

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general.

GENERAL RULES TO BE OBSERVED AT ALL U.S. FLYING FIELDS

During the rush of war the rules of flying pertaining to aviation activities were left entirely to the Commanding Officer of each and every Air Service Station. This resulted in such a state that pilots flying under the rules of one field found themselves breaking all of the rules of the field when entering another station. For this reason and for the sake of standardization of flying fields, general rules which pertain and apply to all Air Service activities have been compiled. They contain only general rules in regard to hangars, machines, ground rules and rules of the air and hold true in all Air Service stations. It is understood that each field will have special rules peculiar to its own locality. The general rules are as follows:

HANGARS.

1. Smoking is prohibited in any hangar or within 25 feet of any machine or gasoline container. Notice to this effect to be posted in the hangar.
2. Landing or taking off must not be over hangars.
3. Visitors will not be allowed on the Flying Field or in the vicinity of hangar unless they are accompanied by an officer or enlisted man of the Post.
4. Landing near hangar is prohibited.
5. Hangars must be cleared by 50 feet.

MACHINES.

1. The crew chief will personally inspect and see that all safety belts are securely fastened and fit snugly; in case a seat is empty that the safety belt is so fastened as to prohibit it ever becoming entangled in the controls.
2. Instructors and students in flying will not wear a long coat or loose clothing that might become entangled in the controls, nor will loose articles such as waste or rags that might jam the controls be left in the machine.
3. In leaving a machine always head it into the wind and change the propeller to a horizontal position.
4. Unless alone pilots should not attempt to start a motor without assistance.
(This is properly a cross country rule).

5/26/20

3445

5. Do not take a machine into the air unless you are satisfied it is in perfect condition.

6. Never leave the ground with the motor leaking or running poorly. Never take a machine in the air until you are thoroughly familiar with the working of the throttle, the switch, the gasoline shut-off, the oil pressure, the air release, the air-pump, and all other controls and instruments.

7. If pilot finds anything wrong with the plane he is to report it to his Flight Commander and to no one else.

GROUND RULES.

1. Ambulances to be on Flying Field during all flying hours with a surgeon and necessary medical detail in attendance. Ambulance should be equipped with all necessary tools, such as wire cutters, axes and fire extinguishers.

2. A landing "T" will be used on Flying Fields to designate the direction of landing and will govern irrespective of the direction of the wind. As far as practicable this "T" will be kept headed into the wind.

3. Do not turn sharply in taxiing when on starting lines, instead of turning short, have tail lifted around, thus avoiding a turn which might strain the fuselage.

4. Do not taxi closer to 100 feet to another ship unless mechanic has hold of wing.

5. Never get out of machine with motor running until pilot relieving you can reach engine controls.

6. Pilot must clearly inspect machine before taking same into the air. Inspect action of controls.

7. In taxiing to take off position, oblique machine to right or left to make sure that the Section of the Field you are going to use is clear, and that no other machines are coming in to land directly behind you.

8. Machines in flying into Field have preference over those about to leave.

9. It is advisable to carry a good pair of cutting pliers in a position where both passenger and pilot can reach them in case of an accident.

10. Never use glass goggles. No flights should be made without goggles or a helmet. Handkerchiefs should be carried in a handy position in order that goggles may be wiped off.

11. Riding on steps, wings or tails of a machine is forbidden.

12. A fire extinguisher will be carried on each machine.

13. Before leaving ground pilots and passengers will make sure that belts are securely fastened.

14. After coming on a bed line allow motor to idle a few minutes to prevent sudden cooling of motor, thus warping valves.

15. In taking off, look on the ground and in the air behind in front and to either side.

16. In taking off never start suddenly. Open throttle change and take the first 20 feet slowly, thus avoiding other pilots that are about to take off.

17. In case engine fails on take off, land straight ahead regardless of obstacles.

18. A plane with a dead motor has the right of way in landing.

19. No plane is to taxi faster than a man can walk.

20. Do not forget to close throttle before starting motor.

21. In taxiing hold elevator back, never taxiing with tail end without man holding the wings.

22. Planes will not be taxied abreast. They will follow ahead 100 feet in the rear of the preceding machine.

23. Never run motor so that blast from the propeller will blow on other machines or in the direction of the hangar.

24. Motors will be tried out only in the presence of the Flying Officer.

25. Rules about right of way are for guidance only. Collisions are always avoidable. There is no right of way. Every pilot must be awake at all times and prevent his machine from getting dangerously near another machine.

26. Never turn a machine after landing until you have looked around you and are sure the path is clear.

27. No two cadets shall fly together. Cadet must be accompanied by an instructor when flying dual.

28. No ship will cross the line when motor is running.

RULES OF THE AIR.

1. Speed always means control. Loss of speed means loss of control. If motor starts to miss while getting out of field always nose plane down to gain flying speed before trying any maneuvers. Most crashes are caused by trying to turn close to the ground without sufficient flying speed.

2. After flight has begun if conditions arise that make flying hazardous, land as soon as possible.

3. Do not trust any altitude instruments. Learn to judge altitude especially on landings. Barometric conditions may change in a cross-country flight, so that even a barometer that is functioning properly may read an incorrect altitude. Moreover, the altitude of the landing place may be different from that of the starting point.

4. An officer in charge of flying will prescribe whatever rules are necessary and advisable to cover such lines of traffic as are necessary to eliminate the possibility of accidents when machines are coming into and taking off from the home field.

5. In all maneuvers where altitude is lost rapidly, be sure that no machines are under you.

6. If other machines precede you in starting, allow them to gain a sufficient distance before following. Do not follow in trace; propeller wash will thus be avoided.

7. In passing a machine going in the same direction, have an interval of at least 200 yards.

8. In passing over or under another machine, interval must be at least 200 yards.

9. Machines approaching head-on pass to the right at an interval of at least 200 yards.

10. Before beginning a glide see that no machines are under you. Those flying beneath you have preference.

11. If you see another machine, get out of its way. Do not depend upon the other pilot having seen you.

12. At all times keep machine in such position, in reference to suitable ground, that a landing can be effected at any time.

13. Do not cut across bows of other machines when making your first turn.

14. No vertical banks, steep climbing turns or zooming will be done under 300 feet.

15. All acrobacy such as loops, wing-overs, eights, rolls, half-rolls and spins must be completed at not less than 1,500 feet.

16. All instruction in forced landings is to be done with the instructor in the machine.

17. Come out of steep side-slips and spirals at not less than 300 feet.

18. At no time will "hedge-hopping" be tolerated.

19. No machine will take off until the officer in charge has been notified of proposed air route to be followed, the purpose of a flight and the names of both pilot and passenger.

20. All landings will be made on the home field except in case of forced landings or to assist another pilot whose machine has been wrecked. All such landings off home field will be reported immediately upon return to the officer in charge of flying.

21. No pilot will fly over a city or town without sufficient altitude to reach a landing place.

22. All pilots going out for acrobatics will be assigned to sectors far enough from the field so that they will not interfere with the regular traffic.

23. No acrobatics will be indulged in without the permission of the officer in charge of flying.

24. Whenever possible, landings and take offs will be directly into the wind.

25. There will be a trouble-shooter on the field at all times when flying is going on.

26. No spins on back or tail slides will be indulged in as they put unnecessary strain on the machine.

27. All machines will land in a straight glide from 500 feet.

28. No acrobatics at any time will be done over the field.

29. To go off the ground in a side wind, be sure to allow the machine to have flying speed before attempting to arise then turn slightly into the wind, gain a safe altitude and then level out before attempting to turn and go with the wind.

30. If machine slides in, use more rudder or take off some of your bank or combine both.

31. If flying against the wind and you wish to turn and fly with the wind, do not make a sharp turn close to the ground.

32. In gliding for a landing, if gliding flat at a high altitude, increase the angle of the glide and store up speed when approaching the ground. If gliding flat and you wish to make a turn, increase the angle of glide and allow the machine to pick up speed, then make the turn. Glide steep rather than flat. Increase glide for a turn.

33. Motors have been known to stop during a long glide on account of running same throttled down too low. If pilot wishes the use of motor for landing, open throttle at intervals during the glide.

34. In coming down with excess speed, level out and allow machine to skim along close to ground. Do not attempt to force machine on ground with more than flying speed; the result is bouncing and ricocheting.

KELLY FIELD ENTERTAINS MAJOR TAKAGI, JAPANESE ATTACHE

Major S. Takagi of the Japanese Army has been a constant visitor at Kelly Field, Texas for the past three weeks and has been given every opportunity to study our methods of Operation, Training and Supply.

Major Takagi is attached to the Japanese Embassy in Washington exception of a few months spent in France just before the Armistice. He is a veteran of the Russian-Japanese war and is an officer in the Imperial Japanese Engineer Corps. His special mission was to study our methods of Training and Field Construction for Japan has recently appropriated a huge sum of money for its Air Service and the Major will probably have charge of the construction of Japanese Air Service Schools.

During the first week of his visit Major Takagi visited the Air Service Mechanics School and attended lectures and practical demonstrations given to the students on the assembling and repair of various types of motors and planes. The second and third weeks he spent studying the Operations Rooms, Hangars and Supply Sections of the First Pursuit and First Bombardment Groups, Wing Operations and Field Supply. While with the Bombardment Group the Major attended the various Ground Classes in bombing, radio, gunnery, artillery reglage, contact-patrol and general liaison, and he was much impressed with the amount of work accomplished and the results. After attending a lecture he was taken out to the airdrome and given a practical demonstration of class-room instruction, Lieut. C.M. Chennault, A.S.A. of the Twelfth Bombardment Squadron gave the Major his first ride in a DH-4 service plane.

On December eleventh the Major visited Laredo and inspected the airdrome of Flight B Eighth Surveillance Squadron, which is on Border Patrol duty.

The flight from Kelly Field to Laredo was made in a "Bluebird" piloted by Major W.G. Schauffler, Jr., A.S.A., Operations Officer First Wing, and was a thriller in every sense of the word for Major Takagi. The weather conditions when the take-off was made at Kelly Field were ideal but forty miles south, rain, fog and a young hurricane were encountered for about an hour. From this time on, until the storm had been passed Major Schauffler hugged the railway track at fifty feet and Major Takagi was initiated into the pleasures, thrills and discomforts of storm flying at a low altitude. The total time from Kelly Field to Laredo, one hundred and fifty miles against the wind, was two hours and forty minutes against one hour and five minutes made on the return trip with the wind above the clouds by compass course.

Major Takagi was very much interested in the work of the Border Patrol and was especially surprised at the comfortable way B Flight has fixed itself, - Officers and Enlisted Mens' Clubs with large open fire-places, mission furniture, waxed floors, etc; a splendid tennis court, clay-pigeon traps, volley-ball courts, base-ball diamond, - well in fact most of the comforts of home, - including a Chinese cook that should be a cook for a king. A trap-shoot was pulled off for the Major's benefit and although the gun was a bit long for him he managed to "Kill" quite a few.

After finishing with his course of study at Kelly Field, Major Takagi inspected the Aviation General Supply Depot and Brooks Field.

While on the post he was a member of our various messes and at all times proved himself to be a thorough officer and gentleman. On December eighteenth Major Takagi gave a farewell dinner at the Gunter Hotel to a number of officers from the First Wing. Several Japanese civilians were also present and everybody had a glorious time.

COAST PATROL REPORT

On December 17, 1919, in spite of the cloudy and foggy weather, First Lieutenant C.E. Duncan, A.S.A. and his observer, First Lieutenant L.M. Wightman covered the 365 miles coast patrol from Mitchel Field, Long Island to Langley Field, Virginia, in two hours and ten minutes. At Sandy Hook, Atlantic City, Cape May and Cape Charles boats were sighted.

The DH-4 plane No. 63110 was flown at an altitude of 2000 feet, making an average speed of 120 miles per hour. In all 63 gallons of gasoline and 16 quarts of oil were used for the whole trip.

HENSLEY URGES DEVELOPMENT OF RIGID AIRSHIPS

Colonel William C. Hensley of the Balloon and Airship Division of the Air Service has been in Europe for the last six months studying the construction and operation of the modern types of dirigibles, particularly the rigid dirigible. He has covered the ground thoroughly in England where he has taken a complete course of training in handling such ships. He is now in Germany and is at present mastering the intricate details relative to the construction and operation of the German rigid airships. In the ensuing description which is copied verbatim from his report, he gives a vivid account of his experience in a German rigid "Bodensee", a rigid airship of most improved design and construction and urges the development of this branch of aerial navigation in the United States.

"Airships are now possible in any kind or condition of weather'. No weather conditions, except a strong-cross hangar wind, prevent the "Bodensee", the commercial air-liner built since the Armistice by the Zeppelin Airship Corporation at Frederichshafen on Lake Constance, from making its daily flight between Frederichshafen and STAAKEN, which lies some thirteen miles from BERLIN. Of this fact, my last flight convinced me.

In a driving snow storm, October 25, 1919, at 9:30 A. M., we left FREDERICHSHAFEN in this "Bodensee". At 100 meters height, we lost sight of the ground, and had to steer by a dead reckoning and to locate by directional wireless from Frederichshafen and Staaken. Once only did we see the ground. That was when we turned a circle over the town of GERA to determine direction of wind. About 150 kilometers from Staaken we entered a fog, about 100 kilometers from Staaken, a driving rain.

In spite of all these navigational difficulties, we landed at STAAKEN only fifteen minutes late. Any other type of aircraft would have been wholly impossible under the violent weather conditions encountered.

Because she flies between BERLIN and the natural inlet and outlet to SWITZERLAND, the accommodations on the "Bodensee" are at a premium. Each time that I have been in BERLIN in the last two months, bookings have been made for trips on this ship four weeks in advance, and only the fact that I was undergoing a course in rigid airship piloting (and was thus allowed to ride in the pilot-house) got me aboard.

Many people will pay 475 marks or \$15.00 in fare to see the tremendous panorama spread below the air traveller. Unexcelled beauty is unfolded to the eye of the passenger, which leaves a feeling of regret that the journey is so quickly ended.

Sixteen times I have made this journey. Sixteen times I have regretted to have it end. Leaving STAAKEN, the route passes over POTSDAM, where not only the old palace of "Sans Souci", but the new palace of the former Emperor of Germany may be seen. These are surrounded by less pretentious but still beautiful type of buildings, situated in wooded areas which gleam with small lakes.

The ELBE is passed at WITTENBERG, then on to LEIPZIG. Directly over the so-called largest railroad terminal in the world we hover, and fly on again to BAYREUTH, the scene of Wagner's "PARSIFAL", where the theatre may be distinguished from above.

NURNBERG, the ancient walled city, is next pointed out on the way to NORDLINGEN and ULM, where the famous church spire, second in height only to St. Paul's in London, is almost touched by the airship itself. With a turn over LAKE CONSTANCE, we land at FREDERICHSHAFEN.

The voyage leaves a mental picture of an ever-changing series of beautiful scenes; of the ruins of ancient castles, of little country hamlets tucked away in ravines, - artistic, to a degree, they are with their civic centres combining playgrounds, swimming pools and tennis courts.

It leaves, also, a remembrance of stately monuments to Germanic heroes of a size and simplicity that over-awes, of church spires that reveal the touch of a master chisel, of industrial centres that made Germany a formidable rival for the commerce of the world, and the extensive cultivated areas, laden again with immense crops. Sharply defined in irregular shapes, one sees woods so dense that light never reaches the interior.

So from the white and gold of "San Souci" through the green of the country side, past the red and white of the farms, over the black of the woods, races the colour scheme below the ship, to the blue of LAKE CONSTANCE.

Each day the trip is made on way-- LAKE CONSTANCE to BERLIN, or vice-versa. Two days in each week, one up and one down journey, the route goes via MUNICH, where a landing is made to discharge and to take on passengers. It is approximately a distance of 390 miles, and the liner negotiates this in from four to six hours, depending upon the wind, direction, and speed. This is quite different from twenty-six hours in a present day German train with its attendant discomforts. The food to be had on the airship is the exception to the "ersatz" food served elsewhere in Germany. The steward probably obtains his supply for two days at FRIEDRICHSHAFEN, which is at the SWISS border.

Fifteen kilograms of baggage is transported with each ticket and excess baggage is charged for at the rate of five marks per kilogramme.

This commercial service is operated by what is known as the D E L A G Company, (which is a contraction for DEUTSCHEN-LUFTSCHIFFARTS-AKTIEN-GESELLSCHAFT) the HAMBURG-AMERICAN STEAMSHIP COMPANY in BERLIN acting as booking agents for the operating Company. The ZEPPELIN AIRSHIP CORPORATION has no connection with the above operating Company, although there may be interlocking directorates.

The design of this "Bodensee" is the latest in airships, being at the present date the only truly stream-lined rigid airship actually in commission. It is really so far advanced in every way over anything I have seen, that one is led to express the opinion that, in airship construction (and operation as well), all other countries are mere "Babes in the Woods" compared to the Germans.

This is not said with any idea of criticism of the efforts of other countries, but only with the desire to see our country realize that her future guidance in airship construction and operation should be patterned after the most efficient system. There is no doubt in my mind that that system lies in Germany.

Commercial air navigation is coming, and we must meet that issue very soon. Let us be prepared to choose our course so that we shall make as few mistakes as possible. The building up of the present small commercial enterprise in Germany has meant numerous heartbreaking experiences, - experiences that would have forbidden progress, had not one man with a fixed idea held to his opinions.

Millions of marks have been lost in the beginning, and lives of members of crews have been lost, but let it be said, to the eternal credit of the man with the fixed idea and of his subordinates, that not a single passenger carried on a Zeppelin airship has been injured or killed, - and to date the total carried has reached the sum of plus 140,000.

This statement does ~~not mean~~ that casualties will not occur. Irresponsible boys can take airships in the air and bring them down in flames in the heart of a large city, or careless officers and men may explode a dirigible on the ground and burn a number of spectators; but we can at least conduct our service along scientific, known principles, that can be obtained from an intimate study of the German methods, and thus minimize the number of disasters.

An instance which shows the remarkable speed obtainable by this ship of 700,000 cubic feet capacity occurred on one of the sixteen trips that I have enjoyed in this ship, is as follows:

On one trip from FREDRICHSHAFEN to BERLIN, in the vicinity of LEIPSIC, an aeroplane drew alongside of the "Bodensee". Dr. ECKNER, the dean of all airship men now living, was in command and the first to see the aeroplane. He immediately rang all four engines for "Allekraft" (full speed), one could feel the airship jump under the sudden impulse and the race was on. Try as it did for twenty-two minutes the aeroplane gained not an inch, and finally dived and circled for its home field. I checked the speed during this burst of speed and clocked 168 kilometers an hour. How strong the following wind was I was unable to find out, - probably about 33 kilometers per hour.

America is by nature, the chosen spot of all the world for commercial airship work; with her great expanse of territory within, with her far flung territories and insular possessions, with her commercial possibilities in Central and South America, with her centers of population disposed so as to require more rapid transport than yet in operation, with her push and energy that bids for supremacy in all things good, with her supply of helium gas unequalled in all the world, should bid strong for that which is, unquestionably, her way in the path of Progress.

WAKE UP AMERICA !!!!!!!!

U.S. AIR MAIL OFFICERS.

The following list comprises the names of officers who are functioning the aerial mail activities of the United States Air Service:

Otto Praeger.....	2nd Assistant Postmaster Gen.
J. B. Coeridon.....	General Superintendent.
Dr. L. T. Bussler.....	Chief of Maintenance.
J. Clark Edgerton.....	Chief, Flying.
John L. Jordan.....	Chief Construction.
George L. Conner.....	Chief Clerk.
E. J. Scanlon.....	Chief Supply.
A. J. Willoughby.....	In charge of Radio.
Charles I. Stanton.....	Supt. of Eastern Division.
George O. Noble.....	Supt. of Western Division.
Edward McGrath.....	Assistant Supt. of Western Division.

NEW REFERENCE BOOKS IN AIR SERVICE LIBRARY.

There have been placed in the Air Service Library five volumes which constitute a list of all who were officers in the Air Service between April 6, 1917 and December 1, 1919, as compiled by the Personnel Division, Office of Director of Air Service. This list is divided as follows:

- (a) Those on duty November 30, 1919.
- (b) Officers honorably discharged.
- (c) Officers separated from the Service.
- (d) Officer mortalities.

Each list is arranged by rank and alphabetically under the respective ranks. These volumes are available for consultation at any time but owing to the great bulk it is impossible to furnish copies for publication in the Weekly News Letter.

CIVIL AVIATION IN INDIA.

It is understood that the Government of India has decided that the development of Civil Aviation in India will in so far as mails are concerned best be attained by granting a monopoly for the carriage of mails throughout India to a single Air Transport Company, which will not be linked with any aircraft manufacturing company. The monopoly will be limited to the carriage of mails, the postal rates for which will be fixed by the Government of India.

In fixing rates for the carriage of goods other than mails and for the carriage of passengers, the Company operating the mail monopoly will have a free hand in open competition with any other companies which may be established for such traffic.

An Air Board has been constituted as a purely advisory body to advise the Commerce and Industry Department. This Department now deals with all questions concerning civil aviation. The members of the Board consist of the Secretary to the Government of India (Commerce and Industry Department), the Director General of Posts and Telegraphs, India, the Officer Commanding the Royal Air Force, a Representative of the General Staff, and the Financial Advisor, Military Finance Department. There is also a Secretary of the Board.

AIR SERVICE ACHIEVEMENT

On declaration of war in April 1917, the United States had 55 service airplanes, 51 of which were obsolete and the other 4 obsolescent. The personnel of this time consisted of approximately 65 officers and 1100 enlisted men. On November 11, 1918, at the time the Armistice was signed, the United States had on hand in the A.E.F. 3,538 airplanes consisting of all types while in the United States on November 11, 1918 there were 4,865 airplanes, making a total of 8,403 airplanes. The air service personnel at the close of the war, in the A.E.F. consisted of 19,724 men in England, 58,826 men in France and 174 men in Italy, making a total of 78,726 men. Statistics show that pilots under instructions in the A.E.F. on Nov. 11, 1918 numbered 1,323 pilots awaiting instructions 155; pilots in zone of advance 1,119; pilots graduated on November 11, 1918, 16,169. The total personnel of the Army Air Service at the close of the war consisted of approximately 200,000 officers and enlisted men.

The American Army made approximately over the enemy's line 12,830 pursuit flights, 6,672 observation flights and 1,174 bombing flights, making a total of about 20,676 flights. They flew for 35,747 hours over enemy's line covering approximately 3,574,700 miles.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general.

CAPTAIN COOK DISTINGUISHED "ACE", LEAVES AIR SERVICE.

Captain Harvey Weir Cook, A.S.A., D.S.C. with Oak Cluster, an American "Ace" who is officially credited with the destruction of four enemy balloons and three planes, has received his discharge and left Kelly Field and the First Pursuit Group to try his luck in the Texas oil fields.

Captain Cook has been in the service ever since the United States entered the war and even longer. He was with the French driving an ambulance, when the United States declared war on Germany. At that time he resigned his former duties and joined the U.S. Flying Corps at Issoudun. After the usual protracted course of "Barrack Flying" he was sent to Tours and having completed his course there put on his wings. He was then sent back to Issoudun for advanced training, to Cozoux for aerial gunnery and then to Orly where he was engaged in ferrying ships to the front and from supply depots in France and England.

About the middle of July 1918 he was assigned to and joined the Ninety Fourth "Hat-In-The-Ring Squadron" and was with this squadron during the remainder of the war. He participated in the Aisne-Marne, Chateau-Thierry, St. Mihiel and Meuse-Argonne offensives and the Toul defensive. Captain Cook flew for one hundred and twenty hours over the lines.

With the Ninety Fourth Squadron he went with the army of occupation to Coblenz where he was stationed during the winter of 1918 and 1919. He returned with the squadron to the United States, landing in New York on May 31, 1919.

He was with the First Pursuit Group at Selfridge Field, last summer and moved with it to Kelly Field in September, where as Commanding Officer of the One Hundred Forty Seventh Squadron he has contributed his full share to the rebirth of the new First Pursuit Group, helping to make it the live efficient organization that it is today.

The Air Service, Kelly Field, The First Pursuit Group the One Hundred Forty Seventh Squadron and above all that his numerous personal friends feel keenly the loss of a "Bon Comerade" and an efficient officer and wish him every success in the world.

GENERAL PERSHING INSPECTS ENGINEERING DIVISION
OF THE AIR SERVICE AT DAYTON, OHIO.

General John J. Pershing and his staff made a short inspection trip to McCook Field on Tuesday, December 16, 1919. The party arrived at Dayton at 12:55 A.M., but remained aboard their special cars until 9:00 A.M. when they were met by Colonel Thurman H. Bane, A.S.A., and staff from McCook Field, and escorted to the National Military Home west of the city, where General Pershing made a short address.

The party arrived at McCook Field shortly after 10:00 A.M., and immediately started on their tour of inspection. They visited the wood, metal and machine shops, and the dynamometer and engine test laboratories, after which the line of planes consisting of one of each type of airplane on the field, was inspected. The first plane to elicit special comment from the General was the U. S. Martin Army 12-Passenger Transport Plane. He expressed a desire to get in the plane, and after he had inspected the interior, the ship was ordered in the air. An opportunity was offered General Pershing and his staff to make a flight in this plane, but due to their limited time, they declined, stating that there was too much of interest on the ground. General Pershing also showed great interest in the LePere airplane, equipped with supercharger, the principles of which were explained to him by Major Rudolph W. Schroeder, A.S.A. He was much interested in Major Schroeder's statement that he intended to try for 50,000 feet with the supercharger. The Ordnance Scout was pointed out to the General as one of the newest types of single-seater fighters, and was ordered in the air by Colonel Bane. First Lieut. Harold R. Harris, A.S.A., flying the Martin Transport Plane, and Master Electrician Clarence B. Coombs, A.S., flying the Ordnance Scout, gave an interesting exhibition, flying close together to give a comparison of speeds, and demonstrating scout escorting. A demonstration of the use of the parachute, showing the method of strapping pack on the back of the aviator, and one parachute drop with "dummy", completed the exhibition. The visit concluded with an inspection of the variable pitch propeller and the "Bug". Before the party left the field, civilian employees assembled for an informal reception.

From McCook Field, the party proceeded to the plant of the Dayton Wright Airplane Company, and from there went to the Miami Hotel where a luncheon was given by city officials. In a short address, General Pershing expressed deep interest in aviation activities about Dayton, and special appreciation of the important experimental work being carried on at McCook Field. Immediately after luncheon, the party proceeded to Memorial Hall, where a public reception was held. They left the city at 3:00 P.M., for Camp Sherman, Chillicothe, Ohio.

96th Aero Squadron Has a Fire.

A fire originating in the machine shop truck, caused considerable damage to Flight A of this 96th Squadron, stationed at Douglas, Arizona. The engineering supplies, machine shop truck, one trailer and two hundred fifty aerial bombs, Mark I high explosive, were destroyed. The burning oil and explosions from gas and detonators of the bombs made fighting the fire exceedingly hazardous. But the personnel of the Flight assisted by Line troops of Camp Harry J. Jones and by the civilian fire department of Douglas succeeded, by hard work, in confining the fire to a relatively small area. Airplanes belonging to the Flight were all removed to a place of safety before being damaged.

On the morning of December 30th Major L. A. Walton, Commanding the First Surveillance Group and Captain Cecil G. Sellers, Commanding the 96th Aero Squadron, proceeded to Douglas by airplane. They carried with them enough supplies to enable Flight A to put their plane in flying condition.

No border patrols were discontinued as a result of the fire. Flight A made the Nogales Patrol daily while Flight B made the Monument 40 and Douglas Patrols from this Station. The latter patrol normally being made on alternate days by Flights A and B.

ROSS FIELD ACTIVITIES

During the week five spherical balloon ascensions were made. The first four day flights were flights in which officers took part, as part of their qualifying course for ratings as spherical balloon pilots.

Sgt. Saurin who is qualifying for a pilot's rating had an interesting experience which was not altogether devoid of thrills. He left Ross Field on a solo flight. For 40 miles he flew through thick clouds over San Gabriel Mountains and landed safely two miles west of Hesperia, California in a desert area among high cactus trees. Most of the time that he was in the air he was unable to see anything of the ground below because of the fog and rain.

Carrier pigeons were released and bore messages to the Post. These birds made excellent time considering the cloudiness of the weather which prevailed. One bird which had never been more than 25 miles from camp flew from Hesperia, California 47 miles in an air line to the camp through clouds, rain and over mountains some of which were over 10,000 feet high. The bird was released at 2 o'clock and reached the home loft on the post the next morning at 9 o'clock.

Lt. Colonel L.J. Mygatt, Lieut. Col. Henry B. Hersey and Major Max Fleischman, formerly of the Air Service and Dr. J. Boerema, scientific collaborator at the Royal Magnetic and Meteorological Observatory for the Dutch Government Batavia, Java, East Indies, were interested spectators at Ross Field. Dr. Boerema inspected the meteorological station and watched a pilot balloon ascension and the method of making an observation for wind aloft. The visitors were very much interested in testing the NG-1 balloon (named after its inventor, Lieut. N.E. Galentino A.S.A.) A test was made to determine the parachuting action of a special 24,000 cubic foot capacity spherical balloon which was designed by Lieut. Galentino and Master Electrician Ed. R. Boland. This balloon has a rigging band with battennettes and rope rigging somewhat similar to an observation balloon. The rigging band encircles the balloon somewhat below the equator, the ropes running to a concentrating ring from which hang the basket supports. This balloon has flown a number of times successfully in passenger carrying flights, and is much more easily inflated, deflated and packed than the standard spherical balloon using a net.

It was inflated with hydrogen gas taken from an observation balloon, which was deflated, and the balloon was allowed to rise about one thousand feet. Sand bags approximating the weight of three men were placed in the basket and a rope was attached to the rip-cord. After the balloon had reached the desired height the balloon was ripped by pulling on this rope, and deflated almost instantly and flattened out like a parachute very quickly, lowering the basket to the ground with somewhat of a jolt, but not enough to have seriously hurt any occupants, had there been any.

HIGHLY PLEASED WITH MECHANICS' SCHOOL.

The Air Service Mechanics' School is once more active due to the arrival of one hundred and sixty students. These men have been trade tested and are now in school. They will graduate in three months time as airplane and motor mechanics.

Lieut. Colonel W.C. Sherman who has recently returned from an inspection trip to the school reports it to be in very good shape to receive more students. He believes that with certain additions made to the building it could be expanded to take care of an Air Service of 25,000 enlisted men.

Captain F.B. Weimers is giving the school a detailed inspection after which he will report the needs to the Director of Air Service.

It is expected that this unit which is the only remaining of its kind in the Air Service will grow steadily.

FIRST PURSUIT GROUP

When the First Pursuit Group comprising the 94th, 27th, 95th and 147th, Aero Squadrons ceased operating overseas it did not return home as a unit. The 94th Squadron or "Hat-In-The-Ring Squadron" was the last to arrive in the United States, having served as aerial police in the American occupied territory. As fast as the pursuit squadrons arrived in the United States they were mustered out of the service. Some of the men were discharged while others were ordered to the Third Air Park at Selfridge Field, Michigan. At this time it was thought that no pursuit units would be retained in the Air Service.

The re-birth of the Group was ably guided by Lieut. Colonel Davenport Johnson, Colonel Johnson commanded the Second Pursuit Group during its whole career at the front. Assisting Colonel Johnson in the formation of the New First Pursuit Group were the following officers:

Major Reed Chambers of the famous "Hat-In-The-Ring Squadron", Distinguished Service Cross, three palms, Legion of Honor, Croix de Guerre.

Major J. J. Houghton, A.S.A.

Captain Arthur R. Brooks former commanding officer of the Twenty Second "Shooting-Star Squadron", Distinguished Service Cross.

Captain Clayton Bissell, Flight Commander of the One Hundred Forty Eighth "Liberty-Head Squadron", which did such wonderful work attached to the Royal Air Force on the British Front, British Distinguished Flying Cross;

Captain Weir Cook formerly with the "Hat-In-The-Ring Squadron", Distinguished Service Cross and one palm;

Captain James A. Healy, 6 official enemy planes, Service from April to November 11, 1918 at the front, saw service at Toul, Chateau Thierry, St. Mihiel, Argonne Offensive, decorated with the distinguished Service Cross, oak leaf, Croix de Guerre, three palms.

1st Lieut. Samuel G. Frierson of the Ninety First Army Observation Squadron.

The First Pursuit Group was transferred from Selfridge Field to Kelly Field in September equipped with British S.E. 5 planes and since that time has been commanded by Major Reed Chambers vice Lieutenant Colonel Davenport Johnson who assumed command of Kelly Field. The above mentioned officers were placed in command of the various squadrons and Captain Frank B. Tyndall formerly with the Twenty-Second "Shooting-Star Squadron" was made Group Operations Officer.

Several weeks were required to get the planes into shape for flying but sufficient arrangements had been made to give an exhibition of flying for Major General Joseph T. Dickman when he inspected the Post.

About half the officers in the Group are former overseas pilots and the rest have been doing the disappointing, though none the less necessary duty, of instructing new pilots on the home fields. The enlisted personnel is comprised of one third overseas service men, one third home service men and the remaining third are "Rookies". The last mentioned, however, have caught onto the spirit of the older men and are holding up all the old traditions of the Group.

Formation flights to points along the border where the First Surveillance Group squadrons are stationed are made almost every week, combat practice, gunnery practice, and precision flying and dead-stick landings are a part of the regular routine of the week and when the weather is clear night flying is sometimes done. Ground classes in liaison, radio, gunnery, etc., are also conducted by the Operations Officer.

DEATH OF MAJOR E. W. CROCKETT

Major E. W. Crockett, Air Service, died of apoplexy at the St. James Hotel, Washington, D.C., December 23th, 1919.

Major Crockett was taken ill at lunch, Monday noon and was removed to a room in the hotel where, in spite of efforts of the attending Surgeon, he died at 3:15 that afternoon. His wife and son were with him at the time of death.

Major Crockett came to Washington June 13, 1918 from Mineola, Long Island, where he had been in charge of recruiting for the Air Service. He was Chief of the Training Section of the Balloon & Airship Division in the Office of the Director.

Previous to his assignment to Mineola, Major Crockett was stationed at Fort Omaha, Nebraska, where he graduated from the Revised Air Course. He was later Commanding Officer at Fort Crook, Nebr.

His death was entirely unexpected as he had always appeared to be in perfect health. Only that morning he had commented to several people on how well he felt. His loss is a particularly keen blow to the Balloon & Airship Service, in which he was one of the most popular officers.

Previous to his commission in the Air Service, Major Crockett had served for fourteen years in the Philippine Constabulary. He retired with the rank of Major to accept a temporary commission during the war. He had been recommended for permanent commission in the Regular Army.

The body was taken by Mrs. Crockett to San Francisco, where interment will be made in the National Cemetery at the Presidio.

CARRIER PIGEONS AT ROSS FIELD DOING EXCELLENT WORK

Many of the balloon schools have demonstrated the superiority of pigeon liaison over all other means of communication in free balloon flights. The carrier or homing pigeons at Ross Field are doing excellent work. Twenty-two pigeons are now being trained at this Post for flights up to about fifty miles, and twenty six "squeakers" are ready for their first exercise about the loft.

Recently a Board of Air Service and Artillery officers headed by Colonel Prentice of the Air Service, while inspecting this field, visited the Observation Camp belonging to Ross Field on Mount Harvard, near Mount Wilson. This camp is at an elevation of approximately 5,000 feet and is six miles in an air line and about 14 miles by road from the Post. Four carrier pigeons were carried with the party and one of the birds flew back to camp in four minutes after being released, thus making the excellent time of one and one half miles to the minute.

Ten carrier pigeons were exhibited for a week at the Eighth Annual Pigeon Show, which was recently held at Los Angeles. These birds excited considerable interest, and frequent flights were made between Los Angeles and the home loft.

280 POUND MAN GIVEN AIRPLANE RIDE.

Mr. Henry Fox, who was given a flight over Washington, D. C. January 6th, has the distinction of being the heaviest man who ever had a ride in an airplane. He weighs 280 pounds. The flight was made over Bolling Field in a DH Honeymoon Express piloted by Major W.C. Ocker.

LETTER FROM AERO CLUB OF NORTHWEST CONCERNING AN AERIAL
DERBY TO ALASKA.

"It was with some misgivings that we read the statement of Mr. J.W. Tyrrell of Hamilton, Canada, relative to an aerial trip to Alaska. Inasmuch as this Club is planning to conduct an Aerial Derby to Alaska this coming spring to demonstrate the entire practicability and advisability of aerial mail service to Alaska, this statement of Mr. Tyrrell gives an entirely erroneous impression.

"In the first place a great deal of productive Alaska is located south of the Arctic Circle and in a more temperate climate than portions of our northern Atlantic Coast states. There is weekly steamship service the year around to southeastern and southwestern Alaska, and half of the year to the Arctic ports of our northern Territory, and as far as the possibilities of an aerial flight go, one could be undertaken from Seattle on twenty-four hours' notice should the occasion arise, in normal weather conditions, summer or winter.

"We realize that an aerial trip of exploration into Arctic regions would be extremely hazardous, but we would appreciate very much if you will state in your next news letter the fact that it is possible to fly to the most inhabited portions of Alaska in a sea plane without once being outside of a very reasonable glide to a sheltered landing. We hope to demonstrate this successfully next spring in the big race we have planned. The Committee is now at work on this matter, and as soon as definite plans are made, we will take pleasure in advising you of them.

"If you wish we can give you most accurate information on Alaska, and information that no doubt, in the light of Mr. Tyrrell's statement, will prove most amazing to those who think of our Northern Territory as a barren Arctic waste."

TEEL WILLIAMS,
President."

A letter has been forwarded to Mr. Williams requesting that he furnish all data assembled for a proposed Derby to Alaska.

PARACHUTE WORKS SUCCESSFULLY AT AN ALTITUDE OF ONLY 400 FEET. ✓ ✓ ✓

The Air Service Engineering Laboratory, Dayton, Ohio recently demonstrated the successful use of parachutes as a means of safe exit from an airplane in full flight, which will eliminate many dangers which have been a bugaboo to flyers.

The parachute drop was made from a DH-9-A plane, Liberty motored, flying over 100 miles per hour at an altitude of only 400 feet.

The parachute with a 300 pound loading opened in one and one half seconds and reached the ground in 20 seconds with its living load with no oscillations whatever.

From time to time it has been demonstrated that successful drops could be made at high altitude but at an altitude of only 400 feet with a high powered plane such as a DH-9-A it is considered remarkable.

The parachute used was a reconstructed Martin flat topped with a spread of 27 feet when fully opened.

MAJOR SCHROEDER ENCOUNTERS 150 MILE WIND.

Major Rudolph W. Schroeder, Chief Test Pilot of the Air Service Engineering Laboratory at Dayton, Ohio and Lieut. George W. Eisey his assistant, while flying a Le Pere airplane in a recent attempt to break the world's altitude record had a most remarkable experience.

Major Schroeder holds the world's altitude record with a passenger. His airplane is equipped with a new air regulating device which was being tested for extreme high altitudes. He and his observer while testing this device reached an altitude of 18,000 and encountered such a high wind that the plane, which is equipped with a 400 Horse-power Liberty Motor and capable of making a speed of 139 miles per hour, was blown backward at a rate of 15 miles per hour. He was finally compelled to dive his plane to a lower altitude in order to get back to his field. It is estimated that the wind was in excess of 150 miles an hour.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general.

RAILROAD HELIUM REPURIFICATION PLANT.

During the war one of the greatest military assets obtained by the Allies was the production of Helium in quantities sufficiently great for use in Balloons and Airships. While none actually reached the front, a supply was in transit and continuously increasing production assured. Helium is an element that occurs in only a few locations in quantities sufficient for extraction on a commercial scale. The most promising fields thus far discovered are located in Texas, Kansas and Ohio. It is believed by scientists that other sources of supply will be discovered susceptible of development for the production of Helium in balloon quantities as the result of exploration work. At the present time such an exploration program is being actively prosecuted by the Government. On account of the rare occurrence of this gas, of the high cost of production and the expense of transportation from point of production to point of use, a plant for its repurification after contamination thru use in aircraft proved desirable. The practice with Hydrogen, (the gas at present used by the Army for Balloon and Airship inflation) when the purity of the gas becomes low, is to discharge the entire contents into the atmosphere, to use the entire contents for the inflation of free balloons, or to bleed part of the contents into the atmosphere, replacing the gas lost with fresh Hydrogen thereby bringing the purity to the proper standard. The daily loss of Hydrogen from a 37,000 cu. ft. balloon may run as high as 5000 cu. ft. With a Helium balloon attempt will be made not to lose more than a small fraction of this amount. The gas, instead of being allowed to escape into the atmosphere, will be bled from the envelope, and thru a Truck Compressor Unit compressed into cylinders under the standard pressure of 1800 pounds per square inch. These cylinders will then be transported to a Repurification Unit where the impurities are extracted, the gas recompressed into cylinders and again used in the inflation of the envelope. A production of 40,000 to 45,000 cu. ft. of Helium is expected within a period of three or four months and a great portion of this gas will be used at a distance of 300 to 1200 miles from the source of supply at Fort Worth, Texas. A cylinder containing but 180 cu. ft. of this gas weighs 135 pounds. If attempt were made to ship Helium, as it became impure, back to Fort Worth for repurification, the freight charges would amount to a very large figure, or if attempt were made to ship to Zone repurification plants, the cost would be very heavy. It can be seen from the foregoing that the conditions surrounding the design of a Repurification Plant for Helium point to the importance of a highly mobile unit. This was obtained by placing the plant on two standard 70 ton railroad cars.

In actual warfare these units will be available for emplacement on the nearest railroad siding to the balloon and airship ascension points. Several truck compressor units each with a capacity of 5000 cu. ft. per hour, will operate at the balloon or airship beds, as the case may be, compressing the impure gas into cylinders which will be transported, at the earliest convenient time by trucks to the Railroad Repurification Plant. Here the cylinders of impure gas will be connected to manifolds discharging directly into the Purifying Column, passing out thru another set of manifolds into cylinders being

charged with purified gas. This Railroad Repurification plant has a capacity of from 1000 to 2000 cu. ft. per hour and is designed to operate for 24 hours per day continuously, if need be, for a month or more at a stretch. The power to operate this plant is furnished by a 120 H.P. heavy duty gasoline motor directly connected to a direct-current generator. However, where electrical current is obtainable, an alternating-current motor is used, which is also directly connected to the above mentioned generator, the engine being disconnected. The power plant is located in one car along with fuel supply tanks, sleeping quarters for the crew, office room, tool supply bins, etc. This power plant generates sufficient current to operate two repurification cars, one at each end, should larger capacity be required from a unit. The other car or repurifying car contains all the repurifying apparatus consisting of Air and Gas Compressors (electrically operated) purifying column, manifolds, both charging and discharging, desiccators, cooling tower, fuel and water supply tanks, gasometer, testing apparatus, etc. This car is arranged to operate either from a platform or from the ground, - in one case the cylinders lying on their sides, in the other standing on end. The underframe of these cars are of standard U. S. Steel construction built from plans of the U. S. Railroad Administration for the sake of standardization, - the superstructure is of composite construction, with steel frame, wood and sheet steel sides, wood sheathing, etc., to secure warmth in cold weather, at the same time giving an exterior finish which conforms to the Hydrogen gas car practice of the Air Service.

The Truck Compressor Units are mounted on a 5 ton chassis. The Compressors, of a compact vertical type of special design, the same as used in the Repurification Car, are connected thru a gear reduction and flexible coupling to a 80 H.P. heavy duty type gasoline motor. Both compressor and engine are cooled thru a single radiator suitably divided in order to allow the compressor to operate as cool as possible, at the same time giving the engine the required working temperature. The engine and compressor are mounted on a single sub-base, the whole being housed in a composite wood and steel superstructure with sides opening out, giving working space to operate the manifolds, which are attached to the platform formed by the sides when open. Ample fuel and water supply tanks are provided for a continuous ten hour run. If difficulty is encountered in the operation of these units in rough and sandy country, a caterpillar tractor will have to be resorted to.

The principle upon which this Repurification Plant operates is simply stated, but rather complicated in application. It consists of a liquification plant to reduce the temperature and change the pressure of the impure Helium to a point where the impurity (air) is liquified and drawn off, allowing the pure Helium to escape in gas form. This plant is at the present time under construction and every effort is being made to complete it in time to care for the Helium production mentioned above.

The following articles are from clippings taken from the Asiatic News Agency and the Peking Leader, Peking, China concerning aviation. It is interesting to note that the Republic of China not only contemplates the use of aircraft for military purposes but also intends to make extensive use of aircraft for commercial purposes.

Asiatic News Agency, Peking, October 31, 1919.

With reference to the Japanese report that the British firm which sold aeroplanes to China had advanced £ 200,000 sterling to the Peking government in violation of the agreement that no loan would be given to this country until the reunification of north and south, the "Asiatic News Service" has been authorized to state that there is no truth in this story. Aeroplanes have been purchased by China upon strict commercial basis without any commission or advance at all. On account of this, the vernacular papers, Kuomun Kungpao and Yi-shih Pao were recently ordered by the Peking police to correct their statements because they printed the Reuter telegram from London as a loan from British capitalists.

The Ministries of War and Communications have completed their plans for the establishment of an efficient air service for the Republic of China under the supervision of Lt. Colonel Smallwood whose address on modern aviation delivered in the presence of prominent foreign and native officials and diplomats has attracted wide attention among Chinese.

Information from the Presidential Office indicates that His Excellency President Hsu Shih-chang takes a great interest in the building of a modern air service in co-operation with the proposed wireless telephone between Peking-Tientsin-Shanghai-Hong Kong and Canton.

The Ministry of War is also going to enlarge the existing Chinese aviation school at Nan-yuan for training young men to learn aviation both for military and civil purposes. As aviation will surely play an important part in the reconstruction of China in view of its great success in the battle fields of Europe, the President says that he will place all the resources of China at the disposal of air experts so that every sort of an airplane can be manufactured in this country. General Ting Shihyuan has been placed in full charge of aviation by the President.

FROM: "Peking Leader", Peking, China.
October 19th, 1919.

CHINA ORDERS VICKERS-VIMY AEROPLANES.
Same Machines That Won Atlantic Flight.

The Times aeronautical correspondent says that the Vickers-Vimy aeroplanes ordered by China are similar to the machine that won the trans-Atlantic flight. Their length is 42 feet, height 15 feet, width 67 feet. They carry two Rolls-Royce engines, totalling 750 horse power. Their maximum speed is 115 miles an hour, cruising for six hours flight, but extra tanks can be fitted if necessary. They carry two pilots. The cabin is enclosed. They can seat twelve passengers whose safety and comfort is in every way studied. The maximum weight of freight and mail they can carry will be 2,600 lbs. A number of skilled pilots and engineers and organizers will shortly proceed to China to establish air services. The result will be an enormous quickening up of communications, with very far reaching political, economical and commercial effects China will assume an entirely different aspect as a world factor.

NAME OF "JOINT ARMY AND NAVY BOARD ON AERONAUTICS" CHANGED

The Secretary of War and the Secretary of Navy have agreed to change the name of the "Joint Army and Navy Board on Aeronautics" to "Aeronautical Board" and all communications etc., to be forwarded to this Board will be addressed as above.

The present members of the Board are: Major General Chas. T. Menoher, Director of Air Service, Chairman; Lieut. Col. George A. Nugent, C.A.C.U.S.A.; Lieut. Col. Byron Q. Jones, A.S.A.; Captain Thomas T. Cravent, U.S.N. Director of Naval aviation; Captain Lyman A. Cotten, U.S.N.; Commander J. C. Hunsacker, U.S.N.; Commander Warren G. Child U.S.N. and Lieut. Col. A.R. Christie, A.S.A. Working Committee; and Captain A.J. Clayton, A.S.A. Secretary.

The duties of this Board are to consider and make recommendations for prevention of duplication; to secure coordination in the plans for new projects for construction of aircraft, for experimental stations, coastal air stations and for stations to be used jointly by the Army and Navy; as well as questions relating to the development of new types of aircraft and weapons used on aircraft; and other important questions relating to Government activities.

TRAINING ENLISTED MEN IN FLYING

The policy of the Air Service in giving flying instructions to the enlisted personnel at Carlstrom and March Fields has proven to be a popular one among the men.

The majority of the enlisted men in the Air Service are of a high class and of intellectual caliber and it is anticipated that they will have little difficulty in successfully completing their course providing they are physically fit. These two schools of instruction are located at Carlstrom Field at Arcadia, Florida and March Field at Riverside, California where the climatic conditions are ideal.

At both schools they are given a thorough course of instruction in airplane assembly inspection, wire and fabric work, engines, trouble shooting, aerial navigation, photography and a general working knowledge of meteorology.

There are 214 enlisted men under instruction at the present time in various degrees of completing their flying training and 157 waiting assignment to the schools. The enlisted men are highly enthusiastic over this innovation of the policy of the Air Service because it presents a goal which has long been sought and efficiency and morale has greatly increased. Upon being assigned to school for training these enlisted men are classed as cadets and upon the completion of the course prescribed by the Director of Air Service for flying cadets, each cadet if he so desires, may be discharged and commissioned as a Second Lieutenant Officers' Reserve Corps in accordance with C.A.R. 96, Paragraphs 1591-92 and 93.

SCHOOL FOR WEST POINT CANDIDATES OPENS AT KELLY FIELD

The Commanding General of the Southern Department has requested that a school be opened at Kelly Field for the instruction of enlisted candidates who desire to take the entrance examination for the West Point Military Academy. The course of instruction has been placed under the supervision of officers who are West Point graduates. It has been an extremely difficult matter to organize a school at this time due to the fact that there are but few officers in the Air Service who are West Point graduates but nevertheless a school has been actually started and at the present time is instructing candidates for this examination. 26 enlisted men from the Southern Department, of which 15 are from the Air Service units are to attend this course.

FIRE DESTROYS AEROPLANE

Lieut. Guy L. McNeil pilot and Lieut. Lawrence P. Hickey members of the 8th Aero Squadron on Border Patrol duty at McAllen, Texas had a narrow escape after a forced landing followed by a crash. The officers were compelled to land in a small field, four and a half miles southeast of Fort Ringold on account of motor trouble. A safe landing was made and mechanics were sent from the airdrome at McAllen to remedy the trouble. Upon making the repairs they took off from the small field and just before full flying speed was attained the motor went dead, and the plane crashed thru two fences after tearing down four hundred yards of telephone wire, turned upon her nose and immediately caught fire. The officers had barely time to extricate themselves and lost all their equipment.

STOWAWAY ABOARD AIRPLANE ON BORDER PATROL DUTY

Orders were received at the headquarters of the 104th Air Squadron, El Paso, Texas in the early hours of the morning to take the air at 8:30 for patrol duty along the border. The members of the squadron thought nothing unusual of this and promptly at 8:30 left the ground and circled for altitude and proceeded to get into "V" formation. Lieut. Stacy C. Hinkle, one of the members of the Squadron, after being in the air about fifteen minutes began to realize that he was not alone in his ship and he decided to drop out of the formation and go down when a shaggy head appeared above the front seat barking furiously, proved to be "Spin" an Airdale, who is the official mascot of the 104th squadron. When the Squadron landed at its airdrome Spin expressed her delight by barking and cavorting about the field while Lieut. Stacy recorded on the Flying Register after the name of Spin the 12th official hour in the air.

PORTABLE ENGINE CRANKER

A portable engine cranker designed and built under the supervision of the Equipment Section, Engineering Division, McCook Field, was successfully demonstrated December 19, 1919. The design allows for the cranking of engines mounted in various airplanes, ranging from the Curtiss Training Plane to the Martin Bombing types, on rough and uneven ground. The outstanding feature of this cranker is that it will accommodate all right hand engines fitted with a standard hub, not mounting a spinner. It develops a starting torque 50% greater than that necessary to turn over a cold Liberty "12".

STANDARDIZATION OF INSIGNIA, ETC.

The specifications and Standards Section of this Division is making an effort to standardize colors for insignia, markings and coating of aircraft. It is expected that samples of these colors will soon be ready for distribution, thereby settling a matter about which there has been much question of late. This Section also has under consideration the matter of deciding on colors for shock absorber cords in order that one year's manufacture may be distinguished from another.

REPORT ON "DUMMY OBSERVER"

The Flight Test Branch of this Division has received an instrument known as the "Dummy Observer", which was built by the Bureau of Standards according to designs furnished by the Flight Test Branch. This instrument consists of a board carrying the usual instruments required for performance testing, with an automatic camera so arranged that photographs can be taken at predetermined intervals of time. This device enables more frequent and more accurate readings of the instruments to be taken during performance test than would be possible for an ordinary observer.

Due to the fact that the "Dummy Observer" is equipped with indicating instruments, the possibility of error from the friction of recording pens against paper charts is eliminated. Absolute synchronization of the readings of the different instruments is obtained, and the exact interval between readings is determined by including a clock on the instrument board.

It is believed that this "Dummy Observer", the plans for which have been discussed by the Flight Test Branch for a year and a half, will enable more rapid and more accurate performance tests to be made.

LIEUT. GEN. LEGGETT, WESTERN DEPARTMENT INSPECTS ARMY BALLOON SCHOOL, ROSS FIELD, ARCADIA, CALIFORNIA.

Lieut. Gen. Hunter Leggett, Commanding General, Western Department paid an informal visit to the Army Balloon School, Ross Field, Arcadia, California. The general was accompanied by Mrs. Leggett, Col. B. B. Ray, retired, Lieut. Colonel Penrose, Q.M.A. Los Angeles.

The General and his party made a general inspection of Ross Field. He was particularly interested in the constant vigil maintained in watching for Forest Fires. He was given an opportunity of learning how forest fires were located and communicated to the foresters. Observers are constantly on duty both day and night, to detect fires to the west, north and northeast of the post. Flights are being regularly made with spherical balloons over the mountains. Large and extensive fires have been reported by pilots. Observation balloons are in the air day and night thru out the entire year. The area patrolled by this station covers a little over 30 miles, with a net valuation in Forest Timber protected by Balloon Observers of \$25,000,000.

In addition to observation work the field is so well equipped that on short notice direct assistance with fire apparatus and men can be given the Forester when the occasion demands. The fire Department alone has saved the government many thousands of dollars by rendering quick action in helping to stamp out forest fires.

The total number of flying hours spent in Forest Fire Observation to date are 1202 hours and 53 minutes.

General Leggett was next shown two new types R. Observation Balloons and an exhibition given by two Balloon companies was given in operating and maneuvering.

The general expressed his appreciation of the splendid and systematic manner in which fire control observations and flights were handled and complimented the Commanding Officer and his Command on the splendid layout and conditions of the post.

KELLY FIELD ORGANIZES POLO TEAM

Providing all works well, the indications are that the Commanding Officer at Kelly Field will have a well organized Polo team in a very short time. Recently the Adjutant General of the Army advised by circular that military posts would be furnished with Polo equipment, ponies etc., upon application to his department.

Major Garrison of Kelly Field, an expert Polo player and a member of the "Free Booters" of Fort Sam Houston, Texas has organized the Polo Team.

Many of the flying officers have never ridden a horse although they are wearing spurs just the same, nor have they had an opportunity to play this interesting and exciting game and while waiting for the ponies to arrive the embryo polo candidates are practicing on dummy horses and with driving nets.

The polo team candidates are as follows:

Lt. Col. Johnson.
Major Garrison.
Major Stratemeyer
Major Cousins
Major Schauffler
Captain Bissell
Captain Adler
Captain Buckley
Captain Tyndall
Captain Cook
1st Lt. Van Meter
1st Lt. Motley
1st Lieut. Blackburn
1st Lieut. Easterbrook
2d Lieut. Wolfe,
2d Lieut. Gates
2d Lieut. Wood
2d Lieut. Eller
2d Lieut. Norton
2d Lieut. Zellner
2d Lieut. Brophy
2d Lieut. Rowland
2d Lieut. Beez
2d Lieut. Mosher
2d Lieut. Smith

It is to be hoped that the officers who are practicing for accuracy and efficiency will have respect for each others heads and shins as well as those of the ponies. A number of games with military and civilian polo organizations are already assured and when the civilians see our aviators upon horses they will realize that the aviators can use a pair of spurs for something else other than to push the rudder bar of an airplane or get them tangled up in the controls.

POSTOFFICE CONTEMPLATES FOUR NEW AIR ROUTES

The Postoffice Department is contemplating an extension of its aerial mail routes and has requested an appropriation from Congress of three million dollars.

It is planned to link all the important cities from coast to coast and the new routes as outlined by the department are as follows:

1. From Chicago to San Francisco. By this extension it will complete the route from the Atlantic to the Pacific Coast.

2. From Pittsburgh to Kansas City via Cincinnati, Indianapolis and St. Louis.

3. From New York to Atlanta by an extension from Washington, D.C.

4. Minneapolis to St. Paul to St. Louis via Chicago.

The new air routes would reduce by one half the mail time by train between the named cities. For instance a letter mailed in New York would reach the Pacific Coast in approximately 45 hours and 15 minutes, west bound, against 90 hours and 30 minutes, west bound, by train and 51 hours' air time, east bound, against 102 hours, east bound, by train time.

The Postoffice Department is also considering the establishment of a hydroplane route down the Mississippi River from St. Louis to New Orleans stopping at Cairo, Illinois, Memphis, Tenn. and Vicksburg, Miss.

(Note: Vol. III - No. 22 is last of series for 1919. Starting this date Volume IV - No. 1 - 4)

Vol. IV AIR SERVICE NEWS LETTER No. 1 - 4

Information Group
Air Service

January 19, 1920

Building B
Washington, D.C.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general.

FOREIGN OPINION ON THE FUTURE OF AMERICAN COMMERCIAL AERONAUTICS.

Recently there appeared in a Washington Newspaper an article which was released by the Associated Press entitled "British have no Fears of United States Civil Aviation". In order that one can thoroughly understand the trend of thought abroad with reference to the United States being a power in commercial aeronautics present and future, following is the article in full as printed:

"British Have No Fears of U.S. Civil Aviation.

London Statement Lists France, Italy and Germany as England's Most Serious Competitors.

LONDON, December 24 (Correspondence of the Associated Press). - American progress toward popularizing civil aviation is giving the British Government no fears of the United States achieving a supremacy in this line of aeronautics. A white paper just issued by the Government lists France, Italy and Germany as England's most serious competitors in securing an international aircraft trade.

Efforts are being made in Italy to form a combine to strengthen the position of the aircraft industry. A semi-rigid airship of 1,100,000 cubic feet capacity is being constructed for civil aviation, and should be ready for service soon. It is believed that in this vessel the Italians will attempt a flight from Italy to Rio de Janeiro. It is intended also to dispatch a squadron of airplanes from Italy to Japan.

The French have adopted the principle of subsidizing airplane service, and 13,000,000 francs have been ear-marked this year for that purpose. It is understood that the present policy is for the French Government to supply the material for a commercial airship service from Marseille to Africa, and later to South America by way of Dakar.

Germany is understood to be developing airship services to Scandinavia. The policy foreshadowed is for all German airdromes to be in the hands of the state and for a combination to be formed of all firms for working purposes. Each firm is to standardize a type and types of planes are to be approved by the Government. An Air fleet union, modeled on the lines of the German Navy League, has been formed, with the object of fostering national interest in aviation".

It is true that England, France, Italy and Germany have made great strides in the development of commercial aircraft since the signing of the armistice particularly England to whom great credit is due in foreseeing the advantages of keeping her aircraft industries intact and aiding aeronautical commercial enterprises and in actually putting transportation lines into operation. That the appropriation given the Royal Air Force for the development of aeronautics was a wise move cannot be denied.

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When one reads of a heavier-than-air craft constructed to carry one hundred passengers, as elsewhere described in this number, and of the wonderful performance of the lighter-than-air craft, the R-34 type, one cannot help but be amazed that such wonderful strides in aviation could be made in the short space of a year. However, we are not willing to admit that the aircraft industry in America is entirely dead. It is absolutely true that after war activities ceased a post mortem was held over the corpse of aviation and it was promptly interred to sleep peacefully thru the ages to come, but fortunately a few of the mourners who followed the procession believed that the corpse of aviation was only in a transitory period of suspended animation and have exhumed the body; already it is showing signs of life.

Commercial aviation in this country is far from dead. It is true that very little government support and encouragement has been given to private enterprises nor has a great amount been lent to the government due largely to the fact that the Committees of Congress at the present time are busily engaged with affairs in connection with the organization providing for a permanent Air Service. To prove the above statement that strides are being made in this country in spite of the difficulties that have been placed in the way of aviation a few facts that are recalled are quoted off hand.

In June 1919 a corporation was formed of ex-aviators who were temporarily on duty at Langley Field, Hampton, Virginia. This company was organized primarily as a mapping concern although in its original prospectus it was the intention to transport passengers as well. At the present time it is understood that this corporation has more mapping contracts on hand than can be filled throughout the year.

On the Pacific Coast the Mercury Aviation company which has been organized almost a year has been doing a passenger carrying business out of Los Angeles to near by cities and apparently have no intention whatever of quitting. The Service Aviation, Training and Transportation Company, Wabash, Indiana are also operating passenger carrying ships between the states of Texas and Oklahoma. The Chaplin Airplane Service operating eight triple motored airplanes between Los Angeles, San Francisco and San Diego.

The Southern Airplane Company, capitalized at one hundred thousand dollars, at Fairmount, West Virginia, is to operate a general passenger and commercial business and will operate in a number of the southern states.

The Postoffice Department is maintaining a daily service between Washington, Philadelphia and New York and from New York to Chicago and is planning to extend its service from coast to coast and from border to border.

Now let us turn our attention for a few minutes to the Aeronautical Exposition being held in Chicago at the present time. We read that E. J. Johnson of the Aero Transportation Company of Denver, Colorado, purchased 500 ships to be used in connection with sight seeing passenger carrying, J. B. Humphries, another western man, purchased six ships, B. I. Brookins of Tulsa, Oklahoma purchased 447 ships for which the latter paid \$2,500,000 and in addition a number of small sales of one or two ships were made to individuals. Certainly these buyers are not purchasing ships and spending good money for pleasure purposes. It is a purely business proposition and their intentions are to operate their lines for profit.

It is with a great deal of satisfaction that we can still quote further that the North American Aerial Transportation Company has been organized to operate dirigibles throughout the United States for passenger and freight carrying purposes. Their plans are to manufacture dirigibles of a greater length than anything that has as yet been seen and the plans are to operate from San Francisco to New York to London, full details of which are described on another page of this issue. Does not this look as if the corpse of aviation has at least one eye open?

There is no doubt whatever but that this country will come to the front rapidly in all branches of aeronautics providing the proper government support is given. It is to be hoped that aeronautics will not prove to be another "Ship Subsidy". There is, however, no reason to believe it will.

Far seeing capitalists, inventors and corporations are busily engaged in experimenting with steam motors, all metal airplanes and devices for giving greater radius, stability, etc., to heavier-than-air craft and also a great deal of attention is being devoted to lighter-than-air craft. Travel in lighter-than-air craft in the future will be absolutely safe. The serious element of danger; namely fire, can be entirely eliminated by the use of Helium gas.

In closing it is desired to state that the opinion of the aeronautic interests in Great Britain are by no means shared by the majority of the people who are interested in aeronautics in this country. To prove this contention a number of letters have been written to aircraft manufacturers inviting attention to the Associated Press statements and a request made for their version and such other comments as they desire to make regarding the present and future of the industry in this country from a civilian point of view rather than that of military. As fast as replies from the American aircraft manufacturers are received they will be published in full in the News Letter for the information of all concerned. There is no doubt whatever that replies to be received from the manufacturers will be enthusiastic and their plans for the future will be of greater magnitude than heretofore. Much valuable and interesting information will be secured.

DEVELOPMENT OF BRITISH AIRCRAFT INDUSTRY.

England develops 100-passenger airplane. From London comes the startling announcement that the Vickers Company, Ltd., famous throughout the war as manufacturers of munitions and aircraft, has built a gigantic plane called the Vicker's "Vigilant", with which the Royal Air Force has been experimenting with secretly for a long time. This airplane carries 100 passengers or their equivalent in bombs, and is equipped with six engines which develops 4,000 h.p. The airplane has an extraordinary wing surface and is about one-half again as big as the 4-engine Super-Handley Page. The machine is so arranged that it can be utilized in time of war for the transportation of troops. General specifications are not available at this time.

It is interesting to note that British Aircraft manufacturers have been working in close cooperation with their government since the armistice and beyond a doubt have put England far ahead of any other nation in aeronautics not only in heavier-than-air craft but also lighter-than-air craft and in addition to this a number of companies have actually commenced operating commercial airplane routes which have been successful to a more or less degree. However, the main factor in connection with the commercial aspect is that England could very quickly place all commercial aircraft to her line of defense in case of necessity.

A few of the achievements of England in the development of aircraft during the past year are quoted herewith:

The Tarrant Aircraft Construction Company have constructed a huge triplane which is also capable of carrying 100 passengers or its equivalent in bombs. This machine has a total plane surface of approximately 5,000 sq. ft. and weighs when fully loaded 45,000 pounds, and is equipped with 6 Napier line engines with approximately 3,000 h.p.

The British Colonial Airplane Company, Ltd., have also developed what is known as the British Fullman passenger airplane. The cabin is about 7 feet in height and the seats are placed on either side for a central gang way with sufficient room for luggage as well. It is heated and lighted by electricity and has triplex glass windows. It has a moving load of 2700 pounds and a fuel capacity of 5 hours sustained flight, or alternately 4,000 pounds with fuel for $2\frac{1}{2}$ hours sustained flight with a speed of 100 to 105 miles per hour at three fourths throttle.

The English Aircraft Manufacturers have been experimenting with all metal type of aircraft ever since the advent of the Junker type used by Germany during the latter part of the war. They have developed a very efficient light weight type of metal airplane which is equipped with a 200H.P. Hispano Suiza motor for military work.

The English Electric Company, Ltd., has also made great strides in connection with the building of a gigantic airplane. Up to the present time no specifications are available. Not only in large heavier-than-air craft has England been particularly successful but also in lighter-than-air craft, and the performance of the R-34 and the sister ship 28, the former of which crossed the Atlantic Ocean, is well known throughout the world.

NEW AERIAL TRANSPORTATION COMPANY BEING ORGANIZED BY AMERICANS.

It has come to the attention of official aeronautic circles in Washington, that a large corporation is in the process of formation to undertake the aerial transportation of express matter and passengers. This corporation is to be known as the "North American Aerial Transportation Company" and its organization is being handled by men of long experience in aeronautical matters.

Mr. R. Preston Wentworth, who has direct charge of the matters of organization, has been in touch with matters of aerial transport since 1908 at which time he was in attendance at the early zeppelin trials while staying at Zurich, Switzerland. Mr. W. C. Young, President of the Akron Flying Club is deeply interested in this organization, as is Mr. G. M. MacVicar, formerly of the United States Steel Corporation and now prominent in the U.S. Shipbuilding Corporation. During the war, Mr. Wentworth had supervision over the technical and development work in aerial photography, which is a specialized, scientific part of aeronautical science for the U.S. Army Air Service. Mr. J. J. Quinn formerly of the Naval Air Service, who is now on a tour of South America expects to return in time to take an active hand in the inauguration of this company. Mr. F. A. Seiberling, President of the Goodyear Tire and Rubber Company, extends the hearty cooperation of his organization to the North American Line. Mr. J. T. Gallaway who is now in Chicago emphatically feels that this new corporation is to be the first and foremost in American commercial aviation. Franklin C. Lane, Secretary of the Interior is certain that the natural resources of the world will be brought to America's feet by this development. The directors of the North American Aerial Transportation Company have not as yet been announced but it is known that among them will be found several of prominence in financial circles in New York. The capitalization of the North American Line is at first set at \$5,000,000.

This information coming as it does at the same time as that from Chicago, announcing record breaking sales of airplanes, gives a new life and stimulus, and is a development welcomed by the Air Service. All lighter-than-air craft under civilian operation, represents the nucleus of a potential military unit in time of war, and it is to the everlasting credit of the nation that in spite of the lack of government assistance, the courage, conviction and patriotism of some men are sufficient to endow this country with the advantages of commercial aerial transportation.

It is understood that the plans and ideas of this corporation have been submitted to the Goodyear Tire and Rubber Company of Akron, Ohio and have been heartily indorsed by them as rightly conservative and in the light of their nine years' experience in this field of endeavor, probably the first proposition of this nature that will be put through successfully. Operations will be started over certain routes in the United States, using airships capable of carrying 75 passengers with baggage and providing sleeping accommodations and many comforts of travel not now available on any other existing means of transportation.

The first route which it is proposed to open will be a daily service in each direction between St. Louis, Missouri and New York City. It is hoped that this service will be inaugurated within the next ten months. For this route two small airships will be built and as demand warrants other and larger airships will be built and operated from San Francisco to London with stop over at New York in five days, New York to Rio de Janeiro, four days, New York-Havana, 20 hours. San Diego-Seattle, 30 hours, New York-Seattle, 36 hours, and other connections to Canada, Japan, China and Europe and the Orient.

Recent reports, some of which have been included in the body of these News Letters, have indicated the remarkable developments in commercial aeronautics both in Great Britain and Germany. Over 140,000 passengers have been carried in Germany by airship during the past eight months and there is no single instance of even minor injuries to anyone. The daily route of the "Bodensee" is from Friedrichshafen to Staaken, a distance of about 390 miles, which this airship accomplishes once each way daily. Existing operations data, indicate the ability of this new American corporation to charge a beginning rate of eight cents per passenger mile, which is about three cents per mile more than the actual cost of railroad transportation at the present time. Travel in this latest manner will be accomplished between any given points in approximately one half the time now consumed by railroad travel and in general about one fourth of the time consumed in present steamship travel. Financial indications point to the early expansion of operations of the North American Line and further developments are awaited with keen interest. At a later date, when conditions warrant, expansion of routes within the United States will be rapidly undertaken, and the routes to Europe and South America will be opened up. Airplanes will figure in the transportation plans of this corporation when route expansion reaches a point that it is deemed advisable to add such service as this in its relationship to the main routes, which will be at first opened and always traversed by airships.

The formation of the North American Aerial Transportation Company is an effective answer to the formation in England of the Great Northern Aerial Syndicate, Ltd., and Great Britain's challenge for the commercial control of the air is taken up in active fashion so that history will not repeat itself analogous to the merchant marines. The American corporation is all the more creditable for it is backed by the people and is not a corporation composed of aviation interests as is the case in Great Britain. The Great Northern Aerial Syndicate, Ltd. plans to purchase airships from the British Admiralty, such as the R-34 (of trans-Atlantic fame), R-38, R-80 and others. These ships are in general five to six times smaller than craft that will ultimately be operated by the North American Line, which already contemplates a ship 1200 ft. long capable of carrying 1000 passenger at a speed of 100 miles per hour, which can more than go around the earth the Equator without stop.

NEW YORK-NOME, ALASKA AIR ROUTE

The Training and Operation Group have plotted a proposed course overland to Alaska over Canada, which is being considered with view, if possible, to flying over this course at some time in the future. In the route set out below it will be noticed that one proceeds direct from Mineola to the new Grand Trunk Pacific Railway, running from Edmonton, Alberta, to Prince Rupert, B.C. At Hazelton, B.C., the proposed route branches North between the coast range and the Rockies, following at one and the same time the valleys, the most populated way, the one least likely to be covered with fog, the one having the established telegraph line from Hazelton to Whitehorse, and the one most favorable from a supply point of view.

Any communications received relative to this route or any information that might be of value will be carefully considered.

CONTROL STOPS.	DISTANCE GOING	Miles from start (subject to slight correction)
Mineola		
*Bellefonte	382	282
Cleveland	255	537
*Bryan	147	684
Chicago	160	844
*Madison	150	994
1. *LaCrosse	112	1106
St. Paul-Minneapolis	112	1218
Fargo	230	1448
Minot, N.D.	225	1673
(Cross the border from North Gate, N.D. to North Portal, Saskatchewan)		
Regina, Saskatchewan	205	1878
Saskatoon	138	2016
*Wainwright	175	2191
Edmonton, Alberta	112	2303
2. *Edson	128	2431
*Jasper Park	73	2504
*Fraser River, B.C.	128	2632
(Between Coat and Beaver)		
* Ft. George, B.C.	146	2778
*S. Buckley, B.C.	146	2924
Hazelton	128	3052
*Ft. Creek	146	3198
Telegraph Creek	128	3326
Altin	150	3476
White Horse, Yukon	127	3603
Selkirk	172	3775
Dawson	128	3903
Ft. Egbert (border)	73	3976
Circle, Alaska	127	4103
Ft. Yukon	128	4231
Ft. Gibbon	220	4451
Fairbanks (side hop)	130	
Nulato	200	4651
Nome	220	4871
*Emergency Stop		

PARACHUTE TESTS BEING CONDUCTED AT McCOOK FIELD.

The Engineering Division of the Air Service at Dayton, Ohio, has conducted two successful parachute jumps using a new pack type parachute.

Sgt. 1st Class, Ralph Bottriel and James Russell, a civilian ascended to an altitude of 2,000 feet in a Martin Bomber Airplane equipped with these pack type parachutes which were developed by the Engineering Section for use on all types of airplanes. Mr. Russell jumped from the wing tip of the Martin Bomber landing on the ground in one minute and 23 3/5 seconds while Sgt. Bottriel followed him by jumping from the rear gunner's cockpit and landed in one minute and 24 seconds.

A great deal of interest has been aroused in connection with the test at this field and at the present time ten non-commissioned officers are under instruction in connection with their use under the division of Engineers.

Upon completing their course they will be sent to the various fields where they will act as instructors.

GERMAN AIRPLANES RECEIVED AT THE WILBUR WRIGHT AIR SERVICE DEPOT.

There have been received at the Wilbur Wright Air Service depot at Fairfield, Ohio, during the past few months as varied a collection of German airplanes as may be seen anywhere in America. These airplanes were received in connection with the armistice terms and were ferried down from the front by American pilots to Romorantin, France, and at that point were taken apart and shipped to America. Among the types at the Wilbur Wright Air Service Depot at the present time are: Fokker's Pfalz, Hanover, Freidrichshen, Gotha, AVG, LMG, Haberstadt, Albatross, DGW, Rumpler, Roland, Siemens-Schukert and last, but not least, two sets of upper wings for the famous Junker C-1, all metal type airplane. The sheet surfaces of the wings for the Junker airplane are of corrugated iron and are very well internally braced with semi-tubular aluminum alloy. Group characteristics of these planes with their heavy substantial large bored upright motors are easily distinguishable.

SPERRY GYROSCOPIC TURN INDICATOR TEST

(a) Test was recently made on the Sperry Gyroscopic Turn Indicator for Cloud and Fog flying by Training and Operation Group.

REPORT OF PILOT

Brief Description:

The instrument is a light gyroscope operated at a speed of approximately 2300 revolutions per minute by a Venturi, capable of varying degrees of sensitiveness by the operation of a thumb screw to vary the effectiveness of the Venturi.

As placed in the DH4 liberty plane on this test, it appears as a circular dial of three inches in diameter on the dash, having a disc which rotates to lay bare the white portion of itself on the port or starboard side, signaling as it were for corresponding application of rudder; for example, should the machine tend to turn to the right, the white portion of the disc is laid bare on the left, calling for the application of left rudder immediately by the pilot, and vice versa.

Conclusions: ✓✓

The instrument is good and it is all that is claimed for it, but requires great care on the part of the pilot. Its one great value, I think, will be its use in conjunction with the compass for keeping the pilot on a dead straight bearing, irrespective of fog and defects in rigging of the plane itself. It is admitted that were a compass sufficiently sensitive this instrument would not be necessary, but with compasses now extant and used in planes, the movement of the dial is so slow that a slight turn is not immediately indicated, and the pilot, unaware, does not make the necessary correction in time. This instrument fulfills the function of revealing quickly any turn the machine makes.

One precaution it seems to me must be made and that is that application of the rudder be made instantly the variation appears. If it is allowed to continue more than four or five seconds on its wrong course the gyroscope is apt to assume a new bearing which will not be apparent to the pilot until he glances at the compass. Besides the precaution of applying the rudder quickly, the pilot must, in addition, use this instrument in conjunction with his compass.

The pilot made a recommendation that an instrument should be developed which will perform the functions of a compass and Turn Indicator in one.

Information Group
Air Service

January 27, 1920

Building B
Washington, D.C.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general.

THE IMPORTANCE OF SENDING IN REPORTS EACH WEEK OF NEWS ITEMS
FOR PUBLICATION IN THE OFFICIAL AND REGULAR NEWS LETTERS.

Commanding Officers, we are more interested in you than any one else because a first class news letter for the information of the personnel of the Air Service and the Associated Press cannot be published by this office unless we have your cooperation. We want every crumb of information concerning aviation at your field that can be possibly crammed into a letter but unless you make it your business to appoint someone who will cover news in general thoroughly and who will not skip around the corners we cannot do justice to you nor to ourselves.

On December 3, 1919 an order was sent out to all fields, depots, etc., by the Director of Air Service requiring a news report to be sent in each week. Few fields have complied with this order with the exception of the border units and the balloon schools who have worked over time in this respect and have done more than their share.

Let's have some good stories on aviation and encourage your officers and enlisted men to write individual articles on subjects pertaining to aviation, new ideas, inventions, betterment of the service or in fact anything which would be of general interest.

Now please remember that events concerning your field are of as much importance to the public as they are to the members of other Air Service fields therefore if it isn't a secret "Shoot it in".

FOKKER TALKS ON FUTURE WAR AIRPLANES ✓

During the war we heard much of the word "Fokker", which carried in our minds the picture of an efficient airship, invented and manufactured presumably by an intense anti-ally. The truth is that A.H.G. Fokker is a Hollander and his home is in Amsterdam. He is the inventor of the Fokker and was strictly neutral during the war. A London correspondent has recently had an extended interview with him, and the account of that talk is exceedingly entertaining and is quoted in full.

"Fokker was engaged in making airplanes before the war, and when the Germans placed a commission with him he executed it, as a matter of business. The secret of the superiority of the Fokker machines at the beginning of the war lay in the fact that the German Government gave Fokker carte blanche to spend money. His first distinct advantage was in the development of a device for shooting through the propeller. Next he found a way for shooting through the bottom of the plane. He increased speed from time to time because he had an unlimited supply of money to equip plants and to engage the services of the best specialists.

But for the blunders of the Berlin War Office, says Fokker, the Germans would have developed airplane warfare to such an extent that they would have put the artillery out of Commission; they would have made the big guns as old-fashioned as spears." In explaining how the Germans proposed to expand their air program Fokker explains that in 1916 Berlin asked him to make a very cheap airplane, with a very cheap engine, capable of flying about four hours, which could be steered through the air by wireless waves. They intended to load each one of these planes with a huge bomb and send them out under the control of a flying man who would herd them through the air like a flock of sheep. He would be able to steer them as he pleased, and send them to earth at the exact spot selected. Here is the way Fokker tells how the method would have rendered artillery useless.

"The German idea was that it was a tremendous waste to send shells through the air by means of explosives. Their idea was to put all their explosives into the shells and then move the shells to their destination by gasoline power. They had really lost faith in the use of big guns. The Big Bertha which fired shells seventy-five miles on to Paris was probably intended to delude the allies into believing that the Germans were developing their big guns instead of preparing to discard them; and if they had not become tangled up in their own red tape they would have rendered the big guns useless before the armistice came. I prepared the plans they asked for. I found that we could make use of old engines that were not reliable for fighting planes. All we asked of an engine was that it should fly for about four hours at the most. Of course, each one of these airplanes with its engine would be blown up when the bomb exploded. The whole thing was not much more expensive than firing long-range shells, and it would be far more sure and far more deadly. My plans were accepted by the authorities, and then the war office made its great mistake. It decided to make the airplanes itself. The war office bungled along with the manufacture of the planes for many months, and when they had finally turned out a few machines they found that they could not be depended upon. In the summer of 1918, three months before the armistice, they came to me and gave me a huge order for the wireless-steered airplanes. I had just got ready to manufacture them in wholesale quantities when the end of the war came. These airplanes would have worked havoc wherever they were used. It would have been like shooting huge shells hundreds of miles with a range that was absolutely accurate."

Fokker says that the airplanes of the next war will be the winged wireless steered bomb and great airplanes that will carry hundreds of men, with a speed limit to the size of pocketbooks.

The Dutch inventor is now working out a scheme for engineless planes to be used in "air coasting". Sporting contests with such planes would be very much like coasting contests on the winter runs in the Alps. An air coaster would be towed by an airplane to a height of 5000 feet or more and then cut loose. The flier could make a record of staying in the air longer than his rival; he might try to make more spirals downward, or he might try for speed in coming down. "They are just as safe as airplanes, and I think the day will come when air coasting without engines will be a great sport".

Expanding this idea, Fokker says it would not be impossible to tow a series of these coasters and have each cut loose when it reached the town where the passenger in each particular coaster wished to alight. He intimates that the Germans were thinking of moving troops in this manner.

It is said that Fokker proposed locating in the United States as his home country. Holland, is too small for his activities.

RECORD ALTITUDE BEING MADE BY THE 8th AERO SQUADRON.

The 8th Aero Squadron on duty at McAllen, Texas seems to have surpassed all other squadrons in the United States in reaching high flying. Lieut. Fonda B. Johnson flying a DH-4 reached an altitude of 16,700 feet for "Flight B". The greater part of the flight was made between two layers of clouds, the lower strata which was of 1000 feet thickness being penetrated at an altitude of 9000 feet and the upper layer was reached at 16700 feet but could not be penetrated because of darkness. His record almost reached that made by Lieut. James Haizlip "Flight A" last week when he attained an altitude of 18500 feet. This record to date stands unbeaten by any squadron in this country and speaks well of the work done by the 8th Aero Squadron.

Change of Border Organization

The Twelfth Aero Squadron which has been operating on this field under The First Day Bombardment Group; will leave within the coming week to take station on the border, relieving the Ninety-sixth Aero Squadron.

This change will complete the transfer of all First Day Bombardment organizations which were on the border to their present station as a member of the First Wing at Kelly Field. It also completes the transfer of all organizations of the First Surveillance Group, to border stations, from Kelly Field. The First Surveillance Group Headquarters is now at El Paso. This group is a member of the First Wing.

"A" Flight and Headquarters of the Twelfth will take station at Douglas, Arizona, and "B" Flight at Nogales. The Airdrome at Nogales completes the chain of border patrol Airdromes, along that portion of the border which lies in the Southern Department. This stretch of border between Point Isabel, Texas and Yuma, Arizona, covers about fifteen hundred miles; every portion of which is patrolled twice daily by airplanes, weather permitting.

NOTES OF INTEREST CONCERNING THE FIRST PURSUIT GROUP ON THE BORDER.

Owing to the unfavorable weather conditions aerial activities on the Border practically ceased during the past week. During this period of inactivity there were a series of lectures given by Captain Meredith and Lieut. Perry. The lectures were on the lubrication system of the Hispano Suiza motor and the effects of overheating and suddenly cooling of this type of motor and also interesting as well as instructive lectures on the mysteries of gas engine ignition.

Captain A. B. Brooks, Commanding Officer of the 95th Aero Squadron and one of the leading officers in the A.E.F. engaged in a flat spin with a motorcycle side car. He is now resting comfortably in the hospital although it will be some time before he will be ready for duty again. It appears that the driver dodged a bad hole in the road and skidded on the slippery pavement into a car going in the opposite direction.

First Lieut. H. W. Follmar, temporary Commanding Officer of the 94th Aero Squadron has placed his resignation in the hands of the Commanding Officer of the wing, and expects his discharge soon. It is to be regretted that this officer is leaving the service as he is efficient and an expert in every respect and was responsible for a considerable part of the reorganization of the First Pursuit Group. The resignation of this officer is especially to be regretted at this time as the First Pursuit Group is very short of officers and resignations at the present time are very detrimental.

Notwithstanding the rainy and cloudy weather and a wet and muddy field which tended to break a propeller on every take-off the First Pursuit Group managed to put in 29 hours of actual flying time in connection with training and practice.

RADIO MESSAGE FROM AN AIRPLANE SENT 175 MILES. ✓✓

Recently during the regular maneuvers of the 37th Infantry at Fort Mackintosh, wireless signals sent from an airplane were recorded on the receivers of the U.S. Intelligence Station at Del Rio Texas, a distance of 175 miles. An altitude of 300 feet was maintained during most of the time and a general north and south course was flown. Several messages which were coded and repeated were received without a break although the operator listed in his report that they became faint at times and the distinctness varied which was likely due to the direction of the flight.

This is perhaps the greatest distance that messages have been received from S.C.R. No. 73 Radio set and will probably go down as a new record. "D" tap with 550 meter wave length was used.

OFFICERS OF THE 166th AERO SQUADRON COMPLIMENTED FOR EXCELLENT WORK IN
CONDUCTING ARTILLERY SHOOT AT FT. CROCKETT, TEXAS.

The First Wing on duty at Kelly Field, Texas has accomplished splendid results in connection with the Artillery "Shoots" conducted by the Post Artillery Corps and the Air Service at Fort Crockett, Texas. Brigadier General, J. D. Barrett Commander of the Coast Artillery with Headquarters at Charleston, South Carolina, Col. E. R. Tilton Commander at Fort Crockett, Col. Fechet, Department Air Service who witnessed the shoot were highly pleased over the results, and a great deal of complimentary correspondence has passed between these officers concerning the splendid liaison and coordination accomplished by the Air Service Officers on these "Shoots". Colonel Fechet, Department Air Service directed that a copy of the commendations expressed in the various communications concerning the maneuvers be entered upon the efficiency reports of all officers of the 166th Squadron, "Flight A" who participated.

The following officers were engaged in the "Shoot".

Major Oliver P. Echols A. S. A.
1st Lt. Harry Weddington, A. S. A.
1st Lt. Arthur E. Easterbrook, A. S. A.
1st Lt. S. H. Batson, A. S. A.
1st Lt. Geo. L. Usher, A. S. A.
1st Lt. Albert M. Guiders, A. S. A.
2d Lt. Eric H. Nelson, A. S. A.
2d Lt. Charles M. Cutler, A. S. A.
2d Lt. Delmer H. Dunton, A. S. A.
2d Lt. Allyn G. Smith, A. S. A.
2d Lt. Arthur Liggett, A. S. A.
2d Lt. Clifford G. Nutt, A. S. A.
2d Lt. W. W. Meyer, A. S. A.

System of Ground to Airplane Signalling

1. The following system for signalling from the ground to an airplane was devised and put into use by the first Bombardment Group, El Paso, Texas, and its use has been approved by the Department Air Service Officer, Southern Department. It is now being used by the First Surveillance Group in its Border activities.

2. Explanation and instruction for the use of the "D-R" system:

(a) From working with ground troops along the Border it has been found that lack of ability to send simple messages from ground to airplane limits to a very great extent the value of the plane. For example; a cavalry column wishes to inform plane that a courier has just brought in report that troops C and K of 8th Cavalry at Bosque Ranch have been attacked during the night, horses stampeded and both troops cut off from water and low on ammunition. Unless plane can land alongside of cavalry column which is very unlikely, there would be no way of transmitting the message to the plane for necessary action, whereas if the ground troops could send one short simple message, the whole situation should be cleared up. It is impracticable to transmit by panels other than prearranged sentences or characters and when used by line troops there is a big chance for mistakes.

(b) The only solution for this seems to be a simple system of message transmission. Experiments have been made with wig-wag but this fails due to confusion of forward and sideward movements of flag. Semaphore fails due to inability to read different positions accurately. Panneaux and projector not reliable. The D R system was devised and tried out with good results and with practice can be used at rate of about five words per minute. It has the advantages of being clear, simple, easily learned and not effected by direction in which sender faces.

Following is explanation of details of D-R system:

International code used.

Flags are 2' square, white with red center 8" square, handles about 30" long.

-Plane flies at 500' to 100' describing a circle with diameter about 3000', inner wing dropped about 20%.

FROM GROUND-----

Dot -- Flags sideward horizontal (Character R in Semaphore)

Dash -- One flag vertical over head, the other straight down at feet.
(Position D in semaphore)

Attention - Same as semaphore (Character U)

Error - Same as Semaphore, C: Hopped up and down to right.

FROM THE AIR-----

Ready to receive -- One zoom.

Repeat -- two zooms.

I understand -- three zooms.

(c) When practicable observer should drop copy of message he has received and get an O.K. from ground to assure correctness.

(d) In experimenting with D-R system officers with 15 or 20 minutes instructions have been able to read messages at rate of one word per minute which rate can easily be worked up to five words per minute with a little practice in sending and receiving.

(e) It is believed that this system can be used to good advantage where two way radio or telephone is not available or until some better system is advised.

96th AERO SQUADRON ORDERED TO KELLY FIELD, TEXAS,
FOR TRAINING AS A DAY BOMBARDMENT SQUADRON.

The 96th Aero Squadron on duty at Fort Bliss, Texas, entrained January 10, 1920, for Kelly Field, having been relieved by the 12th Aero Squadron. Monument Forty and Douglas Patrols were turned over to the 104th Aero Squadron. The 96th Aero Squadron will undergo an intensive course in day bombardment.

This 96th Aero Squadron was the second Air Service unit to be placed on the border. The Squadron left Columbus, New Mexico, on July 1, 1919, and moved to Fort Bliss on July 3, 1919. At that time the squadron consisted of 14 officers and 141 enlisted men, the enlisted men being raw recruits with but few exceptions and further no planes were in possession of the squadron at that time. On August 1st 21 planes all in crates were assigned to this squadron and the work of setting up these planes was immediately begun. On August 9th enough DH-4s had been assembled to take over the border patrol from Fort Bliss to Nogales, Arizona, a distance of 350 miles. Three planes flew formation from Fort Bliss to Douglas on August 9, 1919, making Monument Forty and Douglas Patrols. The afternoon of the same day Flight A made the first Nogales Patrol. This patrol has been made daily by Flight A since that time. The monument Forty and Douglas patrols have been made on alternate days by Flights A and B.

During the stay on the Border planes from this Squadron have flown a little over fourteen hundred hours without one injury to pilot or observers. In addition to patrolling the Border, this Squadron has furnished teams for Cavalry contact with Cavalry at Fort Huachuca, Arizona, the First Cavalry at Camp Harry J. Jones, Douglas, Arizona, the Twelfth Cavalry at Camp Shannon, Machita, N. M., the Twelfth Cavalry at Camp Furlong, Columbus, N. M., and with the Fifth and Seventh Regiments of Cavalry at Fort Bliss, Texas. Infantry maneuvers were carried on with the Twenty Fourth Infantry at Camp Furlong, Columbus, N. M., and with the Nineteenth Infantry at Camp Harry J. Jones, Douglas, Arizona. Observation of Field Artillery Fire was carried on with the Eighty Second Field Artillery at Fort Bliss. In this work observers qualified both in spotting fire and in conducting the fire from airplane.

A school for observers was conducted and pilots were trained to do observing work. In connection with the school the following air work was done:

Practice Photographic Missions.

Practice Gunnery with forward and flexible guns.

Bombing with dummy and live bombs.

Visual reconnaissance missions.

Simulated artillery shoots.
Simulated contact with cavalry and infantry.
Radio practice, telegraph and telephone.
Formation flying.
Practice reading signals sent from the ground by DR system of signalling.

MINUTES OF THE FIRST MEETING OF THE SUB-COMMITTEE ON COMMERCIAL AVIATION,
Monday, January 12, 1920.

Meeting held at 10:30 A.M. in the office of the Chairman, R. S. MacElwee,
Bureau of Foreign and Domestic Commerce.

Present were - R. S. MacElwee, Chairman
Col. G. Sevier, G. S.
Lt. Col. Horace M. Hickam, A.S.
Comdr. Childs, U. S. N.
G. W. Lewis, Nat'l. Adv. Com. for Aeronautics
W. R. Manning, F. T. A.
E. Eggerton, Post Office Dept.
Mr. Stuart, Forest Service
C. A. McQueen, Latin Amer. Div.
F. R. Eldridge, Far Eastern Div.
L. J. Briggs, Bu. of Standards.

Mr. Manning and Lt. Col. Hickam presented reports and considerable data showing the status of commercial aviation in South America and the Far East. The reports to date show that the English, French, and Italians have been very active, and in a large measure successful, in establishing flying fields, commercial companies for aviation, and even air lines. Foreign governments have been liberal in presenting training planes and sometimes the entire equipment for an esquadron or two for the use of South American governments in order to stimulate their interest in aviation.

Conclusions of the meeting were that those present voluntarily associated themselves in an interdepartmental sub-committee to consider this subject intensively for an initial period of two months (and longer if desired). The meetings will be Mondays at 10:30 in the same place, until changed.

At the next meeting each member will submit (a) suggestions for a questionnaire to be sent to the officers abroad of the Departments of Commerce and State; (b) each will submit a short report of the activities in the civil use of the airplane by his department; (c) suggestions as to the steps that should be taken by this committee to stimulate concerted effort to promote commercial aviation at home and abroad.

The object of the committee may be summarized as follows: to exchange information among the departments concerning the activities of each in commercial aviation, to collect all the information possible concerning progress in commercial aviation at home and abroad; and to formulate a program for promoting commercial aviation through public and private initiative.

It was agreed that the representative of the Manufacturers' Aircraft Association should attend the meetings of the committee.

PACK TYPE PARACHUTE PROVES SUCCESSFUL IN DRAG JUMP MADE AT MCCOOK FIELD, DAYTON, O.

During the week seven live parachute jumps were made at McCook Field, at Dayton, Ohio, with the new pack type chute developed by the Equipment Section of the Air Service at Dayton, Ohio. Heretofore it has been customary to release the chute after jumping clear of the airplane. All such tests made by the pack-type chute have proven successful. The Martin Bomber was used in connection with the tests and for the first test was sent up 2000 feet. Each jumper while in his place on the airplane allowed the parachute to open first and then drag him off of the machine. In all seven tests this same method was used. In some of the tests jumps were made as low as 1000 feet proving the entire practicability of using the pack-type chute either in jumping direct or being dragged off of the wings as well as making close to the ground jumps.

This particular type of parachute has been given a series of strenuous tests and it is considered one of the safest and most reliable devices yet developed for aeroplane use.

CHANGE OF BORDER ORGANIZATION

The Twelfth Aero Squadron which has been operating on this field under The First Day Bombardment Group, will leave within the coming week to take station on the border, relieving the Ninety-Sixth Aero Squadron.

This change will complete the transfer of all First Day Bombardment organizations which were on the border to their present station as a member of the First Wing at Kelly Field. It also completes the transfer of all organizations of the First Surveillance Group, to border stations, from Kelly Field. The First Surveillance Group Headquarters is now at El Paso. This group is a member of the First Wing.

"A" Flight and Headquarters of the Twelfth will take station at Douglas, Arizona, and "B" Flight at Nogales. The Airdrome at Nogales completes the chain of border patrol Airdromes, along that portion of the border which lies in the Southern Department. This stretch of border between Point Isabel, Texas and Yuma, Arizona, covers about fifteen hundred miles; every portion of which is patrolled twice daily by airplanes, weather permitting.

RECORD ALTITUDE BEING MADE BY THE 8TH AERO SQUADRON

The 8th Aero Squadron on duty at McAllen, Texas seems to have surpassed all other squadrons in the United States in high altitude flying. Lieut. Fonda B. Johnson flying a DH-4 reached an altitude of 16,700 feet for "Flight B". The greater part of the flight was made between two layers of clouds, the lower strata which was of 1000 feet thickness being penetrated at an altitude of 9000 feet and the upper layer was reached at 16700 feet but could not be penetrated because of darkness.

His record almost reached that made by Lieut. James Haizlip "Flight A" last week when he attained an altitude of 18500 feet. This record to date stands unbeaten by any squadron in this country and speaks well of the work done by the 8th Aero Squadron.

MAJOR LEON B. LENT JOINS THE AERIAL MAIL SERVICE

Major Leon B. Lent formerly engineering officer in the Air Service has been appointed in an advisory capacity on aeronautics in the aerial mail service, as assistant to Mr. Otto Praeger, Assistant Postmaster General. Major Lent before entering the service for twenty years was engaged in mechanical engineering and has had a varied experience in connection with the design, construction and operation of steam and gas power plants. While in the service he did extensive experimental work in connection with radio experiments and has for years been editor of the Engineering Magazine "Power".

Major Lent is a graduate of Stevens Institute of Technology, and is a "fellow of the Society of Mechanical Engineers". He was discharged from the Service at his own request Oct. 13, 1919. In the two years he was in the Service he made a splendid record for himself and acquired an extensive knowledge of advanced aeronautics. The Aerial Mail Service have acquired a valuable asset in Major Lent.

COAST PATROL PLANE MAKES SAFE LANDING IN A MARSH.

While on a Coast Patrol, from Mitchel Field, Long Island to Langley Field, Hampton, Va. Lieut. E. C. Black, Pilot and Lt. Walter E. Richards, driving a D.H.4-B was compelled to make a forced landing.

These officers were flying at an altitude of 3000 ft. following the shore line when over the Chesapeake Bay the main gasoline tank went dry and they were forced to use the reserve tank. They were within four miles of Langley Field at a height of only 1000 ft. when the reserve tank went dry. It became necessary to either land in the Chesapeake Bay or a salt water marsh. They chose the latter, and managed to make a safe landing without injuries either to themselves or plane. A remarkable fact when one considers the fast landing speed of a D.H.4-B. The wings were taken off the machine, put aboard a tugboat and sent to Langley Field where it was reassembled and flown back to Mitchel Field.

RESERVE MILITARY AVIATORS NOW RATED AS AIRPLANE PILOTS

There seems to be a considerable amount of misunderstanding and confusion regarding the change in the rating of all Reserve Military Aviators to the rating of Airplane pilots.

Paragraph 1534 $\frac{1}{2}$ Army Regulations creates the rating of Airplane Pilot effective Oct. 16, 1918. This rating has been created to supplant the rating of Reserve Military Aviator under instructions from the Director of Air Service. Orders have been issued rating all Reserve Military Aviators who held such rating on Oct. 16, 1918 to the new rating effective viz. Airplane Pilot effective on said date. Copy of said Orders are now being published, and will be forwarded to all officers affected.

COMMERCIAL AERIAL PHOTOGRAPHY

The Air Service of the U. S. Army has been fostering in every way possible the establishment of commercial aerial photography. At the outbreak of the World War aerial photography was a comparatively unknown science and heavy responsibility devolved on the United States Army Air Service to develop and practically adapt this work for all phases of military operations that it might be called upon to assist, especially with regard to its application to mapping. In the latter case considerably more progress was attained than had been anticipated, considering that the work, primarily experimental, had to be handled during the war period. There are still certain problems which must be solved before the application of aerial photography to map making can be said to produce scientifically and technically perfect results, but in spite of its present errors, it will produce maps as accurate as three quarters of those at present produced by the usual ground surveying methods, while the time and cost necessary to produce a map of a given area is reduced to an extremely low point as compared with hitherto customary methods. Appropriations have been reduced so that experimental work in this line is practically precluded, together with the loss of all personnel who have any technical or developmental knowledge of photo-topographic work.

The use of aeroplanes in this work imposes certain limitations which confine activities at present to areas where landing fields are available, and these occur at present in territory that is sufficiently progressive, have in all probability been already mapped. There are few men in the United States that fully realize the accomplishments, possibilities, and limitations of commercial aerial photography as expounded in an article on 'Aerial Photo-topography' in the Aerial Age Weekly of December 17, 1919, and some of these are preparing to undertake quite soon aerial photographic mapping work of such nature as is for instance capable of producing local or average atlas or hand maps such as are published now by Rand-McNally and others. Oblique photographs can be supplied to concerns such as Underwood & Underwood from any part of this continent almost immediately upon the start of operations. As only 1/6 of the earth's surface has been mapped and most of that mapped is now out of date and obsolete, with the fact that American photographic mapping methods are further advanced than those of any other country, the availability of contracts outside of the United States as well as at home is anticipated.

Utilization will be made by these men of airships both for transport and photographic purposes, they will have unique advantages in both endeavors as well as appreciable economy over aeroplane work in these lines. An aeroplane of a type sufficiently reliable for practically universal use would cost around \$3.60 per mile flown while an airship of the size used in this work would not cost more than \$1.00 per mile flown. This initial advantage coupled with the fact that the airship can travel in safety over rugged or unexplored country with a much longer period of endurance, with high speed unnecessary to sustain the ships, portends wide-spread demand both from civil as well as governmental agencies for work of this character at a cost now within the existing mapping budgets.

To be continued next week.

SUPERCHARGERS AND VARIABLE PITCH PROPELLERS.

By L.D. Seymour.

A great deal has been said in the past few months relative to so called "Superchargers" for aeronautical motors, the supercharger in this sense being taken to mean an apparatus for supplying an aeronautical engine with air at high altitudes, approximately the same as that at sea level, making up for the difference in atmospheric pressure reduction at great altitudes and the consequently reduced volume of air supplied to the engine. Closely allied to experimentation in this direction is the subject of variable pitch propellers, a variable pitch propeller being understood to mean a propeller which may be so changed, that in proportion to different speeds of the engine and condition of the air (density) through which the airplane is moving, the resultant effect will be the same. Several newspaper articles that have appeared have possibly led the public to believe that experiments in these lines had reached a point which might be said to be more or less complete. However, the truth of the matter is that experimentation is being carried on in connection with both the supercharger and the propeller, and is by no means complete at this time.

As early as 1915 and throughout the war, experiments in Europe were being made by the Allied nations, and in 1917 work was begun in this country along the same lines. There was up to the signing of the armistice no superchargers placed in production for the use of the Allies in the Field, although it was known that better performance at high altitude of Allied planes would give them a tremendous advantage over German planes. Various reports from time to time of German activities along that line during the war have not been authenticated.

It is a well known fact that as one travels away from the surface of the earth and advances to higher altitudes, the atmospheric pressure grows less and less in proportion to the altitude attained. Now since an aeronautical engine must operate both near the earth's surface and in these high altitudes, and since a gasoline engine is dependent upon air for its operation, it will be readily seen that this change in altitude has a great effect upon the performance of the engine. As the pressure decreases in ascending, the volume of air taken into the cylinder of the engine being dependent upon atmospheric pressure for its entrance into the cylinder must necessarily grow less, producing an improper mixture in the cylinder, and hence less efficient operation of the motor. To overcome this, then, it was natural that scientists and designers of engines should look about for a means of supplying additional air to the engines and in doing this there were several kinds of apparatus contemplated. Two systems for the introduction of this additional air into the engine have been attempted, one system in which a certain amount of air is admitted to the cylinder through ports located near the end of the downward stroke of the piston, and the intake and power stroke, and the other system which was attempted to attain the same result by introducing air compressed of a greater pressure than the surrounding atmosphere directly into the intake of the carburettor.

This apparatus has been applied to the Liberty motor and tested both at Dayton and at Pikes Peak. In both places more or less elaborate tests have been made and as before mentioned, while these are not yet complete, the results so far obtained, like those, in Europe, have been such that the future possibilities seem very good. At various altitudes it has been possible to very nearly duplicate sea level air.

The relation of the variable pitch propeller to the subject of superchargers may be seen to be direct and of great importance when we consider the fact that if the supercharger gives to the engine the same power at high altitudes as at sea level where comparatively speaking the air is greatly rarified, extensive speed of the engine will be developed with resulting damage to the engine and plane without giving either greater speed or climbing ability. Therefore, it will be seen that as the power of the motor is kept constant at high altitudes, and the propeller can be changed to take care of the lower density of the air, more nearly sea level conditions in flight can be obtained.

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In the design of supercharging apparatus, mechanical problems seem to be of the greatest importance because it must be remembered that there are certain proportions of weight and performance in the engine and plane that must be maintained, and naturally since the supercharging apparatus has to consist of the parts above discussed, there is considerable weight involved. As an example of the problems encountered, we may say as an approximation that at 15,000 ft. altitude the power of an engine will be reduced 43% and that it will be reduced 6% more for the power used in the supercharger to return the engine power to normal, the total being a recuperated power of 37% but in doing this we must bear in mind that for every 60 lbs. in weight added, there must be added to the supporting surface of the plane some 10 sq. ft. of area. From this again as an approximation, we might conclude that the supercharging apparatus should not exceed two lbs. per recuperated H.P., noting that in good practice airplane engine weights vary around that figure.

From the preceding discussion it will be seen that the development of the supercharger is inter-dependent with mechanical design of the engine and the airplane and is dependent upon and closely allied to the success and perfection that can be attained in a propeller which may be changed in form or its equivalent at the will of the pilot.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general.

Lieut. H. J. Odenthal, Air Service.

INSPECTION OF CATTLE RANCHES AND THE OPENING UP
OF REMOTE PLACES BY AIRPLANE

The world war has been entirely responsible for revolutionizing the possibilities of the heavier-than-air craft as well as the lighter-than-air craft as a business venture. Prior to the war neither America nor foreign countries had made very great strides in aeronautics. It seems that after the Wright Brothers made practical the theory of flight, only the daring few used aircraft and they only for exhibition work. France, however, stood out greater than any other nation and all will remember the early work of Blériot and Farman who at that early period saw the wonderful possibilities of the airplane. Aircraft at the present writing have advanced a thousand fold since those days and are continually growing larger with greater radius of travel, are nearing the stage when the carrying of one hundred passengers is entirely feasible and practical. In the great development in the use of airplanes in commercial life there are points of view which will have to be kept in mind. It is obvious that the airplane of today is considerably more suited to the conveyance of passengers and mail matter than to the cartage of heavy goods although to the latter we are coming rapidly as airplanes assume larger proportions in this country. It is very unlikely that the airplane can compete for short distances in civilized countries with the automobile or railroad train. Where the airplane scores is over long distances of 200 miles or more and in countries where roads are scarce and railroads are few and far between. War planes although not adapted to long distance flying, have been flown over practically all desert areas in the south and southwest, further they have given an excellent account of themselves in the Toronto to New York Race, as well as the Transcontinental Race. On the other hand the larger types of fighting craft, twin and multiple motored, such as the American N-C 4, British Vickers-Vimy have amply demonstrated that they are capable of staying in the air for 20 hours or more.

Airplanes of the future, required to make long overland journeys will be specially built for this purpose, probably multiple engined, with a fuel supply capable of 24 hours or more. Indeed it is possible to build such a type of craft at the present time, flying hundreds of miles with unflinching regularity over deserts, mountains, cities and villages in all kinds of weather with an absolute freedom from danger, which is more or less prevalent in War Type Airplanes in use at the present time. The cost of the upkeep of an airplane and the salaries of the pilots and mechanics to keep the machine in order would soon be paid for out of the sums now given for slower rail and boat transportation, for horses, carts, pack trains, etc., necessary for desert transportation. Similarly the big engineering, oil, or mining firms whose operations are conducted in poorly developed countries such as the interior of Alaska or in the North West Rocky Mountain area will find it simply a business proposition to maintain a fleet of airplanes with mechanics and pilots so that the business of the various companies who are located in out of the way places can travel from place to place or from headquarters on the coast to the scene of operations inland, comfortably, quickly and safely. Small inexpensive airplanes can be used for short distance traveling and the larger types with twin motors where it is necessary to travel five or six hundred miles with several passengers or their equivalent in weight.

The mining official who journeys by mule pack entails great dangers over mountain passes, long narrow trails along over hanging precipices and across primitive bridges over streams with frightfully deep chasms below is hardly to scoff at making the journey in comfort by air in an hour or two instead of weeks. The extra comfort and saving in time alone makes such a method of transportation an every day business proposition.

In the inspection of ranches there is another use for airplanes and there is but little doubt that before long the owners of vast sheep and cattle ranches in the Southern and Western states will soon be large buyers of aircraft and they will be conveyed from one station to another in a few minutes and will have several reliable pilots and mechanics as a part of their outfits. The owners of ranches in the Southern and Western States at the present time are using motor cars for covering vast areas in preference to horses and considerable time is saved by this method over the time consumed by the use of horses. Despite the fact that bad roads or no roads at all, a car of the practical American type will average better speed over unbroken country than a horse but when one considers that even the medium powered airplane such as was used for training purposes during the war will make from 80 to 100 miles per hour, the great advantage to the owners of such ranches who wish to keep in touch with their stock will be easily perceived. Just as the automobile is a time saver over the horse so the airplane is a time saver over the automobile. It would take the average automobile the best part of eight hours to cover one hundred miles over some of the territory in the west, while the maximum time that would be consumed with an airplane considering the fact of head resistance through winds would not be over one and a half hours.

For other than inspection purposes the airplane would be of equal advantage for most of the big ranches are far removed from railroads and it would be quicker and more pleasant, minus the dust and dirt for one to fly direct to the nearest city when bound there on business than to endure a long and tedious horse back, automobile or train journey.

There is still another class of business which might receive attention, that is, the formation of regular passenger and transport air lines between cities and the country. For instance, where firms have big interests in Central American countries it would be an advantage to run a line of flying boats or overland air routes in connection with expediting of big business. The modern flying boat can carry about two tons of dead weight with a speed of approximately 80 to 100 miles an hour. It uses any convenient water surface for an airdrome and of course saves the trouble and expense of laying out land for landing purposes. Where great water ways exist and where there are ports for water borne goods it is simple and cheap to put up sheds for housing the flying boats. On the other hand where it is necessary to carry eight or ten passengers or precious minerals, geological reports, etc., long distances the overland type of machine will hold its own and is far more preferable and in many instances will be a time saver over the water route because of a more direct route. Large machines of this type are already in use that are capable of staying in the air from 12 to 15 hours.

For example, let us assume American geologists have discovered great deposits of Radium and traces of other valuable minerals in Managua, Nicaragua. Not having apparatus etc., to make scientific tests, they must proceed to Chicago, Illinois at once to make said tests, as well as close deals for leases of land etc., to beat out competing concerns. The only means of transportation available at the present time is by steamer. This distance by such a route is approximately 2550 miles to New York, from New York it would be necessary to proceed by rail, approximately 856 miles, the total time consumed would be 9 days or 236½ hours.

There is no way by which one could proceed from Nicaragua to Chicago by rail, however, were it possible it would take equally as long in time as by steamer because of a circuitous route necessary to detour around mountainous country.

Now we proceed by seaplane from Managua, Nicaragua. Flying across the Gulf of Mexico, up the Mississippi River thence up the Chicago River to Chicago. The total distance would be approximately 2300 miles. Assuming a seaplane has a speed of 80 miles per hour, we would have consumed exactly 29 hours actual flying time.

While overland from Managua, Nicaragua to Mexico City, Mexico to Chicago it is approximately 2750 miles. With a twin motored ship, such as the Martin Bomber type capable of 100 miles per hour we would arrive in Chicago in 28 hours actual flying time. One can at once see from this the many advantages that are to come in connection with the transportation of passengers, express matter, mail etc., by air.

American firms with interests at such places will quickly perceive the advantages of machines that can cover from three to four hundred miles per day over water as well as see the advantages of machines that can make a thousand miles in one day, stopping here and there to take on and set down passengers and light goods as against ten miles an hour in a steamboat, 40 miles per hour over a round about road by rail which has to follow every bend and winding of the river as well as to detour around mountains, etc.

There are innumerable uses for the airplane and the great thing for every business man to remember is that airplanes are not merely instruments of war but that they are practical commercial vehicles, which can be flown safely by any man who is capable of driving a fast car and which can be relied upon as a method of transportation at all times. The future development of commercial aviation and the extension of lines from coast to coast depend largely upon the general support which will be given by the big business interests and the Government of the United States. It cannot be throttled, it will come, it will have its ups and downs, the same as did the automobile but when once established with the proper financial support you may be assured that the airplanes of tomorrow will be as radically different in design and performance, etc., as the present day locomotive is from Stephenson's locomotive "The Rocket", of 1829.

STOCK KEEPERS' SCHOOL AT WILBUR WRIGHT DEPOT.

Recently a school for the instruction of enlisted men in stock keeping was opened at Wilbur Wright Air Service Depot at Fairfield, Ohio and placed directly under the direction of the Commanding Officer of this Depot.

The purpose of organizing a stock keepers school for enlisted men is to give these men a thorough training in accurate and intelligent record keeping. These men are being carefully instructed on the various types of airplanes, spares, and motors in stock and also the systematic handling and checking up of material. Up to the present time the personnel under the instructions have done very well notwithstanding the fact that there is but limited space available to conduct the school. They are now engaged in learning the intricacies of assembling the different types of motors, the methods of functioning, etc.

It is an extremely difficult problem for both the executive force as well as the operating force of the warehouse to function efficiently when green men are allowed to shift for themselves until they catch on. Even then they have not reached their maximum efficiency and the possibility of errors creeping through undetected are always prevalent, which when discovered are not only exasperating to the Commanding Officer of such warehouses but are equally as exasperating to the Commanding Officer of the field receiving the wrong material.

The course at the Wilbur Wright Depot was planned by Major Weir who has a thorough knowledge of all matters pertaining to supplies and the enlisted men are indeed fortunate to have one in charge who has such a wealth of information and who is as widely versed in aeronautics. The instruction these men receive will be a valuable asset to them when they return to civil life.

FIRST BOMBARDMENT GROUP ERECTS A CAMERA OBSCURA

This Group is erecting a Camera Obscura outfit on the west end of the field which will be one of the most complete and best assembled of this interesting type of apparatus ever used. The hut will be located just without the limits of available landing ground; the topography of that section being such as to permit of this construction without in any way impairing the approach to the field. The proximity of the hut to that portion of the field most used by Bombardment Group Pilots will be advantageous in several respects especially in the matter of the ready reference to the resultant flight graphs permitted pilots and observers immediately upon landing. In addition to the regular camera obscura proper, the hut will be equipped with wireless sets, both telegraphic and telephonic. It is expected that very gratifying results will be obtained in training, if good telephonic communications can be established between the plane and the man at the obscura board during an exercise.

For the benefit of those who have had no opportunity to become conversant with the purpose and operation of the camera obscura, a brief description is subjoined.

The camera obscura is a device which makes possible the depiction upon paper of the actual path of a plane across the sky with reference to a fixed point upon the ground. The fixed point is, of course, the device itself, or rather the hut containing it. The pilot and observer respectively flies a course and sets the bomb sight, using the hut as a target. However, instead of releasing a bomb at the proper instant as dictated by the bomb sight, the observer sends a dash (T) with his wireless. Action starts in the hut at once and results in there being placed before the pilot and observer immediately upon landing a graph of their flight insofar as it directly concerned the bombing of the target. This chart not only shows point where bomb would have struck but, in event of error, indicates its nature.

The outfit consists of a hut 10 feet square with a gable roof in one side of which is placed a hinged door. Immediately below the center of this aperture and located in a flat, false roof, is a large lens consisting of nine lesser lenses, the purpose of which is to intensify focus and project in shadow, the image of the plane overhead onto the sheet on the table below. The half of the hut interior containing this table is darkened, light coming thru the lens only. The approach of any plane intending to take the exercise is announced to the operator within by men stationed outside. As soon as the operator picks up the moving shadow of the plane on the paper, he follows it closely, placing pencil dots to denote its course at half second intervals. He is enabled to do this accurately by use of a metronome which is set to tick at that tempo. At the instant the dash denoting release of a bomb is received it is noted by an X at that point where shadow appears. Upon completion of the flight the dots are connected and the resultant line is a graph of the actual position of the ship at all times with reference to the hut. The point on the paper immediately under the center of the lens is obviously the target. A computation which combines meteorological data, altitude and speed of the plane, and known facts concerning trajectory and lag of the bomb renders it a simple matter to determine the point where bomb would have struck. The camera obscura is sufficiently reliable to enable an expert bombing team (pilot and observer) to show consistently accurate work.

Lieut. A.G. Liggett, A.S.A., a very expert and competent officer along this line, is in charge of the camera obscura work at this field.

A Puff Target for artillery adjustment is being built about one mile and a half from the hangars. 1st Lieutenant Benton A. Doyle, A.S.A., who for a year was Instructor in Artillery Adjustment at Fort Sill, is in charge of this work. A detailed account of the construction and operation of this target will be published in next week's news letter.

THE VAN METER PARACHUTE RELEASING DEVICE

The Van Meter Parachute release, the invention of First Lieutenant S. L. Van Meter, Engineer Officer First Wing, presents many features of interest to the Parachute builder. It is designed to contribute two additional factors of safety to parachute jumping by, first, assuring the casting out of the parachute to a distance of several feet from the fuselage in order to eliminate the danger of entanglement with the ampannage, and, second, by providing means of immediately opening the parachute, preventing the initial precipitate plunge and consequent strain, now present in parachutes. In addition, shock absorbing devices are provided to lessen the strain on the aviator after the jump, and means of tilting the seat back to permit the aviator being lifted out of the ship.

The object of this device is to instantly release the pilot of an aeroplane from his seat and, at the same time, to cast a full-sized parachute twenty feet or more clear of aeroplane, before parachute is permitted to open. In order to enable parachute to be cast through slip stream, and to insure that it completely clears all parts of the ship before opening, the parachute is enclosed in an aluminum container which, either by means of a spiral spring or compressed air, is thrown about twenty feet from an aeroplane, when aluminum container falls completely apart and releases the parachute. Parachute is then instantly opened by means of a simple device consisting of loop shaped springs which fall free of parachute the instant it is completely open. To insure the pilot being easily pulled clear of ship a shut or slide-way is installed immediately to the rear of pilot's seat.

In case the pilot wishes to use parachute when the ship is falling at a very high rate of speed, means are also provided for absorbing the shock imparted to the body of the pilot when the parachute has caught the air.

In 1910 and 1911 Lieut. Van Meter developed a jump chute to be used from an aeroplane, and filed patent application on same. In 1911 he came to Dayton in order to take up with the Wright people the equipping of their pilot with the jump chute. After doing a little flying and going over the matter carefully with them, it was decided that a jump chute was not practical, and that, in order to use a parachute from an aeroplane, it would be necessary to install some means of automatically casting the parachute completely clear of the ship before the parachute was allowed to open. Lieut. Van Meter therefore immediately began work on launching device, and abandoned the jump chute. The development of an automatic launching device was undertaken with the following problems in mind:

(a) In case of a tailspin, side-slip or vertical nose dive, jump chute very easily becomes entangled in the tail or some other part of the ship therefore parachute must be cast completely clear of aeroplane before opening.

(b) In case pilot is wounded in legs or arms, it is very difficult to unstrap safety belt and jump clear of ship. He should be automatically released from seat and pulled clear of ship when parachute opens without any physical effort on his part.

(c) The jump chute is strapped directly to the pilot's back. A pilot is considerably hampered by having this weight on his back, specially if he were fighting. When launching device is used, pilot is left free and unencumbered.

If it is intended to equip primary training aeroplanes with parachutes, a launching device is desirable, as it operates almost instantly and could be used successfully within one hundred feet of the ground; whereas with a jump chute it takes several seconds to unfasten safety belt and jump clear of the ship, and then several seconds more before parachute opens and checks the fall of the pilot sufficiently to prevent serious injury. Also, a Cadet often loses control of himself upon falling into a tailspin and in such cases has not sufficient presence of mind to release himself and jump clear of the ship, especially if he is near the ground; where-as with launching device a slight pull on the release ring opens parachute and pulls cadet free of the ship almost instantly.

VW

When using this launching device, pilot remains in his ship until parachute is completely open, and is supporting his weight sufficiently to pull him clear of ship. If parachute is open sufficiently to lift the pilot clear of ship it stands to reason that it will also support him safely to the ground. On the other hand, employing a Van Meter parachute if the parachute fails to open, the pilot still remains in the aeroplane.

With jump chutes the pilot jumps clear of the ship to start with, then if for any reason parachute fails to open, he has neither ship nor parachute to support him.

An examination of the method of mounting this parachute on the aeroplane reveals that it takes no room in the fuselage which might be otherwise utilized, and that it does not offer any additional resistance to flight. When development is completed, the overall weight of the device will be well within thirty pounds. Any standard type of parachute may be utilized.

In official sand bag tests, with the plane in straight-way flight it was observed that, after the parachute had been shot out the full distance the cords to the sand bag stretched tight, the parachute stands out at an angle of 80 degrees. The parachute then took a short sweep down, snapped open and pulled the sand bag out at about 35 to 40 degrees.

This development is of interest for it is certain that the ultimate parachute will launch above the plane out of the way of the tail, even in case of a spinning nose dive. Lieut. Van Meter is protected by broad patents.

It is probable that in the near future this device will be thoroughly tried out, as details and models are in the hands of the Air Service at McCook Field, where appliances of this nature are thoroughly tested.

ORGANIZATION OF NIGHT FLYING SQUADRON

Night flying or as called by the French night chasse, is organized for the purpose of stopping enemy night bombing raids. Owing to the dangers of such flying it is a volunteer system, no pilot being ordered to do this work.

The pilots are first given a thorough course of ground instructions. Then the pilot is taken up at night by an instructor in a slow machine such as the British Avro and given a number of landings. He is then sent on solo flights with the same machine and after doing approximately 10 landings he begins flying a Sopwith Camel in the day time in order to accustom himself to the machine. As soon as he feels confident of the machine he takes a solo flight at night. The system of working on the front is as follows:

A row of search lights and microphones are used. One pilot patrols at 7000 feet and one at 9000 feet over a given territory. When the search light men hear a high power motor approaching from the enemy territory the one who gets the sound most distinctly throws up a search light beam at an angle of 45° toward the enemy territory. Both pilots in that sector immediately fly to the vicinity of the search light. As soon as the plane coming from the enemy territory is caught in the search light our pilot dives under the tail to look at the markings so as to be sure that it is not one of our own planes returning from a bombing raid. If it is an enemy plane he zooms up and flies the same course as the enemy plane gradually increasing his speed so that he is traveling at about 5 miles an hour faster than the other plane and works in as close as possible preferably about 50 yards. He then fires his machine guns into the fuselage using tracer bullets interspersed with standard bullets in an attempt to disage the pilot and ignite the gasoline tanks. After the patrol is finished the pilot returns to the airdrome. A system of lights under the fuselage were used with which to notify our men that it is one of our planes returning. Instead of flying directly to the airdrome the pilot first flies to a dummy airdrome and flashed signals previously agreed upon and from there a message was phoned to the airdrome. The pilot then flies to the airdrome the landing lights being flared on long enough to land turned off before the machine is completely stopped, in this way avoiding attracting the enemy's attention.

Night flying was more or less an experimental proposition in the war but the British did exceptionally well with one squadron, bringing down in six weeks 24 enemy planes, 3 of which were 14 ton ships. Most of the planes were brought down in flames.

Engineers Find Airplanes a Valuable Adjunct to Select Best Line of Survey in Mountainous Country in Panama.

One important reconnaissance mission was carried out on Jan. 9, 1920, in connection with the survey for the trans-Isthmian military roads. The work was carried out at the request of Col. D.D. Pullen, Eng. Corps, who is in charge of the surveys for these roads.

Col. Pullen and two of his assistants, A.W. Brooks and G. V. Barril, made the trip as observers. They were piloted by Maj. Wm. Ord Ryan, Capt. Thomas Boland, and 2nd Lieut. Homer B. Chandler, respectively. The fourth plane was piloted by 2nd Lieut. Elmer F. Degen, with 2nd Lieut. Dayton D. Watson, as observer. The purpose of the mission was to select the best line for a survey from Monte Lirio, C.Z., to Gamboa, C.Z., thence to Alhajuela, R.P., and thence to Porto Bello, R.P., a distance of about sixty (60) miles. The country over the last half of this trip is absolutely virgin jungle interspersed with mountains, some of which are over three thousand (3000) feet high. All four teams successfully completed the work to Gamboa but then due to low hanging clouds, three of the planes were unable to follow the flights as outlined. The plane operated by Lieut. Degen, followed the correct course, and Lieut. Watson collected some very valuable data on the topography of the country. His findings will be used as a guide by the Engineers in making the survey for these important roads. The work performed on this mission should save several months work by exploration parties in locating the best line of survey.

FORMER SERVICE MEN ANXIOUS TO SEE COMMERCIAL AVIATION A REALITY

That there has been a country-wide awakening to the possibilities of aerial passenger and freight transportation, due to broadened vision brought about by the use of dirigibles and aeroplanes in the World War, has been found by J.T. Calloway, of the Goodyear Tire & Rubber Company's aeronautical department, in recent lecture tour of 16 of the principal cities.

Hundreds of business men and former military aeronauts heard Mr. Calloway speak before Aero Clubs and Chambers of Commerce and by their eager questions showed that a deep sentiment toward the future of aerial transportation existed.

St. Louis and Cincinnati were found to be cities where ballooning was in favor, enthusiasts in the latter city having obtained a charter allowing condemnation of land and building for aero fields.

Nebraska was found to lead all States in aeroplane development, more than 320 planes being in actual use. There are former government ships, now being fitted with new motors and otherwise adopted for civilian flying. One doctor used a plane in making the round of his patients. Because of his widespread use of aëros, the Omaha Goodyear branch has in operation nine aeroplane service stations and will have twelve by February 1920.

Chicago has nearly 300 planes in use while Kansas is very aggressive in aerial development.

At every turn Mr. Calloway was besieged by former service men with the query as to how they could put into practical use the experience received in the recent war and evidenced great interest in the future of dirigibles for passenger and freight transportation.

CHIEF OF SUPPLY GROUP VISITS KELLY FIELD

Colonel W. E. Gillmore, Chief of the Supply Group, Air Service is making a tour of all Air Service Stations in the interest of retrenchment of expenditures. Last week Colonel Gillmore visited Kelly Field everyone knowing what mission and errand he was on had visions of that biblical psalm "Even that little he hath shall be taken from him", not so with the Colonel he played the role of Good Samaritan and gladdened the hearts of everyone from the Commandry Officer down by authorizing sufficient funds to build a real road over three-quarters of a mile stretch between the main gate of Kelly Field #1 to Kelly Field #2. The present road over this stretch is almost impassable, and keeps most of the motor transportation in the repair shops.

LIEUT. STRUTHERS 104 - AERO SQUADRON, EL PASO, TEXAS, ✓✓✓
LOSES LIFE IN A DIVE OUT OF CLOUDS

The first serious accident of 104 Aero Squadron Station at El Paso, Texas, since its arrival at this Airfield occurred January 24, 1920. Lt. Bruce Struthers, pilot and Lt. Charles Evans, Observer, while patrolling the border from Douglas, Arizona to El Paso, Texas, got into a very dark cloud, in fact so dark that the observer could not see the pilot, and the plane hit a very heavy gust of wind forcing it into a stall. The pilot pushed forward on the stick and the plane regained its speed when Lt. Evans sighted a mountain top immediately ahead and pulled back on the stick, but the plane had been diving so fast although he managed to get the plane in a position parallel to its forward speed crashed it into the mountain side. Lt. Struthers was thrown against the mountain clear of the plane and was killed instantly, and Lt. Evans suffered a broken shin, broken nose, and several very bad cuts about the face. The plane took fire and was a total loss. It is an interesting fact that a trapper happened to be setting his traps about 100 feet from where the plane crashed and that but for his presence Lt. Evans would have been burned to death as he had been knocked unconscious and it is also interesting that this trapper was the first person in that vicinity within the last two years. ✓

TWELVE OF THE LATEST TYPE GERMAN FOKKER PLANES ARRIVE AT INDIANAPOLIS

Twelve German Fokker airplanes of the very latest type have been received at the Aviation Repair Depot at Indianapolis, Indiana. These machines, it will be recalled, were turned over to the United States government in connection with the terms of the armistice. Practically all of these machines were flown from the interior of Germany to the various supply depots in France and then torn down and shipped to this country. It might be interesting to invite attention to a few of the pertinent facts in connection with the inventor and the type of plane he created for the use of the German armies during the world war.

The Fokker type of airplanes were made possible by A.H.G. Fokker, a Hollander who hails from Amsterdam. Germany secured his services at the beginning of the war and placed unlimited resources at his disposal. The result being that he produced the famous type of fighters which were largely responsible for Germany's success in the air. It is also interesting to note his radical departure in design from the standard stereotyped airplanes that were used by the other nations prior to and throughout the war and which are still in use. The wings of the Fokker type are about nine inches thick, braced internally by thick heavy cross sections, which gives the wing a remarkable amount of rigidity. Rigidity however, was not the primary idea in making the wings so thick. The idea behind the entire construction was to build into the wings the angle of incidence, the camber, stagger, dihedral and to eliminate entirely the use of struts. This he succeeded in doing there being no struts on the wings with the exception of two up-right struts with cross wires which hold the upper and lower wings together at each end of the wings. By this method Fokker has eliminated a great percent of parasite resistance. By the elimination of struts he has also increased the speed of his ship and the maneuverability which is so essential in fighting craft. The airplane which has the greatest maneuverability can easily get the jump on the opposing craft.

Fokker also invented for Germany the Junker C-1 an armored airplane (all metal), a very fast and efficient monoplane, also a tri-plane of more than ordinary merit.

The machines received at Indianapolis have caused a great deal of speculation among the flying officers, particularly as to their efficiency in flight and great admiration is manifested by all who fly these ships because of the excellent workmanship and ingenious welding of metal parts. It sort of gives one a feeling of absolute safety under all conditions when in the air.

The Mercedes Engines in these planes were torn down and were given a minute inspection. They were found to be in perfect condition notwithstanding the rough handling in bringing them to this country.

All machines will be examined thoroughly and put in perfect condition and it is expected that within the course of about a month's time they will be ready for shipment.

EXTRACT ON BRITISH AIR SERVICE & AVIATION INDUSTRY

The following is an extract from an article entitled "The Air Service and the Aviation Industry" taken from the December, 1919 issue of Engineering, London, England.

"According to the provisional program, it is proposed, during the next three years, to establish at home a striking force of four squadrons, six training wings of three squadrons each, two squadrons for co-operation with Army divisions, about five squadrons for working with the Naval fleet in home waters and one communication squadron. In addition, there will be for experimental stations, several schools and training centers, a number of repair and store depots and an airship station. Overseas, there will be eight squadrons in India, seven in Egypt, three in Mesopotamia and one squadron of seaplanes each at Malta, and Alexandria, as well as a flight of float seaplanes on a carrier for service in the Mediterranean. The total thus amounts to about fifty squadrons and, as a squadron consists of from eighteen to twenty machines, the total number of aeroplanes employed would be about one thousand!"

2. The co-operation of the Air Service with the Army and Navy is discussed briefly, it being pointed out that this co-operation is essential but that it should be secured without any risk of the younger and weaker service coming under the control of the older service. A solution of this problem has been proposed by Mr. Churchill, namely, the formation of a combined Imperial War Staff for the three services actuated and operated under a single control. In considering the future of the Air Service the subject of civil aviation is referred to inasmuch as it is from this source that men and machines for the Royal Air Force would be obtained in case of necessity.

"For this reason, if for no other, it is essential to keep the aircraft industry in being until it is rendered self-supporting by the growth of commercial aviation. State aid, so far, has taken the form of the development of air routes, the provision of airdromes, the supply of meteorological information, etc., and, although work of this kind is of the utmost value and is highly appreciated, some more direct support seems necessary in view of the comparatively small expenditure proposed in connection with aircraft construction.

Aircraft manufacturers might well be encouraged in experimental work by awarding prizes for the best design of machine to fulfill certain stated conditions or experimental work along approved lines might be directly subsidized. Some such aid, at least during the period in which commercial aviation is developing, appears to be essential to prevent the industry from dwindling to a serious extent."

NOTES OF INTEREST FROM HEADQUARTERS FIRST WING,
KELLY FIELD, TEXAS.

Lt. St. John, in charge of motor instruction at the Air Service Mechanics School, and Lt. Hodge, Assistant Adjutant of this field, flew to Laredo last Saturday. By grace of a pass from the Laredo District Commander they spent Sunday across the river at Nuevo, Laredo, where they enjoyed themselves thoroughly; thanks to a Mexican Captain and a Mexican Lieutenant who were their self-appointed hosts. They reported that every one showed them the best of courtesy and treatment and extended a hearty invitation for them to return. This is worthy of note as these two pilots were believed by the Mexicans to be pilots of the present border patrol. They returned to this field Tuesday, being held at Laredo by unfavorable weather.

Captain Kindley, former Executive Officer, Mitchel Field, Mineola, L.I., has arrived at Kelly Field. He was promptly assigned to assume command of the 94th, (Hat in the Ring) Squadron. Capt. Kindley's record in the A.E.F. is well known to all.

Captain Frank B. Tyndall, formerly Group Operations Officer, assumed command of the 147th Aero Squadron of over-seas fame. His reputation for initiative and aggressiveness mark him a go-getter and under his leadership big things are expected of the 147th.

On Monday a lecture was given by Lieutenant E.R. Cowles at the Group Operations room on the "Present Supply System". Lieutenant Cowles treated his subject in a broad, comprehensive manner and drew largely upon his own experiences as a Supply Officer both in the States and Over-seas. A very interesting lecture was delivered Tuesday in the Group Operations Room on two-seater combat work, by Lieut. Geo. R. Phillips of the 95th Aero Squadron, who has had many hours of two-seater combat work over the lines. Wednesday an illustrated lecture in the Group Operations room was given by Lieutenant Stanley Smith on theory and use of the Radio Phone which is soon to be used under actual battle front conditions. On January 13th, 14th and 15th lectures on Squadron Administration were delivered by Lieutenant A.S. Heffley at the Group Operations Room. On Thursday at 3:00 P.M. an illustrated lecture was given at the Aerological Station in Hangar one on Meteorology which was very appropriate, especially at this time, as he explained thoroughly the reason why it is better to understand the direction and speed of the varying air currents at different altitudes before starting a long cross country flight.

Spad flown by Capt. A.R. Brooks of 1st Pursuit Group now on
Exhibition at Smithsonian Institute, Washington, D.C.

The original Spad flown by Capt. A.R. Brooks of the 22nd Aero Squadron, 2nd Pursuit Squadron A.E.F. has been flown for the last time. This famous old bus is now on exhibition in the Smithsonian Institute in Washington, D.C. where it will repose for the ages to come. The younger generations, will have an opportunity of comparing airplanes used 50 years hence from the machines used by their forefathers in the World War and probably, have great discussions concerning our pioneer efforts.

BRIEF HISTORY OF SPAD AIRPLANE #20
Type XIII 220 H.P. #7689, Engine #119435.

22nd Aero Squadron, 2nd Pursuit Group, American E.F. France.

This Spad was assigned to Lieut. Brooks a pupil of Lieut. David E. Putman who sacrificed his life towards the end of the War. Lieut. Brooks was newly assigned to the 22nd Squadron as Flight Commander, and on August 25, 1918 gave Spad #20 its initial baptism of "Archie" fire over the line of the "Toul Sector".

HERE AND THERE WITH THE EDITORS (Cont'd)

The court has made an order that he is entitled to take as security the sum which the state owes to the aeroplane manufacturers. They are protesting against this decision, and have sent to the newspapers a joint resolution in which they declare that in a spirit of solidarity aeroplane manufacturers, whether effected or not by the question of the patent, will close their work-shops if the decision of the court referred to be confirmed on appeal.

(N.Y. Tribune 11/20/20)

AIR SERVICE INFORMATION CIRCULARS

The following are the titles of the information circulars recently issued by the Air Service, Washington, D.C.

- (a) Report of Test of 27mm Automatic Cannon in Cannon Engine.
- (b) General Descriptive Matter on Dopes and Instructions for the application of Dope and Pigmented Protective Coverings.
- (c) General Descriptive matter on Airplane Fabrics, Tapes and Cords, and Instructions for Application of Fabric to the Wings.
- (d) An Empirical Theoretical Method of Comparative Prediction of Airplane Performance. (Automotive Industries 10/28/20)

A I R S E R V I C E N E W S L E T T E R

Information Group
Air Service

December 11, 1920

Building B
Washington, D.C.INFORMATION OBTAINED FROM OPERATIONS REPORTS
OF TACTICAL UNITS FOR WEEK ENDING NOVEMBER 13, 1920STATIONS, FLYING TIME AND AVAILABILITY OF PLANES

<u>Name of Station</u>	<u>Location</u>	<u>Flying time</u>	<u>Planes on hand</u>	<u>Planes Avail.</u>
1st Aero - Obs.	Mitchel Field, Mineola, L. I.	47:35	18	16
2nd Aero - Obs.	Ft Mills, P. I.	No report		
3rd Aero - Obs.	Camp Stotsenburg, Pampanga, P. I.	No report		
5th Aero - Obs.	Mitchel Field, Mineola, L. I.	12:25	17	10
4th & 6th Sqdns.	Luke Field, Ford's Is. H.T.	No report		
7th Aero - Obs.	France Field, Panama, C. Z.	No report		
8th-A Aero - Sur.	McAllen, Texas	20:40	13	5
8th-B Aero - Sur.	Pope Field, Camp Bragg, N. C.	12:	3	2
9th Aero - Obs.	Mather Field, Sacramento, Calif.	No report		
10th & 99th - Obs.	Bolling Field, Anacostia, D. C.	48:50	17	12
11th Aero - Bomb.	Kelly Field, San Antonio, Texas	1:	4	4
12th-A Aero - Sur.	Douglas, Arizona	17:05	5	2
12th-B Aero - Sur.	Nogales, Arizona	13:05	7	5
20th Aero - Bomb.	Kelly Field, San Antonio, Texas	31:30	5	1
27th Aero - Pur.	Kelly Field, San Antonio, Texas	6:35	21	7
50th Aero - Obs.	Langley Field, Hampton, Va.	9:15	13	7
88th Aero - Obs.	Langley Field, Hampton, Va.	6:25	16	8
90th-A Aero - Sur.	Del Rio, Texas	16:35	8	6
90th-B Aero - Sur.	Sanderson, Texas	9:05	8	8
91st-A Aero - Obs.	Crissy Field, California	No report		
91st-B Aero - Obs.	Rockwell Field, Coronado, Calif.	25:25	5	4
94th Aero - Pur.	Kelly Field, San Antonio, Texas	5:25	21	6
95th Aero - Pur.	Kelly Field, San Antonio, Texas	3:30	24	11
96th Aero - Bomb.	Kelly Field, San Antonio, Texas	10:10	9	2
104th-A Aero - Sur.	Fort Bliss, Texas	13:25	15	9
104th-B-Aero - Sur.	Returned to Kelly Field			
135th Aero Obs.	Post Field, Fort Sill, Okla.	79:20	16	12
147th Aero - Pur.	Kelly Field, San Antonio, Texas	2:50	23	6
166th Aero - Bomb	Kelly Field, San Antonio, Texas	0	4	3
258th Aero - Bomb	Aberdeen Proving Ground, Aberdeen Md.	8:47	31	24
Air Service Troops	Camp Benning, Ga.	12:30	9	9
Air Service Troops	Godman Field, Ky.	6:50	17	7
Air Service Troops	Pope Field, Camp Bragg, N. C.	5:30	13	6
1st Bomb Group				
Hdqtrs Det.	Kelly Field, San Antonio, Texas	27:15	12	9
		443:02	354	192

STATIONS	SQUADRONS	PERCENTAGE DAYLIGHT	TOTAL NO. FLIGHTS	PRACTICE FLIGHTS	SPECIAL MISSION	CROSS COUNTRY	PA- TROL	T
Ft. Bliss, Texas	104th Aero Flight A	80	24	17			3	
Dev. Rio, Texas	90th " " "	50	11		2			
Douglas, Arizona	12th " " "	100	24	12			2	
Eugene, Oregon								
McAllen, Texas	8th " " "	78	21		1			
Mather, Calif.								
Nogales, Arizona	12th " " B	100	13	2	1		4	
Sanderson	90th " " B	95	5					
Rockwell	91st " " B	50	16					
Aberdeen	253th bombardment		32			2		
Boiling	10th & 99th	100	53					
Camp Benning	A. S. Detachment	100	26	2		2	5	
France Field								
Ft. Leavenworth								
Godman	A. S. Detachment	90	18	14		2		
Kelly Field	1st Bombardment	43						
"	Headquarters Det.		114					
"	11th Aero		2					
"	96th "		7					
"	166th "							
"	20th "		19					
1st Pursuit Group		40						
	27th "		34					
	94th "		29					
	95th "		15					
	147th "		30					
Langley	50th "	85	7	3			4	
"	88th "		7	3			4	
Luke Field								
Mitchel Field	1st Aero	89	49	5		4		
"	5th Aero		19	5		2		
Post Field	Headquarters 135Aero	100	254					
Pope Field	A. S. Detachment	85	7					
"	8th Aero Squad.		16					
Philippines								
"								
Crissy Field	91st " " "	40	1					

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE DECEMBER 15, 1920.

REPORT ON

THE VERVILLE PACKARD IN THE PULITZER TROPHY CONTEST, NOV. 25, 1920.

During the course of shipment from France to the United States the case containing the Verville Packard was dropped at Cherbourg and the fuselage was broken in two in the vicinity of the tail skid. It had also been slightly cracked while landing at Etampes, France, due to the rough character of the field.

The plane was turned over to the Curtiss Corporation on November 9, 1920 to be repaired and also to install a larger radiator. The repairs were completed and the radiator installed Thursday, November 18th, being the day I arrived at Garder City. Mr. Verville had been at the Curtiss factory superintending the repairs at the installation of the radiator. Charles Devorak of the Assembly Department, McCook Field, Dayton, Ohio, who had been overseas with the plane and was familiar with it, came from McCook Field on November 12th at his own expense so as to be able to help in getting the plane in shape as he realized that there was a great deal of work to be done upon it in order to have it ready for the race on Thanksgiving Day. The night of November 18th he and Mr. Verville worked all night installing two extra bracing wires from the center to the fuselage as an added factor of safety.

The plane was immediately moved to Mitchel Field and on Saturday Mechanic John Smith from the Motor Department at McCook Field arrived and with the assistance of the rest of the crew (composed of Devorak, Smith and Sgt. John Dolan of Mitchel Field) immediately proceeded to give a thorough inspection to both the motor and plane and started setting it up. The plane was completely set up and ready for test on Monday noon, November 22nd. Monday, however, was a very bad day, a heavy fog covering everything with a slight drizzle of rain, so that flying was impossible. However, we ran the plane out and gave the motor a short run and discovered one of the exhaust valves was sticking slightly. This was quickly remedied and the motor given another run on the ground. This time it gave a very satisfactory result, turning up 1550 r.p.m.; the water temperature being about 65°; oil temperature 40° and oil pressure 45°.

Tuesday, November 23rd, was another foggy, rainy day and looked prohibitive to flying. However I felt that it was absolutely essential that I fly the plane before the race to determine if the motor and plane functioned properly in the air. Accordingly, when the rain stopped for a few minutes about two o'clock, we immediately ran the plane out and after a short test on the ground took it into the air. Since the visibility was very poor and the ceiling never being over three hundred feet, the test developed into trying to keep below the level of the clouds and off the tops of the buildings. Every time the throttle was opened I would either be carried up into the clouds or be given so much speed that I would shoot off into still lower hanging clouds, some of which came all the way down to the ground since there was only one small open spot over Mitchel Field. However, the twenty-one minute flight showed me that the plane was very sensitive on the controls, handling beautifully in the air; that the Packard 636 h.p. motor functioned perfectly up to 1700 r.p.m. but missed badly and continually above 1700 r.p.m. The motor ran very cool at 55° C. As a matter of fact this was the chief worry of all concerned due to the reports of overheating in France.

Due to the low hanging clouds I was unable to get any distance from the field in order to glide in, so was forced to fly the plane into the field with motor throttled, with resultant high landing speed. However, the plane landed very easily even with this great excess speed and showed a tendency for buoyancy when the speed dropped off which I consider very good with this heavy plane, the weight

of the plane being 3,350 pounds with a wing spread of 37 feet, six inches and a wing loading per square foot of slightly over thirteen pounds.

Wednesday, November 24th was a very fine, clear day, but since the plane had given such a good performance the day before I thought it hardly necessary to make another test for if anything went wrong we would not have sufficient time in which to make necessary repairs before the race.

Thursday, November 25th the race was scheduled to start at eleven o'clock, most of the planes getting away between eleven thirty and twelve o'clock. The Verville-Packard was scheduled to be the last to start but it was necessary to ask for a deferred start since two of the exhaust valves on the right bank were a little sticky and would not function. However, about twelve fifteen everything seemed to be running all right so I took off over the hangars of Mitchel Field. At an altitude of about thirty-five or forty feet the motor began missing badly. I continued on over Hazelhurst Field trying to smooth this miss out of the motor and flew about in a circle, all the time attempting to smooth the motor down. However it continued to miss, probably due to one or two of the exhaust valves being a little sticky. The air speed indicator registered nearly 180 miles per hour even with this missing and since I felt confident this speed would win the race if the motor would only stand up under the missing, I opened the throttle full and crossed the starting line at about 300 feet. Fortunately I had been over the course about twenty times before the race and was thoroughly familiar with it so was able to devote practically all my time to smoothing my motor down rather than picking out the course.

During the entire first lap my motor continued to miss, the tachometer jumping from 1300 to 1800. The motor, however, continued to run cool, and on the second lap just before reaching Lufberry Field I had finally managed to get rid of the missing. I now held the motor at exactly 1700 r.p.m., the air speed indicator registering about 174 miles per hour at this r.p.m. After rounding the pylon at Babylon the motor was running so smoothly and with so little vibration that I decided to open the throttle, thinking that probably it would now run all right. However on reaching about 1750 r.p.m. the missing immediately started again much to my chagrin since the air speed indicator had gone up about ten (10) miles an hour with the increased r.p.m. It now took about half of the lap to get the motor smoothed down again. Each lap was practically a repetition of this performance. Immediately the motor would start running smoothly I would slightly advance the throttle in order to get all the speed possible since the least advance in throttle would give a very added increase in miles per hour.

During the first three laps I managed to get the motor to run wide open for about thirty seconds on the second leg of the triangle and the air speed indicator immediately ran up over two hundred (200) miles per hour but the violent missing would commence again and I would have to throttle down. Upon finishing the fourth lap I had the motor smoothed down with the air speed indicator registering 181 miles per hour and with the nose of the plane held slightly down to give me an increased speed. Since it was functioning so nicely I decided to make a fifth lap, hoping that I could get the throttle entirely open and get a real good record for one lap of the course. However, as soon as the air speed indicator reached about 194 miles per hour at about 1800 r.p.m. the violent missing started all over again and continued practically the rest of the lap.

I flew the entire race at an altitude of 400 to 500 feet and although my air speed indicator registered around 180 miles an hour almost all of the time I could not quite realize I was going that fast except from the terrific wind blast and until I commenced passing DH-4's, S.E.-5's and S.V.A.'s.

The average time for the 135 miles was 178.6 miles per hour.

REMARKS ON THE PLANE:

The plane handled wonderfully in the air, being very sensitive on the controls both laterally and longitudinally, with a particular sensitive rudder. Position of the pilot is such that the visibility is slightly better than with a Spad. The cock-pit is very compact and comfortable. It is so made that there is a place for a parachute to be carried if desired. I, however, did not carry one.

The position and length of the "stick" is very favorable although it was necessary to place blocks on the rudder bar so that I could properly manipulate the rudder. There is a very efficient wind shield so placed that by holding the head up away from the rear of the seat the blast of air nearly misses one. However with the head placed back against the head rest the blast of air produces a

sort of pounding effect on the head which is very uncomfortable. I would advise wearing a good tight pair of goggles and a good tight helmet since a blast of wind, when moving the head from behind the wind shield, is terrific, and the combined noises of the wires and the rush of the air is almost deafening.

The plane is very buoyant even though heavily loaded and very little effort is required to manipulate the controls.

The Verville-Packard, while giving a very excellent performance is, I believe, unsuited as a service type of pursuit plane since the lower part of the motor is rather inaccessible; the fuel consumption is high, being about a gallon a minute, and since it has a very high landing speed it would require a rather large field with good approaches and fairly smooth surface. It was found in the last war that such fields were very difficult to find.

I believe that the Verville-plane, however, is an excellent design to be used in developing this Packard motor since it gives a wide range of speed and the motor can be given a better test than if placed in a larger and slower machine.

REMARKS ON THE MOTOR:

The motor at 1700 revolutions and under gave a wonderful performance, hauling the plane along with no apparent effort at around 180 miles per hour by the air speed indicator. There was practically no vibration at all, in fact at between 1500 and 1700 revolutions there is less vibration in the Verville-Packard than any plane I have ever flown. However, when the air speed indicator gets above 190 miles per hour with a corresponding increase in r.p.m. the motor misses violently.

My own personal opinion as to the cause of this miss is, I believe, in the location of the carburetor with special attention to the air intake. The carburetor is placed on the bottom of the motor with the air intake opening downward; i.e., the intake manifold being at right angles to the line of flight. I believe that at high speeds the air rushing by the opening of this manifold at such terrific speed makes a vacuum, which causes an over-rich mixture, this causing the missing. To bear out this theory, bursts of black smoke are thrown out when the motor misses. It certainly gives the appearance of a too rich mixture.

The motor was equipped with A.C. plugs and I cannot say too much in the way of praise for this particular type of plug, since with the motor running on a very rich mixture in the first place and with the continual missing, not one of these plugs fouled up or gave way. The compression ration of the Packard 600 h.p. motor is 6-1/2 to 1, and I consider it a remarkable record for a plug to stand up under this compression with the added difficulty of functioning properly with the motor missing continually at high speeds.

Taking into consideration that this Packard motor is a number one motor from the factory and has never had but a few slight tests in the air, I consider it a wonderful power plant which with a few minor changes can be made into a high powered, successful motor practically on a par with our now famous Liberty motor.

The work of motor mechanics J. Smith of McCook Field and Sgt. John Dolan of Mitchel Field, and rigger Charles Devorak of McCook Field, who worked both night and day continuously from November 20th to the day of the race in order that both plane and motor would be in A. No. 1 condition, was highly commendable, and they were in a large measure directly responsible for the results accomplished.

SPEED TRIALS:

Upon completion of the race on Thanksgiving Day, on the few following days I ran the Verville-Packard several times over an electrically timed course of one kilometer in an attempt to break the world's record of 191 miles per hour.

Before making these trial tests we put on the small radiator that Captain Schroeder used in Paris and the motor ran very cool at about 65°. The weather, however, was very much colder than the day of the Gordon-Bennett race when the temperature was around 75° compared with 55° the days I flew with the small radiator.

My best time for any one lap in these trials was 11.95 seconds, (186) miles per hour, while the world's record for one kilometer is 11.65 seconds, (191) miles per hour -- a difference of thirty hundredths (.30) of a second.

On September 22, 1918, over the region of Armacourt-Bey (Northeast of Nancy) the first victory credited to #20 was won when Lieut. Brooks shot down in flames an enemy bi-plane Rumpler. Two days later #20 with the #22 of Lieut. Tyndall's and the #18 of Lieut. Jones', destroyed a Monoplace Fokker in the region east of Thiaucourt.

On September 14th Lieut. Brooks in #20 officially shot down two more Fokkers out of a swarm engaging him over Mars-la-tours and the Lake Iachausee region. On this occasion the plane received over a score of bullets and was so badly damaged that salvage was necessary. The nourrice tank, the wind shield, the fuselage just behind the pilot's back, the main spars and the rudder control wires were pierced.

A new #20 (7689) served as a replacement, and on October 9th at Aincreville, during the Meuse-Argonne offensive, this plane was in at the death of a Hun two seater, type D.F.W.

On the 27th of October Lieut. Clinton Jones in this same plane destroyed an enemy Fokker over Champigneulles and three days later another of the same type near St. Georges.

On the latter fight the plane showed over a score of wounds:- 6 in the nourrice tank, 3 in the wind shield, and the remainder scattered in the wings and fuselage. Lieut. Jones as did Lieut. Brooks on the parallel instance, miraculously escaped injury.

After this episode a change of wings was necessary and the planes again entered the offensive up to the time of the Armistice. It was flown until the close of the American Air Depot in France and finally was assigned for exhibition at the Smithsonian Institute in Washington, D. C.

A few bullet holes remain in the fuselage but due to the change in wings and badly shot parts, the present "Iron" crosses are, in the main, indicators of the holes made by the Spandau (German air machine gun) bullets, during the St. Mihiel and Meuse-Argonne offensives.

No. 20 in 22d Squadron records has 65 flying hours to its personal credit, divided between 14 voluntary patrols, 5 protection patrols, 3 bombing and strafing missions, and 20 sector patrols.

The guns (Marlin Aircraft Type) on #20 were removed from Lieut. Tyndell's #22 after the Armistice. On October 29th, Lieut. Tyndell, with these guns, fired 1150 rounds without a jam, in two separate combats against the enemy, gaining two victories during each combat.

Notes of Interest from Headquarters 8th Aero Squadron, McAllen, Texas.

Since the arrival of Capt. Kyce, M.C. flight B has gone in very strongly for athletics. A tennis court, baseball diamond, quarter mile track, basket ball ground and volley ball court have been built. Facilities for other kinds of athletics such as a horizontal bar, jumping, standard, wrestling mats and jumping pits have also been constructed under the direction of the Flight Medical Officer. Games in the above mentioned sports have been matched with teams of schools and clubs in the vicinity.

Wednesday afternoon two planes flew in formation to the Gulf from McAllen making the patrol in that direction. After arriving at their destination the planes were landed and the officers spent about two hours shooting ducks, slept under their planes during the night and before daybreak were again out shooting. Thousands of ducks were seen and enough were killed to supply the officers mess for one meal. About nine A. M. the planes were flown back to the Airdrome making the morning patrol. This flight was made to find landing fields for emergency use as well as to shoot ducks.

In these trials I encountered the same difficulty at high speeds as during the race -- that of missing.

Considering the fact that the plane showed a speed of 186 miles per hour with a missing motor I feel absolutely certain that with a few minor changes in the motor I can easily set a record of well over two hundred (200) miles per hour with this plane and motor.

C. C. Moseley,
1st Lieut., Air Service.

SECRETARY OF WAR COMMENDS REPORT OF CHIEF OF AIR SERVICE

Warmly commending the report for 1920 of the Chief of Air Service, Secretary of War Baker expresses the belief that its serious, just and conservative tone will at once command the confidence of the Congress.

The communication in full appears below:

September 5, 1920.

My dear General Menoher:

I have just finished reading your report for 1920 and I am glad to be able to tell you that the whole report has my hearty approval. It takes a serious and just view of the importance of the Air Service and states the problems and needs of the service so conservatively that Congress will give their confidence at once to your message.

The obstacles and difficulties of this year of reconstruction have necessarily affected all arms of the service and now that the reorganization is effected we are happily started toward more satisfying conditions and results but it is gratifying to see that the Air Service has been able to press ahead with much constructive and significant work in the midst of its war-time demobilization and reorganization.

I congratulate you and the men of the service.

Sincerely,

Newton D. Baker.

CO-OPERATION BY THE CANADIAN AIR BOARD

In planning and perfecting the recent Flying expedition to Alaska, the U.S. Army Air Service received the heartiest co-operation of the Canadian Air Board, Captain Howard Douglas, who was the path-finder of the expedition, and Lieutenant St. Clair Street who commanded the flight, on their return and in all reports both spoke in the highest terms of the assistance rendered them by the Canadian Air Board, as well as of the courtesy and hospitality extended them by the Canadian people.

In response to a letter from the Chief of Air Service expressing appreciation for the assistance rendered, the following acknowledgment from the Canadian Air Board was received:

The Air Board

Ottawa,
Canada, Nov. 23rd/20.

Dear General Menoher, -

The Air Board desires me to thank you for your letter of November 18th, thanking them for the assistance rendered to the Alaska Flying Expedition, and to assure you that it was a great pleasure to the Board to be able to help your Service in any way.

The success of the Flight and the notable achievement of your Officers has done much to assist aviation in Canada and show its practical possibilities. We feel that we have distinctly benefitted in this country from the Flight and that any action we have taken has been fully rewarded by its success.

Yours very truly,

(Signed) J. A. Wilson.

Secretary.

Major General Chas. T. Mencher,
Chief of Air Service,
War Department,
Washington, D. C.,
U. S. A.

FLYING AT KELLY FIELD, TEXAS

With one accord all the Squadrons of the First Pursuit Group report that flying was in the discard during the past week due to weather conditions. The 27th had the misfortune to break a De Haviland 4-B propeller because of the mud. Practically all the squadrons are taking advantage of the quiet spell to inspect their wings, the fabric being opened and the flying or brace wires in the wings being tightened up where needed.

Second Lieutenant H. L. Speck left Kelly Field Saturday at 9:15 A.M., attempted to reach Sanderson, Texas but owing to heavy fog was forced down at Dryden, Texas, 22 miles east of Sanderson. There is a good field, marked with a Tee, three fourths of a mile west of Dryden and south of the Southern Pacific Railroad tracks. He flew to Sanderson on Sunday morning, lunched with the Squadron there and took off for El Paso that afternoon-- fog quite low with frost and snow on the mountains. Tried to get over the divide into Marfa but the fog was right on the ground and when he flew up the tracks ran right into it so returned to Alpine, landed and spent the night. Several of the very good towns-people gave them a fine party, 16 guests, food, dancing, etc. Took off from Alpine Monday morning and landed at El Paso at 12:14 P.M.

Changed propeller at El Paso, cleaned up the spark plugs and motor that afternoon and flew to Columbus the next morning, dined with the Commanding Officer of the Regiment Station; then consummated our business there and flew to Demming that afternoon. Flew around over the 146,000 acres of land held by the War Department, visited the Chamber of Commerce, finished our business there and flew back to El Paso that afternoon.

Spent the next day at El Paso. Lieutenant Hanes held a conference with General Houze and Colonel Bassett regarding land and building leases for the War Department. They left El Paso, Thursday at 9:00 A.M. and flew to Sanderson in two hours and thirty minutes. Gas, oil and lunch were gotten there; left Sanderson at 2:00 P.M. and landed at Kelly Field at 4:30 P.M.

The only difficulty in the whole trip was the effort and time used to start a cold Liberty motor during the freezing weather. The trip was very successful and Lieutenant Hanes who is in charge of the Real Estate Division at the Headquarters of the Eighth Corps Area, stated that he enjoyed the trip immensely and that the government had been saved several thousand dollars thru the information gathered on the trip.

Cadet Danison, accompanied by Cadet Harkey as passenger, made a cross country flight to McAllen, Texas, for the purpose of training. Owing to extremely bad weather, they were unable to return immediately.

NEW COURSE FOR FLIGHT SURGEONS AT MITCHEL FIELD

A new course for Flight Surgeons commenced at the Medical Research Laboratory on November 16th and will continue until January 25, 1921. This course consists of lectures, demonstrations, and practical work at the laboratory and clinics in New York City. All subjects pertaining to Aviation Medicine and which will be of advantage to the Flight Surgeon in his work are covered in the course. In addition each officer is taught to perform a "609" examination and to conduct a re-breathing examination. The following student officers are in the class:

Major R.F. Longacre, M.C. from Kelly Field; Major A.M. Brailsford, M.C. from McCook Field; Captain G.S. Willey, M.C., of Mitchel Field; Captain J. F. Hickam, M.C. from Eagle Pass, Texas; Captain P.D. Moulton, M.C. from Camp Upton, Long Island; 1st Lieutenant D.W. Bedinger, M.C. from March Field, California; and 1st Lieut. G.P. Rawls, M.C. from the Aviation Repair Depot at Indianapolis, Indiana.

TRAINING SCHEDULE FIRST AND FIFTH OBSERVATION SQUADRON MITCHEL FIELD, LONG ISLAND.

The fall training schedule of the First and Fifth Observation Squadrons will be temporarily interrupted during Thanksgiving week by the preparations for the Pulitzer Race. During the three weeks ending November 20th however, a carefully planned series of training missions were carried out with notable success. They were so arranged as to develop a keen spirit of competition between the squadrons.

Although in the message-dropping contests, trap-shooting and target practice the First Squadron has kept the lead up to date, the success of the Fifth in the Photographic and Visual Reconnaissance missions leaves the season's honors still in the balance. Results of the Navigation and the Formation flying problems have not yet been announced.

In addition to these strictly training missions, successful reglages have been conducted for the Coast Defenses of Boston, Long Island Sound and New York from time to time as well as special photographic missions and cross-country work in the interest of recruiting.

260 FLIGHTS AT MARCH FIELD, CALIFORNIA

Despite fog rolling inland from off the Pacific and oft times hanging low over the field for the greater part of the morning 260 flights were made at this school during the past week. In all 244 hours and 55 minutes were consumed. Preliminary instruction required 104 hours and 35 minutes; advance instruction 55 hours and 10 minutes; test flights 6 hours and 30 minutes and miscellaneous flights 63 hours and 35 minutes. An approximate mileage covered will total 14,600.

FOREST FIRE PATROL ACTIVITIES FROM MARCH FIELD

A consolidated report of forest fire patrol activities carried on from this base from May 19 to October 31st gives some interesting statistics.

Total number of flights	314
Total flying time	1143 hrs. 38 min.
Total gallons gasoline consumed	19,990
Total gallons of oil consumed	1,237 1/4
Area of square miles covered	133,477,493
Total miles flown	108,920
Total number of fires discovered	131
Total number of planes flown (DH-4B's)	6
Total number of minor accidents	1
Total number of major accidents	None.

This patrol was carried on under the direction of Captain Ernest Clark, officer in charge of flying at this field. Pilots were graduate cadets from this school. R. Benton, forester, was stationed at the field during the patrol season, relaying information about fires from the radio station to the various rangers in the mountain reserves.

AIR SERVICE RECRUITING DISPLAY AT LOS ANGELES

One of the most attractive Air Service recruiting displays ever presented in Southern California has been installed on the fifth floor of Bullock's Department store in Los Angeles. In addition to aerial equipment and an educational display a French Spad has been erected on the roof garden. Lieut. A. B. Pitts of this school is in charge of the exhibit.

ACTIVITIES OF AIR SERVICE TROOPS AT ABERDEEN PROVING GROUND, MD.

No vocational training was conducted during the summer months but was resumed on October 1st. All day Friday is devoted to vocational training so that there will be four days uninterrupted to carry on the regular programme.

The work now consists of bombing with actual bombs for tests of fuses, etc., also flights over the camera obscura for tests of bomb sights. There are six (6) targets laid out at a distance of 1500 feet from the camera building, the bomber aiming on the target. When the target comes in line with the sights the bomber presses a switch which sets off a smoke puff which registers on the chart in the camera obscura building. Corrections are then made and computed. The smoke puffs are found to be more satisfactory than radio equipment and there is a lack of skilled radio personnel.

The work for the week comprised (1) camera obscura, (18) bombing, (2) cross country, and (11) miscellaneous flights. A total of (42) bombs were dropped with a total weight of (8100) pounds.

A CORRECTION

In the News Letter of November 9th was published a brief notice of the death of Private Earl W. Moon who was drowned while making a parachute jump at Aberdeen Proving Ground, Maryland. The information relative to this fatality was taken from meagre reports obtainable on the date the News Letter was prepared for publication. We are glad to make the following correction, this authoritative data having been received from the Commanding Officer, Air Service Troops, Aberdeen Proving Ground.

"In the consolidated News Letter of November 9th there was an article with reference to Private Earl W. Moon, who was drowned at this station. We wish to correct the erroneous report which has been circulating in print. The parachutes functioned perfectly and the board of investigation decided that his death was due to misjudgment on the part of Private Moon in making the jump when he did. He landed in the channel of the bay, drowning before assistance could reach him."

DOG MAKES A PARACHUTE JUMP

Bing, the dog mascot, of the Air Service Mechanics School at Kelly Field, San Antonio, Texas, made a successful pull-off from the upper wing of a De Haviland 4-B plane. A special harness was fitted to him and an eighteen foot seat pack was used. Bing made the journey aloft, to the altitude of 1000 feet, by the side of Sergeant G. A. Shoemaker who released Bing's chute at the proper time. The chute opened nicely and Bing had a pleasant journey down, landing in the arms of Lieutenant J. L. Stromme who has the distinction of raising Bing from a blind pup. Bing was none the worse for the journey and proclaimed in dog language its merits when once again he set foot on terra firma. This adds the title of "Expert Jumper" to Bing's rating of "Airplane Observer". This jump created much interest in San Antonio and the vicinity and a large crowd assembled at the Field to witness the jump.

The San Antonio "Light" in its account of the novel parachute performance says, "The largest crowd ever gathered to witness a jump at the field were attracted by Bing's performance."

"When the ship began to gain altitude, Bing crawled to the edge of the wing, looked down at the ground several hundred feet beneath and then over at the two men in the cockpit. As they climbed higher, he began to get cold and Shoemaker threw his arm over the dog's head to keep the wind out of his ears. He had begun to shake them as if they were getting cold.

When the ship reached a spot over the center of the field Shoemaker jerked the rip cord of Bing's chute with his thumb and the dog went into mid-air with a sudden jerk. He did not seem to mind the experience in the least, according to the men on the ship who said that he looked at the ground, at the chute above him and at the ship circling around as if to say "where do we go from here!"

When the chute was about a hundred feet from the ground Lieutenant Stromme whistled and Bing kicked and wagged his tail, much to the delight of the spectators. It took him one minute and eleven seconds to make the descent."

RADIO NEWS DAILY AT POST FIELD

The Personnel of Post Field is furnished daily with Radio Press Dispatch from the Air Service Communications School here. The Items are posted in a daily Bulletin and contain all weather reports, Naval Press Reports from Arlington station; Washington, D.C., and New York City concerning all items of interest which the Radio Station can pick up from the air.

PROGRESS REPORT, POST FIELD, FORT SILL

The Refresher Course given to Observers who have been sent to this station to take the School of Fire Course, consisted last week of Visual Reconnaissance and Aerial Photography. The Officers have but three (3) more weeks to go and they will be ready for the School of Fire Course at Fort Sill.

The Cadets who are here taking the Observation Pilot's Course are progressing rapidly. Last week was devoted almost entirely to Aerial gunnery, using the 1918 Model Marlin Guns. These Guns have been operating with a great deal of success and the Cadets have received valuable experience in the timing of CC synchronizing gears and installation of Machine Guns on the ships, and actual firing from the air.

RECONNAISSANCE FLIGHTS AT LUKE FIELD

During the week the officers and enlisted men, who spent a week on the Island of Maui, for the purpose of general reconnaissance of that Island, returned to Luke Field. Captain Wheeler, Lieutenants Weddington, Manzelman and Hynes flew back in planes, while Lieutenants Brooks and Elliott in charge of the enlisted men returned, a few days later by boat, daily flights were made around the Island for the purposes of gathering information of military value, taking photographs and making observations of all sites where Air Service bases could be established. The field from which all flying was done has been obtained as a permanent flying field for the Island and will be used as a base for all future land plane operations on Maui.

Two formation flights were made on consecutive mornings over the famous Crater of Haleakala - the largest extinct crater in the world. Prior to this only on one occasion had any airplanes been flown over this spot, then by planes from Luke Field several months ago. On the earlier flight a large part of the beauty of the crater was obscured by clouds which form regularly each morning over the crater, several hours after the sun has risen. For that reason the later flights were made in the early morning before the clouds had formed. At an altitude of 12,000 feet the yawning cavity of the crater measuring over ten miles in diameter was plainly visible. Inside of the main crater were craters - two to eight hundred feet in height - much resembling large ant hills from the air. The course taken by the last lava flow - which according to history was about four hundred years ago - is plain to be seen, where it broke thru one side of the crater wall and poured into the sea. The first aerial photographs ever taken of Haleakala were snapped on the last flight.

DEPARTMENT OF COMMERCIAL AVIATION ✓

This department wants to grow and extend in usefulness. It will do so provided we get the co-operation of those whom the department is designed to serve, namely: those who are in anyway interested in Commercial Aviation, We

shall be glad to publish week by week reports from individuals, and business firms, of all kinds that are concerned with any phase of commercial aviation. Send your communications plainly marked under the head of subject "for publication in the News Letter", and bearing information that will be of interest with regard to your business in the realm of aviation.

United States.

STATEMENT ON FEDERAL AIRCRAFT LAWS.

There is at the present time no Federal law in existence for the registration of aircraft, nor for the licensing of operators. Under the President's Proclamation of February 28, 1918, persons contemplating the operation of aircraft were required to obtain licenses from the Joint Army and Navy Board of Aeronautic Cognizance. This Presidential Proclamation was rescinded on July 31, 1919.

The only law which may be considered as controlling air traffic in the United States is that covered in a ruling of the solicitor for the Department of Commerce.

The only other restrictions are those contained in local laws and ordinances, in force in the following states and localities: States of Connecticut and Massachusetts; County of Los Angeles, California; Atlantic City, New Jersey; Newark, New Jersey; Nutley, New Jersey; and Kissimmee, Florida.

THE DAWN OF COMMERCIAL AVIATION

Under this caption the Scientific American of date November 27, runs a double-page illustrated story of the launching on October 23 of the "Santa Maria" the "Pinta" and the "Nina" the first three of the six twin-engine mail and passenger carrying flying-boats comprising the fleet now operated between Key West and Havana by the Aeromarine West Indies Airways, Inc. The story is by the popular writer on aeronautics, Ladislas d'Orcy, M.S.A.E., but an editorial note preceding the article reads as follows:

"There is no use mincing words; the American, aeronautical industry is decidedly at a low ebb. Following the Armistice and the suspending of heavy Government orders for airplanes of all kinds, our aircraft manufacturers found themselves with a large stock of raw materials and expensive plants, with little or nothing to do. In other words, we in America had nothing to take the place of wartime flying. Meanwhile, Europe forged ahead in commercial aviation. Although we were the first to introduce winged mail, Europe has eclipsed us beyond a doubt. And Europe has done remarkably well in commercial aviation. We are a considerable distance behind, true; but it is with some satisfaction that Americans at last can rest assured that a start has been made in American commercial aviation, and that a practical way has been found to make such ventures profitable."

As to the advantages the traveler will derive from using a fast flying boat in preference to the steamships which ply between Key West and Havana, these are remarkably similar to the ones which have rendered the London to Paris air line so popular.

The saving in time is obviously the most outstanding. This will represent a clear saving of twelve hours in the case of the East Coast train, which arrives at Key West at 5:20 P.M., because the boat for Havana does not leave until 10 P.M. and arrives in the Cuban capital the next morning, at 6:30 A.M. The flying boats, however, are scheduled to take off from Key West half an hour after the East Coast train arrives and will reach Havana at 7 P.M. the same day so that the traveler will be able to dine in view of Morro Castle.

The desire to escape sea-sickness was incidentally one of the strongest reasons which caused so many citizens of Paris and London to patronize the daily passenger air line across the English Channel. Large aircraft, flying through the air at high speed, are virtually immune against the pitching and rolling motions which the average traveler dreads in a sea voyage.

In the announcement of the inauguration of a passenger and a freight service by the Aeromarine-West Indies Airways, Inc., between Key West and Havana, Cuba, there is a back-ground of experience, organization and business ability which will undoubtedly prove this venture the exceptional one which has proven the rule of aeronautical progress in the past. Starting with six re-built navy F-boats which war and peace have demonstrated air-worthy and sea-worthy, with ample capital, experience and organization and with a determination to carry on even though the service is not immediately profitable, the new Florida-Cuba Air Line deserves the active support and co-operation of the public, the press and the manufacturers of aircraft.

Canada

AIRPLANE PASSENGER LINE. MONTREAL TO NEW YORK

The Canada Steamship Lines Ltd., which is the chief Canadian operation of steamships on the Great Lakes, plans to start an aerial passenger service between Montreal and New York, beginning next summer. J.W. Norcross, head of the company, made this announcement on his recent arrival from England after having placed contracts for the deliveries next spring.

"While the new service will be largely in the way of an experiment", said Mr. Norcross, "I am convinced that aerial transportation is the mode of the future since it possesses boundless possibilities in a commercial way."

To insure the maximum of safety, Mr. Norcross explained, water courses would be followed all the way. The planes which will carry twelve passengers in addition to two pilots, can develop a speed of 127 miles an hour.

Haiti

AIR MAIL IN HAITI

"The Marine Aviation Force stationed at Santo Domingo City, D.R., is developing air passenger and mail service, with highly satisfactory results," says Aviation for November 22, Passengers are being taken from one post to another and mail is being delivered whenever a suitable occasion arises. A satisfactory mail service is in effect between Santo Domingo City and Santiago, also between the former point and San Pedro de Macoris.

The mountains and jungle-covered conditions of many portions of the Island of Haiti, render mail service by air much quicker than by any other means. Furthermore, the unsettled condition of portions of the interior, is a source of delay to transportation upon land. It appears that airplane mail will be the solution of the problem of delays in communications, which have been experienced for a long time in Haiti.

SQUADRON NEWS

First Surveillance Group, Fort Bliss, Texas

Lieut. H. R. Rivers of 104th Aero Squadron received orders to Photographic School, Langley Field, Hampton, Virginia.

On Wednesday Flight "A" 104th Squadron carried on an artillery adjustment with the 82nd. F.A. Lieut. Gaffney was observer and Lieut. Harvey pilot. Two problems were scheduled; 1st problem for Air Service Observer and 2nd Problem for Artillery Observer. Air Service carried on its work according to Liaison Regulations and problem was successful. Guns were laid on target and fired for effect twenty-five minutes from time plane checked in with Battery. Second problem was called off due to failure of radio.

Friday a liaison problem with the 7th Cavalry was held. A demonstration of different means of communication was successfully carried out and it was proven that the Air Service was of great importance to the ground troops. Three planes were used; Command Plane-- Observer Lieut. Bouquet, Pilot Lieut. Harvey; Contact plane Observer Lieut. Hinkle, Pilot Lieut. Gaffney. Observation Plane used to carry officers of 7th Cavalry for ten minute flights. Commanding Officer of the 7th Cavalry was well pleased and highly complimented the work of the Air Service.

Due to shortage of bachelor officers at this Airdrome, the officers' club in El Paso will be disorganized.

Ross Field, Arcadia, California.

A type "A" Goodyear poly blimp arrived at the field during the week and will be put in commission soon. This little ship, the smallest type of military airship in use in this country, will be utilized for the further training of balloon officers and cadets and student officers taking the observer's course at this post. It is the first dirigible to be operated at Ross Field and due to the excellent climatic conditions, making it possible to fly the year round, it will be in daily use this winter.

The marriage of 1st Lieutenant George F. Parris, A.S., Commanding Officer of the Second Balloon Company, and Miss Ruth Bailie, daughter of Mr. and Mrs. Charles G. Bailie of Los Angeles, was solemnized at the home of the bride's parents, 1000 Manhattan Place, on Tuesday. Among the guests were Major and Mrs. Harold Geiger, Captain Harold E. Weeks, and 2nd Lieutenants Dache M. Reeves and Clarence H. Welch, all of Ross Field. The newly married couple will leave soon for Langley Field, Virginia where Lieutenant Parris is to be stationed for a course of dirigible training.

The Second Balloon Company gave its first annual dance at the Post Saturday. The event was in every way a success.

Carlstrom Field, Arcadia, Florida.

Activities at Carlstrom Field during the past week have consisted of the routine work of the school and a very good football game between the Field team and that of Souther College, of Southerlin, Florida. Carlstrom won, 7-6. In the evening of the same day, Friday, the officers gave a very enjoyable dance at the Officers' Club.

The three Latin-American Officers who are taking a course in flying have all soloed by now and are daily making progress, so it is expected that they can return to their respective Republics with a valuable training in aeronautics.

Hunting has commenced and as many as can get the opportunity have been out enjoying the unusual game of this region, - birds, deer, alligators and rattlesnakes.

2nd Observation Group, Luke Field, Pearl Harbor, Hawaii.

On Friday evening the Air Service acted as hosts to their Army, Navy, Marine and civilian friends at a masquerade Halloween Party given at the Service Club on Luke Field. The snappiest jazz orchestra on the islands was called in to furnish the music. The Club House was elaborately decorated with everything appropriate to this season of the year. As added attractions to while away the time between dances, there was a bar with all the equipment of

the places we read about in history when there was no prohibition - kegs, mahogany top, a foot rail, pictures on the walls of pugs and chorus girls, and a swinging door. Cider, doughnuts, and hot dogs were on tap throughout the evening. In another part of the hall a gambling joint was in operation where everything from craps to hitting the nigger-baby could be enjoyed. During the evening a mock air raid was put on by two night flying planes which gave a spectacular acrobatic demonstration for the admiring crowd. The spirit of the occasion was entered into with enthusiasm and everyone proclaimed the party a huge success.

Mitchel Field, Mineola, Long Island

1st Lieut. E. R. Black, recently returned from Germany, has been designated Group Parachute Officer. Before his departure for Europe in September Lieut. Black made a series of sensational jumps at Mitchel Field. He will be assisted by Master Sergeant F. E. Jones, 5th Aero Squadron; Sergeant F. B. Haney, 1st Aero Squadron; and Sergeant J. E. Riviere, Group Operations Clerk, who are all experienced in parachute work.

Six new Type "A" parachutes have just been received from the Middletown Supply Depot and plans are under way to incorporate some parachute jumping in the squadron operations schedules before the winter closes in.

Mitchel Field has a new hostess in the person of Miss Day, formerly of Camp Upton. The enlisted men's club is rapidly becoming the social center of the camp for enlisted men. Weekly dances are being given. A new library is being installed and the building has been completely redecorated and refurnished.

Educational and Recreation

A gymnasium is being installed in the old Red Cross Hostess House. The Educational and Recreation Officer has arranged for a quantity of new equipment and the Flight Surgeon, Captain Scott, is arranging a program of physical training calculated to make the gymnasium of special usefulness to the flying personnel during the coming winter.

The Post educational and recreation school opened last week. Courses of instruction ranging from primary to high school work are provided. Of special interest to the Air Service is the Cadet Class, the purpose of which is to prepare applicants for appointment as Flying Cadets in the Air Service. This class has an enrollment of 45 and great interest is being shown by the students.

Air Service Pilots' School, March Field, Riverside, California

Dr. Edwin G. Dexter, corps area educational consultant, was a visitor at March Field over Thursday and Friday. He expressed himself as well pleased with the educational and vocational work being carried on at this school. Dr. Dexter will review the work of the educational and recreation departments at Ross Field, Camp MacArthur and Fort Rosecrans before returning to San Francisco.

First Lieutenant Earle G. Harper reported Friday from Camp Travis, Texas, for flying instruction. Lieut. Harper comes from the First Infantry, Second Division.

Post Adjutant E. S. Norby, Lieutenants Worthington, Benton and Quinn are on cross country flight to San Francisco. While in the bay city they attended the U. of C. Stanford football game.

At least 40 members of the Ladies Club of March Field gathered Thursday afternoon at the Officers' Club. Hostesses for the occasion were the Mrs. Dinger, Foster and Fry. Late in the afternoon several of the officers of the command were entertained at tea.

"Pete" Menshower, ex-cadet at March Field is now flying for the Barr Flying Circus of Los Angeles. He recently completed an exhibition engagement at the Arizona State Fair and is booked to perform over the Speedway at Hollywood. On January 8th the outfit will sail from San Francisco for Japan.

Eight naval officers from the Pacific Fleet Air Detachment and the Naval Air Station at San Diego have been assigned to this school for preliminary flying instruction. Authority has also been requested for a detachment of ten enlisted men from the naval base to service the planes used by the student pilots.

An article in the San Francisco Chronicle states that Eddie Rickenbacker has offered to give flying instruction to a class of students in aviation at the University of California. Flying operations would be carried out from Durant Field in Oakland.

R. H. DeLay and Wesley May, aerial stunt artists, were on the field at various times during the week, preparatory to staging the "plane to train" stunt for the Vitagraph moving picture company. William Duncan is directing the eighth episode of "Fighting Fate" and engaged the aviators to put a few thrills into the scenario.

Los Angeles aerial enthusiasts are preparing for the reception of Anthony H. G. Fokker, famous Dutch airplane designer, whom, it is reported may erect an aircraft factory somewhere in Southern California.

Cadets Dolph and London who have been engaged in forest fire patrol duty from this field expect to be discharged from the service within a few weeks. They will join the U.S. Air Mail Service according to present plans.

A. S. Mechanics School, San Antonio, Texas

2nd Lieutenant Warren G. Carter, Engineer Officer of the School, surprised the entire organization by becoming a married man, Armistice Day. The bride, Miss Eileen Smith, is a popular San Antonio girl. The wedding took place at St. Marks Episcopal Church, San Antonio, Texas. Lieutenant James S. Eldridge and Mrs. Eldridge were the attendants. Lieutenant and Mrs. Carter will be at home at their apartment, 1022 Blanco Road, San Antonio, Texas. The Engineering Department presented Lieutenant and Mrs. Carter with a handsome silver service.

Lieutenant H. A. Sturcken and Staff Sergeant G. A. Shoemaker made successful pull-offs from the upper wing of a DH-4B plane, Thursday, using the modified United States Army Type of Chute. This chute, instead of having a flexible vent to take up the shock of opening at high speed, has a ring vent which is four inches wide and extends entirely around the chute about four feet from the apex. This prevents oscillation and takes up the opening shock, preventing injury to the chute and doing away entirely with the use of rubber shock absorbers which are apt to deteriorate. The modifying of the chutes is carried on under the supervision of Sgt. Bottriel who has been detailed for this work from the Parachute Department at McCook Field.

A second Equitation Class has been organized by the Polo Association of the two Fields. The Polo Team is in training for a Polo Tournament to be held in the near future. Interest in Polo on this Field is rather low at present but it will undoubtedly revive with the coming tournament. Several Officers from the Air Service Mechanics School have joined the class with the view of preparing themselves for playing on the polo teams.

With a view of increasing the morale of the students preparations have been made to photograph each graduating class and present each student with a picture. A photographic record will also be kept of all men graduating from the various courses.

Some of the Officers and Chief Instructors of the School are making preparations for a week end hunting trip after wild turkey and deer. There are excellent opportunities for hunting within a radius of seventy miles of this station. If the nimrods are as successful as they expect to be, the Officers' Mess will be a place of much interest for the next few days after their return.

The A.S.M.S. Social and Athletic Club for Enlisted Men was organized during the week. The Board of Governors consists of the most responsible enlisted men in the School. This Club is organized for the purpose of increasing social activities among the enlisted men, to tighten up athletics and the morale generally. The Board, made up of the most responsible enlisted men is given as follows: Master Sergeant; Perry S. Jackson, Harry E. MacKnight, Humphrey T. Beck, Frank G. Billker, Albert Holtzman, Harry Secord, Staff Sergeant; Carrol M. Chalk, Charles M. Manning, Ernest Brown, Private; Morris Stoller.

Storage Depot, Selfridge Field, Mt. Clemens, Michigan.

Mr. Eugene A. Drumm, who served as Quartermaster at this Field during the World War, was a visitor on Wednesday of the past week. Mr. Drumm is now Chief Water Inspector for the city of New York.

The Joy Realty Company, the lessor of this Field, has purchased a large tract of swamp land north of this station, with the intention of starting a reclamation project. They have two large dredges working overtime in an effort to get as much of the drainage work done as is possible before cold weather sets in.

Flight 8th Aero Squadron, Pope Field, North Carolina

The courses of instruction started two weeks ago for officers and enlisted men were carried on very successfully this week. The course in Airplane motors which consisted of lectures and practical work in tearing down and re-assembling carburetors was engaged in enthusiastically by a large and well attended class of enlisted men. Upon the completion of this subject this class took up magnetos while a second class was formed for a course in carburetors.

The Officers of this field have voluntarily selected a course of training which consists of instruction in Artillery Observation and practical work on Airplane rigging. Different Officers lecture and instruct in subjects with which they are familiar.

The pilots of this field as well as the Observers are becoming thoroughly acquainted with the majority of towns and cities of this state. Numerous reconnaissance flights are being made each week for the purpose of keeping the pilots trained in cross-country work and also to encourage and aid in recruiting.

The Officers of this field were the honored guests at the "Carolina" Pinehurst, N.C., during the three days which marked the opening of this famous winter resort. Spectacular formations of five (5) De Haviland planes were flown daily during the "Sandhill" Fair, which formed part of the programme in the opening of this resort. Efforts were made during these flights in securing recruits.

Several very successful reconnaissance expeditions were carried out during the week and as a result the Club, dining hall, and Officers' quarters are practically filled with beautiful holly, mistletoe, and pines, all of which have been found on this reservation within a radius of two miles.

12th Army Observation Squadron, Douglas, Arizona.

An inspection of the Squadron and Field was made this week by Major Pratt and Lieut. Beaton from San Antonio, and Major Hefferman and Lieut. Harvey of El Paso.

The new 160 acre Airdrome is located three miles north of the city on the Douglas-El Paso Highway. It is the property of the Douglas Chamber of Commerce and Mines and leased to the Government. The two steel hangars have been installed. The portable buildings are all erected and at present the plumbers are at work. Within a couple of weeks everything will be completed on the field, and the enlisted men and supplies will be located permanently. At present the enlisted men and Officers are living in the barracks at camp Harry J. Jones.

HERE AND THERE WITH THE EDITORS

JAPANESE PLAN BIG AIR FLEET

Tokyo, Nov. 29.- The fact that Japan is backward in her airplane service is beginning to worry the public. Not only does Japan not have much of a force of aircraft but the Japanese are notoriously deficient as airmen, and hardly a month passes by without seeing one or more serious accidents.

It is reported that the Navy Department has plans for the building up of an air force consisting of 15 air corps, with 280 planes, this to be provided by 1923, and that thirty British airmen are to be engaged as instructors. Just how Japan feels about her deficiency in this respect is in an editorial in the *Yorodzu*, the principal exponent of anti-Americanism in the recent California question, which says:

"It should be noted that while America is engaged in naval extension and anti-Japanese agitation that nation is steadily increasing the strength of her air armaments.

The Zeppelin factories in Germany will shortly be transferred to the United States and it is said that super-airplanes will be constructed for freight and passenger service across the Atlantic. It is proper to regard the proposal as being due to a desire to contribute to the development of commercial flight in peace times, but there are not wanting signs of American ambitions in the air. As a matter of fact, America is building several super-seaplanes for trans-pacific service and several bombing airplanes have been detailed to the Pacific fleet. It should be noted that the day will come when America will control both the Atlantic and the Pacific as if they were small ponds.

"If America should go to war with another country, her seaplanes will play an important part. We should not overlook the fact that America is steadily increasing her air forces. She is audacious, but she is not careless about making preparations."

(Washington Herald 11/30/20)

THE U. S. AIR MAIL SERVICE

Brig. Gen. William Mitchell has contributed three very interesting and instructive articles to the Review of Reviews. The first appeared in the September number and described the Army's Air Service. The second, in the October issue dealt with the use of aircraft in naval warfare, and the December number contains the third which deals very thoroughly with our aerial mail service.

He says that the United States Air Mail service is the most extensive, regularly operated civil airplane service in the world.

General Mitchell begins his history of this service with its first experiment between Washington and New York City in 1918 and continues up to the present date giving every detail of its present development and the possibilities for the future. Types of planes employed; mileage; load and speed; cost as compared with railroad service; regularity of service; value of wireless equipment; weather conditions, and its part in National Defense are his special subjects in this article.

He says, "The predominant characteristic of airplane traffic is speed, and this is being developed to a greater extent every day".

The great utility of the Air Mail Service he says, "is not only in the carrying of mail but in showing what can be done in the establishment and maintenance of air routes throughout the country".

He closes with the following: "Great credit is due Second Assistant Postmaster General Praeger for establishing and maintaining a system which, if properly developed will give us more data as to continued use and operation of airplanes than any other existing system of its kind in the world".

(Review of Reviews, December 1920)

LONDON-PARIS SERVICE ENDS YEAR WITH FINE RECORDS

London, Friday Nov. 22. - The London-Paris "air express" closed its first year's service on August 25, with a record of 323,355 miles flown, at an average speed of 100 miles an hour. Of the 1,535 flights scheduled for the year 1,448 were finished, while 83 were prevented by weather and four by mechanical defects. Twenty-nine flights were interrupted by mechanical defects, but were later completed after repairs had been made.

Commenting on these figures, Harry Harper, technical secretary of the Civil Aerial Transport Committee, declares that it is perfectly clear that the percentage of efficiency for 1919-20, a fraction or so over 94, will in 1920-21 be very little short of 100.

HERE AND THERE WITH THE EDITORS (Cont'd)

And when speaking of the weather between London and the continent, he continues, "one should lay stress on the fact that the conditions for flying are probably worse on this particular route than almost anywhere else in the densely inhabited parts of the world".

We have it recorded now that in more than 300,000 miles flying, often in conditions which have imposed severe strain, on machines as well as pilots, only four journeys had to be abandoned through any mechanical trouble, while only 29 were interrupted temporarily owing to some engine or other defect.

Almost more encouraging than anything else, for the reason that it is an inherently favorable fact, is the demonstration now given of the resiliency of the air as a medium for high speed transport. These machines, which carried their loads of passengers, mails and goods, and are constructed of materials no stronger than wood, wire and fabric, have been rushing at 100 miles an hour for distances of thousands of miles, and yet so well-nigh perfect is the air as a highway, and so free is it from the shocks and grinding contracts of earth-borne traffic, that these light airplane structures - which would be shaken to pieces almost at once by any fast transit over the land - can work for a year, as they have done, on this London-Paris airway, and show an astonishing lack of really serious wear and tear.

(Seattle Daily Times 11/14/20)

RICKENBACKER IN RECORD FLIGHT

San Francisco, Nov. 28. - Eddie Rickenbacker, American ace, flew from Los Angeles to San Francisco today in three hours and ten minutes, said to be a record for a northward flight over the 341 miles. He bucked a heavy wind all the way and made a forced landing at San Jose for gasoline. A mark of three hours and one minute was set for the southward flight over the straight line distance yesterday by Lieutenant E. C. Batten, an army flier.

(N.Y. Tribune 11/29/20)

INTERALLIED COMMISSION ALLEGES TREATY VIOLATION IN AIRCRAFT COMMERCE

Berlin, November 23. - Eleven aluminum German airplanes sold to an American concern and loaded on a ship in Hamburg have been ordered held up by the interallied aeronautical commission, which alleges a violation of the Versailles treaty, it is officially announced here. German manufacturers claim the contracts for the airplanes were drawn since July 10, when, in their opinion the prohibition against the manufacture and sale of airplanes under Article 202 of the Versailles treaty expired.

The commission is understood to claim authority from the council of ambassadors in Paris to prevent commerce in airplanes until Germany has complied with Article 201, which directs the delivery of air material to the allies.

(Washington Star 11/25/20)

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE DECEMBER 17, 1920.

ANNUAL REPORT OF THE DIRECTOR OF AIR SERVICE

In presenting his Annual Report to the Secretary of War for the fiscal year which ended June 30, 1920, Major General Charles T. Menoher, Chief of Air Service, calls attention to the extraordinary conditions and the difficult problems with which the Air Service has had to deal, and which have demanded the expenditure of much of its appropriations.

He emphasizes especially the difficulty under which the Air Service has operated by reason of the uncertainty as to its future. Such uncertainty, inevitably, resulted in the loss to the Air Service of many valuable officers, who could have been retained had it been possible to offer them such opportunity as was eventually granted by the Army Reorganization Act of June 4, 1920.

The introduction to the report reads as follows:

"Preliminary to my detailed report, I invite your attention to certain extraordinary conditions and difficult problems that have confronted the Air Service, consumed much of its appropriations, and required a great share of the time of its officers for their solution.

"The Air Service during the year has suffered from the uncertainty of its future. Created in 1918 by Executive order under the authority of the Overman Act, it was July 11, 1919, before the Air Service secured legislative authorization for its existence as a separate organization, and this but a temporary grant until June 30, 1920. A similar temporary authorization for the retention, until the same date only, of its emergency officers, constituting 90 per cent of its commissioned personnel, was delayed until September 17, 1919. Such uncertainty has lost the Air Service many valuable officers who would have remained if it had been possible to offer them such certainty of opportunity as is granted by the Army reorganization act of June 4, 1920.

"The planning and submission of desired legislation, the study and discussion of this and other proposed legislation, the preparation and presentation to the War Department and to committees of Congress of data relative to Air Service expenditures during the war, all are conditions of the year extraordinary in themselves or unusual in their scope; to meet them properly required the Air Service to divert from its own immediate and important needs the greater part of the time of its most able officers.

"Prior to the World War the authorized commissioned strength of the Air Service was only 148 officers. The peace-time plans for the organization, training, operation, and supply of such a force were of no value in the study of these problems of today -- problems complicated by the failure to obtain authorization of the personnel that every reasonable plan indicated to be an irreducible minimum; by the necessity of accommodating Air Service stations, whose location had been determined by their availability for training to a strategical plan of national defense; and by the disintegration of the aircraft industry. Such problems require continual study, but the accomplishments of the year will furnish future guides, the lack of which has been a principal impediment to their solution.

"The preparation for and the proper storage of reserves of engines and airplanes; their parts, spares and accessories; reserve material, tools, jigs and dies for their repair and construction; aviators' clothing and all the varied articles of aeronautical equipment have been a burden upon our appropriations which has not been appreciated by those unfamiliar with the magnitude of this work. Civilian employees, paid from Air Service funds, have performed the labor; but commissioned officers have given the time necessary to formulate such plans as would make possible not only the preservation of this material but also its expeditious issue and use in case of an emergency.

"The disposal of large quantities of obsolescent and surplus material and the liquidation of war contracts have imposed a severe and an extraordinary burden upon Air Service appropriations and upon the time of its officers during the year.

"These activities are covered at length in my detailed report. To a varied extent, they will continue to present their problems and entail expenses during the coming years. Their magnitude during this fiscal year was deemed worthy of these introductory remarks.

"I present the subject matter of my report under the following general heads:

- I. Organization, Past and Present--Office, Director of Air Service.
- II. General Developments.
- III. Appropriations and Legislative and Executive Authorizations.
- IV. Air Service Accomplishments.
- V. Projects and Undertakings.
- VI. Recommendations.

THRILLING EXPERIENCE IN FREE BALLOON FLIGHT IN PHILIPPINE ISLANDS

Lieutenant W. E. Huffman of the 17th Balloon Company, Fort Mills, P.I., had a thrilling experience recently when the splice in the end of the cable gave way, setting free the balloon in which he and a passenger were making an ascent. Lieutenant Huffman's report of the experience follows in full:

"On October 20, 1920, at about 2:30 P.M., I ascended to 1700 feet with Private Murray, C.A.C., as passenger. After being up about 10 minutes I called the winch and instructed them to haul down to 1000 feet, intending to fly at that altitude for a few minutes and descend. We felt a slight jerk as the balloon started down, and I remarked to the passenger who was on his first flight, that in a few minutes there would be another slight movement of the basket, indicating that the winch had stopped hauling down. That "moment" never came. I had just looked at the altimeter and noted that we were almost down to the 1000 foot mark, when I heard something snap in the direction of the metallic vee, and turned around to see what had caused the noise, and after one hasty glance reached for the valve cord. What I saw at first glance was the nose of the balloon raising rapidly and the legs of the metallic vee hanging loosely, and I knew that we were loose. After opening the valve I looked again to see what had given away, and found that the splice in the end of the cable had pulled out. I instructed the passenger to undress and put on a life preserver and to see that his chute harness was securely fastened, and I held the valve open with one hand and removed most of my clothing with the other. The balloon seemed to rise slowly at first, the rate of ascent increasing as we went up. When we reached 4000 feet, I released the valve and got everything that could be used as ballast ready to throw over when the time came. By the time I had finished checking up the ballast, we reached 6000 feet and were still rising rapidly and I again pulled the valve cord. With the pulling of the valve line came the sound of tearing fabric, and the hiss of escaping gas, and we looked up and saw a 2 foot tear in the side of the balloon.

"The reinforced opening in the side of the balloon through which the valve line passes had given away, and the valve cord tore down through the side of the envelope. Once more we examined our parachutes and looked to see if there were any boats in the vicinity of the place we would be likely to land in case we jumped. I was afraid that with a hole already started in the envelope, the rapidly increasing internal pressure might cause it to tear still larger and with the small amount of ballast we carried, a safe landing could not be effected.

"We were now up 7500 feet, and throwing over some paper, we found that our rate of ascent had checked, and in a few minutes we reached an equilibrium at 8000 feet. We checked up our location and wind direction and estimated that we were about two miles from Corregidor, over Manila Bay, and drifting towards Cavite. Then our descent began and we descended very slowly and only about half a bag of ballast had been used when we reached 1000 feet. During the descent we noticed two flying boats circling us far below, and it was a relief to know that when we did hit the water there would be some one near to pick us up.

"At 1000 feet we began to drop very rapidly and almost all of the ballast had been disposed of when we struck the water. The landing would probably have been a bit rough for a land landing, but we felt very little jar as the basket struck the water, and rose to about 100 feet. When we started down the second time I threw the rest of the ballast, and just as the basket touched the water I pulled the panel partly off, and with the aid of the passenger cut the basket suspension ropes. The balloon still contained considerable gas, and with the weight of the basket released, shot back into the air, drifted a few yards and collapsed upon the water. The basket was equipped with life preservers and was non-sinkable, but had gotten turned up side down while we were cutting it loose. However, we got a hold of it and held on until we were picked up by Lieutenant Richter, in an HS-2-L flying boat, which rescued us a few minutes after we landed."

STORY OF THE 8TH AIRSHIP COMPANY AT CAMP BIERNE

The 8th Airship Company arrived at Camp Owen Bierne, El Paso, Texas, November 16th, 1919, from Brooks Field under the command of 1st Lieut. Byron T. Burt, with 2nd Lieut. Harold K. Hine as his Junior Officer.

They found a very much run down camp, which had been built in 1916 by the Kentucky National Guard, and work just starting on the hangar. Every man worked with a will, making his quarters as livable as possible, also helping the Construction Company to erect the hangar, which was completed, all but the floor, in March 1920. The operation balloon was operated each month to give the enlisted personnel all the Air Service training possible. 1st Lieut. Don L. Hutchins joined the command relieving Lieut. Hine February 25, 1920, and 1st Lieut. John W. Shoptaw joined the command on April 13, 1920. The greater part of the spring and summer was devoted to work about Camp with a view of making living conditions better and in making preparations for the time when they would have a floor in their hangar and an airship would arrive.

On May 21st, 1920, the first shipment of the Airship C-1 was received with great rejoicing by the entire Command. Work was immediately started on the airship's car, which had seen considerable service in the Navy during the World War. By the latter part of July they saw a Construction Company at last working on the hangar floor. Every man in the organization took a new lease on life, for they were able at last to look forward to the day when they could rightfully call themselves an Airship Company. Supplies were also arriving with a regularity which raised the morale of the Company, and several of the very best men of the organization re-enlisted.

The erection of the ship was started August 30, 1920, and from that time on rapid progress was made toward the desired end - to fly the first airship in the southwest. Lieutenant Burt was ordered on the 21st of August to participate in the National Balloon Race held at Birmingham, Alabama, leaving Lieut. Shoptaw in command.

When the floor was finished and they had a chance to unpack the equipment, they found a great many things missing and different parts made for different types of ships which would take a great deal of time to order and have replaced. Therefore, some very ingenious appliances were developed, thanks to the engineering officer of the 104th Aero Squadron, who swore that they used at least five condemned DeHavillands in the erection of one airship. The inflation net covered less than one-half the bag, the rest was held down by gripes and ropes tied to beams in the hangar. The fins were made for a C type ship and they had a C type bag equipped for D surfaces; therefore the patches or fin brace wires that fitted these were made up as near to specifications as possible. There were no good ladders available so some very make-shift ladders and platforms were constructed and two pieces of cable stretched from end to end of the hangar with pulley and boat-swains chair attached which allowed freedom of movement; in fact too much freedom of movement horizontally for the comfort of some of the crew required to work on it.

After it had been weighed off and free-ballooned a great many times in the hangar and numerous changes made, the ship was at last pronounced ready for a trial flight which took place at 5:30 A.M., Sept. 27, 1920. When the command was given "Let go", her tail went up until she rode 8 deg. nose heavy instead of the

normal, 2 deg. Lieut. Shoptaw, who was commander and altitude pilot "gave her the gun" but she would not pick her nose up. Lieut. Hutchins steered around two fifteen foot sand dunes but hit the third. The motors were stopped and the drag rope dropped allowing the ship to free-balloon with the landing party in hot pursuit. They caught her after a short run but it was discovered that one of the propellers had picked up a rock and thrown it through the bottom of the bag. The hole was kept plugged by Master Sergeant Chapman and Staff Sergeant Barnes, alternately by the use of their fore fingers until the ship was put in the hangar and the hole patched. Minor adjustments were made and three very successful one and one-half hour trips were made the next morning. On one of these trips Col. Glover, Chief of Staff to Brig.-General Howze, was a very enthusiastic passenger, speaking well for the possibilities of lighter-than-air craft.

September 29th was an unlucky day for the Airship C-1. A two hour local flight was made which proved the ship was flying perfectly, answering to controls readily but while out a strong cross hangar wind came up, and in maneuvering into the hangar, with the wind on the broad side of the ship, one of the forward handling lines broke, pulling the men on the other lines through the sand burrs and over the sand dunes at a terrific rate. Only the quick and accurate commands of Lieut. Shoptaw and the instant action of the men saved the ship from a free-balloon trip with Lieut. Hutchins as pilot, but in saving the ship the rudder and part of the stabilizer was smashed as the ship stood on end, using it for a pivot to turn on. After some difficulty the ship was put in the hangar and repair work started in earnest as they were due to fly for the horse show at Fort Bliss the following Monday and Tuesday. They worked. One proof of it was when the Chief of Staff came over at eleven o'clock P.M., October 3, 1920, and found all hands on the job, even the ladies of the Post diligently sewing fabric for the rudders new covering. The ship was unable to pass in review for General Dickman October 4th, but flew over the horse show and city of El Paso October 5th. While in flight a part of the stabilizer which was thought undamaged gave away in the air, necessitating a free-balloon landing. However, the ground crew arrived in trucks in time to save her from a rip landing and maneuvered her back several miles through sage brush to the hangar. The stabilizer was repaired during the next two weeks.

Lieut. Burt returned October 8, 1920, but only for the purpose of clearing the station in preparation for transfer to Langley Field, Va. He left Oct. 22, 1920. Since October 1st, the ship has been flown to several neighboring towns and through mountain passes, experiencing no difficulty in operating (lighter-than-air-craft) in this locality except from cross hangar winds and, owing to the fact that the ship was designed for flying at sea level and that it is now flying at an altitude of 4,000 feet above sea level, which, of course, causes a great decrease in the lift of the ship.

We have had ideal flying weather this week, and the C-1 has flown every day except Tuesday, which was spent in unloading a shipment of Hydrogen Gas cylinders. On Friday the ship had as passenger Brig.-General Howze, who inspected border stations during the flight, the motors being throttled down and the ship nosed into the wind, allowing it to stand still with reference to the Camp. The General seems well pleased and very enthusiastic over the possibilities of lighter-than-air-craft.

PHILIPPINE PLANES FLY FOR
CHINESE FAMINE SUFFERERS.

The first part of the week saw our HS2L Boats being tested and placed in actual flying condition, preparatory to the two flight days that were then to be held on Wednesday and Thursday. These two days were set aside as the Air Service's donation to the Chinese Famine sufferers, and flights for officers, soldiers and civilian employees were given at ten pesos each. Three H-Boats and two No. 9 seaplanes were pressed into service. The first day netted a total of eighty-one rides, or a money receipt of eight hundred and ten pesos. There would have been more had not the balloon, which was also doing its share, broke loose and drifted at eight thousand feet in the direction of Cavite. Two H-Boats were immediately dispatched to the rescue, as Lieut. Huffman of the 17th Balloon Co. had in the meantime brought his big bag down to the water. Both Lieut. Huffman and his passenger, a soldier in the Coast Artillery, were picked up from the

water by Lieut. J. Paul Richter, who flew an H-Boat to their rescue. Lieut. Richter had with him at the time two other passengers; however, this did not stop him from taking off with all five, and flying back to Corregidor.

The second day saw one hundred and forty-one passengers taken up, it having been demonstrated that four passengers besides the pilot could be safely carried. The total amount of money received was twenty-four hundred pesos, which is to be donated to the Corregidor China Famine Fund. This is the best donation from any garrison on the Post.

Preparations are being made for a flight of three ships to Zamboanga next Monday. All pilots are looking forward with great interest to this trip due to the fact that many points of interest among the Southern Archipelago will be touched. Zamboanga is about five hundred and seventy-five miles from this station, and the amount of gasoline needed will be about three thousand gallons. Should the trip that far be uneventful, it is possible that Jolo and the north coast of Borneo will be listed in the itinerary. Pilots are gambling with one another to see who will be the one to take the Sultan of Sulu for his first ride in the air, should the latter part of the trip be consummated.

FREE BALLOON FLIGHT AT BROOKS FIELD

On November 13, a free balloon flight was made at 10:00 A.M.

Pilot:	Edward L. Fersten	1st Lt. A S
Passengers:	Asa J. Etheridge	1st Lt. A S
	Roland L. Davis	1st Lt. A S
	Guy McIntyre	Staff Sergeant, 7th Balloon Co.
	Sep. A. Balzart	Staff Sergeant, 16th Airship Co.
	John D. Feyen	Staff Sergeant, 6th Balloon Co.

Balloon landed at Hancock, Texas, at 12 noon, November 13th.

156 FLIGHTS AT MARCH FIELD

Forty planes from this field made 156 flights during the past week. Total flying time consumed 86 hrs. 50 min.; approximate mileage, 6,663. Preliminary instruction required 37 hrs. 45 min.; advance instruction, 8 hrs. 45 min.; and miscellaneous flights 40 hrs. 05 min.

MARCH FIELD REPORTS NEXT RACE FOR PULITZER TROPHY TO BE HELD IN CALIFORNIA.

Southern California will be the scene of the next air race for the Pulitzer trophy according to a telegram from Lieut. C. C. Moseley, army pilot, who won this event on Thanksgiving Day at Mineola. Moseley's home is at Long Beach and the 1921 event will doubtless be held under the auspices of the Aero Club of Southern California.

CATCHES A HAWK IN LANDING GEAR

Lieut. R. J. Kirkpatrick, flying instructor at March Field, returned Friday from cross-country flight with a large hawk entangled in the landing gear of his plane. He reports that the bird soared along with him for about a mile making nose dives from time to time at the wings of his plane. It finally crashed into the landing gear and became lodged between the wheel and shock absorber. Upon landing and taking his catch from the perilous position both wings of the hawk were found to have been broken.

PROGRESS REPORT, ABERDEEN PROVING GROUND

The work for the week consisted of eleven (11) bombing, five (5) camera obscura, two (2) photographic, one (1) meteorological, and thirteen (13) miscellaneous flights. We dropped twenty (20) bombs with a total weight of 6500 lbs.

DEATH OF CADETS SIGMUND SZYMANSKI
AND JAMES A. TURNEY.

The commanding officer at Kelly Field sends the following report of the death by an airplane accident, of cadets Sigmund Szymanski and James A. Turney.

Cadet Sigmund Szymanski and Cadet James A. Turney were instantly killed at Kelly Field on November 22, 1920 at 10:10 A.M. Cadet Szymanski was assigned to duty as a flying instructor. He had had about two hundred and fifty hours in the air and was considered a very competent pilot. Cadet Turney had been recommended as being ready for solo work but as the officer who tests cadets was not able to take him up that day, Szymanski was going to give him some time. Turney took off with Szymanski in the rear seat and immediately pulled the ship up into a very steep climb. When the plane had reached an altitude of about one hundred and fifty feet, Szymanski was seen to reach over into the front seat and touch Turney on the shoulder. Presumably, he was signalling to Turney not to climb so steep. Turney turned around a little in his seat and the nose of the plane went up still higher. By this time the plane was practically "standing on its tail". The plane fell off on a wing and struck the ground nose first with the motor full on. The plane immediately burst into flames so that it was impossible to get the men out. The remains of Cadet Szymanski were buried in San Antonio. Lieutenant John H. Wilson accompanied the remains of Cadet Turney to Berkeley, California. During the funeral services of Cadet Szymanski the usual "V" shaped formation with one vacant place was in the air.

INTERESTING EXPERIMENTS BY GAS DEPARTMENT AT
OMAHA BALLOON SCHOOL

The Gas Department has been making some very interesting experiments in the production of a new type of Electrolytic Cell for the manufacture of Hydrogen Gas, and have had some very gratifying results. Some of the principles involved represent a wide departure from the standard practice but their feasibility has already been demonstrated sufficiently by the Department at this place to warrant the construction of an actual size cell that will be put to a very thorough, and exhausting test.

Good progress has been made in the production of a new gas valve. The one now undergoing test has repeatedly released the gas of a standard container, charged to a pressure of two thousand pounds per square inch in sixteen seconds time and without any choking or freezing.

DEPARTMENT OF COMMERCIAL AVIATION

UNITED STATES

MUNICIPAL LANDING FIELDS, AND AIRPORTS

"Of all the problems facing commercial aeronautics today, the need for flying routes and landing fields is the most acute and immediate. Until these are provided, not much progress can be made in the solution of other aspects of the general problem. If these facilities are provided, commercial transportation by air will follow more rapidly than we can now realize."

This statement gives, briefly, the reason for being of an interesting volume, "Municipal Landing Fields and Air Ports", recently edited and compiled by George Seay Wheat, assistant to the General Manager of Wright Aeronautical Corporation. The book has been written, Mr. Wheat states, in an effort to present to the public in concrete form the entire problem involved in the creation and administration of flying routes, landing fields and airports.

General Mencher, Chief of the Army Air Service, and Captain Craven, Director of Naval Aviation, have written chapters for the volume in which they have emphasized the need for air lanes, landing fields and airports, if the development of aviation is to proceed along the lines that will insure its efficiency.

The book, which is published by G. P. Putnam's Sons, is profusely illustrated. It contains a map and in an appendix gives a list of the landing fields on file in the office of Chief of the Air Service.

AMERICAN BUILT AIRCRAFT A SUCCESS

Such races as that for the Pulitzer trophy on Thanksgiving Day would fail of their purpose if they did not provoke analysis and excite interest for a long time afterwards, and the event in question is a signal success along that line, for no end of discussion has resulted as a consequence. The consensus of opinion seems to be that planes and engines made in the United States are a success. With this promise to start upon come the divergent opinions. Which proved to be the most successful? Was plane design or engine design paramount? All of which brings us back to the old query, "Can a man fly a barn door if his engine be good enough? The engine men give "ayes" galore and the plane men with equal fervor shout "no". One thing in this connection seems to be impressive as a result of the race, and that is that there seems to be today no limitations to the size of aeronautical engines for racing. The parallel to this is seen in the old days of automobile racing when engines of any size were allowed, with the result that engines which were of no service except for racing were developed, the consequence being that little or no information of practical value was gathered from these contests. As soon as automobile racing was carried out with a limited cubic capacity of engine, racing began to make real contributions to the automobile because it proved that smaller engines could be built which were not only better but even more powerful than the larger engines of the older day. The engineers were obliged to exercise their ingenuity to make engines that would stand up and still be light; springs that would not break and still give easy riding; transmissions and axles that were easy running and not over-weight. The result is easily seen in our best automobiles of today as compared with those of a decade ago. If aeronautical engineers could profit by the experience of the automobile and develop planes and engines with the greatest practical value and race them, the game would be further-ed.

To illustrate, the cubic capacity of the little E 180 H. P. Wright motor, which took the Vought around the course at a rate of 143 miles per hour was 718 cubic inches. The Thomas Morse (Wright 300 H.P.) was 1,125 cubic inches, and the winner of the event, the Verville-Packard, had an engine with a cubic capacity of 2,225 inches. The Morse made the course at 168 miles per hour, while the Verville ground out a pace of at least ten miles more per hour. But to get back to engine space: the Vought with engine 700 cubic inches was driven at 143 miles. When the engine capacity was increased fifty per cent approximately, it was possible to increase the speed by only twenty-five miles per hour, but to get a speed even ten miles faster it was necessary to increase the cubic capacity of the engine 100 per cent.

In this is food for thought to all who concern themselves with the future development of aviation.

CHINA.

AIR SERVICE TO BE INAUGURATED BETWEEN PEKIN AND SHANGHAI.

According to a Chicago Tribune cable appearing in the Little Rock Gazette of 12/1/20, official sanction has been given by the Pekin Cabinet for the inauguration of an air service between Pekin and Shanghai. There will be intermediate stations at Tsinau, Suchow and Nanking, where stops for the night will be made. For the first six months the airplanes will transport only mail, but after that they will carry passengers and express.

SCHEME FOR EQUIPMENT OF CHINA FOR COMMERCIAL AVIATION.

The Airplane of November 3, is authority for the following: "It would appear from accounts received that the military party in China is rapidly gaining complete mastery of the country. The following with regard to the aeroplane order under the Handley Page and the Vickers contracts is indicative of the situation.

"The contracts under which these machines were ordered provided a scheme for the equipment of China for commercial aviations purposes and for the training of aviators, upon the condition that the machines and aircraft should not be used for military purposes. This condition was disregarded to some extent in the recent fighting, when some of the machines were used but not to any great extent. The

THE FIRST BOMBARDMENT GROUP UNDER INTENSIVE INSTRUCTION

The members of the 1st Bombardment Group are now under intensive instruction at Kelly Field, Texas. The course will consist of Artillery Adjustment, Aerial Gunnery, Buzzer, Motors and Planes, Infantry Contact, Aerial Navigation, Photography, Radio, Tactics, Pursuit Tactics, Meteorology, Court Martial and Squadron Administration. The actual time consumed in class-room instruction will cover 88 hours.

In addition to the above, the members will be required to put the theory learned in the class-room in actual practice before the course is entirely completed.

When the First Bombardment again goes on Active Border Duty Major Ralph Cousins, in command of this outfit will have not only a well organized group, but it will be prepared to act as either a Bombing or Surveillance Group.

All Officers will be required to familiarize with the theory of Army Corps Observation. They will be given special instruction along these lines in connection with a new Miniature Range where problems will be assigned.

MOTION PICTURES PLAY AN IMPORTANT PART IN THE ARMY

Motion Pictures play a mighty important part in Army posts these days, especially when the markets afford so many pictures of educational value, which will fit in splendidly with the program of vocational training; of course, the popular types of motion pictures also offer excellent forms of recreation and are quite as necessary as instructional pictures.

The Surgeon General of the Army during the war produced a number of wonderful motion picture films. Those who have seen "Fit to Fly", "Come Clean", etc., cannot help but appreciate their value. Men think twice before they leap after seeing pictures such as above quoted.

Mr. Burton Holmes of the Travelogue Fame, whose main offices are in Chicago, has the most interesting collection of travel pictures combined with lectures taken in practically every nook and cranny on the globe and a thousand and one other subjects. His collections are probably the greatest ever assembled by anyone.

The Pathe Company of Jersey City and the Universal Film Company of New York City are noted for their wonderful collection of current events, industrial and educational subjects. While the Prizma Company of New York have a very magnificent collection of travel pictures produced in actual colors.

During the war the Signal Corps produced millions of feet of motion pictures depicting all events in the A.E.F., as well as numbers of subjects produced in this country, such as "The Making of a Soldier", etc. These pictures can be secured through the War Plans Division of the General Staff. Make it your business to appoint someone on your Post to give this matter their personal attention. Success lies in your hands and you have an opportunity of doing important work on your Post. There have been a number of industrial films produced by the Air Service overseas which have recently arrived. These films are now being assembled and in the next issue of the weekly news letter it is hoped to give a complete list with a short description of these films. In this connection it is believed there are a number of films on the assembly and operation of the Liberty Motors and the construction of airplanes.

All motion picture companies will be mighty glad of the opportunity to furnish pictures for your men. This service, up to the present time, has been absolutely gratis. If you cannot get the picture you want through the local exchange write directly to the manufacturer and by all means secure a complete list of the films he has in storage.

British Legation protested against this, partly to safeguard the British aviators, and also with regard to the violation of the written contract. Later General Chang Tso-lin gave orders that all the aircraft material at Peking was to be transferred to Mukden, and troops were quartered at the airdrome barracks to enforce this. Some 30 airplanes are now being transported together with the plane from the sheds, including the electric lighting plant."

ENGLAND.

THE NEEDS OF CIVIL AVIATION

In a series of articles under this head the Aeroplane is discussing editorially at length the needs for civil aviation, and the ways and means of encouraging its development in the United Kingdom. "The young department of Civil Aviation", says the Aeroplane of November 3rd, "has, with the best intention in the world, prepared rules and regulations, propagandist sub-departments, Air Conferences, inspectors, light-houses and all sorts of good things which do not seem to be appreciated as they should be by the aeronautical community. And the aeroplanes, whose operations should have been encouraged by this luxurious feeding, seem to have become submerged". The writer deplures the fact that the Amsterdam-Rotterdam-London postal and passenger service has been suspended because of weather conditions, at the same time pointing out that perfectly gorgeous days are allowed to go by in which there is no flying at all either at Cricklewood or Croydon. "Surely something is wrong", Londoners are saying, "when such an important service as that between England and Holland is stopped on the feeble excuse that the weather is too bad in the winter, and when no flying is to be seen in the best of weather". In this regard, they were better off before the war, when one could always see plenty of flying at Hendon, or Brooklands any week end, wet or fine.

It is contended by critics of present conditions that, while the Department of Civil Aviation costs £500,000 per annum, the sole and only useful service it performs is to regulate the Cross-Channel air lines; for there is no other civilian air traffic in the country, it is stated. According to the report the Cross-Channel air lines carry, at most, 10,000 passengers in the year. Therefore it costs the nation by way of the Department of Aviation, £50, to "regulate" each passenger across the Channel, though the passenger only pays on an average a fare of £10.

It is pointed out that such a criticism is unjust, because the organization which has been set up could equally well regulate 100,000 or 1,000,000 passengers per annum; but as even the lower figure is not likely to be touched for some years to come, the contention of the critic is true for the moment, at least. It is suggested, therefore, that, in its own interests, the department would do well to make some sort of a show of activity in other directions, and one of the most obvious means of such expression would be that in which the public could gratify its interest in the modern sport of flying.

In setting forth at some length the considerations that should emphasize the need for the development and encouragement of civil aviation, the article closes with the following statement, the merits of which cannot fail to present themselves to the politicians of other countries than the United Kingdom:

"At present not a vote is to be won or lost over aviation. Whether we hold the leading position in the air or not will make no difference in the election of an M.P. or in a division in the House. But, when once the public is properly educated as to the uses of flying, and when once the shop-keeping business man has been taught the benefit of air transportation, then aviation will be a vote-catching proposition. And when that happy day arrives the Department of Civil Aviation will be able to demand what vote it likes, and to raise its own pay to a really handsome sum. So it is to everybody's interest that the Department should wake up."

SQUADRON NEWS

March Field, Riverside, California.

March Field on Wednesday of the last week in November entertained as honor guests, congressional members of the naval affairs committee, some twenty-five of whom visited this field enroute to Camp Kearney and San Diego. Escorted by naval officers the congressmen were engaged in an extensive inspection of all naval bases along the Pacific Coast.

Of chief concern to the congressional party, so it was reported, is the selection of a suitable base, "somewhere on the Pacific Coast", for the giant navy dirigible R-38 which is now building in England. Rumor had it that March Field was a probable site for the erection of a hangar to house the big gas bag. None of the party, however, would commit themselves, declaring that a report of their findings would be made at a later date from Washington.

Escorted by Major B. K. Yount, commanding officer of the field, the congressional party arrived just in time to enjoy the Thanksgiving dinner party which was held in the Officers' Club Wednesday noon. Dancing and music provided entertainment for the 175 present, between courses. A brief aerial review of various type ships used at this field followed the dinner.

Members of the party were: Senator L. H. Ball and Mrs. Ball of Delaware; Senator H. W. Keyes, N.H.; Senator Thos. J. Walsh, Montana; Congressman Fred A. Britten and Mrs. Britten of Ills.; Congressman L. P. Padgett, Tenn.; Congressman David J. Riordon, N.Y.; Congressman A.E.B. Stephens, Ohio; several secretaries to the above named members of the committee and the following named naval officers - Admiral R. E. Coontz, Rear Admirals Capps and Parks, Capt. Tomb, Lieut. Commander Hill and Lieut. Coontz.

Capt. O. J. Rose, former member of the Royal Flying Corps has been made instructor in aeronautics at the Los Angeles High School.

Cadets at this school will start dual instruction the first of next week. There are about 40 in the class with nearly a hundred student officers some of whom have advanced to the solo stage.

Eight naval officers and ten enlisted men from the Naval Air Station at San Diego are scheduled to arrive at this field Monday for flying instruction in scout planes.

Three days after Christmas an aerial detachment from the Pacific fleet will leave San Diego for the Panama Canal and return. The round trip will mean 6,500 miles of flight. The number of planes and personnel of the flight has not yet been made known.

Carlstrom Field, Arcadia, Florida.

A good number of the Navy fliers have already arrived for their pursuit course. Lieutenants Feckler and Cornell motored down from Jacksonville on Saturday. It is considerable of a thrill for these officers when our implacable flight surgeon gets them in his office for the "609". We give them our best wishes.

A "vought" bi-place plane has arrived and is assembled. It will be used in pursuit training. Every one seems very pleased with the way it flies; Captain Royce tried it out first, and showed the field a few new things for the bi-place assortment.

Brooks Field, San Antonio, Texas.

Brooks Field has some winners in the squared circle, Bohinc defeated the fly weight champion of Texas in a six round go. Frankie MacFarland also defended his title of light-weight champion won at St. Louis last summer.

On Sunday, the K of C team defeated the Brooks Field Boys in a hard fought game, score 7 - 3.

Examinations were held for Staff Sergeant during the week, twelve passing with high grades.

12th Observation Squadron, Douglas, Arizona.

During the State Bankers Convention which was held in Douglas, Arizona recently, an "open house" was planned for the visiting Bankers, wives, and friends.

One of the Flight's D H 4 B's was completely equipped with bombs, radio, guns, etc., and was demonstrated on the ground. The nomenclature of the plane and equipment was explained to the visitors by the Squadron Commander, Lieut. E. D. Jones. During this time, another plane piloted by Lieut. Douglas was working a test flight over the Airdrome to show the Bankers the speed at which an airplane traveled.

The last demonstration of the day was a bombing exhibition from 3,000 feet with dummy bombs. Lieut. Paul, piloted, and Lieut. Milyard, bombed. The target was a mile from the spectators but the shots were visible and out of eight bombs carried aloft, two were direct hits, and the remainder close enough to damage the target had the bombs been of serious nature.

Among the spectators was Brigadier General Malin Craig who commented favorably on this demonstration.

The three old planes of the flight have at last been put on the "Cooperstown" list and are now at Kelly awaiting orders for Dallas, Texas.

Four of the seven new D H 4 B's have been ferried to Douglas by members of this flight, and the other three are on their way here.

While ferrying one of the old planes to Kelly Nov. 21st, Lieut. Alex. Pearson Jr. and Lieut. Chas. Douglas, we believe, made record time. The trip was made in 5 hours and 31 minutes flying time and with but one stop between Douglas and Kelly and that was at Marfa. At 10:10 they were off for Kelly and at 12:41, Mountain time, they were on the Kelly Airdrome.

Soon after taking off at Douglas, a favorable wind was found around 10,000 feet and when in the vicinity of El Paso, they saw they had gas enough to make Marfa, so continued. The same altitude was reached between Marfa and Kelly.

2nd Lieut. Clarence E. Shankle has reported to this station for duty. He was formerly attached to the 20th Bombardment Squadron at Kelly Field.

A. S. Troops, Aberdeen Proving Ground.

Vocational Training was conducted Friday with all officers acting as instructors. There was also drill and athletics for the enlisted men.

Three planes were tuned up to enter the race on Long Island and the pilots had received the numbers for the planes, but at the last minute the Commanding Officer of the Ordnance Proving Ground refused to allow the planes to go.

The 253th Aero Squadron won the basketball championship in the Army and Navy League last fall and are now practicing to get another championship team in line.

The photographic department made several pictures for the Ordnance of some craters down on the reservation. These craters were made by powder explosions, testing large quantities of powder for the Trojan Powder Company.

France Field, C. Z.

Interest during the past week centered in the firing of the record pistol practiced by the enlisted men. To most of the men it was a distinct novelty, as only a small percent of the command have ever fired the service pistol. A few of the older soldiers and some of the new men are having an interesting competition for the high score of the practice. Staff Sergeant Adam Kralik, Staff Sergt. Ananias Nikulaine, Corporal Walter F. Beer, and Pvts. Gustav G. Ploomstrand and Frank Enick have shown some excellent shooting and are likely to qualify high enough to qualify for a trial at the expert course next week.

There is also hot competition among some of the officers in the practice shooting. Major M. F. Harmon Jr., has shown the way thus far with Capt. Thomas Boland a close second. The officers will shoot their record scores next week and a few have dim hopes of being lucky enough to qualify as experts.

An attempt to carry out an Artillery Reglage Mission on the Pacific side of the Zone was made on Friday for the first time and was a complete success.

First Lieut. Rowland C. W. Blessley, pilot, and 1st Lieut. Harlan W. Holden, observer, conducted the mission at Fort Amador with a battery of twelve inch motors. Three trial and eight record shots were fired. The fourth record shot was a direct hit on the small towed target at 9000 yards. The radio telephone worked excellently, sensings being given the Battery Commander as the shells hit the water. The greatest success of the mission from the view point of the Air Service, was the silencing of the skeptics among the Coast Artillery officers, many of whom had strong arguments against working with an airplane.

Headquarters Kelly Field, San Antonio, Texas.

Lieutenant Hiram Sheridan had a forced landing at Bryan, Texas while piloting a plane from the Aviation Repair Depot at Dallas to Kelly Field, Texas. Lieutenant Stanley Smith attempted to take a new motor air pump to Lieutenant Sheridan but lost his course and ran out of gas just a few miles before he reached the plane. Lieutenant Smith ran through several fences but finally came to rest with the plane in fair condition except an entering edge on the lower wing. Having no more pilots available on account of the shortage of officers it was decided to send a couple of mechanics to repair the damages. Lieutenant Sheridan flew his plane back to the field; and a pilot will be sent for the other as soon as weather permits.

Training of cadets will be appreciably slower in the future because of the adoption of a policy of having only commissioned officers do instruction work. In the past the best of the cadets were assigned to duty as instructors after finishing the course.

Lieutenant Stanley Smith has been ordered to Post Field, Fort Sill, Oklahoma. This officer has been radio officer of the First Pursuit Group for nearly a year. He is a graduate of the Radio School of Columbia.

Lieutenant Joseph W. Burton is to be discharged in the near future. He has been with the 464th Construction Company.

Lieutenant Clifford H. Billett is being discharged. Lieutenant Billett has been photographic officer of the Wing and has received an offer from the government to continue in experimental photographic work at McCook Field in a civilian capacity.

We wish to correct an error that occurred in last week's news letter. We announced the marriage of Lieutenant Sam Frierson and Miss Winnettinos. This should have read Miss Winette Jones. Our apologies to Lieut. and Mrs. Frierson.

8th Aero Squadron, McAllen, Texas.

While this item of news was late in arriving, readers of the News Letter located in the Magic Valley will, no doubt, still be interested in it.

Armistice Day was celebrated throughout the Magic Valley of the Lower Rio Grande at Brownsville, Texas, and special features staged in honor of President Elect Harding. The Eighth Aero Squadron furnished a five plane formation which flew up and down the line of parade to the delight of the spectators. The formation maneuvered from a five plane Vee to a four plane diamond thence to a three plane Vee. Colored Very pistol flares added to the event and made it more realistic.

The following letter from the Brownsville Chamber of Commerce shows the appreciation of the citizens of that part of the country:

Brownsville, Texas, November 20, 1920.

My dear Sir:

I want to take occasion to express to you the deep appreciation of this organization and the citizens of Brownsville and the valley generally, for the splendid part played in the Armistice Day celebration at Brownsville, November 11, 1920, by the Eighth Aero Squadron. The Squadron contributed greatly to the entertainment of the great crowds which gathered here, and I am sure to the especial pleasure of our distinguished guest, Senator Warren G. Harding, the next President of the United States.

We were more than glad that you were able to join with us in this celebration, and while I feel that no word of mine can add to the appreciation and esteem

in which the Squadron is held by the people of the Valley, yet I want to say that the Brownsville Chamber of Commerce deeply appreciates your magnificent contribution to the festivities of the day.

BROWNSVILLE CHAMBER OF COMMERCE,
J. H. Hott, Manager.

Again the Squadron shrinks in personnel as Major Earney, M.C. leaves us for discharge, and no replacement. Lieut. Lawrence P. Hickey was ordered to March Field, Calif. for pilots training and Lieut. Gerald E. Grimes goes to Bolling Field, Washington, D.C. This with a prospective transfer will leave Flight A with only four officers. A year ago we had fifteen officers. If we shrink much farther there will only be the shadows of the old personnel left in command.

Cupid shot his little arrow and hit the double heart mark, in the wedding of Lieut. Gerald E. Grimes and Miss Emily McManus of Houston, which took place at Sacred Heart Church, Houston, Texas, on November 23rd, 1920. This is the third wedding of "A" Flight, 8th Aero Squadron in the past six months. The magic wand of the little heart smasher has worked havoc with the whole Air Service in the last few months.

1st Surveillance Group, Fort Bliss, Texas.

1st Lieutenant DeShields reported to this Airdrome for duty.

Wednesday "A" Flight 104th Aero Squadron carried on Artillery adjustment with the 82nd Field Artillery. Two problems were scheduled. First problem for Air Service Observer and second problem for Artilleryman. Lieut. Smith of 104th Aero Squadron was unable to check in with radio station, therefore the reserve plane carried out first problem by wireless phone. Lieut. Bettis of 104th Aero Squadron was observer. Problem was successful. Second problem was called off as Artilleryman was unable to check in with radio station.

On Tuesday and Friday Liaison Exercises were held with 7th Cavalry. The entire regiment was assembled at Regimental Headquarters which was located at North-east corner of Flying Field and the plan of liaison was discussed by Commanding Officer. Each squadron of Cavalry was given a sector to cover and one squadron held in reserve. Different means of communication were carried on throughout the problems and Regimental Headquarters was kept busy with dropped messages and radio from both Command and Contact planes.

The following officers carried out the work on Tuesday's problem:
Command plane - Lieut. Smith, observer, Lieut. Bettis, pilot. Contact plane; Lieut. Liebhauser, observer, Lieut. Hinkle, pilot. Liaison officers at Regimental Headquarters were Lieutenants Bouquet and Burgess.

The following officers carried out the work on Friday's problem:
Command plane - Lieut. Burgess, observer, Lieut. Berry, pilot. Contact plane - Lieut. Bouquet, observer; Lieut. Liebhauser, pilot. Liaison officer at Regimental Headquarters were Lieutenants Bettis and Smith.

Balloon School, Fort Omaha, Nebraska.

Recruiting continues at an unabated speed. Five men were recruited and accepted for the Lighter-than-air. Several more were accepted for the Heavier-than-air, and other branches of the service, and the two Balloon Companies, the 9th and 12th, are rapidly approaching their authorized strength.

Camp Stotsenburg, Pampanga, P. I.

Officers and enlisted men of the Third Aero Squadron are elated over the receipt of a silver cup awarded to the Air Service unit in the Islands standing highest in "morale, training and discipline".

The inspection of the five Air Service units in the islands, three at Fort Mills, Corregidor, and two at this station, for the purpose of awarding the cup, was made on October 9th. The inspectors were Captain E. L. Canoy, Department Air Service Officer, and First Lieutenant Ira C. Baker, Executive Officer. They first inspected the two units at this post, flying here from Paranaque Beach at Manila. They returned to Manila in a DH-4, and then "caught" a seaplane for Fort Mills, where the inspection of the units stationed there was made.

The notification of the award of the cup has just been received by the Commanding Officer, Third Aero Squadron.

1st Observation Group, Manila, P. I.

The last homeward bound transport, the Sheridan, left here Oct. 15, with the Air Service much in evidence.

Captain D. A. Scott, Ex-Flight Surgeon, and watch-dog of health, formerly of the Second Aero Squadron, and Lieut. Sec. E. Litherland, Ex-Supply Officer of the Second Aero, held down the pier side of the boat, and friends on shore held down the boat side of the pier until the U.S.A.T. had pushed off and was steaming out of the breakwater. Losing old friends is like having a control wire snap at ten thousand feet.

The steel hangar at Paranaque Beach, near Manila is nearing completion, and should be ready for occupancy before another two weeks has passed.

It will be used to house a Spad, a D.H. and an M-9 seaplane which are to be used by those officers on duty and the Department Air Service Officer during their "Flighty" moments.

Paranaque Field is ideally situated for both land and water machines. The hangar is located close to the beach permitting land and seaplanes to be housed in the same hangar.

The opposite side of the hangar opens on a two way field which is used jointly by the civil government, the Army and the Curtiss Aviation School.

The civil government will soon open up activities with F-5-L and Air Service flying boats in maintaining an interesting mail service and to assist revenue cutters in running down opium smugglers.

With additional visiting planes in from Stotsenburg and Corregidor on a clear day the air about Manila is fairly teeming with "sky buggies".

Fort Mills, Philippine Island.

Five HS-2-L Flying Boats were turned over to the Operations Office, 2nd Aero Squadron and assigned to two pilots each. It will be the duty of the Chief pilot to see that his ship is always in shape for any emergency, and all flights made will be under his order, he being responsible to the Operations Officer, who in turn will be responsible to the Squadron Commander. There were no important flights made during the week due to threatening weather. Number one typhoon signal has been very much in evidence, but nothing further developed.

The 2 K.W. Radio set was put into operation with excellent results, and tests were made with the Air Service Tender "Geary" which is equipped with $\frac{1}{4}$ K.W. and an S.C. 67 telephone set. Tests with the $\frac{1}{2}$ K.W. Plietron Arc set have so far been unsuccessful.

The Air Service Launch "Petè Puryear" made a trial run after having been laid up for about three weeks for overhaul, and aside from a few minor adjustments which will take a few more days to complete, she stood up quite well. This boat is getting quite old, and has seen much active service in protecting planes and balloons.

2nd Observation Group, Luke Field, Pearl Harbor, H.T.

Keen interest is being displayed by the officers and men of the Fourth and Sixth Squadrons, in the annual department small arms competition to be held at Schofield Barracks in the middle of December. In addition to the entrants in the ground firing, there will be teams from each organization opposing each other for supremacy in aerial gunnery and bombing. Intensive training has been begun by these teams and some excellent aerial work is expected as the result. The gunnery competition will be conducted in accordance with the regulations and methods adopted at the national aerial gunnery matches at Camp Perry, Ohio, during the summer of this year.

The radio department has been hard pressed recently providing small radio sets and equipment to the rapidly increasing number of enthusiasts among the enlisted men. The men have erected small station sets in their tents and operate them at night, with the result that the post sounds like a radio madhouse with embryo operators buzzing everywhere.

Mather Field, Sacramento, Calif.

Returning from San Francisco to Mather Field, California, on the afternoon of Thursday, Lieut. I. J. Williams and Lieut. Mockbee encountered heavy fog and were flying low when their plane crashed into a hillside near Richmond, California. Only the presence of mind of Lieut. Williams and his quick action in pulling back on the "stick" averted a head-on crash. The ship was completely demolished and caught fire upon impact. Both pilot and passenger escaped serious injury.

Lieut. Halverson and Captain A. D. Smith flew up from Frisco on the afternoon of Wednesday to look after matters of administration. They returned the same afternoon.

Selfridge Field, Mt. Clemens, Mich.

Captain Edward M. George, Q.M.C. of the Construction Division, Office of the Quartermaster, Sixth Corps Area, visited this field last Tuesday to look over the situation in connection with the proposed change in the intake pipe of our water system.

Weather conditions during the past week have not been conducive to flying. Despite the rain, and the resultant poor visibility, the two officers at this station managed to get in several hours of flying.

Ross Field, Arcadia, California.

A remarkable flight was recently made by two homing pigeons of the Ross Field loft. The birds were released from the Southern Pacific Railroad yards in Los Angeles at 3:20 in the afternoon and arrived at their home loft 10 minutes later. The airline distance is somewhat over 15 miles which gives a speed in excess of 90 miles per hour. Both were young birds, and this was their second flight.

Post Field, Fort Sill, Oklahoma.

Sunday a formation of five DH4B's and one Fokker Pursuit Plane flew to Oklahoma City to participate in a flying frolic promoted by the Central Flying School of Oklahoma City under the auspices of the Oklahoma Aero Club of America. Every civilian aviation company in Oklahoma and neighboring states was represented. The Bristol and Curtiss people from Tulsa were represented and a large number of Standards and "Canucks" flew in to Oklahoma City to take part in the numerous flying events.

A crowd of several thousand people witnessed the formation flying, acrobatics, looping contests and races. Post Field entered in only two events. The thirty mile free-for-all was won by Major Bradley, Commanding Officer of Post Field. A handsome silver cup was given as first prize for that event, but

to retain it, the race must be won three years in succession. The twenty-six mile handicap was won by Lieut. Mills, who also carried away a silver cup,

Duck season is on, and the foremost enthusiast at Post Field is Major Bradley. The other afternoon, accompanied by Lieut. Givens, the Major flew over to a small pond on the Reservation, where ducks are usually plentiful, and landed nearby. The two officers brought down only one duck apiece, however, and both of them landed in the middle of the pond. In the absence of a retriever, the plane was backed up to the pond, the motor started. The propeller wash was very effectual but it retrieved only one duck. The other duck still insisted on remaining in the middle of the pond, whereupon the Major who claimed, it refused to fly back to the field without his share of the game. It was a cold, damp afternoon, but Major Bradley waded in the icy water up to his chin. He reached the duck - but it was a mud hen!

Sergeant Chambers made a parachute jump recently. The plane from which he jumped was piloted by Lieut. Agee. Chambers left the plane at just the right place to land on the field. A high wind was blowing, and, in addition, two shock-absorber rubbers failed, making the descent rather rapid, and the Sergeant in landing went head over heels a couple of times but was uninjured.

Mather Field, Sacramento, California.

On Monday Cadet Hyer and Sergeant Ekerson of the 91st Aero Squadron, flying a DeHaviland airplane, narrowly escaped death as a result of a forced landing near Folsom, California. The ship struck a high tension wire in landing and burst into flames upon impact. Both pilot and observer escaped with a few minor scratches.

HERE AND THERE WITH THE EDITORS

WAR DEPARTMENT TO EXPEND MORE THAN \$6,000,000 ON AIRCRAFT

Bids for 300 new airplanes will be called for by the War Department within the next few days. The planes are to be on the designs worked out by the aviation section of the army, and will include all the latest improvements which its tests have demonstrated to be valuable.

The amount to be spent on the planes is in excess of \$6,000,000. The total appropriation for the Air Service, exclusive of pay and maintenance of men was \$33,000,000, of which it was provided that not less than \$6,000,000 should be spent for new machines and equipment. The Air Service last year asked for a total of \$80,000,000 and will ask Congress on Monday for a total of \$60,000,000. Senators on the military affairs committee and members of the House military committee today said that nothing like this sum could be allowed, in view of the great pressing need for cutting governmental expenses. In addition it is the belief of many of the members of Congress that the money now being spent by the government for Air Service is not being economically spent, and that it cannot be put on a sound basis until all the Air Services of the government are consolidated into one department.

(Philadelphia Public Ledger 12/4/20)

AIRPLANE PASSENGER LINE TO BAHAMAS

Miami, Fla., Nov. 23.- Regular airplane passenger service will this winter be maintained between Miami, the Bahama Islands, Cuba, Jacksonville and Palm Beach, officials of the Aero Limited and Trans-Oceanic companies announced today.

Twelve passenger airplanes, three of them carrying fifteen passengers each will be in service by the first of December. The season's business will be inaugurated tomorrow with a flight to Bimini in the Bahamas, the plane to be piloted by Harry Rogers, who made the world's record distance flight from Miami to New York last spring in fifteen hours and thirty-five minutes, making only one stop enroute.

(Times Picayune 11/24/20)

COMMERCIALIZING FROM THE AIR

The top side of life, a new selling argument for a country estate or the display of a factory plant, is the latest thing in the way of commercializing from the air what is on the ground. Aerial photographs at \$100 for the first print - that is the cost. Former Lieutenant Charles J. Woods, of the Royal Flying Corps, was making the argument to a New York business man, and the novelty of the proposal suggested this paragraph. In a portfolio carried by Mr. Woods were a score of sample pictures taken from an airplane. There were views of magnificent country homes along the north shores of Long Island, and pictures of manufacturing plants that spread out below like spiderwebs. "This initial price of a print barely covers the cost of being in the air taking the picture," said Mr. Woods. "With gasoline at its present high figure, we estimate \$1 a minute as the minimum expense of a plane when flying. We keep the negative, and of course sell extra prints at a much lower figure than the first one."

(Philadelphia Public Ledger 12/4/20)

AIRSHIP IN RECRUITING DRIVE

The airship has proved to be one of the greatest of crowd-attractors, and the biggest commercial enterprises of the country have begun to utilize it as an advertising factor of front rank.

The navy airship B-18 will be used at Venice, Cal., to aid in the big drive being put on in that city for the purpose of enlisting native sons in the Navy for the great new super-dreadnaught, U. S. S. California. The North Island airship will flood the city with recruiting literature as well as perform for the benefit of the throngs of curious airship fans.

(Aerial Age Weekly, 11/22/20)

ANOTHER NEW WING

Simultaneously with the announcement of details of the Handley Page wing, another device has been developed by Levasseur, the inventor of the Antoinette monoplane, Robert Gastambide, and Mr. Lathan, a cousin of Hubert Latham, and consists of reducing the speed of the alighting aeroplane by varying the superficial area of the upper wing. Two sliding extensions of the wing are fitted, one in front and the other behind, so that when the pilot desires to reduce speed for landing they can be made to move outward in such a manner that the wing surface is increased from, say, thirty square metres to fifty.

The speed, it is claimed, is reduced by this device from, say, 125 miles an hour to 38. Curiously enough, this is practically the same reduction as claimed for the new Handley Page device. Trials of the new variable surface wings have been made at Etampes aerodrome by the French pilot Grandjean and are reported to have been regarded by experts present as in every way satisfactory. The machine is to make an effort very shortly to win the standing prize of 100,000 francs offered here for the best device to secure safety in flying. (Aerial Age Weekly, 11/22/20).

KING ALBERT SPEEDS TO CAPITAL BY AIR

It is difficult to be more up-to-date and abreast of the times than King Albert of Belgium who, while on a visit in Brazil learned of a crisis in the Cabinet at Brussels which demanded his presence, employed the use of airplanes over a part of his homeward journey, and arrived at his capital twenty-four hours earlier than would have been possible without this means of transportation.

(Philadelphia Pub. Ledger 11-28-20)

AN AIRPLANE WITH SHED

An Airplane that carries its own shed has recently appeared in the form of the new Sablatng parasol limousine monoplane, of European conception. The fold-

HERE AND THERE WITH THE EDITORS (Cont'd)

ing tent weighs about 75 pounds, and when the planes are folded along the body the tent covering rests on the leading edges and the propeller tip, thus protecting the airplane against the elements.

(Scientific American 11/27/20)

UNDERWRITERS STUDY AIRCRAFT SAFEGUARDS

The establishment of safeguards in aircraft construction and use by Federal enactment was urged yesterday at a meeting of the National Aircraft Underwriters Association at 140 Nassau Street, by Edmund Ely, the president.

Mr. Ely said: "It should be borne in mind that the passenger carrying plane in time of peace is a potential bomber in time of war, and that it is the patriotic duty of the Insurance interests to determine upon a programme for the solution of the question of aerial laws." (N. Y. Herald 12/1/20)

ILLINOIS TO STUDY AVIATION

Champaign, Ill. Nov. 16. - Arrangements have been completed with the War Department for the establishment of an air unit at the University of Illinois in connection with the military training department. A laboratory for the ground school and planes, engines, aerial cameras and wireless outfits will be provided by the government, with competent instructors.

(Chicago Daily News 11/16/20)

NEW SHIP

Berkeley, Calif. Nov. 12. - A new monoplane, rated as a marvel, has been invented in this city.

Four brothers, members of the Jacuzzi family of airplane builders, have constructed a new passenger-carrying machine which promises to break all existing aviation records.

Saturday the machine, carrying the four inventors and a mechanic, piloted by George V. Grey, Alameda aviator, flew from Redwood City to Oakland via San Jose, in twenty-five minutes. A speed of 120 miles per hour was attained in the flight.

(Chicago Tribune 11/28/20)

A I R S E R V I C E N E W S L E T T E R

Information Group

Building B

Air Service

December 17, 1920.

Washington, D.C.

INFORMATION OBTAINED FROM OPERATIONS
REPORTS OF TACTICAL UNITS FOR WEEK ENDING NOVEMBER 27, 1920.STATIONS, FLYING TIME AND AVAILABILITY OF PLANES.

<u>Name of Stations</u>	<u>Location</u>	<u>Flying Time</u>
1st Aero - Obs.	Mitchel Field, Mineola, L.I.	18:40
1st Obs. Group Hdq.	Quartel De Espana, Manila, P.I.	6:00
2nd Aero - Obs.	Fort Mills, P.I.	10:25
3rd Aero - Obs.	Camp Stotsenburg, P.I.	42:23
5th Aero - Obs.	Mitchel Field, Mineola, L.I.	5:10
2nd Obs. Group.		
4th & 6th Squadrons	Luke Field, Ford's Is., H.T.	
3rd Obs. Group.		
7th Aero - Obs.	France Field, Panama, C.Z.	16:03
8th-A Aero - Sur.	McAllen, Texas.	13:50
8th-B Aero - Sur.	Pope Field, Camp Bragg, N.C.	14:35
9th Aero - Obs.	Mather Field, Sacramento, Calif.	
10th & 99th - Obs.	Bolling Field, Anacostia, D.C.	33:23
11th Aero - Bomb.	Kelly Field, San Antonio, Texas	24:48
12th-A Aero - Obs.	Douglas, Arizona.	44:45
12th-B Aero - Obs.	Nogales, Arizona.	12:10
20th Aero - Bomb.	Kelly Field, San Antonio, Texas.	2:25
27th Aero - Pur.	Kelly Field, San Antonio, Texas.	9:00
50th Aero - Obs.	Langley Field, Hampton, Va.	7:00
88th Aero - Obs.	Langley Field, Hampton, Va.	5:53
90th-A Aero - Sur.	Del Rio, Texas.	16:20
90th-B Aero - Sur.	Sanderson, Texas.	20:15
91st-A Aero - Obs.	Crissy Field, California.	13:45
91st Aero - Obs.	Rockwell Field, Coronado, Calif.	20:15
94th Aero - Pur.	Kelly Field, San Antonio, Texas.	9:20
95th Aero - Pur.	Kelly Field, San Antonio, Texas.	9:40
96th Aero - Bomb.	Kelly Field, San Antonio, Texas.	13:47
104th-A Aero - Sur.	Fort Bliss, Texas.	17:35
104th-B Aero - Sur.	Marfa, Texas.	
135th Aero - Obs.	Post Field, Fort Sill, Okla.	56:05
147th Aero - Pur.	Kelly Field, San Antonio, Texas.	5:00
166th Aero - Bomb.	Kelly Field, San Antonio, Texas.	3:10
258th Aero - Bomb.	Aberdeen Prv. Grd., Aberdeen, Md.	10:11
Air Service Troops	Camp Denning, Ga.	8:55
Air Service Troops	Godman Field, Camp Knox, Ky.	1:35
Air Service Troops	Pope Field, Camp Bragg, N.C.	
Project "A", A.S.	Weissenturn, Germany	4:05

278:22

RADIO SECTIONLANGLEY FIELD.

A test on CW transmission was carried on with McCook Field and signals were heard in medium intensity on both 750 and 1000 meters.

Reception of signals from Bolling Field is now accomplished by means of a single wire antenna about 150 feet long and 20 feet high, pointing directly toward Washington. This is found to be very directional and there is very little trouble from interference. The new DeForest commercial receiver

is now being used for the reception of all signals and is found to be much more selective than the 109 receiver.

The most successful radio telephone flight of the season was made for the purpose of determining the efficiency and distance possibilities of the 109 set in telephone communication with airplanes and results were quite surprising. Under conditions far from being ideal, telephone signals from this station were heard quite loud with ease by both pilot and observer with the ship in any position up to fifteen miles distance. This was increased to more than twenty miles when flying directly toward the station. Two way communication was easy when attempted.

PHILIPPINES.

Ft. Mills. The radio department installed a ground telephone set on the launch "Geary". Two 100 foot aerial masts were raised and a test made with a 1/2 K.W. type 1100 Navy Radio Telephone Set. Tests with the sets on shore and on the "Geary" were very successful to a radius of 6 miles.

Camp Stotensburg. The School for Aerial Observers is in full progress. The radio course covers a total of thirty hours practice on the international code during the first month. Observers will be required to send and receive eight words per minute at the end of the fourth week. Instruction is given on construction and use of instruments and on the installation of instruments.

HAWAII.

A radio telephone demonstration was given recently with the use of an amplifier.

DEVELOPMENT.

Direction finding for ground. An experimental station has been completed with a 6 foot double loop. The mechanical operation of the station is very good but changes are being made to eliminate the distortion of the received signals by the metal parts of the station. Tests are being arranged to collect data on the effect of the directive airplane antenna on the direction of the signals received from the airplane antenna.

FRANCE FIELD, PANAMA C.Z.

The first attempt to carry out an artillery reglage mission on the Pacific side of the Canal Zone, was successfully completed on Friday by this field. Observation was for a twelve inch mortar battery at Fort Amador, three trial shots being fired at a stationary target and then eight at a towed target. Communication to the ground was by wireless telephone and panels were used to send messages to the plane. The problem was carried out very smoothly considering that this was the first time that the battery had used aerial observation to regulate its fire.

LUKE FIELD, FORD'S ISLAND, HAWAII.

The champion Hawaiian swimming team, victors at the Olympic Games at Antwerp returned during the week. A DH formation acted as an aerial welcoming party and large quantities of leis were dropped on the deck of the ship from the planes.

"FOR OFFICIAL USE ONLY".

"TACTICAL OPERATIONS, INSTRUCTION
BY FIELDS &
BORDER S

STATIONS	SQUADRONS	PERCENTAGE	TOTAL NO.	PRACTICE	SPECIAL	CROSS	PA-	TES
		DAYLIGHT	FLIGHTS	FLIGHTS	MISSION	COUNTRY	TEOL	
Ft. Bliss, Tex.	104th Aero Flt. "A"	100	46	34		1		
Del Rio, Tex.	90th " " "	80	12		1			
Eugene, Oregon								
Douglas, Ariz.	12th " "	100	37					
McAllen, Texas	8th " " "	80	9	2	2			
Mather, Calif.								
Nogales, Ariz.	12th Aero Hdqts & Flt B	100	35					
Sanderson	90th Aero " B	100	11	1	6			
Rockwell	Hdqts. & 91st Aero	95	2					9
Aberdeen	258th Bombardment	90	18					
Bolling	10th & 99th Aero	100	10					
Camp Benning	A.S. Detachment	65	6					
France Field	3rd Obs. Grp. 7th Aero	89	28					
Ft. Leavenworth								
Godman	A.S. Detachment	75	5	3				
Kelly Field	1st Bombardment	60						
"	Headquarters Detach.							
"	11th Aero		41					
"	20th Aero		2					
"	96th "		5					
"	166th "		3	1				
1st Pursuit Group		50						
	27th Aero		29					
	94th "		24					
	95th "		16					
	147th "		6					
Langley	50th "	60	6	2		2		
"	88th "		22					
Luke Field	2d Obs., 4th & 6th Aero	100	39					
Mitchel	1st Aero	60	31					
"	5th Aero		14					
Post Field	Hdqts. & 135th Aero	100	99					
Pope Field	A. S. Detachment	100						
"	8th Aero Flight B		16					
Philippines	1st Obs. Grp. Hdqts Det.	95	10					
Ft. Mills	2nd Aero		21					
Camp Stotsenburg	3rd Aero		66					
Crissy Field	91st " Flight "A"	80	39					
Weissenturn, Ger.	Project "A", A.S.	50	3					

"FOR OFFICIAL USE ONLY"

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE DECEMBER 30, 1920.

UNITED STATES AIR MAIL SURVEY FLIGHT

NEW YORK - SAN FRANCISCO

In an exhaustive report of the United States Air Mail Survey Flight from New York to San Francisco undertaken by the Post Office Department July 29-August 8, prepared by one of the flyers, Lieutenant S. C. Eaton, now of the Army Air Service, and former Air Mail Pilot, presents a number of interesting details and gives a full log of the journey.

When it became known that the Air Mail Service of the Post Office Department contemplated the making of a survey flight for the opening of a trans-continental route, John M. Larsen, President of the J. L. Aircraft Corporation of New York, who was, at that time, importing from Germany Junkers all-metal monoplanes equipped with the B.M.W. -185 H.P. engine, offered the use of two of these planes and the services of his pilots at his own expense, to take part in the flight. This offer the Air Mail Service was glad to accept, by reason of its own limited appropriations, and explains the rapid prominence gained by the J.L. 6 in this country, following so shortly after Bertram Acosta, flying one of these planes, made the American non-stop cross-country record flight from Omaha, Nebraska, to a point near Lancaster, Pa., a distance of 1090 miles.

The route selected was, practically, the one traversed by the U.S. Army Air Service Trans-continental Flight of 1919, and in addition to the two planes offered by Mr. Larsen, the U. S. Army Air Service proposed to co-operate with the Post Office Department as far as was possible by sending along at the same time a J.L. 6 which it proposed using for fire patrol duty near San Francisco.

The personnel of the flight, at its take-off from New York were:

Post Office Plane #1 - Pilot Bertram Acosta, former Curtiss test pilot,
Mechanic Ernest Buhl, former B.M.W. factory
motor expert.

Post Office Plane #2 - Pilot Emil Mons, former German Junkers test pilot.
2nd Pilot Harold T. Lewis, U.S. Air Mail Service.

U.S. Air Service Plane #3 - Pilot Captain H. E. Hartney,
2nd Pilot Lieut. Charles Colt.

Upon reaching the first stop, Cleveland, it was deemed inadvisable to carry the German Pilot on Plane #2, and a telephone request was made to the New York Office for Pilot S. C. Eaton, who was now employed as one of Mr. Larsen's test pilots, to take his place, and to bring along Mechanic Charles Myhers to replace Mechanic Ernest Buhl.

The passengers were:

General Superintendent L.L. Lent, U.S. Air Mail Service.
Mr. John M. Larsen, President J.L. Aircraft Corporation.
Mr. E. Allyne, President American Aluminum Casting Corp., Cleveland, O.
Mr. Eddie Rickenbacher, former Captain U.S. Air Service, overseas.
Mr. J.A. Bockhurst, International Film Service Corp., motion picture
camera man.

The following control stops were provided and made use of:

<u>Control Stop</u>	<u>Height above Sea Level</u>	<u>Time Change</u>	<u>Distance between stops</u>
1 - Mineola	106	Eastern	
2 - Cleveland	603	"	503
3 - Chicago	598	Central	307
4 - Omaha	1034	"	431
5 - Cheyenne	6062	Mountain	455
6 - Salt Lake City	4248	"	387
7 - Reno	449	Western	431
8 - San Francisco	15	"	187

Total mileage was 2701, one detour being made, namely between Omaha and Cheyenne, to North Platte from which city a request had come that the flight would inspect the proposed airdrome at that place.

An interesting point presented by Lieut. Eaton's report parallels one on the same subject brought out in reports of Captain St. Clair Street and the other members of the Alaskan Flying Expedition, namely that it is impossible to procure a cross-country map showing in detail everything needed by a flier, and yet void of unnecessary and confusing detail. The maps carried were a U.S. Air Service Trans-continental map, a Post Office map, together with Rand and McNally maps of each state traversed.

Supplies requested at each stop were:

200 gals. 90% Benzol: 200 gals. high test gasoline: 50 gals. specifications 35-35 oil, and the list of spares actually used include:

Cleveland: Plane #1 used several rocker arms from Plane #3.
Plane #3 washed out of flight and substitute flown to Cleveland from New York to continue flight as Plane #3.

Omaha: Plane #3 - new wheel.

Cheyenne: Plane #2 - new tire.

Reno: Plane #1 - broken landing gear, strut repaired by machine shop.
Plane #1 also used one new tire.

San Francisco (Oakland). Plane #2 - new exhaust valve spring.

JUDGE MAYER'S DECISION OF TREMENDOUS IMPORTANCE TO AERONAUTICS

No legal decision recently has been of such interest and importance to the aeronautical industry in the United States as that of December 6th rendered by Judge Mayer in the Federal District Court of New York, restraining Handley Page, Limited, the Aircraft Disposal Company, Ltd., and William H. Workman, from disposing of aircraft planes, engines and materials. The decision came as the result of a legal action recently instituted by the Wright Aeronautical Corporation, owners of the Wright patents, against the foregoing defendants. The temporary injunction granted by the court has the effect of protecting the American aeronautical industry from the "dumping" here of vast aeronautical stores owned by the British Government at the close of the war and which are now said to be obsolete.

In his decision Judge Mayer said the Aircraft Disposal Co., was formed in March, 1920, and a month later purchased from the British government some 10,000 airplanes and 40,000 aeronautical engines that were surplus material from the British War effort. He also said that there was no market for the material in any part of the world other than the possible market that might be made in this country.

He also recited the fact that a hearing was held in Washington on May 28, 1920 by the House Ways and Means Committee in connection with a bill designed to prevent dumping of this material. Brig. General William Mitchell, of the United States Army Air Service at that time declared the importation of these planes would ruin the American aeronautical industry.

"The defendants acquired these planes from the British government with their eyes open" continues the decision, "and took their chances of their legal rights." "They state they have selected 2,365 planes for the American market, the selling price of these planes is said to be \$6,500,000 and the defendants assert that the expense of storage and other incidentals are mounting high, and if a preliminary

injunction goes against them they lose the market and thus suffer great loss. Yet, this was their hazard. They should have known that the plaintiff would move expeditiously and diligently as it has. There are then no equities in favor of the defendants, and they must rely on their legal rights."

F. B. Rentschler, vice president and general manager of the Wright Company said that the decision has given general satisfaction to the entire aeronautical industry in America, inasmuch as the builders here of planes and engines felt that it meant unfair competition on the part of foreign airplane corporations had been greatly hindered if not altogether stopped.

"In attempting to enforce its rights under the Wright patents the Wright Aeronautical Corporation felt that it was doing a duty to the entire industry in the United States" he explained. "The British government had on hand at the close of the war thousands of planes and engines which are now obsolete and which they wished to dump into the United States at prices not commensurate with the actual cost of production.

"There is one thing which each American manufacturer wishes to make clear: We do not want to stifle fair competition, but we do want our market freed from the sale of plane, engines and parts which are obsolete and which are of wartime production.

In conclusion Mr. Rentschler said, "It must be remembered that this dumping process, if permitted to continue in America, will be an annual performance on the part of foreign governments and plane and engine builders. Each year as aircraft, engines and materials become obsolete, they will be sent to the American market unless appropriate action is taken to protect our industry. It can readily be seen what an effect this will have upon the national defense in the air, for both the army and navy are looking to the American industry to keep not only abreast of modern aircraft development but ahead of the program of other countries".

FOR THE FIRST TIME IN HISTORY OF THE WORLD
PROBLEM FIRED IN WHICH ALL DATA WAS SUPPLIED FROM THE AIR BY BALLOON.

Since April 10th, 1920, the Fourteenth and Twenty-fourth Balloon Companies, have been conducting certain Air Service experiments at various Coast Artillery and Heavy Artillery Posts along the Pacific Coast. It may be of some interest to the public in general and the service in particular to be informed as to what has already been accomplished, what is desired and expected, and the methods used.

The 14th and 24th Balloon Companies left the United States Army Balloon School, Fort Omaha, Nebraska, on April 10th, 1920; the 24th Company commanded by 1st Lieut. F. J. Durrschmidt, A.S., and 2nd Lieut. James T. Neely, A.S.; and the 14th Company commanded by 1st Lieut. W.C. Burns, A.S.; and 2nd Lieut. Joseph A. Physioc, Jr., A.S. Their first destination, San Francisco, California, was reached on April 14th and the companies were stationed with the Coast Defenses of that city, the 14th at Fort Funston, and the 24th at Fort Barry. During the three weeks at this location no results in air work were obtained, the time being spent in choosing suitable locations for permanent buildings for balloon garrisons, and in a study of the Coast Artillery systems and the nature of the work involved.

So far as is known this work has been undertaken but once before, at Sandy Hook in 1919, when no satisfactory results were accomplished. That being the case the task became one of more or less pioneer effort. The organizations next moved to Puget Sound for a month where the problem was again taken up. For Coast Artillery purposes, firing at a moving target, it is required that the balloons be able to "track" the target as well as spot the shots. The spotting of shots on water is of course a matter of training and judgment of distance which can only be satisfactorily accomplished after experience in that work, this, however, entailing no essentially new departure from the observation work usually done by balloons. The "tracking" of targets was an entirely new problem and one for which there had been no instrument developed. A Board of Officers met to discuss the question and after several suggestions an instrument was finally devised for trial. The system upon which the work was attempted is known as the "horizontal base-line system". The balloons are established at opposite ends of a horizontal base-line of about 8,000 to 13,000 yards in length. With the instrument provided each balloon reads the angle between the other balloon and the target at a given time (Time Interval Bell) This is done every minute and the "track" of the target is plotted on a "Balloon

Plotting Board". Without going into undue details the instrument may be described as a 1900 Azimuth instrument and base mounted on a metal arm containing a fixed telescope. The whole instrument is suspended from the rigging above the basket and one observer keeps the telescope on the other balloon while a second observer tracks the target with the Azimuth Instrument. After a month of this work the results gave great satisfaction, the balloon having tracked targets at a range of 15,000 yards and obtaining tracks which, when checked by the Artillery ground O.P.s. were found to coincide within an error of about 20 yards in range and about .02 of a degree in azimuth. These results were considered exceptionally good especially considering the unstable character of the basket and the crude stage of all the appliances used.

The companies were then ordered to Camp Lewis, Washington, making the trip by truck-train over the Olympic highway, and owing to the mountainous character of the country and to the shortage of gasoline at that time prevailing, a great deal of trouble was encountered, the 125 mile trip taking three days. The sojourn at Camp Lewis consumed three and a half months, during which time work was conducted with the 31st Artillery Brigade, Coast Artillery Corps, which work consisted of adjustments for 3 inch, 155 mm G.P.F.s, and 8 inch Howitzers, and also several maneuvering problems and firing problems without the use of maps, etc.

At the end of September the companies returned to their previous stations at San Francisco and resumed work with the Coast Defenses. During the last three weeks of October a great many tracks were made which showed constant improvement and checked satisfactorily. During these three weeks each officer of both companies gets in more than 41 hours in the air, all of which time was consumed in actual work with the Artillery. The constant improvements were due to various additional devices making for greater accuracy more notably on the Balloon Plotting Board and in the location of the balloon baskets at the time of each reading, and in the increased efficiency of the personnel with experience. Finally, after elaborate preparations, a problem was fired, for the first time in the history of the world, in which all data was supplied from the air by balloons. On Wednesday, November 24th, 1920, Battery Mendell (12 inch disappearing guns) fired 22 shots at a pyramidal target with an approximate range of 14,000 yards, the target being towed by a tug with a tow line of 500 feet. The tracking and spotting was done by balloons and the data obtained from the Balloon Plotting Room. No direct hits were obtained on the pyramidal target but had it been actual service conditions with a ship as the target at least five of the shots would have been direct hits, not including several probable ricochets. The firing was case 11, with the gun pointer doing the pointing, and the shots were all well grouped. The group was as satisfactory as any obtained this year with ground data and the last four shots from number 2 gun had the range correct, but were off in deflection due to the faulty pointing of the gun. This work is still in its more or less primary stages and a lot remains to be done in the matter of accuracy and speed, however, these results have laid a foundation upon which future improvements can be built with lasting and definite advantage to the Service. The regulation of Coast Defense firing by balloons will be especially advantageous in this locality where haze and fog frequently ruin the visibility of the ground stations. Quite often this condition does not exist more than 15,000 to 20,000 yards out to sea and the balloons could thus go above the fog and see beyond it with perfect accuracy. With good visibility sizable ships can easily be tracked a distance of twenty-five miles from shore. The advantage of this is apparent. It is believed that for future work of this nature each balloon should fly with two baskets: One basket containing two observers and the tracking instrument, and the other basket containing the Fire Commander or some such officer properly trained in air work who can spot shots, assign targets, transmit intelligence, etc.

These companies will continue on this work at San Francisco until about the middle of January, 1921, taking up mortar problems, night firing with flares, new instruments, etc. At the end of this work they will proceed to Ross Field, Arcadia, California, for permanent station and further work along these lines. The present results have proven conclusively the immense value of balloons to the Coast Defenses; it only remains to increase this value by adding more uses, accuracy, and speed in order that maximum results may be obtained under service conditions by both branches; which will result in a great and important technical advantage for the Coast Defense.

SCHOOL FOR FLYING CADETS, MARCH FIELD OPENED JANUARY 19, 1920.

Major Ernest Clark, A.S.A., in charge of flying and Major George H. Peabody, A.S.A. Commandant of the Cadet Department at March Field, advises that the school for the instruction of cadets started operation January 19, 1920.

The Officer in charge of flying has assigned cadets to each of the four flights, the number of cadets in each flight being further divided into A and B sections; these sections alternate in flying periods so that flying in early morning will be equalized. Each section is in charge of a section leader, who marches his section to the flight assigned, and also to ground classes, reporting absentees, on arrival, to the officer in charge of class and later, to the Commandant of Cadets, Ground instructors also submit a daily list of absentees, so that a double check on attendance is provided.

The following departments for ground instruction have been organized:

Signalling Dept.
Aerial Navigation Dept.
Gunnery Dept.
Airplane Instruction Dept.
Motor Instruction Dept.

Ground department heads submit a weekly report showing nature of work, grade, and total hours per cadet. The data on these reports is then filed on the individual cadet record sheets at Cadet Headquarters. Infantry Drill is held daily, cadets being required to drill platoons and the company, and to explain the movements before execution.

A two weeks course has just been completed, with satisfactory results, in the following subjects:

Army Regulations.
Army Organization.
Manual Courts Martial.
Squadron Administration.

The personnel of the detachment is taking great pride in the work and to date there have been none but minor infractions of regulations. The demerit system is used, a daily delinquency list being published. The competitive squad system is being used in barracks with excellent results.

ABOUT LIEUT. MC DERMOTT OF THE FIRST PURSUIT GROUP.

During the war we read much of the spectacular work of the American Air Service Officers over the German lines. The work of Captains Rickenbacker, Donaldson, Cook, etc., will be recalled by everyone. Their exploits have been heralded throughout the world and their names will go down in history as America's immortals, which they rightfully deserve.

Many other American Air Service officers also did wonderful work over the lines and engaged the enemy at every turn but unfortunately their praises have not been sung to the world at large. We refer now to an officer stationed on the border patrol with the First Pursuit Squadron, Lieut. Cleveland W. McDermott. Lieut. McDermott while overseas served his entire time with the 147th Aero Squadron, First Pursuit Group.

For extraordinary heroism in action near Bantheville, France on the 18th day of October, 1918 he was awarded the Distinguished Service Cross.

In starting on a patrol mission Lieutenant McDermott was delayed by motor trouble. Unable to overtake the other machines, he continued on alone. Sighting an enemy Fokker, he immediately gave chase, and despite its efforts to escape succeeded in shooting it down. Six Fokkers then suddenly attacked him, and though he was outnumbered and blinded by the sun, he shot down one of them and scattered the others. In the midst of this combat, his motor stopped and he was forced to glide into friendly territory.

This officer also saw service at Chateau-Thierry, St. Mihiel and in the Argonne. Although he has an official record of three planes only he shot down a number for which official credit has never been given. The French Government awarded Lieut. McDermott the Croix de Guerre with one palm for shooting down one enemy plane in the Chateau Thierry sector and successfully driving off five German Fokkers who were attacking him.

SENATOR HARDING WARMLY WELCOMED TO HAMPTON ROADS

Air Service officers from Langley Field flying in a battle formation of 25 DeHaviland planes flew to the mouth of the Chesapeake last Saturday and maneuvered over Senator Harding's returning ship, the Pastores, to welcome the Senator on his return from the Panama Canal. The dirigibles Zodiac and A-4, also participated in this flight and followed the Pastores into Hampton Roads. Other Langley Field Officers flying alone maneuvered about the ship, looping, spinning and diving. Still another Langley Field ship was equipped with the Radio telephone. This airplane was the first to meet the Pastores and the pilot kept up communication with Langley Field. By means of the Radio telephone the Senator and his party were advised of the coming of the big squadron and messages of welcome were also forwarded. An interesting incident in the Radio telephone work was the locating of the Pastores. The pilot of the Radio telephone airplane upon approaching Chesapeake Bay saw a great many vessels widely scattered. Of course he could have flown over each one until he found the Pastores, but this would have required some time. Instead he merely called the Pastores on his Radio Telephone and requested from the latter the position of the ship. The Radio operator replied, "2 miles off Bug Light, and 4 miles from Hampton Roads," and it was thus an easy matter to immediately identify the Pastores.

CADETS MAKE CROSS COUNTRY FLIGHT OVER TEXAS PANHANDLE

Cadets Thomas E. Pirtle and James E. Sinnott of Post Field, with mechanic, made a successful cross country flight of 450 miles over the Texas Panhandle on week end of November 25th-29th. This trip was in the course of their routine training and was for the most part over very rough country, abounding in deep canyons where a forced landing would have resulted disastrously. The flight was made in four legs from Post Field to Matador, 135 miles; thence to the J.A. Ranch, 65 miles; thence to Amarillo, 50 miles; and the return flight to the Field, 190 miles - the total flying time for the entire trip being 5 hours and 15 minutes. A DH-4B plane was used, an average of 1400 R.P.M's being maintained on entire trip.

NEW TIMING DISK

A new timing disk has been developed at Post Field by Second Lieutenant James D. Givens, A.S., Engineering Officer, for the Liberty Motor. It is believed that this disc will become generally used in all Air Service stations. The feature which recommends it is that it can be used without removing the prop and radiator. It is equally valuable in the shops as in the field and will be a great saving in time and labor. In addition to this, it is infinitely accurate. Drawings and photographs of each part are being made and forwarded to the Engineering School at McCook Field.

SOUTHERN CALIFORNIA AIR TOURNAMENT

The tentative schedule of events and exhibits, which has been announced by officials of the Aero Club of Southern California and by Army and Navy officers who are lending every assistance, indicates that the affair which is to be held at Daugherty - Municipal Flying Field, Long Beach, will be one of the most important aerial events of the year.

The three days of flying and of practical demonstrations of the commercial possibilities and development of aeronautics, will include everything from an open speed event to parachute jumping by Army observers, and a handicap race between three and possibly four, dirigible airships.

The fullest possible cooperation is to be afforded by the various Air Service units belonging to the Ninth Corps Area, instructions having been issued by General Charles T. Mencher, from Washington, to Colonel H. H. Arnold, chief of Air Service on the Pacific Coast, to meet with officials conducting the tournament relative to arranging Army entries in the various contests.

As a result, Lieut. H. Halverson, aide to Colonel Arnold, is completing the plans whereby more than twenty single-seater planes, and several fast two-seaters, will participate, as well as other material.

The Army entries, which will concentrate at Long Beach from several California fields, will include Fokkers, Spads and Nieuports, SE-5's, Le Peres, De Havillands, and several Hispano Curtiss machines. The final entry list of both planes and pilots is now being drawn up at Air Headquarters, San Francisco, and will be announced early next week.

Several fast civilian planes, including Orioles, and an Italian Pomolio, are to be entered in both the scratch and handicap races.

The ground show, which will be entirely out-of-doors, will surpass anything of its kind held during the present year, and will be particularly featured by multi-engined planes. The entry list already includes the Pacific Hawk, a twin-engined six passenger plane manufactured on the Pacific Coast; the Friesley biplane, another California product; two all-metal monoplanes, both of which were delivered from New York by air; the New Davis-Douglas "Cloudster", the latest product of Donald Douglas, designer of many of the Glenn Martin planes; and possibly one of the Martin "Torpedo planes", several of which have recently been consigned to duty with the Pacific Fleet.

The Navy's exhibits, which were secured through the cooperation of Captain Toombs, chief of the Naval Air Service on the Pacific Coast, consist of three flying boats, an F-5L, and R-6, and an F-boat, in addition to complete displays of radio equipment, engines and ordnance.

The final day of the meet will be devoted largely to lighter-than-air craft, a number of which have been entered by the Army and Navy and commercial interests. The Navy is dispatching the B-18 from San Diego, which will compete in a handicap race with two "Pony Blimps", the first belonging to Marshall Neilan, motion picture producer, and the second to the Army. Several free balloons from Ross Field, Arcadia, California will be entered in a race to be held on the final day. In addition, three observation balloons will be used to mark the turning points of the triangular airplane race course.

The outcome of the National Winter Air Tournament is being watched with intense interest, both by aviation enthusiasts in Southern California and throughout the country. It is the first time that an attempt has been made to combine an aero show of any size with a featured program of flying events.

Every effort is being made to impress the public with the enormous strides which have been made in commercial and military aviation during the past few years.

The ground exhibits are intended to afford an opportunity for inspecting all types of planes and equipment at close range, and a number of the flying events have been planned solely for the purpose of demonstrating the practicability of aircraft for everyday commercial work.

The Daugherty-Municipal Field, at Long Beach, upon which the tournament will be held, is said to be one of the finest flying fields on the Pacific Coast. Grading operations just completed give an available runway for landing and taking off of more than three thousand feet by five hundred feet, with the length directly into the prevailing winds. Grandstands are being erected for the large crowds that are expected to attend from all parts of Southern California, and several acres of ground immediately adjoining the field are being covered with gravel and rolled for auto parking space.

EXPRESSION OF APPRECIATION FROM THE BROTHER OF CAPTAIN MCCOLLOUGH

The following letter from the brother of Captain Max L. McCullough, A.S., who was killed in an airplane accident during a practice flight at Bolling Field Nov. 23, is warmly appreciated by the officers and employees of the Air Service all of whom held Captain McCollough in the highest esteem:

San Jose, California, Dec. 9, 1920.

To
The officers, men and employees of the Air Service,
Washington, D.C.

Gentlemen:-

I want to express to you my deep appreciation of your esteem and affection for my brother, the late Captain Max L. McCollough, which you showed by sending a beautiful floral piece to be placed on his grave at Arlington Cemetery.

I want to take this occasion to express my appreciation of the heroism of the men of your Service who, at the risk of their lives, made repeated and finally successful attempts to take from the burning plane the mangled body of my brother. The spirit and traditions of the Air Service are heroic, and your acts of heroism go to prove in definite fashion and to strengthen these traditions. To me, you gentlemen will always be heroes, and I am glad of this opportunity to express my appreciation of your devotion not only to the Service but to my brother in a personal way.

Very truly
J. H. McCollough, Jr.

RADIO TELEGRAPH: A CORRECTION

In the News Letter of Nov. 9, publicity was given an item on Radio in the news sent from Rockwell Field, which contained an unfortunate statement. If the practice described therein is followed, it will have the effect of placing a considerable quantity of radio apparatus out of commission.

Special attention is, therefore, called to the following authoritative data and instructions by Lieutenant Colonel C. C. Culver, Air Service, Assistant Executive (Radio).

"Rockwell Field, California, in the News Letter of Nov. 9th., claims to have made a discovery regarding the radio telegraph SCR-73. This field seems to have found that difficulty experienced in getting the self-excited generator. GN-4, to build up may be eliminated by the insertion of a small battery in the field circuit (see schematic diagram page 8, Signal Corps Confidential Radio Pamphlet No. 13)

Such a step is thought entirely unnecessary since, when in proper condition and properly connected, the generator functions perfectly. Inability of the generator to build up may be ascribed to a number of causes, principally lack of permanent or residual magnetism, or incorrect field connections.

The use of an external battery to start excitation will remedy the first condition but, if used incorrectly, or when the second condition prevails and is later corrected, will render the set unserviceable for field use.

Some of the first sets of this type manufactured were found defective, requiring such excitation, but have since been corrected.

It is, therefore, suggested that all SCR-73 sets, requiring excitation from an external battery, be thoroughly examined, tested, and the trouble eliminated. The use of battery is not necessary with a correct installation and entails additional parts and complication."

323 FLIGHTS AT MARCH FIELD

Three hundred and twenty-three flights were made from the Pilots school at March Field during the past week. Total flying time 225 hours and ten minutes. Preliminary instruction required 137 hours 20 minutes: advance instruction, 28 hours 15 minutes; test flights, 4 hours and 50 minutes; and miscellaneous flights 54 hours 45 minutes.

DEATH OF LIEUTENANT REX E. FIELD

It is with exceeding regret that we record the accidental death of First Lieutenant Rex E. Field at Love Field, Dallas, Tex. on Nov. 7th. With almost two years of service at this station he had formed a large circle of friends both among the members of the Post and the residents of Dallas. He was first of all a soldier of the finest type and through his zealous attention to duty, held an enviable reputation as such.

Lieut. Field began his military career as a member of the Elmira, New York National Guard and served with them on the Mexican Border. Barred by his age from being accepted as a flier, he attended the second officers training camp at Fort Niagara and was recommended for a Captaincy of Infantry, but, adhering to his first choice, accepted appointment as a first Lieutenant in the Air Service and was stationed at Chanute Field, Rantoul, Ill. for a term as Commanding Officer of one of the Squadrons, and later as Commandant of Cadets and there he began his flying

training. From Chanute he was sent to Garden City, L.I. preparatory for overseas duty when the Armistice intervened, and in Dec. 1918, he was sent to Love Field where he served efficiently in the capacity of Squadron Commander, Maintenance Officer, and Quartermaster. Lieutenant Field continued his flying at Love Field, and, at the time of his death, had nearly 2000 hours in the air, and was regarded as a first class pilot who used sound judgment on every occasion. His excellent flying record makes his crash the harder to understand.

At the time of his death, Lieutenant Field was flying a civilian plane with an acquaintance. As he was flying over the northeast corner of the field at an altitude of 1500 feet, his motor was heard to miss and next he went into a spin down to about 200 feet when the plane righted momentarily and then went into a steep spiral when the nose dropped and the plane crashed.

A military escort preceded the remains to the station and "taps" was sounded as the train pulled out. The body was sent to the home of his parents 665 Grove St., Elmira, New York.

His comrades remember him as a true and upright man and a soldier of the highest type.

107 MEN TRADE TESTED AT KELLY FIELD

During the week ending December 4th., 107 men were trade tested at Kelly Field. Men were recommended for the following courses: 20 men for army paper work and stenography; 16 men for aircraft armament; 10 men for automobile repairing; 26 men for engine mechanics; 25 men for airplane mechanics; 13 men for vocational training in the Educational and Recreational school at this Post; 1 man was rejected as being unfit for any course of instruction.

SUBJECTS COVERED IN TRAINING OF MEMBERS OF MASTER TRADE TEST BOARD.

Members of the Master Trade Test Board at Kelly Field are being trained along Air Service Recruiting lines to work in conjunction with their trade test work. Among the subjects covered are the following:

Different activities of the Air Service.

Rates of pay and allowance to enlisted men.

Organization of the Air Service.

Advantages and Possibilities for further education.

Location of all Service Schools for enlisted men and Courses of Study taught in these schools.

Possibilities of cadet training to those possessing qualifications for it.

Qualifications for enlistment in the Air Service.

It is planned to have these trade test examiners acquire a large store of authentic information on all subjects pertaining to the Air Service, so that any recruit passing through this board, or any man being examined for enlistment, can be acquainted with such facts as he may desire pertaining to the Service. It is hoped by this plan to correct a great many erroneous impressions and to prevent errors on the part of the man who is just entering the Service.

PERSONAL

First Lieutenant H. J. Odenthal, A.S., formerly Chief of the Publicity Section in the Office of the Chief of Air Service, having been honorably discharged from the Army November 30th, is at present engaged in business in Washington, D.C.

Lieutenant S. C. Eaton, A.S., Office Chief of Air Service, has been ordered to Carlstrom Field, Arcadia, Florida. He will leave for his new post January 1st, 1920.

SERGEANT DRAINVILLE, A.S., BURIED AT ARLINGTON

Staff Sergeant Gaspard Drainville, Jr., A.S., whose death occurred at Walter Reed Hospital, December 13th, was interred at Arlington National Cemetery, Thursday morning, Dec. 16th, funeral service having been held at 9 A.M. at St. Josephs Church, 2nd and C Sts., N.E.

Sergeant Drainville had a long and faithful service in the United States Army, his record being: Private 69th Coast Artillery, Sept. 18, 1900 to Sept. 27, 1903; Sergeant Troop C., 15th Cavalry, June 1, 1904 to Sept. 20, 1909; Corporal Troop B, 15th Cavalry, Oct. 11, 1909 to Aug. 11, 1910; Sergeant 3rd Field Artillery and Color Sergeant 5th Field Artillery, June 8, 1914 to Dec. 19, 1917.

On Dec. 17, 1918, Color Sergeant Drainville, then on duty with the A. E. F. was transferred as Sergeant to the Headquarters Troop, 42nd Division and assigned to duty as Orderly with Major General Charles T. Menoher, then Commander General of the Division, now Chief of the U. S. Army Service. When on Nov. 10, 1919, General Menoher was promoted to the post of Commanding General, 6th Corps, Sergeant Drainville was transferred to that Corps and assigned to duty as his Orderly.

While on duty with the 42nd Division, Sergeant Drainville served in the Lunerville and Bacarat Trench Sectors; the Champaigne Defensive, July 14th, 15th, 1918; the Aisne-Marne, the St. Mihiel and the Meuse-Argonne offensives. Sergeant Drainville was ordered to the United States in December, 1919, and transferred to the Air Service as Sergeant 1st Class April 16, 1919, in which branch he served to the time of his death.

Sergeant Drainville was born at Woonsocket, Rhode Island, thirty-seven years ago. He is survived by his wife and one son, who reside at 663 F. St., N.E., Washington, D.C.

GARRISON SCHOOL FOR COMMISSIONED OFFICERS
AT MARCH FIELD.

In compliance with instructions from the Chief of Air Service, a garrison school for commissioned officers of the command will be opened on Monday, December 4. Captain George H. Peabody, officer in charge of training, will supervise the work in this school which will include at least 50 lectures on military subjects. A tentative schedule is as follows:

Military courtesy and Customs of the Service, Major Weaver; Military Hygiene and First Aid, Medical Officer; Military Law, Captain Peabody; Interior Guard, Major Vautsmeier; Military Sketching, Captain Peabody; Manual of Pistol, Major Tinker; Administration, Captain Peabody; Rules of Land Warfare, Major Tinker. The term will extend over a period of at least two months.

DEPARTMENT OF COMMERCIAL AVIATION

UNITED STATES

THE GLENN L. MARTIN COMMERCIAL TRANSPORT

Aircraft, if it is to be successful commercially, can no longer be designed solely on the basis of performance as was done during the war. New standards have arisen. The efficient commercial airplane of today is judged on its commercial adaptability. Like the locomotive, the automobile and the ocean liner, the commercial features of the airplane are paramount.

With this all-important factor of commercial airplane construction predominating, the Glenn L. Martin Company of Cleveland is designing a new commercial transport which it is claimed will incorporate every element of commercial adaptability. Among the principal points that are being carefully considered are the factor of safety, life of the plane, economy in operation, repair and replacement of parts, minimum work in upkeep, simplicity in housing and towing.

The details of construction will be of interest:

Fuselage

The fuselage is of general rectangular cross section, the maximum depth being 59 inches and the maximum width 50 inches outside. The fuselage is built on four (4) spruce and ash longerons, varying from a solid section to an "X" section in going from nose to tail. The top longerons are horizontal in flight and parallel to the axis of the motors. The lower longerons taper upward toward the upper longerons as they approach the nose and tail.

The forward section of the longerons is of ash spliced to the spruce. The longerons are solid at fitting bearing points; the nose is braced with 3/32" 3-ply birch plywood walls and built up plywood bulkheads to the rear of the aft cargo compartment. The cargo compartments are lined with plywood, and are braced and reinforced to carry ordinary loads. A cradle and slings are provided in the central compartment for carrying heavy concentrated loads. From this point aft, the fuselage struts are spruce and are routed out to I-beam shape. These spruce struts are stepped in cup fittings, which, in turn, are brazed to the longeron fittings. The longeron fittings are of strap form, made from sheet steel, entirely encircling the longeron; each fitting, with exceptions, accommodates six (6) brace wires.

The fuselage flooring is of 3/16" 3-ply birch plywood, suitably braced and secured. Where spruce longeron struts are used, that is, from the pilot's cockpit back, the bracing is of solid steel tie rods. Fitted metal cowling is provided around the pilot's cockpit and metal plywood doors are provided for the cargo compartments. The tail skid is mounted on a swivel post and secured for shock absorption with 5/8" elastic cord and 3/8" rebound rubbers. The skid is of hickory, provided with a cast steel shoe. All walls of the fuselage not built with plywood are covered with grade "A" linen, doped and finished in khaki enamel. The exterior plywood walls are also finished with khaki enamel; the interior wood parts are filled and varnished; interior metal parts are zinc plated, or covered with blue lacquer or both; the exterior metal parts are zinc plated and enameled in khaki; wearing surfaces, etc. are greased.

Wings.

The wings are constructed in conventional truss form in the outer sections with front and rear spars and interplane struts and streamline wire bracing. The upper wing is made in two (2) outer and one (1) center section, and the lower in two left and two right panels; a total of seven (7) panels. The interplane struts, outside of the folding wing hinge, are of routed spruce; two (2) front and two (2) rear on each side of the wings. Tubular steel struts, faired with aluminum, are used at the folding wing hinge. The strut system around the motors on the lower inner panels, consists of a truss work of steel tubes, faired with aluminum, which connects the nacelles to the body, to the landing gear, and to the upper wing. The wing truss wires are of streamline wire, fitted with terminals of clevis form.

Wing panels are built on two (2) spruce spars, routed wherever possible to I-beam sections; the front spar is 10" from the leading edge and the rear spar 60". In the inner lower wing sections, an auxiliary triangle of steel tubes, inside the wings, carries the stress in the lower rear spar from the engine nacelle to the front beam at the body hinge and to the hinge fitting at the rear of the cargo compartment, in the body. The ribs are of truss type, diagonal and vertical bracing and are built of spruce; spruce drift struts are used to carry the drag loads and spruce box ribs, to close the ends of the panels.

The four (4) ailerons are attached to the rear spars, upper and lower, at both sides of the machine. The ailerons are unbalanced and do not extend beyond the contour of the wings. The wing fittings are of plate form, made of sheet steel with attached parts brazed and secured to the beams by through bolts with bearing blocks of metal. Fittings take interplane strut bolts; flying, landing, incidence and internal drag, brace wires. The internal wing wires are of solid steel fitted with adjustable terminals. The wings are covered with grade "A" linen and doped with four coats of acetate and two coats of nitrate dope, in the order named, the latter being impregnated with khaki wing enamel. The wood frames of the wings are wood filled and varnished.

Landing Chassis.

The landing chassis is attached under the fuselage and engine nacelle and consists of two (2) 44" x 10" wheels and two (2) nickel steel tubular axles. The axles are held in place laterally by the medium of sway braces attached under the fuselage and support the machine by means of "A" struts. These struts are vertical; two (2) being attached under each nacelle. The landing gear "A" struts are of nickel steel tubing and are braced from the rear. Each wheel is shock absorbed with 5/8" elastic cord and the shock absorber is enclosed in a streamline; and guards are provided for each wheel. The landing gear "A" struts are streamlined with wood and covered, where necessary, with grade "A" linen, doped and finished

in khaki enamel. The sway braces are streamlined with aluminum and magnesium fairing and are provided with steps to facilitate work upon the motor when the engines are not running.

Tail Surfaces

The tail surfaces consist of elevator, stabilizer, 2 rudders and 2 vertical fins, all built upon the stabilizer. The elevator is hinged to the trailing edge of the stabilizer and the rudders and fins are mounted on top of it. Entire unit is mounted on top of fuselage tail and braced with steel tubing and steel tie rods or cables.

The tail surface unit may be detached intact. The stabilizer is adjustable from 0° to minus 1° from the pilot's cockpit, during flight. All tail surface frames are of steel tubing and are channel section. The frames are enameled and covered with grade "A" linen. The covering is doped and finished with khaki wing enamel.

Power Plant

Each engine is mounted in the forward portion of the nacelle. The engine bed is built in the top of a vertical plywood bulkhead, braced laterally by a horizontal plywood bulkhead, connecting it to the nacelle longerons. A sloping bulkhead connects the forward end of the engine bearers to the front spar of the wing. The oil tanks are carried beneath the motors. Directly behind the rear end of the starters is an aluminum covered plywood fire wall, which runs from the top to the bottom of the nacelle. On top of the fire wall and outside of the nacelle is the radiator. Behind this fire wall and separated from it by an air space, is the gasoline tank. The gasoline tank ends at the rear spar where there is another vertical bulkhead. Behind this bulkhead is a fairing to streamline the nacelle. A removable cover is provided for this, making it available for the storage of tools, etc. Detachable cowling is also provided over the motors. All cowling on the nacelles is sheet aluminum.

The engine controls are carried to the fuselage through the wings, being run over the pulleys at the nacelles and at the inner end of the wings and being run through straight aluminum between these points. All controls are standard cable. A gravity tank is provided in the upper wing over each motor, and a sight glass in the overflow line enables the pilot to determine at all times, whether gasoline is being pumped to the gravity tank.

The entire gasoline system is designed to withstand a pressure of five pounds per square inch.

CERRUTI AIRCRAFT CORPORATION

Mr. Frank A. Cerruti, First Lieutenant in the U.S. Army Air Service during the war, has announced the organization of the Cerruti Aircraft Corporation of Detroit. The company has been incorporated under the "Blue Sky Laws" of Michigan to manufacture and sell aircraft and maintain hangars and flying fields. It is planned first to place upon the market a two-seater airplane of the sport and business type, to be followed later by a small single seater, and, after that, the large passenger and freight-carrying type. The two-seater will be a high class machine in every respect, with a speed of 110 miles per hour, 150 h.p. engine.

Mr. Cerruti is a practical aeronautical expert, and it is his purpose to devote himself to the business of the company. He is a member of the U.S. Army, and Navy Air Service Associations, of the Aerial League of America, and of the American League.

ENGLAND.

NEW HANDLEY PAGE WING

After six months of discussion during which the interest of the public has been rather keenly aroused, the new Handley Page wing has at last appeared. Early in November the firm issued an invitation to the press and others to witness a demonstration and hear an explanation of the new device at Cricklewood aerodrome.

An account of the demonstration and a general description of the new wing, written by F. A. De V. Robertson, appears in the *Acroplane and Auto Age* for November.

Both from the report and from the illustration accompanying it, it would seem that the new wing consists of a series of overlapping slats, which at present are rigid, permitting the air to escape through at all times; but since the wing is still in the experimental stage it may develop that the slats will be made adjustable while in flight and so counteract the loss of speed experienced in the present form of construction.

"To the uninitiated," says the report, "it might appear that these slats would allow the air to escape through the plane and so deprive it of all lift: but, as a matter of fact, exactly the reverse took place. In effect the slats in the wing would convert a single plane into a whole series of planes and so increase the lifting power of the wing. The experimental machine which was before our eyes had only two slats which increased its lifting power by about 55%; but experiments had been made with various divisions up to .6, which increased up to about 400%. We gathered that these experiments had been made in the wind tunnel. The ways in which this increased lift could be turned to advantage are numerous. In the first place, a given machine will be able to lift the same load as at present with a very much reduced wing area. This reduction in area will, in itself, reduce drag and therefore, make for increased speed, though it was confessed that the H.P. wing form reduced the speed of the machine. In the case of the D.H. 9 - upon which the new wing device was tried - it knocked about 10 m.p.h. off the top speed. While this might be considered a serious matter, on the other hand, it lowered the landing speed to from 36 to 38 m.p.h., one of the greatest boons which it conferred. With smaller wings to do the same work as the large ones do at present, it would, of course, be impossible to indulge in much stouter wing construction as, for instance, all metal wings, and so become much more serviceable commercially."

SQUADRON NEWS

March Field, Riverside, California.

Dr. Hau Un Yuen, of Peking, China, was a visitor at March Field on Friday and the same evening was the dinner guest of Major and Mrs. B. K. Yount at their home on West Eleventh Street. Dr. Yuen, who is a financial agent for the Chinese government, has been negotiating with officials of the Morgan interests of New York. He is enroute home, and while at March Field evidenced marked interest in the various type planes used at this school. He is accompanied by his nephew, Mr. Shen, of Shanghai, China.

March Field now has a woman's club. Its members are the wives and relatives of commissioned officers stationed at this school. A constitution has been framed and adopted and an order of business is followed at each meeting, the first and third Thursdays of each month. Meetings are held at the Officer Club on the post. Entertainment and tea follows the business sessions and the officers are usually guests during the closing hours of the afternoon.

Capt. Vernon L. Burdge has been ordered to Fort Sill, Okla., to take a course of instruction in the Air Service Communications School.

Capt. Wm. B. Wright, ex-adjutant of the Pilots School Detachment at this field, has been transferred to Cambridge, Mass., where he will assume duties as Assistant professor of Military Science and Tactics at the Massachusetts Institute of Technology.

Capt. Thomas G. Lamphier, former Post Adjutant, has been promoted to Major. He is now stationed at Mitchel Field, Long Island, N.Y.

Sergt. Oliver Hall, recently reported at this field from Hawaii, was married Thursday to Miss Dorothy Lebaron of San Bernardino.

EX-Lieut. Lea Remelin, formerly stationed at this field, now an acrobatic pilot with Barrs' Flying Circus of Los Angeles, was married on Tuesday to Miss Nina D. Bowman. The newly-weds will leave soon after the first of the year for Japan and the Orient, where he will be engaged in exhibition work.

Lieut. Ridenour, C. H., formerly flying instructor at March Field, was married Wednesday to Miss Esther Larson of Pasadena. Ridenour is now stationed at Rockwell Field, and will take his bride to a newly furnished home in San Diego.

Chaplain Edward L. Spaulding has reported at March Field and will conduct non-sectarian services at the Enlisted Men's Club each Sunday morning.

Second Lieutenant Thomas Brinker, was honorably discharged from the service during the past week. Lieutenants A. F. Herold and Mile N. Clarke have been recommissioned in the regular army.

Nurse Lillian Hamilton has been transferred to Fort Sam Houston, Texas, for duty at the station hospital.

Headquarters Detachment, 1st Obs. Group, Manila, P.I.

Department Air Service Officer, Captain Earl L. Canady, foreign observer for the United States Army at the grand maneuvers of the Japanese Army and Navy received his promotion to Major on October 22, 1920.

Lieutenant Ira C. Baker, Executive Officer to the Department Air Service Officer, accompanied by Captain Langtry, Q.M.C., Chairman of the Chinese relief, flew low over the city - dropping hand bills and pamphlets advertising War Motion pictures to be given for the benefit of the Chinese Relief Fund. A good deal of excitement and commotion was caused in the business section of Manila by pedestrians in their endeavor to obtain some of the mysterious sky literature.

The Sixth Photo section of Camp Stotsenburg got a taste of real work last week when a hurry up call came to map the entire Fort McKinley reservation. The job is now complete and each battalion commander will be furnished with both vertical and oblique airscapes, which will be of immense value during the coming maneuvers.

Camp Stotsenburg, Pampanga, P. I.

This week the six student observers had their first opportunity of swinging a camera gun against a D.H.4 blast. Not a gun was lost overboard, although several magazines were blown away. All observers are now taking intensive physical training in preparation of a double Lewis gun; they all hope a double gun does not make as many blurs as a single gun.

The photographic section is kept busy making mosaic maps around the vicinity of Manila.

A few transportation flights were made the first part of the week between this station and Manila, and on Wednesday a formation of five H.S.2.L. Flying Boats flew around Manila Bay, making the trip within one hour and a half. Radio tests with the leading ship throughout the formation were successful, and the home station was never at any time out of communication. The ships were flown by the following pilots and assistant pilots in the order named: Leader, Captain R. G. Ervin and Lieut. R. A. Greer; #1 Right, Lieut. N. R. Wood and Sergt. McComas; #2 Right; Lieut. Virgil Hine and Lieut. E. W. Franklin; #1 Left: Lieut. B. R. Dallas and Lieut. R. E. Lea; #2 Left: Lieut. J. P. Richter and Lieut. C. G. Ellicott. Private 1st Cl. Clinton Herberger was fleet Radio Operator. The radio sets on each ship were tuned in upon leaving the home station, and each ship wound in its antennae with the exception of the leader upon joining the formation. In this way it was possible for any ship to take the duties of the leader should that ship be unfortunate enough to drop out.

On Wednesday afternoon No. 1 Typhoon Signal which went up Tuesday evening was changed to No. 3, and the wind got quite brisk, necessarily stopping all further operations for the week. The typhoon, however, blew to the southward of us and Friday showed a decided improvement in the weather. The heavy ground swell which usually follows a typhoon made further operations during the week impossible, due to the inability with our present equipment to launch our plans and Flying Boats.

The Air Service has a base ball team made up of players from the Second Aero Squadron, 17th and 27th Balloon Companies. This combination team defeated the Manila Citizens last Sunday and was defeated on the following Wednesday afternoon by the 4th Philippine Infantry.

Lieut. J. B. Patrick, who has been on temporary duty in Manila superintending the construction of an Air Service Hangar at Paramacque Beach, has returned to his organization.

Fort Mills, Corregidor, P.I.

The past week was occupied mainly by practice in the use of I.D.R. in preparation for the review of all units on the post which took place on the top-side drill ground this morning. In consequence all operations of any great importance were suspended in order that the Air Service Garrison might make some showing beside the well trained Philippine Infantry troops, and the daily drilled Coast Artillery units. The 17th Balloon Company was the leading unit of the troops, and make a good showing.

Many transportation flights were made to and from Manila, and one Radio test flight proved to be a fizzle due to a shortage. The first part of the week was excitedly devoted to the preparation of a flight of three ships from here to Zamboanga, but just as all arrangements were completed, the flight was postponed until after maneuvers.

The $\frac{1}{4}$ KW radio set that was installed on the "Geary" was removed and a larger set is being installed. It will be ready for test on Tuesday next.

Lieut. Ira C. Baker and Lieut. W. A. Gray were members of an examining board which met here this morning to determine the fitness of certain enlisted men for attendance at Training Camps for Flying Cadets. Captain R. G. Ervin was president of the Board, and Major Morene, M.C., physician.

Kelly Field, San Antonio, Texas.

The Garrison School is continuing as usual and lectures are being given twice each week on Tactical subjects in addition to this. The Tactical Course was scheduled for four hours a week but on account of the fact that almost all officers have several duties, it was found necessary to reduce this to two hours. As a rule the newly commissioned officers are developing a fine attitude toward the professional side of their lives. There appears to be nothing so good for the development of a new officer as putting him in a position where he has a lot of responsibility.

Some new S.E.5's have been received from the Aviation Repair Depot at Dallas. These planes are equipped with a larger radiator than the ones the British used but in that respect they arrived a little late in the season. Most of us are having difficulty in getting down from any altitude and keeping the motor fairly warm. The new radiators will be fine next summer if we remain in this climate.

There is an acute shortage of motor car gasoline on the field. Transportation has been cut down to an absolute minimum.

Lieutenant William J. White was recently married to Miss Mary Elizabeth Hampe of New Braunfels, Texas, the ceremony taking place at the home of a cousin of the bride. Lieutenant White is Supply and Transportation Officer of the First Pursuit Group.

Lieutenant Sheridan and Lieutenant McIvor flew to Caldwell, Texas, to repair and bring back to the field a DeHaviland left there recently by Lieutenant Stanley Smith. Lieutenant Smith, on landing, wrapped the ship up in a couple of fences and some telegraph wire and then had to repair the wire himself before he could send for assistance.

It is noted with some relief that a few students are being returned from the Air Service Mechanics School. While there is a shortage of men in all departments, clerical help is the scarcest commodity on the field, and we are glad to note that the situation is improving.

Lieutenant Harry Speck recently flew to Ellington Field taking with him as passenger Captain Eric Eaks, J.A.G. Dept. Captain Eaks made the trip for the purpose of adjusting some legal matters in connection with the purchase of the field.

Ellington Field, Houston, Texas

Lts. W. S. Wade and Edwin Sullivan, Air Service, reported for duty at Ellington Field the past week. Prior to his discharge in July, Lt. Sullivan had served here for approximately two years, and the small personnel of the field is glad to welcome him back.

Captain Shores E. Clinard, Medical Corps, has been transferred here, vice Captain Willard Justin White, who has reported to Fort Logan, Colorado, for discharge.

Aberdeen Proving Ground.

Orders were received the latter part of November, for the 258th Heavy Bombardment Squadron, with the exception of a small detachment, to go to Langley Field, Hampton, Va. Eight officers and twenty enlisted men are being retained here to perform the tests for the Ordnance Department. Three officers and approximately one hundred fifty enlisted men are going to Langley Field; due to leave here on or before December 21, 1920.

Pope Field, Camp Bragg, N.C.

The Flight regrets very much the transfer of Lieutenants Crocker and Ladd to San Antonio, Texas. A farewell party sent these officers away in good spirits.

Two civilians, Chadwick and Ludwick (former Air Service officers) landed their Standard Plane on the polo grounds of Camp Bragg while looking for this field. Motor trouble caused them to land. These stranded pilots were given aid from this field and finally succeeded in "zooming" their plane out of this small field. They are making a flight from Connecticut to Florida through the Atlantic States.

A conference on Artillery Firing was held with the new Commanding Officer of Camp Bragg, Colonel Bowley. Plans were discussed for the training of details from Artillery organizations in all forms of communications used between Airplane and Battery Commanders. It was suggested that each Battery have its own panel detail and radio operator trained in this work and co-operate with the Air Service in establishing a complete system of communication during all Artillery problems.

Carlstrom Field, Arcadia, Florida

Seventeen Naval Officers are now on this post taking a course in pursuit flying. These aviators have completed the course at Pensacola and require the training to be had only on the small and fast Army scout planes. All promise to make a creditable record at chasse work.

The work of the June class of flyers has been quite completed. The members have soloed on the light and trappy Vought plane which has just arrived here: all handling it to the satisfaction and gratification of the Commandant of the School. This is a very considerable tribute to the efficiency of the training given at Carlstrom Field, as the Vought is not the easiest plane to fly by any means.

Selfridge Field, Mt. Clemens, Mich.

Mr. Joseph F. Bass, civil engineer, Construction Service, Quartermaster Corps, Sixth Corps Area, Fort Sheridan, Illinois, reported at this station during the week, on temporary duty in connection with our various construction projects. Mr. Bass is to look over the ground and make necessary recommendations to the Construction Service.

The Township of Harrison is putting in a drainage ditch a short distance west of this field in order to carry off the spring overflow of the Clinton River. This ditch, when completed, will further eliminate the possibility of the field being flooded each spring.

Ross Field, Arcadia, California

Two free balloons from the Field made a series of flights Friday, December 3rd. The larger, a 24,000 cubic foot balloon, left the Field at 8:28 A.M., carrying Lieut. Clarence H. Welch, A.S., as pilot, and Cadets Guy W. Brown, Lloyd L. Berger and Kenneth L. Frazier as passengers. It made six flights of approximately an hour's duration each, traveling in a general easterly direction. On the last three flights but two passengers were carried, Cadets Kenneth L. Frazier and Ronald L. Short, Lieut. Welch piloting. The final landing was made near Long Beach, at 2:45 P.M., after covering a distance of about fifty-five miles. The other balloon, of 12000 cubic feet capacity, made three solo flights of an hours duration each. The first was made by Cadet John B. Strider, the second by Cadet William J. McCracken and the last by Lieut. Clarence P. Kane, A.S. A final landing was made at El Monte, California at 12:22 P.M. These solo flights qualified each of the three men for pilot's licenses. Both balloons and crews returned to the Field in the evening.

Saturday, November 27th, a number of Ross Field officers went to Big Bear Lake for a hunting trip. They made the journey by auto, going by way of San Bernardino and Hesperia. Saturday night they spent at the tavern at Big Bear Lake and Sunday morning went to Baldwin Lake for ducks. There were several flocks on the Lake, including canvass backs, butter balls and spike tails, but they flew over to Big Bear Lake early in the morning. They were flying too high to shoot but returned to Baldwin Lake in the afternoon, rather late. The officers started a drive across the Lake and bagged 21 birds before dark. The party returned to Ross Field that night. It consisted of Captains H. C. Gray, P. G. Hemphill and H. E. Weeks; Lieutenants J. H. Hill, G. D. Watts and J. I. Sullivan.

Doctor Ford A. Carpenter, instructor in Meteorology at the Southern Branch of the University of California, and head of the Department of Meteorology and Aeronautics of the Los Angeles Chamber of Commerce, spoke at the Post Service Club recently on the military value of meteorology. The lecture was arranged primarily for the present class of student officers but was opened to as much of the entire personnel as could attend. Dr. Carpenter has a large collection of lantern slides pertaining to meteorology and allied subjects many of which were used to illustrate his lecture.

Plans are being drawn up for a temporary hangar for the Goodyear Pony Blimp recently received at this Field. The hangar should be ready within the next few weeks and the blimp will be put in commission as soon afterward as possible.

The news of the Army-Navy football game at New York, November 27, was received at this Field, play by play, through the use of the radio equipment. The Naval radio station at San Diego broadcasted the flashes and they were picked up from there. Master Sergeant Aldwyn B. Watson, in charge of the radio work at the Field, arranged a special aerial for the purpose and experienced no difficulty in getting the news as the game was taking place.

Captain Raymond S. Bamberger, retired, present Executive Officer of Ross Field, has been commissioned a Major, Air Service, and will probably be assigned to the Balloon School at Omaha, Nebraska, as Commanding Officer.

Captain Thomas A. Grant, A.S.M.A., Post Quartermaster, was discharged November 30th and placed on the retired list. Before the War Captain Grant had retired as a Master Signal Electrician and was commissioned as a temporary Captain upon returning to active service in the Aviation Section, Signal Corps. He has served as head of the various quartermaster activities in this Post for more than two years. The Captain will engage in citrus fruit growing, probably near Arcadia.

1st Lieutenant Lawrence A. Lawson of this Post has been assigned to the Balloon Detachment, Hawaiian Territory, and will sail from San Francisco December 6, 1920, on the Madawaska. The Lieutenant has been Transportation Officer here for two years. He will be stationed either at Ft. Ruger or Kamehameha.

Hjalmar B. Hovde, formerly 1st Lieutenant, Signal Corps, and Meteorological Officer at this Post, has been recommissioned a 1st Lieutenant, Signal Corps, and assigned to the Balloon School at Lee Hall, Virginia, as Meteorological Officer. Lieutenant Hovde was in civilian life for nearly a year before returning to the Army.

Ray Delhauer, Ex-2nd Lieutenant, Signal Corps, is at present in the post investigating conditions with a view to the advisability of establishing a permanent breeding loft here for the Pigeon Section, Signal Corps. If established, this will be the breeding center for the Ninth Corps Area. Lieutenant Delhauer was formerly in charge of the Pigeon Section, Signal Corps and stationed in Washington. He is at present employed with the Signal Service.

A new surgeon has taken charge of the post hospital within the last week, Captain Daniel B. Williams, M.C. He was transferred to this Post from Fitzimmon General Hospital, Denver, Colorado. Captain Williams has been in the Army since the spring of 1917, and served overseas one year.

Captain Frederick M. Darrow, formerly stationed at this Post, was honorably discharged recently. The Captain was Post Surgeon for nearly a year, and was stationed here for nearly two years in all.

Mather Field, Sacramento, California

The officers and men of the Field (9th and 91st Aero Squadrons and Air Service Supply Detachment) have been engaged in pistol practice and instruction during the week preparatory to firing the record course. Competition has been very keen and some excellent scores have been made.

Major Max R. Stockton, M.C., Eye Specialist, on temporary duty at this station from the presidio of San Francisco, California, made a trip to San Francisco by airplane with Flying Cadet Henry O. Carlson on the 3rd.

Former Captain Evert L. Moore, Air Service, who has the distinction of being the first commanding officer of Mather Field, reenlisted in his former grade of Master Sergeant on November 17th and is now attached to the 91st Aero Squadron awaiting orders for assignment to Kelly Field, Texas.

Hawaiian Department

Extensive activities have been begun on the erection of permanent buildings on this post - the total expense of which is to be covered by an appropriation of over a million dollars. According to the present plans Ford's Island is to be used jointly by the Army and Navy; the Army to occupy the strip along the northwest coast, and the Navy that along the southwest coast, while the flying field, in the center of the island, is to be used by both. An appropriation for the Navy equally as large as that of the Army has been made and was announced recently. These expenditures will result in the establishment of one of the most complete and modern flying bases in the service to say nothing of its beauty and attractiveness as a post.

A large corps of laborers are at work under the direction of the Construction Quartermaster and materials are arriving daily at the dock. Foundations for three large storehouses have been laid and the frame work on ten sets of officers quarters is being set up. The base of the main road running along the west shore of the island has already been put in. All temporary buildings on the post are being torn down and the lumber recovered for future use.

All preparations have been made for the flight of two HS2L boats to the Island of Hawaii, the largest island of this group. Major John Curry, Department Air Service Officer, and a crew of enlisted men will precede the flight by several days for the purpose of preparing for their arrival. The officers who will proceed by plane are Captain Allen, Lieutenants Wooten, Duke, Duncan and Gale, Air Service, and Captain Johnson, Medical Officer. A week will be spent by the flight making reconnaissance of Hawaii in the interests of the Air Service, both by air and on the ground.

Camp Bierne, Fort Bliss, Texas.

Regular flights have been made by the Airship C-1 during the past week, and the usual Wednesday morning observation carried on for the 82nd Field Artillery from the observation balloon.

Major John G. Thornell, Commanding Officer of Brooks Field, paid us a visit, arriving here Thursday evening in one of Texas' most pleasing sand storms, which lasted until the next evening. Major Thornell inspected the Camp Grounds and buildings Friday, and the sand that was blowing at a fifty mile clip gave him a pretty good idea of what we are up against in the way of keeping policed for an inspection. Saturday was an ideal day for flying, and we took full advantage of it, making one three hour flight and three short flights of fifty minutes each. The Major got in more than five hours flying in the Airship, and seemed greatly pleased.

Camp Benning, Columbus, Ga.

From October 4th to 9th inclusive, a detail of men from the organization, also one officer, made up an exhibit at the Muscogee Valley Fair, Columbus, Ga., including a balloon, basket, telephone set, a complete inflation set, cylinders, etc. and a windlass in addition to a series of maps, photographs and signs, making the exhibit as explanatory as possible. The detail spent all of its time during that period demonstrating and explaining the purpose and use of Army Observation Balloon. This exhibit together with the Aeroplane exhibit by other Air Service troops at this station, was the center of attraction. Army exhibits of various kinds were made up, all being very interesting, especially tanks, machine guns, etc. It is believed that the Army exhibits together were largely responsible for the large attendance during the week.

The Company was honored on Nov. 4th, by the Commanding General making an ascension. General Gordon expressed himself as being satisfied with the flight, as it gave him an excellent opportunity to look over the entire reservation.

On November 9th, the Battalion Commander, Field Artillery troops at this station, made an ascension for the purpose of ascertaining target and battery positions. It is expected that some very good work will be done in cooperation with the Field Artillery.

Camp Benning has the largest Infantry School of Arms in the world, and together with the assisting branches of the Service, an immense school program is carried. Officers from all parts of the country, and of all ages and grades are receiving instruction here. The Infantry is aided by Air Service, both balloons and aeroplanes, tanks heavy and light, Engineers, Signal Corps, Field Artillery, Motor Machine Guns, Motor Transport Corps and allied services.

All field operations are observed by balloons and aeroplanes, and in addition to the reconnaissance, the Company conducts flights for the student officers, whereby they may learn the relation of the observation balloon to the other branches of the service.

The company at present consists of two officers and seventy-eight men, consequently there are many opportunities for advancement, as the organization must keep at all times, ready for any field work that may come up. This necessitates as many non-commissioned officers and specialists as possible. As the work consists of a great deal of field operation, the organization is treated to all the experiences of actual warfare minus the hardships and dangers.

Vocational training is carried on to the fullest extent possible, and it is hoped that more of it can be accomplished in the near future. The members of the Company take advantage of the various phases of company training and are also allowed the privilege of attending a series of classes maintained by the E & R Office; all of which training will help fit them for something useful upon their return to civil life, if they desire to do so upon the termination of their enlistment period.

As for athletics, the climate is very favorable and the organization has good football, baseball and basketball teams, with all the facilities of practice. The Company has an athletic field fitted to train for various other games. This field contains a ring for boxing and wrestling, punching-bag, volley-ball court, basket-ball court, base-ball diamond, foot-ball field, horizontal bar, flying rings and track. Since this Company has been at this station, some excellent work has been done in athletics. One member of the organization is a welter-weight boxer and another a welter-weight wrestler, both with substantial victories to their credit.

HERE AND THERE WITH THE EDITORS

FRANCE PLANNING TO LEAD WORLD IN AIR

Paris: Aviation is safer than any other means of locomotion, according to M. Flandin, Minister of Aviation here, whose plans for next year include an extensive programme which will easily put France in first place insofar as civilian flying is concerned. At the present time 2,500 miles of air route has been established. They will be increased ten fold next year when new interior lines will be in operation and France will be connected with her African colonies through a daily aerial service, the pilots, flying machines, and hangars for which are ready now.

The Air Ministry shows that while in 1919 less than a thousand air passengers were carried between interior points and across the Channel, the number of passengers already carried this year exceeds 7,000.

France's merchant marine is not to be compared with that of the United States or that of Great Britain, but the French Government has recognized the value of aviation and is leading in it. Not only are airplanes to be assigned to the Government controlled routes, but scores of dirigibles soon will be carrying freight from one end of France to the other at rates which will defy rail competition, especially when speed is a factor to be considered. (N.Y. Herald 12/12/20)

WRECKED AIRPLANES DECIDE CHINESE QUESTION

The question as to what use shall be made of several airplanes recently bought by the Chinese government whether for war or for establishment of mail service as stipulated in the contract for their purchase from a British firm, has been settled so far as three of them are concerned. Chang Tsolin who at present dominates North China militarily, ordered three of the six machines shipped to him at Mukden. The others were to be sent to Paoingfu for military purposes. Those destined for Mukden were loaded on flat cars and started northward. Some distance beyond Tientsin they collided with the superstructure of a railway bridge, which, along with the machines, was put out of commission. The wreck tied up traffic for a long time.

(New York Times 12/12/20)

PLAN FOR MAIL SERVICE HOUSTON TO TAMPICO, MEXICO

The establishment of an air mail service between Houston and Tampico, Mexico, is virtually assured in a cablegram received at the Chamber of Commerce, Houston, from the manager of foreign trades department, who is now in Mexico attending the inauguration of president Obregon.

(San Antonio Examiner 12/7/20)

UNITED AIR SERVICE

According to the Army and Navy Register 12/4/20, it is expected that a determined effort will be made in Congress to bring about the establishment of a United Air Service. This effort will be strenuously opposed by officials connected with naval aviation, who insist that unity of command of air forces in time of war is not essential, but that operations in the air are incidental to the general plan of campaign and that naval aviation is an integral part of the fleet.

In time of peace the arguments advanced against the proposed consolidation are based upon differences of production, experimentation, training, etc. and that expensive duplication may be obviated by a hearty cooperation and coordination of various Government departments.

There is every argument in favor of a centralized office. It is expected that recommendations will be renewed by the Secretary of the Navy at the present session for the creation of a separate office, and the objections he entertained last Spring to the appointment of another bureau chief will be overcome, if there is a good prospect of obtaining the necessary legislation.

LUMINOUS CAMOUFLAGE

As early as May 27, 1916, a novel plan to lure enemy aircraft away from cities and munition plants by means of luminous camouflage was submitted by Dillon and Shallard to the British War Office.

In his letter addressed to Lord Curzon his proposed method was to arrange areas adjacent to any town - London, Newcastle, Hull, etc. - and mark it out with dummy forges, furnaces, factories, etc., showing lights appropriate to such places and draw the Zeppelins within those areas to drop their bombs harmlessly.

The Air Board sent him word that other steps had been adopted with a view to the same end. This answer was under date of April 10, 1917.

In reading the article published recently by The New York Herald descriptive of the plans of luminous camouflage which the French military authorities were considering putting into effect about the time of the armistice, Mr. Shallard hunted up his correspondence and sent it to this newspaper. In February, 1918 he proposed to Commandant Ducros, Minister of War (aviation) a plan for constructing an imitation of a railway with illuminated trains, signals, stations, etc., not far from Paris, and second, a plan to camouflage certain sections of the Seine in Paris by smoke clouds.

In answer Commandant Ducros pronounced Mr. Shallard's ideas ingenious meriting the sincere praise of the National Defence. He said, however, "The grouping of projectors has been done in another form, as has also the realization of the incandescent projectors."

(N. Y. Herald, 12/12/20)

FRANCE WILL TEST AIR BOMB'S VALUE AGAINST WARSHIPS

British naval circles are tremendously interested in experiments soon to be carried out by the French navy as to what effect airplane bombs will have when dropped on the deck of a fully protected battleship. The British navy was equally interested in the tests recently made in Chesapeake Bay on the old battleship Indiana, but the French experiments, according to reports received here, are

HERE AND THERE WITH THE EDITORS (Contd)

to be along lines which will be more indicative of what constructional course Great Britain will follow if it is finally decided that big ships must continue to be built, despite improvements in both submarines and airplanes.

The long discussion in connection with the big ship controversy now going on has developed a general belief that the submarines have been conquered. Even the foremost protagonist of capital ships, however, admit that airplanes are still an unknown factor in naval warfare.

During the war there was but little direct experience which is now of value. One British airman scored a direct hit on the deck of a German torpedo boat, the A-40, lying at a dock. The records show one or two merchantmen sunk by air bombs, but it took more than one to finish them.

It is now reported that the French navy is determined to settle the point at the expense of some former enemy warships now in her possession. The best French aviators called upon to drop their heaviest bombs to find out whether they can score hits under ordinary conditions of combat and what damage the hits will do.

(New York Herald 12/12/20)

HONDURAS GETS AIRPLANES

Two American aviators have arrived in Honduras with American built flying machines, bought for the War Department. They are engaged for a certain period to teach flying and how to care for the airplanes. It is expected that in peace times the machines will be used for the transportation of mail over the country, where railroads are very scarce and roads very bad.

(N. Y. Tribune, 12/12/20)

MISSING AIRPLANE SAFE

Havana, Nov. 19. - Fears that the hydro-airplane Santa Maria, which left Key West at 4:30 o'clock yesterday afternoon for this city, had been lost were dispelled early today when reports were received that the machine had landed at Santa Cruz, a small port 15 miles from here. The captain, pilot and mechanic and six passengers carried by the plane were reported safe.

(Washington Post 11/20/20)

A letter to the Air Service brought out the many and varied possibilities of application of aerial photography to matters of every day importance.

"It is unquestionably true that the science of aerial photography is now developed to a sufficient state of perfection as to be immediately applicable to many matters of every day importance, and to the thinking mind should inherently prove their manifold assistance and progressive aid to everything in which they can serve to guide the mind and hand of man."

"The multitude of activities to which aerial photography can be applied makes it impossible of complete chronicle here. It might be said however that the immensity of the field is such that whoever undertakes this kind of work whether on a large or small scale, or with aeroplanes or airships ought to find always more than enough work to keep them busy all the time."

"I will expound a suggestive few of the many possibilities of application and feel sure that the train of thought induced by these will carry one well on toward the field of fancy.."

"First and foremost of course, in these applications is the subject of mapping. In the United States alone over two-thirds of the territory still remains more or less unmapped and a greater portion of that which is mapped is now out of date. At the present rate of progress at which the United States Geological Survey is completing its Topographic Atlas it will take one hundred years to map the United States. By aerial photography this task could be completed in 15 years with proper equipment, personnel and direction, and at a cost considerably less than the completed task now being carried out on the ground will eventually cost. Naturally a process of saving at the spigot and spending at the bung-hole will not countenance economy in the long run, and on account of the local demands for maps it is probable that commercial enterprise will have the country mapped before the Government does."

"Consider the relief to public utilities companies electric street railways, interurbans, gas, electric, and water companies when with a photographic map at hand they can work out respectively, best routing of tracks, per capita marked on each house, location of stops for the most convenience of the largest number of people and the elimination of inefficient stops, expansion to care for new developments; the routes of interurbans to serve the greatest number of people - isolated communities with the minimum trackage, problems to be met in laying trackage such as bridges, culverts, etc., and alternate routes that might reduce the cost per mile of construction and still serve an equivalent per capita; gas and electric companies can move intelligently, note developments and progress and field reports coupled with photographic maps data, can save many temporary installations that could be more permanent in the first place, location, extent, and distribution of underground conduit both for old and new system will save many dollars eventually; water companies can watch city growth and better find and deal with additional sources of supply."

"Insurance companies aided by a photographic map can much more minutely distribute the rate districts to the end that many risks carrying a high premium do so just because of the deflection of one or two members of a community. When this is seen by the natural inter-comparison of rate the risk will be eliminated by the force of operation of an unwritten law of survival of the fittest, whereby with the removal of the danger the rate can be reduced and the insurance companies gain while the world's parasitic losses are diminished."

"All grades and applications of engineering processes can profitably utilize both vertical and oblique photography. City planning, city expansion, engineering projects both before, during and after railroads, highways, bridges, irrigation, hydraulic, marine and practically all other classes of engineering can actually improve their work by using aerial photographs because it allows of a broader and more complete conception by the directing mind."

"Pushing off into the future more fanciful applications appear in exploration, photographs of stars from without the haze of the atmosphere near the earth's surface, location of fish schools, sunken objects, etc., even to mining, but in the latter case it is readily apparent that a lay prospector may better follow a fault line which has cut off his claim by following the natural objects shown on the photographic map through which the fault line passes as put on the map by a competent geologist."

"With mention of the fact that the nation can avail itself of the advantages of aerial photography and progress thereby. Remember meanwhile a photo-map has every detail even to the leaves of the trees at the larger scales, so it is the nearest approach to reality we have outside of models which are much more expensive."

(To be continued)

MAR 12 1928

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W-561, A.S.

NOTES ON RUNNING 160 MONO-SOUPAPE MOTOR.

The following notes have been extracted from a letter written by Lieut. Col. H. R. Hartney. These are based upon several months experience with these motors in France with both day and night flying. They apply both to the 160 and 100 H.P. Gnome.

"There seems to be the impression broadcast that the Gnome is apt to catch on fire. This is entirely erroneous and should be corrected."

I. GAS.

There is no carburetor and the flow of raw gas to the cylinders is controlled by a throttle or simple twisting valve. This throttle or valve must at all times during flight be adjusted so that the motor is running on as little gas as possible, and is the means of throttling used in the air at all times. Never use the switches in the air except the selector and this only on rare occasions, as for example, when the pilot is learning to fly the ship.

If the motor blazes up, either in the air or on the ground, cut the gas off at this throttle and there is absolutely no danger for the flame will be extinguished immediately.

On starting, when the mechanic asks for "gas on", open this throttle, but before "contact" is given, turn gas all the way off again and wait until motor has started firing before opening up to the running position.

Care should be taken in getting off, that this throttle is just right, but should the motor miss and there is any doubt in the mind of the pilot as to whether this missing is because of too rich or too lean a mixture, pilot must ease nose forward to insure glide, at same time shut off his gas until the motor stops the ease throttle forward to the smoothest running position consistent with the leanest mixture possible.

As the pilot rises in altitude he will find that he must keep cutting down on the throttle to insure leanest mixture at all times. The Nieuport 28 rises so quickly that he will do well to keep his hand on the gas almost all the time while he is flying.

To come down from an altitude for a landing, cut the gas off entirely (being sure to leave at least one of the magnetos firing). Just before reaching the ground turn on the gas again and land by means of the switch but do not fire the motor until machine is nicely on the ground with tail down. In other words, land without any kick from your motor whatsoever.

II. SWITCHES:

There are two switches on the 160. One the selector switch which need not be used at all by a good pilot, except when he first takes it up. Non-use thereof prolongs the life of the motor.

Both switches should be on all the time except for landing and taking and under no circumstances should gliding be done in the air to any extent by means of the "coupe" button. Use the "coupe" button for taxiing and landing as much as you please as there is no carburetor and short bursts of power are good for the motor rather than injurious, because it insures a liberal supply of oil and is a healthy practice when you first start the motor in the morning. (This is not true of the LeRhone).

Be careful that the switches are always in good shape because a light Nieuport 28 has more than once taxied into another machine or tried to climb hangar guide rope because of a faulty switch.

III. PROPELLER

If the propeller stops in the air be sure that the gas is turned off and the switches turned on before diving to re-start the motor. If the propeller in a dive does not start immediately, flick the stick or the rudder, turning one way or the other and it will start without fail. Be sure, however, that the propeller is moving before the gas is turned on again.

IV. PRECAUTIONS:

See that the oil is properly connected before the first flight. The oil gauges on the dish are not a good indication, stop the motor and examine the valves for traces of oil, to make sure.

Remember that the mono-soupape motor never fails unless there is no gas, however, clean your filters often and systematically and do not "take off" until you have a ready flow of gas with plenty in reserve on your throttle adjustment.

Do not hesitate to change a piston or cylinder as it is a very simple matter when once accomplished successfully. Given plenty of spares the mono-soupape can be kept 100 per cent serviceable even on active service, provided there is cooperation between the pilot and the mechanic in the handling of same.

There is no doubt whatsoever as to the positiveness of these instructions and any pilot or mechanic who blasphemes the motor by giving any other instructions should be severely reprimanded as he obviously has not had any experience of any value with them. It is a fact that the Gnome manufacturers themselves had to be convinced of the veracity of one or two of these instructions but finally agreed in every particular with the instructions above given, increasing the life of their motor from ten hours as it was originally known to have, to 65 hours.

V. MECHANICS:

About the only thing a mechanic should look out for is to keep off all rust by shining the outside of the cylinders; insure oil supply uninterrupted; clean filters regularly and systematically; glance at and adjust magneto points as in any other ignition; and examine switches frequently.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public Press.

We are in receipt of an interesting letter from Mr. Rex. L. Uden, Secretary of the Cleveland Aviation Club, in which he enclosed a copy of the official organ of the club called "WINGS". The magazine is chuck full of information and has a number of humorous articles one of which is quoted in full as follows:

"AN AVIATOR'S DESCRIPTION OF A FAIR DANSEL AT A DANCING PARTY.

She was some 5 ft. 4 in. OVER-ALL LENGTH, TRACTOR TYPE, designed somewhat after the Mary Pickford model, faultlessly STREAMLINED, and her features were slightly radical in design, but she showed a very good ASPECT RATIO.

The ENTERING EDGE of her chin had a very noticeable PHILLIP'S ENTRY. Her nose took the place of a well designed FIN, with deeply CAMBERED eyebrows. Upon VETTING her ears she showed a two degree DIHEDRAL and the NEGATIVE WASHOUT in the corners of her mouth gave a DERNIERE TOUCHE to her bewitching features. Her complexion at a distance was so CAMOUFLAGED as to give her the appearance of a school girl. Her hair was SWEPT BACK, giving the effect of HIGH INHERANT STABILITY with a solid gold CABANE having very little BRACING. Her shoulders would indicate a large KATHEDRAL. She being of TRACTOR TYPE, her FUSELAGE was carefully covered with the finest quality FABRIC and her LONGERONS so designed as to give exquisite effect.

She had a stately and well sprung UNDERCARRIAGE and as she TAXIED about the floor her graceful TAKEOFF was very noticeable, although she had a slight DUTCH ROLL and a very peculiar PITCHING MOTION at first, but she quickly assumed her PROPER POSITION.

One of the PILOTS reports she was so perfectly ALIGNED that she responded very quickly to the CONTROLS especially in a SPIN, and she readily assumed her GLIDING ANGLE.

In an attempt to test her CONTROLS, together with her RESISTANCE the CRITICAL ANGLE was found and she started to STALL, giving the observer a beautiful example of HANDS OFF, which immediately showed sufficient FACTOR OF SAFETY.

Owing to a sudden RETREAT a large GAP must be left in the detail of description, which leads us to suspect a WARPED disposition."

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AIR MINISTRY COMMUNIQUE NO. 416

The Air Ministry makes the following announcement.

THE CAIRO - CAPE ROUTE

It is interesting to note what has been done in the matter of preparing the all-British air route between Cairo and the Cape, now available for traffic.

In December 1918 three survey parties, known respectively as Nos. 1, 2 and 3, African Survey Parties were despatched to explore and as far as possible prepare the most suitable air route through Africa. These parties were instructed to get into personal touch and work in conjunction with the administrative authorities in each zone and the happy results of this policy, maintained throughout, have been very marked.

No. 1 party dealt with the section from Cairo to Nimule (Soudan).

No. 2 party dealt with the Section Nimule to Abercorn, (Rhodesia), and

No. 3 party dealt with the section Abercorn to Cape Town.

Each party, consisting of six officers and a certain number of other ranks, has for the past year been collecting all available information as to its own particular section, and has, with the aid of parties of natives, cleared aerodromes and landing grounds at distances of about two hundred miles or less along the route selected.

The route follows the Nile from Cairo to Wady Halfa, thence the railway to Shereik, from which place it conforms to the course of the Nile to Khartoum.

From Khartoum the course is to the west of the White Nile to Fleri and then almost due South through the Uganda Protectorate to the northern shore of Lake Victoria. Partly owing to the extremely disturbed nature of the atmosphere above the lake the route skirts it on the eastern side, passes over what was formerly German East Africa to the southern end of Lake Tanganyika and thence crosses Northern Rhodesia to Livingstone, whence a south-easterly course is followed to Bulawayo. The next town of importance on the route is Pretoria and so by Johannesburg and Bloemfontein across Cape Colony by Beaufort West to Cape Town.

The preparation of many of the landing grounds has involved a great deal of labour. In places it has been necessary to cut aerodromes out of dense jungle, to fell thousands of trees and dig up their roots, while the soil of innumerable ant hills has had to be removed by hand, being carried in native baskets, as practically no barrows or other equipment were available. Moreover, where tsetse fly prevailed no cattle could be utilized for cartage purposes.

To those unacquainted with this country it will come as a surprise to learn that ant hills are often 25 feet in height and between 35 and 45 ft. in diameter. As one cubic yard of ant-hill weighs about 2,670 lbs. some idea may be gathered of the labour necessary to clear the ground at such a place as, for instance, that at Ndola, in northern Rhodesia, where seven hundred natives were working from April to August of this year and roughly 25,000 tons were removed from the ground cleared. Blasting was tried but was found to be unsuitable.

However, now that the initial work of clearing has been completed, it is not anticipated that the cost of maintenance will be heavy. Native labour is generally abundant and cheap, and it is estimated locally that even in the worst cases, i.e. those of landing grounds situated in the fast-growing bush and forest country, only small annual charges will be incurred.

In practically every case land was provided free of cost or at purely nominal rent by the local administrations who have arranged to guard the stores deposited at the aerodromes and to assist in keeping the aerodrome and landing grounds cleared of bush.

In some cases landing grounds were prepared entirely by such local authorities. For instance, at Serowe, Chief Khama laid out such a ground at his own expense in order that his district should be linked up with the route. He also rendered considerable assistance in preparing that at Palapwa.

It has been arranged for the survey parties to return shortly, and the intention is to organize the route into six areas, each under the general supervision of a British Official.

SOME DIFFICULTIES.

The first portion of the journey along the Nile Valley should present no particular difficulties to air traffic. Communications by telegraph, river and railway are fairly good, and landings can be safely effected, if necessary, at many places apart from the prepared grounds.

In the central zone, however, difficulties are more numerous. Most of this is covered with dense bush and tropical forest, and landings at other than the prepared grounds will be exceedingly dangerous, if not impossible. In some parts there is no land transport with the resultant difficulty of providing the necessary stores at the aerodromes. Moreover at some places tsetse fly prevents the use of cattle so that, failing the provision of light motor transport for which special roads would have to be prepared over some sections native bearers will have to be used for the carriage of stores. Shortage of water and the frequent occurrence of areas infested by mosquitoes and white ants increase the difficulties. The fact that the survey parties have, in the face of such obstacles, completed their work within twelve months is worthy of notice.

For most of the southern section, with the exception of Northern Rhodesia conditions are considerably better, Railway and telegraph facilities are good, and stores can be distributed without much difficulty. The climate, too, is healthy, and forced landings could be negotiated in many places without serious danger.

COMMUNICATIONS.

There are wireless stations at various points within touch of the chain of grounds. Generally speaking, cable and land line communications are good, with the exception of those across certain sections such as that between Abercorn and N'dola and others in Central Africa, where considerable delay may be experienced.

COMPARATIVE OVERLAND JOURNEY.

In view of the saving of time which will be effected by the eventual opening of this air route it is of interest to compare the time at present required to complete the journey overland.

The distances and method of overland journey following as nearly as possible suggested aerial route are:-

Cairo to Khartoum. 1342 Miles - $3\frac{1}{2}$ to 4 days.

Rail Cairo to Shallal 555 miles 23 hours.

Steamer Shellal to Halfa 208 miles 42 hours.

Rail Halfa to Khartoum 579 miles 24 hours

Khartoum to Lake Albert. 1411 miles 21 to 24 days.

Steamer Khartoum to Redjaf 1096 miles 14 days.

Ground transport, Redjaf to Nimule 150 miles 5 - 8 days.

Steamer Nimule to Butiaba 165 miles 2 days.

Lake Albert to Lake Victoria. 350 miles 5 to 12 days.

Ground transport, Butiaba to Entebbe 180 miles 4 - 10 days.

Steamer Entebbe to Muanza, 170 miles 1-2 days.

Lake Victoria to Lake Tanganyika. 810 miles 15 days. x

Ground transport Muanza to Tabora 200 miles 10 days. x

Rail Tabora to Kigama 260 miles 2 days.

Steamer Kigama to Abercorn 350 miles 3 days. x

The steamer service is uncertain

Abercorn to Broken Hill. 475 miles 10-15 days.

Ground transport 475 miles - 10-15 days.

Any estimate of time must only be very approximate. x

as a journey would be governed by the state of the track.

Broken Hill to Cape Town. 1836 miles $4\frac{1}{2}$ days.

Rail Broken Hill to Bulawayo 473 miles $1\frac{1}{2}$ days.

Rail Bulawayo to Cape Town 1362 miles 3 days.

(Ground transport may include motor, horse or bullock wagon or any form of local transport.)

Thus the total distance by existing methods of communication is 6223 miles, for which 59 to $74\frac{1}{2}$ days would be required. Against this the total flying distance of the aerial route should not exceed 5200 miles as the pilot will stop only at the main stations. Taking 100 miles an hour as fair average flying speed, under favourable conditions, and when the route has become firmly established only 52 hours actual flying time would be required to traverse the entire continent or, say about a week, flying 8 hours per day.

The survey parties everywhere met with the greatest assistance and co-operation from the various local authorities who evinced the utmost enthusiasm for the project. Such whole-hearted assistance has been invaluable and it is certain that had it not been forthcoming the work could never have progressed as it has done.

This co-operation indeed has been a most encouraging feature throughout the period of prospecting and is a happy omen for the successful opening of the route.

1st Lieut. George R. Phillips, D.S.C. loses his life in an accident on the Border.

1st Lieutenant George R. Phillips, A.S.A. of the 95th Aero Squadron, 1st Pursuit Group, was fatally injured in an airplane accident at the McAllen Airdrome, Monday, January 19, 1920, at 9:30 o'clock A.M., and died at 10:30 o'clock P.M. the same date from burns received at the time of the accident.

Lieut. Phillips was making a test flight in an SE-5 preparatory to beginning flight for this station, and when at an altitude of approximately seventy five feet, an aileron control wire broke and threw his machine into a tail spin. The machine struck the ground nose on and instantly burst into flames. The officer extricated himself from the wrecked plane and crawled about forty feet from the machine before he lost consciousness. He was badly burned about the face and body. Every medical attention was given to him but his burns proved fatal the same evening.

He was one of the most popular and well liked officers at this station, and the entire personnel of this command both at Kelly Field and the border stations join the men of the 1st Pursuit Group in mourning the loss that they have suffered. The loss of Lieut. Phillips was a hard blow to the 1st Pursuit Group. He had made an enviable record both as an executive and as a pilot.

The record of Lieut. Phillips as quoted from the List of Honors and Awards in the Air Service Bulletin No. 3 is as follows:

"He was decorated with the Distinguished Service Cross for extraordinary heroism in action at Beffu-et-le-Morthomme, France on the 23rd of October, 1918.

Lieutenant Phillips, pilot, accompanied by Lieutenant M. H. Brown, observer, while on a reconnaissance for the 78th Division, attacked an enemy balloon and forced it to descend, and was in turn attacked by three enemy planes (Fokker type). The incendiary bullets from the enemy's machines set the signal rocket in the observer's cockpit afire. Disregarding the possibility of going down in flames, Lieutenant Phillips maneuvered his plane so that his observer was able to fire on and destroy one enemy plane and drive the others away. He then handed his fire-extinguisher to Lieut. Brown, who extinguished the flames. They completed their mission and secured other valuable information.
Home Address: George W. Phillips, Father, 122 West Market St., Lewiston, Pa."

This officer's service dates back to August 6, 1917, having transferred into the Air Service from the 1st Officers' Training Camp at Fort Niagara. He later attended Ground School at Cornell University, graduating October 6, 1917, with high honors. He immediately proceeded to France, receiving his flying instruction at Avord. He was ordered from there to Chateaufort, France, where he was given training in Caudrons. From there to Issoudun, a pursuit school, and received his training in stunts and acrobatics on Nieuport planes. This course finished he proceeded to the Corps and Army school at Tours to undergo instruction on two seaters, observation planes. On August 15, 1918 he joined the 50th Aero Squadron, First Corps Observation Group, where he was initiated into service over the front, receiving his baptism of fire in the St. Mihiel and Meuse Argonne offensives.

This officer was mentioned in General Orders several times during his career over the front, receiving the Distinguished Service Cross for downing three Bosche planes far over the lines and fighting his way back with valuable information. He also received a citation and medal from the Aero Club of America in recognition of his fearlessness and devotion to duty. Upon his return from overseas he joined the 1st Pursuit Group.

The entire Air Service will keenly feel the loss of such an active and energetic officer, as his popularity was only bounded by those who came in contact with him. He received the highest admiration from all those who knew him. His wide circle of friends mourn the loss of this very efficient officer and join in extending his relatives their deepest sympathy.

FIRST PURSUIT GROUP FORMULATE PLANS TO DISCOVER THE SOUTH POLE

In scientific circles a great discussion and debate has been going on for several years. As a matter of fact has been going on ever since Admiral Perry beat Dr. Cooke to the North Pole. You can see these wise looking gentlemen most any time at a certain club in New York- no I won't tell you the name of the club- poring over maps, making astronomical observations, writing notes and looking off into space apparently in a daze. After spending several hours at the club I began to feel as though I was in a morgue "a sort of a creepy feeling". However, my curiosity began to get the better of me and I walked over boldly toward a group of "Profs", introduced myself and asked them "Why the Gloomy atmosphere"? I really expected to be told that they were holding a requiem for John B's soul. Not so-- a learned professor informed me in a subdued whisper that they were preparing for an expedition to the South Pole and hoped to have it within their reach within three years.

The announcement made a profound impression upon me and upon my return I hunted up one of my friends, incidentally a Major in the First Pursuit Group now on the Border, and we had a long discussion over the possibilities of discovering the South Pole and decided that it could be done very easily by the First Pursuit Group with the expenditure of only a few gallons of gasoline and oil.

It must be admitted that the First Pursuit Group is nearer the equator than any other squadron, and it is also well known to everyone that the earth revolves on its axis once every twenty-four hours-- that much is simple. Further the First Pursuit Group must make its regular patrols anyway so it was confidentially told to all members of the group that on a certain day next week-- date a secret--, the First Pursuit Group would go up to about 15000 feet or more and just loaf around for twenty-four hours and when the South Pole came their way they would place the American flag on it with a little sign "Discovered by the United States Army Air Service, First Pursuit Group, in the year A.D. 1920".

We have no doubt but what our scientific friends will be quite peeved when they learn of this but so were the Germans when they met the First Pursuit Group.

FLYING CONTINUES THROUGHOUT WINTER AT CHANUTE FIELD ILLINOIS

In spite of extremely cold weather, often below zero and a blanket of snow, which has covered the airdrome to a depth varying from three inches to two feet, the officers of Chanute Field have succeeded in keeping up their flying practice and have accomplished a total of about twenty-five hours in practice flights, during the month. No trouble is experienced in landing in the snow. It is the general opinion that the snow cushions the ground, which is usually very hard and quite rough in winter and makes possible a smooth landing with a quick stop after the wheels touch the snow. No attempt has been made to equip the ships with skids or runners, because up to the present time no difficulty has been experienced with the regular landing equipment. A great deal more flying could have been done had it not been for the shortage of personnel, which makes the handling of the ships on the ground very difficult. All the ships in use are kept in a steam-heated aero repair building and no difficulty has been found in the operation of motors, due to cold weather, although considerable care must be taken in the handling of Hispano motors to prevent the warping of valves.

FORMER LIEUT. M.A. NORTHROP IS INDICATIVE OF FUTURE OF COMMERCIAL AVIATION.

In the news letter of January 19, 1920 an article was published on the "Future of Commercial Aviation". In it you were told that we did not agree or share the opinion of Foreign Countries that "America need not be feared as a competitor in Civil Aviation".

A number of manufacturers were forwarded letters inviting their attention to the above quoted press despatch. Today we are in receipt of a letter from former Lieut. M. A. Northrop, R.M.A, a graduate of Scott Field who is now General Sales Manager for the Curtiss Northwest Airplane Company.

It is mighty encouraging to read of his activities in the Northwest coupled with the reports from the Chicago show. It looks as though Civil Aviation will more than come to the front. Lieut. Northrop's letter is quoted in full:

"Sirs:

Replying to your letter of January 20, FILE NO. 3191, with reference to the visit to Scott Field, recently made by the writer and the outlook for the sale of aeroplanes in the Northwest, I would say that in our territory we are very enthusiastic and a great deal of interest is being displayed. We started selling planes on the second of July, 1919 and in three months had sold almost 40 planes. This year we are sure of selling at least 100 and there is a possibility of that number being increased to 125. During the past year the sale of planes has been more or less confined to former air service officers who were buying these machines to fly exhibition and carry passengers. In almost every case these men have been very successful and of course this year there are just as many more who will attempt to do what the first have done. In addition to that there will be a certain number of machines bought by our purchasers of last year, who will hire an extra pilot and instead of having only one machine, will have two or more they own and operate. Another source of sale will be the man who has enough money to buy and fly a plane for his own personal pleasure and the man who will buy and operate a plane for his business. A great many firms are contemplating the purchase of planes for this purpose, as the country in the Northwest is ideal for flying with great large fields and unbroken prairie for hundreds of miles in the cases of the States of North Dakota, South Dakota and Western Minnesota.

I believe that when the Government aligns its efforts with those of civilian manufacturers and there is perfect unison between all forces working for the development of aeronautics, you will see a great deal of progress and interest in this country. But as it is at the present time, with certain elements boosting and other factions knocking, there is bound to be a lot of dissatisfaction and unfavorable comment on our programme of aeronautics. I believe that time will remedy these faults and am very frank to say that before a great many years we will be behind the other countries in the manufacture of aeroplanes, simply because we have been so far away from flying and people have only read about it. In the cases of the countries of France, Germany and England, there has been flying of all kinds over their heads for years, and they have come to believe in it; whereas there are districts in the United States that have never had an aeroplane land or in other cases no one has ever flown over their cities. We must educate the people and only by a great deal of propaganda can this be done.

The first thing that must be done is the establishment of some sort of system or plan to secure landing fields throughout the entire country. Just as the greatest development of the automobile followed the good roads campaign, so must the aeroplane depend upon the establishment of landing fields. There is nothing that presents so great a problem today as the establishment of landing fields in each and every city throughout the country.

We try to start this in every city that we go to because it is the best propaganda for the sale of aeroplanes in the future that can be carried on. I would be glad to co-operate with your department in any way possible for the betterment of flying throughout the United States.

If there is any way that we can help you secure this information or in which you in return will help us secure these landing fields, I would like to hear from you at any time or on any phase of this subject.

The Round the Rim Martin Bombing Plane landed at our field and Colonel Hartz said that it was one of the best fields that he had used on his trip thus far. The All-American Flying Squadron of the Hispano-Suiza plane used this field as did Lieut. Col. Clagett with the De Haviland 4s when he was in Minneapolis. I believe these squadrons do a great deal to create interest in flying and I am sure the Government has realized this point also.

If there is any information that I can secure for your office by

to you^{would} wish brought out, I will be very glad to do this service.

Best wishes, I am

Very truly yours,

CURTISS NORTHWEST AIRPLANE COMPANY

M. A. Northrop,
Sales Manager.

BORDER SQUADRON PLANES MAKE RECORD RELAY FLIGHT FROM BROWNSVILLE, TEXAS
TO NOGALES, ARIZONA.

The value of the airplane as a means of transmitting written communications from one point to another over a long distance was put to a favorable test Wednesday when a letter written by Major General Joseph T. Dickman, Southern Department Commander, was carried from Brownsville to Nogales, Arizona, a distance of 1,000 miles in eight hours and thirty minutes. The experiment was made at the direction of Gen. Dickman, who expressed himself as well pleased at its success. The time is believed by Air Service Officers at the Southern Department Headquarters and at Kelly Field to be a record for this sort of flying.

With Gen. Dickman actually in his office at the Southern Department Headquarters, at Fort Sam Houston, this supposititious problem was put up to the Air Service. --Problem. Gen. Dickman is at Brownsville and desires to communicate with Col. Earl C. Carnhan, commander at Nogales. He cannot send his message by wire or for some reason does not wish to do so. Can airplane do it, and do it faster than train?

The Air Service said the airplane could, and to demonstrate it two letters were started from Brownsville at the same hour, 4.25 o'clock on the following day.

Relays of airplanes and of aviators both pilots and observers were provided at each landing field along the border, and no time was lost in transferring the letter from the hands of one observer to another, while the pilot prepared to get his machine under way.

The complete log of the trip has not been received at Southern Department headquarters. Following is the log in so far as it has been received, the hour being that of arrival on the one plane and the departure of the other.

Brownsville-4:25 o'clock a.m.

Laredo-6:10 a.m.

Eagle Pass-7:14 a.m.

Marfa-9:09 a.m.

Nogales-12:55 o'clock noon.

The difference between central and western time was taken into account in computing the time of the flight, the letter having gained an hour between the time the first machine left Brownsville and the arrival of the last machine at Nogales. Stations missing in the log are Sanderson, El Paso, and Douglas, Arizona.

There is no landing field at Nogales and the machine was forced to circle the reservation and drop the message, returning to headquarters of the Arizona district at Douglas.

No report of an accident of any sort throughout the entire trip has been received at Southern Department headquarters.

The selection of the pilots and observers for the trip, together with other details, were left to commanders of stations along the border.

Lieut. Melroy piloted the first ship, leaving Brownsville Wednesday morning with Lieut. Hickey as his observer; Lieut. Fonda B. Johnson with Lieut. Harbeck as observer piloted from Laredo to Eagle Pass, and Lieut. Cavanaugh, pilot, accompanied by Lieut. Kilinski, observer, carried the message from Eagle Pass to Marfa; the names of the other pilots and observers have not yet been learned.

The message, addressed to Col. Carnahan and signed by Gen. Dickman, read as follows; "This message is being carried in order to test the reliability of airplanes and the plan of carrying messages by airplane to points within this department."

The letter sent by mail was only well started towards Nogales when the airplane message was delivered. A letter under the most favorable circumstances takes 48 hours to go from Brownsville to Nogales by mail. The airplane delivered its message in less than one fifth of this time.

LIEUTS. DAVIS AND GRIMES FREED FROM MEXICO WHILE LIEUTS. GEO. E. USHER AND LEROY WOLF WHO LANDED FEBRUARY 3rd, ARE BEING HELD.

Lieut. E.F. Davis and G.E. Grimes Army aviators who were compelled to make a forced landing at Guerrero, Mexico, due to fog, wind and a bad engine were released February 3rd, by the Mexican authorities.

Captain W.B. Bradford, Assistant District Adjutant went to Matamoros and made the necessary arrangements to have gasoline and oil sent across the line, and later in the day Lieut. Stoner flew the machine back across the line. Lieuts. Davis and Grimes are now on U.S. soil. Except for some minor injuries received in landing both officers are O.K.

Particular reference was made by these officers, to the courtesy extended them during their forced stay in Mexico. Hardly had these officers cleared Mexico when Lieuts. Geo. R. Usher and Leroy M. Wolf, who were flying a patrol from El Paso to Nogales, Arizona, and incidentally considerably off their course were compelled to make a forced landing near Nacozari Sonora, Mexico which is about 79 miles south of Douglas. The border patrols have been up against most terrific rain and wind storms, as well as fog and flying at times has been extremely hazardous. The last named officers are reported being held by the Municipal Authorities of Nacozari. It is expected, however, their release will be accomplished within the next few days.

BRITISH AIR MINISTRY

The Automotive Industries outlines the organization of the British Air Ministry as follows:

"The British air operations are directly under the King as General in Chief and in turn under the Air Council, of which Winston Spencer Churchill, who is also Minister of War, is President. The Council includes in turn a Secretary of State for Air, which position is held by Churchill; an under-Secretary of State for Air, who is also the Vice President of the Air Council; the Finance Member, the Chief of the Air Staff, the Controller-General of Civil Aviation, the Director General of Supply and Research, the Administrator of Works and Buildings, two additional members and a Secretary.

Contrary to general opinion, the Air Ministry is not a supreme body but instead is subordinate to the Air Council. The Air Ministry comprises a Sub-Secretary of State for Air, his under secretary, the Secretary of the Air Council Assistant Secretary of the Air Council and individual secretaries for those members. It controls and includes the Department of the Air Council, the Department of Finance, Department of the Chief of Air Staff, Department of Civil Aviation, Department of Supply and Research, Medical Administrator, Department of Works and Buildings, Department and Inspector of the R.A.F.

The Air Ministry is supreme under the Air Council in all matters pertaining to aviation, civil or military. Great Britain makes no distinction between naval and military aeronautics. It places both under the title of "service aeronautics" and the Air Ministry and Air Council function chiefly for service aeronautics, excepting the Department of Civil Aviation, which, however, must in turn co-operate completely with the other departments and function according to the requirements of service aeronautics.

The Department of Finance controls the purchase of lands demobilization, purchase of and payment for materials and all matters relative to finances. The Department of the Chief of the Air Staff has charge of training and organization, personnel and equipment. The Chief has under him, in addition to deputies, a Director of Training, a Director of Personnel and a Director of Equipment. This department is completely controlled under direction of the Air Ministry of training organization and the purchase maintenance of equipment.

The Department of Works and Buildings comprises a Director of Air Construction Service, a Director of Inland Construction, a Director of Marine Works, a Chief Electrical Engineer, a Chief Water Engineer, and a Chief Drainage Engineer each in turn with large organizations under their control. This Department has charge of the construction of flying fields, hangars, and factories, both for naval and military aeronautics.

The Inspector General of the R.A.F. is charged with the duty of enforcing all orders and commands of the Air Ministry.

C.

OLD KINDLEY MEETS DEATH IN KELLY FIELD MANEUVERS.

Captain Field Kindley, Commanding Officer of the 94th Aero Squadron on border patrol duty was fatally injured February 1st while engaged in aerial maneuvers at Kelly Field Number 2. The accident occurred while a group of planes were in practice formation preparing for the exhibition scheduled in honor of General Pershing's coming visit.

Captain Kindley's machine became unmanageable when about 50 feet from the ground. It fell into a spin and before he had time to level out the machine crashed to the ground and immediately caught fire. He was so badly injured and burned that he expired the same evening at the Post Hospital.

This officer had a notable record for daring with the 148th Aero Squadron which was attached to the British Forces overseas. For bravery and extraordinary heroism in action he received the Distinguished Service Cross, oak leaf cluster, and the Distinguished Flying Cross. The following paragraphs are quoted from the official records of this office:

"On September 24th Lieut. Kindley led his flight down on seven Fokkers north of Bourion Wood, one of which he followed down and saw crash and burst into flames.

On September 26th while working in conjunction with another of our flights Lieut. Kindley's Flight accounted for two E.A. crashed, one of which he got.

On September 27th this Officer on low flying duty dropped bombs on railways near Marcoing, then attacked a balloon near Noyelles-sur-l'Escaut, driving same down and compelling the two observers to jump. He then, at an altitude of 600 feet, attacked and silenced an enemy machine gun and shot up troops. Being then attacked by a Halberstadt he engaged it and brought it down in flames. Lieut. Kindley's ammunition then being used up, he started for the lines, but on the way back saw two E.A. which he dived on. They turned and went East.

This Officer has been on active service in France since May 23rd, 1918. His work in this Squadron has been consistently good and since July 30th, 1918, he has been leading "A" Flight with marked success. He has accounted for a total of seven and one half E.A. destroyed and has driven down out of control three."

After Captain Kindley's return from the A.E.F. he was stationed for a time in the office of the Director of Air Service. He was intensely interested in the organization of a permanent Air Service and furnished a lot of valuable information in connection therewith. Later he was stationed at Mitchel Field and only recently was transferred to Kelly Field to take command of the 94th (Hat-in-the-Ring) Aero Squadron.

Captain Kindley was a splendid type of a man and had a magnetic personality. His death has been a shock to his brother officers and enlisted men in the service and is keenly felt by all. The Air Service has lost its premier flyer by his death.

SELFRIDGE FIELD USES LAKE ST. CLAIR FOR LANDING FIELD.

Selfridge Field, for the past forty-eight hours, has been held in the grip of the severest storm of the winter. A fall of snow averaging twelve inches, and accompanied by high winds and a zero temperature, brought remembrances of the famous blizzard of January, 1918. Aside from drifted roads, no damage has been done, and short work has been made of the drifts by an artillery tractor drawing a road scraper.

Although this winter has been consistently cold, and with the ground covered with snow most of the time the miscellaneous flying hours of this field are well up to the average of the warmer months. This is a fair indication of the rapid strides flying has made since the winter of 1917-18, when, owing to cold weather, all flying was suspended. Last week Major N. J. Boots, as pilot, and accompanied by 2nd Lieut. J. E. Machle, observer, made many successful landings on the frozen surface of Lake St. Clair. This lake, adjoining as it does the field, adds several hundred square miles of landing space.

ARMY AND NAVY OFFICERS HAVE EXCITING BALLOON FLIGHT.

Lieutenant James D. Jordan of the Army Air Service and Ensign Gobel of the Navy had an interesting and most exciting flight this week. On the haul down at the end of their flight a sudden gust of wind hit the balloon broadside at an altitude of fifty feet causing the nose to become depressed and the balloon to dive sharply. The nose of the balloon hit the ground followed closely by the basket and in the ensuing mix up the basket became entangled in the rigging. When the balloon and basket recovered and re-ascended from the dive the basket was hanging upside down. It remained in that position for about a minute and then disengaged and righted itself. The minute, however, was a very trying and anxious one for those in the basket and those watching from the ground. Ensign Gobel is a Navy heavier-than-air man and is stationed in Omaha on recruiting duty. This was his first experience of this nature in lighter-than-air craft and needless to say his respect for the Balloonist has been greatly enlarged.

COAST PATROL PLANE FLIES WITH BROKEN BRUSHES.

A Coast Patrol Flight was successfully carried out between this Field and Langley Field, Virginia on January 28th and 29th, by two DH-4 planes piloted by 2nd Lieutenants W. B. Souza and Howard Norris, 1st Lieut. M. S. Lindgrove A.S. acted as observer for Lieut. Souza, and Lieut. Norris had Lt. Col. Gerhart as a passenger. On the trip from Mitchel Field to Langley Field fog was encountered most of the way, making low flying necessary. While flying over Delaware Bay, the fog was so thick that flying on a compass course both Pilots were out of sight of land for about twenty five minutes. Upon arriving at Langley Field, Lieut. Norris found both brushes on the distributors broken, but this caused the motor no trouble. Lieut. Souza on his return trip from Langley Field, was accompanied by two DH-4 Patrol Planes, one being from the 50th Aero Squadron and piloted by Lieut. Davis, the other from the 88th Aero Squadron piloted by Lieut. Potter. All the ships arrived at Mitchel Field about the same time.

The Material Disposal and Salvage Division of the Supply Group have a number of hangars and frames for sale. The items are as follows:

		Approx. Price
171	Alban Richards type A airplane hangars..	\$6000 \$2000
	size 72 ft. x 41 ft. front 72 ft.	
	High (front) 15 ft.	
	" (ridge) 23 ft. 9 in.	
	" (rear) 8 ft. 6 in.	
	Depth 40 ft.	
	Includes frame and canvass cover,	
244	Frames only	\$5400 \$1300

The above hangars and frames are located at Kearney, N.J. and Morrison, Virginia.

If any further information is desired a letter should be addressed to the Material Disposal and Salvage Division, of the Supply Group, Washington, D.C.

ACTIVITIES OF MITCHEL FIELD. ✓

REORGANIZATION OF 1ST AND 5TH AERO SQUADRONS

The 1st Aero Squadron has been designated as a long-distance bombardment squadron, and reorganized with available personnel at this Field. At present there are assigned to it twelve (12) pilots and two (2) observers. The executive personnel is as follows:

Commanding Officer: Capt. A. E. Simonin, A.S.A.,
 Adjutant: 1st Lieut. Russell L. Maughan, A.S.A.,
 Operations Officer: 1st Lieut. A.M. Roberts, A.S.A.
 Engineer and Supply Officer; 2nd Lieut. Lucas V. Beau, Jr., A.S.A.
 Commanding Officer "A" Flight; 1st Lieut. A.M. Roberts, A.S.A.,
 Commanding Officer "B" Flight; 1st Lieut. Eugene H. Darksdale, A.S.A.

Executive personnel of the 5th Aero Squadron, as follows:

Commanding Officer: Capt. Harry M. Smith, A.S.A.
 Adjutant: 1st Lt. C.L. Midcap, A.S.A.
 Operations Officer; 1st Lt. Paul J. Mathis, A.S.A.

This squadron has been designated to patrol the coast from Mitchel Field, at Long Island, to Langley Field, at Hampton, Va. At the present time, both the 1st and 5th Aero Squadrons are doing this work. In spite of the very bad weather only twice have these patrols been uncompleted. In some cases as many as three snowstorms have been encountered en route.

A school for instruction has been established at this Field to carry out a training program as directed by the Director of Air Service. At present about twenty-eight (28) officers attend this school daily. A great deal of interest has been shown on the part of all and it is expected that marked progress will be made in this training.

The local chapter of The American Officers of the Great War is being established at this field. It is estimated that the chapter will consist of about fifty-five (55) members to begin with. All ex-officers living in this vicinity of Mitchel Field have been invited to join.

Accident Death Rate of Flyers Three Times Battle Death Rate of other Officers. ✓

The death rate for battle and accidents among flying officers who served overseas was over five and one-half times that of officers of all other services. Flying officers receive additional pay because of the extra hazard incurred.

For deaths from accidents alone, the rate among flying officers overseas was nearly 49 times that of all other officers and over three times the battle death rate of other officers.

Figures for total number of officers served overseas include 16,782 commissioned in the A.E.F.

Officers	Overseas	Deaths		Deaths by:		Death rate per 1000		Total
		by battle	by accident	battle & accident	who served overseas.			
Flying	4,318	236	206	532	54.6	63.5	123.2	
All others	96,484	2,001	139	2,140	20.7	1.4	22.1	
Total	100,802	2,237	435	2,672	22.2	4.3	26.5	

Flying Officers	Deaths per 1000 Served Overseas	
	Battle	Accident
Flying Officers	54.6	63.5
All other officers.	20.7	22.1

TREATMENT OF AERONAUTICAL MOTORS FOR LONG TIME STORAGE.

The Aviation General Supply Depot at Little Rock, Arkansas has devised a method of treating an aeronautical motor for long time storage which is quite interesting. To treat these engines it is necessary to install an elaborate system of machinery. To date they have turned out 7,300 engines, of which about five thousand five hundred eighty seven were Liberties. Treating these engines for long time storage has required about two hundred fifty thousand gallons of oil. The rate of output is about one completed engine every six minutes, which is very rapid when you consider that one Liberty engine treated individually would probably require the work of four mechanics for the greater part of the day. This rapid output is obtained by the installation of a system based on the theory of all rapid quantity systems, namely that of having each man perform one operation and one only, and perform it upon each engine as it passes him. Engines pass around the operating track in a steady stream, going on in the condition and state of assembly in which they are received from the factories, and coming off completely prepared for long time storage. A tremendous amount of work is done and a large output obtained in this manner.

FLYING OFFICERS OF THE AVIATION REPAIR DEPOT AT INDIANAPOLIS INDIAN EQUIP PLANE FOR WINTER USE.

Flying officers who are stationed at the Aviation Repair Depot, Indianapolis, Indiana have had little opportunity to get in their flying time or to keep up their practice due to the repeated snow storms which have covered the field to the extent of several feet making it positively dangerous to attempt to take off or land.

In order to remedy the condition a call was sent out to all officers of the depot for suggestions as to how this difficulty could be remedied. The inventive ability of the officers of the post responded nobly.

The wheels of a standard type Curtiss airplane were taken off and a pair of skies similar to those used by sledge jumpers, were attached to the under-carriage. The results were highly successful. All officers who have flown the ship so equipped have expressed themselves as highly pleased with the performance, the take-off being fully as short and the landing much smoother than with a machine equipped with wheels. As a result of this unusual plan flying can be done throughout the winter in spite of arctic conditions.

ACTIVITIES OF MECHANICAL INSTRUCTION BRANCH.

1. At the present time there are over two hundred (200) enlisted men under instruction at the Air Service Mechanics School at Kelly Field. Thirty-eight (38) of these are Lighter-than-air men receiving instruction on engines and dirigible motors. Twenty-one are receiving instruction in automobile repair (motor transportation). Classes covering instruction in all trades required in the Air Service will be gradually opened up. It is expected to start a small class in instrument repair within the next week or so. Classes in Engine Mechanics and Airplane Mechanics are being enlarged by small detachments which are arriving from time to time from various Stations. The length of the regular course will be approximately four and one-half (4½) months.

2. Three of the ten enlisted men who graduated from the parachute course at McCook Field have been ordered to the Air Service Mechanics School at Kelly Field as instructors, and a class will be started shortly for the instruction of about sixty (60) men in this work. It will be required to train one man for each Air Service Flying Field and one for each tactical unit. Authority has been requested for the establishment of an Armorer's School, instruction to be carried on at the Air Service Mechanics School at Kelly Field. Syllabus of this course has been prepared. It is proposed that selected enlisted men will receive this instruction this Spring.

NOTES OF INTEREST FROM THE FIRST WING, KELLY FIELD

Major William G. Schaufler, A.S.A., Wing Operations Officer, led a flight of three SE5's to Laredo and McAllen and return to Kelly Field on January 17-20, 1920. He was accompanied by Lieuts. S. G. Frierson and George R. Phillips both of the 1st Pursuit Group. The flight left Kelly Field at 11:45 A.M. Saturday and arrived at Laredo one hour and twenty five minutes later. One hundred and forty miles was covered at an altitude of from fifty to five thousand feet. The terrain most of the way offered ample forced landing fields in the way of farms along the railway, there being only a short space of mesquite where landing was made dangerous.

The Commanding Officer, Lieut. Col. Davenport Johnson, left the field earlier in the day for Laredo, and at that station was joined by Major Schaufler flight on the trip to McAllen. Colonel Johnson flew in a Bluebird, and no doubt his advent into these border stations was somewhat of a surprise as he gave no pre-notice of his inspection trip. Later on and before reaching McAllen the flight was joined by another DeHaviland, Lieut. George E. Hodge and Lieut. Jordan on their way to McAllen.

RECORD FLIGHT

Captain L. E. Appleby, Executive Officer of the Field accompanied by 1st Lieut. Harry D. Smith, took off at one o'clock P.M. Saturday, in a DeHaviland for the Aviation Repair Depot, Dallas, Texas. A distance of two hundred and ninety miles between the two stations was covered in two hours and five minutes, at a rate of almost 145 miles per hour. The plane flown by Captain Appleby was being ferried to the Repair Depot for overhauling the motor having had more than one hundred hours of border patrol flying. An altitude of two thousand feet was maintained all the way to Dallas, and the R.P.M. showed 1550 practically all the way. This is considered the record flight in the Southern Department, and is especially interesting in view of the fact that the motor had had more than one hundred hours of hard border service.

The Radio School at this station, under the direction of Lieut. George Burgess, Wing Communications Officer, suddenly came into prominence during the past week, when communications was established between Berlin and New York.

Lieut. Burgess reports that a conversation was listened into between this German city and New York. Messages were caught from the following stations:
Naues (Berlin Germany, Clifton, Ireland, Oahu, Hawaii, and steamships off the coast.)
Lyons, France, Glace Bay, Novia S. of Brazil.

Receiving from New York, Washington, Bermuda, Panama, San Diego, California, as well as from steamships on the Atlantic and Pacific, are common daily occurrences. The maximum range of this station has not yet been determined, but it is expected that stations in Japan, Philippine Islands and Asia will be brought within its radius shortly.

NOTES OF INTEREST FROM THE 1ST WING

FORT SAM HOUSTON COMMENTS MOST FAVORABLY
ON KELLY FIELD ATHLETIC ACTIVITY.

The following letter was received during the week from the Department Adjutant, expressing appreciation of athletic activities at Kelly Field. This letter speaks for itself:

"HEADQUARTERS SOUTHERN DEPARTMENT
Fort Sam Houston, Texas.

Jan. 21st, 1920

FROM: Department Adjutant.
TO: Athletic Officer, Kelly Field, Texas.
SUBJECT: Athletic Activities.

1. We wish to express our appreciation and gratification of the excellent work you have been doing in promoting and encouraging the athletic activities at your station. Your interest and cooperation in putting over the initial games of the Army Post Basket Ball League is most commendable and is appreciated.

2. The work at Kelly Field is a noteworthy example of what may be accomplished with limited resources and we speak for a continuance of your good work and splendid all around activities.

J. WATT PAGE,
Major, Infantry, U.S.A.
Asst. to Dept. Adjutant"

The good weather on Monday resulted in considerable flying by the 27th Squadron, which engaged in trick formations and other training work. Lieut. Aldworth, commanding this squadron has been assigned two other officers, Lieuts. Hoppin and Mathews, the latter having participated in the trans-continental cross country flight recently.

Monday and Tuesday morning exhibition formations were flown by Captains Kindley and Meredith, and Lieuts. Roberson, Brokaw and Penniwell, from the 94th Squadron. This work was in the nature of practice for General Pershing's visit on February 3rd next. Lieut. Roeder, recently from forest patrol work, reported to the 94th Squadron during the week.

NOTES OF INTEREST FROM THE 1ST DAY BOMBARDMENT GROUP

The second flight of the 12th Aero Squadron, under orders for El Paso, Texas, took off ten planes strong, on Saturday morning, after a week's delay on account of weather conditions. All of the ships reached their destination. This is quite a record for the 12th, as twenty one DeHavillands belonging to this organization were ferried to Douglas, Arizona and El Paso without the loss of a ship.

With the arrival of the 96th squadron from Douglas and El Paso the Bombardment Group is complete. Training is being actively and energetically engaged in, and a splendid showing is expected to be made. Along athletic lines other groups will take notice that strenuous efforts are being made to eclipse the fields.

Four Spad airplanes were received from Ellington Field and two of them have been assigned to the training department for instructional purposes.

NOTES OF INTEREST FROM THE 8th AERO SQUADRON, McALLEN, TEXAS.

Lieut. Fonda E. Johnson Flight B, dropped three days rations to three men from Ft. McIntosh who were stranded 20 miles east on the San Antonio Laredo Road last week, thereby relieving their suffering for lack of food.

NOTES OF INTEREST FROM THE 104th AERO SQUADRON, EL PASO, TEXAS.

This squadron furnished four planes to the regular weekly formation flight, also "Spin" the Airdale pup was present at 8:00 A.M. in full flying equipment to take her regular ride. This formation was one of the best put on at this field as it was flown close up, and the planes hold their position remarkably well.

AIR SERVICE ENLISTED MEN BEING SELECTED FOR FLYING CADETS.

The Air Service has selected one hundred ninety four (194) of the enlisted men on duty at the various fields in the United States to take flying training. These men have been placed on a cadet status and are now under instruction at Carlstrom Field, Arcadia, Florida and March Field, Riverside, California.

The cadets are given a thorough course in all branches including mechanics and the construction of airplanes in the ground schools before they take their actual flying training. The entire course covers a period of from nine months to one year during which time the cadet draws \$100 per month.

During the world war the Allies and even Germany used many enlisted flyers over the lines, the United States was the single exception. Many of the Americans in the Lafayette Es Quadrille were enlisted men and remained enlisted men until they were taken over in the American Air Service where upon they were commissioned.

The cadets upon the completion of their training are commissioned in the Aviation Section of the Signal Reserve Corps as airplane pilots and are given the preference either to receive their discharge or return to duty as enlisted men with the privilege of wearing wings. A great majority of the cadets have signified their intention of remaining in the service after the completion of their training. At the present time about 150 men are on the waiting list for flying training.

In view of the increased facilities for training, the Air Service in the near future will be ready to accept candidates from civil life who desire to take a course of training for airplane pilot.

WAR DEPARTMENT

DSS-NBM

Office of the Director of Air Service
Washington

December 16, 1919.

From: Director of Air Service.

To: General John J. Pershing, Washington, D. C.

Subject: Request for Statement Regarding "A Separate Air Service".

1. I believe that the press of the country either misunderstands or misinterprets your views on the needs of the Air Service as expressed at the joint meeting of the Senate and House Committees on Military Affairs. The attached photostats will disclose what is reaching the public and leading them to believe that you favor such a "Separate Air Service" as is proposed in the New and Curry bills. To correct this interpretation of your views, which I consider an incorrect and erroneous interpretation, I request your answer to the following questions.

2. (a) Can military forces be efficiently trained or can they operate efficiently without an air force?

(b) Can an air force acting independently win a war against a civilized nation?

(c) Can an air force, by itself, accomplish a decision against forces on the ground?

(d) Is an air force an essential combat branch and should it form an integral part of an army?

(e) To insure success, is it necessary that the air force be controlled in the same way, understand the same discipline, and act in accordance with the army command under precisely the same conditions as do the other branches?

(f) Is it essential, in order to establish battle control, that the air force, equally with the other branches, must fully understand its exact functions in working with the other branches, know their needs, be in full sympathy with them, think in the same military atmosphere and have the same esprit de corps?

(g) If the above conditions are essential, can they be brought about in any force unless it is an integral part of the command, not only during battle but also during the entire period of its doctrinal training?

(h) Can such conditions be obtained in a force that is but a temporary attachment to a command?

(i) Is the air force of sufficient importance to be a separate branch of the Service, co-ordinate with the Infantry, Cavalry and Artillery?

(j) The New and Curry Bills propose a separation of the air force from the Army and Navy, and provide for its training under a Director of Aeronautics, so that it may comprise a combatant force distinct from the Army and Navy. Do you favor a Separate Air Service as provided in these bills?

(k) Is any quotation of your views as favorable to a Separate Air Service correct if it refers to a Separate Air Force WITHOUT the Army as provided by the New and Curry bills or is such quotation correct only when it refers to a separate branch of the service, WITHIN the Army, separate only as the Infantry and Cavalry are separate?

3. The purpose of this request is to get your real views before the public. I believe my purpose would be best accomplished by your giving to the public your answers to the above questions. If such a course is not feasible, I request permission to publish your answers here.

4. It should be remarked that this categorical presentation of the matter is not intended to influence you to reply categorically to the questions asked, or even to suggest the form and nature of your reply. It was felt, however, that a specific outline of the points raised in this connection would not alone be the easiest way of presenting the matter, but would be one of convenience to you in formulating your reply.

Chas. T. Menoher,
Major General, U.S.A.,
Director of Air Service.

5 att.

GENERAL HEADQUARTERS
AMERICAN EXPEDITIONARY FORCES
Old Land Office Building
Washington

Enroute Denver, Colorado,
January 12, 1920.

Major General Charles T. Menoher,
Director of Air Service, War Department,
Washington, D.C.

My dear General Menoher:

I am at a loss to understand how my opinion on the question of a separate Air Service as expressed at the joint meeting of the Senate and House Committees on Military Affairs could be misinterpreted. In those hearings, and on many other occasions, I expressed my view that the Air Service for military purposes should remain a part of the Army. I urged, of course, the very gra

necessity. Developing aviation in a commercial way and for other than military purposes as an invaluable adjunct to military preparation in time of peace.

Before the joint meeting of the Military Affairs Committees I indicated my belief that some cooperation and coordination between the different departments of the Government using air ships might well be obtained and, in fact, that such coordination was essential to the development of aviation. The question of coordinating the industrial end of aviation is, of course, an entirely different matter from the proposition of taking away from the Army this Air Service and establishing a Department of Aeronautics independent of the control of the War Department.

I am very glad to answer the questions you asked in your letter specifically, and I am giving my answers below the same headings that you gave your questions.

2. (a) Military forces can never be efficiently trained nor operated without an air force.

(b) An air force, acting independently, can of its own account neither win a war at present time nor, so far as we can tell, at any time in the future.

(c) An air force by itself can not obtain a decision against forces on the ground.

(d) A military air force is an essential combat branch and should form an integral part of the army.

(e) If success is to be expected the military air force must be controlled in the same way, understand the same discipline, and act in accordance with the army command under precisely the same conditions as other combat arms.

(f) An air force, as well as all other branches of the military organization must fully understand its exact functions in working with other branches, must know the needs of other branches, be in full sympathy with them, think in the same military atmosphere, and have the same esprit de corps in order that effective battle control may be established.

(g) No such force can realize the above conditions unless it be an integral part of the command not only during battle but also during the entire period of doctrinal training.

(h) To realize these conditions the different arms of the service must live together and train together.

(i) An air force should be established as a separate arm of the service, coordinate with the Infantry, Cavalry and Artillery.

(j) An air force should not be established as a combatant force distinct from the Army and Navy.

(k) The only view that I have ever expressed on the question of the Air Service for military purposes is that such Service should be established as a separate branch within the army, and separate only in the same way that Infantry and Field Artillery are separate.

On my present tour of inspection I have had occasion several times to refer to my opinions on the Air Service. I shall probably again refer to this question, but I have no objection to your utilizing this letter in any way you see fit.

Very truly yours,

(Signed) JOHN J. PERSHING,
General of the Armies
of the United States.

Certified to be a true copy.

Wm. F. Pearson,
Colonel, A.S.A.

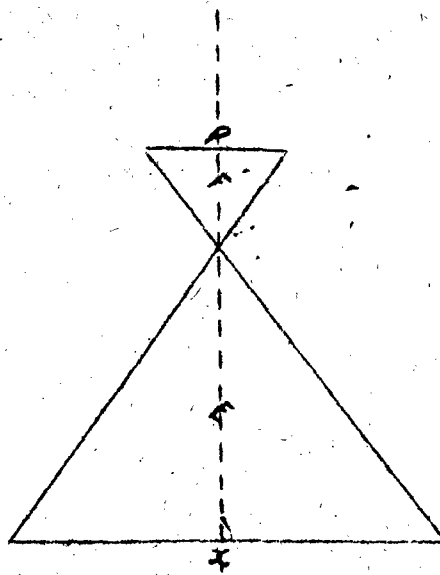


FIG. 1.

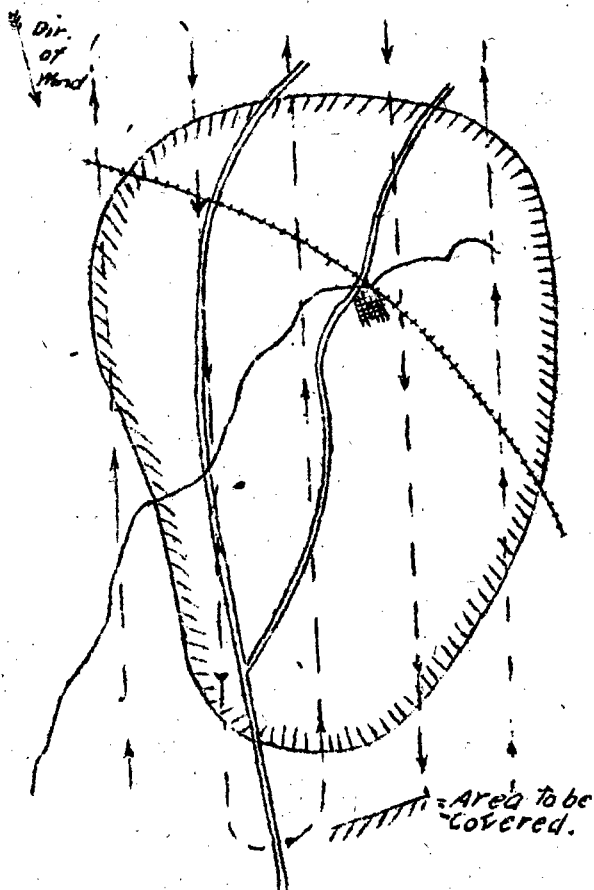
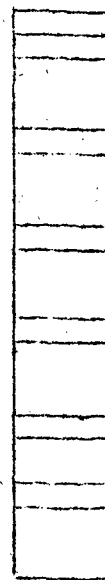
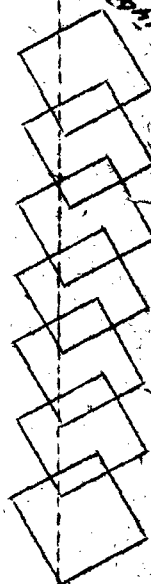


FIG. 2.

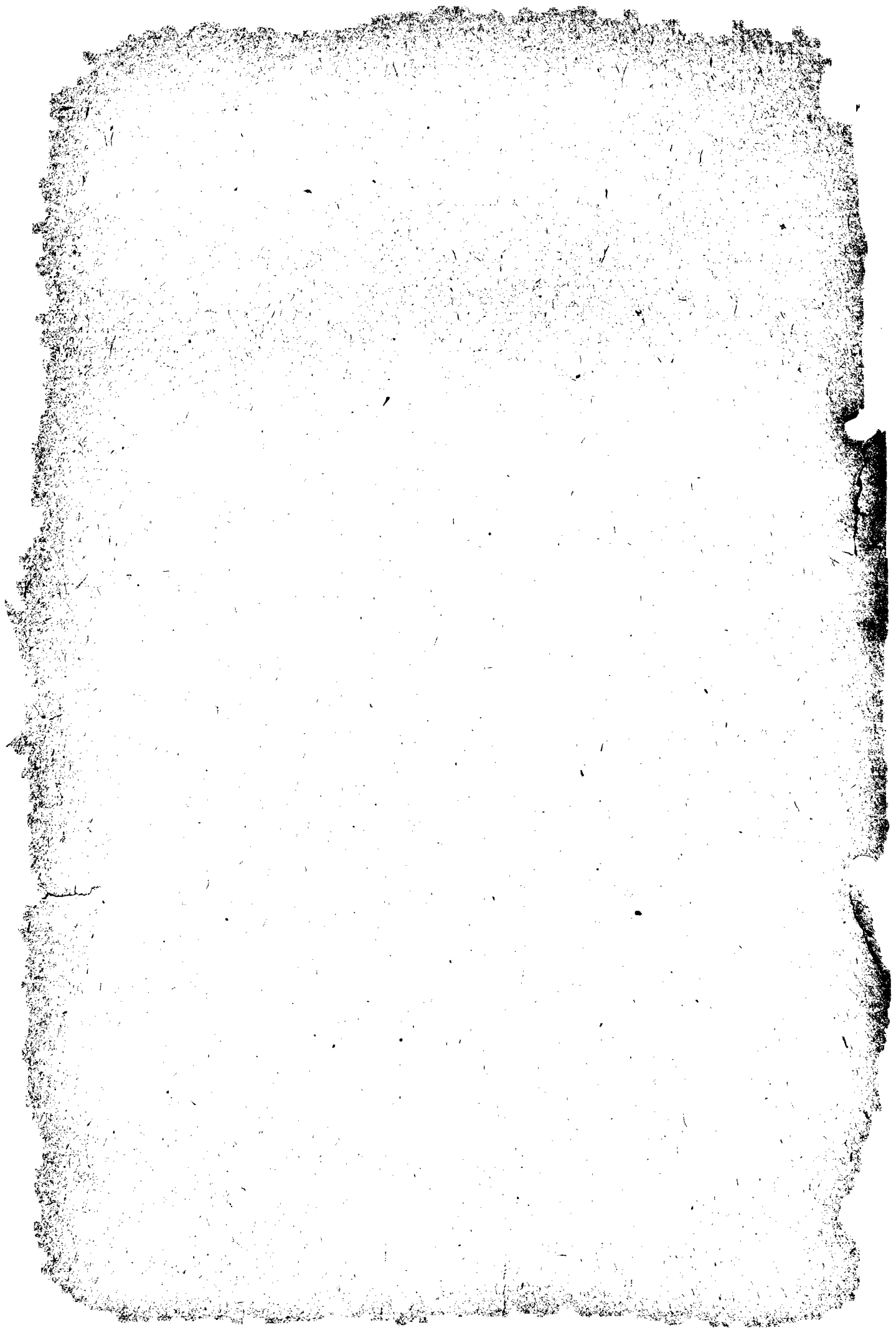


No Gaps



Gaps

FIG. 3.



In connection with covering a given area completely and efficiently the question of economy must play an important part.

Let us take for example the case of 25 square miles of territory in a block five miles on each side, to be flown at an elevation of 10,000 feet.

What camera shall be used? A 4 x 5 camera with ten inch lens will cover 4000 x 5000 ft. per exposure. An 8 x 10 camera with ten inch lens will cover 8000 x 10,000 ft. per exposure. Unquestionably we use the latter, for only one-half the number of exposures are necessary with consequent saving in chemicals, paper, time and so forth. Furthermore, only 4 flights across the area will be necessary as compared to 8 in the case of the 4 x 5, yet the scale, definition and data is the same in both cases. The 4 flights with climbing time and turns will roughly cost with 8 x 10 camera for 25 square miles, as follows:

(a) Curtiss JN-H.S.E.	\$3.25
(b) DH-4	7.75
(c) Martin	15.50
(d) A-type Airship	.75

These costs would have to be doubled if a 4 x 5 camera were used instead of the 8 x 10. If the area were larger the question of endurance would enter in which varies as follows:

Curtiss JN	2 hours
DH-4	2.5 hours
Martin	3.8 hours
A-type airship	33 hours

Of the aeroplane types the Martin is much more universally applicable to varied aerial surveying projects, but the preeminence of the airship for this work is readily seen by a mere comparison of the figures. These figures are computed as operating costs at the place of surveying and do not include going to and from the project for which of course the cost per mile flown is the same as in operation neither is there any computation of photographic materials and work included.

Concluded

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public Press.

FINANCIAL ASPECT OF COMMERCIAL AVIATION

The experience of the last twenty or more years in the practical operation of lighter-than-aircraft in Great Britain, France, United States and Germany makes it possible now to readily analyse the financial aspects of the application of ships to commercial aerial transportation. The tables of operation costs, income, and capital investment are now available, and reveal many interesting features contradictory to hitherto generally accepted prejudices in many people's minds on the subject of aviation finances.

Commercial aerial transportation is something that cannot be undertaken on a small scale and put thru successfully but a proposition that is financed so that it can suffer improbable losses at the start, will survive and within a relatively few years promises a greater return per unit of value than any other so-called "new proposition" successfully put through. This is particularly true of airships. The risk in the latter form of aerial transportation is considerably less than has been heralded by many, unfamiliar or antagonistic to its uses.

It is estimated that the minimum capitalization necessary to inaugurate an airship service that can be said to have a sufficiently safe margin to be designated as rightly conservative in the light of these facts would be \$5,000,000 for operation of two small airships. Small in the sense of size, yet large in type, assuming they will be non-rigid. The operation of these craft is assumed, with proper and necessary equipment, over an efficient route range for this type of craft of between 800 - 1000 miles. This sum bears a larger percentage of ground costs than any other further expansion or increase in operations will bear.

Estimate of cost of operations for airships can be based on performance data of the order of much over 2,500,000 miles covered equal to more than 100 times around the earth at the equator and will include depreciation, running costs, upkeep, ground costs, insurance, and so forth. Estimate based on data of this order of reality cannot be far from right and if computed with a proper margin of allowance will not exceed a value of greater than 15% of the total capitalization and this rate with added experience and the efficiency inherent to large scale expansion will be reduced materially.

Computation of commercial rates sufficient to cover total annual charges, and still repay the sources of financial supply a reasonable return even at the start, other data remaining equal, have been arrived at by both American and English authorities and put at eight cents per passenger mile. Considering that the transportation provided accomplishes the distance between any given point in one-half the time that direct railroad connections would take at a total cost averaging five cents per passenger mile, thereby supplying one of the most necessary elements to present progress which is speed, it seems that this rate and the patronage which it will unquestionably draw is ample proof of the immediate practical adaptability of airships to commercial aerial transportation.

Contrary to a lot of lay opinions that have been set forth, this sort of service must be inaugurated on a relatively small scale, and built up for thereby you build up your patronage and "raison d'etre". Admitting that other nations have gone further than the United States in the development of airships and admitting that improvements will be made as progress is accomplished nevertheless the copy of an advanced foreign type and an attempt to begin where they left off, or the putting in of years of effort to perfect the vehicle to a point of Utopian superiority gains nothing, for when you present the results of either of these propositions to the world you are under maximum conditions of operation and your accomplishments present no greater advantage in the fundamental necessities and your patronage or ability to assume your position in the normal order of events is no better than it is now.

In fact, the advocate of a rigid ship for other than work in the near future after a service of this nature has been inaugurated is unnecessary and unduly exercised by arguments of parasitic inefficiency and fails to understand that comparisons of efficiency are proportional. American manufacturers have gathered expert personnel to take care of this coming work and those experts have had experience with the latest and best in designs, both actual and proposed, and have designed non-rigid ships of which the former are commercially available now. With the start of commercial airship transport these experts are more than capable to improve the best designs in the world today besides adopting them to American production methods, and are literally marking time waiting for lethargic America to wake up.

TRIS SPEAKER CATCHES HIS TRAIN

Tris Speaker lately of the Red Sox received a telegram to make immediate arrangements to join his new team, the Cleveland Americans. Now our friend Tris lives on a ranch way down in Hubbard, Texas, about 150 miles from the nearest railroad station, which is at Waco. The daily "Rocket" puffs out of Waco at 1 P.M. each day. It being 10 A.M. Tris was in quite a quandary to know what to do. However, being of a practical turn of mind he called upon Ex-Lieut. Belsler, a former flying instructor at Kelly Field, who lives on an adjoining ranch. The result was that our friend Belsler gave Speaker a glimpse of a brand new Curtiss Bus, he had just assembled. The machine was taxied out, warmed up and both took the air at 11 A.M. They arrived at Rich Field, Waco, Texas at 12:30 - 30 minutes to the good.

Needless to say Tris was enthusiastic about air travel and it is rumored that he intends purchasing a machine for his own use.

GENERAL PERSHING ESCORTED BY 12th AERO SQUADRON PLANES AT EL PASO, TEXAS.

On Monday February Second, the Personnel of Headquarters and Flight "B" turned out in its Sunday very best in anticipation of the visit by General Pershing. At eleven thirty the General's Car was seen approaching, and the Squadron took position for the inspection. After the inspection the Officers attended the reception at the Fort Bliss Officers' Club where all were presented to the great Commander.

At two thirty in the afternoon a nine plane formation flew in review before the General who had taken position at the west entrance of the Officers' Club. The Club is situated on the edge of the Mesa, and as the nine DeHavillands roared past the reviewing stand, in close formation, the Observers standing at salute, had to look up to see the reviewing stand. The planes were so low that a civilian photographer who had slipped through the Guards, and was holding his camera at arms length above his head trying to snap the formation, had his camera smashed by the wheels of the leading plane. After passing the reviewing stand the formation broke and formed column and passed once more in front of the reviewing stand. On the last trip the low flying De Havillands had a clear field.

When General Pershing's train pulled out of El Paso Union Station three planes took position just in rear of his car and flying at the height of the telephone poles escorted the General to Fabens. When the planes appear the General came out to the observation platform and remained there until escorting planes fell out at Fabens.

COMMERCIAL AND MILITARY POSSIBILITIES OF THE AIRPLANE AND AIRSHIP.

The modern airplanes and airships are viewed by the average person as something which can be used for the military and naval arms of the service--more or less successfully,- for the transportation of mail, passengers, etc., but which is, nevertheless, a dangerous toy. This is really not the case at all. True the airplanes and airships have not reached the apex of perfection nor will they ever reach that stage--any more than the present day locomotive street car, electric generator and a thousand and one other modern inventions which these days are a part of our very existence. Today it has reached the criterion stage-- tomorrow it is obsolete,- newer and better apparatus having replaced it and so it keeps on. The airplane and airship will go through the same stages of evolution. The airplane of today is a practical machine which can be made with a cruising radius of from 20 to 30 hours by the use of a series of motors of which two or more are for auxiliary purposes only while the airship can, as has been proven by the performance of the R-34, stay in the air 80 hours and over without the least bit of difficulty.

The future development of the science of aeronautics depends largely on whether the people want it to grow or remain stunted, particularly in so far as the commercial status of aeronautics is concerned. However, the military end must continue to keep abreast of the times as fighting craft has proven its worth in the world war. Everyone knows that the army which does not have a competent air fighting force cannot hope to compete with its enemy. Therefore, it is obvious that the armies of the world will devote their efforts to the development of fighting aircraft for their own protection.

In this article we are not particularly concerned about military craft, we lean more as to the possibilities and probabilities of their use from a civilian point of view and their commercialization in connection with the promotion of new enterprises to which commercial air vehicles can readily adapt itself and to bring before everyone the fact that it is one of the inventions of man which has come to stay. Last but not least the development of a national aircraft industry through the development of commercial aviation which will sooner or later be placed upon a safe and sound basis which it is hoped in time will be second only to the automobile industry.

There is quoted on the following pages some of the many uses for which aircraft can be employed and on the last page the uses to which aircraft can be put in connection with the military and naval arms of the service.

SCIENTIFIC APPLICATION

Two years ago the Bureau of Entomology made certain preliminary tests with respect to examination of infected forest areas by aircraft. It is suggested that the proper personnel and material be furnished the Bureau of Entomology for the purpose of completing an exhaustive test of this application, covering the necessary period, keeping accurate account of all available work days, reasons for loss in time, costs of all kinds, etc. This test could be applied not only to forest areas but to those under cultivation.

CUSTOMS

Necessary personnel and material to be furnished the Internal Revenue Department for exhaustive trial over certain distance, full records to be kept, with a view to ascertaining the definite proportion of aircraft necessary to prohibit illegal crossing of boundaries by smugglers or others.

SURVEY

By arrangement with the Geodetic Survey certain portions of the country, heretofore not mapped, could be mapped by aircraft and the time and costs of the completed work compared with an approximation of a similar survey made with normal methods. So far as is known, no information is available with respect to the exact ratio between aerial and territorial mapping.

COAST GUARD

A similar period of tests could be made with the cooperation of the Coast Guard for the various operations conducted by it, which would furnish definite information as to whether or not there is a market for aircraft in this branch of the Government.

PISCATOLOGY

The Bureau of Fisheries is interested in the production of fish and in the location of shoals. But one test has been made of this character which gave sufficient indication as to the immense value of aircraft for this work. An exhaustive trial could be made of aircraft covering the necessary period in cooperation with this Bureau.

CROP SURVEY

So far as known, the Department of Agriculture has made no attempt to use aircraft for the surveying of probable crops and furnish real information. An exhaustive test could be made of this.

FORESTRY

While forest fire patrols were being conducted experiments could also be made as to the possibility of estimating and selecting quantities of various kinds of timber.

RANCHING

Arrangements could be made with some large ranchers to put at their service several airplanes and sufficient personnel to exhaust all possible uses of aircraft in connection with cattle raising such as searching for lost cattle, finding broken fences, herding, etc.

JOURNALISM

The Government or private concerns could possibly undertake the photography of the principal events during the coming year by utilizing aircraft. For example, in the case of the International Yacht Race this could be photographed by still and moving cameras, and still negatives immediately developed at Governors Island and distributed to all newspapers, announcement having been made to the newspapers in advance thereof. This would provide photographic instruction, information of value in connection with the operation in future of aircraft in obtaining the best position for photographing, would interest the newspapers in the novelty of the operation and demonstrate to the public a definite application of aircraft and at the same time obtain valuable publicity for the future of aeronautics.

Airplanes (land and water), Balloons (Captive and free), Dirigibles.

Commercial

Mail and express.

News service-- distribution of matrices and illustrations to rural or other newspapers and journals.

Photography for mapping of development tracts, estates, unexplored country, factories, water power projects, burnt lands, insurance surveys, inspection of power and telegraph wires.

Searching range for lost stock.

Communication on large scattered farms and ranges.

Supplying rations, or materials, at inaccessible places while on exploring expeditions or in case of injury by storms, etc.

Catching outgoing steamers with important mail or other messages.

Delivering mail to and from dirigibles and large airplanes.

Inspection power, telegraph and telephone lines.

Mining inaccessible but rich territory.

Exhibition flying for industrial expositions, fairs, carnivals.

Passenger carrying at fairs, expositions and carnivals.

Passenger carrying between important cities.

Amusement flying at resorts.

Delivering evening newspapers to outlying districts.

Transporting material and personnel to and from inaccessible mines or other locations.

Receiving mail from incoming steamers while long distances at sea.
Trans-oceanic and trans-continental mail, express and passenger carrying.
Exploration.
Supplying fuel to other aircraft while in flight.
Journalism- photographing of sporting events of all kinds.
Flying to and from hunting camps.
Location and reporting of schools of fish, whales.
Sealing.
Police Patrol
Fire Patrol
Transportation of medicines and supplies when the factor of time is important.
Heading off stampeding cattle on ranges.
Timber cruising.
Coast and Geodetic Survey.
Aerial Ambulance
Coast Guard Patrol
Passenger carrying to nearby islands, etc. (Aerial Ferry)
Crop Survey.
Inspection motion picture "locations".

Forestry

Mapping of forests.
Location and reporting of fires.
Photography of forests for isolating infected areas.
Patrol against raids and depreciations of any character.
Location of desired timber.

Sport.

Racing.
Flying to sporting events, gold grounds, races, etc.
Cross-country touring.
Establishment of new records.
Photography.
Hunting.

Meteorological

Exploration of the upper air.

Scientific

Observation of celestial bodies above earth's dust layer.
Geographical study.

Misc.

Smuggling, and counter smuggling.
Burglary, arson, kidnapping, cattle stealing, boot-logging
Stampeding cattle, and heading off stampedes.

Military and Naval

Attack of all enemy elements in the air.
Liaison with infantry.
Messenger service at high altitudes.
Prevention of enemy air attacks on friendly ground troops.
Artillery adjustment.
Visual reconnaissance.
Bombardment raids.
Artillery surveillance.
Coast Patrol.
Communication between fleet commander and cooperating force on shore
Assisting in naval blockades.
Offensives against submarines and torpedo boats.
Location of mines.
Adjustment of shore batteries.
Photography of results of bombardment.
Photography of friendly works to improve camouflage.
Dropping maps, locations, orders and information to friendly troops.
Dropping propaganda.
Guide to advancing troops.

Landing agents in enemy territory.

Photographic reconnaissance.

Landing raiding parties, back of lines.

Attacks on ground troops.

Incendiary bombardment.

Supplying food and ammunition to isolated posts.

Destruction of battle ships.

Raids on hostile batteries that cannot be reached by artillery.

Adjustment of fire from ships.

Location and destruction of enemy submarines.

Coast Guard

Location of wrecks, derelicts and other menaces to navigation

Location of vessels in distress, particularly where radio communication has failed.

Prevention and suppression of aerial smuggling.

Search of areas in western rivers, in flood time, for refugees and speedy acquisition of information concerning condition of settlements out of communication with the outside world.

Establishment of communication by line between vessels on shore and the beach when vessel is beyond the range of line gun.

Occasional use, where practicable, in actual rescue from the water of persons in danger of drowning.

NOTE: These are but main headings; many branch into subheadings when the duty becomes highly specialized.

TRAINING FILMS AVAILABLE FOR DISTRIBUTION

The following training films are now available for distribution under the provisions of Section VIII, General Orders, No. 134, War Department, 1919.

<u>Part No.</u>	<u>Subject</u>		
1.	Discipline and Courtesy.	32.	Lewis Light Machine Gun
2.	How to Shoot the Rifle.	33.	Lewis Light Machine Gun.
3.	Bombing.	34.	Chauchat Automatic Rifle.
4.	Manual of Arms.	35.	Chauchat Automatic Rifle.
5.	Physical drill.	36.	Browning Automatic Rifle.
6.	The Bayonet.	37.	Browning Automatic Rifle.
7.	Pistol Shooting.	38.	Browning Automatic Rifle.
8.	School of the Squad.	39.	Drill of Gun Section.
9.	School of the Company.	40.	4.7 inch Field Gun Battery.
10.	Gas and Gas Masks.	41.	M.T.C. Field Operations.
11.	Signals.	42.	M.T.C. Field Operations.
12.	Care of the Horse.	43.	M.T.C. Field Operations.
13.	Harness and Harnessing.	44.	Trench Mortar.
14.	Harness and Harnessing.	45.	Trench Mortar.
15.	The Bayonet (Speed Cam.)	46.	Elements of Map Reading.
16.	The Artillery Team in Draft.	47.	Elements of Map Reading.
17.	The Artillery Team in Draft.	48.	Firing Data.
18.	Target Designation.	49.	Firing Data.
19.	Target Designation.	50.	Common 3" Shrapnel
20.	Infantry Equipment.	51.	3" Gun Section.
21.	Infantry Equipment.	52.	3" Gun Section.
22.	Field Fortifications.	53.	Indirect Laying.
23.	Field Fortifications.	54.	Indirect Laying.
24.	Heavy Browning.	55.	3" Firing Battery.
25.	Heavy Browning.	56.	3" Firing Battery.
26.	37 mm. Gun.	57.	155 mm. Recoil System.
27.	37 mm. Gun.	58.	Modern Percussion Fuses.
28.	37 mm. Gun.	59.	Principles of Bomb dropping.
29.	Vickers Machine Gun.	60.	The Bomb-sight.
30.	Vickers Machine Gun.	61.	Army Foot-measuring and Shoe fitting System.
31.	Rifle Grenade.	62.	Army Foot-measuring and Shoe fitting System.

ROSS FIELD ACTIVITIES

At ten o'clock on Monday morning, January 26th, General John J. Pershing visited Ross Field and made an inspection of the command and the camp. About ten thousand people gave the General and his staff a rousing ovation which will never be forgotten in Arcadia. The General and his Staff officers appeared well pleased with the condition and appearance of the camp, equipment and the command, and left for Los Angeles after they had been in the post approximately an hour and a half.

Lieut. Colonel Forrest Bradley, Field Artillery, arrived at the Post during the week to arrange for and participate in a course of training to be given to nine artillery officers, to be chosen from the country at large, which will cover a period of three months training. This course will be very similar to that given to Air Service Officers qualifying as balloon observers, and will include a thorough ground course, as well as a mountain observation course. The other officers who are to take this instruction are expected during the next few weeks.

On Saturday Evening, January 31st, a dance will be given at the Service Club (formerly the Y.M.C.A.) in honor of Mrs. Mary E. Coles, the new Post Hostess, who is the wife of Mr. Fred S. Coles, Director of the Service Club. The inauguration of a Hostess at the Post is received with much pleasure by the enlisted men, as an opportunity will now be afforded for the proper reception and entertainment of the feminine friends and relatives of the soldier at this Post.

A number of complimentary communications have been lately received concerning the excellent appearance and behavior of the companies belonging to this Post, which participated in the ceremonies connected with General Pershing's recent visits to Los Angeles and Pasadena. The Post Band has developed to such an extent that its performances are bringing forth the most favorable comment, and it is a big factor in benefitting the morale of the troops.

OFFICERS AND ENLISTED MEN HAVE EXCITING BALLOON FLIGHT.

A number of free spherical balloon flights were held on Monday and Tuesday, January 26th and 27th, using a 19,000 cubic foot capacity spherical balloon. Those participating were: Captain Ira R. Koenig, A.S.A.; Captain Lee W. Felt, A.S.A.; Lieut. Benjamin Cassidy, A.S.A.; Lieut. J. E. Stanton, M.C. and Sergeant 1st Class John W. Jackson, 15th Balloon Company. One of these flights was a night flight, and one of the day flights proved very exciting due to the fact that the balloon landed on some 15,000 volt electric transmission lines, and was only removed after a number of wires had been broken with many fireworks and much consternation on behalf of the onlookers.

CORRECTION OF STATEMENT IN NEWS LETTER JAN. 27-1920

The 9th Aero Squadron on duty at Rockwell Field, California take exception to the allegation of the Air Service News Letter of January 27, 1920 that the 9th Aero Squadron on duty at McAllen, Texas seems to have surpassed all of the squadrons in the United States for reaching high flying.

On October 14, 1919, 2nd Lieut. Luke J. McLaughlin, A.S.A. pilot accompanied by 2nd Lieut. G. W. Parry, A.S.A. reached an altitude of 19,000 feet in a DH4 Type A, making the ascent and descent in a little less than 90 minutes and it is believed by this organization that that flight set a record altitude which will stand for some time.

CORRECTION OF STATEMENT IN THE NEWS LETTER OF FEB. 9th.

In the news letter published February 9th, page 16 in the second paragraph it is stated "The entire course covers a period of from nine months to one year and during this time the Cadet draws \$100 per month". This is an error and should be interpreted to read "\$75.00 per month" which is the correct amount the cadet receives in accordance with existing regulations.

CAPTAIN MCKINNEY FORMER COMMANDING OFFICER OF THE SCHOOL OF AERIAL PHOTOGRAPHIC RECONNAISSANCE AT LANGLEY FIELD DIES OF PNEUMONIA.

It is with extreme regret that we announce that Captain Michael A. McKinney succumbed to pneumonia on February 5th at his home in New York City. Captain McKinney was discharged from the service in October, 1919 and had reentered the photographic business in which he was engaged prior to the war. During the war Captain McKinney was Commanding Officer of the School of Aerial Photographic Reconnaissance at Langley Field, Hampton, Virginia.

Notwithstanding the fact that he was outside the draft he enlisted as a photographer shortly after war was declared. He was a most thorough and expert photographer and was immediately placed in charge of primary instructional work. He was commissioned a 1st Lieutenant shortly after his entry into the service and later was commissioned a captain.

He was largely instrumental in the successful formation of the School of Aerial Photographic Reconnaissance and won the praise and admiration of all with whom he came in contact.

One of his notable achievements in the early days of the war was to demonstrate the feasibility of long distance photographic reconnaissance flights, which at that time were considered impractical. Early one morn he selected his best photographic pilot and headed for Washington, D. C. He flew a straight photographic course up and down the streets of Washington and returned to Langley Field without alighting. He put his force to work on the plates, developed, printed, assembled the mosaics and delivered it by aeroplane to the Director of Air Service within 24 hours. This proved that long distance and rapid method of photography could be accomplished and caused spirited contests between the Photographic Sections at the fields, each trying to equal his record in speed. For this achievement he was awarded the Medal of Merit by the Aero Club of America. Many other notable mosaics were made by him in connection with the training of observers and the course of instruction will be remembered by all who were fortunate enough to take it as being most thorough and interesting.

Captain McKinney is survived by a wife and one son.

THE LIBRARY DIVISION OF THE AIR SERVICE AND ITS FUNCTIONS.

In order that all Fields, Stations and posts in the Air Service as well as the various other activities may have a clearer understanding of the functions of the Library Division of the Air Service the following is published with the hope that all concerned will lend their hearty cooperation.

It is the mission as well as the intention of the Library to supply all Air service stations, etc., with a personnel of over 100, an aeronautical library consisting in the main of books, pamphlets and magazines pertaining to aeronautics in general as well as subjects which are closely allied thereto.

In addition it is intended to add special books for specialized schools, fields, air parks, etc., such as Pursuit, Bombardments, Photography, Gunnery, Balloon and Airship, etc.

In order that this can be accomplished successfully it is necessary for all inactive fields and stations ^{to} send in all books, pamphlets and documents while the active fields will be required to furnish a complete and comprehensive report of all books, pamphlets, etc., they have in their possession at the present time.

An inventory of books and data in the possession of this office is under way. It is indeed a difficult matter to compile a list such as contemplated with the small amount of personnel available and it is requested that the Commanding Officers at all active and inactive fields do their utmost to cooperate in connection with the above.

In the near future there will be sent to all fields from now have on hand, the general aeronautical library mentioned this article and shortly afterward will follow the special library of interest to individual endeavors. It is also the intention of the Library Division to supply periodicals to all such activities if they will supply a complete list of those they are now receiving, when their subscriptions started and what ones they desire in addition, with the names of publisher, price, etc., and if funds are available, we will do everything in our power to see that all requirements are fulfilled.

All requests in regard to books, magazines and newspapers which are the property of the U. S. Air Service will be directed to this division. Note that this does not include books for recreational purposes which will be supplied all Army units through the American Library Association, Army Library Service or the Vocational Training books, but it is our intention and hope that we can get all of these activities united and working in cooperation with each other so that there will be no duplication of effort. If there is any of the above arising at your own field, please notify us at once and we will take the matter up. It is understood that several fields have asked the American Library Association for aeronautical magazines when they have a Library Division of their own whose function it is to supply same to them. Many similar instances such as these will be referred to us. Any material which does not pertain to us we will notify those writing in and let them know to whom we have turned it over, and if they will keep us posted we will work with them to help them secure their desired results.

NOTES OF INTEREST FROM THE U.S. ARMY BALLOON SCHOOL, FORT OMAHA, NEBRASKA.

A summary of the flying at the United States Army Balloon School, Fort Omaha, Nebraska for the week ending January 31, 1920 shows the following totals: Captive Balloon without passengers 299 minutes, Captive Balloon with passengers 1010 minutes, Free Balloon 253 minutes.

Two Captive Balloons are being flown every morning thru the week at this Post from 8:30 A.M. to 11:30 A.M. One of these is used primarily as a training balloon for both ground and air work, and maneuvering, etc. The other balloon is used primarily for experimental work and on it are tried out all of the experiments that have progressed sufficiently to be ready for field tests.

A free balloon flight is now made from this Post every Sunday. Those participating this week were:-

- Captain R. S. Steenberg, M.C. (Flight Surgeon)
- Second Lieutenant William E. Connolly, A.S.A. Pilot.
- Second Lieutenant John R. Hall, A.S.A.
- Second Lieutenant William E. Huffman, A.S.A.
- Master Electrician C.L. Airhart, 14th Balloon Company.
- Sergeant First Class V.P. McDonnell, 27th Balloon Company.

This party made four ascensions on the one flight, the time of each being 70 minutes, 63 minutes, 60 minutes and 60 minutes. In all the party covered about 175 miles on the four flights. There was a very strong ground wind up that day and on the last landing the wind got into the rip panel and partially inflated the balloon causing it to drag the basket for a considerable distance over some very rough ground. The wind was blowing approximately 50 miles per hour and the basket was dragged for about half a mile; over trees, fences, and other obstructions.

All of the occupants except the Pilot were injured to some extent. Captain Steenberg received a sprained ankle, Lieutenant Hall head cut and other bruises, Lieutenant Huffman twisted ankle and various cuts and bruises, M. E. Airhart nose broken and rendered unconscious, and Sergeant McDonnell head cut and knee twisted and rendered unconscious. Upon returning to Omaha Master Electrician Airhart and Sergeant McDonnell, while waiting for a car to take them to the Fort, were hit by a taxicab and again knocked unconscious. Taken as a whole the returning party had the appearance of having participated in a rather strenuous flight.

This was the first Free Balloon Flight taken by Captain Steenberg, M. E. Airhart and Sergeant McDonnell and needless to say was one that they will remember for all time to come.

NOTES OF INTEREST COVERING THE FIRST PURSUIT GROUP

The pilots of the 1st Pursuit Group greeted the extended visit of "Old Sol" with extensive aerial activity. Activities started Tuesday afternoon when the sun dispersed the early morning mist. Practice target shoot was engaged in by the 27th and 95th Aero Squadrons. Later in the afternoon an exhibition formation practiced maneuvers about the vicinity of the airdrome. All Squadrons participated in formation flying. Wednesday also broke clear and sunny and the air echoed from the shrill screams of the S.E. 5's. Dead stick landing practice was engaged in by the 95th and 27th Aero Squadrons. An exhibition Trick formation composed of pilots from the 94th and the 147th Squadrons flew about the vicinity of the Airdrome Thursday.

A monster formation composed of all available pilots of the 1st Pursuit Group flew about the vicinity of San Antonio, echelon formation. Later a flight from the 27th Aero Squadron, patrolled the battle sector at the altitude designated. They were known as the Blue Forces, and were sent out to attack another formation from the 147th Aero Squadron, known as the Red Forces, about the vicinity of Wipff, on the I.G. & N. Railway, at an altitude of five thousand feet. The idea being to train the pilots under actual battle front conditions and to enable them to become acquainted with, and to learn the great advantages of knowing Meteorological conditions, and to teach the pilots the advantages to be derived from absolute knowledge of Meteorology. The Flight Commander, having this knowledge has a decided advantage over Flight Commanders of the opposing forces, as he can judge instantly what level or altitude to bring his flight before attacking the enemy, thus not only using the direction of the wind to aid him but to utilize to its fullest extent such meteorological conditions, as clouds, fog, etc. The purpose of these patrols is to teach not only the Flight Commander, but each pilot engaged with him, the advantage of attacking from the blind angle of the enemy's ship. He is taught to utilize the sun to the fullest extent in making his attack, as seventy-five per cent of the victories in combat work are caused by the victor surprising his opponent. Camera guns are used in these patrols for recording faithfully the mistakes made by the pilots. After the films are developed such mistakes as are shown thereon will be taken up in the school of the squadron and discussed. Then various methods will be adopted to avoid mistakes of a like nature in the future.

A course of lectures has been arranged covering a large variety of subjects dealing with the work of a pursuit pilot. In the past week several lectures have been held in the Group Operations Room of wide spread interest. The lectures on Ignition and the Oiling system of the Hispano-Suiza motor have been delivered by Lieut. Perry M. Powers and Captain Meredith. Another lecture of unusual interest was delivered at the 1st Pursuit Group Headquarters, by one of the foremost experts in aerodynamics in the United States, Mr. Verville, who touched on many subjects during his short but very interesting lecture. As he has just returned from abroad he is familiar with all the latest foreign types of battle-planes. Despite the great strides made by the foreign nations the American experts have accomplished wonders indeed. In a few short months they had developed three distinct types of pursuit planes, which compare very favorably with those of the English and the French. The performance of all three distinct types namely: Ordnance, Thomas Morse, and the Verville Scout have shown what American brains and American ideas can produce when they are given a fighting chance. The difficult formations accomplished by the 1st Pursuit Group and the intensive training undergone by the pilots in both administrative and flying duties show that the efficiency of 1st pursuit pilots are equal if not superior to that of any foreign nation. A school has been held in the 1st Pursuit Group to train the younger officers in Army paper work, administration, and executive duties. Officers of the 1st Pursuit Group have also had occasion to become 1st class drill masters, and the neat and snappy appearance of the Group as a whole show the results of long continued drilling. All useless Fokkers, crashed machines or other "Dud" material has been placed where it can not injure the efficiency of the Group. Inspections have been held, fences white-washed, roads policed, ditches cleaned and efforts have been made to add to the appearance and comfort of the enlisted personnel. Plans are in full swing for a monster Pershing Welcome, and all that is necessary to make the show complete is a glimpse of "Old Sol".

On Saturday evening, January 24th, the Pointer Club of the 147th Aero Squadron held its sixth banquet. This Club began by members of the 147th Aero Squadron is an organization composed of and governed by the enlisted personnel of the Squadron. Under its by-laws any member or ex-member of the Squadron is eligible for membership. The purpose of the Pointers is to promote esprit de corps of the Squadron and to provide recreation for the members. In this connection sight seeing trips have been inaugurated to the historic and interesting points about San Antonio. In addition to the committees incident to the proper organization there has been created a sick committee whose purpose it is to provide sick members with fruits and periodicals. The event of the month is the banquet, usually held at the historic White Horse Tavern, this results in a general turnout of officers and men eager to eat the good food, listen to good speeches and participate in the good-fellowship. During the five months of the Pointers Club's existence, the membership has increased to 85, Club rooms are being equipped in the end of the Squadron mess hall, and athletic equipment secured for the use of the Club members. It is expected that in a short time affiliated chapters will be inaugurated among the Squadrons of the 1st Pursuit Group.

The 1st Pursuit Group received several additional pilots the last few days namely Lieut. Riddlesbarger, who will be assigned to duty as assistant Provost Marshall in San Antonio; Lieut. Roeder, who has just been relieved from duty in the forest patrol, has been assigned as Squadron Supply Officer, and Captain Stenseth, who is one of the few "Aces" that has remained in the Service. Athletics are booming in the Group, officers and men alike are taking great interest in basket-ball, polo, base-ball, tennis, and bicycle riding. The recent basket-ball games held between Squadrons in the Group, show that all teams are fast rounding into form. The scores have been very close, and victory was in doubt until the final whistle blew. The 27th Aero Squadron tossers seemed to have hit their usual stride, beating the crack 94th Aero Squadron to the tune of 16-13. They also put the Indian sign on the fast 95th Squadron team, the final score being 25-13. According to a re-survey of the final scores, number 13 seems to be the 27th's lucky number. The 147th Aero Squadron defeated the unlucky 95th to the tune of 20-9. The game was amicable as could be expected, when both teams were out for blood. The 27th Aero Squadron has begun practice to develop a winning base-ball team, and during the present warm summer-like days, the 27th boys not only talk base-ball, but they get out and practice. Many of the boys are to be seen after working hours giving the old "soup bone" a final workup. It is a little bit too early to make any predictions, but we may safely say that the 27th will be right up among leaders of the Kelly Field League. The tennis courts are in use continually by the officers of the Group, and very close games may be witnessed any afternoon after working hours. Another form of exercise which many of the officers go in for strongly, is bicycle riding, which is a quicker means of transportation than walking from one end of the field to the other. The officers of the Group are eagerly looking forward to having some polo games in the future. Under the direction of Major Garrison, a very capable team should be developed from the great wealth of material to be found in the Group.

NOTES OF INTEREST CONCERNING TWELFTH AERO SQUADRON ON THE BORDER, DOUGLAS, ARIZ.

Lieut. Geo Pond, U.S.N., on recruiting duty with the Navy, has been making daily trips to the surrounding towns in one of the 12th Aero Squadron planes. He has made trips to many of the smaller towns North of Douglas, where, after the first circle of the town, the entire population turned out to see their first airplane. Lieut. Alexander Pearson, Jr. has been acting as pilot and reports that with but one exception there has not been a landing field within ten miles of any of the towns visited.

The last station of the Border message relay race from Brownsville to Nogales was flown by Lieut. Alexander Pearson, with Lieut. Frank M. Paul as observer. They left the Douglas Airdrome January 23th at 12:08 P.M., and the message was dropped on the parade ground at 12:55 P.M. the same date. The trip consuming 48 minutes. At Douglas a ten mile East wind was blowing, which changed to the South near Naco, Arizona. Their air speed was about 110 miles per hour and the ground speed 120 miles per hour. The vertical visibility was good, and the horizontal visibility was about 20 miles.

NEWS OF INTEREST CONCERNING THE 10th and 99th OBSERVATION
SQUADRON AT BOLLING FIELD, ANACOSTIA, D. C.

The work of the Athletic Department, the Educational and Recreational Department and the Library from now on will be conducted thru two channels, the Educational and the Recreational. Steps will be taken to fully equip the Service Club for the enlisted men and to begin with the regular program of entertainments for the men of this field. The cooperation of the Non-commissioned Officers and the men here is expected and suggestions will be appreciated.

Arrangements have been made with the chiefs of the airplane and motor sections including the blacksmith shop and the dope house, to instruct all enlisted men of this field who care to become familiar with specialized branches. There is always work on in these departments that should prove highly interesting and useful to any man on the field. Men from the hangars are especially urged to spend what time they can here. The expert machinists in these departments will be glad to instruct men in the various types of high grade motors, etc., while others who desire a knowledge of rigging, propellers, and the wing or fuselage repair may get that also under competent instruction. This is an important step towards extending the opportunities of the men of this field to acquire an education along lines that they are interested in.

A number of men have already sent in their names thereby indicating their desire to enroll in the educational classes that will begin here soon upon the completion of the school-building, not later than February 1st. At present the airplane section of this department is busy assembling six new DH-4s. These planes are to be used by the 99th Observation Squadron. In the repair section, work is being done on a Fokker, Nieuport 28, a Vought and two Avros. These ships the repair work on which are nearly completed, will be turned over to the 10th Observation Squadron. The Fokker mentioned above, is the ship that Colonel Hartney used in making the recent round trip to San Francisco. A Spad, Model 16, the ship that General Mitchell flew over the lines in, was recently sent from this field to the Smithsonian Institute.

A new oil reclaimer plant is being installed. A one-thousand gallon tank for motor gasoline has already been installed at the garage and as soon as the Railroad siding is completed, a ten-thousand gallon tank for airplane gas will be installed behind the garage so as to do away entirely with the present method of handling gas in drums.

During the week seven Governors and 2 Senators were visitors at Bolling Field. They were shown over the field and made a thorough inspection of the mechanics departments and the method of assembling planes and were also shown the newest model Fokker, Nieuport 28 and American Vought. The visitors were very much impressed by what they saw and later in the day were taken up for rides over the city of Washington. Each one personally expressed his enjoyment of the visit of the field and all promised to pay another visit at a later date. The names of the visitors are as follows:

Governor George Stephen	of Colorado.
Governor S. J. Rogers	of Montana.
Governor William A. Barnhill	of Arizona.
Governor Frank C. Parsons	of Wyoming.
Governor J. T. Whitehead	of Nebraska.
Governor E. T. Blaine	of Washington.
Governor F. G. Tracy	of New Mexico.
Senator J. E. Edwards	of Montana.
Senator R. T. Tiffany	of Washington.

Lieut. George Neuman, of the Marine Corps who fell December 31st, at Bolling Field while testing the Loening Monoplane the "Kitten", died of his injuries at the Naval Hospital. This officer fell from an altitude of 2000 feet and when extracted from the wreckage it was not believed that he was seriously injured. Later at the Naval Hospital it was determined that he was very seriously injured internally.

Lieut. E. H. Brown and Lieut. V. H. Wright while flying a Curtis JN-4 plane had motor trouble and fell on landing at Bolling Field. According to reports received from Walter Reed Hospital where they are patients at the present time they are getting along as well as could be expected. Lieut. Brown received a triple fracture of the right leg and a badly bruised nose while Lieut. Wright had his right hip dislocated and right leg fractured.

Captain Marquette and Sergeant William J. Shackelford who are at Walter Reed Hospital are reported to be progressing favorably. Capt. Marquette fell into a spin while close to the ground due to the failure of his motor. He received lacerations of the head and his left leg, right elbow and both shoulders were bruised, while Sergeant Shackelford a simple fracture of the right leg and bruises on the arms and face. It is hoped these officers will be returned to duty within the next two months.

GENERAL AERONAUTICAL TERMINOLOGY

(Adopted by Federation Aeronautique Internationale)

Aeronautics - general term covering whole science and art of aerial locomotion.

1. Aerostation - Lighter than air.

1. Aerostat - balloon.

A) Free

- a) Passenger
- b) Pilot
- c) Propaganda

B) Captive

- a) Spherical, or ovoid
- b) Kite, "sausage," drachen, "saucisse"

2. Aeronaut - a dirigible balloon; an airship

A) Rigid

B) Semi-rigid

C) Non-rigid

II Aviation - gasless, heavier than air.

1. Airplanes, either tractor or pusher, land or water

A) Monoplane

B) Biplane

C) Triplane

D) Quadroplane, etc.

All these kinds of apparatus are known as Aeronefs

2. Ornithopter - a beating wing machine. None of this type has to date been successful at flight.

3. Helicopter - a direct - lift machine, only successful experimentally as yet.

4. Kites

5. Gliders

FUNCTIONS OF THE CIVIL OPERATIONS BRANCH

The Civil Operations Section of Operations Division was established when the Air Service was re-organized in March 1919. Operations was then under Lt. Colonel L.H. Brereton who requested Captain Walter R. Lawson from Post Field to proceed to Washington to inaugurate the section.

The function of the Civil Operations is, the supervision and operation of all Civil activities of the Air Service, and the cooperation with civil operations and authorities, particularly with reference to Forestry, Agriculture, Geological Survey, Coast and Geodetic Survey, Aerial Mail, Revenue Service, Municipal Landing Fields, etc.

Many situations have arisen involving the activities of the Air Service aside from its purely Military value. These questions were taken up in detail and an effort made to satisfy the needs of the various civil departments. The result of the work accomplished can be seen from the report of the Department of Agriculture on Forest Fire Patrol carried on in Oregon and California by the Air Service during the fire season of 1919. The Air Service personnel, alone, discovered and reported 570 fires in California and Oregon. Plans have been formulated in cooperation with the Geological Survey to survey and map, by airplane, unmapped portion of the United States. Plans have also been formulated in cooperation with the Coast and Geodetic Survey to survey the coast line of the United States and photograph the coast and adjacent waters.

In connection with the Bureau of Entomology certain lands in Texas are protected by airplane patrols for the purpose of preventing the unlawful planting of cotton in what is known as the forbidden area. The cultivation of cotton, in this belt, has been made unlawful because of the attempt to segregate the boll weevil menace so prevalent to that section of Texas. The use of the airplane in this connection has been to detect the illicit cultivation of this product in this belt.

But by far the most far-reaching function of the Civil Operations is the inauguration and supervision of landing fields, known as municipal fields. On this is based the development of industrial and commercial aeronautics in the United States. There is on file in the landing fields branch, complete information on over 1000 fields. Map routes have been projected and a system, of aerial route maps, has been formulated. It is the function of this section to be in very close touch with the numerous civil activities, such as Aviation Clubs, Societies and Civic organizations for the promotion of the science of aeronautics.

When legislation is enacted by the governmental control of airports and municipal landing fields, this section will be in a position to extend governmental cooperation to each field in the United States and have each field as developed, reported, numbered, and catalogued.

It is expected that during the coming summer, when the aerial activities throughout the United States increase, the work of this section will be greatly augmented and become one of the most important activities of the Air Service.

THREE DVA ALBATROS SCOUTS RECEIVED AT SUPPLY DEPOT RICHMOND, VA.

The Aviation General Supply Depot at Richmond, Virginia advise that they have received three of the latest type German Albatros DVA Scouts airplanes equipped with the Benz #13, 260 H.P. and #11- 160 H.P. Mercedes engines. The planes are part of the allotment received by the United States thru the terms of the Armistice.

The 3 Albatros DVA Scouts are in good condition and are equipped with two Spandau machine guns, and machine guns with the latest German synchronizing device for shooting thru the propeller. Two separate triggers controlling the firing of these guns are attached to the "joy stick" near the top which makes it very convenient for the pilot to operate in fact it is unnecessary for him to remove his hand from the stick. The mechanism which operates this is attached to the camshaft and is enclosed in flexible cable.

The Benz engines are 260- and 200 H.P. respectively, 6 cylinder, vertical type. Both of the engines appear to have been purposely rendered unserviceable. One having a hole punched thru the water jacket and cylinder, while the intake manifolds on the other were apparently hacked off with an ax.

The magneto straps and ignition cables and Bosch magneto on the Mercedes engine were also badly damaged. It would appear from the systematic efficiency in wrecking these engines, that the Germans have again lived up to their customary code of honor.

Notwithstanding the damage done these engines can be repaired. In a short time they will be ready to take the air with a "Hat-in-the-Ring", "Wild Cat" or other American insignia painted on them instead of the German cross.

LIEUTS. GRIMES AND DAVIS WHILE RELAYING A MESSAGE FROM BROWNSVILLE, TEXAS TO
TO NOGALES, ARIZONA LAND IN MEXICO.

Notification was received during the early part of the week that a flight to demonstrate the reliability of the aeroplane for carrying messages would be flown as soon as the weather permitted. This came Wednesday Jan. 28th, 1920 - The message was to be carried from Brownsville, Texas to Nogales, Arizona in the quickest possible time. This squadron was to carry the message as far west as Eagles Pass, Texas and to get the message to its destination and allow the last relay plane to return to Douglas, Arizona before dark was dependent on the 8th Aero Squadron getting off at the earliest possible time in the morning. To get this early start it was decided to send two planes to Brownsville the day preceding the one selected for the flight. This was done and Pilots Meley and Davis, and Observers Hickey and Grimes were detailed to make the flight. It was decided to start at an hour in the morning early enough to allow the flight from Brownsville to Laredo during darkness. This was done ^{and} at 4:25 A.M. Lieuts. Meley and Hickey in DeH4 B plane No. 9 took the air at Brownsville, Radio communication was established at once with the Home Airdrome and maintained until the plane had passed fifty miles west over Roma. The large border stations maintained radio communication during the entire flight a distance of about two hundred miles. Rockets were fired at McAllen Airdrome when the plane reported its position eighteen miles away, which were plainly seen by the officers in the plane. Fires were also started and enabled the pilot to check his compass. Fires were also lighted at Zapata by the ground troops which again allowed checking of the compass. At no time was this plane in doubt as to its location. Landing was made at Laredo in darkness at 6.10 A.M., six fires had been lighted on the field in two rows which the plane was to land between. In landing the plane struck a small telephone pole and damaged the left lower wing but a safe landing was made.

The total elapsed time of this flight was one hour and fifty five minutes. Forty five seconds after the plane arrived at Laredo, Lieut. Fonda B. Johnson pilot and Lieut. E. V. Harbeck, observer were on their way to Eagle Pass where they arrived one hour and two minutes later at 7.12 A.M.

The second plane from the 8th Aero Squadron left Brownsville at 5.00 A.M. with a duplicate message and passed over the squadron airdrome at 5.32 A.M. The radio on this plane went out of commission so no communication was maintained. This plane was reported at Zapata some time before daylight and from then on nothing was heard of the fate of this plane until 8.15 P.M. at which time a wire was received from Lieut. Grimes the observer, stating that they had become lost in a fog near Zapata and had followed the Salada River into Mexico mistaking it for the Rio Grande. When daylight came the plane was still in the air and at 7.45 A.M. landed about thirty miles west of Guerro, Mexico. Lieuts. Grimes and Davis were taken to Guerro and the American Consul at Laredo notified, who visited them. They are being extended the most courteous treatment. The necessary arrangements were made by the authorities to have these officers released and they are now back with their squadron.

COAST PATROLS HAVE A THRILLING EXPERIENCE.

The Mineola Patrol was instituted as a bi-weekly flight on January 15, 1920. The patrol which is for coast observation purposes is flown from Langley Field to Mitchel Field, Long Island and from Mitchel Field to Langley Field. While the primary purpose of the patrol is to familiarize pilots and observers with the coast terrain and to secure reports of all kinds of shipping as well as unusual activities along the coast, it also affords practical experience in cross country flying under all kinds of weather conditions. The value of this experience has been put to the test several times during the past month when aviators successfully completed flights during which heavy fogs, blinding snow storms, sleet and rain accompanied by heavy head winds were encountered. Flying at an elevation of only seventy five feet at a speed of one hundred and twenty five miles an hour has its thrills, even in the prosaic work of coast patrol, is the opinion of a pilot and observer who had this experience. It is especially thrilling when the fog is so dense that even at this low elevation ice jams are mistaken for islands.

The following experience as gleaned from the Official report of Lieutenants Finter and Adams, who left Langley Field on January 19th to cover the coast line between Langley Field and Mineola, Long Island, is replete with incidents of a most trying character, challenging the courage and endurance of the men, who against all odds, nevertheless brought their ship safely to land within a few miles of their ultimate destination.

With Lieut. Finter as Pilot and Lieut. Adams as Observer, the ship left Langley Field at 10:05 A.M. on January 19th. Within fifteen minutes they ran into a heavy fog, causing them to come to within seventy five feet of the surface, which altitude was maintained for about four and a half hours. Owing to the density of the fog, land marks were indistinguishable and in flying over Delaware Bay, they were lost for twenty minutes. Finally striking across the interior of New Jersey, they encountered a blinding snow storm. With dense woods underneath no landing place seemed available and they kept on their course. Sandy Hook was at length recognized and they were given new hope for the completion of the flight. However, in flying across New York Bay, Fort Hancock was mistaken for a Fort on the New York shore and turning there they flew south out to sea, mistaking ice floes for islands and unable to find land for fifty eight minutes. At one point they saw land which later proved to be at Penconic Bay, L.I. but this was mistaken for the Connecticut shore and again they became lost over sea for thirty seven minutes. With only a few minutes gas supply left and the reserve tank refusing to respond, the men had about given up hope when land was finally observed at Jones' Inlet. Here they had a forced landing with gas supply exhausted. They had been in the air continuously for four hours and fifty five minutes and were never more than seventy five to one hundred feet from the ground. For one hundred and sixty miles they flew in a dense fog over the sea off the Long Island coast. Fire Island Light ship was passed at one time indicating that they were at least fifteen miles off the coast.

That the flight did not end disastrously is due, according to the report of the Observer, Lieut. Adams, to the courage and cool headedness of the pilot, Lieut. Finter, who endeavored unceasingly to orient himself under conditions that were almost hopeless.

NOTES OF INTEREST CONCERNING 104th SQUADRON EL PASO, TEXAS.

The 104th Squadron has been looking forward to the coming of General Pershing with great favor. We have been practicing a nine plane formation each day for the past week getting some of the new pilots that have only recently joined and the ones that remain^{ed} here when the other Squadron left for Kelly Field, accustomed to flying together in close formations. We hope to be able to put on a formation that will please General Pershing when he arrives February 1st. General Howze has been watching the formations practice each day and is very much pleased with the results we have been able to obtain.

Lt. Cyrus H. Bettis of this Squadron had a narrow escape Wednesday morning while making a four hour oil test. While Lt. Bettis was flying along at an altitude of about four thousand feet enjoying the fresh air he was attacked by a flyer of a much smaller type. Lt. Bettis previous to this time had been observing very closely the rule "Do not allow yourself to be surprised by the enemy" but this time he was caught off his guard. When the flyer came at him running at full speed and hitting Lt. Bettis' plane nose on, Lt. Bettis being in a D.H. 4 escaped without further injury to his plane than a broken shutter and a leaky radiator but the goose was a complete wash-out.

Since the first airplane was flown passengers of all kinds and from everywhere have been riding with pilots, however, the Army Airplanes are limited in carrying passengers, still Lt. Alvan C. Kincaid, the Squadron Adjutant, made his get-a-way very nicely Friday morning when he took Mr. Sands up for his first ride. Mr. Sands has been around this Airdrome for years in fact long before the airplane was invented, still he took a ride with an Aerial Observer that had just been cd loose to solo. Lt. Kincaid has been flying sometime but made his first solo Friday morning with a sand bag.

WEST POINT PREPARATORY SCHOOL - KELLY FIELD, TEXAS.

Kelly Field feels highly complimented to have been designated as the station to organize and operate the West Point preparatory school for the entire Southern Department. The officer in charge and all the instructors are Kelly Field, Air Service Officers.

The West Point Preparatory School was organized pursuant to instructions from the Department Commander, and began its work on December 18, 1919. The school, under the direct supervision of Lieutenant Colonel Davenport Johnson, Commanding Officer of Kelly Field, was organized for the purpose of preparing enlisted men, who are acceptable candidates for entrance to the United States Military Academy, to take the entrance examinations. The men were transferred to Kelly Field and form a separate detachment, and they have every opportunity to prepare for the examinations.

Instructors experienced in teaching in universities, colleges and high schools were selected from among the commissioned personnel of Kelly Field, and devote their entire time to the work of the school. A very careful check is kept on the work done by the students, and their study periods are supervised by an officer. Standard text books are furnished by the Vocational and Educational Officer of the Southern Department in sufficient numbers to supply each student. Fully equipped class rooms and study halls are provided. The students also have exclusive use of the gymnasium for a period of one hour each day.

The school will continue until March 2, 1920, when the men will be required to take the preliminary examinations for entrance to the Military Academy. The examination will be conducted by a Board appointed by the Commanding General, Southern Department, Fort Sam Houston, Texas.

Excellent results are being obtained and it is expected that at least 75% of the men will be admitted to the Academy in June, 1920.

The following is an outline of the subjects being taken:

Algebra	50 Hrs.	Lt. Norman N. Tilley, Instructor.
Geometry	55 Hrs.	Lt. Benjamin Fox Instructor.
United States History	55 Hrs.	Lt. Clarence E. Shankle "
General History. . . .	55 Hrs.	Lt. Claire L. Chennault "
History of English Literature	55 Hrs.	Lt. Thomas H. Gill "
English Grammar	30 Hrs.)	
Composition	25 Hrs.)	Lt. Roy P. MacDonald "
Officer in Charge		Lieutenant David G. Linglo.
Sergeant Major		Sergeant 1st Class, Philip D. Reitano.
First Sergeant		Sergeant 1st Class, Thomas M. Irvine.

NOTES OF INTEREST CONCERNING THE FIRST BOMBARDMENT GROUP

Athletics have become quite popular in the Group. The boxers are rapidly making a name for themselves, several of the most talented are matched against favorites of the city of San Antonio. Basket-Ball is going forward with a rush. The rivalry between squadrons being at intense heat. Interest is equally great in respect to the Kelly Field Post Team as this Group is well represented on that team.

Lieutenant Plumb took a flying trip to the Border, Tuesday, carrying Lieut. Beaton to Del Rio, where Lt. Beaton had been forced to leave his ship for repairs. Both ships returned in the afternoon.

Numerous formations have been in order during the past week as this Group is desirous of becoming as near perfect as possible in formation flying; with the idea of putting on a formation next Wednesday, for General Pershing, that will be a revelation of formation flying by a large number of ships.

The usual flying missions for training purposes are being carried on reconnaissance missions predominating. On these missions a pilot acts as observer. Outlying towns are visited. The Observer draws sketches of the town, possible landing fields enroute, reports as to all things observed of interest in a military way, and submits a map showing all data gathered.

Lt. Paul Davis of Mexican Bandit fame, Group Communications Officer, spent an afternoon giving Mr. Archambault, Fox's daring movie man, a whirl thru the clouds with his camera, snapping S.E.5's, La Pere's, Curtiss's, Fokkers, De-Havillands, and all the other various species populating the air of this region. It is hoped the God of Photographers will be kind to his films.

TRANSCONTINENTAL FLYER WITH OBSERVER AND MASCOT ON FLYING RECRUITING EXPEDITION.

Lieut. Belvin W. Maynard who recently won the transcontinental and also the New York to Toronto and return race has been assigned by the Director of Air Service to fly over fifteen cities in the interest of Air Service recruiting.

Lieut. Maynard is accompanied by Master Electrician William E. Kline and their famous mascot Trixie. This same trio engaged in the races above quoted and seldom does Lieut. Maynard get in the air that the other two are not with him. The itinerary of the flying recruiting expedition is as follows:

New York to Washington, D.C.....	220	miles.
Washington, D.C. to Norfolk, Va.....	135	"
Norfolk to Fayetteville, N.C.....	240	"
Fayetteville to Columbia, S.C.....	140	"
Columbia to Jacksonville, Florida.....	260	"
Jacksonville to Savannah, Ga.....	125	"
Savannah to Birmingham, Ala.....	400	"
Birmingham to Jackson, Miss.....	210	"
Jackson to New Orleans, La.....	160	"
New Orleans, La. to Little Rock, Ark.....	350	"
Little Rock to Nashville, Tenn.....	325	"
Nashville to Louisville, Ky.....	150	"
Louisville, to Knoxville, Tenn.....	185	"
Knoxville to Greensboro, N.C.....	225	"
Greensboro, N.C. to Raleigh, N.C.....	170	"
Raleigh, N.C. to Richmond, Va.....	150	"
Richmond to Washington, D.C.....	100	"
Washington, D.C. to Mitchel Field, N.Y....	220	"
Total.....	3765	"

At each city Lieut. Maynard will give a series of talks on his experience in connection with the transcontinental flight and on the Air Service in general. He will bring to the attention of the citizens of the states in which he stops the many advantages and opportunities which are offered to men who enlist in the Air Service. Particularly inviting their attention to the system of vocational training as well as a hundred and one other things the enlisted men learn, such as the assembling and making of airplanes, parts, mechanical machine working, repairing engines, etc. He will also tell his hearers that the United States Army Air Service is now giving flying training to all enlisted men who desire to fly and that a great number of enlisted men have been enrolled as cadets and are now taking instructions at Carlstrom Field, Arcadia, Florida and March Field, Riverside, California. This is an innovation of the policy of the Air Service which heretofore was only training officers. However, he has authority to tell those with whom he comes in contact that enlisted men upon the completion of their training may be commissioned in the Aviation Section of the Signal Reserve Corps and receive their discharge or they may revert to their enlisted status as flying enlisted men with the privilege of wearing wings.

The Air Service is desirous of obtaining upright, clean and moral young men who have ambitions and who desire to get ahead. All men who are examined and selected will be given every opportunity to make good. In other words, it is up to the individual - opportunities are plenty.

FRANCE FIELD PANAMA REPORTS PROGRESS IN SECURING LANDING FIELDS

The longest reconnaissance flight ever attempted on the Canal Zone was successfully completed on January 19th when three D.H.4 planes flew across the Zone and then penetrated into the interior on the south coast for a distance of about one hundred miles. The purpose of this flight was to find a landing field where a base could be established from which to carry on work still farther up the coast.

The first landing was at Penonome, where a field had been cleared by the municipal authorities, but this field was found not suitable for a regular landing field. The Mayor of this town was on hand to receive the planes, and after receiving recommendations regarding the improvement of the field, he promised to have this work done at once.

The planes then proceeded to Aguadulce, about sixteen miles further west and here found one of the finest natural landing fields that any of the pilots had ever seen. This field is very large and is absolutely smooth and level. It is likely that this field will be used as a way station for planes operating between this field and the western boundary of the Republic of Panama.

Reports have been received from explorers who are acquainted with the country beyond Aguadulce and all these men say that there are many very good landing fields in this country. Much of the country is very mountainous and covered with thick jungle but with the good landing fields reported in various districts it is not expected that much trouble will be had in carrying operations to the extreme western limits of Panama.

It is planned to further explore this country soon, especially in the province of Veragus near the towns of Santiago and San Francisco, where good landing fields have been reported. Veragus is reputed to be the richest mineral district in the world and is practically undeveloped. It is in this district that the most famous lost gold mines in the world are located and several new mining enterprises are being exploited at present by both American and foreign capital. Part of this district is inhabited by wild and uncivilized Indians who allow no one to invade their territory.

The three planes returned to Fort Amador in the afternoon, where they secured a fresh supply of gas and oil and then returned to the Atlantic side of the Zone. The Pilots of the planes were Major Wm. O. Ryan, 1st Lieut. Charles B. Austin and 2nd Lieut. Elmer F. Degen. 2nd Lieut. Dayton D. Watson accompanied the flight as a photographer and secured some excellent photographs of the towns and landing fields. Major R.C. Prescott a reserve officer and Inspector General of Telegraphs for the Republic of Panama, was a passenger and his first hand knowledge of the towns greatly assisted in the work. Major Prescott is co-operating closely with the 3rd Observation Group in this exploration work and his influence will greatly assist in establishing the landing fields that are to be located in this district.

The invasion of airplanes into this country causes considerable excitement among the natives as they have never seen any sort of flying machines. Everybody turns out to greet the aviators and at one of the landings on the 19th the police of the town marched out in a body, bringing with them large bouquets of roses to welcome the flyers.

On the 22nd practice missions over the country around Lake Gatun, were made by the new pilots and observers. These missions were to acquaint these new men with the kind of country over which they will have to work. In the afternoon a critique was held and the reports showed that very little that could be seen had been missed. Everybody showed a marked enthusiasm for the work.

AIR SERVICE DEPOT AT FAIRFIELD HAS A LARGE ASSORTMENT AND VARIETY OF MOTORS

There are at present approximately two thousand (2000) motors of various types, mostly foreign, being stored at Wilbur Wright Air Service Depot. These motors are stored in such a way as to assure that no rusting will occur.

Among the motors being stored are the following:

Mercedes	Curtiss OX-5	Napier Lion
Clement	Isotta Fraschini	Deardmore
Clerget	Bugatti	Anzani
Fiat	Bayron	Renault
Beaz	Le Rhone	Dragon Fly
Hall Scott.		

The storage of these motors consists of completely filling them with a rust preventative, non-oxide, and by blowing under high air pressure, a rust preventative over the entire outer surface. This rust preventative is similar, but not exactly the same, as that used in filling the motors. An idea of material used, can be obtained, when it is stated that one Fiat motor contains forty-three (43) gallons of this rust preventative.

The motors are sealed by means of attaching wooden strips to the exhaust manifold, in such a way as to close the ports. The intake manifolds, are closed by means of a solid gasket. Spark plug vents are closed by means of screwing in a steel plug.

These motors will keep for many years without being given any special attention after this treatment.

PROGRESS OF AVIATION TO 1910 INCLUDING A RESUME
OF PRINCIPAL FLIGHTS TO DECEMBER 1919.

The serial story which will follow was completed by Mr. Octave Chanute, one of the pioneers in Aviation for the annual report of the Smithsonian Institution. The story is full of human interest concerning the early trials and tribulations of intrepid inventors, who not only risked their necks in all kinds of suicidal contraptions which they endeavored to fly, but also risked financial embarrassment in many instances. In the last number of the serial will be given a resume of the accomplishments of all the early flyers from the beginning to the year 1910 as well as a resume of all principal flights from 1911 to December 1919. It is our belief, that everyone interested in flying would like to keep a copy of this chronological story for their library. The author of this report died November 23, 1910, shortly after completing this report.

(Remarks by President Allen introducing Mr. Chanute; It is a remarkable coincidence that just 12 years ago this evening - October 20, 1897 - Mr. Chanute gave his first paper before this society on the subject of aviation, the paper being entitled "Gliding Experiments". A few years later in 1901, and again in 1903 Mr. Wilbur Wright appeared before the society, at Mr. Chanute's invitation, and gave an account of the experiments then being made by himself and his brother Orville. The opportunity comes to very few men, I think, to appear before the same body 12 years after their predictions had been made, and be able to point to the fulfillment of those predictions, as can be done by Mr. Chanute tonight.

It is our privilege to listen to him now, at a time when aviation has become a matter of great public interest, and when he can point to the fulfillment of his own prophecies, and the launching of the aeroplane as a practical machine on the ideas that he enunciated in our rooms 12 years ago. Mr. Chanute is well known to us all and needs no introduction from me. We are proud to number him among our members as, perhaps, the foremost living authority on aviation today in this country or in any other country.)

As your president has said, on the 20th of October, 1897, I had the honor of presenting to you an account of some gliding experiments that were carried on at Dunc Park, near this City. Those experiments were made solely to study the question of equilibrium and to determine if it was reasonably safe to experiment. We had the good fortune to make about 2,000 flights (Mr. A. H. Herring, Mr. W. Avery, and myself) without any accidents - not even a single sprained ankle. The only thing we had to deplore was the fact that my son, in making one flight, tore his trousers. An account of these experiments was published in the journal of this society for October, 1897, and subsequently an account was also published in the Aeronautical Annual, Boston, in 1897. That publication contained the statement that it was thought that these experiments were promising, and I gave an invitation to other experimenters to improve upon our practice. That invitation remained unaccepted until March, 1900, when Wilbur Wright wrote to me, making inquiries as to the construction of the machine, materials to be used, the best place to experiment, etc. He said that he had notions of his own that he wanted to try, and knew of no better way of spending his vacation. All that information was gladly furnished. Mr. Wright wrote me an account, subsequently, of his experiments in 1900, which gave such encouraging results that each year thereafter the brothers carried on further experiments in North Carolina and at Dayton, Ohio.

On the 18th of September, 1901, Wilbur Wright read a paper before this society in which he gave an account of what he had done up to that time.

Again, on the 24th of June, 1903, Mr. Wright read a second paper before this society, giving an account of his progress since 1901. Late in the year 1903 the Wrights applied a motor to their gliding machine, which by that time they had under perfect control, and they made their first flights on the 17th of December 1903. (I might mention that I was present on each of the years during part of the experiments.) At that time Wilbur Wright expressed his intention of giving to this society the first technical paper on the subject which he furnished to anyone. He said he had already promised to give a popular account in the Century Magazine, but that a technical paper, giving an account of the results and the laws which had been observed, would be reserved for this society.

In 1905 Mr. Wright told me it had dawned upon him that there was some money to be made by selling the invention to governments for war purposes, and that he would defer giving a technical paper to our society. He considered that his invention would be more valuable if, with the machine, he could give the secrets of construction and laws which have been observed. I do not know whether the paper has been written, but I hope you will get it some day.

Of the early flying experiments which had been made previous to that time I will mention but two.

Mr. Maxim built an enormous apparatus, weighing 8,000 pounds and spreading 4,000 feet of surface, moved by a steam engine of 360 horsepower. That machine was run upon a track of 9 feet gauge a good many times, and on one occasion it undertook a vagabond flight on its own account; its equilibrium was bad, however, and the steam was shut off; the machine alighted somewhat broken. Mr. Maxim saw clearly that it would be necessary to change the design, and he has never rebuilt that machine.

It had a large aeroplane at the top and two propelling screws 17 feet 10 inches in diameter, which imparted a speed of 45 miles an hour running over the track, and it was held from rising by wooden rails of 35 feet gauge which engaged outrigger wheels as soon as the machine left the sustaining track.

Maxim is now said to be building another machine, which it is expected will be completed soon.

The next experiments were made in 1896 by Prof. S. P. Langley. After devoting some years to experimenting, he devised a working model which he started from a launching scow. The model machine flew perfectly on the 6th of May, 1896, in the presence of Alexander Graham Bell. This machine, flew about three quarters of a mile, alighted safely in the Potomac River, and was ready to fly again.

On the 28th of November, with a similar model, Langley made another successful flight, and further launches were privately made subsequently.

He was then urged by the United States Government to build a full-sized machine, capable of carrying a man, and he spent three or more years in doing so. That man-carrying machine was completed in 1903, and on the 7th of October of that year the launch was attempted. The machine, however, caught a projecting pin of the launching rail and was cast down into the Potomac. The operator, Mr. Manly, was upset, carried down into the river, and came very near drowning. Another effort was made December 8 and the same mishap occurred. Part of the launching ways caught the machine, and it never entered upon flight. There is no doubt, however, that if the machine had been properly launched it would have flown. The machine is still in existence. It was broken when alighting, and in picking it up afterwards, but has been repaired. It is most unfortunate that further effort was not then made to launch that machine, and that Langley was so severely criticized in Congress and by the newspapers. He was grievously balked of deserved success, and he died of apoplexy two years afterward.

The next attempt to fly with a man-carrying machine was in North Carolina on the 17th of December, 1903, when the Wright brothers effected three successful flights, the first to alight safely in history. The longest flight covered 852 feet and occupied 59 seconds, in the face of a 20-mile wind. The weather was so inclement that they then took the machine down and abandoned experimenting for that year. There had been unfortunately some previous delays and breakages. When I went there in November to see the launching of the machine, it was postponed first by the twisting off of the shaft, and then by the breaking of the propeller, which required sending it back to Dayton in order to repair the work in the shop, but full success was attained at last. In 1904 they operated in a field about 8 miles from Dayton, Ohio, and it took them most of that year to learn how to turn a corner. The machine was slightly broken a number of times, repaired, and finally, in October, 1905, they got their apparatus under perfect control, and succeeded in making a flight of 24 miles in 38 minutes. They made 105 flights in 1904 and 49 flights in 1905. The machine is placed on a single rail, weights are hoisted on a derrick and a rope is carried from the derrick with a return pulley to the machine. Upon the dropping of the weights the machine is given an impulse this method being found to be preferable to the catapult which Mr. Langley had devised and which failed him on two occasions when trying to launch his machine.

The launching rail is 60 feet long, and with the aid of the falling weights the machine quickly acquires the necessary velocity for rising in the air.

The years 1906 and 1907 were spent by the Wright brothers in an effort to sell their machines to various Governments. They had taken out patents in eight different countries, and they hoped to sell flying machines to war departments, together with the secrets, the tables of resistance, and all the elaborate calculations which they had made, but in each and every case the Government wanted to be shown the apparatus before buying. The Wrights refused to exhibit the machine until such time as they had a contract contingent upon their performing certain feats - notably, to fly with two passengers and with enough fuel to carry it 125 miles; that it must attain a speed of at least 36 miles an hour, maintained over a distance of 5 miles, and must fly continuously for one hour.

None of the Governments would thus contract with them. They were offered at one time \$120,000 by the French Government, but they refused. They were then offered \$200,000 if they would perform their feats 1,000 feet in the air. To this they said that they had no doubt that they could get up 1,000 feet but they had never done so and would not agree to the proposition.

In 1908 they changed completely their plan of operation and decided to show their machine with the risk of its being copied and getting themselves into litigation. The machine of the 1908 design, at Le Mans, where Wilbur Wright first exhibited it to the French, while a contract had been made in this country with the United States Government to furnish a similar machine. There is at the front a double-decked horizontal rudder. It will be noticed that these inventors have modified the make-up of a bird by putting the tail in front. Behind are placed vertical rudders, but it is the front rudder which elevates and gives horizontal direction to the machine. The rear rudder guides the machine to the right or left. Back of the main surfaces are the two screws revolving in opposite directions.

The machine is equipped with a pair of skids for alighting, while the French people have equipped their machines with wheels. The wheels weigh more, catch more air, and are not as safe as the skids, but the skids require a rail and a starting weight in order to get the machine into the air, unless there is a brisk head wind.

Mr. Wright had extraordinarily good fortune in carrying on the experiments in France, his machine falling only once. One other accident occurred in the breaking of one of the sprocket chains in mid-air; but he then operated the machine as a glider and came down safely. The French people at first made all sorts of comments, criticisms, and caricatures of Wilbur Wright, and even published a number of amusing songs, but finally he triumphed, won their esteem and admiration and they acknowledged that he was the master of all the aviators. From Le Mans he went to Auvours in order to get better ground, and there made over 100 flights.

The more remarkable performances which he made I have undertaken to tabulate, but I will not inflict those statistics upon you this evening. Mr. Wright established great records, however. On the 18th of December, 1908, he flew 62 miles in 1 hour and 54 minutes, this being at that time the world's record, and he beat this directly afterwards, on the 31st of December, by flying 77 miles in 2 hours 20 minutes and 23 seconds, thus winning the Michelin prize and establishing a world record, which was only beaten in the tournament at Rheims three weeks ago. In Rome he took up a great many passengers, and on one occasion he started without the use of starting weights, simply facing a wind of sufficient intensity and going up straight from the ground. On the 25th of September, after returning to America and after he had been universally acclaimed in this country and overwhelmed (modest man that he is) with public dinners, receptions, and medals he encircled in flight the Statue of Liberty in New York Harbor and made a magnificent flight of 21 miles, from Governors Island to Grant's Tomb and return.

(Continued in next week's issue)

THIS OFFICER HAD A NARROW ESCAPE

A few days ago an accident occurred which will be of interest. The A. S. M. S. test pilot was testing a Le Pere. Flying level at an altitude of a little more than a thousand feet, he pushed the stick ahead to dive for the field. The ship did not respond. A pull back left it still flying level. The pilot, suddenly interested, found that he was without the use of his elevators. These small, but often important adjuncts to any well regulated ship, were absolutely useless. It later proved that the small steel band around the stick, to which the elevators are attached, had broken. Ailerons were all right.

It was as all of us can readily realize a startling moment. The ship was tail heavy, the result being that it flew level with the motor turning 1450. Heavy mental activity by the test pilot brought him to the decision that perhaps the motor could be throttled to make the ship dive gradually, and that it would level out when the motor was turned full on. It took several moments for him to get courage enough to put the ship in a dive. Then came the agonized waiting while the motor went full on. Slowly and surely the ship righted itself.

A mile back of the field he dived again, with the motor turning about twelve hundred. Needless to say, that dive was very gradual. At three hundred feet the throttle crept forward bit by bit, and by miraculous luck the ship leveled precisely right and made a smooth two-wheel tail-high landing. Now our Le Peres are equipped with a triple thickness band around the stick. No one of our flyers yearns to repeat the experience.

ENLISTED FLYERS MAKING RECORDS AT RICH FIELD

The enlisted flyers at Rich Field are proving to be a rattling good bunch of flyers and are mighty enthusiastic about their work. During the week the enlisted flyers have been making regular flights in J4 Ds for the purpose of ascertaining the average altitude to which they might be able to fly. Incidentally to establish a record and reputation for themselves at the field. Sergeant Sheffield made the record which has not been equalled so far, reaching an altitude of 9,400 feet. Several have reached 9,000 within the last few days. It is our opinion that the Sergeant will soon have to surrender the honors.

A great deal of anxiety is prevalent among the enlisted men. All are on pins and needles awaiting orders from Washington to ferry the balance of the Curtiss contract machines at Rich Field to Love Field at Dallas, Texas. Recently 127 of these machines were ferried down by these men and not a forced landing or accident occurred during the entire journey to mar the joy of their cross country.

A FLIGHT IN THE CLOUDS PROVES THRILLING

Anyone who has spent any time in Texas, particularly those engaged in flying at this season of the year know all about "falling clouds". It is needless to say that flyers have no particular hankering to get mixed up in them.

Last week Lieut. Glenn and Sergeant Sheffield of Rich Field, Waco, Texas had a "hair raising" experience in one of these "falling clouds". They left the field and rose to 1200 feet before clouds were encountered. They continued to fly upward above the clouds where they enjoyed themselves flying around for about 10 minutes. Then they started down through the clouds which by this time had settled so low that at 200 feet the ground was barely visible. They came out of the clouds over a number of tall buildings and had a narrow escape in attempting to miss some of them.

This officer and enlisted man also had another interesting experience. The clouds were at a height of 4000 feet. They flew to and through them, learning that it was a first strata of clouds about 500 ft. thick. Above the first strata there was an open and distinctly clear space of about 2000 feet before the second strata was reached which was about 1000 feet in thickness. Above the second strata the sky was as clear as crystal to heights beyond.

LIEUT. BROWN TAKES OFF FROM THE FIELD AT THE AVIATION GENERAL SUPPLY DEPOT,
MIDDLETOWN, PA., ON A RUNWAY BUILT OF BOXES.

On Monday, February 9, 1920, 2d Lieut. Ray W. Brown, A.S.A., in accordance with Director of Air Service orders, prepared to take off for Washington, D.C. with a D.H.-4 airplane, said plane to be delivered to Bolling Field for service. For the week previous, snow had been so deep that it was impossible to get a ship off the ground. On this particular morning the snow was still twelve inches deep on the field. Lieut. Brown had a wooden runway made of airplane boxes, six sections of which were laid out in track form on to the field. The ship was placed with the front wheels just barely resting on the end of the track. The motor was warmed up in this position and when all was ready, Lieut. Brown gave the motor full gear, allowing the ship to run on the runway and immediately upon gaining speed, ship was pulled off the ground about one foot, then allowing it to gain sufficient flying speed to continue with the climb. It was a rather hazardous take off but yet a very successful one. This trip also demonstrated the feasibility of delivering material from a supply depot to the fields within the zone, as six fur lined flying suits, for use of officers at Washington, D. C., were carried by Lieut. Brown and delivered at Bolling Field along with the plane. The trip was made in 1 hr. 7 min., from the time wheels left until they touched. Trip was entirely successful. The weather was very good although slightly cloudy.

HOW SNOW SKEES FOR DH's ARE BUILT BY THE OFFICERS OF THE SUPPLY DEPOT
AT MIDDLETOWN, PA.

During the week the flying officers at this post designed and built skees to be used on airplane so as to enable the officers at this post to get in their flying time as all flying had been suspended due to the deep snow. The construction of these skees is as follows: Each skee having at its body two DH-4 box wing ribs reinforced on the inside on the upper and lower panel of the narrow side by inch square material. These skees covered by 3/8" veneer screwed to the bottom and the front curved up so as to give a decided sled runner effect. A "V" block, mounted slightly forward to center and well braced on the side, constituted the axle rest where ordinarily the wheel of the plane is attached. Directly in the rear of these "V" blocks cross brace wires were used to act as spreaders preventing collapse of the skees when the side stresses were thrown upon them. Directly in front of the "V" blocks adjusting wires were placed fastened to the forward landing gear strut fuselage fitting, these wires being used to keep the skees at an even angle at all times both on landing and taking off. It is found that these skees are very successful, also it was found that the veneering on the bottom of the skee was apt to wear a little fast so an experiment was made with sheet aluminum for the facing of the runner part. This proved to be a great improvement and is considered quite an achievement by all who have seen and flown the ship with this attachment.

LUXURIOUS AIR LINERS EXHIBITED IN PARIS

No doubt the great feature of the Paris aeronautical exhibit is the wonderful exhibition of the big Passenger carrying machines. Manufacturers have evidently decided that the future of aeronautics lies largely in the transportation of people and many firms are evidently concentrating on business looking aircraft capable of taking air travelers long distances in the shortest possible time. The immense Meriot two decker, "Marmoth", Caudron, Farman "Goliath" and the British Handley Page exhibits were crowded continually. The people examined these machines very minutely both inside and outside. The Handley Page Aerial transport attracted a great deal of attention and particular interest was displayed in array of levers and switches by which the pilot controlled the mechanism and was a constant source of close examination.

Machines which attracted a great deal of attention were the new passenger carrying British Airco DH-6. This is an extremely good looking craft and is a type which has proven itself to have wonderful dependability in the regular Paris to London passenger service. The Boulton and Paul small machines appeal more to the expert than to the general public. In this machine there is no wood used in the construction. The whole of the structure being of very light steel. The machine complete weighs approximately 700 pounds less than the same type of machine made of wood.

The British and Colonial Airplane Company is exhibiting three Bristol planes, one of which is a passenger triplane equipped with four Liberty engines. The Bristol passenger carrying triplanes, empty weigh 11,000 pounds and when fully loaded weigh 17,750 pounds and carries sufficient fuel for 500 miles and for commercial purposes is rated at a speed of 100 miles per hour $3/4$ throttled although it is capable of making an actual speed of 120 miles per hour. It is most luxuriously fitted up on the inside. The pilot being separated from the passengers with a doorway between the two compartments. It is fitted up with wireless telephone, electric lights, triplex glass windows, and lavatories. There are two Italian concerns with exhibits. The machines exhibited were the Caproni, "Fiat" and the "A.S.A.". The former a triplane bomber which was used throughout the years of the war and which has been refitted with cabins for passenger transport and is capable of carrying 32 passengers.

The Fiat is extraordinary by reason of the very powerful 700 H.P. engines. It is claimed that these machines can carry enough fuel for 20 hours flying at 162 1/2 miles per hour.

There were a number of small machines and flying boats also exhibited. Of the small craft the most interesting was the "Bristol Babe" which is equipped with two cylinder air cooled engine giving a speed of 85 miles per hour and using only three gallons of gas per hour and is rated at 140 H.P. In view of the H.P. of this machine the fuel consumption is considered very low.

SANITARY OFFICER AT GODMAN FIELD USES AIRPLANE TO LOCATE INSECT BREEDING PLACES.

A new use has been found for the airplane by Lieut. McMutt, Sanitary Inspector at Godman Field, Kentucky. The medical officer's mission is to keep bugs out of our system and as a rule the "medics" usually adhere pretty strictly to this job. However, Lieut. McMutt had an idea that bugs were in other places besides in our systems. Therefore, he decided that he would take a look at "skeeter" breeding places in and around Godman Field from the air. Accordingly arrangements were made with Captain Arthur Thomas to take the Sanitary Officer up for a flight to cover the territory around Godman Field. These officers were equipped with maps in cases and charted every water hole and pond that could be seen from the air upon their maps. It is needless to say that these officers located great numbers of insect breeding places in a very short time. Had this been done by the usual ground methods it would have consumed months of time.

By having all of these breeding places charted it enabled the Sanitary Officer to lay out a comprehensive plan of attack to his enlisted forces which will enable them to locate places without difficulty and cover them thoroughly with oil which is the usual method for exterminating the larvae from which these insects spring.

The method of locating these places from the air has proved to be the most accurate and feasible method and is also very valuable in locating other places which are detrimental to the health of the commissioned and enlisted personnel.

ACTIVITIES OF RADIO BRANCH

The establishment of a Radio School at Post Field is contemplated and preliminary work for the same is being carried out. Radio tests in conjunction with the Navy Department have been completed at Bolling Field in order to determine the various points in favor of three competitive airplane radio telephone sets. A complete report on the same will be available within a week.

Extremely good results have been obtained by the Navy by the use of a new type trailing aerial called the trailing loop, and consists of a wire running from the center of the boat to the extreme end of the wing, thence underneath the boat behind the step to the end of the opposite wing and thence back to the reel. The standard antenna weight is attached to a pulley and fastened to any point of the loop except a point directly under the boat. This weight is so arranged that when the reel is paid out a triangular trailing antenna develops with the weight at its apex. When this loop was used as an antenna against the counterpoise, a decided increase in radiation was obtained over the trailing wire type and correspondingly greater audibility at the receiving station was noted.

CAPTAIN J. O. DONALDSON, A. S. A. TAKES COMMAND OF 94th SQUADRON

The tragic death of the Commanding Officer of the 94th Aero Squadron, Captain Field E. Kindley, A. S. A., has placed Captain J. O. Donaldson, A. S. A. in command of the famous 94th Aero Squadron.

Captain Donaldson, is a Military Aviator, with several decorations, and as squadron Engineer Officer for the 95th Squadron has shown himself an efficient and capable officer. He has been very popular with both officers and enlisted men of the 95th Squadron, and all wish him the best of luck in the world with the famous "Hat-in-the-Ring" outfit.

The following article is reprinted from the German paper "Die Woche". It is published with a view of illustrating the German trend of thought.

"WHO HOLDS THE RECORD?"

A critical view of the performances of the British
Airship "R.34" and the German L. 59".

Now that the excitement with regard to the flight to and from America carried out by the R.34, has somewhat subsided in the Allied Countries it will be well to examine this flight from a more sober point of view and to take down the extraordinary self-conceit of the British. The "Times" stated that the R.34 with its 55850 cubic metres content is larger than any Zeppelin and the Air Ministry also, on July 6th, 1919, the day of the arrival of the R. 34 in America, declared officially that the airship, on completing this flight of 3130 nautical miles, or 5768 km., had flown the longest distance ever covered by any airship. The truth is, that the performance of the British airship has been beaten both from a technical point of view and as regards pilotage by the performance of one of our naval airships during the war. This was the flight of the "L.59", piloted by Captain Bockholt, which took place 21-25 November 1917- almost two years ago, from Jamboli, in Bulgaria. The L.59 exceeded the "R.34" in size by 15650 cubic metres, the distance flown was 1000 km. longer. This flight was in no way intended as a sensational sporting and record flight, but as a relief expedition to our hard pressed troops in East Africa, in order to take them ammunition, machine guns and above all bandages and medical stores. Unfortunately the airship was unable to carry out its mission as it was recalled by W/T on account of news from the front, when in the neighborhood of Khartoun.

The "L. 59", 226 m. in length, is 30 m. longer than the "R.34". The lines of the "R.34" are identical with those of our smaller 55,000 cu. m. airships, such as were constructed for the Navy in great numbers during the war. This exact reproduction of our types was only possible to the British after the loss of "L.38" in England and the "L.49" in France in 1916 and 1917 respectively. The British found great difficulty in constructing these airships. They acknowledged that they could not succeed in copying our wonderful Maybach engines, despite the fact that some of these fell undamaged into their hands. The Sunbeam engine with which the "R.34" was fitted is in essentials the same as the German engine.

The construction in both cases is of special girder type in duralumin. The gang-way-the keel of the airship- is in every way the same as in the Zeppelins. The position of the gondola, and the shape and arrangement inside are the same as in the German airship. The tail unit is also copied from the German airship. Even the size of the ballast bags and ballast hoses is copied. In vain may we seek something new and original in descriptions of the airship. The construction of the "R.34" is a technical plagiarism, a copy of the pattern created by German science and energy. Nevertheless, the British have not succeeded in keeping the net weight of the airships as small, that is to say, in constructing as lightly as is done at our airship construction yard, the Luftschiffbau Zeppelin G.m.b.H., Friedrichshafen.

The total lifting capacity of the German ship exceeded that of the British ship by 14,700 kg., its volume was 12,650 cu. m. greater. The weight empty of both airships, the framework, gondolas, envelope, in fact everything connected with the body of the ship, amounted in the "L.59" to 27,500 kg. and the "R.34" to about 38,000 kg. The net weight of the British airship, then, was 10,500 kg. heavier than that of the German, despite the fact that the latter was 12650 cu. m. larger. An increase in net weight means a loss in useful load. On this account the proportion of net weight to total lifting capacity forms the scale of judgment of airships.

This proportion is particularly important in the case of commercial airships, of which the "R.34" is doubtless the prototype. The gain in useful load by means of lighter construction and greater volume finds its expression in the materially increased amount of fuel- synonymous with range- and more than anything in loading. The "L.59" carried 23,225 kgs. of fuel (petrol and oil) and 13,000 kgs. load, whilst the corresponding figures for the "R.34" were only 16,800 kgs. and 5,000 kgs. respectively. For the crew of the "R.34" 31 men, ten of whom were officers, and for their comfort during the propaganda flight, 4000 kgs. was counted, whilst for the war flight of the "L.59" with a crew of 22, 4 of whom were officers, inclusive of provisions, only 2600 kgs. was reckoned.

As regards the meteorological and climatic conditions, unexpected incidents and dangers were far more frequent in the case of the German airship. The flight of the "R.34" took place over a region of medium geographical width within the temperate zone, in which the meteorological and climatic conditions were practically the same at the end as at the start and these conditions were thoroughly investigated beforehand. We cannot deny that the meteorological difficulties were great for the "R.34". There were, however, no abnormal sudden changes in temperature and similar complications to be expected, though there was a possibility of strong headwinds and squalls on the outward flight. The "R.34", however overcame all these dangers. The meteorological stations on both sides of the Atlantic and in the Atlantic Ocean itself were called into play and the flight made as easy as possible from this point of view.

The "L.59's" flight was quite different, the meteorological material available was scanty, no weather reports or warnings could be communicated to it on the way. The greater part of the flight lay over enemy territory. The flight almost direct North to South led from the late autumn weather of Europe, to the tropics of Africa. This was a great difficulty, as the changes of temperature were quite abnormal. The strong sunlight and the reflection over the desert caused strong vertical eddies so that the 230 m. long airship behaved like a ship in stormy weather and some of the crew suffered much from sea-sickness.

The high temperature formed a severe test for the engines and transmissions as did also the desert dust. The engines behaved splendidly in spite of the wide changes of temperature. There was no previous knowledge of the effect of tropical heat upon the sensitive gas bags of the airship. These crackled and worked so much in the unsteady airship, that there was danger of their becoming leaky. There was also danger of electric disturbances.

As early as 1917 we were in a position to fly to America with the "L.59". It would have been possible to reach Chicago. After its 35 hours' flight the "L.59" had sufficient fuel on board for a further 34 hours' flight; this quantity would have been sufficient to reach San Francisco flying over the Cordilleras in good weather, without any landing. If the load had been reduced, in order to make a record flight, the "L.59" with 37,000 kg. of fuel could have flown almost half way around the world. The "R.34" after a 113 hours' longer flight was so short of fuel that it was questionable whether the goal could be reached."

NOTES ON THE FUNCTIONS OF THE ARMY AIR SERVICE

The notes submitted heretofore related to the change in administrative and executive methods of the Air Service brought about by General Orders 132, and the application of an educational scheme for the officers and enlisted men.

These notes relate to the policies established by the War Department as to the functions of the Army Air Service, and the means which the Army Air Service has taken for putting them into effect. The uses of Army aircraft in the operations of war as prescribed for the Army and Navy by the Joint Board, and approved by the Secretaries of War and Navy are as follows:

Army aircraft shall be used:

- (a) As an arm of the mobile army.
- (b) Against enemy aircraft in defense of all shore establishments.
- (c) Alone or in cooperation with other arms of the Army or with the Navy against enemy vessels engaged in attacks on the coasts such as:
 - (1) Bombardment of the coast.
 - (2) Operations preparatory to or of landing troops.
 - (3) Operations such as mine laying or attacks on shipping in the vicinity of defended ports.

It is interesting to note in this connection that all of the provisions for the use of aircraft contemplate their application against enemy elements either on the sea or coming across the sea, except as in (a) "as an arm of the Mobile Army".

The reasons which led to these conclusions are due to the fact, primarily, that the United States can defend itself with ease against any other country at present on the North American Continent, and, next, to the fact that the United States is the only great power that would be self-sustaining in the event of war in so far as men and material are concerned. No matter if hostile navies hold both the Atlantic and Pacific Oceans, if the United States had an adequate military establishment, no base could be seized and held by these hostile fleets from which an offensive movement could be made into the interior of the country. If, however, the hostile countries gained predominance in the air, they could reach our vital centers with comparatively little trouble, and cause damage which might result not only in crippling our power of defense but might turn the whole scale of war.

It has been demonstrated by actual trial that any place east of the Mississippi River can be reached in eight hours from the Atlantic or Gulf coast, and any important place west of the Mississippi within from eight to fifteen hours. The Panama Canal and our insular possessions can be effected in a proportionate manner.

The primary mission, therefore, of an Air Service is to seek out, attack, and destroy the air service of its enemy. It is essentially an offensive arm in its tactical application, and all air services should be organized with that end in view from a strategical standpoint. With a proper organization an Air Service can be brought to bear against an enemy with much more rapidity than any other arm.

In the development of this newest branch of national defense, a look must be taken forward as to its reasonable possibilities if developed rather than what it already has done in the past, because, if we regard merely the performances of two or three years ago, we will fall ^{far} short of what is possible today or will be possible next year. As a matter of fact, the advance in Aviation has been greater as to materiel and its application since the armistice than it was for more than the four years of the War-- the impetus, of course, having been given by the war development.

During the War, our Army reconnaissance was carried out at an altitude of from 15,000 to 18,000 feet. If war occurred today, due to the climbing ability of the present pursuit plane (which climbs 2,000 feet in 20 minutes) and the ability of the Turbo Booster to give us high altitudes, this reconnaissance would have to be carried on at an altitude of from 25,000 to 30,000 feet.

In bombardment Aviation, single projectiles of a ton's weight would be used from airplanes.

In Attack Aviation, armored airplanes (really flying tanks) carrying cannon, machine guns of various calibers, grenades, and bombs would be used. The Army Air Service has designs and models of each one of these types of airplanes. Production has not been possible on account of the shortage of funds.

At the end of the War, our pursuit ships had 220 H.P. with a speed of about 120 miles per hour. If we went to war tomorrow, pursuit ships would appear with a horse power of from four to five hundred, and a speed of 200 miles an hour.

As to lighter-than-air craft, the observation balloon equipment for work with troops is complete. There are a number of small non-rigid dirigibles on hand. Both the observation balloons and non-rigids are used for observation purposes in various ways.

In the most important department of lighter-than-air aeronautics, little has been done up to the present. I refer to the acquisition and use of large rigid airships of the Zeppelin type. The recent models of these have a cruising range of 10,000 miles, a speed of 90 miles an hour, and the ability to carry 20 or more tons of cargo. These airships are desired by the Army Air Service for the purpose of attacking other dirigibles, for the attack of vessels on the water and debarkations from them, for surveillance purposes along our frontiers and coasts, and as a means of transportation for supplies for heavier-than-air units.

Ten tons of supplies will keep one thousand airplanes in operation for one day. It is believed to be perfectly practicable, therefore, to keep up the train for the heavier-than-air units by means of dirigibles. In this way the Air Service will be independent of communications either on the land or on the water, making it possible to carry on an extended campaign through the air alone. These airships are also desired as a means of transporting troops and materiel for the Army. Personnel and equipment can be landed from airships either directly or by parachute.

As auxiliaries to the above, the most important single element is the development of ordnance, not only for the attack of other aircraft, but for the attack of objects on the ground and on the water. An Army can hide itself under trees, under the ground, and in many other ways. Surface vessels on the sea cannot hide themselves, either by day or by night. Their searchlights are confined to their decks and are easy to put out with projectiles -- much easier than those against which we operate on land. Their means of anti-aircraft defense again are confined to their decks as distinguished from the carefully concealed means of defense against aircraft on land.

As the recent war was essentially one on land, comparatively little development took place in armament for the attack of naval or other vessels. This is now receiving consideration along the line of heavy chemical projectiles which will produce heat such as thermite, others that will produce smoke upon impact, projectiles with self-contained means for increasing their velocity for piercing decks, water torpedoes, and depth bombs.

Radio communication between aircraft and submarines increases the difficulty which surface vessels will have of maintaining themselves against aircraft in the future.

As a parallel development with aircraft, it is extremely necessary that progress be made in anti-aircraft artillery of various forms, aerial fixed barrages for the defense of important points, and searchlights and means of illuminating the skies at night, and that these be coordinated with the air work. At present these are handled by the Coast Artillery and the Engineers, respectively.

The next auxiliary in importance is radio and other communication between aircraft themselves, between aircraft and the ground, and between aircraft and elements on the water.

The third is the development of American photographic cameras of sufficient power and excellence for the work in hand. The organization which the Air Service itself provides for putting into effect the policies of the War Department along the lines indicated above consists of a Director of Air Service who is charged under the War Department, with the preparation and execution of all plans relating to the Air Service, and the training and supply of the Army Air Service. The staff is organized on the general plan of the "G" system, i. e., an Administrative Group, an Information Group, a Training and Operations Group, and a Supply Group. This organization has been brought about within the past year from the various evolutionary changes through which the Air Service went during the war.

As the object of the Army Air Service is the application, primarily, of this Air Service in war, the Operations Group initiates the projects and prepares all the tactical methods necessary for their accomplishment. It notifies the Engineering Division of the Supply Group, which is charged with the preparation of new equipment as to the characteristics of new materiel required. The Engineering Division prepares data to which the civilian engineers and constructors of aircraft are encouraged to offer solutions. In order to bring under one central engineering direction, all of the elements which go into the make-up of an airplane and to insure harmony in the execution of projects, an Armament Section of the Ordnance Department, a Radio Section of the Signal Corps, and a Photographic Section of the Air Service are maintained directly under the Engineering Division.

When any equipment is completed to meet the requirements of the Operations Group, the equipment is tested from a service standpoint by actual flights and by tactical units. It is then approved, and production and issue are ordered by the Supply Department.

Such is the theory on which the Air Service is based. Its application will depend largely on the amount of initiative that it is allowed to have, combined with the amount of money that is devoted to this purpose. In addition to its strictly military functions, the Air Service actually is the nucleus of aviation for many national purposes, among which may be mentioned the forestry patrol, mapping work of various kinds, and the encouragement of what civil aviation may develop.

Plans have been drawn up along these lines which will require legislation for putting them into effect. There is no provision in law at present which allows the Air Service to sell gasoline or oils to passing airplanes; nor can spare parts and the services of mechanics be utilized at cost by such planes.

The formation of reserve units, aeronautical courses in educational institutions, and scientific research along aeronautical lines are being urged wherever practicable.

Aside from the samples of equipment mentioned above the Air Service has no service airplanes on hand capable of coping with a first class antagonist. It has the organization and system of work which will produce results after the necessary appropriations are made. To obtain these results however will require about two years.

THE METHOD OF TRAINING MEN IN THE AIR SERVICE MECHANICS' SCHOOL.
AIRPLANE DEPARTMENT AT KELLY FIELD.

To the man with both feet firmly on the ground, and no expectation of ever having more than one of those feet off the ground at the same time, the blue-denimed mechanics who throng the line on a flying field have no particular interest. To the pilot in the Air Service, of the United States Army, those husky privates and non-coms assume gigantic proportions. One of their mistakes may cost him his life. A poorly connected wire or a strut that has become unduly strained on that expensive ship may mean "another good man gone wrong", or more probably, the complete destruction of fifteen thousand dollars worth of government property. Consequently that mechanic, his ability and training become of vital importance to the welfare of the Air Service.

The Air Service Mechanics' School at Kelly Field is entrusted with the task of training the thousands of young men recruiting for the Air Service. To the Officers and the instructors of the School falls the responsibility of selecting the proper material to mould into efficient, reliable and expert airplane mechanics, and then accomplishing that task. How they succeed in transforming an ordinary young man without technical knowledge into a technical expert in his line, on whose work the lives of trained flyers depend, is an interesting study in practically applied education and vocational training. A surprising amount of common sense psychology is included in the elements that go to make up the course.

Before any discussion of the methods of giving the actual technical instruction in airplane mechanics, it is necessary to understand the mental attitude developed in the student from the start. He is made to understand, the first day he is in the school, that the job ahead of him is one of dignity and responsibility. He begins to realize, as he surveys the multitude of tools and ships in the airplane Department, what his task will be. Over his head fly the ships of the Air Service Mechanics School, ranging from the little Fokker and SE-5 Scouts to the big De Havillands and Le Peres. On the line he sees men who have gone through the school handling the ships, going up for rides as passengers. As he watches them roar low over the hangars, tremendous in their power and speed, the words of his first lecture on the responsibility of the airplane mechanic burn deeper in his mind, and he is ready to actually apply himself to the smallest details of his work.

In a word, the principle of that work that he gets for twelve weeks in the Airplane Department is "Learn by experience under expert guidance". Such lectures as there are, are made practical by charts and pictures, or better still, by the use of actual motors and planes to illustrate the points made. There is one instructor to every eight men. This allows personal attention.

A slightly detailed account of the first week's work of a student in the Airplane Department will illustrate the fundamental principle of practicality that is the basis of all the work. The student's first day is devoted to lecture room instruction on airplane woods - exactly why wood is used, its precise elements of strength and suitability, illustrated with charts and tables of tensile strength, resisting power, etc., as compared with metal. Exactly why it is dried and seasoned, the tools used in working with wood, and the care and use of these tools are touched on. Then comes his first practical exercise. He cuts a splice for a longeron and does the glueing.

His second day starts with wrapping and doping the longeron splice, with the instructor in charge of the work bench in constant direction. After completing this job, the student constructs a seat rail support. Here he learns to lay out work from a blue print. His day ends with the construction of a compression strut, laying out his work again from a blue print.

Follows on the third day the construction of the center web, which he lays out from a pattern, and does the glueing, nailing and finishing necessary. A floor board support likewise yields up the mysteries of its construction to him, and at the end of the day has one to his credit, made complete by his own hands. During all this work he is becoming acquainted with the use of a variety of tools - brace and bits, panel and coping saws, chisels, planes, marking gauges, square, divider, rasp and others.

At the end of the week he has constructed, in addition to the above, a nose web, tail web, compression web, and spacer web. His last day is devoted to the construction of a model propeller tip, which will be used later in a propeller tipping exercise. This makes him well acquainted with the various uses of templates, protractors, spoke shaves and draw knives.

An examination and review finishes the week. The instructor has taken careful note of each one of his student's energy, natural ability, and interest in his work. From the start the completeness and conscientiousness of his labor has been the prime interest of the experienced mechanic over him.

Even this cursory examination of that first week's work stresses the fact that the Air Service Mechanics' School is run on the principle that doing a thing is the best way to learn how. It is an easy matter to turn out theoretical experts who could not put in a cotter pin or intelligently fill a ship with gas. The fact that the Departments of Training have succeeded in solving the problem of evolving an airplane mechanic in twelve weeks of practical work is an interesting experiment in rock-bottom vocational training, conducted by efficient men who make up for lack of experience as educator by long training in getting results without being hampered by conventional methods.

The complete twelve weeks course includes rigging on pursuit, bombing, and reconnaissance planes. Ships used for this work are De Havilland Fours, SE-5s Spads, and Curtiss H's. For three weeks the men, after a lecture on the theory of flight and why exact rigging is necessary, start on torn down ships and build them into ships in commission to fly. Broken down ships in the last stages of decay are most emphatically non grata in the Training Department. New planes are used, which are often flown after the rigging class gets them ready.

Motors take three weeks of the course. One week is devoted to the Curtiss OX5. A two hour lecture on the nomenclature of the motor is made practical by the use of charts. These men are not to be motor mechanics - in fact their knowledge of a motor, so far as this course is concerned, is intended to be just enough to make them able to intelligently "pull" and install a motor in a ship. The motor department of the school turns out the specialized motor mechanics.

The remainder of the week is used in doing the work connected with pulling and installing a motor. The men install a motor in a fuselage, connect the instruments, adjust the propeller, crank the motor and see it run in the fuselage. Needless to say, the motors used are in commission. Every motor installed in a ship by the class runs before the work is considered satisfactory. From time to time through the week there is opportunity for short lectures on carburetion and ignition, using the actual parts of the motor to demonstrate timing and adjustment.

Two more weeks are given to motor installation, adjustment and cranking, one week for the Hispano-Suiza motor, so popular for scout planes, and one week to the Liberty, installed in a D.H. 4 fuselage. At the end of these three weeks the student is prepared to install any one of the three motors connect the instruments, correctly mount the propeller, and start the motor. He has an intelligent idea of valve and magneto timing, knows the Zenith Carburetor from top to bottom, and realizes for the first time "why the wheels go round" in a gasoline motor. Propeller tracking, inspection of the gas and oil and water systems are included.

In the scope of this article, which aims only to illustrate the methods of instruction in the Air Service Mechanics' School, it is unnecessary to go into detail regarding the remainder of the course- the wire making, building of loops, the adjustment of control wires, the intelligent inspection of wires, struts, turn buckles and wing and fuselage construction. It is sufficient to say that here, as in the other weeks, the men learn by actually doing the thing under expert supervision.

The course as laid out is precisely long enough, and rightly divided, to insure time enough for the student to actually do the things he will be called on for when actually on the line. A brand new feature of the training is three weeks of post graduate work in the Flying Department, where the men work on ships that are flown every day, and get the atmosphere of the line. Here again their instructors are experts. Each student is assigned to a crew, and the crew chief sees to it that the student under his wing has the opportunity to put into practice the things he has learned. The student has his first ride - and it is a very chastening and stimulating thing for a man on his first ride to lock down three thousand feet and realize that soon he will be responsible for keeping the ship in the air. He leaves the school with the same idea he was given when he entered- that his is a great trust, and that he was considered available as a student because his superiors thought him worthy.

The Officers of the Air Service Mechanics Schools are all flyers. They know from experience what they, as pilots, demand of their crewmen. And they have laid out the course with this in mind. The test of their success in their work is shown in the Flying Department of the school itself, and throughout the Air Service, from Mitchel Field to the Border. The Sergeants and A.M.'s, and M.E.'s who keep the eight different types of ships in the A.S.M.S., flying department in shape are men who have started on the foundation of their training at school.

KELLY FIELD REVIEWED BY GENERAL PERSHING

On Tuesday, February 3, 1920, at two P.M. the entire command was reviewed and inspected by General Pershing and his staff.

General Pershing arrived in San Antonio at ten thirty in the morning on his special train from El Paso and was escorted into the city from Hondo, a distance of forty miles, by ten planes of the First Pursuit Group.

The planes and personnel of the following organizations were formed for review from the eastern end of the field, facing north along the line of hangars in the following order:- First Pursuit Group, First Provisional Air Park Group, including wrecking crews, fire fighting apparatus and Medical Corps equipment, First Wing Headquarters Flight, Headquarters Southern Department Flight and First Bombardment Group.

General Pershing and staff accompanied by Major General Joseph T. Dickman, Commanding the Southern Department, and staff were escorted from San Antonio to Kelly Field by a flight of six planes from the Air Service Mechanics School, and while the inspection of the first Pursuit Group was being made these planes flew back and forth across the Airdrome in close formation at a low altitude, breaking up and landing as soon as the inspection of the First Pursuit Group was completed.

Immediately after the four squadrons of the Pursuit Group (27th, 94th, 95th and 147th) took off in formation. While these four squadrons were forming in a large formation a special gunnery flight circled the Airdrome several times, diving in formation and firing at a ground target at the western end of the field.

Just as General Pershing began to inspect the First Bombardment Group the four Pursuit Squadrons flew over the field in close formation, executed several turns and then broke up, simultaneously each pilot stunting until he had reached an altitude of five hundred feet. This maneuver took the huge crowd assembled on the athletic field by surprise and expression of appreciation could be heard everywhere, mixed with the shrieks of delight from several hundred small boys of the post and San Antonio, who were busily engaged telling visitors about their particular friends in the air.

The inspection of the First Bombardment Group completed, General Pershing and staff accompanied by Officers of the Southern Department gathered at the eastern end of the athletic field to watch the "Show" by the pilots of the First Pursuit Group.

General Pershing at this time was the center of the huge crowd and was kept very busy shaking hands with the people who crowded up to meet him, and he gave special attention to the numerous wounded men of the A.E.F., who had come out from the hospital at Fort Sam Houston to witness the review.

Then a mighty roar of motor was heard and the four squadrons, (11th, 20th, 96th and 166th), of the First Bombardment Group took off to the south in formation. The huge formation formed and then returned at a low altitude crossing and recrossing the field several times, flying almost wing and wing. This formation was not spectacular in the sense of the word applied to the Pursuit Group, but it was spectacular-- it was enormous and impressive, for it showed the power and the destructive ability of such a flight when used in time of war.

Judging by the comments heard, the performance before General Pershing was commended by the latter, and others of the reviewing party, and was interesting and impressive to all. Upon the breaking up of the large formation, two five ship formations escorted the General to Camp Normoyle and Brooks Field.

NOTES OF INTEREST CONCERNING SQUADRONS ON THE BORDER
The First Day Bombardment Group.

A complete course of Artillery Adjustment has been put into operation in the 1st Day Bombardment Group. The first subject taken up was the theory of gunnery and the method of fire used by both the light and heavy artillery. Next the subject of liaison between the ship and the battery was taken up. Included in this subject is the use of the ground panels and the various codes such as the two number, three number, and three letter codes. Then the class was introduced to the miniature range.

This range is of very simple but effective construction. It consists of a box five feet by eight feet. The bottom of which is studded with 60 watt incandescent lamps at various locations. The light thrown by the lamps is reduced in radius by covering them with tin. This covering has a hole in the center one half inch in diameter.

The box is covered with canvas on which terrain is depicted as well as targets, such as batteries in action, etc. The lights are controlled by a switch board. The operator can thus throw on any combination of lights and know their exact deviation from the target.

A puff target range has also been constructed. The range is located just South of Kelly Field No. 1. Its construction is somewhat different from the usual, and is rather ingenious. It consists of a target, made to represent a four gun emplacement, and 36 smoke-pots. These pots are distributed around the targets in such locations as closely simulate artillery fire of the various kinds, viz: Precision fire with its stages of trial fire, improvement fire, and fire for effect; Zone fire with its stages of bracketing and fire for effect. The pots are made of two and a half inch pipe with a spark plug set in the bottom. One wire leads from the pot to the switch board and the ground is used as a return. The pots are fired by a booster. The distance from the battery to the target is about one half mile. Communication from the firing station to the panel station is by radio phone with radio telegraph as auxiliary. Communication from ground to ship is by panel and from ship to ground by radio telegraph.

All the pilots in the group are getting this instruction, so that they may be able to do observation as well as their usual work.

This course is in charge of First Lieutenant Benton A. Doyle, who was chief instructor in Artillery Observation at Post Field, for about one year.

First Pursuit Group Stages Big Show.

The First Pursuit Group lived up to their record in putting forth their best efforts to make the "Show" for General Pershing and his staff the best in the history of Kelly Field. The ability of the individual pilots of this Group is shown when in spite of all the acrobatic stunts engaged in, not a single pilot was injured or plane crashed, although several RAF wires snapped in the air while stunting, the pilots skillfully brought the planes down, jumped into a reserve plane and were in the air again in a very few minutes. (All RAF wires on controls are now being changed to cables, as tests have proven a cable to be far stronger than RAF wires for this purpose.)

Training activities in the 1st Pursuit Group for the past week have been very strenuous. The warm sunshine has scattered the early morning mist and every night is clear and cool with a soft moon. On Wednesday, the 28th, dead stick landings were practiced by the 94th, and 147th, Aero Squadrons. Later in the day formation flying and practice target shoots were engaged in by all squadrons in the group.

The First Pursuit Group has formed a league in which all the Squadrons will be represented, and from the tentative line up's they will be very evenly matched, and some hot games are to be expected. A new factor which may enter into deciding of the championship is the rapid spread of an epidemic which appears to have broken out in the Group. After a hasty consultation the Medical Experts diagnosed it as "Matrimonial Typhus" in a particularly virulent form, it carried off five members of the 147th Aero Squadron in the past two weeks. However, this epidemic does not seem to affect their athletics as they are sitting on the top rung looking down on efforts of the rest of the eagle tossers.

The polo players have decided to build a wooden horse inclosed by a saucer like affair so they can sit astride Wooden Maud and whale the ball. Some claim it is good exercise, others say it trains the eye, so if it really does do all these things the 1st Pursuit Group will have the best team about these parts.

11th DAY BOMBARDMENT SQUADRON

On Monday evening we tangled with the 20th Squadron who displayed a much improved brand of Basket-Ball. They guarded very close holding the score to 21-3. Lieut. Greer of the Big Team of Kelly Field was most unfortunate in this respect and his green shirt was hounded by one of the 20th men throughout the game. An unfortunate accident happened when the 20th center slipped and fell on his shoulder. He was rushed to the hospital immediately and we are grieved to learn that his shoulder was broken. Spectators remarked at his gameness as he grimed although suffering excruciating pain.

FLYING

Lieut. Johnson and Captain Hoag led most of the formations this week and all of our formations at all times was worthy of praise. Lieut. Lawton, Lieut. Myers, Lieut. Greer, and Lieut. Plumb were present at most formations and their splendid work helped to place the 11th Squadron among the best fliers in the Group.

Lieut. Plumb has proven himself as a daring and brilliant pilot not only in D.H.'s, but in S.E.-5's. The Pursuit Group we learn in underground channels are trying to steal him from us. We have our fingers crossed.

GERMANY'S ARGUMENT WAS NO BETTER

A heated argument on the ground developed into an interesting comparative speed test last week. Captain Adler, Adjutant of the A.S.M.S., has a pet De Haviland, which according to him, can fly circles around any other plane in the air. Lieut. St. John, the demon stunt flyer, has a firm conviction that the Fokker is the best plane known to exist in these parts. Lieut. Eldredge is one of the only two pilots in the Air Service Mechanics School who flies a vacuum feed Liberty motored Le Pere and enjoys hearing it miss. These three pilots argued the question of the speediest ship with numerous blasphemous embellishments. Finally St. John goaded beyond reason by the sardonic comments of the other two on his Fokker, recklessly staked fifty cents on the statement that his Fokker could beat the world. The amount was promptly faded by the other two, and the race came off.

It was ten miles. At the finish Lieut. Eldredge and the Le Pere slid over the finishing cloud four hundred yards ahead of the roaring De Haviland. A speck, half a mile back, was all that could be seen of the Fokker.

NINETY FIFTH'S MULE KICKS THE HUN INSIGNIA - - - At - - - DANCE.

Something unique in the line of an animated insignia for a Squadron was shown at the dance given by members of the 1st Pursuit Group. Many of the visitors as well as pilots became very curious to know how it operated, but this however was kept a deep secret and the contraption rigged up by underground means, so as to surprise the other squadrons of the Group, especially the 94th Aero Squadron, who intended to show up the other outfits along this line. The 94th could not keep their ideas of their proposed decoration a secret, and information leaking to the 95th Squadron, caused this old rival to 'get busy'. A Squadron Council of all the Sergeants was immediately called, and following a very good suggestion from Lieut. Ames, they developed a "Kicking Mule" insignia, keeping it a secret until the time of the dance. It caused great admiration, amusement and not a little curiosity. Within easy range of his hoofs showed an iron cross during the interval that he was preparing for a mighty swing of his hoofs, and then, apparently he kicked it way up in the sky. Then by a very clever arrangement far up in the sky, at the completion of his kick, there appeared in the distance a big "54", which represents the number of Huns the Squadron accounted for, overseas. At the same time a bright flash lit up his evil eye, and taking it all in all, it was a big success and went over "BIG" with the large crowd present.

IN MEMORIAM

Field E. Kindley, Captain, A.S.A.
Premier American Flyer - Kelly Field

(By his Brother Officers 1st Pursuit Group)

On Sunday morning, February 1, 1920, the whole Air Service rejoiced, Kelly Field, particularly, was in a happy mood and above all the 1st Pursuit Group was joyful in a rollicking and reckless manner. Orders had been issued for the reception of the General of Generals - the one man who had led all these men to victory in the late war. Harder activities were to be reviewed and Kelly Field was going to be given an opportunity to show itself at its best.

There were on Kelly Field practically all the Premier Flyers who had survived the Big Show and who were still in the Service. They had all been decorated in Europe by the General, as well as by others, and they were happy in the thought that they would again see The Big Chief. To express their appreciation, they were to fly at the head of their Squadrons as they had in Europe. They were to pass in review in the air and were then to frolic as they had done for the Huns when the Archies were defiantly laughed at.

Such were the plans, and with a light heart everyone was busy. Then, Alas! at 1:50 P.M., while leading a Squadron in review at about fifty feet altitude, the unexplainable happened and down to the ground crashed a plane.

Hurried investigation showed that it was too late to render any assistance, for all that was mortal of Field E. Kindley - Captain, Premier American Flyer, Distinguished Service Cross with Palms, Distinguished Flying Cross of England, and British War Medal - lay broken and crushed in the weeds of Kelly Field, Texas. But the spirit of the man - yea, the superman - lives on.

Here was an officer and a gentleman in every sense of the word. Britain can mourn, France may weep, all the Allies may indeed express their sorrow, but America must bow its head in deeper mourning than all; for with this simple crash, America, the Army and the Air Service loses one of its best.

Those of us who remain can well profit by the example of this officer's devotion to duty. Duty was to him a moral magnetism which controlled and guided his course over the tumultuous sea of life. Although the stars of honor, reputation and reward shone for him, he still kept for his guide that unerring magnet which showed him the true course to steer. There is the lesson for us to accept. Duty calls and we must answer. What matter how great the danger or how rough the road - the finger of duty still beckons and on we must fly even though we can see death at the end.

Death - the Great Mystery! Why isn't it explained? We believe in the mortality of the body and the immortality of the soul. Is that enough? What lies beyond the point of death? Can anyone believe that with this crash, Field E. Kindley has died? Let those who knew him answer, and the answer must come in thundering tones, Never! God grant that we may never forget the wonderful example of Field E. Kindley - the Man, the Superman, the Premier American Flyer, the Officer, the Gentleman. Yet all that was mortal of Field E. Kindley tonight lies broken and crushed at Kelly Field.

The history of Captain Kindley can be written briefly, but in that brief history there are volumes of deeds. Early in 1917, like many others, he heard the call to duty and entered a training camp at Tullahoma Field, Texas. He was then transferred to England and completed his flying training at various schools there. Upon completion of this hazardous training he was sent to France and attached to the 43d British Squadron; was later transferred to the 148th American Pursuit Squadron and served in the British Front until November 4, 1918 when it was transferred to the American Front. It was while he was with the 148th that he accomplished his deeds of valor. During this brief time, twelve Huns were sent to the ground. Picture the glorious combat of the air! Sometimes single handed against many; at other times while accompanied by friends, but always ready to do or die. Sometimes the flight over the lines meant escorting some untried pilot - a helping hand. At other times it meant diving to the rescue of some brother, hard pressed by the enemy. Then again, there were times

without number when it meant a flight through raking shrapnel, when every moment might be the last. But the greater number of times was when the enemy was met and the result of the combat could be only death. This meant skill against skill and courage against courage, but there never was a question. Field E. Kindley was always a superior, always better, always more skillful, always possessed of more courage. For all of that he was awarded the highest honors possible by both Great Britain and America. It was not so much the deeds that were rewarded but the conception of duty which made these deeds possible. Yet tonight all that was mortal of Field E. Kindley - man amongst men, courageous amongst the courageous - lays crushed and broken at Kelly Field.

Let us take heed. The paths of glory may indeed lead to the grave, but where is the man who is not happy in the thought that death is only a temporary lull if he has maintained a life which has held as a guide a motto equivalent to that of the greatest military institution in the world.

"Let Duty be well performed,
Honor be ere untarned
Country be ever armed
West Point, by thee."

Another life has gone - once more the finger of Death has beckoned. This time it took one of the best, but the spirit of Field E. Kindley will forever live on.

BUREAU OF STANDARDS CONDUCTING EXPERIMENTS WITH AIRPLANE INSTRUMENTS

Recently an investigation at the Bureau of Standards, Washington, D. C. of certain special instruments has been made for the military authorities including rate-of-climb indicators of a German type, a thermograph, and balloon manometer of the diaphragm type. In the last-named instrument, the use of a sensitive diaphragm is carried to a high degree of refinement. Conferences have been held between the Bureau's experts and the authorities of the Army and Navy at three of the dirigible stations regarding the practical needs in this work. A study has been undertaken of methods for developing the necessary new instruments called for, including special altimeters and air speed indicators to give high precision at lower altitudes and lower speeds than those manufactured for airplanes. An air volume integrating instrument is also needed to measure the flow of air into the envelope to secure buoyancy and economy in the use of hydrogen.

This investigation is nearing completion and the water channel and vacuum wind tunnel experiments may now be interpreted as showing conclusively (1) that the compressibility of the air may legitimately be left out of account in determining the law of action of the usual Venturi tubes; (2) that the viscosity must not be neglected in low speed flights, thus introducing a new property of the atmosphere hitherto ignored; (3) that at low speeds the indication of the Venturi, contrary to the assumption hitherto made by all users of this type of indicator, is not directly proportional to the air density, nor is it proportional to the square of the speed, but departs noticeably from this relation.

An expert from the Bureau of Standards is working in cooperation with the Air Service Engineering Division at McCook Field, Dayton, Ohio. A number of flight tests have been conducted in connection with the above which have afforded a practical check against the numerical results of the previous laboratory experiments. As soon as these results can be made available, they will be of importance in connection with airplane performance tests whenever high precision is required, and more particularly in connection with air speed observations on dirigibles.

ARMY BALLOON SCHOOL AT FORT OMAHA, NEBRASKA HAS A FIRE IN THE
HYDROGEN PLANT DURING THE PAST WEEK

Two interesting and unusual fires have occurred within the space of a week at the Hydrogen Plant at this Post and it is believed that they are of sufficient interest to the Service in general and to the Balloon and Airship Branch in particular to warrant the publication of the reports regarding them which were forwarded by Lieutenant Colonel Jacob W.S. Wuest, Commanding Officer, to the Director of Air Service. The reports follow;

"A fire occurred in the hydrogen plant at this Post on the afternoon of January 13th, which has several points of interest attached to it for the reason that it is believed that much can be learned from such accidents by the Entire Balloon Service. An investigation of the fire disclosed the following facts:

The fire occurred in the charging room during the charging of cylinders. In order to get a comprehensive idea of the conditions under which this fire occurred, a brief description of the process of charging will be given.

In this plant the compressor and the charging manifold are located in the same room, which has a concrete floor, brick walls, wood frame work to windows, doors etc. The compressor is placed on the east side of the room and near the center line. The charging manifold is placed directly against the north wall of the room, the shortest distance from the manifold to the compressor being about 12 feet. The cylinders to be filled are placed directly under the manifold tubes and rest upon the concrete floor. They are arranged along a continuous line in banks of 10 cylinders each. During the operation of charging, the compressor is of a necessity in operation. The valves of the cylinders are connected to the manifold by small filling tubes. When the gas has reached a pressure of about 2100 pounds in the cylinders, the cylinder valves are closed and turned, beginning at the center of the line of cylinders, and working to the outer cylinder of each bank. As the connection remains continuous in each bank during the operation, the closing of the cylinders in succession still leaves the outer cylinders in connection with each other through the filling tubes of the manifold.

The work of filling, on this particular day, was in charge of Mr. Thomas E. Jensen, a civilian employee of the gas plant. The men employed upon this work under his direction were receiving vocational training. At the time of the accident the cylinders of both banks had been fully charged and the closing of the valves had begun. Private Rock was working on the left bank of the cylinders and had just reached cylinder number 7 of the left bank when the safety disc on that cylinder suddenly blew out. A flame instantly shot from the cylinder before Private Rock could remove his hand from immediate proximity of the valve stem. His hand was in consequence quite badly burned.

The gas in cylinders 8-9 and 10 fed back through the charging manifold to number 7 which in consequence continued to burn until all of the gas of those cylinders had been exhausted, in addition to that which originally was in number 7. The flame was thrown out from number 7 in a vertical plane, producing an intense heat to a radius of about 8 or 10 feet. Valve number 7 was enveloped in the flame making it impossible for anyone to close it and thus shut off the gas which was feeding back from numbers 8-9 and 10. Pyrene Extinguishers were used to protect the woodwork of the wall but of course were ineffective as far as extinguishing the flame of the gas itself was concerned.

Through the coolness of the operators of the charging room the plant was shut down at once and all valves from pipes leading from the generating room and gas holder to the compression room were promptly closed. No damage occurred other than the slight charring of the wooden window frames in the north part of the plant but it is easily to be understood that disastrous results were prevented by the coolness of the men working in the plant.

The interesting aspects of this fire are the following:-

- (a) The determination of the cause of the fire.

- (b) The possibility of future fires of the same character.
- (c) The means of preventing fires in a hydrogen plant and the means of explaining fires that should occur in a similar manner.

Possible cause of fires. A personal investigation of this matter leads to the following conclusions in regard to the cause of this fire. The cause of the fire was undoubtedly due to one of two things.- either a frictional spark, which occurred when the safety disc blew off, or a static spark which was introduced at the time the gas was issuing from the valve. As frictional sparks are not uncommon in the blowing off of cylinders the probability in this case of a frictional spark was great. However, at the time of investigation I noticed a man working in the charging room, wearing a pair of heavy winter overshoes. This immediately excited a suspicion in my mind that the ignition may have been due to a static spark, passed from Private Rock to the cylinder at the instant he attempted to close the valve. This was investigated and it was found that Private Rock at the time was wearing rubber soled winter overshoes. It is extremely likely that Private Rock, who was wearing cotton overalls over a wooden uniform, may have, in the course of his natural movements generated a sufficient static charge upon his clothing to produce a spark when he came near the cylinder. Being well insulated from the concrete floor this supposition is highly plausible. There is another possibly more plausible reason for the accumulation of a static spark on the body of Private Rock and that is the fact that while working at the charging manifold this man was close to the revolving fly wheel of the compressor. It is a well known fact that a revolving fly-wheel has about it a large electrical field, and it is extremely likely that because of the dry atmosphere that existed at this time that large static charges were easily taken from the vicinity of the fly-wheel by the men working near it.

I am of the opinion that this was the direct cause of the fire. That the workmen in the charging room, being in the vicinity of a powerful electrical field, became charged with a static charge which, in the case of Private Rock, was not grounded, and that even though a few moments before he had grounded the charge by touching the steel cylinders, there was no manifestation of such a charge until the escaping gas actually caught fire in No. 7 cylinder, and that there was sufficient time for his body to become re-charged after turning off the valve of each cylinder, that he contained a sufficient electric static charge when he touched cylinder No. 7 to fire the escaping gas.

In regard to the possibility of future fires: It is extremely likely that they will occur unless more adequate means for their prevention are to be provided through a close and careful study of the conditions that surround the manufacture of hydrogen. In this particular plant the floor itself is a source of danger. The concrete floor should not be used in any gas producing plant for the reason that sparks from it are frequent, due to the scuffling of the feet or the dropping of steel tools, or even the scraping of a cylinder upon it. A wooden floor, preferably of blocks, impregnated with a conducting material should be used. The cylinders, during the process of charging should be placed upon a metallic plate, which has been carefully grounded. The actual charging of cylinders should take place in a building separated from that in which the gas is compressed. The gas compressor should be surrounded either by a fine metallic screen or by sufficient metallic brushes to secure a continuous brush discharge of the field that exists around the moving parts. No person should be permitted to enter either the charging room or the compressing room while wearing shoes of a non conducting material. It is most important, however, that the material of the floor itself of both these rooms should be of a conducting material.

In regard to the extinguishing of fires of this kind, it is a well known fact that burning gas cannot be extinguished by the ordinary means. In the case of a burning gas issuing from the cylinder under compression it is necessary to cause a combustion of the hydrogen. This can be done, I believe,

by placing over each cylinder a large metallic hood lined with an absorbing material and which contains a sufficient amount of chloroform or some inert gas which makes combustion impossible. This hood should be lowered immediately over the fire. The fire should be localized by surrounding each cylinder with asbestos sheets, making for each cylinder a separate fireproof chamber. One of the great dangers of fires during the charging of cylinders is the fact that the flames are so large that adjoining cylinders and other parts of the filling equipment are in danger of becoming unduly heated and thereby exploding. By placing each cylinder in a fireproof chamber, the fire can then be localized.

Steps are now being taken to put some of these ideas into effect here. The charging room will be moved to an outhouse at a distance from the compressing room and other corrections will be made to minimize the danger of fire. In conclusion I desire to report that possibly a great disaster was averted thru the cool-headedness and the courage of the men in the charging plant.

The second fire occurred at about 1:50 P.M. Friday, January 23, 1920, in the same room and was of a more severe nature. This being more on the lines of an explosion and was primarily caused by a static spark in an explosive mixture.

THE RADIO TELEPHONE AS USED IN CHASSE SQUADRONS

Digest of lecture delivered by
Lieut. Stanley Smith, A.S.A.

Since the inception of radio communication between planes and the ground, which started in 1916, at San Diego, California, when Colonel Culver, then Captain, successfully sent messages from a Wright Martin plane, this means of communications, wireless has made vast strides.

Even at that early date, it was realized what a source of possibilities were capable of development in this application of wireless to planes and under the direction of Colonel Culver, steps were taken to develop and standardize the equipment to be used. Then came the war, with its consequent large allowances of funds, which meant unlimited experimentation along radio lines.

The war over, finds the United States Air Service with just about the most, practical, compact and complete radio sets for plane installation that present day science can devise. Omitting the ground stations or sets, let us see just what we have capable of successful use in planes. In the way of telegraph sets we have what is called in the nomenclature of the Signal Corps, the S.C.R. 73. This is the set, the De Havillands now operating along the border are using with such marked success. To quote Colonel Culver, "this set is the best telegraph set in the Army and is practically fool-proof". It consists of a stream line generator, in the housing of which are beside the generator windings, a rotary spark gap, a power transformer and condenser, and an oscillation transformer. The generator is driven by a variable pitch aluminum propeller which maintains a constant R.P.M. of 4500. This set is capable of sending messages over a hundred miles when properly operated and kept up. An average performance of 50 to 75 miles can always be relied upon, assuming the set is, as before stated operated and kept up properly. The set demonstrated its worth in France and now down on the border it is again justifying the faith of its designer Colonel C. C. Culver.

Coming down to our own work, the chasse planes of the 1st Pursuit Group, we find two kinds of radio instruments installed in the S.E. 5's. Here we are not using the telegraph at all but are pinning our faith to the wireless telephone. There are at present in every squadron of the 1st Pursuit Group, three planes equipped with the radio telephone. One of these planes is equipped with a simple receiving set, the S.C.R. 59. The other two planes of the squadron are equipped with the S.C.R. 68, which is a two way set, capable of transmitting or receiving the voice a distance of from three to ten miles, with the average radius of from three to six miles.

In small planes like the British S.E.5's some trouble is necessary in installing these sets and some sacrifices have to be made. In our case in the Group the C.C. gear plunger was offered up at the altar of communications amidst howls of anguish from the armament officers. Specially designed brackets were made to hold the sets in the planes, in such a way that they could be efficiently operated by the pilot who of course also had to fly and perhaps remain in formation while making his adjustments, three things which are much easier to write about than do on a good rough Texas afternoon.

With regard to the sets themselves, the S.C.R. 68, the two way set used by the Flight Leaders of the squadrons, consists of nothing more than the set box itself, the generator which is mounted on the lower right wing close in to the fuselage, and the trailing antenna which extends from the outer wing struts. To operate this set, which is mounted upside down in the fuselage, the "Transmit-Receive" switch is worked, pushing away from the pilot to talk and toward the pilot to receive, on the transmitting side, nothing further is done by the pilot except to push this switch. All the adjustments have been made on the ground and the set is properly calibrated for efficient transmitting. For receiving with the 68 set, besides placing the switch on receive, two other adjustments may be made, on the antenna condenser and the antenna inductance. They are both simple enough and fairly easy to get at.

The simple receiving set, the S.C.R. 59 being of nothing more than half the former set, of course being considerably easier to install and handle. This set instead of deriving its power from a generator mounted on the wing and driven by the propeller wash as is the S.C.R. 68, is operated by a four volt Edison Battery which is placed in the tool compartment just back of the pilot. This set is considerably lighter than the S.C.R. 68, and being less complicated is very reliable and efficient. To operate this set the button marked "To light the filaments" is pulled out and the set tuned in, by varying the antenna inductance and the antenna condenser as in the S.C.R. 68.

The antenna for both of these wireless sets is of the trailing type, and consists of 150 feet trailed out from each wing. Before taking off, the mechanics unwind it and lay it on the ground behind the plane, landing with it in the same way, the wire being wound up around the lower wing when not in use. On account of the antenna, radio plane should always be marked with a white pennant trailing from the rudder. In landing, care should be taken to miss the tops of buildings or hangars as the wire breaks very easily, and the loss of same, very materially decreases the efficiency of the set, if going upon a mission.

The leather telephone helmet used for this work, should always be fitted by the pilot, in the most comfortable way, and then tightly laced. It is suggested that the pilots who are doing so much radio flying take the helmets home and make alterations to the helmet itself that will insure comfort. Any changes may be made, provided that the phones and wires attached are not harmed.

Here in the 1st Pursuit Group, we have had marked success with the radio telephone. We have had several excellent radio formations, with the flights being led and directed with a plane equipped with a two way 68 set, the members of the formation using the one way or 58 set. Perfect communications between five planes obtained at all times various complicated maneuvers were gone through. Several planes equipped with two way sets have flown together and conversation between them and the ground resulted. On January 20th Colonel Davenport Johnson, Commanding Officer of this station, personally directed the maneuvers of a pilot in the air from the ground, the Colonel giving orders and the pilots answering and obeying the commands.

Major Reed H. Chambers, Commanding the 1st Pursuit Group, has ordered that all the pilots in this Group, are to be trained in the operation of the wireless telephone, both with the Flight Leader's set and the receiving or 59 set. With this end in view, radio formations will be flown regularly until every pilot in the Group is thoroughly familiar with the modus operandi of the apparatus.

Information Group
Air Service

March 2, 1920

Building B
Washington, D.C.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

15 LB. PARACHUTE DEMONSTRATED IN A 45 MILE WIND

Mr. Floyd Smith, inventor and President of the Aerial Life Pack Company of Chicago, Illinois with his assistant, Mr. Charles G. Willis demonstrated before officials of the Air Service at Bolling Field a new type of parachute which he invented to meet the need of airplane crews. The pack is probably the most compact as well as the smallest made. When folded up it is about 8" wide and 25" long and with the complete harness it weighs only 15 1/2 pounds. The jumper puts on the harness and carries the pack upon his back and at no time does it interfere with his duties in the machine.

Mr. Willis ascended in a DH-4 piloted by Lieut. Haynes of the 99th Observation Squadron, to a height of 1000 feet, followed by General Mitchell in an S.E.-5, who desired to witness the jump from the air. Due to the fact that a 45 mile wind was blowing across the field the pilot carried Mr. Willis out over the War College whereupon Mr. Willis stepped off the fuselage into space. Hardly had he cleared the machine before it opened. He landed successfully in the middle of Bolling Field. The unique part of the demonstration was the fact that this was the first jump ever made by him, proving the reliability of the chute as well as his nerve, considering the speed of the wind. The average time of operating this Life Pack is one and two fifths seconds at 75 miles per hour and four fifths of a second at 150 miles per hour.

Mr. Floyd Smith the inventor was formerly a civilian Test Pilot at the Dayton Wright Plant. He is an early pioneer in "chute" work having made demonstrations back in 1914. In September 1918 he was detailed to parachute work alone and development work and testing all makes and descriptions from all over the world at McCook Field.

His "chute", is the outcome of his past experiences. Mr. Smith intends to personally give a demonstration at an altitude of only 75 feet this week. The release of a spring device allows him to be lifted out of the airplane.

OFFICERS SIGNAL FROM GROUND TO AIRPLANE

From the 104th Aero Squadron located at El Paso, Texas comes a story of probably one of the narrowest escapes from death that has as yet been recorded. On February 25th Lieut. George Rivers and Lieut. Frank Gardner while flying on a mission over Fabens, Texas were forced to land due to engine failure. As their mission required low flying they had no time to pick out a landing field. Therefore, they were compelled to crash their DH-4 in a very narrow place with no more damage than a pair of bruised legs to Lieut. Rivers while Lieut. Gardner came off without a scratch.

News of the accident was received by headquarters in El Paso in less than 15 minutes after the accident and a relief plane was immediately sent out. The pilot easily located them from the air. Upon ascertaining the fact that he could not make a landing he dropped a set of D.R. Signalling Flags to Lieut. Rivers on the ground, and maneuvered around until he read the message that they were O.K. and would proceed home by rail. The fact that these officers were not killed is most extraordinary and the use of signals although unique proved to be entirely practical.

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AIR SERVICE TOTRAIN 22 FORESTERS FOR FOREST OBSERVATION FOR AIRPLANES.

The Army Air Service is hard pressed for trained observers and pilots who are urgently needed to complete a number of Squadrons at various Air Service stations throughout the country.

In order to relieve this situation to some degree it has been decided to train twenty-two (22) civilian foresters in Forest Fire Observation from airplanes.

The Director of Air Service accordingly has authorized a school to be opened at March Field, Riverside, California, and the personnel from the Forest Service be given a course of instruction thru a period of six weeks, on the condition that the operation of the school and training will not entail any expenditure of Air Service funds. This will, however, involve but a small expenditure on the part of the Forest Service as sufficient equipment is available and trained Air Service officers will be retained at March Field until these men have satisfactorily completed their training.

The Air Service will continue to furnish airplanes and pilots for the regular Forest Patrols while the second man in the airplane will be the civilian observer.

The Air Service has maintained a regular schedule of patrols since June 1918. Up to the present time 570 fires have been discovered by the observers. Future maintenance of forest patrols after June 30, 1920, will be entirely dependent upon the action of Congress.

HOSPITAL AMBULANCE AIRPLANE.

To meet the urgent need for airplane hospital ambulances, orders were received to redesign and construct four D.H.-4's into these converted models. A.V. Verville, Aeronautical Engineer, Air Service, McCook Field, Dayton, Ohio, has completed design as per specifications advanced through Colonel T.H. Bane, Chief of Airplane Engineering Division, and is personally supervising the work at Dayton Field. Each machine will have accommodations for pilot and two patients seated side by side horizontally on Stokes Navy Litters.

Primarily the service requirements for this type have been strikingly apparent from experience gained during the World War and more recently during our Border patrol work. The initial useful functions of this craft lies in responding to emergency calls, such as accidents befalling aviators who wreck in distant fields not immediately accessible to field motor ambulances. Opportunity for first aid is given through medium of a medical officer accompanying ship and in also assisting ambulance pilot to put injured men on stretchers and into machines. If two men are injured the medical officer remains at the scene of accident until another aviator arrives to pick him up. In case one man is injured he rides back with the pilot and injured man to the nearest medical base. During the times of war this would probably be the immediate line base, where after diagnosis and proper dressing of wounds the injured could be conveniently transported from there to the base hospital and there be operated upon and given proper treatment during the period of convalescence.

These machines could be used for permanent commuting purposes between hospital bases for transfer of patients who could not withstand rigors of long travel and also for convenience in cutting the time element for transport. Medical service insignia will be painted on the rudder, Red Cross insignia on either side of the fuselage, with medical insignia in the center. On the top side of upper wings Red Cross insignia in center will be painted thereon.

There is no doubt that this will work the advent of the use of such craft in numbers in the future as a basic part of the equipment for commuting and rescue work, and designed to carry two or more patients.

GENERAL PERSHING GIVES INSPIRING TALK TO CHINESE.

During the recent inspection of Ellington Field by General Pershing, a unique feature in connection therewith was a party of thirty-six Chinese who greeted the General. The Chinese were a part of the wards of the Military Establishment who were brought by General Pershing himself, in 1916 from Mexico into the United States. Most of them have learned to read, write and speak English and have been faithful and desirable employes. It was a proud moment in the lives of these Chinese when the Commanding Chief of the Expeditionary Forces recognized some of them and gave them a very inspiring talk.

SCHOOL OPENS AT KELLY FIELD TO TEACH PARACHUTE JUMPING.

Arrangements are now being completed for the installation of a course in the art of parachute jumping at the Air Service Mechanics' School at Kelly Field, Texas. A number of trained men sent from the Engineering Division of the Air Service are now on their way to Texas to act as instructors. It is of more than passing interest to state that every man at the Air Service School has applied to take this course. A few years ago only a so called dare-devil would have attempted to jump from a moving plane into space, but in these days with the latest types of chutes weighing scarcely over 15 lbs. it is a reasonably safe method of making an exit from a plane.

MEXICAN GOVERNMENT ESTABLISHES AIRDROME DIRECTLY OPPOSITE EAGLE PASS, TEXAS.

An Airdrome has been established by the Mexican Government at Piedras Negras, directly across the Rio Grande from this station. The detached Flight which is at present on duty there consists of one 1st. Captain, Five Lieutenants and one Cadet with the necessary number of Mechanics and other enlisted personnel, the latter being assigned from the Ground Troops of Piedras Negras. Five biplanes and one monoplane comprise the equipment, which are stored in Canvas Hangars when not in use.

The biplanes are of native manufacture being built in the field. They are of very light construction having approximately 40 feet wing spread and 25 feet over all. They are equipped with Hispano Suiza motors, 150 H.P. with Field built radiators which are very clumsy and heavy and offer more than ordinary air resistance. The ships have a horizontal speed of about 70 M.P.H. but climb at a fast rate on account of their light construction and an exaggerated wing camber which is classed as the Eiffel #4.

No armament is used but a hole is cut in the bottom of the fuselage in the rear cockpit for the use of light bombs and Machine guns. Turelles are not used neither are bomb sights or radio equipment in evidence.

The monoplane is a French Bleriot and no changes appear to have been made in it. All biplanes are unpainted and roughly finished, showing conclusive evidence of their manufacture in the field. Landing wires appear to be made of ordinary 1/8" steel wire twisted to the desired size. The ships are well braced and they are reported to be suitable for stunting. The personnel is commanded by 1st Captain Hermanes, a very affable and highly educated native. He is keenly interested in the development of the Mexican air service. He spoke very interestingly of its handicaps and the necessity of arousing the interest of the government and civilian population in the building up of this branch of the service. Arrangements are under way to provide for a visit to this station and the officers at Eagle Pass look forward with pleasure to the prospect of entertaining them.

SIGNALLING EXPERIMENTS BEING CONDUCTED BY AIR SERVICE AND INFANTRY AT PANAMA.

Infantry Contact work with a battalion of the 33rd infantry was recently attempted in Panama. The Infantry went on a hike from Gatun to the Gatun reservoir on the trail thru the jungle. At the plane's request, "Where are you", the Inf. displayed the Battalion Panel and then sent about six messages to the Plane. The observers had trouble reading the panels right due to the soldiers on the ground crowding around the panels and in so doing blanketing parts.

The Infantry while in the jungle did not attempt to answer the planes for it is impossible to see thru the tree tops and as yet we have not found any signal that can be used with any degree of accuracy.

A hike will be held next week on which the Infantry will attempt to answer the plane regardless of where they are at the time. Experimental work along these lines will be carried out every week until May 1st, when the wet season starts.

COMMERCIAL CLUB OF KENEDY, TEXAS WANTS
A LANDING FIELD IN ITS TOWN.

The Wing Operations Officer at Kelly Field, Texas received an interesting letter from the Commercial Club of Kenedy, Texas asking for information regarding the construction necessary to establish a landing field in their city. The Commercial Club of Kenedy is indeed enthusiastic and is also emphatic in asking, "Are there any good reasons why a Municipal Landing Field should not be established here for your trips to Corpus Christi?" And further requesting all the information available on the progress being made in aerial transportation.

This is the spirit that will spell success for the future air transportation. Many states in the west and also in the east have already established Municipal landing fields. If all the states will pull together and invite the assistance of the Aero Clubs of their states as well as the Army Air Service great strides will be made in the laying out of Commercial routes.

AIR SERVICE MECHANICS SCHOOL TO EXHIBIT AT
AUTO SHOW.

The Mechanics Schools at Kelly Field, Texas is slated for a considerable share in the prospective Air Service exhibit which is to be an adjunct of the San Antonio Automobile show. This is the first time so far as is known where two branches of the automotive world, namely land and air, have jointly exhibited.

A Le Pere, Spad, Fokker and SE-5 will be contributed together with every type of practical motor used on the battle front. A number of the motors will be run and actual demonstrations will be given. The average civilian will receive a lasting impression of the big Liberty 12 when he hears it running.

BRITISH AIR MINISTRY ANNOUNCES HOUNSLOW AIRDROME OPEN
TO NIGHT FLYERS.

The British Government is certainly doing all within its power to encourage civil aviation. First it has placed Hounslow Airdrome at the disposal of Civil Aviation companies and even goes a step further by announcing the following to flyers:

"NOTICE TO AIRMEN"

HOUNSLOW NIGHT FLYING

The Air Ministry announces: The following "Notice to Airmen" has been issued.

'Hounslow Aerodrome is temporarily equipped for night flying.

Each evening for a period at sunset a lighthouse in the airdrome will give three flashes every ten seconds in the following order:- Flash, one second: eclipse, one second: flash, one second: eclipse, one second: flash, one second: eclipse, five seconds. Ground searchlights and landing flares will also be displayed.

These lights will be provided at any time during the night, if notification is made to Hounslow that machines intend to land, or if a machine is heard in the air.

These arrangements are subject to alteration of which due notification will be given'.

It will be but a short time at the rate they are advancing before regular night passenger service will be established between Paris and London.

Notes on the Application of G.O. 132 to Air Service Units.

In carrying into effect the provisions of General Orders 132 with reference to the Air Service, the following points seem pertinent to the change of executive and administrative methods required.

1. Heretofore, the organization of the Air Service in the United States has depended almost entirely on a centralization of control in Washington. This was due to the necessity for sending the maximum number of men and the maximum amount of material to Europe, and also to the absence of any tactical organizations of the Air Service in this country.

With the coming of the armistice and the demobilization of the Army, it became necessary to organize the Air Service really as a new combatant and an integral part of the army. The personnel which was allotted by the War Department therefore has been organized into tactical units of this branch.

It is desired at this time to call particular attention to the general division of Air Service tactical units and their particular application in war.

To begin with, the Observation Air Service is a direct adjunct of troops, and its duties relate specifically to the adjustment of fire of various weapons, to local reconnaissance by eye or by photograph, and to liaison between the elements of the force to which it is attached. Observation aviation elements are assigned to divisions, and, when divisions are assembled in a corps, they are brought under the general jurisdiction of the corps. The efficiency of these units depends not only on their own instruction and their ability to work with the troops on the ground but also very largely on the ability of the troops to work with them. This branch of aviation although the best understood has been the most difficult one to bring to a high state of perfection in its relation with ground troops, because so many elements are necessary to be coordinated in its successful application. The greatest care is necessary in this combined training. In the use of observation air units, superior authority directs the methods and means to be employed. The tactical missions are assigned by the commanders of the organizations of which these observation air squadrons form a part.

2. PURSUIT AVIATION. The mission of this branch of the Service is to destroy the aviation of the enemy. It operates in groups of approximately 100 airplanes, divided into about four squadrons. The group is the fighting unit of pursuit aviation, in the same way that a battalion of infantry is the fighting unit of that branch of the service. The pursuit wing, which consists of two or three groups, corresponds to the infantry regiment. Its tactics, method of command, and liaison between its various elements are independent and different from those used on the ground.

3. BOMBARDMENT AVIATION. The mission of this branch of aviation is to attack enemy elements, either tactical or strategical, on the surface of the land or water. Again, the group of 100 airplanes is the fighting unit. It has its particular tactics and their means of application.

4. ATTACK AVIATION. This is the newest branch, and will consist of airplanes, armored, carrying cannon, machine guns, and grenades, and will be used for the attack, at low altitudes, of enemy personnel and materiel, tanks, etc. Again, the group of 100 airplanes is the basis of organization. This branch of the Service was just beginning to come into use as the armistice took place.

Observation aviation is essentially an auxiliary to other troops as an integral part of their commands, whereas the development of pursuit, bombardment, and attack aviation has attached them to the higher command, whatever it was, acting in a definite theatre, according to the general objective which the combined operations sought to attain.

Tactical manuals, prescribing the method of operation of all these branches have been carefully prepared, and now are available for the use of all air and ground troops.

The recommendations of the War Department for future legislation contemplate that aviation take its place as an arm beside the infantry, the artillery and the cavalry. The duties of this arm are essentially in the air and not on the ground, and, as it is such a new arm, and, comparatively speaking, so little understood, there is probably more necessity of developing combined training between this and the other arms than there is for the other arms between themselves.

In doing this, it is extremely necessary that the different branches of aviation be kept constantly in mind, i.e., the principal differences between observation pursuit, bombardment, and attack aviation, and their proper application to the military problems confronting us.

In the carrying out, of the provisions of General Orders 132, each Department Commander will be furnished with a Department Air Service Officer, whose duties will be analogous to those of the Army Air Service commanders during the War. They will act both as the technical advisors of the Department Commander concerning the air units under him, as the supervisors of the work of the observation squadrons or groups assigned to troops, and will be directly in command, through the department machinery, of the pursuit, bombardment, and attack units within the department.

The Department Air Service Officers will be provided with a staff capable of exercising the functions of an Air Service G-1, 2, 3, 4, and 5. The number of officers assigned should depend on the amount of air activity that is taking place within their respective departments. For instance, at the present time, the Southern Department has one complete pursuit group, one complete bombardment group, and one surveillance group of four squadrons operating.

This department Air Service Officer consequently has the elements on his staff necessary for his particular purposes.

The efficiency with which the application of General Orders 132 will work as to the Air Service will depend on the appreciation of the duties and functions of an Air Service, not only with relation to the other arms but with respect to the characteristics peculiar to itself.

The educational system for the Air Service, which is gradually being put into effect, contemplates pilots' schools where young men of suitable mental, moral, and physical characteristics, coming from the usual sources for commissioned officers, are taught to fly and to understand something about the armament and other accessories of airplanes. They will combine what formerly was taught in the ground and flying schools, with a little extension of instruction in a tactical direction.

Upon graduation from these schools, the personnel will begin to specialize in the particular kind of aviation that they will enter, whether observation, pursuit, bombardment, or attack. This work is now being done in the squadrons themselves, because, due to the limited personnel, special instruction units for this purpose with the incident overhead, cannot be established.

Having passed through the specialized course of instruction for a particular branch of aviation, the officers will join their squadrons and receive what corresponds to the instruction given at our post or garrison schools.

Certain selected officers, who have proved themselves to be capable of performing the duties of higher Air Service commanders, will then be selected and finished at a school designed for the instruction of field officers.

As to the enlisted men, the instruction in vocational training is particularly easy in the Air Service on account of the many trades which can be taught as an incident to the work. From the standpoint of morals, also, comparatively little difficulty will be encountered because the whole air subject is one of great interest to the personnel engaged in it on account of its rapidly expanding nature and its possibilities.

In general the Department Commanders will have tactical control over all Air Service tactical units within their department, and disciplinary and supply control over all school units, supply points, and air organizations in the process of formation within their respective departments.

ONE SQUADRON ABLE TO COOPERATE WITH FIVE DIVISIONS OF THE U. S. ARMY

Scott Field located at Belleville, Illinois is probably the most ideally situated flying field in the United States, insofar as being near Stations where regular United States Army Divisions are located.

Four of the seven Divisions of the army are now located as follows: Camp Dodge, Camp Zachary Taylor, Camp Grant and Camp Pike are within a radius of only 300 miles or approximately 2 1/2 hours flight, while Camp Funston is only a distance of 400 miles in an air line making it possible for a Squadron at Scott Field to cooperate in maneuvers with five of the seven Divisions of the Regular Army.

REGULATIONS CONCERNING THE ATTRIBUTION OF AERIAL
VICTORIES FOR FRENCH FLIERS DURING THE WAR.

At the beginning of the war when aviation was only serving as observation, there were no special regulations established concerning the control of aerial victories.

The first German brought down occurred the 21st of September, 1914, and as he fell within the French lines, nobody thought it necessary to regulate for the future, the determination of victories. But as soon as February and March 1915, the aerial flights became frequent, if not common, and many aviators in landing, asserted that they had shot down Germans with German lines. The Generals commanding the Armies at this time were, in this case, the only judges of the attributions, and often they refused to count such victories. In 1916, the aerial fights occurred chiefly above the German lines. Nearly all of the planes shot down were out of control, but in order not to discourage the aviators, all of their relations were taken into account. This caused an excess to appear and the necessity was shown to take immediate steps to suppress the chance of errors.

A very hard regulation followed. A plane would not be considered shot down if there were not three witnesses.

1st. Infantry or each man on the ground.

2nd. The observation balloon.

3rd. Another plane.

The result of these regulations were, that one of the witnesses missed three times out of four, and many of the planes shot down were not counted. This regulation lasted three months.

It was admitted afterwards, at the end of 1916, that a man on the ground was enough to ascertain the victory; that the affirmation of the balloon alone was equally enough to ascertain the victory, but that never was the affirmation of another plane sufficient to decree a victory.

This last system of regulation lasted up to the end of the war.

FLYING OFFICERS FREE FROM INFLUENZA.

Does a frequent flight in the air assist in making one immune from ordinary colds, grippe and influenza? Experience and facts at Rich Field would warrant one to confirm the fact that it does. During the last ten weeks 15 such cases were placed in the Post Hospital and not one among the 15 were on active flying duty. The personnel of the post consists of 7 officers and 67 enlisted men. Of this number 4 officers and 6 enlisted men are pilots flying regularly and to date, have been absolutely free from sickness.

During the influenza epidemic at Rich Field in 1918 it is also recalled that cadets and flying officers were absolutely free from these ailments. There is no doubt that great deal of sound logic is behind this. How different the Air feels after you ascend above 1000 feet. It certainly stands to reason that at high altitudes the air must be pure because very little if any dust gets up there.

Ex-Lieut Noel, 148th Squadron on long Distance Flight.

Ex-Lieut. Sidney Noel formerly of the 148 Aero Squadron attached to the British forces in the A.E.F., dropped out of the skies on February 14th and landed at Rich Field.

Lieut. Noel is flying a Canadian Curtiss. He started from Kansas City, Missouri February 1st. From Rich Field he will fly to Key West, Florida and from there across the big pond to Havana, Cuba. Upon the completion of his business in Havana he will return to his home by the air route.

MR. R.G. LOCKWOOD FORMERLY OF R.A.F. ENROUTE TO CUBA.

Rich Field seems to be an ideal spot for Ex Army Fliers to land on when on their way to Key West and Cuba. This week we are informed that Mr. R.G. Lockwood, formerly a flying officer in the R.A.F. landed at Rich Field in a Canadian Curtiss. He is associated with the Aviation Training and Transportation Company of Wabash, Indiana and is enroute to Cuba. At the various stations he is making advance arrangements for a flight of 15 ships flying under the auspices of his company from Wabash, Indiana to Cuba. Mr Lockwood was accompanied by Mr. Earl R. Desmond formerly M.S.E. in the 36th Aero Squadron

ANOTHER ALTITUDE RECORD MADE AT ABERDEEN.

In two different issues of the news letter there was quoted Squadron altitude records made on the border and at March Field. Now along comes the Commanding Officer at Aberdeen Proving Grounds, Aberdeen, Maryland and whispers a new altitude record to us. Here is his story:

"During the week two flights were made, one 19,500 feet and the other 20,000 feet. On the first flight a gale was encountered which carried the machine- a DH-4 about 15 miles east of the starting point, the plane being headed west from the take off. No attempt was made to reach a maximum climb or altitude because both machine and motor were new. A few days later 20,000 feet was attained in 40 minutes in a test flight. The ship was still climbing well but the pilot Lieut Lester Seveely was forced to descend due to the intense cold affecting his mechanic. Flights to 18,000 feet are made regularly in connection with routine meteorological flights."

He further advises that ascensions from 18,000 to 20,000 feet are not uncommon. Some of our border squadrons and other Squadrons noted for their high flying activities will have to go some to beat the records of the outfit at Aberdeen Proving Grounds.

NOTES OF INTEREST CONCERNING THE SQUADRONS ON
THE BORDER.

First Day Bombardment Group.

Since last Wednesday, we have had only three good flying days, but that the ball was made to roll on these days is attested to by the fact that the Group spent 111 hours and 10 minutes in the air and made a total of 99 flights during that period. Most of the flying was in the form of cross country reconnaissance missions, in which single ships and formations of three or five ships flew to various towns approximately 75 to 100 miles distant and return, the observers making written reconnaissance reports. Most of the flights were one way by compass and the other by map. On several occasions, communication was retained with the field by radio telegraph thru out part or all of the flight. Some of the towns visited in this way were Austin, Tilton, Schulenberg, Pleasantan, Flatonia, Cuero, West Point, San Marcus, Tilden, Kenedy, Seguin and Eagle Lake.

On Friday the 13th we hoodooed the Jinx by staging a 13 ship practice formation. The number was entirely accidental, as the formation was simply one of the regular ones used by the Group as a large bombing formation, but the newspapers in town seized the occasion to compliment us on our audacity in defying the ancient Jinx. Besides these there were the usual number of Camera Obscura, Smoke Bomb (Artillery Adjustment), D-R signalling, cloud flying, and radio and ships tests flights.

The testing of the Airvoid Food Retainers this week has afforded some little amusement. In one case particularly, the joke was on a famished mechanic who ^{had} missed out on breakfast- he rode all the way from the border with one of the Retainers banging his shins and when, upon arrival at the Field, the pilot opened up the Retainer to sample the steaming food, the poor mechanic's eyes bulged as he said "Lord help the test if I'd known there was something to eat in that can!"

TALKS TWELVE MILES BY RADIO

1st Pursuit Group.

After experimenting for a week the Pursuit Group Radio Officer, Lieutenant Stanley Smith accomplished the feat of talking to Fort Sam Houston, a distance of twelve miles. This exceeds the distance claimed by the set by seven miles; and it is worthy of note for it increases the efficiency of this set one hundred per cent.

The Fort Sam Houston station was using a 30 K.W. set and working on between ten and twelve thousand meters, but for this test he cut down to about six hundred meters and reported by telephone that he could hear the Pursuit Group distinctly and clearly.

FIRST LIEUTS. HARRY D. SMITH A. S. A. AND HARRY W. BROKAW A. S. A. WERE KILLED INSTANTLY ON THE AFTERNOON OF FEBRUARY 10, 1920, WHILE ENGAGED IN COMBAT PRACTICE AT KELLY FIELD

Lieut. Smith in a Fokker, was engaged in combat with a bi-plane ship when Lieut. Brokaw, in an S.E. -5, joined the combat. The bi-plane immediately left the scene of the practice fight, while the S.E.-5 pursued the Fokker higher and higher, each machine endeavoring to get into a favorable position. Then for an instant the two planes were lost from view in a light cloud and in the next second the Fokker was seen below with the S.E.-5 diving on its tail. From the ground it seemed as though the Fokker tried to loop over and ahead of the S.E.-5 to gain the superior position, but the S.E.-5 was following too closely and its wing clipped the entire tail off the Fokker at about 1200 feet.

Both pilots showed remarkable judgment and nerve during their fall. Lieut. Smith managed to keep the nose of his machine up by the use of his motor and had managed to lose a thousand or more feet in semi-control of his plane, when suddenly he fell off into a steep dive, almost an outside loop, and fell several hundred feet on his back to the ground. Lieut. Brokaw with one wing badly crumpled managed to keep his machine in a fairly wide spiral until within a few hundred feet of the earth and then the nose of the plane went down and he crashed within two hundred feet and on a line with the Fokker. Neither plane caught fire, and it is thought that if both pilots had been equipped with parachutes their lives would have been saved.

Lieut. Smith is survived by his father Mr. John D. Smith, 415 23rd Ave., San Francisco, California and Lieut. Brokaw by his wife and mother Mrs. Elizabeth Brokaw, 114 East Baird Ave., Berberston, Ohio.

FORMER ARMY PILOTS ORGANIZE.

Captain Bissell and Lieut. Frierson fly to Austin to speak at University of Texas Aero Club Banquet

About sixty students of the University of Texas at Austin have organized to form an Aero Club. All ex- army pilots are eligible and already over sixty have joined the club.

The purpose of the organization is to further the interests and development of commercial and military aviation and to keep the members in touch with the flying game. It is believed that thru the continued effort of the Aero clubs which are being formed at all universities, sufficient influence can be brought to bear to keep interest in aviation stimulated to such an extent that the American Air Service will develop as rapidly as the Air Service of other nations.

Another prime purpose of the organization is to place the valuable experience of the former pilots at the disposal of Congress, when bills dealing with aviation subjects are being considered. The Universities in each state will communicate with their congressman and place the facts at issue squarely before them.

It is believed that the existence of such clubs in the Universities will promote interest among college students and should the compulsory military training bill be passed, would cause a large number of the best manhood in America to take their training in the Air Service. The clubs will also place the Air Service before the public in an effort to educate the public to a realization of the great value and necessity of this new much misunderstood branch of the Service.

At the request of the president of the Club, Captain Bissell and Lieut. Frierson of this field were sent in S.E.-5's to attend the banquet given at the Driscoll Hotel in Austin, and upon the request of the club Captain Clayton Bissell spoke on the British Air Service and brought out many things of interest by contrasting the United States and the British Air Services,

Lieut. Samuel Frierson covered the development of aviation since the Armistice, in a very comprehensive and interesting manner.

The Aero Club of the University of Texas has requested that it be furnished with all the data of interest to the Air Service of the Army and Navy. Being composed entirely of former Service men, they have the interests of Military Aviation at heart and desire to do all in their power to promote it. They have been promised all support possible by the Department Air Service Officer and these clubs will soon be able to exert considerable influence on the development of aviation. This office has furnished this club copies of specifications for Municipal Landing Fields and the Questionnaire sent out from the office of the Director of Air Service January 1, 1920.

LIEUT. AMES BACK TO FLYING STATUS

Lieut. Stanley Ames came charging into hangar No. 7, the other day apparently suffering from the effects of the flowing cup that cheers, but after we got him down to earth with a beautiful three point landing we learned that it was all due to his having received news that he was again on flying status. He got into a "Dog Fight" a few weeks ago with a 609 examination that sent him into a flat spin for several weeks. He is thoroughly happy now and wears his wings with a clear conscience.

CROSS COUNTRY FLIGHT TO LAREDO

Captain J.O. Donaldson, Lieut. C.A.C. Tolman, and Lieut. Guy Stewart flew a three ship formation of S.E. 5's to Laredo last Saturday. The purpose of the trip was to secure meteorological information and make a report of all available landing fields between here and Laredo.

CORRECTION OF STATEMENT NEWS LETTER FEB. 16, 1920

Reference to article concerning Lieut. Maynard's Recruiting expedition, it is advised this trip is being made in the interest of the Army at large. At the present time enlistments are not authorized for the Air Service.

104TH AERO SQUADRON

Major Walton and Lieut. Harvey created a heap of excitement for a few hours among the personnel at Fort Bliss Airdrome. It seems that the Major and Lieutenant decided to take a short trip by the air route to look over a new bombing field about 14 miles northeast of Fort Bliss. Before departing they casually mentioned that they would be back in about a half hour. No attention was paid to their absence for about two hours then the officers began to feel uneasy. Four planes from the 104th were sent out to look over the country in the direction of the missing pair. These four planes scouted the country to north and Northwest for a distance of 80 miles. Each ship kept in wireless communication with the airdrome and was prepared to lend any assistance possible to the crew if found. After spending three hours in their fruitless search in a 45 mile wind they returned for gas and were ready to take off again when a telegram was received from Marfa stating that the missing crew had arrived there. They made up their minds while in the air by passing a little note and away they went.

1st Surveillance Group, El Paso, Texas

A shipment of Steel Hangars is due to arrive for all stations on the border. These hangars will solve the difficult problem for the proper protection of planes along the Border. Heretofore most planes had to be kept in canvas hangars or be staked down in the open. The high winds which are common to the Border country make canvas hangars extremely unsatisfactory. A few days ago three planes at Douglas, Arizona broke away and started towards Mexico. Only the wire fence at the international line prevented them from deserting the army and escaping to foreign soil where they no doubt would have been added to Villa's equipment. On one occasion a high wind blew down ten hangars and rendered them unserviceable.

Information Group
Air Service

March 9, 1920

Building B
Washington, D.C.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

NEW RADIO TRUCKS WILL SOON BE GIVEN TRIALS

The Radio operating truck SCR-108 mounted upon a White chassis being manufactured by the Mulholland Company of Dunkirk, New York are well on toward completion.

The Radio Trucks were patterned after the models used by the British. The body is totally inclosed and is 120" long, and 64" wide and 64" high with door on the right hand side and two glass windows provided with canvas flaps. Room is provided for three operators and one Squadron Radio Officer. One bench supports a ground radio telephone set (type SCR-67A), one crystal detector receiving set (Type SCR-54A) and one low frequency amplifier (type SCR-121). Storage batteries are held in clamps underneath the bench. A continuous wave radio telegraph transmitting and receiving set (type SCR-79 A) is installed on another bench. A desk for the officer is installed with a battery compartment underneath. A 6-volt circuit, comprising two lamps, is connected to storage batteries while a 110-volt 2-lamp circuit may be used when a suitable external supply is available.

External brackets are provided for carrying antenna masts. Each set is provided with its own antenna. No fixed permanent antenna is provided for a station, to be set up at the truck.

The ground radio telephone set, (SCR-67 A, will in the future, be replaced with a higher powered telephone set, SCP-109, which will increase 2-way telephone communication to a distance of approximately fifty miles. These higher powered sets are not available at the present time.

The radio telephone set will have a transmitting range of approximately fifteen miles under ordinary conditions for work from ground to plane and vice versa. The transmitting range of the continuous wave set is in the neighborhood of fifty miles. The receiving ranges of these sets will depend upon the local conditions and mainly upon the power of the transmitting set whose signals are being received.

GERMAN AIRCRAFT FIRM DEMONSTRATING AIRCRAFT IN SWEDEN

The German airplane company Siemens Schuckert, has sent one of its expert aviators to Stockholm, Sweden to demonstrate a new type of Siemens-Halska biplane.

This machine is patterned after the scout type used by Germany during the War. It is equipped with a 240 H.P. rotary Siemens-Halska motor. One of the peculiarities reported concerning the performance is that while the motor is running with the greatest number of revolutions the propeller revolutions give double the R.P.M. of the motor. While another point is that the motor loses none of its effectiveness at great heights. This machine is capable of ascending 6000 meters in 15 minutes.

The machine has received great praise in Stockholm and is said to be especially adapted for couriers, police, customs work and sport.

FRANCE - RABAT (MOROCCO)

A commercial Aerial Transportation Company has been incorporated in France under the name of "Lignes Aeriennes Latecoere", and has established a Commercial Air Line running from Toulouse, France to Rabat, Morocco. The machines leave France at nine in the morning and arrive in Morocco in the afternoon of the following day.

Ordinary and registered mail for western Morocco may be sent in this way. French official mail between France and Morocco goes by this route. The average passenger and freight carrying capacity of airplanes travelling this route is approximately 1100 pounds. This does not include the pilots and fuel for about 5½ hours flight.

Charges in addition to the regular postal rates may be covered by the ordinary postal stamp and mail marked "By airplane from Toulouse to Rabat" is accepted at all post-offices. The Company operating this line is subsidized by the French Government by an allotment of 10 millions of francs to cover a period of 15 years for the purchase of new equipment and additional subsidy of four millions has been granted by the Morocco Government for the same purpose. The representatives of the company state that the financial condition of the company is satisfactory.

The airplanes which first started the service were Breguet bi-planes with 300 H.P. Renault motors. The company is substituting a new type plane which will carry two passengers equipped with the Salmson 250 H.P. motor. This company is maintaining regular service in all weather conditions since organized. The pilots are all reserve officers of the French aviation. Average pay 20,000 frs. a year. The mechanics are all demobilized from the Army Air Service. No stop is necessary at the international frontiers. The customs inspection being made at the first authorized stop in the country. A great deal of interest is attached to this line due to the fact that it operates over greatly varying and exceedingly difficult country with uniform success. Not only are weather conditions very changeable in Spain, but the country offers practically no ground suitable for forced landings. In addition violent and changeable winds are experienced over the straits and the northern part of Africa. Notwithstanding this a regular schedule is being maintained.

CAPTAIN RICHARD C.M. PAGE LOSES HIS LIFE IN A SEAPLANE

Word has reached this office that former Captain Richard C.M. Page on overseas return lost his life in a seaplane accident at Fort Meyers, Florida.

While overseas Captain Page was Deputy Flight Commander of the 88th Aero Observation Squadron and did excellent work. The following is quoted from the history of Aviators.

For extraordinary heroism in action at Fisines, France August 9, 1918 he was awarded the Distinguished Service Cross. He was detailed to fly without escort on a visual reconnaissance over the enemy lines. At an altitude of 1800 meters he was attacked by 6 enemy planes over Fisines. Both he and his observer unhesitatingly fought this superior number. His observer was severely wounded three times but nevertheless both continued to operate their machine guns, and finally shot down one enemy plane. In spite of the fact that his elevator controls had been shot away he skilfully maneuvered the plane throughout the combat and piloted it safely to his airdrome.

Captain Page resigned from the Air Service on August 7, 1919. A short time before leaving the service he was decorated with the Croix de Guerre with one Palm.

JUNIOR YANK SENDS A LETTER TO THE SECRETARY OF WAR

The following is a letter received by the Secretary of War from a 13 year old patriot. The only thing preventing this lad from being a member of the Air Service is his age.

"Secretary of War,
Newton F. Baker,
Washington, D.C.

Honorable Secretary Baker:-

In this Honorable letter to you I am writing, a few facts which I would like to know.

I am a Junior Yank, thirteen years of age, Corporal, Commanding Company No. 19004, Aviation Corps. I am also in the Winchester Junior Rifle Corps, Unit No. 396 of Babylon. I am an American born citizen of the United States, of which I am very proud.

In the Junior Yanks we have army corps, the same as real Yanks have, and we preferred to be in the Aviation Corps, which I, myself am very much interested in.

If the real, live Yanks have large aeroplanes, to learn how to fly and to battle during the war I only hope the boys of mine and many other companies have some advantages to fly aeroplanes, also, very many boys and I, are very sorry because the United States Government has not any small planes for the boys, and also fields, upon which they may learn to fly. I read many interesting, and thrilling books and stories and I was so interested in them, that at night I would fall asleep over the book, and when I awoke the next morning I was still sitting on a chair, and the book was still on the table.

My father and I were trying to be very patriotic during the war. We have many War Savings Stamps and also thrift stamps and we also bought six one hundred dollar Liberty Bonds on every loan, except when it was the Fourth Loan my father died from pneumonia.

I have graduated from eighth grade at the age of twelve on January 29, 1919. I am now in first year Babylon High School. On the third loan I got \$8,000 worth of subscriptions to the Liberty Loan.

I would like you if you please to send me a list of real, true American War Books, and also a book of instructions of how to fly and aviator's instructions, so I may have a successful Aviation Corps. I saw many aeroplanes but the nearest I ever got to one, was about ten yards. I saw two aeroplane accidents of which both flyers were killed, but this has no interference to my ambition to become an aviator. May my wish be granted, I would enlist in the Air Service.

One night I had a dream that I walked all the way from Babylon, N.Y. to Washington, District of Columbia, and there I met you and the Honorable President Wilson, and I also found a friend of mine who was in active service in France as an aviator. You told him he may get a good Haviland Battle Plane and so we may fly home and you also told me that my friend aviator, would show me how to fly. This is why I am writing you.

Hoping that my dream may become true, I also wish that you will be pleased with my honorable letter to you and that you will send me a satisfactory return answer.

I am a true, real American.

Carmelo Fischetti,
P.O. No. 36, Higbie Lane,
Babylon, L.I.,
New York, U.S.A.

P.S. When I was dreaming of meeting you and the Honorable President Wilson, I was reading a book of the United States Politics, where I saw both your faces, and studied them, both very well, as if I was studying a very interesting book or lesson."

CHARLES L. WILLIS PARACHUTE DEMONSTRATOR LOSES LIFE IN POTOMAC RIVER

Throughout the week Mr. Floyd Smith and his assistant, Mr. Charles L. Willis, have been giving a series of parachute jumps at Bolling Field to officials of the Air Service and members of Congress to demonstrate the efficiency of the Life Pack, or parachute, invented by Mr. Smith. This pack has been given every kind of a test from the jumping off from a fuselage at 1000 feet, to allowing themselves to be dragged off of the wing at an altitude of only 100 feet. In every case the Life Pack which is the smallest and lightest ever seen, weighing only 15 pounds, functioned beautifully and won the praise and admiration of all who witnessed it.

On March 3rd Mr. Smith announced that they were to make a double jump from one airplane to prove that more than one person could safely make an exit from an airplane in the air. Accordingly he requested that arrangements be made with the press and motion picture news companies representatives to be present. Promptly at 1:15 Lieut. C. M. Haynes of the 99th Aero Squadron Bolling Field, ascended with Mr. Smith and Mr. Willis aboard and when at an altitude of about 900 feet directly over the War College, both men jumped. Instead of being blown into Bolling Field by the wind which has been the case in each demonstration the wind suddenly died down with the result that both men with parachutes fully opened descended straight down into the river. Mr. Smith who landed close to shore was reached first by the navy launch. Mr. Willis landed about a good city block down the river. Due to his heavy suit of clothing he sank before the launch could rescue him.

General Mitchell with several others who witnessed the affair aloft from an S.E. 5, followed him down and hovered above the spot in order to assist the launch in finding him but unfortunately they could render him no assistance as the army machines were equipped for alighting on land only.

91st SQUADRON PILOTS CHECK IN BY RADIO EVERY FIVE MINUTES TO PREVENT FLYING OVER MEXICO

The 91st Aero Squadron is now on temporary duty at Ream Field, Imperial Beach, California, and is doing daily patrol of the Border from Ream Field east to Calexico. In order to reduce to a minimum the possibility of ships being lost without immediate knowledge of that fact by the home station, all planes have been equipped with S.C.R. #73 sets operating on 377 meters, which is the best wave length to dodge interference. Pilots are required to check in their position to the home station every five minutes. In order to further prevent possibility of ships becoming lost, the Radio Officer of the 91st Squadron, has erected at Ream Field, a radio compass station, by which goniometric readings are also taken while the ship is sending position reports. As the course is almost straight east from the home station, the Radio Officer can tell immediately from the goniometric readings whether or not the ship is keeping on its proper course. If the pilot should be confused, lose or mistake his position and turn south, the radio compass would immediately show that the plane was over Mexican Territory. This was distinctly proved on one occasion where the pilot turned north to locate an intermediate station near Campo. The Goniometric reading showed at once that the ships bearing was changed, and the pilot was asked upon his return if he had not turned north, and answered that he had circled north for about fifteen miles looking for an identification panel. Under good interference conditions the goniometric loop received the plane somewhat over fifty (50) miles distant. It is planned at a later date to establish two goniometric stations with a base line of several miles in order to be able to pinpoint the ship exactly.

A VOICE FROM THE AIR CALLS TO A CITIZEN ON THE GROUND

Quoted in full below is a letter received by this office on March 3rd from Mr Chester R. Boyce of Windsor, Vermont. It is most interesting and should bring clearly and forcibly to mind what Mr. Citizen of the future will be called upon to do.

From this letter, two important things can be gleaned. First; The importance of cities and towns in having municipal landing fields. Second, To be equipped with wireless stations capable of receiving both telephone and telegraph and third, to have a large electric sign with the name of the city and town facing skyward to guide aviators in checking their position upon their maps.

Windsor, Vermont,
March 1, 1920

U.S. Aeronautic Dept.
Gentlemen:-

On the night of Feb. 28th, 1920 at 9:45 P.M. I stepped out of doors for a few minutes. Before going out I turned on the piazza light. I had been out only a few minutes when I heard a voice at some distance in a few seconds I heard the voice again but could not make out what it was or where it came from. A third call came a few seconds later and this time I heard the voice call out from above me "Hello below", I answered "Hello". He yelled back "What town is this"? I replied "Windsor, Vermont". He called again "What town is this"? I replied "Windsor, Vermont". This time he replied Windsor, Vermont after me. I yelled at him, "Who are you"? It was snowing and the wind was blowing hard and I did not get his reply. As nearly as I could judge the balloon from which the voice came was about 1000 feet in the air. It was round and carried no lights. It was traveling so fast and snowing so much that I could not see more. It was traveling north with the Connecticut Valley at about 60 miles or more an hour.

This is rather an unusual event in this part of the country especially at this time of night and in a snow storm. The only way I could explain the matter was that it must be an observation balloon blown loose from some station. If this is the case this may help you to locate the person in the balloon. If you can give me any information in regard to this matter I would be glad to hear from you.

Yours truly,
Chester R. Boyce,
16 Buena Vista Park,
Windsor, Vermont."

WAR DEPARTMENT, GENERAL ORDERS NO. 4

VII. POLICY OF THE ARMY AND NAVY RELATING TO AIRCRAFT.

The following policy of the Army and Navy relating to aircraft has been approved by the Aeronautical Board, the Secretary of War and the Secretary of the Navy, and is published for the information and guidance of all concerned:

Policy of the Army and Navy relating to aircraft:-

Aircraft to be used in the operations of war will be designated.

- a. Army aircraft.
- b. Navy aircraft.
- c. Marine aircraft

Army aircraft are those provided by the War Department and manned by Army personnel.

Navy aircraft are those provided by the Navy Department and manned by Navy personnel.

Marine aircraft are those provided by the Navy Department and manned by Marine Corps personnel.

SUMMARY OF RESULTS OF R.A.F. MAIL SERVICES

Some interesting detailed statistics are now available regarding the six months running of the Folkestone-Cologne mail service which was terminated towards the end of October.

The actual cross Channel service was inaugurated on March 1st, and was the development of various mail delivery services which had for some time previously been in operation in France and Belgium. Prior to March 1st the mails were snipped to France and taken by ground transport to the aerial distributing centers. These services, however, were not carried out regularly for any lengthy period over particular routes but were constantly being changed as the movement of troops and progress of demobilization rendered necessary. It is, therefore, not possible to give any detailed and useful statistics for the period before March 1st but it is of interest to note that out of 1023 trips commenced only 45 were uncompleted from any cause. This represents an average percentage of successful flights of not less than 96. If the fact be borne in mind that all these flights took place over difficult country and in the bad weather of the winter months December to March, this result is particularly good.

Three squadrons were at first employed on the cross Channel Service Nos. 18, 110 and 120, equipped with DH-9's, DH-9a and DH-4 machines.

From March until July the mails were not usually carried direct from Hawkinge to Cologne, but were flown from Hawkinge to Maisconcelle (later on Marquise) and there transferred to other machines for Cologne.

Neither Maisconcelle nor Marquise, however, were half-way stages, both being considerably nearer Hawkinge, so that the longer and more arduous portion of the journey, including that over the range of high hills between Lille and the German frontier, had to be negotiated by the pilots of Nos. 110 and 18 Squadrons, at Maisconcelle and Cologne respectively.

The distance from Hawkinge to Maisconcelle was roughly 67 miles and from Maisconcelle to Cologne 229 miles - a total distance of 296 miles against 250 miles over the non-stop route adopted later. The average time for the first stage was one hour, and for the second two hours and a quarter.

From July 22nd the squadron at Marquise ceased to operate and the through service between Folkestone and Cologne was thence forward regularly flown until the termination of the aerial mail. Even before that date many individual through flights had been successfully made.

During the six months flying subsequent to March 1, 1842 trips were made, comprising rather over 3,000 hours in the air. Up to 460 lbs. weight of mails were carried per machine trip.

Of the 1842 flights begun, 96% were successfully completed. Of the 45 the percentage of flights which failed slightly over 2% were due to engine trouble, or mechanical defect and under 2% to bad weather.

Of the through flights from Folkestone to Cologne of 270 begun 267 were completed, or only 1% of failures.

The regularity of service was also good. Mails were carried from Folkestone on 146 out of the 182 days under review and from Cologne on 139 days. The percentage works out at 80.2% and 76.4% respectively. The times of departure of the aerial service were fixed so that in the event of the weather being impossible for flying the mails could be sent by rail or boat without delay.

A striking feature of this service was its immunity from casualties. During the six months covered, only one pilot and one passenger were injured - both in the same accident.

Although this service has provided valuable data on many of the points which arise in the working of a commercial service, it has been found impossible for various reasons to deduce actual running costs per lb of mail carried. For instance, the total possible load of the machines in use was 600 lbs. but not more than 460 lbs. were ever carried in one machine and very often considerably less; and again, of each machine available was not employed as regularly or as frequently as it would have been on a commercial service.

The figures would not therefore have represented true values for the cost per ton carried.

THE LONDON-PARIS SERVICE

Details have also been prepared of the London-Paris service for the same period.

This service was carried on by two composite squadrons one at Hendon- afterwards moved to Kenley- and the other at Buc, near Paris. The machines used on this service were chiefly D.H.-4's, but Handley-Page, Martinsyde, and Bristol Fighter types were also employed- all the machines being fitted with Rolls Royce engines. This service differed from the Cologne Service as being primarily for passenger work though official mails and dispatches were also frequently carried.

The total number of trips made from the commencement of this service to the end of August amounted to 744, while 934 passengers and 1028 mail bags were carried. A certain number of these flights were to various other French or Belgian towns; 90%, however, were to Paris.

Of the flights made between March 16th and the end of August- 556 were completed and 52 failed; 13 on account of weather conditions and the remainder owing to mechanical defect or engine trouble. The percentage of successful trips therefore amounted to 91.

In this service machines were not working to their full capacity. Naturally, owing to this fact, the resulting cost (which was obtained for another purpose), is higher than would otherwise have been the case, but the data so obtained are interesting and valuable as roughly indicating the possibility of commercial aviation as a paying proposition, though it has not been possible to work out the costing in great detail.

In arriving at these figures allowance has been made for depreciation on buildings and plant of 5% per annum on original cost, as well as rates and upkeep. Depreciation on the machines employed has been charged for the one month's running under review at 1/12th of their initial cost, thus allowing a complete write off of each machine in one year, while that on engines has been taken at 1/36th of initial cost, allowing lifetime as 3 years. This, of course, is in addition to the full charges for all personnel employed and all stores consumed.

Taking the average weight of a mail bag as 25 lbs. and of a passenger as 180 lbs and working on the figures of May as being a representative month on this service, the actual cost worked out to one shilling and a half penny per ounce per 205 miles - the actual distance between Kenley and Paris.

During the six months there were five accidents on the service in which 3 pilots and one passenger were killed and 2 pilots and one passenger were injured.

Taking the combined results of the two services it appears that of 2450 trips begun since March 1st no less than 2331 were successfully completed, the proportion of failures amounting only to 5%, the percentages due to weather and mechanical defect being 2.8% and 2.2% respectively.

As the early months of this period provided particularly bad weather this result is satisfactory.

NEW MEDICAL TESTS FOR THE FLYER

Based on the experience gained in the World War the procedure for physical examination of aviators for the United States Army has recently been revised in many details, the principal changes having been made in the eye and neuro-psychiatric examinations. In the eye examination a depth perception test at twenty feet has been substituted for the old test for stereoscopic vision with the hand stereoscope, a satisfactory apparatus for performing this test having been developed at the Medical Research Laboratory, Mitchel Field. A complete refraction of the eyes in each case has also been included and several additional tests for muscle balance which will make the test much more fair to the aviator. Under the examination of the nervous system provision has been made for the performance of definite tests and a brief personality study has also been included. A new edition of Form 609, A.G.O. for reporting this examination has been issued and detailed instructions for carrying it out are set forth in a new War Department publication, Special Regulations 65-c.

The revision was made by the War Department on the recommendation of the Chief Surgeon, Air Service, after consultation with the Medical Research Board at Mitchel Field.

Under the provisions of orders recently issued by the Director of Air Service every flier will be required to take this examination, with a few modifications, semi-annually. It is also provided that only Medical Officers specially designated by the Surgeon General shall make these examinations. These officers have all had a special course of instruction in the technique of the examination at the Medical Research Laboratory.

AIR SERVICE VOCATIONAL, MECHANICAL AND ✓
TECHNICAL SCHOOLS PROVE SUCCESSFUL.

The present authorized strength being about 11,000, the impression has gone forth throughout the army that owing to the Air Service's greatly reduced personnel that the schools and vocational training of the enlisted personnel has been necessarily neglected. This matter was taken up at a conference in the office of the War Department, said conference being composed of what is known as "Recruiting Drive Committee" and is composed of a representative of each arm, corps and service of the army. Lieut. Col. John D. Carmody, A.S.A., represented the Air Service on this committee. The records of the personnel division show the present enlisted strength as follows:

Three year enlistments.....	6044
One year enlistments.....	3962
The one year enlistments will expire as follows:	
March.....	420
June.....	808
April.....	836
July.....	732
May.....	674
August.....	492

Making a total of 3962 as heretofore enumerated. The Air Service will lose in addition to these one year enlistment men 669 who are eligible for furlough to reserve.

The enlisted students in attendance at the various schools are as follows:

- 2 Heavier-than-air flying schools 188 enlisted men.
- 4 Lighter-than-air flying schools 25 enlisted men.
- 1 Mechanics' School 239 enlisted men.
- 1 School of Aerial Photography 52 enlisted men.
- 30 Vocational schools with an attendance of 3189 enlisted men.

No reports have been received from the Army Balloon Schools at Ross Field, California or from Lee Hall, Virginia.

The above shows that despite the limited personnel of the Air Service, the Fire Guard and Police have not been subjected to the Educational and Vocational changes and that the Air Service is truly living up to the motto "Earn and Learn". In addition to the above there is now being carried on at Kelly Field #2 probably one of the most important schools being conducted for the army in that it is a preparatory school for West Point. The attendance at this school is made up of enlisted men of the Southern Department.

In order to correct a wrong impression it is perhaps timely to state that the pay for flying cadets is \$75.00 per month. This includes flying pay. There is also an allowance made for subsistence of \$1.00 per day and this is turned over to the cadet mess. The length of the prescribed courses are 7 months for heavier-than-air and 10 months for lighter-than-air. The total number of cadets authorized by law is 1300 divided as follows:

- 1000 for heavier-than-air
- 300 for lighter-than-air.

LAWS REGULATING AIRCRAFT WILL RETARD COMMERCIAL TRANSPORTATION ✓

According to recent newspaper accounts a number of states have had bills introduced in their State Legislatures for the purpose of governing Aircraft traffic. The state officers who are behind these bills no doubt are sincere and feel that their bills will remedy any future condition which may arise. In fact a number of states refer to the rules in vogue in Great Britain at the present time. It is true that England has passed a number of regulations and good ones too, but consider this fact that Civilian flying and air transportation in England has steadily increased since the signing of the armistice, until today a regular passenger service is maintained by competing companies over the Isle of Britain as well as with France and Belgium and they also have a well established and organized mail service, while in this country little or nothing has been done by organized capital to promote Air Travel and transportation.

With all the experience England has had her rules governing air traffic are flexible to the extent that as new conditions arise or old ones are found impractical they are changed to meet the conditions by the Department of Civil Aviation of the Air Ministry which has the power to make or change the laws. These laws are national and provinces have no authority to alter or change them.

Now consider that England has 30,000 aviators, then the approximate territory this country controls. What do you think would happen if every state and province decided to make their own regulations? In less than a month's time, were such the case, commercial aerial transportation would be dead and bankrupt. That much on the part of England is foresight, which comes from having a well organized Civil Department.

Ultimately in America we will have heavier-than-air and airship transportation companies flying regularly between all our cities. Extraordinary efforts will be made to put it across but thousands of difficulties will be encountered. If the states start making laws of their own for governing air traffic the interest in aerial transportation will expire quickly. One can get an idea of what state regulations would mean from this: In flying from New York to Washington, D.C., 5 states are flown over, and in so doing the pilot would more than likely violate the statutes of every state without knowing it because it would be impossible for him to remember all of the laws.

When the time is ripe for regulation of air traffic it should be a matter for the Federal Government to lay down the policies and laws, which will be applicable to all states, the same as it does with the Postoffice Department, etc. If the states do make laws, particularly if they are stringent and differ from one another, aviation progress will be retarded until the ages to come.

CIVIL AERIAL NAVIGATION IN SPAIN

Civil Aerial Navigation is developing to a great extent in its industrial propaganda, as is shown by the great number of airships which have arrived in Spain; some of them accidentally as a consequence of international flights, and some of them temporarily to show by exhibition flights the security of the mechanism of their machine and the advisability of its acquisition. But inasmuch as the airships in themselves constitute a merchandise which is dutiable and whose importation either definite or temporary must be subject to the requirements established by the customs laws for similar manufactures, it has been considered necessary to adopt laws governing their entrance and stay in Spain, even when this is only temporary, until such time as the international laws now being studied are put into execution; to this end.

His Majesty the King, at the suggestion of the Minister of Finance, has decided upon the following provisions:-

1. That the importation of merchandise in all classes of airships is absolutely prohibited until an agreement has been made between the Spanish Administration and the country requesting it.
2. All airships coming from abroad, desiring to fly in Spanish space and land in Spanish territory, must make their first landing in an airdrome fitted with customs service, where customs duties may be appraised and paid, or sufficient security given to cover same if within the period of 6 months the departure of the airship for abroad has not been arranged, submitting in all things to the provisions of the customs laws for the temporary admittance of the merchandise authorized by Case 12 of the 3rd provision of the tariff.
3. For the purpose of the previous article, at this time the airdromes or landing fields adjoining Barcelona, San Sebastian, Malaga and Sevilla shall be considered as fitted with customs service.
4. The airdromes now established are not to be considered fitted to receive airships unless they first obtain fiscal authorization, request for same to be made to the General Direction of Customs by means of a petition signed by the person or company, owner or operator, of the landing field, specifying there in the exact situation of the land and building thereon. Fiscal authorization shall be necessary for the future installation of airdromes and landing fields situated on the border or within national territory.

5. National or foreign companies, who for various purposes may establish a regular aviation service in Spanish territory, must obtain fiscal authority for the airdromes already established or to be established in future, accompanying their request, which must be sent to the Direction General of Customs, with a report of the airships to be used in such service; they having to arrange for the departure of their apparatus and guarantee the value of the corresponding duties through a recognized bank of credit established in Spain.

6. In case of voluntary or forced landings in private airdromes which are not fitted with customs service, the person or operating company, shall give immediate advice to the nearest customs authority and must not permit the airship to resume its flight without written authorization of the customs authorities. When a forced landing is made on account of fuerza mayor the pilot must give the same advice; in both cases the apparatus may not resume its flight without having paid the customs duties or presented the guarantee provided for. If the voluntary or forced landing of an airship, not having special permission from the Spanish Government, is made in a military airdrome, the Officer in charge must comply as strictly as possible with the provisions governing the owners or managers of private airdromes not fitted with customs service.

7. Any infractions of the above ruling, i. e. giving immediate advice to the customs authorities, shall cause the owner or the person in charge of the airdrome to be punished by a fine of from 50 to 1,000 pesetas and if the apparatus has been permitted to depart before obtaining the authorization of the customs a still larger fine shall be imposed. For any infraction of the same ruling by the pilot, the airship shall be taken over by the Customs Authorities and shall not be returned until they receive previous guarantee, to the satisfaction of the Administration, for the fines which may have been imposed for defrauding the customs of duties on the apparatus.

8. In all other infractions occurring with respect to the fiscal customs rules, the owners of the airdromes, as well as the pilots of the ships, the subsidiary owners, shall be subject to the penalties established by the customs laws for similar cases, the amount to be five times as much, according to the scale of penalties, as the amount demanded for equal infractions of maritime navigation or on land.

9. The customs must appoint an official whose name and residence shall be known to the owners of airdromes and landing fields fitted with customs service, or their representatives so that they can apply to him for the prompt compliance with his duties, said official to personally appear in the airdrome at the first notice, in order to receive and vise the documents belonging to the airplane and the pilot, to make out the customs charges and to demand accountings, should it be necessary.

10. When the airdromes or landing places are not near the custom houses which are to render their services, the owners, or their representatives must place at the disposal of said office an adequate and dignified means of transportation for the customs official who is to have charge of the operations of the airships. If the landing site is outside the municipal boundary, the fees incurred must be paid by the person necessitating the customs official or his services, the owners of the airdrome requesting his presence being responsible for same.

11. Airplanes of private ownership, either foreign or national, by construction and by nationalization through payment of customs duties may enter and depart from Spain in flight, by previously guaranteeing the payment of duties in the first case and in the second case being subject to the provisions of the customs laws for the temporary importation and passage over the frontier of vehicles. The provisions and rules which govern the circulation of automobiles crossing the frontier established in Royal Order of June 20, 1910, shall be applicable as much as possible.

12. Importation of airships for military services, both on land and sea shall be governed by the customs rules and provisions in force, for the importation of manufacturers, arms and effects destined for the Ministries of War and Navy, and these Departments shall advise the Department of Finance of the entry in Spain of airships so destined, for the purpose of customs inspection and compliance with the customs rulings.

13. The Direction General of Customs shall decree the necessary provisions for the strict compliance with this Royal Order fitting out the nearest landing places to be established provisionally, with personnel from the Customs Dept. and shall study the definite fitting out with customs service of the airdromes which it may be considered indispensable to establish in the points of entrance and departure of the probable aerial routes crossing Spanish territory, giving the personnel and necessary material and requesting the credits needed for the purpose, which are to be included in the first general budget project submitted to Parliament.

SHALL AERIAL TRANSPORTATION IN AMERICA BE ANALOGUS TO MERCHANT MARINE. ✓

Aircraft Industries of England, France, Italy and Germany are well organized. Commercial Aerial Transportation making great strides in all European Countries.

The development of the airplane since the year 1908 has been interwoven and closely associated with the needs of the armies of the world so that in tracing the history of the development of the military airplane during the war one incidentally traces the entire history of the airplane. The Wright Brothers demonstrated and proved conclusively that a machine heavier-than-air constructed along the proper lines, with sufficient motor power could navigate the air successfully, the eyes of the world were somewhat opened although very little was ever done toward the actual development of the airplane in this country up to the time of the war. A few American airplane manufacturers struggled along bravely and succeeded in somewhat advancing the heavier-than-air plane. Up to this time commercial aviation had never been given the slightest consideration whatsoever. No efforts were made prior to and throughout the war to the development of commercial, cargo carrying or pleasure aircraft. Yet on the other hand thousands of training and fighting aircraft were produced of which only a few types produced during the war are adaptable for commercial or pleasure purposes, primarily because these types can carry but very little load and increase the cost of operation per mile beyond reasonable proportions.

When the armistice was signed the great need for military aircraft diminished to such a degree that the War Department found itself with a large surplus on hand. Many ships were disposed of for the reason that further need for craft of this type did not exist. Quite a number of these planes found their way into the hands of ex-army officers. It was the ambition of these men to purchase these airplanes to create an active interest in commercial aviation as well as to make it remunerative for themselves.

Let us go back for a moment to the period between the armistice and the present day and ask this question. "What has been done in America to promote civil aviation"? The answer is "Practically nothing". We have a few companies which have been organized on a small scale scattered around the country that are attempting to make a permanent business of passenger carrying. However, nothing has been attempted on a large scale. Can this be attributed to the lack of initiative on the part of private capital? Probably not! But because the capitalist will not put his money in a business venture which up to the present time has had no organized support and of which no effort has been made to prove its merits. Capital is interested only from the point of how much can actually be realized on the investment.

It is the unanimous opinion of business men that it is up to the government to support the development of the aircraft industry to such an extent that the private capital can be interested to put the thing on a permanent safe and sane business basis. These business men believe that with an enter-

prise so new and of which but few people know thoroughly the technical details that it is also up to the government to carry on experimental development and even to put into operation civil transport lines or at least to work in close co-operation with people who are interested in the development of commercial aviation as well as to encourage the aircraft manufacturers to make further experiments and development.

While we have been peacefully slumbering on the subject of aviation notwithstanding the fact that it has cost us a billion of dollars to build up an industry for the production of war machines, our allies have been keenly alive to the opportunity of successfully promoting commercial aviation in their own countries through their departments of civil aviation which in each case are directly under the control of an Air Ministry whose mission is to define policies, make regulations, routes, etc. For example England has made a liberal appropriation for the Royal Air Force, and by so doing they have clinched two things at once: viz, holding together a splendid body of fighting men and holding her aircraft industries intact which incidentally cost her enormous sums to establish throughout the war. On February 12, 1918 after a thorough investigation a department of Civil Aviation in England was organized and great care was taken to insure the success of this department. England realized the importance of commercial aviation and provided for it. To date they have been very successful. They have organized postal and passenger routes throughout the Isle of Britain and in addition to this a company has been organized to carry passengers, mail and freight maintaining a daily schedule between London and Paris. The machines they are using are the twin engine Handley-Page, the Super-Handley-Page (4 engines) and the Vickers-Vimy (2 engines) type. These machines can truly be called aerial limousines and are capable of carrying not less than 14 passengers but also a considerable amount of baggage per passenger.

The French and Italians are also active in doing their utmost to promote civil aviation and even Germany is coming to the front exceedingly fast notwithstanding the handicap placed upon her through the terms of the armistice and is feverishly engaged in producing as many airplanes and airships as possible to compete with other governments. It is believed that Germany will in reality be ready for trans-Atlantic navigation in the near future. Germany has thoroughly tested the merits of airships with the "Bodensee". For many months this liner has been making trips of 390 miles carrying passengers etc., and is the last word, compared to anything else, in aerial efficiency and to date has never had an accident of any kind.

In order to prove that great strides have been made by England in the development of civil aviation it is interesting to quote a few figures concerning England's Civil Department dating from the 12th of February, 1918. This includes the London to Paris route as well as all civil aviation on the British Isles, mail freight and passenger traffic. Up to November 1, 1919 commercial aircraft have flown..... 4,000 hours.
Number of flights made..... 52,000
Approximate mileage 333,000
Number of accidents 13
Number of fatalities 2

The percent of passengers injured to those carried is .019, in other words, for every 5,200 passengers carried only one has been injured which is quite a record for such a new venture in a pioneering stage.

A perusal of the activities of England, France, Italy and other countries would no doubt be interesting. Neither England, France or Italy can be justly accused of being asleep in so far as foreign business is concerned. Their slogan seems to be "Give others a start and by so doing we will soon build up a permanent national industry". Promptly upon the cessation of hostilities these progressive countries presented a respectable number of airplanes, hydroplanes and seaplanes which were diverted from their surplus stock of several of the larger South American countries. Did they stop there and feel that they had played the role of the "Good Samaritan" and that these South American countries would break their necks to give them orders for aircraft and did the promoters sit and dream of the profits which would roll to them through their agencies? Not by any means. They promptly sent their best flyers, engineers, mechanics, etc., that were available completely equipped with everything necessary, including the very latest type of commercial and military aircraft. These commissions in South America are slowly but surely interesting these countries in aviation and at the

same time are making sure that these countries will be interested by training the citizens of South American countries to become flyers and in addition are procuring contracts and concessions that will necessarily guard against any probability of failure. This means that South American countries will soon be self reliant and will buy aircraft in greater numbers and will advance with the aeronautical world, but where will they turn to purchase such aircraft as they need in the future? Most likely to European countries. Our aircraft factories at the present time are practically non-existent. What few are left from the war are struggling hard to maintain themselves. With all due credit and respect to American manufacturers it can be said that they are making efforts to secure some of the South American business and have a few representatives in these countries, but their foreign competitors have the jump on them because they are solidly organized and supported and will always be so long as their government fully realizes as well as they do now the necessity for the manufacturers to exist and keep ahead of the times. The foresight of these governments in recognizing this factor reflects great credit upon them. For any thinking person must certainly realize that the manufacturer is the backbone of the entire air program whether it be commercial or military aviation. The expediency of such deliberation on the part of foreign governments have been responsible for producing such ships as the Vickers-Vigilant, an air transport, heavier-than-air type craft capable of carrying 100 passengers or their equivalent in bombs with a cruising radius of ten hours, the Farrant and the Bristol. They are built for passenger carrying but they can be speedily turned into dangerous fighting craft. England is responsible for the development of the rigid type of airship of the R-60-23-34 types, the records of which are well known to all Americans.

Think not that South America is the only place where the British have usurped the airplane business. Recently the Vickers-Vimy Company sold approximately 200 of their Commercial Type which is similar to the machine in which Sir John Alcock flew across the Atlantic, to the Chinese Government. This deal involved several millions of dollars and at the present time Vickers has a corps of engineers and mechanics in China on the ground and has commenced the actual training of the Chinese.

It was rumored at the Aeronautical show recently held in Chicago that Mr. Martin manufacturer of the Martin Bomber was negotiating a contract with the Chinese Government for twenty of his Martin Aerial Transports which are valued at \$50,000 apiece. This machine is a revised bomber type, is capable of carrying 14 passengers, and is equipped with twin American Liberty Motors. In the opinion of flyers it is far superior in many respects to anything yet built by any government.

Now to come back to America. American manufacturers have developed several efficient passenger carrying machines notable among them is the Curtiss Eagle, a multi motored machine capable of carrying 8 passengers and only dependent on two motors to maintain itself in the air. The Martin Aerial Transport is also another notable achievement and the performance of these planes in the past is well known. The Lawson, 22 passenger air liner is another well known machine. When we read in the papers that the Curtiss Company has disposed of 1038 airplanes to their distributors throughout the country it is indicative that this company believes that large sales will be made by their distributors throughout the year. One airship was also sold at the aeronautical show. The total sales amounting to approximately \$7,543,000. It is highly gratifying to note that some of the American business men are awaking to the fact that travel by air is not only safe but it is also on the average fifty percent faster than with land locomotion. If government support in the development of commercial aviation cannot be obtained then private enterprise must do so which will retard progress many years. When such private enterprises begin to realize that airplanes of the Martin, Curtiss and Lawson types have a cruising radius of from 14 to 20 hours and can average from 1400 to 2000 miles on such a cruising radius, all a sensible and sound mind needs to do is to compare time and mileage against the past railroad, steamer or automobile and the answer is self apparent. If we can do this now what can we do with the proper support given to the development of aircraft? We think that the R-34 which recently crossed the ocean was a great achievement but it is small compared to what is to come. It is known that at the present time a number of men who have had extensive experience are planning a dirigible liner twice as long as the type R-34, approximately 1200 feet in length capable of carrying 1000 passengers.

and using Helium gas (non explosive). With such a craft a passenger could get on at San Francisco and arrive at London in about five days. Is such a thing possible with an ocean steamer or train? Yet the cost of building such an air liner would only be about 2/3 of that of a modern ocean liner. These men will eventually secure the capital so necessary to put their project over. It has been repeatedly said of the aerial transport that it would never be a success because it cannot be operated with reasonable safety. It is evident that persons expounding such a theory know little or nothing concerning the science of aeronautics.

Let us quote what the United States aerial mail has accomplished since it began operation. The United States Aerial mail has been in continuous operation since May, 1918, operating the best part of the time with war types of airplanes which are not adapted for commercial and cargo carrying. During the 19 months of operation the mail service has covered 473,210 miles making an average delivery of letters in 16 hours for 22,254,000 letters carried, an efficiency per centage of 91.49 with a total operating expense including overhead and interest on the investment of only \$397,220.47 and a net profit of \$19,103. It is to be regretted that this country did not take the initiative in the beginning to establish commercial aviation and it is to be hoped that government support will be given, but the unfortunate part of the whole situation is that we are losing good business all over the world as well as in the United States of America while our aircraft factories have almost ceased to function through lack of support. The pity of it is that in the field of our own endeavor instead of blazing the trail for others to follow, we instead are the laggards. This government saves enough money annually in the protection of the national forests by aircraft patrol to go a long way towards the maintenance of an Air Service and a Department of Civil Aviation. If the United States will give as liberal a support to the building up of the aircraft industry such as England, France and Italy, to offer inducements and financial aid to the pioneers of aerial transportation on the same basis as does the Federal Reserve Bank to the farmer it will take but a few years before regular schedules will be maintained from coast to coast and regular air liners will travel over seas with the same regularity, efficiency and safety as trains on the land or steamers on the ocean not only in less time but also much cheaper.

DAYTON, OHIO.

LIBERTY 6 PERFORMS BETTER THAN GERMAN ENGINE IN A FOKKER

During the week Major Rudolph W. Schroeder, A.S.A., made the first flight in the new German Fokker, Model D-7, equipped with a Liberty six cylinder engine. As this was the initial flight of the Liberty six, it was watched with great interest.

The test was in every way successful, the pilot reporting that the airplane balanced perfectly and handled especially well. The speed and climb appeared to be very far in excess of the performance of the same airplane with the German engine.

MAJOR SCHROEDER LOSES CONSCIOUSNESS WHEN OXYGEN SUPPLY FAILS.

On February 6th Major Schroeder made an altitude test with the Le Pere biplane equipped with Moss Supercharger. On this flight he did not carry a passenger.

When an altitude in excess of 30,000 feet had been reached, the pilot suddenly realized that his oxygen regulator had ceased to function and that it would be necessary to descend quickly. However, due to the lack of oxygen, he had forgotten the location of the throttle or other engine controls, and after vainly hunting for the right lever to pull, decided to pull back on the stick so that the airplane would spin or spiral down rather than descend in a straight nose dive. At this point he lost consciousness.

He regained consciousness at an altitude of 18,000 feet, and found all engine controls wide open, with the switches cut and the engine stopped. Evidently his last act before losing consciousness had been to stop the engine by cutting the switches. He started the engine again and glided back to a safe landing at McCook Field.

The apparent cause of the failure of the oxygen regulator was the extremely low atmospheric temperature encountered. The strut thermometer at the highest point reached read 52 degrees below zero Centigrade, the temperature inside the pilot's cockpit being about 26 degrees below.

The barograph record of the descent shows that the airplane was executing a steady spiral during the period while the pilot was unconscious, and did not go into a spin. The smoothness of the descent indicates that the pilot held the controls rigidly in one position.

Major Schroeder's experience in falling twelve or fourteen thousand feet, due to the lack of oxygen, is unique insofar as the records of this field indicate.

REPORT OF ALTITUDE FLIGHT Feb. 26

On Friday February 26th, Major Rudolph W. Schroeder, A.S.A., made another altitude flight with the Le Pere biplane equipped with Moss Supercharger.

In order to prevent a recurrence of his experience of ten days ago, when his oxygen apparatus failed to function, he carried two separate oxygen supplies, one being connected to an automatic regulator and the other, the emergency supply, consisting of a small bottle with a rubber tube to the pilot's mouth. However, the automatic regulator failed to function, and it was necessary for him to rely solely on the emergency tank.

At an indicated altitude of 36,000 feet, the supply of oxygen became exhausted, and the pilot became unconscious almost immediately. When he regained consciousness the airplane was in a dive. The barograph indicates that he made a drop of 33,000 feet in a little less than three minutes, regaining control of the airplane when within 3,000 feet of the ground.

The temperature at his greatest altitude was 67 degrees below zero, Fahrenheit. The inside of his goggles became heavily encrusted with ice, and the ice around his eyes froze his eyeballs to such an extent that he was almost blinded.

When he recovered from the dive, Major Schroeder found that he was near Wilbur Wright Field and started to land, but his eyes were in such bad condition that he decided to fly to McCook Field, hoping that his eyesight would improve. However, the pain in his eyes continued to increase in intensity, and he was forced to attempt a landing at McCook Field almost without the use of his eyes. He accomplished almost a perfect landing. He believes that he would have been totally blind had he remained in the air five minutes longer.

Upon landing, Major Schroeder was taken to the hospital at the field, where his eyes were treated. His eyeballs were so badly chilled that he will be unable to use them for several days, but no fear for his eyesight is entertained.

The preliminary calibration of the barograph indicates that the airplane reached a pressure of eight inches of mercury, which corresponds to approximately 36,000 feet on the Bureau of Standards altitude chart.

The sudden change of pressure during the prolonged dive crushed three of the four gasoline tanks carried on the airplane. That the plane was up side down during a part of the drop, is shown by the fact that some mercury which had been lying on the floor was found splattered against the under side of the instrument board. The rapid change in temperature and the terrific rush of air took the varnish and dope off the wings in streaks. It is believed that this was due to the cracking of the varnish by the rapid temperature change.

The calibration of the instruments and the computation of the results are not yet complete, but a full report on these data will be included in next week's items.

LIEUT ARTHUR E. EASTERBROOK TRANSFERRED TO THE INFANTRY

Word was received this date that Lieut. Arthur Easterbrook has been transferred from the Air Service back to the Infantry. He has been on duty with the 1st Surveillance Group, 104th Squadron at El Paso, Texas, as Group Operations officer.

Lieut. Easterbrook has an enviable overseas record, being officially credited with five German planes. He was also awarded the Distinguished Service Cross and the Croix de Guerre, and recently awarded an Oak Leaf Cluster. Citation ceremonies were held at El Paso and the award was made by Major General Howze, Commanding El Paso, District.

His official record is quoted as follows:

"For extraordinary heroism in action near St. Mihiel, France, 12th Sept. 1918.

"Because of intense aerial activity on the opening day of the St. Mihiel offensive, Lieut. Easterbrook, Observer, and 2d Lieut. R.E. DeCastro, Pilot, volunteered to fly over the enemy's lines on a photographic mission, without the usual protection of accompanying battle planes. Notwithstanding the low hanging clouds, which necessitated operation at an altitude of only 400 meters, they penetrated four kilometers beyond the German lines. Attacked by four enemy machines, they fought off their foes, completed their photographic mission, and returned safely."

Lieut. Easterbrook leaves the Air Service with the best wishes of all his brother officers.

OFFICERS CONSTRUCT THEIR OWN SMOKE BOMBS.

The shortage of smoke pots used for simulated artillery spotting practice at McAllen, Texas has been overcome by constructing a substitute from the materials on hand. A piece of two inch gas pipe 6" long with an inch plug of babbitt in one end was made to form the cup. A spark plug was then inserted in to this cup, about one half of its threaded circumference being imbedded in the babbitt and protruding into the cup one half inch. The channel in the babbitt extending one half inch further and forming a cavity for black powder and insuring its being in contact with the firing points of the spark plug. Firing the pots is done with a battery and spark coil. Twenty-four pots are used and a twenty four key switch board has been constructed. The key board being a miniature plot of the target. Each key is placed with reference to the represented target on the key board as the smoke pots are to be the actual target on the ground. Each pot may be fired separately by pressing its key to represent salvo firing or any four may be fired simultaneously to represent volleys. This method has proved very successful and has the advantage of requiring fewer men to operate while giving greater speed of fire than the other types of smoke pots.

NOTES OF INTEREST CONCERNING SQUADRONS ON THE BORDER

8th Aero Squadron, McAllen Texas.

Squadron Mail delivered by Aeroplane

Due to the poor train service between McAllen and Laredo it takes a week or ten days for correspondence to be forwarded and returned from one station to the other. In several cases when matters requiring immediate action arose the round trip has been made by plane in three hours. Should a mail service be inaugurated along the border a great deal of the time wasted by train service could be avoided without inconveniencing the operations of any of the flights. A schedule could be made so as to determine the exact time that the plane carrying the mail would start and the patrols between the two flights could be made at the same time for that day. Weather conditions are the only questionable features to be taken into consideration and there are but very few days in the year that the service could not operate on schedule; but even a delay of twenty four hours would greatly improve the train service.

Four planes of Flight B and one visiting from Flight A flew in formation to McAllen, Texas, from Laredo, where they were joined by a five plane formation of Flight A, and then proceeded to Point Lina, Texas. Captain Kenney then led the formation in a larve V and returned to McAllen. This is the first time since returning from duty with the A.E.F. that both flights of the 8th Aero Squadron have flown formation together.

2d Lieut. Leroy Walthall, an old Kelly Field instructor, who was transferred to the 37th Infantry at Fort McIntosh last June has again been transferred back to the Air Service. While at Fort McIntosh he became familiarized with the operations of the border units and upon reporting to Kelly Field was assigned to the 1st Surveillance Group and thence to duty at Laredo with Flight B.

104th Aero Squadron El Paso, Texas.

Colonel Tompkins leaves Fort Bliss

Colonel S.R.H. Tompkins, former commanding officer for the 7th Cavalry stationed at Fort Bliss, left here Thursday, February 26th to take up his new duties as commanding officer of the 12th Cavalry at Brownsville, Texas. Colonel Tompkins has been connected with the 7th Cavalry for 34 years and to say that he was well known in this District is needless. Colonel Tompkins was a hearty supporter of the Air Service, and always manifested interest in the doings of the flying men. To demonstrate their appreciation of the many kind and noteworthy things he did for the Air Service in the past, the 12th and 104th Squadrons united and flew a formation of planes as an escort to the train which carried Colonel Tompkins away from El Paso. The formation escorted the train as far as Clint and while it was stopped at Clint, the planes dropped a message to the Colonel extending the greetings of the officers and men of the First Surveillance Group, and their wishes for his success in his new command. That he was well pleased could be seen by the way he was waving the red streamer message as the planes swooped down and passed the observation car in a farewell salute.

DECORATIONS AWARDED U. S. ARMY AIR SERVICE, A.E.F.

The following list shows the number of decorations conferred upon officers of the U. S. Army Air Service, who served overseas:

<u>DECORATIONS AWARDED</u>	<u>NUMBER AWARDED</u>
AMERICAN DECORATIONS:	
Medal of Honor	1
Distinguished Service Cross	235
Oak Leaf Clusters awarded with Distinguished Service Crosses	41
Distinguished Service Medal	27
BRITISH DECORATIONS:	
Companionship of the Order of the Bath	1
Companionship of the Order of St. Michael & St. George	8
Distinguished Service Order	1
Distinguished Flying Cross	20
Meritorious Service Medal	4
Military Medal	1
FRENCH DECORATIONS:	
Commander of the Legion of Honor	3
Officer of the Legion of Honor	3
Knight of the Legion of Honor	17
Croix de Guerre (with Palm)	64
Croix de Guerre (with Gilt Star)	10
Croix de Guerre (with Silver Star)	5
Croix de Guerre (with Bronze Star)	74
Medaille Militaire	5
Fourragere	8
ITALIAN DECORATIONS:	
Gold Medal of Valor	1
Silver Medal of Valor	2
Officer of the Crown of Italy	1
Knight of the Crown of Italy	5
Italian War Cross	41
ROUMANIAN DECORATIONS:	
Crown of Roumania	1
Star of Roumania (with arms)	1
BELGIAN DECORATIONS:	
Commander Order King Leopold	1
Officer Order King Leopold	1
Knight Order of King Leopold	1
Officer Order of the Crown	1
Knight Order of the Crown	8
Croix de Guerre	1
SERBIAN DECORATIONS:	
Cross of King Peter	1
MONTENEGRIN DECORATIONS:	
Officer of the Order of Prince Danino	1
Knight of the Order of Prince Danino	1
CHINESE DECORATIONS	<u>1</u>
TOTAL DECORATIONS AWARDED -	587

Information Group
Air Service

March 12, 1920

Building B
Washington, D. C.

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The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

SPECIAL AIR SERVICE SCHOOLS TO BE ESTABLISHED

The Secretary of War directs that the Director of Air Service be advised that authority has been granted to establish special air service schools as follows:

- (a) Air Service Pilot School, Carlstrom Field, Arcadia, Florida.
- (b) Air Service Pilot School, March Field, Riverside, California.
- (c) Air Service Pursuit School, Rockwell Field, San Diego, California.
- (d) Air Service Bombardment School, Ellington Field, Houston, Texas.
- (e) Air Service Observation School, Post Field, Ft. Sill, Oklahoma.

The Course for Communication Personnel is also authorized at this school, Ft. Sill, Okla.

- (f) Air Service Engineering School, Dayton, Ohio.

The location of the Engineering School is dependent upon whether Congress authorizes the retention by the War Department of the plant and fields at Dayton, Ohio. This school will be located at the center of engineering activities of the Air Service, wherever that may be.

A Course for enlisted storekeepers is also authorized at this School, Dayton, Ohio.

- (g) Air Service School, Langley Field, Hampton, Virginia, including:
 - (1) A field officers' course.

(The course at the Air Service School—Field Officers' Course—will be limited to instruction which will fit the graduates thereof for the performance of duties that devolve upon officers of the Air Service as such, reducing the instruction in the tactics of other arms and in combined tactics to that necessary to qualify an Air Service Officer to function as an Air Service Officer. The General Service Schools are the only schools authorized to teach combined tactics.)

- (2) An Airship School.
- (3) A course in Aerial Photography for enlisted men.
- (4) A course for enlisted balloon mechanics.

- (h) Air Service Mechanics School for Enlisted Men, Kelly Field, San Antonio, Texas.

- (i) Balloon School, Ross Field, Arcadia, California.

A course for enlisted balloon mechanics is also authorized at this school.

- (j) Balloon School, Lee Hall, Virginia.

A course for enlisted balloon mechanics is also authorized at this school.

- (k) Air Ship School, Brooks Field, San Antonio, Texas.

A course for enlisted balloon mechanics is also authorized at this school.

PARACHUTE 100% EFFICIENT ✓

Just as the need for final protection against water in event of a steamer accident, brought the life preserver to a perfected state, so the need of final protection against mishap in the air is making the parachute an instrument of 100 percent efficiency.

Most persons who have seen parachute leaps think of the parachute as a thrilling thing, to be used only by daredevils. They have watched the jumper descend the first several hundred feet, arrowlike, with the parachute closed, and then be slowed up by the spreading, umbrellalike cloth.

Recent experiments have been made by airmen who would climb to the upper wing of a plane, throw out their parachute and let it pull them from the plane. This eliminated the free drop which by the other method, takes place in the first two hundred feet.

Now means of attachment of the parachute to the airplanes and to the passengers are being devised so that clearance from the plane will be assured at all times.

After several tests in which the parachute opened before its human burden left the plane, the parachute men found the work even commonplace.

TEST OF DH-4-B'S PROVES SATISFACTORY ✓

The first consignment of DH-4-B airplanes was received during the past week by the 12th Aero Squadron at El Paso, Texas. A test flight was made from El Paso, Texas to Douglas, Arizona much to the satisfaction of the pilots of this squadron. They found this plane to be much better adapted to the Border Patrol work as the pilot has a much better range of visibility besides being able to converse with the Observer, an act impossible to perform with the unmodified DH-4.

FOURTH OBSERVATION SQUADRON FROM MITCHEL FIELD ARRIVES AT LUKE FIELD

The Fourth Observation Squadron from Mitchel Field, with the following complement of officers: Lieutenants Young, Johnson, Gale, Duncan, Johnston, Hynes, Banfill, Elliott and Manzelman (Lieutenant Young in command) arrived at Luke Field during the past week. Other officers to arrive at the same time include: Lieutenant Seagle from Kelly Field and Lieutenants Gowans, Curtis, Rice, Rabenstein, Seifert, Brooks, Foster and Olssen from Rockwell Field.

145 AIRPLANES COVER 14,500 MILES WITHOUT ACCIDENT

On Saturday, February 29, 1920, the flying personnel of Rich Field completed a transfer by air of one hundred forty-five JN-4-D planes from Rich Field, Waco, Texas, to Love Field, Dallas, Texas. A remarkable feature that is worthy of note is that the flights of the several planes necessitated a journey over an aggregate of 14,500 miles which was accomplished without an accident of any serious nature whatever and speaks well for the engineering department, the Commissioned pilots, the Enlisted fliers and the general efficiency of Rich Field where the craft were assembled and from where they were flown after being in storage from seven to nine months.

THRILLING EXPERIENCE OF H.F. KELLAR

The remarkable experience of Major R.W. Schroeder at Dayton, Ohio on February 27th, 1920, serves to cause aviators to recall thrilling flight incidents they have experienced and witnessed.

H.C. "Pop" Keller was a civilian flying instructor at Rich Field in the Spring of 1918. The JN4D had recently been inaugurated as the training 'plane for Cadets. "POP" was always cautious and curious to know the peculiarities of all types of 'planes and to familiarize himself with them thoroughly.

He took off one morning, alone in the rear seat, in one of the new consignment of JN4D's, recently received at Rich Field, to "try her out". She seemed to work all "OK". The power was "peppy", the controls were exceptionally sensitive and the 'plane was coming up to "Pop's" expectations in every particular. "Pop" decided to try her on altitude. He had risen to a height of about 5,000 feet when he decided to nose her down for a rather steep glide. He pushed his stick forward and throttled. Presently he decided to level off and pulled back on the stick. It would not move. He pulled harder and harder; he shoved forward and then pulled but the stick was "frozen". All this time, of course, "Pop" was in a steep glide toward old mother earth. "Pop" says he used his rudder all he could and tried to think, but could think of "nothing". Again he pulled and tugged at the stick, and again there was no response. He was now about 700 or 800 feet from the ground. Suddenly, "Pop" relates, a voice seemed to call out "Shove her to the right". He obeyed the unknown voice. Far over to the right "Pop" shoved the stick and then he pulled back and the stick came back into proper position with "Pop's" guidance about 300 feet from the ground.

When he landed, he made an examination of the ship and ascertained that a sketch case which was in the front seat had come loose and had fallen down into such a position that it had caught the forward stick behind it and held it locked. There was only one way the stick could be removed from behind the case and that was moving it in the path to the right as directed by the "unknown voice".

EXPERIENCE WITH PARTS OF FOKKER SHOW NON-INFLAMMABLE FABRIC USED

During a series of experiments with Spandau guns and other parts of the Fokker, the Engineering Department of the 1st Pursuit Group found to its surprise that the 'plane was covered with non-inflammable fabric. The material used in this test was a piece of covering from the standard D-VII Fokker wing which, when exposed to the flame of a blow torch, showed that fire proofing had been accomplished to such an extent that even though the torch was held at one spot, a considerable time must elapse before a hole appeared and there was no spreading of the flames to larger areas than that covered by the blow torch.

The early German 'planes on the front went down in flames often enough to justify the opinion that only the very late ones possessed this covering. The question of fire is one of the most serious problems we have to deal with today. It behooves America to experiment until a fireproof dope is developed not only shrinking the linen but fire-proofing it as well.

Another means of preventing the deadly menace of fire in the case of a crash may be had by installing a thin tank of pyrene between the engine and the gasoline tank of an airplane. Thus, in case of a crash, even if the gasoline tank did split as it usually does spraying gasoline over the red hot exhaust pipes, the tank containing the pyrene would also split, immediately extinguishing the fire, or at least the spraying pyrene would retard the flames enough to enable the pilot to extricate himself from the crashed machine, or allow others sufficient time to extricate him.

ENEMY AIRPLANES SENT TO THE UNITED STATES.

By the terms of the armistice agreement, Germany was obliged to turn over to the Allies, approximately 1700 airplanes, of which number the United States received 20%. A total number of 347 were sent to this country as war relics and for technical study, etc. Included in the list are the A.E.G., Albatross, D.F.W., Friedrichschafen, Fokker, Gotha, Halberstadt, Hanover, Junker, L.V.G., Pfals, Roland, Rumpler Rubild, Simens and Scheckert.

12-PASSENGER MARTIN BOMBER ARRIVES AT BOLLING FIELD

Lieut. L. A. Smith of Bolling Field, with Lieut. W. Harris of McCook Field as passenger flew the new 12-passenger "Army Transport" Bomber to Bolling Field from McCook Field, Dayton, Ohio during the past week. The plane, equipped with two Liberty engines, made the trip 3 hours and 21 minutes, the distance being 390 miles.

ARMY AIRSHIP HANGARS.

Hangars for the accommodation of airships were practically unknown in the United States prior to our entrance into the war, therefore, one of the first things which was done in connection with proposed Air Service activities immediately after the inception of our war activities, was the creation of the Joint Army and Navy Airship Board for deciding policies and making recommendations relative to the character and scope of the airship program to be carried out by the United States Army and Navy.

One of the principal things that was done as a result of the cogitations of this Board was to authorize the making of plans and writing of specifications for an airship hangar capable of housing two of the largest types of airships which were contemplated at that time. As a result of the above authorization complete plans and specifications were prepared, under the direction of V. H. Dill, A. M. E., Balloon and Airship Division, Air Service, U. S. Army in collaboration with Mr. Starr Truscott, A. M. E., Navy Department, Bureau of Construction and Repair, Aviation Section, for a hangar, having all the essential features incidental to proper housing of Rigid Airships, also to erecting or maneuvering of them.

This hangar, which was designed with a steel frame, to give a cross section of 200 feet (clear) wide, 100 feet (clear) high and a length of 720 feet center to center of end trusses, has formed the basis for all designs which have been made by the Army or Navy thus far, for hangars to accommodate rigid airships.

Hangar construction comes in a category known as higher structures, due to the necessity of using hinged arch roof trusses on account of the large clear width required, also to the necessity for providing great height, occasioned by the headroom required in a vertical direction, for admitting airships fully inflated and equipped. Structures of this character are, therefore, rather unique on account of their great magnitude and require very exhaustive study, with respect to kind and amount of stress which may be developed in the various members, particularly for the reason that many of the members are subject to alternate stresses of tension or compression, due to varying conditions of loading. It is, therefore, apparent that many conditions of snow and wind loading have to be assumed in order to develop all the possibilities and to enable the designer to make all possible combinations incidental to determining the condition for maximum of each kind of stress, which is necessary in choosing the proper cross section for the steel members. This type of structure is also unusual as distinguished from airplane hangars, and other structures, which do not require great clear width or height, in that the wind load against so great an area produces a great overturning moment and, therefore, great stresses are developed in the supporting members, which are accordingly heavy, to transmit the load to the anchorages, whereas, in the ordinary structure of mill building type, a considerably smaller portion of the stress is due to the effect of wind.

The great height begets another condition which affects the character of the construction and the weight of the supporting members. In order to assure the equilibrium of the structure, a steel frame, commonly known as an "A" frame, is substituted for the ordinary simple column principally because it affords two points of anchorage and because it gives a lever arm for counter resistance of the overturning moment, due to transverse wind pressure. This is regarded as being most economical because the weight of the members in the "A" frame do not become so heavy due to the width of the frame, also because of the inadvisability of attempting the design of a simple column of such a length, on account of the great flexural stress which would be developed.

Owing to the necessity of maintaining the clear opening in the ends of a hangar, the question of doors which may be operated so as to cover or to uncover this opening is one of considerable importance. The most economical type of doors for this purpose has been found to be a steel rolling door of Cantilever type, that is a self contained unit, counterweighted against overturning, operated on two rails and propelled by electrical power. The doors are made in two leaves, each weighing from one hundred to one hundred and fifty tons, (exclusive of counterweight) depending upon the clear height of the opening and in open position form a wind screen and, therefore, a lee, which is of great importance in facilitating the landing of a ship in the forebay and the maneuvering of it into the hangar.

The covering of the hangar requires more consideration than the ordinary type of structure for a number of reasons. The roof, as well as the siding, must be of such a character as to insulate the structure against the absorption of too great an amount of heat and the radiation of it into the hangar. In this connection it is interesting to note that effort is made to secure the proper color on the outside of the building, either by choosing materials or by painting to reflect the greatest possible amount of sunlight and in this way to dissipate the heat. The minimizing of the heat radiation is necessary on account of its expansive effect on the gas in the gas bags.

Also, in regard to the roofing, the question of water condensation is important and it is, therefore, considered imperative to use an absorbent material for the sheathing or otherwise to provide artificial methods of catching the water of condensation which would ordinarily drip down into the hangar and onto the airship and be more or less destructive in its effect on the envelope of the airship.

Gypsum Sheathing covered with slate or asbestos shingles seem to be the most satisfactory means of precluding the latter condition. Corrugated Asbestos Product, made with a cement base, seems to be the most satisfactory covering for the sides, and it affords the most satisfactory heat insulation, as above mentioned.

The design of the windows require special consideration on account of the necessity of admitting the sunlight and at the same time cutting out, as far as possible, the ultra-violet rays due to their destructive effect on the fabric. To accomplish this, an amber glass is specified and specimens of this glass have been submitted which transmit only 15% of the violet rays and 45% of heat rays. All window sashes are made of steel and arranged to operate from the floor by hand operators.

Artificial lighting is provided by means of flood lights with vapor proof fixtures, built into the walls of the hangar, and the means of lighting the forebays is provided by a series of flood lights situated at the end of the hangar with special colored lights along the ridge of the roof for enabling the returning airship to spot the hangar and secure sufficient information with respect to direction to properly maneuver for position to land.

Inclosed rooms are housed off on either side of the hangar outside of the clear longitudinal opening which are intended for offices, workrooms, storage places, vapor proof rooms for transformers, if desired, wash rooms and toilet facilities, etc. These are made fireproof by use of metal lumber, expanded metal, neat cement plaster and patent tubular doors. The roof of these inclosed rooms are also designed so as to be capable of carrying considerable live load, thus providing a place for storage of canvas, tools and other accessories incidental to the building or handling of a ship. Separate stairways with pipe hand railing are provided to each one of these.

Stairways with pipe railings are provided at intervals on either side of the hangar from the floor to connect with transverse walkways at the haunches of the roof arches, which in turn connect with a main longitudinal walkway along the center line of the building below the ventilators.

Ventilation is provided by means of ventilated panels in the window sash also through the medium of a longitudinal monitor along the ridge of the roof having continuous top hung sash in its sides.

The flooring is of interest in that the extensive use of petroleum products and their chemical action on certain materials, makes it one of the important considerations in connection with the Hangar. It is desirable to have the finished floor present a smooth surface which is as non-abrasive as possible. Petroleum in contact with asphaltum sets up a chemical action, which causes abrasion and this coupled with the fact that it is very difficult to prepare asphalt mastic in a manner to assure a surface having the proper resiliency and to preclude the scaling begotten by a slaty texture, therefore, its use is not advisable. While a sparkless flooring is desirable to give additional factor of safety against fire, the usual practice, particularly by the French, is to cover the floor under the airship with canvas cloths. Insulite flooring, the material used on floors of Pullman Cars, is probably the most suitable material, but in any case, even a neat cement, very hard and troweled very smooth is preferable to asphalt mixtures.

The Hydrogen Gas is brought into the hangar thru main pipe line - in covered trench - along the longitudinal centerline of the building. Seamless welded steel pipe is used and Globe valves for attachment of gas filling manifold are located in man-holes at intervals of 125 to 150 feet. The gas is forced, by pressure, thru pipes from a Hydrogen Plant situated a considerable distance from the hangar. The English use 10" and 12" pipe for this purpose, whereas, for the purpose of utilizing pipe on hand - two lines of 6" pipe are installed for the purpose at Langley Field, which are estimated to deliver 65,000 to 75,000 cubic feet per hour without the use of a booster fan.

With reference to fire protection, it is deemed impracticable to attempt installation of a fire protection system sufficiently extensive to save an airship, in case the Hydrogen becomes ignited and burned to an extent of setting fire to the envelope; this is true because if this condition obtained it would ultimately result in one great explosion or a series of small explosions which would render the envelope as well as the rigid airship frame, useless. Therefore, about the only provision in this connection is the Pyrene Equipment, which is intended to be used to smother local fires or to stop a flame from climbing in the envelope in case there was ignition of the Hydrogen, from any cause.

There are endless possibilities for providing barracks and mess hall facilities for the accommodation of the personnel in the larger type of hangars by means of balconies and the utilization of areas between the "A" frames.

Considerable thought has been given to the mechanical means of anchoring a ship and of drawing it into the hangar. A loaded hand car can be utilized for this purpose and Germany has devised some special types of docking rails built into the ground for use in the operation of roller bearing docking trolleys, to which the ship may be anchored and drawn into the hangar. The latest information in this connection, however, based on English experience, is that these methods, while practicable, are not considered to facilitate the handling of the ships in and out of the hangar, sufficiently to justify the expense of the above mentioned installation. The handling of the airship is done satisfactorily and more economically by personnel and the utilization of sandbags and mooring masts.

Army Airship Hangars now available, under construction, or about to be contracted, are as follows:

Langley Field - - - - -	125 ft.	wide	x	116 ft.	high	x	810 ft.	long,
Brooks Field - - - - -	125 "	"	x	116 "	"	x	220 "	"
Brooks Field - 3 demountable	50 "	"	x	56 "	"	x	175 3/4"	"
Camp Biene, Ft. Bliss, - -	66 "	"	x	75 "	"	x	220 ft.	"

Complete plans and specifications are available for additional airship hangars, having cross section, as follows:

200 ft.	wide	x	100 ft.	high
66 "	"	x	54 "	"
250 "	"	x	150 "	"
70 "	"	x	66 "	"
65 "	"	x	72 "	"
122 "	"	x	66 "	"

The future airship program of the Army, which includes the establishment of a base airship station in the Central Western portion of the United States, also which contemplates the acquisition of a 5,000,000 cubic feet capacity ship, will require providing a hangar with a cross section of 250 ft. wide and 150 ft. (clear) height and a length of 920 ft.

The future requirements for Hangars will tend toward the very largest types because of a similar tendency with respect to the airships, for the reason, that increasing the size of airships enhances their efficiency, also, that it is a measure of economy.

Information Group
Air Service

March 22, 1920

Building B
Washington, D. C.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE MARCH 23, 1920.

NOTES ON AERONAUTICAL SHOW OF NEW YORK
MARCH 6th TO 13th, 1920

CURTISS EXHIBIT.

At this show a new model Eagle Aerial Lincolne of the Curtiss Company is being exhibited. This machine is primarily intended for regular passenger carrying and as such it certainly fills the bill. It is equipped with 10 comfortable wicker chairs, lavatories, electric grill and electric lights. In addition there are two seats for pilots, in fact nothing apparently has been overlooked.

From the mechanical point of view a number of improvements have been made. The original model had three 150 H.P. motors to drive it while Model 2 is equipped with two 400 H.P. C.M. motors Vee type, weight 675 pounds each. Motors will climb a plane to 20,000 feet in 10 minutes. While they will average on a level flight 124 M.P.H. It carries gas for a flight of 750 miles. The machine will fly and climb with one motor, therefore there is no danger of forced landings with the usual resultant injuries. In this respect a great deal has been accomplished towards absolute safety.

The Curtiss Company is also exhibiting the Seagull Flying Boat JN-4-D Oriole, a 3 passenger single engine ship, as well as a full and complete line of engines manufactured by them. A unique feature of their exhibit is the model flying station. At the said station is a complete schedule of planes leaving to the various parts of the United States and the rest of the world giving time of arrival and departure and radio message being delivered and received from aircraft in route.

Probably the most important recent addition to Curtiss establishment is Aerial Photography. A new department has been organized for handling of this. Former Lieut. S. C. Jones is in charge of operations and former Captain George A. Morell, R.A.F. Pilot and Mr. George A. Worsham in charge of promotion of sales. With this modest force, the new department has been organized and already showing signs of expansion. One of the first important things they have put over is to convince the Curtiss engineers of the importance of having all machines built so as to be able to accommodate all sizes of cameras up to 18 x 24 C.M. Even the seagull is equipped with a special type outward mounting. In fact I am informed that a plane can be bought completely equipped with camera cradles ready to start out upon a photographic expedition.

They will specialize in Aerial Photographic mapping and the taking of obliques for sale. In view of the enormous business done by the Airco Company in England who have sold over a quarter of a million of aerial pictures in three months, it is quite gratifying to see an American Corporation taking an active interest in the most promising and profitable end of the aeronautic game.

L.W.F. ENGINE COMPANY

After glancing around the show for a few moments one is more than startled when he sees the giant L.W.F. Model H "Owl" Aerial Freighter. To say it is enormous would be entirely too modest. The machine has width of 105 feet over length 53 ft. 9½", height 17 feet 6 inches. Each of the upper wings includi

aileron has 1200 square feet of surface. This huge plane can carry 1200 lbs. of mail or express matter and is capable of flying from New York to Chicago without stopping, because it is equipped with 3 Liberty 12's with a total H.P. of 1200 and carries 900 gallons of gas. When loaded it weighs 10 tons and has a cruising radius of 16 to 20 hours, with an average speed of 120 M.P.H. Landing speed of 56 miles per hour, absolute ceiling 17,500 feet, climbs 6000 feet in 9 minutes. It has two perfectly streamlined fuselages and a center nacelle for the pilots all made of laminated wood, biplane tail with three rudders. Also carries two radio operators, 2 pilots and is equipped with resting quarters for crew installed in the fuselage and center nacelle.

The L.W.F. in the true sense of the word is an ideal machine for freighting and passenger carrying. The L.W.F. Company also exhibited a new Model monoplane called the Butterfly which is a very tiny affair contrasted with the Owl. The comparison is an Elephant to a Flea. The Butterfly has a wing spread of 29 feet 9 inches, height 5 feet 10 inches, height over all 19 feet. Weight 595 lbs. Useful load 383 lbs. It is equipped with a twin cylinder Cato Motor, air cooled developing 70 Horse Power. The machine has a maximum speed of 72 M.P.H., climb of 4,800 feet in 10 minutes and a cruising radius of 6 hours, quite a wonderful performance when all is considered.

AEROMARINE

From the L.W.F. we proceed to the Aeromarine booths, now we see something really and truly interesting in fact quite new. The Flying Limousine and the Honeymoon Express. The Honeymoon express is equipped to carry two passengers and a pilot, has plush seats, glass enclosed, and painted in white, which makes it quite attractive. Yesterday one of the Ziegfeld Follies girls dressed up as a bride, and of course had a groom with her and the white streamers attached to the plane presented a real and honest to goodness wedding appearance and of course attracted a great crowd. The machine is a flying boat, pusher type and has a wing spread of 48 feet 6 inches, weight 2,280 pounds, useful load 820 pounds. Motor, Aeromarine 8 cylinder Vee type 130 H.P. Tank capacity 40 gallons. Performance 75 miles per hour. Landing speed 44 miles per hour, climb 2,200 feet in 10 hours. Blue leather upholstery with mahogany trimmings, electric heat, light and starting. The tired and busy business man can surely travel in comfort in such a machine and it is needless to say his every comfort and safety has been provided for.

DAYTON WRIGHT.

The Dayton Wright Company manufacturers of the DH-4 are exhibiting an interesting and comfortable type of commercial passenger carrier, although practically a DH-4 somewhat remodeled, and slightly cumbersome it is nevertheless, a quite roomy and splendid machine inside. This machine is called the cabin cruiser Model K-1 and is equipped with a Hispano Suiza 300 H.P. engine. Weight loaded 2,492 pounds, carries 70 gallons of gasoline, averages 95 miles per hour, landing speed 35 miles per hour, climb 6000 feet in 10 minutes, equipped for 3 passengers and baggage accommodations, average 13 gallons per hour of gas consumption, and a cruising radius of 5 hours.

THE ARMY

The army has quite an attractive booth located close to the entrance. Unfortunately a part of the exhibit only has arrived which is due to the congested traffic conditions. Notwithstanding this a great crowd is always concentrated around the army booth. This year, the officers of the Air Service are demonstrating the commercial possibilities of Aerial Photography from three points of view, viz: taking of obliques of factories, estates, and views of the important buildings in cities. These pictures are in the true sense of the word pictorial and may be classed as a work of art. Such pictures as these could be sold for \$1000.00 each, which was verified by a wealthy gentleman on Long Island who stated that he paid \$1200.00 for an oblique of his chateau in France. On the opposite side of the booth are shown Aerial Photographic maps and strip maps of factories, railroad centers, ship docks, etc. It is needless to say that a great deal of attention has been focused upon these pictures.

Considerable interest is also manifested in the Daskelite propeller used by Major Schroeder in his recent record breaking flight.

The motion picture booth showing our activities in the A.E.F. is crowded with visitors from 11 A.M. until 11 P.M. at night. The Radio Department is giving demonstrations with the Magnovox in conjunction with the navy. The plane flies over each day and telephones in while the crowds listen in the utmost astonishment. It is really wonderful to note the various facial changes when the instrument begins to talk to the crowd.

THOMAS MORSE.

The real sensation of the show is the New Thomas Morse mail plane. In every respect it is radically different from anything seen so far. The machine has two fuselages carrying a mechanic and pilot while in the center it has a nacelle equipment with two Hispano Suiza motors. One pusher and one tractor. Loaded it weighs 55000 pounds. Its useful load being 2610 pounds. The element which gives this plane its amazing weight carrying is its lightness in structure in relation to its horse power. It is driven by two 300 H.P. Hispano Suiza motors developing 680 H.P. The machine is finished throughout with laminated wood and has a factor of safety of 6. The machine will stay in the air on motor loaded and space is provided for 500 lbs. of mail in each fuselage.

The West Virginia Aircraft Company and the Ordnance Engineering Co., are exhibiting new Model single motor planes equipped with Hispano Suiza motors capable of carrying two passengers and pilot. The machine differs somewhat from the usual type to be seen due to their heavy and larger wing spread and a slightly longer fuselage and nine stagger to compensate for extra weight.

The Wright Aeronautical Corporation is displaying the new Hispano Suiza Model K aero engine. This engine is of the 8 cylinder, type Vee, 300 H.P. geared with a 37 M.M. cannon. The cannon is built in between the cylinders of the engine close to the crank case and ejects a shell thru the muzzle which extends out thru the center of the hub of the propeller. This device was worked by the Engineers of the Ordnance Department and the Wright Corporation. It is without doubt the most ingenious device ever invented for aircraft gunnery.

The Goodyear Tire and Rubber Company are again exhibiting their two passenger Pony Blimp, also a number of models of big rigid types of airships for long distance passenger carrying.

Fairchild Aerial Camera Company has one of their new types of 18 x 24 C.M. cameras on exhibition. The camera while not a radical departure from the K-1 in looks is in reality radically different, the lens has been changed, gear shifts altered to function without failure, and the most notable of all, and in between the lens shutter substituted for the focal plane shutter as used in the K-1, which is a remarkable piece of mechanism in itself and fills a long felt need on an aerial camera.

RESULTS OF OFFENSIVE AIR FIGHTING

It is the contention of many people that the value of offensive air fighting has been greatly over-rated, also claimed by others that the reported damages to enemy objectives of military importance, as reported by bombing squadrons, was never observed by advancing armies or by the armies of occupation after the signing of the armistice. One of the Air Service officers who was captured August 24, 1918, by the Germans, on the Cambrai Front, S.E. of Bapaum, had ample opportunity to personally observe the disastrous results of this warfare upon the enemy, including ground strafing, short and long distance daylight bombing and night bombing over the enemies immediate lines of communication. Facts are enumerated as follows, giving dates and places as near as possible.

(a) August 24, 1918 three S.E. 5's on low bombing mission dropped bombs and machine gunned a line of motor lorries proceeding toward the lines, causing three lorries to overturn, chauffeurs to leave their machines, which were left standing over an hour, a detachment of infantry to conceal themselves in a near-by wood, and all officers in Brigade Headquarters, where the writer was taken after being captured, to leave their work and seek their dug-outs. (Results) Destroyed motor transportation of which the enemy were woefully short, held up supplies badly needed at the front, and this sort of "straffing" hurting the morale of the enemy terribly, as shown by the action of the officers mentioned. This was just one occurrence observed during the day and when we consider the damage wrought by this type of offensive air fighting which was going on on all army fronts from day-break until dawn it can be easily seen what a tremendous value it was to the attacking armies of the Allies.

(b) On the nights of August 24 and 25, 1918 he was kept a prisoner immediately behind the lines at some sort of Intelligence Headquarters. The roads leading to the front, just after nightfall were jammed with replacements of troops and supply trains going to the front. These lines of communication were bombed by F.E.'s during the entire night, causing troops to leave the roads and lie in near-by ditches and dug-outs, creating panic in most cases by their repeated attacks. (Results): Again we have supplies and replacements delayed at the only possible time they could be moved. This happened on the main boulevard from Cambrai to Arras at a time when the British were concentrating their attacks on this front and where the Germans were greatly weakened. Only an officer who has been at the front with an infantry organization can realize just what this sort of delays to supplies and replacements mean in the face of a vigorous attack.

(c) On August 29, 1918 he was taken to Cambrai enroute to Karlshrue, Cambrai was bombed on August 27, 1918 by a squadron of DH9's. A direct hit was made on the railroad station and another on a munition train standing just within the railroad yards, destroying the station and tearing up tracks and switches, blocking the yards completely with debris. It took the Germans about eight days to restore the tracks to their normal condition. While on his way from the front to Cambrai, on three occasions Allied Bombing Squadrons passed overhead at a great altitude, being heavily "archied". Each time our train was stopped and all passengers and crews immediately concealed themselves in "dug-outs" which seemed to be provided all along the track, indicating that this was a frequent occurrence and that day bombing raids were greatly feared by the Germans. During these raids all railroad trains were stopped, to prevent their being spotted by the bombers, until the "all clear" signal was sounded which frequently held them up for over an hour at a time. (Results): Supply trains bearing replacements and supplies being held up in this manner had a decided tactical effect upon army operations.

(d) While in the Prison Camp at Karlshrue, Germany, when the day bombing squadrons passed overhead on their way to bomb manufacturing cities farther in the interior of Germany, they would occasionally release a few bombs at the Karlshrue railroad station, which kept the population, civilian and military, in continual fear of these attacks. The alert being sounded long before the bombers reached Karlshrue and the "all clear" not being sounded until the bombers had passed overhead on their return trip. During this period all work ceased and the population sought safety in cellars and dug-outs. This same condition also existed at night, occasioning great unrest. False "alerts" were also a frequent occurrence showing the fear which these raids produced. The industrial loss and the lowering morale thru the fear of the night bombing raids, together with the loss of rest occasioned by them undoubtedly had a great deal of effect in lowering the production of war time necessities in the interior cities of Germany, which would otherwise have hardly have felt the war at all and would have kept up their maximum production of war supplies.

(e) In answer to the statement that reported damages were not observed later by advancing armies, it can be easily seen from the above statements that wherever damage of military importance was done to the enemy, it was immediately repaired. The object not being to destroy towns or cities but to hinder military operations and production which after all is the result most desired in offensive air fighting and bombing. From personal observations and the reports of fellow prisoners, it is believed that our aerial offensives had the desired results and our daylight bombing raids tend to prove that we had the superiority of the air as the Germans could not do this type of work, whether due to the lack of machines or our defenses I am unable to conclude. During the three months this officer spent as a prisoner of war behind the German lines he had an excellent opportunity to observe the results of the classes of aerial offensives mentioned and the effect it had on the German peoples, that men with the advancing armies could never have observed.

WHY MILITARY AIRCRAFT EQUIPMENT IS USEFUL TO COMMERCIAL AVIATION

Practically all of the aeronautical equipment exhibited at the Aeronautical Show was designed for war and has a limited commercial application. As a result of the development of this equipment however enough knowledge and experience has been gained which, properly applied, can put commercial aeronautics on a paying business basis.

The Director of Air Service feels that this knowledge belongs to the American public if it desires to take advantage of it, and is taking every step with the limited funds and authority at his command to make it available to all who can use it.

Too many conclusions have been drawn from attempts to find a commercial use for war time equipment not designed for commercial efficiency. The principles of design for war equipment are almost dramatically opposed to those underlying the development of commercial equipment. In war the need is so desperate that production and operation costs are hardly considered while for commercial needs both are of paramount importance. Aircraft as a means of transportation and communication must follow the laws of development of other means of transportation and communication and must be so designed as to give the desired service as cheaply as is consistent with efficiency and safety.

War machines must possess great speed and at the same time be capable of climbing rapidly, characteristics which are opposed in design. The desired result is gained by a compromise design and the installation of an excess powered motor. They must operate at sea level and at high altitude equally efficiently. This requires a complicated cooling and carburation system which adds tremendously to operation and production costs and is not necessary for many commercial machines. War planes must be very maneuverable at a sacrifice of stability and safety and the comfort of passengers is limited to the point of efficient performance of duty.

When an intelligent survey of the needs for rapid and convenient transportation and communication has been made and designers can tell definitely what service is required of their planes and what limit to production and operation costs will be set for this service, they will be able to produce equipment which will be as efficient commercially as the present equipment is for war. There exists today in the United States enough unapplied knowledge gained as a result of our war expenditure on aeronautics to make that expenditure an excellent investment rather than the dead loss it appears to be today.

The war department has made available for display thru the courtesy of the Manufacturers Aircraft Association some of the equipment which has an immediate commercial use. When we get down to rock-bottom, there will be as many designs of aircraft as there are motor cars and trucks.

Among the exhibits of the war department at the recent Aeronautical show was a model landing field made to scale and complete in detail. Over 2000 cities have applied for information on the requirements for landing fields and it has been difficult to describe in words what is necessary. The model makes it possible to visualize in detail one of the most vital necessities of commercial aeronautics.

So much interest has been shown in the variable pitch or reversible propeller that it has been decided to exhibit it. This propeller will fill a long known want. Every propeller is efficient up to a certain number of revolutions depending on its pitch and design and each engine usually requires a special propeller. Different engine speeds and different altitudes require different propeller pitches and since the engine speeds and the altitudes can be changed at will the variable pitch propeller makes it possible to get the greatest possible efficiency out of the power plant. By reversing the pitch of the propeller can be used as a brake and the roll of the plane on landing reduced to a minimum. With a reliable power plant the size of the landing field can be reduced to that required to take off.

A very human desire for safety has made the parachute a necessary part of commercial equipment. The parachute and pack exhibited has reduced to a minimum the danger of failure of the parachute to open. This equipment is so designed that the parachute opens before the passenger leaves his seat.

In cold weather or at very high altitude even on the hottest summer day the aviator or passenger experiences bitter cold. A suit of electrically heated clothing has been designed that makes it possible to endure cold of many degrees below zero in perfect comfort. Flying in winter or high altitude test would be impossible without such equipment.

Exhaustive tests have proved that it is a loss of oxygen at high altitudes rather than the low atmospheric pressure that causes distress. The oxygen apparatus exhibited makes it possible to fly far above the height where there is no longer oxygen enough to sustain life. Even the most hardy heart and lungs are inadequate above 30,000 feet and most people show signs of distress at 20,000 feet. Eastward bound traffic will be able to take advantage of the terrific winds always found at high altitudes and the continent can be crossed in a few hours. Major Schroeder's record was made possible by the equipment on display.

To those who have spent their lives on the ground a suitable map for cross country flying does not seem of importance yet when it is considered that the aviator must pick his way over the country from a height of 2000 to 10,000 feet at a speed of 2 miles a minute its significance can be recognized. He can not stop to avail himself of the advice of inhabitants and fellow motorists and it is an uncomfortable experience to wander about lost over bad country with an ever decreasing gas supply. Airplane and airship flights of over 500 miles are frequently made and the ordinary map covering that distance is too bulky and inconvenient. Different maps showing the steps made in development are on display.

One of the pleasures of aeronautics is the unusual view of terrain and cloud effects. Aerial photography has developed to the point where these views can be caught and reproduced. Aerial photographs varying from a mosaic composed of thousands of separate photographs to a view of an airplane stunting in clouds can be accomplished. Aerial photography presents one of the commercial possibilities of aeronautics that is immediately available. A photographer engaged in making an accurate mosaic of a city for city planning and other innumerable uses can take aerial photographs of country homes, industrial plants, municipal buildings, and other points of personal and civic pride at a price that will bring it within the reach of every one.

One of the features of the Air Service exhibit was a number of films displaying Army and Navy activities. These ranged from airplanes and dirigibles in flight to the detailed examination of aviators and equipment. The films present probably the easiest method of getting an aeronautical education.

While the exhibit contained a few of the results of our development of an air service for war that have an immediate commercial application it represents only a small part of what is available if business interests can be made to realize the possibilities of aeronautics.

Aeronautics, due to its forced development during a war that has strained the world's resources in invention and supply has escaped the slow and gradual development of the steamship, the steam and electric railway and the automobile. It is an unfortunate fact that a people renowned for its resources and progressiveness should have presented to it the knowledge and experience necessary for the development of a new and superior method of transportation and communication without the desire to take advantage of it. It is to be hoped that this is due to an excusable ignorance of a thing as new as aeronautics and if this be true there should be a determined effort on the part of those who realize the possibilities of aeronautics to make their knowledge available and of those who need it in their business to obtain it.

MARTIN COMPANY BUILDS TORPEDO AIRPLANE

A new Martin torpedo airplane, built for the Navy, was flown to this field on Sunday, February 29, by Mr. Eric Springer, test pilot of the Glenn Martin Company, and turned over to Lieutenant Commander Chase of the Naval Air Service. Commander Chase expects to be at McCook Field for several weeks, conducting tests on the gasoline consumption of this airplane. The construction of the airplane does not differ materially from the standard Martin Bomber, except that the landing gear is divided so as to accommodate a torpedo beneath the fuselage. With Lieutenant Commander Chase are Lieutenants Roger and Fitzpatrick and Ensign McCarthy.

ENLISTMENTS FOR AIR SERVICE AGAIN AUTHORIZED

The Adjutant General has recently authorized 2,500 enlistments and re-enlistments for the Air Service, for one and three years. At the present time these enlistments are only authorized at Air Service stations. However, the War Department has under consideration the question of extending this authorization to General Recruiting offices and other stations, and is preparing a War Department circular on this subject which it is believed will be issued within a few days.

The recruiting plan being considered is to limit enlistments to men of previous service in other branches of the Army who are especially qualified by trade for Air Service work. It is intended to limit original enlistments to men who have a high school education or to those men whose mentality is sufficiently developed to warrant training in the highly specialized trades required for Air Service work.

It is also intended that equal attention will be paid to securing recruits for Heavier and Lighter-than-air.

ENGINEERING DIVISION HAVE A NEW TEST FURNACE

The Material Section, Engineering Division is supervising a test of the Government furnace at Shelby, Ohio. This furnace was installed during the war for the purpose of heat-treating steel tubing in quantities for airplane construction but was not completed until very recently. It is now completed and undergoing a series of tests to determine the feasibility of producing heat-treating steel seamless tubing of very high tensile strength and elastic limit, to particularly meet Air Service Specification Number 10,229, for axle tubing.

The furnace, located at the plant of the Ohio Seamless Tube Company, is 7 ft. in diameter and 22 ft. deep, electrically heated and automatically controlled so as to give constant temperature within very narrow limits. The tubing is lowered into the furnace, which is sunken so that the top of the furnace is level with the floor, in a steel container (capacity 1152 ft. of 2" tubing) by means of a crane. On reaching the required heat the container with its cargo is hoisted out of the furnace, transported over the quenching tank where the bottom of the container is opened and the steel tubing, at the quenching temperature, is allowed to drop into the oil quenching bath.

The tempering operation is conducted in a similar manner, except that the maximum temperature of the tubing in the furnace is, of course, lower than it was for the quenching operation. These tempers run approximately 1400° to 1600° F. for the quenching operation and 400° to 1000° for the tempering operation, depending on the quality of steel used and the physical characteristics desired.

This furnace will be used principally for the heat-treating of alloy steel tubing with special reference to the tubing used in axles. Up to the present time no axle tubing has been produced in quantities which will meet the requirements of Specification No. 10,229 calling for 200,000 lbs. tensile strength with five percent elongation in two inches.

LIGHTER THAN AIR RESEARCH STATION OPENS AT FT. OMAHA

Fort Omaha, the official Lighter-than-Air Experiment and Research Station of the Army Air Service, is making preparations to prosecute much more actively than has been possible in the past, the great volume of development work made imperative by the rapid strides being made in Lighter-than-Air Craft. This work has been, hampered by lack of personnel, caused by the unfortunate conditions attendant upon the demobilization of our National Army. Arrangements have, however, now been made to obtain competent civilian engineering specialists, covering the entire range of work involved, in mechanical, structural and chemical engineering, who will constitute a Research and Experimental Board to invent; design; construct; revise and test; all equipment, present and future, as required for the Lighter-than-Air branch of the Air Service.

Reports from Fort Omaha already indicate the increased activities which are becoming more marked day by day. It is believed that the arrangements made for the development of this Experimental Station will result in the best equipped and most effective Station of its kind in the World.

LATEST AIR SERVICE FIELD NAMED IN HONOR OF MAJOR DANA H. CRISSY.

The Adjutant General of the Army has granted authority to name the new field at San Francisco, "Crissy Field" in honor of Major Dana H. Crissy, who lost his life in line of duty while participating in the Transcontinental flight on October 8, 1919 at Salt Lake City, Utah. Major Crissy was born in Michigan. He was a graduate of West Point, and a Captain in the Coast Artillery Corps.

He was appointed a Major in the Air Service August 5, 1917, and on May 29, 1919 he received his J.M.A. rating. At the time of his death he was commanding officer of Mather Field, California.

SERGEANT AT RICH FIELD PREVENTS ICE FROM FORMING ON WINGS

Flying in winter presents many difficulties to the flyer, the most troublesome of all being the formation of ice on the wings and fuselage of the plane. A great part of the time in winter low flying clouds are encountered which are of a misty nature. The plane readily gathers the condensation from these clouds and of course promptly freezes when higher altitudes are reached. Many flyers have had most unique experiences in controlling their planes as ice formed. It is uncommon indeed for a pilot when his plane is ice coated to carry his stick four or five inches forward in order to fly level.

Sergeant Walter Beech, Engineering Department, Rich Field has been conducting a number of experiments with a view of overcoming this difficulty and finally hit upon the idea of applying a light coat of glycerin on all exposed surfaces of the plane. The experiment has proven to be very successful for preventing the accumulation of a coating of ice on the wings.

Sergeant Beech prior to the war was engaged in the automobile business in Alaska and has had a great deal of experience in cold weather automotive difficulties.

TESTING PARACHUTES WITH PLANE IN A TAIL SPIN

During the week the Air Service Engineering Division at Dayton, Ohio have been conducting a number of parachute tests to determine the course taken by a man lifting off of a JN-4 H in a tail spin in a parachute.

Numbers of tests have been conducted of other methods of exit from a plane but actual exit from a plane in a tail spin with a parachute has never been attempted. The tests were first conducted with flags of lengths corresponding to that of the Service type parachute. Later a 7 foot diameter model parachute with weights was used. All tests were successful.

Numbers of accidents can of course be directly attributed to falling into a tail spin and a safe method of exit will be of great value.

NEW PORTABLE CRANKER A SUCCESS

A portable airplane engine cranker, designed by the Equipment Section of the Engineering Division, McCook Field, is now in use at this field. This starter can be accommodated to all types of engines by using suitable face plate castings. The engine cranker is driven by an automobile starting motor with storage battery, and exerts sufficient torque to spin a cold Liberty-12 engine at approximately 40 R.P.M. The cranker now in use at McCook Field is mounted on a 1-1/2 ton Packard truck. The truck is driven to a position in front of the airplane, and the cranker is swivelled in the universal bowl so that its shaft approximately parallels the propeller axis. The automobile release is set at the starting position, and the engagement lever is then pushed forward until the face plate nearly touches the propeller. The necessary adjustments of the elevating and transversing mechanisms are then made and the bowl clamped in position. The engagement lever is then pushed forward so that the face plate engages the propeller hub nuts, and the starting switch is operated. As soon as the engine starts under its own power, the face plate automatically recedes from its engagement with the propeller hub nuts, leaving the entire starter clear of the propeller, thereby allowing the starter truck to drive away without danger of interference.

FLIES ALMOST 2 3/4 MILES A MINUTE

Lieut. Everett Davis of the 8th Aero Squadron flying a DH-4 B made a flight from Kelly Field to McAllen Texas covering the distance of 256 miles between the two points in 100 minutes - approximately 2 3/4 miles per minute. This is probably the best record made to date.

CIVILIAN FORESTERS MAKING PROGRESS IN OBSERVATION COURSE

The class of twenty forest rangers taking the course of instruction at this Field (March) are making rapid progress in their work. Radio instruction has not yet passed beyond the sending and receiving stage but in a short time, the class will take up the installation and maintenance of the field sets.

The theoretical course in map reading and sketching has been completed and the class is now engaged in making flat road sketches of the country surrounding March Field. They will next make contour road sketches and the course will be completed by a combined position sketch made by the entire class. While accustomed to using maps in their daily work, the majority of the class has never done any sketching and this phase of the work is very interesting to them and will doubtless prove of considerable value in future work.

A short course of lectures in first aid has been completed. The course consisted of lectures and practical demonstration of bandages, splints and so forth.

In their airplane course, a very short course in aerodynamics was given, not so much for the practical value as for the increase of general knowledge of the problems faced by the designer, manufacturer, and pilot. The subject of Landing Fields was covered, taking up the selection, size, preparation, marking and requisite qualifications for landing fields. The difficulties encountered by pilots in fog, rain, and snow were discussed in order that the Forestry Service might obtain an idea of what could be expected and what could not be expected of pilots under varying conditions.

It is planned to have lectures of a somewhat similar nature given to pilots by the Forest Supervisors, so that the pilots in turn may become acquainted with the problems of the Forestry Service, thus insuring closer co-operation between the two services in the coming fire patrol season. The rangers are being given instruction in starting motors with a view to using their services in case of forced landings near their station. They are also receiving short flights during which they sketch from the air, learn to locate landmarks from the maps, and spot fires according to co-ordinates. At the close of the course a short series of lectures will be given in practical meteorology.

OFFICERS INTERNED IN MEXICO RELEASED ✓

On March 5th 1st Lieut. G. L. Usher and 2nd Lieut. L. M. Wolfe of the 12th Aero Squadron were released by the Mexican authorities and returned the following day to headquarters of the 12th Aero Squadron, El Paso, Texas.

These officers were compelled to make a forced landing near Nacozari, Mexico on February 2, 1920 while on a patrol from Columbus, New Mexico to Douglas, Arizona. They encountered thick low flying clouds which were below the mountain tops and were compelled to fly above them for a greater part of the distance. To add to their difficulties the compass went out of commission and their only recourse was to find their direction by the sun which caused them to fly considerably off.

After clearing the clouds the officers were unable to locate the border being over very mountainous country, where the border is hard to follow from the air. Continuing in a general westerly direction, they came to the Nacozari railroad which they took for the El Paso and South Western Railroad. To the south the flyers could see a heavy mass of grey smoke, which they supposed was the smoke from the huge smelter at Douglas. This smoke from the smelter is Douglas's most prominent landmark, accordingly Lieut. Wolfe headed for the smoke screen. When they arrived over the source of the smoke the Officers knew that they were not at Douglas and knew that they had entered Mexico. However, their gas was nearly out, they were flying then on the emergency, so they had to look for a landing field. Nacozari is in a narrow valley with hills for miles around. The plane was landed about eighteen miles to the South. After many false alarms as to the time of their release the officers were freed March 5th, 1920 and proceeded by rail to Douglas. From Douglas they were brought to El Paso by airplane. Lieut. Paul and Lieut. Pearson of Flight "A" 12th Aero Squadron piloted them from Douglas to El Paso.

"RULES OF THE ROAD" AND PRECAUTIONS FOR FLYING ✓

JJJ In the absence of Federal legislation of any kind governing flying in this country, voluntary measures are necessary to minimize and eliminate accidents. These are to benefit not only those concerns entering the business side of the game who are progressive leaders of the new "aerial age" soon to darken the skies in growing numbers, but also the general public. In anticipation of what will be eventually enacted, the standard regulations and rules of the air adopted by the Army Air Service are made public. The chances of that monkey wrench landing on Jones' head or of two planes tangling up in attempting to beat each other to a landing at the inviting field of a popular summer resort are to be very slim.

As the automobilist must know the rules of the road, so the aviator must know the "Rules of the Air". These as well as the words of precaution to pilots and instructions for flying and landing after dark conform closely to the International Air Convention, one of the products of the Peace Conference.

The General Rules of the Air provide that

"No pilots shall fly closer than two hundred yards to any dirigible, free, or captive balloon.

Lighter-than-aircraft will at all times have the right of way over heavier-than-aircraft.

A motor driven aircraft must always manoeuvre according to these rules as soon as it is apparent that if it pursued its course it would pass at a distance of less than two hundred yards from any part of another aircraft.

When two motor driven aircraft are meeting end on or nearly end on, each shall alter its course to the right.

Where by any of these rules one of the two aircraft is to keep out of the way, the other shall keep its course and speed.

Every aircraft which is directed by these rules to keep out of the way of another aircraft shall if the circumstances of the case admit, avoid crossing ahead of each other."

The above rules, when followed, eliminate one of the causes of accidents in the Air. Other safety measures provide that "in following an officially recognized aerial route every aircraft, when it is safe and practicable, shall keep to the right side of such route." "Aircraft on land or water about to ascend shall not attempt to take off until there is no risk of collision with alighting aircraft." Of considerable interest to the non-flying public is the provision reading "The dropping of anything other than ballast composed of fine sand or water from aircraft in the air is prohibited".

Precautionary instructions are given to pilots in the clause that they "must realize their responsibility toward others and except in case of forced landings, must not attempt to land in small fields where poor pilotage or sudden failure of motor might be the cause of death or injury to spectators".

Low flying over cities or other thickly populated districts is forbidden, except where altitude is more than sufficient to insure gliding distance to a policed or safe landing field. Trick and exhibition flying are permitted over cities and crowded districts and at meets and games only on prearranged occasions and with specific authorization.

For flying and landing after dark the method outlined below should be universally followed in the U.S. in order that it might be recognized at once by any pilot wishing to land after dark. Flood lights, if available, otherwise six or seven buckets containing waste soaked in gasoline, should be placed on the field near the best landing in the shape of an "L" as indicated below:

Wind is from	Best landing	Approach
this direction	* here	from here
	*	
	* * * * *	

Note: Stars represent flares.

In the absence of any form of control over civilian flying the spontaneous and voluntary adoption of the above outlined regulations by all operators of aircraft are looked forward to as both logical and necessary. Cooperation in this great new game is essential to insure to aviation its proper measure of development.

AIRPLANES USED TO AWE HOSTILE NATIONS.

The nations in the Province of Churiguri, Panama of which David is the Capital during the last few years have taken a decidedly belligerent attitude towards Americans residing there and particularly towards a small garrison of United States Troops stationed at David to protect Americans. From time to time a number of people have been killed by these hostile natives.

In order to prevent future disturbances the Commanding Officer of France Field, Panama sent a squadron over Churiguri to demonstrate to the natives that a dangerous menace from the air can threaten them in a very short time should trouble arise again.

The mission had the desired effect and it is believed that the natives in the interior of Panama realize the damage an attack from the air can do them.

It is planned to send a squadron over other hostile territories in the opposite side of the isthmus for the same reasons.

(a) CLAIMS FOR DAMAGE RESULTING FROM OPERATION OF AIRCRAFT. The Secretary of War directs that:

All Claims for damages to persons and private property resulting from the operation of aircraft, will be referred for primary action to the Commanding Officer of the nearest aviation station.

To enable intelligent action to be taken, the claimant will be required to submit a statement, over his signature and address, setting forth all the facts and circumstances under which the damages claimed have accrued, the nature and extent of the damages, the date they were incurred, and the cost for repairs of the same, which statement will be accompanied by such evidence as is available, including a receipt for the payment of repairs, if made, or any estimate of the cost thereof.

The Commanding Officer concerned will convene a board of officers who will investigate and report the circumstances under which the claim accrued, the date thereof, the nature and extent of the damages, and whether or not they were due to unavoidable accident, or due to fault of any officer or agent of the United States or any other person. The report will also include an estimate of the cost of restoring the property to the condition in which it existed before it was damaged, if such was the case, and deductions will be made for any improvement in such restoration. The report will conclude with a recommendation as to the amount which should be allowed and paid to the claimant for the restoration, excluding all charges or estimates for improvements, changes or additions to the property. The Board will reduce to writing all pertinent evidence submitted in behalf of the claimant and the Government. The claimant will be required to state in writing whether or not he will accept the award, and if not, to submit his reasons therefor, which statement will be made a part of the proceedings. The proceedings and recommendation of award, in triplicate, bearing the indorsement of the Commanding Officer will be forwarded to the Director of the Air Service.

If the claim does not exceed \$250, or if the claim exceeds \$250 and the claimant agrees to accept \$250 or less, action shall be taken by the Director of Air Service as provided in Act approved July 11, 1919. If claim exceeds \$250 and if claimant declines or fails to accept an award of \$250 or less, the proceedings shall be forwarded by the Director of Air Service to the War Department Board of Appraisers for action.

NEW TYPE OF CAPTIVE BALLOON

At Fort Omaha, the official Lighter-than-Air experimental station of the Air Service, work is being conducted toward the development of an improved type of Captive Balloon, designed to overcome the loss of gas thru valving. While this problem is given added importance at the present time, due to the advent of Helium as a balloon gas, it is of great economical and military value for use with Hydrogen, reducing the quantity of gas required to maintain a Balloon in the air to a minimum. Standard Type "R" Balloons of 37,000 cu. ft. capacity, lose anywhere from 1,000 cu. ft. to 5,000 cu. ft., daily, thru valving, depending upon the weather conditions, climate, etc., in which they are operated. Providing the present experiments are entirely successful (and there is every assurance that they will be successful), absolutely no gas will ever be valved, due to temperature and altitude changes. The only gas required to maintain a balloon in active operation will be that necessary to maintain its purity which, with the improved fabrics being developed by the Air Service, will be reduced to a very low figure.

The scheme being most actively prosecuted and upon which actual field tests are under way at present, at Ft. Omaha, is a very simple adaption of the Standard Type "R" Balloon. An 18" pressure valve, of standard design, for use in Airships, is inserted in the lower part of the ballonnet and a simple check valve is inserted in the air scoop to the ballonnet. While there are several other changes made necessary in order to make the two above mentioned major changes function properly, as the closing of small vent holes, insertion of inflation sleeve and manhole into the ballonnet, etc., they will not be mentioned here.

In the ordinary Types "R" and "M" Captive Balloons, the envelope is divided by a diaphragm into two compartments. One contains the buoyant gas and has no opening to the atmosphere during flight, except at such times as when the valve opens to allow the escape of gas due to excess pressure. The other compartment, termed the ballonnet, is at all times open to the atmosphere thru a 24-inch hole, located toward the nose of the balloon. This hole has a scoop constructed in such a manner as to catch the wind, thus tending to create a pressure in the balloon which is at all times equal to, or greater, than that exerted by the action of the wind upon the nose of the balloon. It is apparent, from the above, that the diaphragm separating the gas and air compartments, whose construction allows of its taking the shape of the bottom of ballonnet when the envelope is inflated to full capacity, acts in such a manner as to allow the expansion and contraction of the gas without loss, within the limits of the capacity of the ballonnet, namely, 7,000 cu. ft.

It would appear that this arrangement as at present in use, would allow the operation of this class of balloon with no loss of gas, that is to say, that 7,000 cu. ft. would be available for expansion of gas due to temperature and altitude changes; but, in practice, this is not the case. What happens is, that the balloon, before being brought from hangar, or bed, in the morning, must be sufficiently charged with gas to maintain its shape, while close to the ground where the air scoop communicating to the ballonet is unable to perform its function of maintaining pressure to counterbalance the effect of the ground wind. Upon ascending to altitudes, it loses gas directly in proportion to the expansion of gas due to decreased atmospheric pressure, then later, when the sun appears and warms the gas, another expansion occurs with consequent additional loss of gas.

Now, turning to consider the action of the Balloon with the changes as outlined above:

The gas compartment is charged only with sufficient gas to fill the envelope under conditions of maximum expansion, namely, the maximum temperature and altitude which it is anticipated will be encountered. The ballonet is inflated with air and maintained under pressure at all times while in the hangar. Upon the balloon being taken out for flights it is found very convenient to handle, - men from both the windward and leeward sides being able to apply their force under all conditions. As the balloon goes up, the air in the ballonet is valved; likewise, when the sun causes expansion of the gas, air is valved; not gas. Upon descending the action is identical with that of the Standard Types "R" and "M" Balloons, as the gas contracts, air enters thru the scoops into the ballonet, thus causing sufficient pressure in the gas compartment to maintain the form of the balloon. The additional weight involved amounts to not over 17 pounds for this scheme.

From the foregoing brief account, an idea may be obtained of the functioning of this extremely simple arrangement. After the tests are completed and the final recommendations of the Officers in Charge of this experiment are rendered a more detailed account will be given.

STATEMENT CONCERNING HELIUM PRODUCTION

In connection with the recommendation made in Report 484 on H.R. 8819, to the effect that the practicability of securing helium at a reasonable price in large quantities be inquired into before further experiments are made at Fort Worth, the following information concerning the development of the helium program in the United States is herewith submitted.

It is desired first, however, to state that the program for helium production was entered into by the Government only after it had been exhaustively considered from every angle and had been approved by engineers of international distinction. Representatives of the British Government conferred with officers of the Army and Navy and with experts of the Bureau of Mines upon the subject and the advice and cooperation of some of the country's most eminent technical men were secured.

Up to the present time hydrogen has been practically the only gas used for filling balloons. As far as buoyancy is concerned it is the ideal gas for this purpose, as it is the lightest of known substances. On the other hand, however, hydrogen is extremely inflammable, and before the war had progressed very far it was discovered that airships filled with it were so easily destroyed by incendiary bullets that such craft could be used only where they could be effectively protected from attack by this weapon.

The officers responsible for the air service activities of the belligerent countries had been continually seeking for some non-inflammable substitute for hydrogen but the various attempts made to utilize non-inflammable gases in balloons were unsuccessful on account of their relatively great weight. Then the possibility of obtaining helium in practicable quantities appeared.

Helium is next to hydrogen in buoyancy. Its weight is but twice that of hydrogen, so that in balloons, compared with the far heavier enveloping air, it exerts a lifting power of about 92% of the lighter gas. Since it is also absolutely non-inflammable, in it has been discovered the all-round ideal ball gas so long sought by scientists.

Before the war the price of helium was approximately \$1700 per cu. ft., and only extremely small amounts of it could be obtained, even at this figure. After the British entered the war they considered the feasibility of obtaining helium from their mine gases and of separating it from the natural gas issuing from certain wells in Canada. It was not found in the former, and the small helium content and nature of the latter made the separation very difficult.

Helium was first found in natural gas in Kansas, in 1907. Very soon after the United States entered the war, the Navy, Army and Bureau of Mines became interested in the project of obtaining it from this source for the use of lighter-than-air service of the United States. This work was considered of the first importance on account of the great tactical advantage which the allied forces would possess equipped with aircraft so vastly superior to those of the enemy that attack by the latter would prove extremely difficult and hazardous. On July 31, 1917, the first allotment of \$100,000 was made from Army and Navy funds for helium production on an experimental scale, this measure being recommended by the Aircraft Board. Various other allotments for this purpose have been made since that time. The total sums involved, which have been spent, or are allotted as sufficient to carry on the helium program up to July 1, 1920, are approximately as follows:

Plants 1 & 2 & Lab.	Plant #3	Production Plant #1	Conservation and Research Program	Pipe line
\$641,700	\$751,375.88	\$5,201,951.55	\$50,083.50	\$90,000
GRAND TOTAL - \$6,735,110.93				

The most marked improvement in the methods of obtaining helium has been made since the Government's program was originally started, and the present cost of its separation on an experimental basis is so low that in time of war, aside even from the tactical advantages its use in balloons will afford, money will actually be saved by its large-scale production, and substitution for hydrogen, by reason of the greater immunity from fire risk. And it is probably not too much to say that, in the not distant future, the production cost will be so much further lowered that, even in time of peace, its use will be indicated both on account of the greatly reduced fire risk just mentioned, and the reduction of hazard to human life.

Since the world's supply of helium is apparently limited, however, it is probable that hydrogen will continue to be employed by the Air Service in certain types of balloons, while helium will be used only in other types in which its peculiar characteristics insure decided advantages. It has also been found that hydrogen in certain percentages can be mixed with helium and so used as a balloon gas without risk of inflammability, and helium may be employed as an enclosing safety envelope for hydrogen-filled balloons.

What has been said above relates but to one of what may be many important uses of helium in war and in peace. Up to recently the amount produced was so minute in quantity that helium was not much more than a laboratory curiosity. Therefore, its range of properties and the consequent possibilities for its useful application in science and the arts could not be fully determined and developed, and only now is such research work made a reality.

In view of the above considerations, and of the progress already made in the production of this remarkable gas, it would be a disastrous policy on the part of the Government, to in any way discourage further developments of the helium program, as this program offers the possibility of ultimately reducing the expense incident to the maintenance of the armed forces of the country, while at the same time, furnishing a weapon of the greatest value.

DEVELOPMENT IN HELIUM PRODUCTION ✓

As above stated, the price paid for helium before the entry of the United States into the war, was approximately \$1700 per cu. ft. It is probable that not over 100 cu. ft. had been isolated in the world.

After our entry into the war three experimental plants for the production of helium from natural gas obtained from the Petrolia pool, at Petrolia, Texas, were erected. Two of these, known as plants 1 and 2, were located at Fort Worth, the gas being supplied through a pipe line from the former place, and the last plant, known as Plant #3, was established at Petrolia. Plant #1 was erected and operated in cooperation with the Linde Air Products Co.; Plant #2 with the Air Reduction Co., both of New York.

During the operation of these plants approximately 225,000 cu. ft. of helium was separated from the natural gas, this helium being contained in mixture varying from 60% to 92% purity. While helium of 92% purity is suitable for use in balloons, that of lower purity must first be brought up to approximately this percentage before it can be so employed.

The cost of producing 1 cu. ft. of helium in a mixture of 92% purity in Plant #1, the most successful plant to date, was about 39¢. This shows an extremely remarkable reduction in the price of producing helium especially when the fact that this was an experimental plant, and was not of such proportions as to give lowest cost, is taken into consideration.

After helium of 92% purity was produced in Experimental Plant #1, the Navy acting for the Army and Navy, entered into a contract with the Linde Company for the erection of a large production plant at Fort Worth. This is now practically completed, and it is expected that it will be in operation in the near future. Plants 1 and 2 having served their experimental purpose, have now passed out of existence.

The cost of producing helium in the new production plant, as estimated by the Navy Department, which is in charge of its construction and operation, is 5.22¢ per cu. ft. This indicates that this plant will produce helium at about 1/7 of the cost of production in the experimental plant. This figure is so low that in time of war the Government will save money by using a maximum of helium as a balloon gas, as the reduced loss of balloons will more than off set the increased cost of the gas over hydrogen. This statement is based on estimates prepared in France by the Air Service during the World War.

Plant #3, located at Petrolia, Texas, is still in the stages of experimental development. It is, however, of such a size that, if the experiment is successful, the plant can be used, without further change, for the commercial production of helium. In this plant an attempt is being made to develop an entirely new process of gas separation, and those in charge of its operation have reason to believe that it will bring the cost of producing helium down to a very low minimum.

The cost of hydrogen used by the Air Service during the World War, was, on the average, 1¢ per cu. ft. While hydrogen can, under favorable conditions, be produced at prices considerably less than this, the figure of 1¢ per cu. ft. gives the actual cost of the hydrogen used during the war, as obtained under war conditions.

In view of the fact that the cost of helium has been very remarkably reduced in the last two and a half years, and further, in view of the fact that its probable cost as produced in the gas plant at Fort Worth will be so low that, everything considered, it will be cheaper for the Government to fill balloons with helium rather than with hydrogen; again, since helium provides the United States with a weapon of warfare which, so far as is known, is not available to any other nation, because nearly all of the practicable supplies of helium so far discovered are contained within the borders of the United States, and on account of the anticipated further considerable reduction in the cost of helium below the present figure, it seems that it is extremely inadvisable to take any action at the present time which would in any way delay or interfere with the proper carrying out of the helium program of the Army and Navy.

In addition to the above it must be remembered that the natural gases containing helium are being continually consumed for domestic and industrial purposes. It, therefore, behooves the Government to expedite in every possible way the development of processes for separation of helium before it is irretrievably lost.

ESTIMATED COST OF OPERATION.

PLANT #3. (Norton Process)

Petrolia, Texas,

. Figures based on the cost for May, June, and July, 1919.
(Not including fixed charges)

<u>Direct Cost</u>	<u>per month</u>	<u>Per 1000 ft. he.</u>
Salaries.....	\$2795.12	3.72
Power, water, gas and light	1600.00	2.13
Maintenance	1698.27	2.26
Supervision & Miscellaneous	725.29	.96
 <u>Indirect Cost</u>		
Grounds & buildings	877.00	1.15
Office Expense	718.18	.94
Garage	613.75	.82
Laboratory	713.69	.92
 <u>Estimated cost.</u>		
Power 2,200,000 KWH per mo.	26460.00	\$24.55
Gas 16,000,000 cu. ft. per mo. @ 17¢ M (10% loss)	2720.00	2.27
Labor (107 men @ \$160)	17120.00	14.27
Supplies	10000.00	8.33
Linde Fee	2500.00	2.83
	<u>61800.00</u>	<u>52.25</u>

Pipe line cost \$1,617,952.04
Cost of Linde Plant 1,559,409.51

Forsword: The following story of a free balloon flight over Texas is so full of human interest that the publisher feels that any attempt to rewrite it would make it less effective.

"FREE BALLOONING OVER TEXAS".

A Free Balloon left Post Field, Fort Sill, Oklahoma at 5:30 P.M., February 25th, 1920, with Lieut. William H. MacIlwain as pilot, and Lieuts. Arthur J. Crowley and William T. Agee, Sgts. John B. Hellen and Burns M. Shaller as passengers, with a steady wind of 25 miles per hour blowing from the North West. The take-off was uneventful, the balloon ascending evenly and the atmospheric conditions were so exceptionally good that the party immediately started plans for their visit to Galveston, or Corpus Christi, either town would do for five tired aeronauts to recuperate in after so long a journey.

Little did we think after such a splendid take-off and such a steady wind blowing us on our intended course as twilight was closing in, of the thrilling adventure and hair raising escape that the following day would disclose to one of our party.

The night was cold, and as no exercise could be taken, the party amused themselves, or rather the Pilot amused us and at the same time warmed our blood by numerous contacts with the ground, fences, telegraph poles, wires, trees and in fact, anything that came in our path. As this was the first Free Balloon Flight for Lieuts. Crowley and Agee, and Sgt. Hellen, the exclamations proclaimed by them, while being numerous, they were also instructive and were highly appreciated by all. Later in the evening, we ascended to a more comfortable altitude, and while soaring over the numerous lights of small villages and hamlets, we told stories and sang songs until one by one the occupants curled up in the bottom of the basket, and while floating smoothly along, gradually went to sleep.

The Brazos River was crossed at midnight and as all of our ballast had been thrown overboard, we were compelled to let down the drag-rope, spending the rest of the night in a rocking basket. No lights greeted our casual glance over the edge of the basket as the wind had veered, and our course now lay over the desolate lands of Texas. Mile after mile, was covered with no signs of lights, no farm houses, illuminated by the pale light of the stars, no barking dogs to greet us as we wended our way through the chill heavens. Nothing but the ghostly forms of trees, knolls or rocks wished us God-speed on our lonely journey, and it was a happy crew, when at 5:30 the drag rope finally caught and held us so as a descent was made possible.

(With the usual to Briggs) 'Oh Boy! Aint it a grand and glorious feelin' when after a cramped night in the basket with your feet most frozen, you land, even in the wilderness, and get a chance to relieve those stiff muscles and to toast your tootsies by a roaring camp fire'. This we did after firmly anchoring the balloon to a tree, and the hot hams and steaming canteens of tea and coffee set our spirits all right and our appetites at ease.

The sun rose at 7:30 but seeing such an unusual sight as a balloon tethered down in the wilds of Texas, soon hid his face behind a cloud, which made the resumption of our flight with five passengers impossible. However, Lieut. MacIlwain, being too kind hearted to leave any one on the plains with no habitation in sight, loaded us all on, and we tried to ascend. Everything that could be called ballast was thrown out but with no avail, and as the basket was playing hide and seek among the trees, and with each crash threatening to send us to our future home, we grabbed onto a handy tree and again anchored down.

With the exception of Lieut. MacIlwain, all extricated themselves from the basket, and the pilot took this opportunity to remove the branches and debris that had collected while playing among the mesquite trees. The only ballast available at this location consisted of small stones and pebbles, and after five small bags of this substitute had been passed up to the Pilot, we were ready to try it once more. During the interval, Lieuts. Crowley and Agee had proceeded to a hill one quarter mile west of our landing to determine whether it would be possible to leave two of our passengers at this point. While they were observing from this hill, the wind had been steadily increasing, and at times the huge bag came in contact with the ground.

Suddenly -- there was a ripping heard. The connection between the drag-rope and the distributing ring had given away, and before the pilot could collect his thoughts, the balloon was 500 feet in the air. The ghastly expression of a corpse is florid compared with the bloodless expression shown by Lieut. MacIlwain as the rope holding him to the ground broke and he sailed skyward at the rate of an express train. "Good bye, boys", he shouted, and by the time we had regained control of our wits, and realized what had happened, the monster bag had ascended to such a height that it appeared the size of a pin head.

Looking upward toward the bag, the Pilot noticed that the cord used for tying the appendix, to prevent leakage of gas while the balloon is anchored, had broken, and the appendix was tied, preventing the gas from leaving the bag which was rapidly expanding. Wrapping the valve line about his waist, he sat in the bottom of the basket valving at intervals. An equilibrium was reached at 17,000 feet, and a rapid descent was experienced, until within 5,000 feet of the ground, where three bags of ballast were dispensed with. The check in the descent was quite noticeable and, although the basket came in contact with the ground at a terrific rate, the Pilot was uninjured. The Good Lord was heaving sand during the descent, and the Pilot made his first earnest prayer.

As the country was still desolate, not a friendly farmhouse in sight, the Pilot continued his trip westward. So much gas had been lost during the ascent, that the balloon would hit the ground at approximately every thousand feet. This crashing and bumping was maintained for fifty miles, and the Pilot was sent to the bottom of the basket so often that he thought his efforts to reach a town fruitless, and he finally decided to land.

The basket was about to crash into a huge boulder on the side of a hill and at this point the bag was ripped. This occurred about 9:30 A.M., and when a solitary cowpuncher peeped into the basket at noon time, he presumed he was looking upon a dead man, until he was greeted with a dismal "Hello".

You have felt that sinking sensation in the region of your solar plexus after something unexpected happens. The feelings of the quartet left on the ground were akin to that as the realization of our predicament fully dawned upon us. We felt no anxiety for Lieut. MacIlwain, as the old balloon Pilot would come out all right. Surely five bags of ballast would check his descent no matter what height the balloon attained, but it was ourselves which caused us the most worry. With no idea of where we would find habitation, we started in the most likely direction, and found a road after an hour's hiking.

Six foot-sore miles which must have been appreciated by Lieuts. Crowley and Agee as their footgear was stiff and new, finally took us to a farmhouse where we were informed that the nearest railroad was Haskell, 35 miles northwest of us. One invitation to a hot breakfast was all that was necessary to a crew of tired men like us, and the fried ham and eggs, hot biscuits with home made preserves, coffee with real cream tasted better than any meal we have ever eaten. We were told, that had our flight lasted a half hour longer, a 40 mile walk to civilization would have stared us in the face. A Cadillac was secured to take us to town, where after a few hour's rest in a country hotel, we secured 'uppers' on the M.K.& T. railroad to Wichita Falls.

After being found by the lone ranger, the Pilot was put on a horse and taken to the farmhouse of Mr. Schaffer, about seven miles from the final landing. Partaking of a good bath and a real breakfast, he obtained help and returning to the balloon, it was packed and hauled to the town of Stamford, Texas, 23 miles west. The train north left Stamford at midnight, carrying one passenger who reclined in his berth, and decided that this is a good old world after all. Just on the point of slumber, he was rudely awakened by four disreputable looking persons who claimed that they had been on a balloon flight with him. After minute inspection, their statements were verified, and the journey back to camp was made in a happy state of mind.

NEW TYPE OF RIGID AIRSHIP DESIGNED BY THE AEROCRUISER COMPANY.

The Aerocruiser Company of America with headquarters in Washington, D.C. have designed a new type of rigid airship, which is entirely a new idea in aeronautics over the stereotyped shapes of machines which are fixed in the minds of flyers.

Its formation may best be described as that of a thick inverted "U". It is claimed by the inventor that the channel formation lessens resistance thereby materially assisting in clearing through the air. The four power plants will produce 1000 H.P. and are located in the channel. This places the driving power where it belongs nearer to the center of resistance and incidentally adds materially to the speed of the airship.

The framework of the machine is of the double Howe Truss Type which gives greater strength and rigidity to the airship which will allow the installation of heavier and higher powered driving plants. The engines are of special design having 16 cylinders hooked together in tandem type, and weigh approximately 3,000 lbs. each. The engine units are designed to develop 1000 H.P. each at 1200 revolutions and will drive the machine 100 miles per hour or better thru the air.

Due to the formation of the airship greater gas capacity may be obtained, streamlining to such fine degrees as applied in the Bodensee are deemed unnecessary. A 530 foot airship of this type will weigh approximately 135,000 lbs. and have a gas capacity of 3,800,000 cubic feet.

The machine is designed to carry not less than 200 passengers and is fitted with a double deck cabin with all modern conveniences. The Aerocruiser Company built a model to scale of the 530 foot type driven by electric motors. All Air Service officers are invited to call at their offices at 416 Union Trust Bldg., Washington, D.C., to see this machine.

FAREWELL BALL GIVEN BY 10th SQUADRON AT BOLLING FIELD

The 10th Squadron Ball, which was held at Bolling Field on Thursday March 4, 1920, will be long remembered by those who attended. It was the first Squadron affair to be held at the field and was held as the farewell to the members of the Squadron who are leaving the service within the next two months.

Upon entering the ball room the gaudy decorations and the clever naming of the different parts of the room struck one as original and clever. The entrance was post number one, the band stand the guard house, the refreshments stand the mess hall, the cloak room the supply department and other parts in similar resemblance were named Officers' Club, Hangar 5, Engineering Department, the Dope shop, etc.

The dance programs were the next surprise in store and much merriment and comment was created by them. In addition to having the names of the entire personnel of the squadron the dances were named in a peculiarly Air Service way. One complete flight being depicted in the following order:- The tenth Squadron Grand March, Taxying Out Waltz, Take Off Fox Trot, Banking Paul Jones, Zooming One Step, Looping Waltz, Wing Over Fox Trot, Barrel Roll One Step, Whip Stall Waltz, Falling Leaf Fox Trot, Tail Spin One Step, Side Slip Paul Jones, Ground Loop Fox Trot, Ambulance Ride Waltz, and Survey One Step.

The Ball opened several minutes after the arrival of the guest of honor, General Wm. Mitchell, and party, General Mitchell and Mrs. Mitchell leading the Grand March upon being requested to do so on behalf of the 10th Squadron by the Squadron Commander Lieut. Leo F. Post.

A short talk was given by General Mitchell immediately after the Grand March, upon the past and the future of the Air Service activities, especially complimenting the men for their past performances and giving them an insight into the future activities. The talk was greatly appreciated by all as this was the first occasion that they were able to get first hand information from competent authority.

The jazz band kept the guests busy from then until the next event, which certainly came as a surprise to all. A sketch "Breaking into the Air Service" written and produced by members of the Tenth Squadron, was the surprise which kept the audience laughing from start to finish, depicting in a humorous way some events in a day's work in the Air Service.

The Squadron Doughnut Kings came next with their Airplane Wheel Doughnuts, Laminated Ham and Lettuce Sandwiches, Doped cheese sandwiches, High Test Gasoline Punch, Liberty Motor Oil Lemonade, and the Shock Absorber Marshmallows, which nearly caused a riot in the bread line.

From the comments that were heard after everything was over we must draw the conclusions that the Tenth Squadron are "some entertainers and hosts" and earnestly hope that not too long a period of time elapses before the Squadron again entertains.

NOTES OF INTEREST ON SQUADRONS ON THE BORDER

Aerial Mapping at Ft. Stockton

Captain M.P. Taylor, Engineer Corps, Lieutenants W.H. Beaton and R.J. Scherzer, Air Service, have left Kelly Field, Texas for the purpose of mapping the vicinity in and around Ft. Stockton. A landing field had been previously prepared by a detachment of the 464th Aero Squadron.

The Bagley camera equipped with three lenses is being used. All photographs were taken from an altitude 10,000 feet above the Fort Stockton datum, which is about 3,000 feet, making an elevation of 13,000 feet above sea level. Needless to say, at this altitude the temperature during the winter months is uncomfortable to say the least, and after a couple of hours one is quite ready to come down and thaw out. From ten thousand feet one exposure of this type camera covers an area six miles in width by one and a half miles in length. Allowing for an overlap of fifty percent, it is possible to cover a strip of territory six miles wide and one hundred and twenty five miles long, at this altitude.

The territory to be photographed around Ft. Stockton had never been mapped, and the work was to be done in line with the progressive military mapping policy in the Southern Department. The area included was about 30 miles wide and 60 miles long east and west, 1800 square miles. Eight rolls of film, or about 300 feet, were used in photographing the area. As there were no existing maps of the area, it was found quite difficult to fly a parallel course properly. Also there seemed to be a scarcity of prominent land marks that the pilots might use in identifying the country.

To obtain the best results in photographic mapping work of this kind, it was found necessary to do the work between the hours of 10:00 A.M. and 3:00 P.M., at least at this time of year when the light is none too strong at the best. Working from 10,000 feet, a perfectly clear atmosphere is essential to secure the best results.

1st SURVEILLANCE GROUP

Two simulated Artillery Regalage problems were carried out this week, using smoke pots to simulate firing of battery and bursting of shells. On Monday, Flight A., 104th Aero Squadron handled the air work and Flight B., 12th Aero Squadron performed the necessary work on the ground. On Tuesday the 12th Squadron did the air work and the 104th Squadron, ground work. Liaison work with the 7th Cavalry is being carried on three times each week, and it is planned to work with the ground troops in the near future on an extensive maneuver of some sort.

Necessary communications were established for the simulated artillery shoots and other problems carried out thru the week. Exceptionally good results were obtained from the Radio sets, and no failures experienced.

FIRST DAY BOMBARDMENT GROUP

During the week ending February 26th the First Day Bombardment managed to get in 114 flights for a total of 136 hours and five minutes. The week activities included Cross Country, Artillery Adjustment, Cloud Flying, D-R Signalling, Formation Flying, Radio Telegraph and Telephone, and Camera Obscura practice.

The Group has started ferrying the new D.H. - 4 B's to the Border. These ships are being tested by Lieutenants D.H. Duntonaud, and Paul Davis. On Thursday Lieutenants Bell and Osborn of the 20th Squadron ferried B's to McAllen, Texas, on the Border. They encountered hazy atmosphere twenty minutes out of Kelly Field and flew compass course which took them directly over and to their objective. They report that they soon became accustomed to the charged pilot seat and that they like the ship much better than the old D.H.-4, on account of the better visibility and its undoubted safety features.

12th AERO SQUADRON.

In addition to the usual Border patrols to El Paso and Nogales a daily Cavalry Liaison has been held with the first Cavalry which is now on a two week's practice march to Nogales and return. The 1st Cavalry, less Troop "L" and Machine Gun Troop, under command of Colonel G.H. Preston left Douglas March 3rd. The daily march will be about twenty five miles a day; camp will be made at Osborn, Hereford, Fort Huachuca, Nogales, Patagonia, Tucson, Benson and Warren, and return to Douglas. Lieut. George P. Johnson, A.S.(A), Observer is acting as Liaison Officer with the Cavalry. An average of ten panels are displayed by the Cavalry. Communication is established by dropped messages and radio. The Cavalry has improvised a radio truck, furnished and equipped by this Flight. All Regimental mail is delivered to the troops while on the march. As the march is conducted along simulated wartime conditions, this has been a splendid training for both pilots and observers.

FLIGHT TO ALBUQUERQUE

Lieutenants Smith and Liebhouser of the 104th Squadron and Lieutenants Knapp and McCarron of Flight "B" 12th Aero Squadron; flew two fully equipped planes to Albuquerque, New Mexico, to give exhibition flights in connection with recruiting drive on March 5th. The field at Albuquerque is very narrow, the long way being into the prevailing wind. But on the 5th the prevailing wind did not prevail but a very strong wind was blowing across the field. Lieut. Knapp landed first and in the short field he had to ground loop to avoid head collision with the fence but his right wing hit the fence and crashed the end of the lower panel. Lieut. Liebhouser seeing Lieut. Knapp's misfortune did not attempt a landing in the regular field but landed safely a mile out side of town. Lieut. Liebhouser and Lieut. Smith put on the show as per schedule.

NIGHT FLYING A SUCCESS

Lieut. Milo McCune accompanied by Lieut. Rex Stoner in a night flying trip on Tuesday evening for the purpose of signalling to the ground by means of a light. The signals at the rate of eight words a minute could be easily read while the plane was flying at a low altitude ranging from one to two thousand feet. The plane was equipped with landing flares but the moon was so bright that it was not necessary to release them.

FLIES ALMOST 2 3/4 MILES A MINUTE

Lieut. Everett Davis of the 8th Aero Squadron flying a DH-4 B made a flight from Kelly Field to McAllen Texas covering the distance of 256 miles between the two points in 100 minutes - approximately 2 3/4 miles per minute. This is probably the best record made to date.

BOMBING PRACTICE

During the week two bombing missions have been sent out from this Airdrome at McAllen, the objective being a salt lake about 35 miles N.E. of the Airdrome. Sixty bombs, (dummies) were about dropped from an altitude of three and four thousand feet with good results and no misses. Many of the dummy bombs failed to explode when dropped in water but the splash is sufficient to show where they strike.

ACTIVITIES OF 7th AERO SQUADRON, FRANCE FIELD, PANAMA

Four flights of two planes each were sent out during the week to keep in touch with a hunting party headed by Lieut. Col. M. F. Harmon, Jr. which was operating in the interior of Panama near the Chepo River. All four flights were successful in locating the party and dropped messages to them. An attempt was made to receive visual messages from them, which was partly successful. Two different schemes were tried. In the first, a dash was sent by holding flags horizontally from shoulder to side, and by holding the flag horizontally and straight to the front a dot was intended. This system was unsuccessful inasmuch as the observers found great difficulty in discerning the dots, due partly to poor background and also to the fact that the flags were too small. The second plan tried was with a small white panel four feet long and three feet wide, each end being fastened by a light wooden strip to keep panel spread out. This was used as a shutter, to be opened and closed by hand, one second being allowed for a dot and three for a dash. Altho some messages were received in this scheme, in order to send them with any degree of certainty and have them interpreted correctly by the plane, considerable practice on the part of the sender is necessary, for in the experimental messages it was almost impossible to perceive the end of a letter, and in most cases it was more guess work on the part of the observer. The chief trouble in receiving messages from the ground sent by the dot and dash system is an almost impossibility to keep the sender in sight sufficiently long to receive one word.

Due to the density of the jungle over which most of our flying in this region must be done, 1st Lieut. R.C.W. Blessley, Officer in charge of flying has issued instructions that two planes will go on every mission so that in case one has a forced landing the other can locate where such landing has been made, and a party sent out on the ground to attempt a rescue.

Information Group
Air Service

March 30, 1920

Building B
Washington, D.C.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.



FOR RELEASE MARCH 31, 1920

REPORT OF THE HANDLEY PAGE COMPANY PROGRESS ON COMMERCIAL AVIATION

Since the inauguration of civilian aviation in Great Britain on May 1st 1919, until February 26th, 1920, the records of the Handley Page Commercial Aeroplanes are as follows:-

Total number of passengers carried	4,170
Total amount of freight carried	47,776 lbs.
Total mileage covered.....	80,818 miles.

The above figures include passenger flights at Cricklewood, London; in the United Kingdom and foreign countries, and passengers and freight carried on the London, Paris and Brussels Air Service.

LONDON-PARIS & BRUSSELS AIR SERVICE

On the Handley Page Continental Air Services between Sept. 2nd 1919 and Feb. 26th, 1920, 976 passengers and 46,383 lbs. of freight have been carried over a distance of 71,369 miles.

ACCELERATING THE LONDON-PARIS SERVICE

The acceleration of the delivery of freight and the conveyance of passengers, which has resulted since the Handley Page aeroplanes have been utilizing Cricklewood Aerodrome, as the departure and arrival station for machines flying on the Continental Air Services, illustrates the extreme value of an aerodrome with geographical and meteorological advantages.

Pilots flying to and from Paris or Brussels by entering London from the North can now avoid the Surrey Hills, which in the past have often caused delay, when mist or low clouds are about and bad visibility has made them difficult to cross. Its high position renders Cricklewood Aerodrome comparatively free from mist, and it is often possible for machines to depart or land when lower lying districts are enveloped in fog.

The waters of the "Welsh Harp" and the railway line are unmistakable landmarks for aviators nearing Cricklewood, and no time is lost in endeavoring to locate the aerodrome.

LINKING TRAIN AND AEROPLANE

Now that the Handley Page aeroplanes arrive at Cricklewood Aerodrome from the Continent, it is possible to link up the railway with the London-Paris air route, so that freight continues its journey with the shortest possible delay. The Midland Railway Station being only a few hundred yards from the aerodrome, cargo which has left the Continent at mid-day arrives at Cricklewood at 3 P.M. is quickly passed through the Customs Offices, situated on the aerodrome and the same evening is being carried North in an express train for delivery in the Midlands.

HANDLEY PAGE IN SCANDINAVIA

The recent demonstration flights of the Handley Page aeroplane in Scandinavia have roused considerable enthusiasm for aviation in that country, and much aerial activity is anticipated in the near future.

Owing to the lack of development of the railway system there is great scope for aeroplanes and flying boats, to link up the large number of coastal towns and those in the interior which have practically no railway facilities at all. Most towns on the coast have to depend on steamers or road vehicles as methods of transport, and some Northern localities cannot be reached from the interior under four days. An aeroplane could reduce such journeys to a few hours.

BULLOCKS DISLIKE OF AEROPLANES

The Handley Page aeroplane which has been successfully demonstrating in Spain, flew back to Cricklewood recently from the Sunny South.

Amongst the pilot's most amusing experiences in Spain was the utilization of teams of bullocks to pull his machine into position on the aerodrome. The animals were quite docile when the engines were not running, but they became so terrified at the roar of the Rolls-Royce that no form of persuasion could drive them near the aeroplane.

CHARACTERISTICS OF HELIUM GAS

1. Characteristics. The characteristics of gases, for balloon uses, are practically identical for both Hydrogen and Helium, except that under Paragraph 9, the lift of Helium resulting from the use of the formula and the calculations illustrating the lift of hydrogen will all be modified for the lifting power of "Balloon Helium" which is 85.8% that of Hydrogen. Characteristics of lifting power and underlying facts governing same follow:

2. The following figures are based upon the assumption that the impurity in the Helium is Nitrogen which is practically true of Helium fresh from the gas fields.

Commercially pure Helium has 92.6% lift of pure Hydrogen.

90% Helium and 10% N itrogen has lift of 83.7% of pure hydrogen.

85% pure Helium and 15% Hydrogen has lift of 93.4% of pure hydrogen.

85% of (90% pure) Helium and 15% pure hydrogen has lift of 85.8% pure hydrogen and is designated as "Balloon Helium".

85.8% of 75.14 or 64.4 lbs. is the ascensional force for 1000 cu. ft. of "Balloon Helium" and is the lift corresponding to 75.2 lbs. per 1000 cu. ft. for 98% pure hydrogen.

NOTE: Nitrogen will gradually be eliminated from "Balloon Helium" with each repurification and the Helium will approach 100% purity, except for that hydrogen remaining from the "Balloon Helium". The tendency is for Helium to gain in lifting power with use and consequent repurification up to 71.1 lbs. per 1000 cu. ft. for a balloon mixture of 85% (100% pure Helium) and 15% of (98% pure) Hydrogen.

SECTION 11

1. Occurrence and Sources. Helium, the lightest of absolutely inert gases, occurs in the air in proportion of 0.000056 per cent by weight, or about one (1) volume of Helium, in 250,000 volumes of air. It also occurs in many minerals including monazite sands, in the gases of many mineral springs, and in comparatively large quantities in several of the natural gases of Canada and the United States, particularly those in Kansas and Texas. Of late, emissions of Helium in comparatively large quantity have been reported from boric acid saffions of Lardorello, Tuscany, Italy.

SECTION III

1. Physical and Chemical Properties. Helium is a colorless, odorless gas in its pure form and, next to Hydrogen, is the lightest known element, having a specific gravity of 0.137 when air is 1.

Weight per cubic foot is 32° F. plus 29.92" Bar. (0° plus 760 mm) is .011056 lbs.

Cubic feet per lb. at 32° F. plus 29.92" Bar. (0° plus 760 mm) is 90.425 Cu. Ft.

Specific gravity 0.137 (nit = 1)

(Assuming air to contain 20.9% oxygen by volume)

Thermal conductivity C°G. (Silver =1) 0.000339

Valence 0

Atomic weight 3.99

Atomic symbol He.

Molecular formula He

Freezing and melting point - 268° C.

Boiling point - 268 1/2° C.

Density of liquid Helium 0.122

Critical pressure 2.75 atmosphere.

Rapid evaporation of the liquid causes a temperature below 2.5° absolute, or 270.5° C, but there is no indication of the formation of a solid. Up to the present time, Helium has resisted all efforts to combine it with other elements. The spectrum of Helium is characterized by a strong line in the yellow (which has been shown to be double) and a dark green line. In its physical behavior Helium is the nearest approach to the ideal perfect gas. The diffusion of Helium through rubberized fabrics is approximately 65% that of Hydrogen, while through goldbeaten skin it is one and one half (1 1/2) times that of Hydrogen. 15% of Hydrogen can be mixed with Helium without danger of ignition. Helium alone being absolutely inert, it has no deteriorating effect upon balloon fabrics and is safe from combustion under all conditions.

SECTION IV.

1. Method of Handling. Helium production plants must of necessity be permanently located owing to the fixed source of supply and the heavy equipment required. Repurification Units, however, are being developed which will be mounted upon railroad cars, and in connection with a Truck Compressor Unit, will be highly mobile. The impure gas will be withdrawn from the balloon and compressed into cylinders, - these cylinders will then be transported to the nearest Repurification Plant which extracts the impurities at a rate of from 1000 to 2000 cu. ft. per hour of impure gas and recompresses the purified gas into cylinders, ready for transport back to the balloons.

SECTION V.

1. Processes of Production. Up to April 1918, Helium had been obtained only in extremely small quantities and for scientific purposes only, - the total amount probably not exceeding 100 cu. ft. at a cost of about \$1700.00 to \$2000.00 per cubic foot. At the present time, however, there are three (3) different trade processes, namely, Linde, Claude and Norton, capable of commercial Helium production, all alike in principle, but different in important details.

2. Linde Process: The Linde process is the process being installed in the production plant at Fort Worth, Texas, drawing its supply of Helium bearing natural gas thru a pipe line from Petrolia, Texas, ninety-four miles distant. In the Linde Process, as is the case with the Claude and Norton Processes, the liquifaction method of gas separation is used. Owing to the extremely low critical temperature and pressure of Helium, which is very much below that of any of the other gases involved, this method readily lends itself to the purpose in hand. The gases to be separated from the Helium are liquified and drawn off, allowing the Helium to escape in a gaseous state. In the Linde Process, the gas mixture to be separated is pumped at a very high pressure, say 1500 to 3000 pounds per square inch, into the apparatus and allowed to expand through a regulating throttle to a lower pressure which gives the refrigerating effect necessary, usually credited to the "Joule-Thompson effect" for the liquifaction of gases.

A discussion of the "Joule-Thompson effect" would carry us too far into theoretical physics, but it may help to explain the general effect of this process to say that the specific heat of highly compressed gases is usually less than that of the same gas at lower pressure, so that a given weight of gas under high pressure, in falling from one temperature to another will give fewer calories of heat than the same weight of gas, at low pressure, will absorb between the same two temperatures. From this it is evident that, on the whole, more heat will be carried out of the system by the issuing gases than is brought in by the incoming, with resulting refrigeration. These differences of specific heat, only become important at considerable pressures and that the pressure created for this purpose is practically wasted at the throttle as far as useful mechanical effect is concerned; makes this process decidedly inefficient from a thermodynamic standpoint, i. e. from the question of power consumption. Its chief merit is its simplicity and freedom from moving parts.

3. Claude Processes. The Claude process differs from the Linde Process in that the expansion of about four-fifths ($4/5$) of the gas takes place in an expansion engine, entirely outside of the cold chambers, thereby gaining greatly in efficiency over the free expansion of the gas within the cold chamber, by which method all the heat represented by the work performed by said expansion is retained within the cold chambers themselves. This process operates at from 400 to 600 pounds pressure per square inch, as against 1500 to 3000 pounds per square inch pressure required in the Linde Process, showing a decided saving of power over the latter. This four-fifths ($4/5$) of the intake gases, which are expanded through the engine, serves to furnish sufficient cold to liquefy the remaining one-fourth ($1/4$) of the gas which is then throttled into the chamber of lower pressure, where it rapidly evaporates, producing still lower temperature. Here it undergoes fractional distillation thereby separating the various gases, one from the other. This process was incorporated in an experimental plant at Fort Worth, Texas, during the war, but has never proved entirely successful for the extraction of Helium. The potential possibilities of the process, however, indicate that success will follow further development of this process. At the present time, a R.R. Repurification Plant is being constructed, using this process. The Repurification Unit is required, simply to liquefy out the impurities, consisting of Oxygen and Nitrogen, (mainly from the air) which collect in balloons through use.

4. Norton Process. The Norton Process differs from the Claude Process on three (3) important points, viz: (1) This system employs three (3) or more expansion engines, each doing work through a different range of temperature. The number of these temperature steps (expansion engines) depending upon conditions, increases with the total range of the temperature to be covered. (2) the pressures of the incoming and outgoing gases are but slightly different and the apparatus operates at about 300 pounds pressure per square inch, which is a measure of its efficiency. (3) the engines work upon the gases after their liquefaction and distillation, thus permitting all the gases to be so treated, and also insuring the expansion engines against easily frozen impurities entering the engine valve chambers and cylinders and greatly simplifies the whole problem of initial purification of the gas to be treated. The last named process has not, to date, produced pure Helium, but in view of its great theoretical economy, as compared with the Linde and Claude processes, experiments are being continued, with indications of a successful outcome.

SECTION VI.

1. Storage of Helium Gas. The information given in Sections 1, 2, 3 and 4, in regard to the storage of Hydrogen gas may be applied to Helium, with the following modifications: On account of the non-inflammability and the more expensive nature of this gas, where both Hydrogen and Helium are available at a Station, Hydrogen should be used to dry out and storage-charge any cylinders being prepared for storage, unfilled, as the cost of Helium is several times that of Hydrogen. No fire precautions need be observed with cylinders charged with Helium.

BRITISH AIR FORCES SUEDE HOSTILE NATIVES.

The Air Force unit which has assisted to break the Mullah's power in Somaliland, amounted to 23 officers and 159 other ranks under the command of Group Captain R. Gordon, Distinguished Service Cross; These numbers included a considerable medical staff equipped with a very complete hospital outfit. The aeroplanes with which the unit operated were 12 De Haviland 9's with B.H.P. engines. One of these aeroplanes was fitted up as an aerial ambulance to take a stretcher case with attendant.

Sanction was obtained for aerial operations and personnel and stores were enroute to Egypt, which was the assembly station for the unit. The war office assisted by permitting a flight of personnel to be withdrawn from Egypt for the operations and the Admiralty rendered important aid in ordering H.M.S. "Ark Royal" to embark the whole unit with its stores at Alexandria and take the direct to Berbera; the shipping difficulty was thus overcome.

Previous to the arrival of the main body of the expedition, advanced parties had been sent to Somaliland to complete administrative details, such as rations, evacuation of casualties etc., and to prepare aerodromes and advanced landing grounds for the purposes of the operations. Berbera was made the base, Bil Der Eban the main advanced aerodrome, with subsidiary landing grounds at Laskhrai and Nil Dab.

H.M.S. "Ark Royal" with the main body of the expedition arrived at Berbera and the erection of aeroplanes was at once pressed on in order that the Mullah should not get warning of the impending attack.

In a short time all was ready to bomb the Mullah whose headquarters were reported at Medishi, 200 miles east of Berbera.

It had been agreed between the Colonial Office and the Air Ministry that the first part of the operation should be purely aerial attack. Should this be successful in breaking up the Dervish, the local military forces would attempt to round up the enemy, capture his stock and destroy his forts. Everything went according to plan. The Mullah's Headquarters at Medishi and the fort at Jidali were located and bombed and machines descended to low heights and inflicted heavy casualties on the fleeing Dervishes and their stock. The attack was repeated later and the Dervishes were caught concentrated preparatory to moving off and heavy losses were inflicted and great panic created. The Dervish force was scattered among the hills and targets for aerial bombardment were hard to find, independent aerial operation therefore ceased, and the R.A.F. prepared to cooperate with the local military forces.

These troops took Jidali when it was ascertained that the Mullah himself narrowly escaped being killed in the first bombardment; his uncle being killed at his side and the Mullah's clothes singed. It was also reported that the Mullah with most of the Dervish leaders had broken south on this date. The Air Force again located the Mullah's party east of Bil Apweina and heavily attacked it, dispersing the Dervishes in great alarm. From this time on aerial operations took a normal course and the Air Force was chiefly employed in reconnaissance, propaganda dropping and in message carrying, which ensured good co-operation between the main bodies of the troops. These were spread widely over the Protectorate in the attempt to catch the Mullah, who was apparently making for Tale. This latter place was located photographed and bombed. A few days later it was ascertained that the Mullah had taken refuge in one of the forts of Tale. This position was captured but the Mullah with 70 horsemen escaped in the direction of Italian territory.

By the aid of the Air Force operations have been concluded in the space of three weeks. In this time the Mullah has been reduced from a power in the land with many armed and aggressive followers rich in stock to a fugitive accompanied by a faithful few. The problem which has exercised the minds of the Protectorate Government for 17 years, and caused an expenditure of millions of money has, it is hoped, been dealt with at a minimum of cost, and with practical-ly no casualties.

The general plan of the air campaign was prepared under the directions of the Chief of the Air Staff.

May 1920

NOTES ON MAJOR SCHROEDER'S RECORD ALTITUDE FLIGHT

Major Schroeder's successful altitude flight was the result of a long series of important tests in engineering development by the Engineering Division. This series of tests have disclosed problem after problem which had to be overcome in some manner before further advances could be made. Some of these troubles were:

The difficulty of delivering fuel to the carburetor against its varying pressure.

Difficulty of cooling at high altitude and of raising the boiling point of the water.

The problem of providing a drain valve to let the water out of the radiator at high altitude in case the engine stopped, so that the engine and cooling system would not be ruined by the water freezing and, at the same time, it was necessary for this valve to be arranged so that it would not itself freeze, making it impossible to operate it.

Major Schroeder had to invent and design special goggles which would not freeze over, in the intense cold at great heights.

A special instrument had to be developed to show the pilot how to handle his exhaust bypass gates, or, in other words, how to control the supercharger pressure in his carburetors without the need of making any calculations.

The Engineering Division has been most fortunate in having Major Schroeder to pilot the airplane throughout the supercharger development tests because he is, in addition to being a surpassingly good pilot, an excellent engine mechanic and is one of the few pilots who can really sit in an airplane and know what an engine is doing and what it needs, and, in this way, he has helped the development immensely.

Considerable trouble has always been encountered from pre-ignition when running with a supercharger, due to the fact that the air delivered to the carburetor is at very high temperature. Future designs of superchargers will provide additional intercooling between the compressor and the carburetors. The fuel feed system had, prior to Major Schroeder's record flight, operated quite satisfactorily but, in spite of this fact, it was necessary for Major Schroeder to close the vents in his gasoline tank and pump some pressure in them with a hand air pump in order to help the fuel pumps deliver the fuel at the extreme altitudes.

To reduce the pre-ignition which it was expected would be encountered on this flight, a specially prepared fuel was provided by Mr. Thos. Higgely, Jr., who has been developing "anti-knock" fuels for Mr. Kettering. This fuel proved to be of great assistance in this flight as it caused the motor to run much more smoothly than it would otherwise have done.

The supercharger used by Major Schroeder was the old original General Electric supercharger designed by Dr. Sanford A. Moss and originally tested on Pike's Peak in 1918, therefore, it is not surprising that no good means had been provided for blowing off the exhaust gases which issue from the turbine, consequently throughout all flights, the exhaust gas has bothered the pilot to a certain extent, due to the fact that it sweeps past his face. No way has been found to date to entirely carry the exhaust clear of the occupants of the machine. On this record flight, it seems that the gases expanded more rapidly as they issued from the turbine in the thin air at great altitude and in even larger volume swept past the pilot's face and, judging from the doctor's report, it seems that the carbon-monoxide poisoning gave Schroeder more trouble than the lack of oxygen.

In military work, an automatic oxygen feed apparatus is provided for the pilot which regulates the amount of oxygen in proportion to altitude so that the pilot need not think of making any adjustments. Major Schroeder had been in the habit of using a simple rubber tube from the neck of the oxygen flask to his mask in such a manner that he could adjust the flow by hand as he has often had trouble with the oxygen freezing up and stopping at high altitudes. On his record flight he knew he would be up for a long time and desired to use the automatic apparatus as long as he could and believed it would work to about 20,000 feet. He therefore took one bottle of oxygen connected through the automatic oxygen feed and one connected direct. However he found that the automatic apparatus did not work at all and he therefore had to start using his emergency bottle at about 18,000 feet,

and realized that it might run short but thought it would last long enough for him to accomplish his record. However, probably due to the large amount of exhaust gas he was breathing, Major Schroeder had to use an excess amount of oxygen. This, of course, resulted in his reaching the end of his supply sooner than he expected. It is believed that his sudden lapse into unconsciousness was due more to the poisoning from the exhaust than to the effect of the lack of oxygen.

It is an interesting fact that the instrument which shows the pilot what pressure his supercharger is delivering to the carburetor, showed a pressure something close to that of sea level even when he was at the highest point of the flight. The operation of the supercharger was excellent throughout the flight and it was found to be in good condition afterward.

Major Schroeder states that he actually reached warmer temperature at the top of his climb. The coldest temperature recorded was about minus 67 deg. F. and two or three thousand feet higher, at the top of his climb, the temperature was 4 deg. higher. He encountered the usual strong west wind which he has in every case encountered at altitudes above 25,000 feet. He believes the velocity of this wind to be close to 175 m.p.h., judging by the rate at which it drifted his machine eastward even though he was headed west and climbing at an extraordinarily high air speed due to the use of the supercharger. It is regretted that figures on these speeds cannot be given for publication.

It is an interesting fact that after a certain low temperature is reached, the exhaust gases issuing from the engine became snow white from the freezing of the vapor in it and from that time on, long white clouds formed by this exhaust are visible from the ground on a clear day such as the day on which Major Schroeder's flight was made. This results in ice forming on all the wires and struts coming in contact with the stream of the exhaust.

When Major Schroeder's oxygen supply finally failed, he raised his goggles in order to see more clearly to try and "coax" some more oxygen from one or the other of his tanks and at this moment, unconsciousness suddenly overtook him but not before he reached for his switch and put the machine into a spiral. He intended to make one steep spiral which would bring him down to about 20,000 feet above the ground, where he expected to recover, but, although he believed after his fall that he had succeeded in doing this, as a matter of fact, the plane fell like a shot pigeon down to about 3,000 feet, above the ground, where Schroeder regained consciousness, "righted" the plane and although he was still semi-unconscious and could scarcely see at all due to the chilling of his eyes, he had the presence of mind to open the vents in his gasoline tanks so that the engine would continue to get fuel and run. It happened that he succeeded in getting only one switch instead of two, which are present in all Liberty ignition systems, therefore his engine had been running practically wide open throughout this fall. This kept the water from freezing in the cooling system and gave him the use of the engine after his recovery from the fall.

The daily papers have been giving the details of his marvelous landing in spite of his almost total blindness, so nothing will be said here about that, however, it is of interest to note that the gasoline tanks which probably had a plus pressure of several pounds in relation to the surrounding atmosphere at the top of the climb, had collapsed, that is, three out of four of them had collapsed, one of them almost totally due to the fact that at the bottom of the fall, conditions had changed so that there was a minus pressure inside of several pounds. This is why it was necessary for Major Schroeder to open the vents in the tanks in order to be able to deliver fuel to the engine to get to a suitable place to land.

The military value of the supercharger will be very great. It will greatly increase speed of airplanes at altitudes, enable them to go much faster than they can near the ground. It will be useful for extreme high altitude photography because the photographer will not be hampered by attack if the plane goes high enough; An airplane with supercharged engine will be valuable to carry dispatches or a high ranking officer over great distances in a very short time. Superchargers, when applied to heavy bombers, will enable this type of machine to reach a coiling well above enemy anti-aircraft gun-fire and in fighting planes, superchargers will greatly increase speed and climb.

Commercial use of superchargers will be to enable heavy passenger error express-carrying airplanes to blimb over the highest mountains or over thunder storms with the use of comparatively low powered, and low priced engines; without the supercharger very large engines would have to be installed in order to have sufficient power to sustain the airplane at high altitudes. This is largely unnecessary if superchargers are used. It is felt that passenger-carrying airplanes can be provided with a supercharger and an air-tight cabin for the passengers so that the supercharger can keep the air in this cabin at a density and temperature which will make it practically comfortable for all passengers, and, at the same time, the airplane can fly at extreme altitudes at very much greater speeds and speed, after all, is one of the chief advantages of air travel over other kinds.

RESERVE OFFICERS' TRAINING CORPS WILL RECEIVE FLYING TRAINING AT REGULAR ARMY PILOT'S SCHOOLS

During the past ten months there have been organized at various colleges and universities throughout the United States a number of aero clubs whose members are commissioned reserve military aviators on the inactive list. These reserve officers feel that something should be done to keep them in flying training and desire to establish units of the Air Service at the colleges and institutions similar to those being conducted by other arms of the Service in connection with the R.O.T.C. and that training be given them in aeronautical engineering in order that all of the previous training will not have been lost.

The Director of Air Service is fully in accord with many of these views, particularly as to the extreme desirability of having former army pilots in flying condition at all times.

Under the policy established in the Air Service early in 1919, the commanding officer at any Air Service station where flying is authorized may at his discretion permit qualified reserve military aviators to take such practice flights and training as in his opinion he may deem advisable. Flying under this authorization is subject to the restrictions that cross country flights will not be made and no interference will be permitted with the regular training or operation of any flying field.

It is not contemplated to establish units in conjunction with colleges and universities or to conduct them along lines similar to the R.O.T.C. units of other arms of the service at this time. Both from the point of economy and safety in training it is felt that all flying training throughout the United States, which the Government plans doing, should be carried on at one of the designated pilot's schools, which will be entirely under government jurisdiction. The training of these men would be conducted under the eyes of regular fliers with the minimum of danger to the reserve officers under training.

The Air Service is, however, heartily in accord with the program of conducting ground training courses of aeronautical engineering at the colleges and universities having units of reserve officers training corps, and is willing to assist in the establishment or conduct of such courses by loaning a limited number of aeronautical engines in connection therewith.

It is the hope of the Director that sufficient provision will be made by Congress for the maintenance of the Air Service in order to enable the department not only to keep this arm of the service upon an efficient status and fully prepared to meet an emergency, but to maintain former flying personnel now on the inactive list in such condition of training as to make them available for immediate duty in the event of another emergency.

NIGHT FLYING FOR BUSINESS MEN

It is proposed that the Handley Page Air Mail Service in India will be almost entirely by night in order to economise, and when it is proved that there is a sufficient demand for through passenger accommodation on the mail services it will be a perfectly simple matter to fit up machines with through sleeping berths in which the passenger can retire to rest early in the evening, to wake to find himself several hundred miles from his starting point. The business man flying in these machines during the day need not waste his time, for they are equipped with wireless telephones and telegraph, and, if there is a demand for one, a stenographer will be carried on board.

The Handley Page machines are especially suitable for flying in India, owing to the fact that the windows in the cabin are made to open so that the cabin temperature can be regulated. This will prove to be a tremendous comfort in India where the variation in temperature due to change in elevation, is so great and rapid.

EX-ESQUADRILLE MEMBERS COME TO RESCUE

Lieut. Glenn on a cross country flight from Bryan, Texas to Rich Field with Lieut. Nicoll as passenger had a rather thrilling as well as unique experience which was divided into three elements, clouds, a fast ride, and a good Samaritan.

Shortly after leaving Bryan they encountered low clouds and in order to get his bearings Lieut. Glenn dropped down to 50 feet. His passenger which incidentally was on his first ride inadvertently closed the switch with his elbow in some manner or another causing the engine to stop dead just a few feet above the tree tops. He put the nose down landing in a field of mud just missing a crash by the slightest margin but fortunately without damage to officers or plane.

It so happened that two civilian flyers erstwhile members of the Oakley Esquadrielle were near the scene of the forced landing. They came to the rescue and recognized Lieut. Glenn as one of the officers of Rich Field when they themselves had landed a few days before for gas and assistance. Remembering the valuable aid given at that time and being aviators and cognizant of aviation troubles they exhibited their powers and athletic ability and in a few minutes helped the officers to take off. They arrived at Rich Field without further accident.

FORMER ARMY AVIATORS ENROUTE TO CUBA

The traffic between the United States and Cuba is apparently not solely confined to persons whose fortunes are large enough to travel by Steamer De Lux.

During the last month 20 civilian aviators have stopped at Rich Field, Texas, enroute to the Island. This week a party of four former army officers and four former enlisted mechanics in Curtiss machines landed at Rich Field on their way to Havana to fill a contract for exhibition work with the French American Aero Club.

The party is in charge of Pilot Ralph Lockwood of the Service Aviation Company, Wabash, Indiana. Pilot Lockwood, always a good story teller, when told of the general exodus of American civilian flyers said it was a question of history repeating itself. To prove this, he further recited, "In 1898 we went to free Cuba, -- to day we go to free Cuba". This is the best reason the personnel at Rich Field have been able to obtain from flyers enroute to Cuba.

MECHANICS SCHOOL -- KELLY FIELD, TEXAS

The Training Department of the Air Service Mechanics School at Kelly Field San Antonio, Texas, has made arrangements for a complete course of instruction in the care, maintenance and operation of parachutes. Six hundred (600) pounds of lead have been melted and cast into blocks, parachute apparatus made for folding shroud lines and chutes, a winch made for lifting weights for testing chutes, weights and "U" bolts assembled for parachute testing and tables prepared for folding parachutes.

The thirteen weeks instruction at the U.S.A., School of Aerial Photography, Langley Field, Hampton, Virginia, embraces courses in the following subjects:

- Aerial camera manipulation, installation and repair.
- Chemical formulae
- Negative making
- Printing and enlarging.
- Lantern slide making.
- Stereoscopic photographs
- Copying.
- Photographic reconnaissance and mosaic making.
- Photographic interpretation.
- Practical photography in the field.

There are forty-five students taking these courses at the present time.

In addition to the enlisted men assigned to the school, instruction in aerial photography is being given to all airplane pilots and observers at the post.

Upon the occasion of his recent visit to Langley Field, General Pershing was shown through the photographic school, and his attention especially called to the large mosaic being made of Camp Benning, Georgia.

1st SURVEILLANCE GROUP, EL PASO, TEXAS

The First Surveillance Group has experienced the most windy weather that it has had since its arrival on the border. One calm day a week is the average. On the other days it is so windy, and the air is so full of sand and dust that it is almost impossible to land a plane. Patrols, however, have continued to get through and to land with the aid of the crew to hold them on the ground.

The officers and non-commissioned officers of the 7th Cavalry liaison class have made rapid progress during the last two weeks. The officers are taking a marked interest in the work and the non-commissioned officers have reached a good state of proficiency in the handling of panels and ground communication. A number of the officers and non-commissioned officers have been taken for flights and begin to realize conditions under which a plane must work. It is planned in the near future to hold maneuvers with ground troops.

R. A. F. AEROPLANE'S TRANS AFRICA FLIGHT

A Royal Air Force Vickers Vimy machine left Cairo this week enroute for the Cape. The crew consists of two R. A. F. Officers and two mechanics.

This machine is the standard Vickers-Vimy Bombing type fitted with two Eagle VIII Rolls Royce engines.

The object of this R. A. F. flight is primarily to report on the condition of the route with a view to making recommendations as to its improvement and to gain experience from the Service point of view in long distance flying.

The machine, which makes the fourth aeroplane engaged on the Trans-Africa Flight, is not flying in competition with the Civil aeroplanes and its start has been purposely delayed in order to give them every opportunity to gain the honor of being first to traverse Africa by air.

Further supplies of Petrol and oil are being placed at selected landing grounds between Khartoum and Pretoria where stocks of fuel are low; the Service machine will not proceed beyond Khartoum until these supplies are in place.

CIVIL FLYING IN INDIA

Regulations governing civil flying in India to be known as Indian Aircraft Rules 1920 were promulgated on January 31st from which date civil flying in India would be permitted.

NEW MARTIN TRANSPORT MAKES 115 MILES PER HOUR

During the week the Martin Twelve passenger Transport was flown to Washington by Lieut. Harold R. Harris of the Flight Test Branch. He was accompanied on this flight by Lieut. A.L. Smith, Lieut. E.B. Koger of the Navy and M.S.E. Clarence B. Coombs.

The distance from McCook Field, Dayton, Ohio to Bolling Field, Washington, D.C. is 385 miles in an airplane which was flown in 3 hours and 21 minutes at the rate of 115 miles per hour. This is the fastest time ever made by an airplane flying between Dayton and Washington.

It is interesting to compare the speed made by the Martin Transport with that made by the trains.

The distance in railroad miles between the two cities is 500 miles, and is made in 17 hours by the fastest scheduled express time which is approximately 30 miles per hour. The airplane beating the train by 85 miles per hour and saving exactly 13 hours and 39 minutes.

During the flight, Lieut. Koger expressed his desire for food. Sgt. Coombs was acting as steward and he immediately produced the necessary viands which were much relished by all. The hot coffee carried in thermos bottles, was especially appreciated.

The crew reported that the trip was unusually enjoyable on account of the totally closed fuselage. The comfort of the passengers during this trip was in great contrast to previous cross-country flights made in open types of airplanes. The temperature of the air outside the cabin was about zero Fahrenheit while in the inside was quite bearable.

BUGLE CALLS TRANSMITTED BY RADIO TO FORT SAM HOUSTON, TEXAS.

An enlisted radio expert on duty at Kelly Field, Texas has just completed an interesting series of radio experiments. The enlisted man in addition to his duties as a radio expert is also official bugler and it is in connection with the bugle experiments were instituted.

He conceived the idea that he would like Fort Sam Houston to receive his bugle calls at the same time they were officially given at Kelly Field. Accordingly arrangements were made and instruments fitted up at both fields. A large magnavox amplifier was connected at Fort Sam Houston which amplified the sound about 10 times.

After 2 weeks of experimental work he succeeded in transmitting the bugle calls to Fort Sam Houston, a distance of 190 miles, which is remarkable. The calls were plainly heard by an enthusiastic audience, and was a success from every point of view.

BAKELITE PROPELLER PUT TO SEVERE TEST

Major William Ocker flying a D.H.-4 Goldbug from Aberdeen, Maryland, to Washington, D.C. equipped with the new Micarta or so called Bakelite propeller put this propeller to a most severe test.

Bolling Field has been in a very bad condition for about two weeks, the mud being 12 inches deep. Landing with a D.H.-4, which has a high landing speed, in mud is a particularly dangerous undertaking.

Hardly had his wheels touched the ground when his plane nosed over. Before he could reach for the switch to cut off his engine the propeller succeeded in churning around in the ground several times. The force of this churning was so great that it threw his plane back into position while the wheels sank down to the hub in the mud.

When an examination of the propeller was made it was found to be in perfect condition and not even chipped. If this had been a wooden propeller it would have been broken into match sticks.

HAWAIIAN SUGAR KING TRAVELS BY AEROPLANE

On Tuesday, March 30th, 1920, Mr. Hall Etter, General Manager of the General Oil Company of Houston, Texas, accompanied by Henry J. Lyman of Milo, Hawaii, landed at Rich Field. They were flying in a three-seater Curtiss Oriole piloted by Mr. R.R. McCabe, formerly an aviator in the United States Army. Mr. Lyman, who has been styled "The Sugar King of Hawaii" recently came to the United States with the Commission named by the Territorial Government of Hawaii to discuss with Congress the different needs of his native country.

The trio left Houston, Texas, about 1:30 P.M. Tuesday afternoon enroute for Wichita Falls. Near Rich Field motor trouble developed and they landed to adjust their motor trouble and for gas. It was about 3:15 P.M. when they landed at Rich Field, having made the flight from Houston to Rich Field, about 200 miles, in about 105 minutes. Mr. Etter and Mr. Lyman immediately drove to Waco and left on the 4:15 M.K. & T Train for their final destination, Wichita Falls. Later in the afternoon, the pilot Mr. McCabe, his motor trouble having been adjusted, departed for Wichita Falls by way of Dallas.

BRITISH AIR ATTACHE TO INSPECT WESTERN AIR SERVICE FIELDS

Commodore L.E.O. Charlton, British Air Attache, in Washington, will leave for San Francisco to meet the Prince of Wales, who is enroute to Australia by way of Panama Canal and San Francisco. General Charlton will be the guest of Lieut. General Hunter Liggett, Commander, Western Department and Colonel H.H. Arnold, Department Air Service Officer, Western Department. While on the Pacific Coast, he will inspect the Pilot School at March Field, Balloon School at Arcadia. Also Rockwell and Mather Fields.

SHOOTS ENGINE LOOSE

Lieut. McReynolds, 8th Aero Squadron, on duty at McAllen, Texas, had a remarkable experience while engaged in Target practice.

Machine guns have a synchronized gear attached which permits the pilot to shoot his guns thru the propeller while in operation. While firing at a ground target with his front machine guns several rounds entered the propeller cutting off one end thru faulty synchronization. He was forced to land immediately and upon examination of the plane it was found the engine had been torn loose from its bed, and the engine bed plates and supports were broken and twisted. How he managed to get down without the engine falling out, or other damage, is a mystery.

NEW LANDING GEAR STRUTS FOR DeHAVILANDS

The DeHaviland-4B and 4-B1 are to be equipped with new landing gear struts. The new landing gear struts are so arranged that the wheels set several inches farther forward than in the present design. The DeH. machines are notable for their high landing speeds, and their tendency to nose over easily. The new installation will materially remedy this condition.

New struts are now in the process of manufacture at the present time and a supply will be shipped to all stations at which D.H. planes are in active use as fast as they are finished.

NAVAL AVIATORS GIVEN TRAINING IN FLYING LAND PLANES

A class of seven naval officers, in charge of Lt. Comdr. E. W. Spencer, Jr., U.S.N., are taking a course of instruction at March Field. This is the second class of naval aviators trained at this field, a class of sixteen, under command of Lt. Comdr. Marc A. Mitscher, U.S.N., being trained here in November and December last year. As a result of this training, practically the entire personnel of this class was assigned to the Pacific Fleet Aerial Detachment and are daily engaged in flying land machines from the decks of battleships and in making cross country flights in close formation.

The present course consists of ground instruction on the Hispano Suiza and Liberty motors, instruction on the Lewis and Merlin machine guns, and Radio Instruction. The flying includes a complete Gosport course on the Curtiss J.N. 6H, a transition course on the Thomas Morse Scout and a finishing course in aerial combat in the S.E.5., equipped with the camera gun. Although this is an elementary school, many of the instructors are graduates of the Pursuit School at Rockwell Field.

The present class is composed of:

Lt. Comdr. E.W. Spencer, Jr., U.S.N.
Lt. (J.G.) Geo. R. Pond, U.S.N.R.F.
Lt. (J.G.) Guy McLaughlin U.S.N.
Lt. (J.G.) E.H. Barkelew, U.S.N.R.F.
Lt. (J.G.) A.C. Lake, U.S.N.R.F.
Lt. (J.G.) T. Burke Lee U.S.N.R.F.
Ensign E.E. Reber U.S.N.

RECORD MADE IN FORCED LANDING ON A SINGLE FLIGHT

Major Lamphier, Air Service, stationed at Seattle, probably holds the record in the Air Service for the largest number of forced landings in a single flight. He left Crissy Field, San Francisco, bound for Seattle, Washington as his destination. He made Eugene, California in two hours, left the following day, then his troubles began. Near Hornbrook his radiator began to leak, not a landing field was in sight anywhere, but a mountain in the distance looked as though it could be done. Accordingly, he glided ten miles and succeeded in slipping and stalling his plane down on a small plateau on the side of Mount Shasta. After repairing the leak he succeeded in taking off and reached an altitude of 12,000 feet when he discovered his radiator had emptied itself thru another leak. Again, he had to find a place to land, and picked out McArthur. In gliding to this town he passed close to the mouth of Mount Lassen, an active volcano; he could see the boiling and seething mass of substances very distinctly in the crater. Another landing at Red Bluff and two at Richmond, at the latter place just missed a fence, ended the trip. Altogether Major Lamphier made eight forced landings in mountainous country safely without the slightest damage to his plane or self.

LANDS WITHOUT RUNNING GEAR

Lieut. John F. Whiteley piloting a DH4B France Field, Panama, in going to the aid of two pilots who were injured, attempted to land in a bad stretch of ground badly damaging his landing gear. Without stopping he again took the air and returned to France Field where he made an extraordinary landing. The gear was suspended by the wires only. Realizing the conditions facing him he manoeuvred so that he would land on a marshy part of the field. He held the plane off the ground until it had practically no flying speed so that upon landing, the jar was so slight that neither officer nor mechanic were thrown out or injured.

ACTIVITIES OF 7TH AERO SQUADRON, HONOLULU, H.T.

On 18 February, two HS2L boats made a flight to Molokai and Lanai, two of the neighboring islands. This trip was one of a series of Inter-Island trips to be made for the purpose of making all of the Air Service officers familiar with the different islands of the Hawaiian group. Colonel Curry, the new Department Air Service Officer, made this trip.

On 23 February, 1920, which date was set apart for the commemoration of Washington's birthday, five DH 4's, two HS2L flying boats, one Hispano on photographic mission, and, in the vernacular of the deadline, a "stunting Jenny" initiated Honolulu into the beauties of a real aerial exhibition. The Department Commander's remark in his official comment on the parade, as viewed from the reviewing stand, was "Flying most excellent".

Under orders from D.A.S.O. a check was kept on a truck train enroute from Honolulu to Schofield Barracks. This form of scouting affords excellent training for both pilots and observers. Playing the game every time the opportunity arises, even though nothing depends on its success but the personal pride of having accomplished a mission, helps a flyer keep his hand in. This is prerequisite to efficiency in the field of operation for, unlike the reconnoitering of ground patrols, aerial reconnaissance is carried on under conditions quite foreign to normal man, and therefore requires a great amount of actual experience, in addition to general knowledge, in order for a pilot to be of more than nominal worth to the service.

Several flights of note have been made from Luke Field. On 29 February, a formation of three DeHaviland Fours was flown over Honolulu, to pay our last respects to the late Mayor J. J. Fern. On 3 March, two DH's flew around the Island of Oahu, for the purpose of observing and inspecting emergency landing fields. Col. Curry, Capt. Oldys, Lieutenants Maitland, Curtis and Manzelman flew a formation to the Island of Molokai, and return on 4 March, to examine possible landing fields, and to test the practicability of inter-island flying in land planes equipped with radio. The formation was escorted by an HS2L flying boat and kept up radio communication with Luke Field Base.

Lieutenant C. E. Duncan, accompanied by Sgt. H. W. Russell, in a DH 4 experienced motor trouble while flying close to the Beach of Waikiki, and were forced to land in shallow water. The plane was a total wreck, but fortunately only minor injuries of a negligible nature were sustained by the pilot and passenger.

NOTES OF INTEREST CONCERNING SQUADRONS ON THE BORDER

FIRST PURSUIT GROUP

Recreation Room.

The recreation room of the 27th Aero Squadron is nearing completion. This Squadron is very fortunate in having two men of considerable decorative ability. Their production of the Squadron insignia exhibited at the Auto Show at San Antonio, created no little comment. Through their efforts the recreation room will not only be comfortable, but also interesting. The insignias of the Pursuit Squadrons overseas are to be reproduced, forming a very pretty border around the room. The other squadrons of the 1st Pursuit Group have volunteered to paint their respective insignias in the space designated. One cannot appreciate this recreation room unless they have the good fortune to be a member of the 27th Aero Squadron. A work about the recreation room, "please". The walls and ceiling are done in old ivory and the wainscoting in a rich brown which produces a bright, cheerful, but restful effect. A pool table, writing table, writing material, an abundance of current reading material and a small library Victrola are only details in comparison to the idea of comfort which has been the main idea in all the selection and improvement of the furnishings.

It will certainly be a pleasure to a tired member just off fatigue to park himself in one of the big easy chairs, light a cigarette, lean back and thoroughly enjoy one of the latest comic magazines. There is no doubt that a recreation room of this type will raise the efficiency of the personnel to a high point; also such home surroundings tend to encourage the enlisted personnel to remain on the post of an evening and through the use of good literature not only improve himself mentally but physically. The spirit of comradeship, which a good recreation room will always promote, is needed among the various organizations of this post. It also instills pride not only in the man himself, but in his organization.

Lieut. Duke back on Duty.

Lieut. D. F. Duke, who has been detailed to expound the many good points of the S.E.-5's to the visitors of the San Antonio Auto Show, is again back on duty with the 94th Aero Squadron. He is still suffering from the effects of the nervous strain, for it was his duty to explain why aviators wore spurs, and why the wheels of the plane were not connected up with the engine. He was observed the other night reading a large book he brought back which seemed to contain various names of the fair sex, who no doubt are still interested in the S.E.-5.

ENGINEERING

A great deal of attention has been given to the subject of formation flying. The development of aerial fighting has shown that there are certain requisites to success, and that a concentration of units is one of the main factors. Aerial supremacy cannot be maintained over any designated district without a concentration of aerial units. The principal method of concentrating units has been through the employment of large, massive formations. The large formation is generally of an echelon type, really being nothing more or less than several small formations under the control and guidance of an efficient Flight Commander. The large echelon formation is more or less scattered, tho the small divisions are practically perfect, and a great deal of training is necessary before such massive formations can change direction without scattering various individual formations about the sky. In case a large formation is broken up due to any reason, individual Flight Commanders take their formations to an appointed place of rendezvous in the air and re-join the large formation as soon as possible. It has been the practice in the past for the individual pilots to leave the ground and form over an appointed rendezvous. This causes a great waste of valuable time and incidentally gas, which should be utilized for the purpose of patrolling a designated sector. This waste can be eliminated by the respective pilots of the flight taxiing into position on the ground, thereby all leaving the air together in perfect formation thus saving both time and gasoline.

In making simple turns, the Flight Commander gives no signal but starts gradually, speeding up his engine, in order to assist pilots on the inside of the turn. Pilots on the inside should throttle down "cut in" slightly toward No. 1, approaching as near as possible the arc made by the No. 1 at the same time the inside airplanes must be careful not to "cut in" too much or they will get into the slip stream of No. 1. Pilots on the outside of the turn must speed up their motors to negotiate the turn and still be in position. Sharper turns are taught as the training advances and when distances can be judged and when the use of the controls has become automatic. Usually pilots on the outside find a sharp turn easy to negotiate while those on the inside find it more difficult. Pilots on the inside must slow down considerably and pull their airplanes almost to a stall, not cutting in as on the gradual turn.

The "cross over" or 90 degree turn is the most advantageously used in formations for sharp turns. Each airplane turns individually in its own place, the inside pilots making a climbing turn and the outside pilots diving slightly to avoid a collision. The right hand machine ends up on the left side and vice versa; that is they cross, so that each has approximately the same distance to cover instead of one getting in front of the other as would otherwise be the case. The formation remains the same.

KELLY FIELD LAYS OUT NEW J.M.A. FIELD ✓

An excellent J.M.A. field has been laid out on the A.S.M.S. flying field for the delectation of those fortunate officers who have been recommended for that exalted rating. The pylons for eights are fifteen hundred feet apart, with outer pylons three hundred feet from the mother spots. Five consecutive sets of eights must be made over this course, keeping the ship within the outer pylons when making turns. A word to the wise from one who has tried the course on five different types of ships may not be amiss. Use an S.E. 5 or a Fokker. Bombardment Group pilots who fly nothing but D.H.'s had better snuggle up to some pursuiter and get a few flights in a scout. Any man who tries to make a D.H. lumber around inside those pylons has a man sized job ahead of him. These pylons are very close together from four hundred feet.

Another J.M.A. requirement is landing in a field 800 feet long by 100 feet wide, surrounded by a ten foot wall. To supply the wall have been prepared whitewashed poles, connected with light string. These poles will be held by soldiers, instructed to dip them without delay if a pilot appears to have the intention of coming in lower than ten feet. Naturally a D.H. would be harder to locate in a small field than a scout. A big circular mark is laid out prominently in the middle of the field for a landing mark. Kelly No.2 pilots are welcome to practice on the course, providing notification is given in order that A.S.M.S. pilots may keep out of their way.

FIRST DAY BOMBARDMENT GROUP

The Group was very busy during the past week. One hundred and thirty seven missions for a total flying time of 135 hours and fifteen minutes. All this work was made possible by excellent flying weather all week coupled with lots of pep by the various squadrons. We had 100% of flying weather and fulfilled the following classes of practice missions, viz: Reconnaissance, cross-country, artillery adjustment (puff target), radio telephone and telegraph, infantry contact, formations, camera obscura and camera gun (combat). On Wednesday a ferry formation of five DH-8's started from Sanderson, Texas, led by Major Schauffler. About two hours out of Kelly Field they ran into a terrific 70 mile per hour gale. Major Schauffler and Lieut. Woodruff were forced to land about 25 miles north east of Dryden, and Lieut. Johnson landed at Dryden, Lieut. Getchell got through to Sanderson. It took him 55 minutes to make the last 21 miles. Lieut. John A. Grear was not so fortunate as the others. He was forced down at Watkins, Texas and instantly killed when crashed. He was very popular with the officers of the Group and his sunny smile is greatly missed.

On Wednesday Lieuts. Doyle and Spencer flew to Kenedy, Texas at the request of their Commercial Club, and located a landing field which the club promised to put in good condition. It is hoped that more of the outlying towns will evince the same interest in aerial work.

96th SQUADRON

Lieut. John M. Early of the 96th is under orders to fly to the border with Captain Meyers of the Medical Staff. The Captain is going to examine all of the flyers on the Border Patrol. They will make all Airdromes from Laredo, Texas to Nogales, Arizona.

Captain M.H. Rice has been assigned to the Bombardment Group and has taken over Major Cousin's work as Group Commander, Major R.P. Cousins, our Group Commander left Saturday for Post Field, Fort Sill, Oklahoma where he is to take command of the post during the temporary absence of Major Howard.

Lieut. C.H. Billett has recently arrived from Post Field. He has been placed in command of the 2nd Aerial Photo Section at this field. Lieut Billett is a graduate of the U.S. School of Aerial Photography at Rochester and Cornell also of the School of Photographic Reconnaissance at Langley Field, Hampton, Va.

Information Group
Air Service

April 6, 1920

Building B
Washington, D.C.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE APRIL 7, 1920.

COMMERCIALIZATION OF AERIAL PHOTOGRAPHY

That considerable interest is being manifested in the commercialization of aerial photographic mapping and survey by civilian concerns throughout the United States was proven beyond a doubt at the recent aeronautical show held at the 71st Regiment Armory, New York City. In fact, one of the companies organized about four months ago have three contracts in Texas and have commenced actual operations in mapping of oil fields.

It was apparent to the officers in charge of the army exhibit that an entirely different class of people as a whole were attending this Show from those attending the aeronautical show held the year before at Madison Square Garden. Numerous ex-army pilots, observers, topographers and mining engineers, as well as representatives of big banking concerns spent hours at the Army booth in going over facts concerning the possibilities of aerial photography, the financial outlay necessary, prospects and methods of securing business, costs, etc.

Two very important things were discovered almost immediately namely, that a majority of persons who were seriously contemplating aerial photography, and mapping, for a business, had only a hazy idea of its many uses and the field it could cover other than mapping, and, further, they had but little knowledge of photography, second: it was definitely ascertained that not a single plane exhibited on the floor of the show was really adapted to do commercial aerial photography due to the fact that no provision had been made in the original specifications to permit aerial cameras to be properly installed. In fact, one of the manufacturers was advocating the use of an out-board mounting for an aerial camera in order to sell his plane. It so happened in this case that the army officers in charge of the government exhibit, were called into consultation with the result that simple alterations were ordered to be made on the interior of the plane to accommodate an 18 x 24 c.m. mapping camera and cradle, and provisions also were made to install a 12 volt dynamo to the power plant to generate current for the automatic operation of the camera. Had this machine been equipped with an outboard mounting the owner would have had no end of difficulty with his pictures, which would have been directly due to vibration and, second, the speed of his plane due to extra resistance of the camera, would have materially reduced the speed of his plane to the extent of at least 15 miles an hour and the final result would have been that this firm, incidently geological and mining engineers, would have come to the conclusion that aerial photographic mapping was entirely impractical.

After this experience all manufacturers were called into conference and the situation was gone over thoroughly. It was found that all were willing to make the necessary alterations on their planes and to install a semi-automatic trap door on flying boats, and they further agreed to catalogue this information in their yearly catalogues. The methods of securing business was also taken up with a number of persons who were interested in promoting commercial aerial photography. At this second conference a number of manufacturers were also present. This subject was gone into at length for the reason that it was equally as important to the manufacturer as to those who were promoting aerial photography, because of the fact that if the manufacturer is thoroughly acquainted with the details of commercial aerial photography, he is incidently in a better position to sell planes for this purpose.

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The first and most important of all which was discussed was the importance of securing contracts for aerial photographic mapping, etc. through Chambers of Commerce by illustration in connection with the photographic map. For instance, we will cite the city of Wilmington as an example. The slogan which the Chamber of Commerce at Wilmington sends throughout the world is as follows: "Come to Wilmington with your manufacturing problems", and in all their advertising literature, particular attention is invited to the water, rail, and manufacturing facilities, low cost of real estate, covered in detail. Those present were shown how this would be applied in a photographic map, illustrating for the Chamber of Commerce the manufacturing facilities, etc., as a whole, by the use of circles and straight lines and at the top of the map a caption of each particular industry. At a single glance a person interested can gain a very comprehensive idea of the city, because of the fact that every industry is consolidated into this map, and illustrated individually and properly captioned with such information as may be necessary concerning individual plants.

Next an illustration was given of the method of exploiting the individual industries as a separate proposition in order that Chambers of Commerce can handle inquiries concerning the various types of industries in their city. This is accomplished by making a vertical photograph and a set of obliques in connection with the original map and, if necessary, a set of stereo obliques. Thus, if Mr. John Jones, a chemical manufacturer out in Seattle, Washington, wants information concerning Wilmington's chemical industries and chemical by-product industries, which can take up his waste material and also information and a general idea of the vacant land facilities in the city of Wilmington, in order that he can determine whether this city would be feasible for him to locate, all that would be necessary for the Chamber of Commerce to do would be to send him a half size reduction, or a full size enlargement of the original mosaic or photographic map, a set of obliques illustrating the vertical and even stereos if necessary, of the chemical industries and by-product industries, and the real estate facilities, and these in conjunction with the general information located on the original photographic map, would give Mr. Jones, who is over 3,000 miles away, a pretty comprehensive idea of what the city of Wilmington is composed, and he can readily make a decision as to whether or not the city is adapted for his purposes.

The Aerial Photographic Mapping Corporation making the original mosaic (rough estimate) would have to charge about \$20 to \$30 per square mile, but this fact should be borne in mind - the course does not have to be flown but once providing the map is correct. The Chambers are not interested in the original mosaic because the cost would be terrific. If mosaics are to be made and sold to Chambers for advertising purposes, then the practical solution of this problem would be to photograph the original mosaic and make either enlargements or reductions, as the case may be, of the original, and the cost of these should not exceed \$8 or \$10 in quantity production, depending however, entirely upon the size. This, is probably the greatest asset that the commercial aerial photographer can have, due largely to the fact that it is a business upon which he secures repeat orders.

In addition to the above the matter of making oblique views illustrating the main buildings and points of interest in the city for post card corporations, lithographic companies, commercial news features for syndicate companies and Rotogravure companies, will also be a profitable one.

It was further found after considerable discussion that those interested in promoting aerial photography through lack of sufficient information such as tables of operations, formulae, costs, and many other things vital to persons figuring on engaging in this work, could not readily be secured. It was therefore decided by the officers in charge of the army exhibit to compile a book of about ten chapters on aerial photography covering every phase in detail. These chapters will be as follows:

- I. Types of Aerial Photography.
- II. Adaptability and Kinds of Planes.
- III. Construction of Planes and Airships for Aerial Photography.
- IV. Types of Cameras.
- V. Ground Photographic Apparatus.
- VI. Aerial Photo-topography.
- VII. Oblique Aerial Photography.
- VIII. Uses of Aerial Photography.
- IX. Commercial Analysis of Aerial Photography.
- X. The Future of Aerial Photography.
- XI. How to Start Out with Commercial Aerial Photography.
- XII. Aerial Motion Picture Photography.

This work is now being compiled at the present time, but due to the limited amount of personnel available it will not be ready for distribution to the manufacturers and others interested in aerial photography, until about the middle of June. In the meantime it is requested that those interested in securing this book will please forward their names and addresses to the Office of the Director of Air Service with information as to whether they are contemplating entering this field of endeavor, furnish information as to types of cameras they contemplate using and the types of planes.

THE BUREAU OF STANDARDS METHOD OF ALTITUDE COMPUTATION

There has been so much discussion of late relative to the various altitude "records" said to have been made by various pilots, and in connection with these discussions there is always arising the question of how the figure given out as the altitude obtained was arrived at, that while it is neither the purpose to be minutely technical nor to cover in detail the whole matter of calibration and correction, it will be attempted in this article to show the general method of computation employed by the Bureau of Standards and the data on which these computations are based.

The reason for referring altitude records to the Bureau of Standards, is that in so far as the United States is concerned the Bureau of Standards is an official, disinterested, technical office, qualified in equipment and personnel to say exactly what figure is represented by the readings of the instruments carried during the flight in question. It is the logical place for the calibration, etc., to be carried on, because as a Government institution its services are as available to the public and commercial concerns as to Government departments.

In order that, in years to come, when methods of determining the altitude, to which any aircraft has carried a particular instrument, may have changed, (as they have frequently in the past), it is most necessary that such data be recorded as will make it possible to compute the altitude by any method, then in favor. This statement means to say that there should be collected at the time of the flight all of the information which could possibly have any reflection upon the conditions existing during the flight. If this has been done, no matter what method is considered, there will always be sufficient data to compute the altitude by that method, and so by the new method compare old altitude records.

In direct relation to the preceding paragraph is the matter of comparison of altitude "records." It should be noted that since altitude records, as indicated by the instruments carried during the flight, may be calculated by various methods, that method by which any particular figure was reached is as important as the figure itself. For this reason, before it can be said that any one man has the altitude record, it must first be said that his altitude has been compared to the altitude of others obtained by the same method of calculation.

The data that should be recorded, beginning, during, and at the end of an attempt to make an altitude record, is as follows: Ground pressure read from a mercurial barometer corrected for temperature; the ground temperature; and the air temperature gradient, i. e., the temperature encountered at intervals during the flight. Preferably the intervals should be regular, but this is not essential. Instrument temperature, at ground, and ceiling, and pressure at ceiling must be recorded. The barograph will give the pressures and should be set at ground pressure at the beginning of the flight.

In the preceding paragraph the reason for the instrument temperature at the ground and ceiling may be said to be: because the temperature will differ considerably in the instrument case within the cock pit and the surrounding air at high altitudes. To avoid this at the ground, the temperature of the instruments can be made almost exactly the same as that of the atmosphere by taking care to leave the instrument in position in the cock pit of the ship for a short time previous to the flight. The air temperature gradient is observed because it is from this that the much discussed correction for the temperature of the air column is made.

Having obtained all of the readings mentioned above relating to a particular altitude flight, the Bureau of Standards observes the following method in calculating the probable altitude reached:

B of S METHOD

	Inches
Ground Pressure in inches of Mercury from Barograph - - - - -	-----
Applying instrument correction for Ground Temperature - - - - -	-----

(a) Corrected Barograph reading at Ground - - - - -	-----
Ceiling pressure in inches of Mercury from Barograph - - - - -	-----
Applying instrument correction for ceiling temperature - - - - -	-----

(b) Corrected Barograph reading at Ceiling - - - - -	-----

Then

- (c) = a-b which is the true difference in pressure.
- Add the true difference in pressure to the mercurial barometer reading at ground and the true ceiling pressure will be found.

From the tables given in Bureau of Standards' Aeronautic Instruments Circular No. 3, the altitude corresponding to the true ceiling pressure may be found. The next computation is shown below:

	Inches
Altitude corresponding to true ceiling pressure - - - - -	-----
Minus Altitude corresponding to true Ground pressure - - - - -	-----

This gives then the "Isothermal difference" in altitude.

At this point a correction must be applied for the varying temperature of the air column between the ground and the ceiling. This correction is necessary because the tables given in the B of S Circular No. 3 are calculated for an assumed constant temperature. This correction is made by means of the mean temperature of air column. This mean temperature is the arithmetical mean found from the temperature gradient, which has been mentioned. Practically, the mean temperature may be found by the use of a Planimeter and graphic method or mathematically. Having arrived at the most probable figure for the mean temperature of the air column, the correction that must be applied to the altitude indicated in the B of S tables as corresponding to the ceiling pressure may be found from tables in the same circular. Now the probable altitude above sea level to which the airplane climbed will be given by subtracting this "air column correction" from the isothermal difference in altitude, and adding or subtracting true (U.S.G.S.) elevation of the field.

In conclusion it may be said that, undoubtedly, the difference in opinion as to how altitude records should be computed exists almost entirely in regard to that correction which has been taken up in the previous paragraph. This is true for several reasons: First the correction itself is usually a very large one and reduces the indicated altitude materially. Second: The error due to the difference in temperature of the air column is sometimes calculated without actually realizing it as such, because it is included in an arbitrary formula, which has been used. In either case, there is a difference of opinion as to how the mean temperature correction for the air column should be applied. It is interesting to note that, this difference in opinion arises mostly from a misunderstanding of methods, e.g., the B of S once employed the correction for temperature of air column based upon what was called the "harmonic mean temperature", whereas they now base their correction on an arithmetical mean temperature. That the two are practically the same may be seen when it is considered that the harmonic mean temperature is based upon pressure intervals, while the arithmetical mean temperature is referred to altitude intervals. Engineers who contend that a correction should be made for each small interval in altitude and then go from that altitude to the one next above it, applying another correction and adding, are simply applying the same correction in small increments that is applied in one operation by the other method. However the Bureau of Standards has adopted the method outlined above, and is prepared to calibrate instruments both before and after flight tests for anyone who cares to make attempts at altitude records, and as the official authority in the United States it is believed that their announced "probable altitudes" as calculated by the method outlined above is as close to the true altitude as it is possible to come.

Such matters, as the detailed description of the method employed in the calibration of instruments, and the various operations connected with the examination of instruments used during flight tests, while very important and necessary to the selection of the most probable altitudes, are too complex, technical and lengthy for presentation here. In contemplation of the subject, however, the fact should not be overlooked that the instruments themselves, their characteristics and the experiments and tests necessary to find out these characteristics, are as important and have as great a bearing upon the altitude reached, as any part of the computation from the readings, that these instruments give.

AIR NAVIGATION SCHOOL FOR BRITISH AIR SERVICE

The Air Ministry announces:

Arrangements have been made to open a school for the instruction of Air Navigation at Calshot in April next. The course which will be of 12 months duration will embrace the following subjects:- Meteorology (Advanced), Mathematics, General Navigation, Nautical Astronomy, Wireless Telegraphy, Maps and Charts, Projections, etc.

Each Officer successfully qualifying at the end of the course will be granted a certificate stating that he is a qualified Air Navigator and will be granted a notation such as A.N. (Air Navigator), which will be decided later, according to the class in which he graduates.

An entrance examination will be held in March 1920 at which all candidates must qualify for admission to the school.

ADDITIONAL NAMES TO DECORATION LIST

Air Service Information Circular date of February 27, 1920 gave a tentative list of decorations awarded U. S. Army Air Service, Am. E. F. with the statement that any errors and omissions should be noted. The following additions to those published in the above circular have been sent the Director of Air Service. Upon the filing of the necessary evidence these names will be added to the official list.

KNIGHT OF THE LEGION OF HONOR (FRENCH)

<u>Name</u>	<u>Rank</u>
Edward V. Rickenbacker	1st Lieutenant
Douglas Campbell	1st Lieutenant
Reed M. Chambers	Captain

CROIX DE GUERRE (WITH ONE OR MORE PALMS)-(FRENCH)

Edward V. Rickenbacker	1st Lieutenant
Douglas Campbell	1st Lieutenant
James A. Meissner	1st Lieutenant
Leo H. Dawson	1st Lieutenant
William W. Palmer	1st Lieutenant

CROIX DE GUERRE WITH BRONZE STAR-(FRENCH)

Samuel Kaye, Jr.	Lieutenant
John Jeffers	Lieutenant
Alden B. Sherry	Lieutenant

BRITISH DISTINGUISHED SERVICE ORDER

Edgar Stanley Gorrell	Colonel
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MEDAILLE D'HONNEUR des AFFAIRES ETRANGERES en ARGENT-(FRENCH)

Ernest L. Jones	Major
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GENERAL MITCHELL VISITS CAMP BENNING

Brigadier General Mitchell and Captain Burdette S. Wright left Washington recently and visited Camp Benning, Georgia for the purpose of conferring with the Commanding General on the subject of the proposed co-operation of the Air Service in the activities of the Infantry, Artillery and Tanks at the Infantry School there. It was found that Camp Benning is ideally situated with reference to the terrain required for the different maneuvers carried out at an Infantry School, and it was further found that ideal locations are available for both heavier and lighter-than-air units. By previous arrangement an airplane was flown to Camp Benning from Souther Field, Georgia and same was available for the above officers during their visit, and it was only by this means that it was possible to see the whole of the reservation and to study its adaptability for the required maneuvers.

It is expected that very satisfactory results will be obtained from the maneuvers at Camp Benning, owing to the fact that a large organization of Infantry and auxiliary organizations of Tanks and Artillery will be available. The new types of communication between the airplane and the ground troops (Infantry, Tanks and Artillery) will be thoroughly tried out and improvements made where possible. In connection with the Tanks it must be said that very little actual cooperation between the Air Service and this arm of the service was accomplished during the recent war, and there is at present an urgent need for the study of the necessary means of communication and the methods of effecting the proper liaison at all times.

PREPARING THE AIRDRONES ON THE SOUTHERN SECTION
OF THE CAIRO TO CAPE TOWN ROUTE

Major Treatt, R.A.F. gives a vivid idea of the extraordinary difficulties which confronted him in carrying out his portion of the survey and the subsequent construction of aerodromes. This party was responsible for the Southern Area covering some 2,000 miles of the route, from Abercorn to Cape Town; and in the Northern portion of this area some of the most difficult country was encountered. Major Court Treatt had with him as assistants the following Officers:-

Captains Marcus, Shortridge and Sutton, Lieutenants Bell and Holthouse, and a few other ranks. For labor dependence had to be placed on several hundreds of natives.

Compared with that of other parts of the route, the nature of the country South of Pretoria was favorable for the formation of Aerodromes, as the surface was generally grassy. Once the sites had been selected the work was light, except for the removal of ant heaps and rock outcrop, though, as some of the former were 60 feet high and 40 feet in diameter, considerable labor was involved in dealing with them.

The greatest difficulties were met with in Northern Rhodesia, where the soil was found to consist mostly of (1) red sand, (2) black soil, (3) red soil. The red sand is quite unsuitable for aerodromes, as during the dry season the surface is converted into thick dust in which an aeroplane would sink up to the axles of the undercarriages. The black soil, on the other hand, though apparently suitable during dry weather, becomes hopelessly boggy during the rains. For instance, at Ndola, at a time when there had been no rain for six weeks, water lay at a depth of from 6 inches to 3 feet below the surface. The red soil was found to be the best, since its surface remains hard even during the heavy rains. The work of preparation, however, was extremely hard, as this soil is usually well timbered and also covered with thick bush, and clearance involved the felling and removal of trees and the extraction of all stumps. Owing to the size of the timber it was frequently found necessary to make an excavation 10 feet in diameter in order to uproot a single tree, and even the smaller trees had to be dug out to a minimum depth of $2\frac{1}{2}$ feet so as to get rid of the lateral roots which very soon sprout up. The grass, also, which grows to a height of from 7 to 12 feet had, of course, to be cleared before the other work could be proceeded with. This Rhodesian grass resembles bamboo more than grass and during the rains grows at an extremely rapid rate.

When the site of an aerodrome had been cleared and, where necessary, levelled it was replanted with suitable grass. For identification each aerodrome was marked with a large circle composed of white stone flush with the ground and usually about 100 feet in circumference which would show prominently from the air. The angles of the aerodromes were similarly marked with "L's" and a "P" was placed on all regular aerodromes (as distinguished from the emergency landing grounds) to mark the position of the petrol, oil and water dumps which were usually placed underground. As illustrating the labor which was involved it may be mentioned that from one aerodrome some thousand trees were removed; at another a slit (ravine) 600 yards long by 30 yards wide had to be filled in with stones; while at a third one thousand wagon loads of stones and rock outcrop were collected and carried from the ground. At aerodromes where no water was readily available special wells were sunk, and at others liable to flooding by one night's rain a drainage system had to be undertaken.

The survey parties had very often to cut roads for the cars and motor-cycles which accompanied them and to improvise rafts from old petrol cans, etc., to enable them to cross the rivers. A somewhat unusual difficulty experienced in the grass country was the fact that large quantities of grass seeds were forced through the radiators of the motors. Sometimes after one day's run the under-shields were found to be covered with seeds to a depth of 3 or 4 inches. The Tsetse fly was a constant source of trouble, and it was found almost impossible to indicate the actual location and depth of the various fly belts. It is possible that the traffic of the war transport has spread this pest considerably and that areas previously immune are now infested. In addition to the Glossina Mersitans (the ordinary Tsetse fly) the Rossina Trypanosomiasis (the carrier of the deadly sleeping sickness) was also prevalent in some of the districts in which this party was operating.

In the fever districts progress was not infrequently seriously handicapped by sickness and, though fortunately there were no deaths among the British personnel, a number of native laborers died from fever while working on the aerodromes. The white officers were often isolated for long periods, and one lived alone without relief for five months at an aerodrome where fever was particularly prevalent.

It should be realized that in much of the country traversed the tall grass rendered it impossible for a man on the ground to see more than a few feet. In such cases the procedure adopted when the site for an aerodrome had been tentatively selected was as follows:-

Four boundaries, usually 800 yards long, were first cut and then two diagonal traverses were made from corner to corner from which the grass and all obstacles except large trees were removed. This gave the approximate configuration of the whole area with least labor so that if the ground was by this method found to be unsuitable the site could be abandoned before much labor had been expended. For clearance the "task" per man was a "skonkewan" (a piece of ground 10 yards square). This was marked out over night and the native's job was first to root up the grass and stack it in heaps and then, when the trees had been felled, to extract the stumps to the depth required. The men were usually divided into gangs, of 35 each in charge of a "Kapitave" (Overseer), two gangs working a line of 600 yards. On the larger sized aerodromes there were usually about 60 "Skonkewans" to each line, a reserve of 16 men being left to clear up the grass heaps and any remaining stumps, or to assist with any particularly bad patches.

The execution of the arrangements for the Cairo to Cape flight were only made possible by the valuable co-operation of the local authorities, who in some cases gave the sites for aerodromes free of charge and in others provided the land at nominal rentals, and by the voluntary aid given by the people throughout the country. These included ex-R.A.F. Officers, local officials, private individuals and others, who assisted with their local knowledge and in many cases gave help in the necessary work. The assistance given by Khama, Chief of the BO'mangwape group of the Bechuanas was particularly valuable. In addition to converting his own race course at Sorowe into an aerodrome he gave the land necessary at Palapyo, and when heavy rain, fever and labor difficulties were handicapping the survey party he specially mobilized some of his regiments to co-operate.

Intense interest in the project was everywhere manifested by all classes of the population. A B.E. 2 E machine flown over part of the route attracted great attention. Natives flocked in from very great distances to see it, while Louiniki, King of the Barrotse, travelled with all his headmen as far as Livingstone to witness its flights. On the whole considerable political importance can be attached to the moral effect produced by the appearance of the aeroplane in this part of Africa.

✓✓✓ THE AIR MEDICAL SERVICE AND THE FLIGHT SURGEON. ✓

Through articles appearing in the general press the public has become generally pretty well acquainted with many of the wonderful advances made by medical science during the war. But there are still other advances that were made that are not so well known, although of equal importance to those concerned with them. Two of these less well known developments were the establishment of a separate branch of the Surgeon General's Office to investigate and handle the medical problems peculiar to the Air Service and the development of that specialized medical officer known as the Flight Surgeon.

The question naturally arises as to why there should be a special Air Medical Service, or why there should be a flight Surgeon distinct from any other Medical Officer. In answering these questions we will make two statements and endeavor to prove them by describing the work of the Flight Surgeon and how the work of the Medical Division of the Air Service in general differs from that of the Medical Department of the rest of the Army. These statements are:

1. The medical problems of aviation are new and entirely different from those of any other service.
2. The Medical care of the flier can be carried out only by one with special training.

The advantages of a special Air Medical Service were first demonstrated by Great Britain. During the first year of the war her air casualties were caused as follows:

Due to Germans 2%

Due to defective planes, 8%

Due to physical defects of pilots, 90%

They then established an independent Air Medical Service and specialized on the care of the flier. The next year the 90% was reduced to 20%, and the following year to 12%.

When the United States entered the war it was decided to follow the advice of our Allies and select specialists in the branches of medical science mentioned below, and assign them to duty with the Air Service. It was discovered that we knew little or nothing about the medical problems of aviation and in order properly to investigate these problems the Medical Research Laboratory of the Air Service was established at Mineola, New York. The laboratory was subdivided into seven professional departments and each department studied the problems of aviation that concerned its own particular field. These departments were Physiology, Heart and Blood Vessels, Eye, Ear, Psychology, Psychiatry and Physics.

The most important phase of the work to attract attention was the effect of low oxygen percentage on the circulation, respiration, mental reaction and the eye. The low pressure tank was installed which simulated the conditions from sea level up to approximately thirty-six thousand feet. Later a rebreathing machine was developed. Briefly the subject breathes over and over again the same air with the impurities removed. The oxygen of course is constantly diminished and the result is similar to that in the tank, for it was early found that the important factor in altitude was the decrease in oxygen percentage and that the decrease in atmospheric pressure and temperature was very secondary considerations. We will speak of these machines later in connection with the classification of fliers.

The specialized work of the Medical Division, Air Service, consists of three things:

1. The selection of the Flier.
2. The classification of the Flier.
3. The maintenance of the Flier.

Now what line is to be drawn in the selection of the flier? First of all it was soon discovered that the standard physical examination for entrance to the army was not sufficient. One of the most important things for a flier to have is good eyes, and by good eyes we mean not only eyes that can see good straight ahead but eyes that while looking at one object clearly are well aware of surrounding objects. The eye muscles must be well balanced, so that there is no tendency to see double. Which tendency becomes quite manifest under fatigue and the strain of high altitudes. The flier must be able to judge accurately the relative position of objects which he sees. This is called stereoscopic vision and it takes excellent stereoscopic vision to make a landing with an aeroplane. Special apparatus for making many of these tests was devised at Mineola.

In the ear, nose and throat examination a normal nose and throat are insisted on. Diseased or enlarged tonsils, or a badly deflected nasal septum that interferes with free breathing must be corrected. The condition of the ear drum must be healthy. Any perforation of the drums or discharge from the middle ear is a cause for rejection. Hearing must be absolutely normal. It is also essential that the sense of equilibrium, which is the function of the internal ear, be normal. This is tested by the turning chair, which has been widely discussed in the press.

The general physical examination is similar to that adopted for recruits for the army in general, except that the standards are more rigidly adhered to.

In addition to the physical examination a personality study is made in each case. The objects of this examination are to detect nervous and mental diseases which may render the candidate temporarily or permanently unfit for the service, to form a definite idea as to what extent the aviator will stand the pressure on arriving at the front, and to determine and, as far as possible, compensate for the existence of any latent tendencies which under the stress of actual warfare, would become so accentuated as to make him inefficient and increase his danger of nervous and mental collapse. The vital importance of such a determination of the personality trends and potentialities is seen in the fact that apart from the disability arising from epidemics, probably 70% of the cases of lowered efficiency among the aviators is due to a break, either partial or complete, in the nervous system. This condition we term staleness. The early recognition of the prodromal symptoms of such staleness counts everything as a means of prevention of crashes with their attendant injuries and the maintenance of a high degree of efficiency in the Air Service.

After we have selected the candidates for flying we then proceed to classify them. This classification is based on the information which has been discovered at the Medical Research Laboratory by means of the rebreathing machine. First of all the aviator is given a general physical examination, including an examination of the eyes. He is also given a personality rating. The candidate is then given the rebreathing examination. In this the candidate is tested as to the reaction of his heart, circulation, respiration, attention and motor co-ordination.

The men are then graded into four classes, as determined by the needs of the service. Class D are grounded, they being totally unfit to fly. Class "C" are allowed to fly up to ten thousand feet, and usually show some circulatory strain. Class "B" are allowed to fly up to fifteen thousand feet, and Class "A" to any altitude. Combat work is done at very high altitudes, day bombing at moderate altitudes and night bombing and reconnaissance at low altitudes, so that these classifications meet the needs of the service. Of the A, B, and C classes a about 61% are rated A, 25% B, and 14% C. So by these methods we are able to determine before a flyer ever leaves the ground, the altitude to which he may safely fly.

AIR SERVICE OFFICER HAS A NARROW ESCAPE

Lieut. Charles McGowan, Engineering Officer, 166th Aero Squadron at Laredo, Texas had a most narrow escape while piloting a DeHaviland 4-B plane.

In taking off from the Laredo Airdrome he ran into the propeller wash or draft from a D.H. just ahead of him which partially deprived him of the control of his plane. The circumstances were such that he found it impossible to avoid hitting a wind mill headon.

The collision resulted in a total demolition of the wind mill and a wreck of about 30 per cent of his plane. His propeller was shattered and his landing gear completely stripped off but in spite of handicaps he made a very expert landing. Neither pilot nor observer were injured.

AERIAL PHOTOGRAPHIC SURVEYING TESTS

By paragraph 13, Personnel Order #69 of the Air Service, a board of five officers has been appointed, composed of Captain Albert W. Stevens, A.S.A., Aerial Observer, 2nd Lieut. Lewis McSpaden, A.S.A., Airplane Pilot, and three Air Service Officers on duty at the Air Service Engineering Division, Dayton, to be selected by the Chief thereof, to make tests of the tri-lens or Bagley aerial camera, transformer and other auxiliary devices; the Air Service K-1 camera; a modification of the K-1 camera, known as the Fairchild camera; the Eastman or Robertson camera, and any other aerial camera, camera appliance or aeronautical device considered suitable for obtaining the kind of aerial photographs desired for use in connection with the preparation of maps. The order directs that the Board convene April 3, 1920 at the Engineering Division, Dayton. Major James W. Bagley, Corps of Engineers, inventor of the Bagley camera will be present at the tests. Representatives of the U. S. Coast Geodetic Survey and U.S. Geological Survey are also expected. It is believed that these tests will have the result of crystallizing the various ideas and methods that have been proposed in the application of aerial photography to mapping, and, as a result it is hoped there will be an appreciable development of this important function of the Air Service.

MAJOR ERNEST L. JONES RECEIVES MEDAL OF HONOR

Major Ernest L. Jones, Chief of Dissemination Division, Information Group, Air Service has been awarded a medal of honor by the French Government.

Major Jones is one of the pioneers in the aeronautical world. He was president of the first aeronautical manufacturers association which is now out of existence and also published the magazine "Aeronautics" a pioneer technical journal which was the first in the field of aeronautics after the practical demonstration flight of Wright Brothers in 1903.

Due to his intricate knowledge of aeronautics and with his experience in connection with the early inventors he was placed in charge of organizing an Information Section for the Aviation Section, Signal Corps by the Chief Signal Officer. Upon the completion of this work which was in the latter part of 1917 he was sent overseas and made Chief of the Information Section of the Air Service of the A.E.F.

PHOTOGRAPHIC MATERIAL TO BE SOLD BY AIR SERVICE

The Supply Group of the Air Service have released thru the Material Disposal Division the following Photographic Material:

- 18 cameras, Gun Mark III - Unserviceable
- 59 cameras, Hythe Gun, Mk III H - Unserviceable
- 64 cameras, Type C, 34 without lens, 4 x 5, American, with B & L Tessar Ser. 1 C 8-1/2" lens
- 101 cameras, Type E, 9 without lens, American, 4 x 5, B & L Ser. 1 C
- 26 cameras, Brock No. 4 lens, Wollensak, Velostigmat F.4.5, 12"
22 have Dunlak Manhattan lens.
- 9 cameras, Brook No. 5 lens, Wollensak, Velostigmat Ser., 2 F 4.5
8 unserviceable
- 2 cameras, Brock Jr., No. 3
- 2 cameras, Schramback View, 13 x 18 cm lens, Sigmar Foyer F.6.8, 19 cm.
- 3 cameras, Demaria View, 2 13 x 18 and 1 18 x 24
- 2 cameras, Schramback View, 1 18 x 24, no lens, and 1 13 x 18 no lens
- 2 cameras, Demaria View 18 x 24 cm. no lens
- 7 cameras, enlarging F & S, R.B. 8 x 10 - Unserviceable
- 2 cameras, Enlarging B & J 4 x 5, no lens, no lighting system
- 1 camera, Enlarging, R.O.C. 5 x 7, no lens (obsolete)
- 200-L type cameras size 4 x 5 will be released for salvage in about one month from present date.

This material together with some other similar equipment is being inventoried and upon completion of this inventory will be advertised for sale by the Material Disposal & Salvage Division in accordance with our regular procedure. It cannot be advised whether or not at the present time, these are complete with cradles, propellers, shafts and magazines, but it is thought that these items are lacking. The cameras will be appraised and sold at not less than the prices fixed by such appraisal. As soon as the bulletin sheets advertising this material for sale are published, copies will be furnished upon request from the Publication Section, Material Disposal & Salvage Division.

Sales of surplus Air Service property are being made by negotiation and to the highest of not less than three independent and competitive bidders. Sales are made f.o.b. point of storage and check in full payment made payable to the Disbursing Officer, Air Service is required before shipment is made.

BOMBARDING STREETS WITH LITERATURE IN RECRUITING DRIVE

The First Day Bombardment Aero Squadron are cooperating with the 2nd Division in dissemination of recruiting literature. Three D.H. 4 B'S made a series of flights to Alamo Plaza, Texas. A few hundred sheets of the large quantity dropped bore mis-statements which could be detected by comparing the dropped sheet with a correct version, published in the early issue of the afternoon papers.

This issue was circulated on the streets at the time the literature was dropped from the aeroplanes. The holder of the sheet bearing a mis-statement was entitled to a ticket to the local theatre.

This plan has resulted in a stimulation of public interest and recruiting is booming rapidly.

AERIAL BOMBS RECEIVED AT PANAMA

During the week airplane bombs were received by the 7th Aero Squadron at France Field, Panama. Previous to the arrival of this shipment there were no aerial bombs, available and therefore only reconnaissance flights could be engaged in.

The arrival of these bombs has created an intense interest in connection with bombing engagements and competition for accuracy will be keen among the flying personnel.

Plans are under way to have large rafts towed out to sea from the naval submarine base to be used as targets.

MAJOR SCHROEDER'S FLOWMETER REVEALS THAT GASOLINE BOILS ABOVE 6000 FT.

Considerable trouble has been experienced by Major Schroeder during his big altitude flights on account of the failure of his siphon pump to deliver gasoline to the carburetor at high altitudes. Upon installation of the Schroeder flowmeter in the gasoline feed system he discovered boiling of the gasoline at altitudes from 6000 feet and up. This was indicated by bubbles appearing in the glass tube of the flowmeter at about 6000 feet. These bubbles increasing in number and size with the altitude finally resulting in breaking the suction of the pump and consequent failure of the pump itself. Experiments in the laboratory of the Material Section, Engineering Division, reproduced this situation exactly on reducing the pressure on the gasoline to pressures corresponding to atmospheric pressures at various altitudes, and an analysis of the gasoline by distillation process showed the gasoline to be casing head gasoline rather than straight run. As casing head gasoline has a much lower boiling point than called for by Specifications Nos. 3511-B covering Domestic, 3512 for Expert, and 3513-A for Fighting gasolines, the conclusion was immediately arrived at that a gasoline having a higher initial boiling point and consequently conforming more closely to the specifications would stop the boiling that had been experienced. Consequently a gasoline conforming to Specification No. 3511-B was ordered from the Sun Oil Company and used by Major Schroeder in his last two flights with no trouble whatever experienced due to boiling. The matter of condemning the gasolines used at the Field on the ground of not meeting specifications had been under consideration for sometime, but had not been decided upon definitely as it was something of an advantage to be able to use the ordinary high test gasoline on sale at all filling stations.

However, this instance together with trouble experienced in the Dynamometer Laboratory and increasing complaints about evaporation losses at the Hangers led to condemnation of the casing head gasolines and immediately increased the quality of the gasolines to the point where they now meet specifications.

The principal lesson drawn from this series of experiences is the wide spread prevalence of an incorrect impression among Air Service personnel concerning the efficiency of the specific gravity test of gasoline. Most all Air Service personnel regard a gravity of 65 Baumé, or specific gravity of .72, as establishing beyond a shadow of a doubt the efficiency and general good qualities of the gasoline. This, however, is not correct as two gasolines, - one straight run and the other blended casing head - can be given identical specific gravities but very different distillation curves, that is to say plotted curves which give the initial boiling points, the final boiling point and the intermediate points. The casing head gasoline will show considerably greater loss by evaporation before it gets to the carburetor of the plane, and considerably less power delivered in the motor after it gets there, than does the straight run gasoline. By 'straight run' is meant that fraction from a crude petroleum distilling off between such points as are designated to constitute the fraction known as gasoline.

Inspection of Specifications Nos. 3511-B, 3512 and 3513-A, will disclose the fact that specific gravity is not named as a requirement of either of the three gasolines but that entire dependence is placed on the distillation curve. Specific gravity is of value only in distinguishing between straight run gasolines of the same base and is of no value whatever in determining the quality of the gasoline unless it is known before hand whether the gasoline is from a paraffine or asphaltum base, and also that it is a straight run gasoline. The distillation curve, on the other hand, does give the relative efficiencies of the gasolines and is the only known, reasonably short, test which can be used for the purpose.

Detailed description of this apparatus and the manner of using it will be sent out in information Circulars in the near future, and it is hoped that field commanders will install and use it for the inspection of gasoline.

The Power Plant Laboratory has just recently developed an outfit to test various types of single cylinder air-cooled engines. Several representative cylinder constructions have already been tested and their thermal and mechanical characteristics studied. Included in the outfit is a very ingenious electrical device for measuring wall temperatures instantaneously. Among the types tested have been the A.B.C. cylinder and the Smith Cylinder. A test was made of the 320 H.P., A.B.C. Dragonfly engine which resulted in a complete engine failure, due to the poor lubrication system. The engine did not maintain its power, delivering 304 H.P., at 1680 R.P.M. and having an excessive fuel consumption. An A.B.C. Wasp engine has also been tested and is delivering exactly the rated horsepower of 170 at 1800 R.P.M. Distribution on this engine is not very good.

The new geared 300 Hispano Suiza engine designed for cannon mounting has been given preliminary tests and appears to be entirely satisfactory. The power output is 340 H.P. at 1800 R.P.M.

A new Packard 12 has been tested and has been delivering 282 H.P. at 1600 R.P.M. with a fuel consumption of .460 lbs. per brake horsepower hour, which is as good as the most economical type of German engines.

Circular proposals have been sent out requesting bids for Radial air-cooled airplane engines.

VISCOUNTESS SALYNAC-FENELON REVIEWS FIRST WING, KELLY FIELD.

Pilots and Observers who served in France will remember the Chateau at Cirey-sui-Blaise and the wonderful French hostess, Viscountess Fenelon, who welcomed with open arms the American Air Service officers who were on a few days leave from the front. Those who were fortunate enough to get away from the Archie and the Fokker and spend a few days at her Chateau cherished a great admiration for the Viscountess and family.

The officers at Kelly Field learned by chance that this charming lady was visiting friends in San Antonio and arrangements were immediately made to have her visit the post. The First Pursuit Group and First Bombardment Group were lined up in front of hangars and the Viscountess accompanied by Colonel Archie Miller and staff drove up to each Squadron questioned the Squadron Commander and old acquaintances were renewed.

Immediately after inspection both Groups took off the field in formation and passed in review in the air. Then the formation broke up and a real exhibition of looping, spinning, slipping and in fact everything in the bag of tricks of an airman were performed for her benefit. The performance ended with a parachute jump from an airplane.

Following the aerial review a Tea Dance was given by the ladies of the post. The Viscountess expressed herself as "delighted" and extended an invitation to all to visit her home in France.

PARACHUTE USED TO COMMUNICATE WITH GROUND TROOPS

In order to demonstrate that in the time of war an officer or enlisted man needed by ground troops on the march or to deliver important secret verbal orders could with safety use a parachute, an official test was conducted during the week at Douglas, Arizona.

Lieut. Alexander Pearson of the 12th Aero Squadron at Douglas, ascended in a DeHaviland-4B, received a verbal message from the commanding officer at Douglas to deliver to a company of cavalry and ground troops 30 miles away. He succeeded in locating the troops at Fairbanks, signaled to be sure they were his own and upon receiving an answer in proper code he promptly stepped off from the fuselage at an altitude of 3,000 feet in a 30 mile wind and landed safely in the field he had selected within a half mile of the ground troops.

This is probably the first attempt made with a parachute to conduct important secret messages by the observer jumping from an airplane with a parachute.

ENGINE CRANKSHAFT BREAKS IN AIR

Two officers of "B" Flight 8th Aero Squadron, narrowly escaped injuries when Lieut. H.G. Crocker was forced to land the plane in which they were flying in a small field near Delores Mines, Texas on account of connecting rod in the engine becoming disengaged from the crank shaft. Plane was headed down wind at such a low altitude that a turn was impossible; but luckily the only open field in that vicinity was in reach. The plane was landed as short as possible, but rolled the entire length of the field and turned over on its back, so that the portion of the fuselage back of the wings extended out over a gully twenty feet deep; Lieut. Bruce Cleveland, who was acting as observer found himself hanging head-down, with a sheer twenty feet drop to earth. The speed of the plane had been reduced to such an extent that it was damaged but very little by the crash. It was necessary however that it be disassembled in order to bring it home, and the country over which the route of travel lay was so rough that it was necessary to send the plane to Dallas for repairs.

MARCH WINDS IN TEXAS HAVE NOT PREVENTED FLYING

The month of March, so far, has been characterized at Rich Field, Texas by the usual and customary "March winds" which seem to have brought with them more than the usual number of "Bumpy". One, at times, can stand in the breezes and imagine that a fair portion of Oklahoma, some of Kansas, and a "wee bit" of Nebraska is rapidly passing by. However, the fliers who have been "schooled" in Texas flying fields have no fear of "March winds" and "Bumpy" air, and some interesting experiences are almost a daily occurrence. Recently, when the Rich Field flying personnel were piloting a consignment of JN-4D's from Rich Field, Waco, Texas, to Love Field, Dallas, Texas, an air line distance of between 90 and 95 miles, a strong tail wind from the south, on one occasion, enabled Lieut. James B. Kelsey to land at Love Field 52 minutes after departure from Rich Field. Curtiss JN-4D's were used and they averaged a speed of 104 miles per hour.

CANTEEN FURNISHES GAS AND OIL FOR CIVILIAN FLYERS.

The Detachment canteen at Rich Field, Texas has inaugurated a scheme at Rich Field which is proving popular with the many civilian fliers who land here for gas and oil. They have installed tanks near the flying field and the civilian pilots are not much delayed when they land here for these flying necessities. The gas and oil are sold to the pilots at standard prices and a small charge is made for "service" which goes into the canteen fund of the Detachment. The gas and oil are purchased by the Canteen from local dealers in Waco and an ample supply is kept on hand to supply the needs of those who land at Rich Field for that purpose.

THE PERSONNEL AT KELLY FIELD PLAY A GAME WITH THE N.Y. GIANTS.

All work was suspended at noon yesterday and a half holiday was declared. Early in the morning several trucks and cars were sent into the city to pick up the members of the New York Giants baseball club and by eleven o'clock the entire club had arrived on the field. Each organization on Kelly Field entertained various members of the New York team, showing them through the hangars, the machine shops, radio school etc.

After a dinner at the Officers' Club the baseball field, which has become one of the fastest and best fields in Texas, was cleared for action and the Kelly Field Post Team "Gave her the gun" and "Took off", for five innings.

The Kelly Field team, considering they had only practiced together for three days, did remarkably well. Lieut. Eller pitched an excellent game for the first five innings holding the Giants to two runs and drove in three runs with a home run in the third inning.

The score in the fifth inning was five to two in favor of Kelly Field, but at this time several bases on balls called on Lieut. Eller and Sgt. Saylor went into the box to relieve the situation. It was too late however and in the last four innings the Giants slammed in a total of fourteen runs.

Although the score during the last four innings was a big one Kelly Field can well be proud of the Post Team. With the exception of one professional team we are the only team in this vicinity that has given the Giants a run for their money during any part of a game.

A tremendous crowd attended the baseball game and flying exhibition and during the course of the afternoon thirty seven members of the New York team were taken up for short rides in D.H. 4's and Curtiss training planes.

Manager McGraw was enthusiastic over his flight and couldn't get over the speed at which he had been traveling. During the course of the afternoon a parachute jump from a D.H.-4 plane was made by Lieut. "Deadweight" (a dummy). Lt. "Deadweight" it was announced to the crowd had made more successful parachute jumps than any one person in the entire Air Service, and it was well advertised that he had served in one capacity or another in almost every army in the world.

12th AIR SCADRON

During the last two weeks daily Cavalry Liaison have been held with the first Cavalry Regt. less L Troop and Machinegun Company, of about six hundred and twenty five men mounted, thirty three light trucks and twenty five heavy trucks. The area covered was from Douglas to Nogales to Tucson and return to Douglas, a distance of over three hundred and fifty miles by road. Liout. George Johnson, an observer of this flight, made the ride with the Cavalry, and acted as Liaison Officer. Thirty five panels were used on the ground and later, due to the varying conditions, white strips four feet long by ten inches wide were used to spell out words on the ground, this proved very successful, very accurate and rapid, five men on the ground being able to place ten letters and plane to acknowledge same in less than one minute's time. Mail was delivered daily to the troops with the exception of two days due to bad weather conditions, which during this entire period high winds prevailed and due to the country in which observers had to work required an altitude of about five hundred (500) feet.

ACTIVITIES AT THE AIR SERVICE MECHANICS SCHOOL

On Friday, March the 19th, an impressive procession wound its way out of the flying department hangars and out on the line. In the van was a Spad with a 220 horse power motor, Hispano Suiza, proudly shouldered by seven tried and true mechanics. Sergeant First Class Kilgore, bursting with pride, fussed around the ship like a mother hen with one chick, as he directed his underlings in detail.

After the warm-up the test pilot took it off the ground in a snaky manner, finally navigating to the upper air in safety. The first Spad ever flown on Kelly Field made tracks for Kelly No. 2, watched affectionately by the mechanics and cursed heartily by the pilot as he fought the left-wing-heaviness and the disposition of the nose to exalt itself skyward. The mechanics had to rig the ship without any specifications. The A.S.M.S., men have not yet completed their French instruction, so the foreign directions were not valuable to them. They did a mighty good job in view of this fact, and on the next trip the ship was perfect.

Since that day the Spad has lurked among the clouds, watching for some unwary S.E.-5 to hop on. The older pilots, who have flown it, are growing more and more enthusiastic each day about the ship.

Lieut. St. John, with the impressive time of forty five minutes in a Spad, brought it down safely with a dead stick in a small hay-field Tuesday. After alighting he gave vent to sundry Ha, Ha's, and Hee, Hee's as he thought of the overseas pilots who had devoted so much time to telling how hard Spads were to fly. "If you can fly a 'Jenny' you can fly them all", remarked St. John. He is right, at that.

The D.H.-4B, for use in the parachute jumping conducted as a part of the parachute course in the A.S.M.S., has been set up and tested. Dropping the umbrellas with dead weights has already been tried, and the first live jump looms in the offing. Two applications for first jump have already been received. Seems rather peculiar why there should be such a rush. Officers are falling over themselves for a chance to jump. Apparently there will be some interesting sights after three thirty in the afternoon.

A SERIES OF ACCIDENTS

There was a combination of accidents and tantalizing complications to mar the happiness of the School flying officers Thursday. Liout. Shovlin came down in a "Jenny" twelve miles southeast of town. A search party took two hours to locate him. With a Sergeant in the rear seat to support five gallons of gas one ship dove for the field. It was a soft, plowed affair with deep furrows. After several near crackups the ship finally reached the side of Lt. Shovlin's machine, only to find him gone. He had been disgusted by waiting, and had hiked eight miles to a main road, leaving a guard by the ship.

There was nothing to do but go home for another pilot, so the Sergeant attempted to crank the ship. It kicked. Result, a nasty looking hand that may be broken. When the pain had died down somewhat, the pilot and the Sergeant started off. After a number of near turnups in the soft ground the ship was finally stalled off, and several tree tops came home with the ships.

Rather than risk another good ship it was decided to send a pilot down by automobile, which was done, and the ship returned safely. It was by the light of the moon. The Cadillac, with Lieut. Shovlin enthroned therein, sailed home over these Texas roads and landed Lieut. Shovlin in his quarters about the most tired, disgusted mortal that ever grabbed a joystick.

One of the bright incidents of his trip was the buying of some cigars for an old gentleman who was so bad off for a smoke that he began using his old stubs. Cigars were in payment for dinner, and now the old gentleman is in clover, with new stubs being made hourly.

FIRST DAY BOMBARDMENT GROUP

During the past week considerable attention has been devoted to the location of available De Haviland landing fields in the vicinity of all large towns within a radius of 100 miles from San Antonio. It is expected these fields will be used in the near future in connection with recruiting work. Bearing in mind the fact that a good landing field for a D.H. is usually a matter of development rather than chance. Results obtained were eminently satisfactory. The predominately flat terrain of Southern Texas renders the selection of first class natural landing fields a much more simple matter than would perhaps be the case in any other section of the country. All squadrons of the Group participated in Reconnaissance missions over widely distributed area with the result that the Operations Office is now supplied with accurate information concerning a number of fields conveniently adjacent to population centers.

NOTES OF INTEREST CONCERNING SQUADRONS ON THE BORDER

5TH AERO SQUADRON PHOTOGRAPHY, LAREDO, TEXAS

A photographic plane equipped for taking pictures of all the Airdromes along the Mexican Border, arrived at Laredo Wednesday March 17th. After completing the work here, Sergeant McConnell the Photographer, was ferried to McAllen, Texas where pictures of that station were made. The complete set of plates were then delivered by Lieut. McNiell of McAllen, Texas, and were relayed from here to the Airdrome at Eagle Pass, by Lieut. McCune. They were relayed in like manner by each flight along the Border, until the Headquarters of the First Surveillance Group, at El Paso, Texas was reached.

SUCCESSFUL JUMP IN IRVING PARACHUTE AT DOUGLAS, ARIZONA

Under authority of Brig. General McCoy, Commanding General, Arizona District, 2nd Lieut. Raymond C. Milyard, pilot of Flight "A", 12th Aero Squadron, on March 13th made a successful jump in an Irving parachute. In the afternoon, Lieut. Milyard, riding in the observer's cockpit with Lieut. Greenslade as pilot, ascended to 2200 feet, where he climbed out on the steps. He then placed the ring, which is used to release the container in his mouth. Lieut. Greenslade put the ship into a sideslip and Lieut. Milyard jumped backward so that he would clear the tail of the plane, which he did by over seven feet. After falling seventy five (75) feet he pulled the package release and the parachute functioned properly opening without even a jar to the jumper. He landed in a little over four (4) minutes and was able to control the movement of the parachute by pulling on the high side.

NOTES OF INTEREST CONCERNING SQUADRONS ON THE BORDER

First Pursuit Group

During the past few weeks the 27th Aero Squadron lost a large proportion of their non-commissioned officers. Most of these men have completed three years of active service, and have had much to do in the reconstruction and training activities of several fields. At first we were somewhat concerned about the loss of these capable men, but now other men are showing the stuff that will insure the filling of these recent vacancies and improve the rather dubious outlook. With a few more officers the details could be taken care of. Many of the officers would feel at home in their "dungarees" if they could bring back sweet memories of that cruise which included overseas service. The 27th is bustling as before and as long as there is 24 hours to work in the Squadron will carry on as usual.

The Squadron suffered the loss of 1st Lieut. Thomas H. Gill, A.S.A. this week, by discharge. He was formerly Commanding Officer of 27th Squadron, and lately Instructor in English Literature at the West Point Preparatory School. He combined a rare insight and sympathy with natural leadership, the squadron was very sorry to part with him.

In presenting a tapestry-upholstered rocking chair to Lt. Gill on behalf of the Squadron, Lt. Wood made some clever insinuations to the effect that the rocking chair was peculiarly appropriate to the alleged sedentary habits of Lt. Gill, but no one believed him for a moment. Speeches were made by Lt. and Mrs. Gill. Lt. Gill resigned to accept a position in the Forest Service and will be on duty in the Redwood National Forest in California. In honor of Lt. Gill the squadron had a banquet last Sunday noon, at which nearly all the officers of the squadron, together with the wives of such as had them, were present. The event proved an excellent way of strengthening the liaison between the officers and men.

We are losing some of our older men within the next few weeks, who are being discharged or furloughed to the reserve. Many are non-commissioned officers, so there will be a number of vacancies in their grades. We shall be very sorry to lose the valuable services of these men. Their departure will leave us considerable under strength. We are in the market for new members. Real live men only need apply - at least the "makings". We will bring the "stuff" out if it is in them. We have lots of "pep" and it is contagious.

ACTIVITIES OF ARMY BALLOON SCHOOL AT FORT OMAHA, NEBRASKA

On Saturday, March 14th, a Free Balloon piloted by Second Lieutenant James T. Neeley and having as passengers Captain H. T. Lewis, Captain W. A. Gray, Captain F. J. Durrschmidt, Second Lieutenant R. A. Gibson and Second Lieutenant H. R. Wells left this Post with the intention of making as many flights as possible, each flight to be of one hours duration. The weather this day was very damp due to a recent thaw and on the first landing it was not necessary to use any sand or valve the balloon at all. After one hour and ten minutes of flying the party landed in a very swampy country five miles west of Missouri Valley, Iowa and as it was not desired to leave a man out here the party tried to ascend again but due to the fact that the anchor had collected a large amount of mud the balloon was unable to rise. Three bags of sand were thrown out but the balloon would not rise; it was then decided that one man would have to leave the balloon and Lieutenant Wells stepped out of the basket but the large bag still remained on the ground, a conference was then held and ended with Lieutenants Gibson and Wells starting on their five mile walk to Missouri Valley. The Balloon ascended to thirty six hundred feet after the two men had left the basket. The second flight was of one hour and twenty seven minutes duration; all the men leaving the balloon except Captain W. A. Gray who made his first solo flight landing at Logan, Iowa after one hour and ten minutes of flying.

ACTIVITIES OF THE 6TH AERO SQUADRON AT LUKE FIELD, HAWAII.

The program of inter-island flying is now under full headway. On the 11th of March, a De Haviland formation flew to the Island of Molokai, for the purpose of surveying landing fields, which have been proposed for the use on that island. An attempt was made by Captain Oldys in a De. H4 to fly to the Island of Kauai, but low heavy clouds encountered about ten miles off Oahu, necessitated a return without completion of the mission. Plans are under way, establishing gasoline Stations at fields on the more distant islands of this Group, so that planes can be quickly replenished in fuel and get minor repairs when landing there. On the 8th and 9th of March flights were made around Oahu. Every pilot and observer has now made the trip and is familiar with the physical geography of the Island.

The Photographic Department has so much work on hand that a photo trailer has been drawn into service, to give more room for operations. Pictures of the Arsenal, and Fort De Russy have been taken and enlarged, and mosaics have been made from them. Overlaps of Kahuku wireless station and of the coast line have been photographed.

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The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE APRIL 13, 1920

PICTORIAL MAPS FOR AIRMEN

Considerable thought has been given in both Great Britain and the United States to the development of simple and efficient maps for use in flying over a given route. Often times when the weather is misty the aviator can faintly see a large town spread out below him. In thickly settled districts it would be extremely hard to identify such a town unless some reference is made on the airman's map to some particular distinctive land mark peculiar to that city. A possible solution for this difficulty of recognizing towns has been suggested in placing within the body of the map or along the border, photographs taken from the air which show the distinctive feature of the individual towns along the line of the route. In this way the aviator seeing these towns through the clouds should be able to instantly recognize some feature about them. A land mark in this regard might be anything from a tall building or a monument down to the street plan or system on which the town is laid out. Undoubtedly, in the future it will be a symbol or a marker laid out in concrete at or near towns which will serve to indicate the municipal landing field as well as to show the location or identity of the town.

Whether it will be possible in the future to provide the aviator with complete photographic route maps or not is a matter of conjecture. With airships and giant airplanes, it is felt that it will be possible to provide aerial photographic route maps at a fairly large scale, but the present demands are for the small map more or less of the pocket variety, which will serve to unflinchingly guide the owner or operator of a small airplane, from point to point over a limited territory. With this idea in view it is felt that if insertions are properly selected, photographs of salient points within the area covered by any particular map will prove of value at the present time.

D.H.-4 AIRPLANES BEING EQUIPPED WITH 8 MACHINE GUNS

The Engineering Division of the Air Service at Dayton, Ohio have remodeled 4 De Haviland-4 Airplanes to carry a total of eight (8) machine guns each. The De Haviland-4's now carry 2 fixed synchronized guns, 2 fixed Marlin guns projecting through the floor of the pilot's cockpit, firing at an angle of about 45 degrees, 2 flexible guns on the upper gun mount and 2 Lewis guns in the floor at the rear of the observer's cockpit. In several of these airplanes these lower rear Lewis guns are fixed while in others they are mounted on a sort of a floor turret which allows them to be directed by the observer.

In all of these airplanes the arrangements of the guns are such that the pilot can direct his airplane in such a way as to fire his synchronized guns directly at the object to be attacked. As he gets closer to the object and can no longer fly directly toward it he raises his nose slightly and flies horizontal, firing the lower forward guns at the target. After he passes over the target he brings his lower guns to bear and as he then begins to climb away from the ground the observer can fire his flexibly mounted Lewis Guns at the target, thus the pilot and observer have four sets of guns shooting at the target at different times as the airplane passes over.

Suitable sights are provided so that by maneuvering the airplane the pilot is able to accurately aim all of the fixed guns while the observer is able to direct the fire of the flexible guns. The completed airplanes now at McCook Field are to be sent to the Border for service tests.

HOW AN AIRPLANE STAYS IN THE AIR

Interesting facts about how an air machine keeps above the ground.

66% of the lifting force due to the suction wing panel.

Few people know that about 66% of the actual lifting force of the air is due to the suction on the upper surface of an airplane wing panel, while only 33% can be credited through an actual pressure of the air on the under surface. It is also a significant fact that the amount of force required to move a small line through the air is as great as that required to move a stream line airplane strut several times its diameter.

The influence of the streamline was not formerly understood and seldom taken account of in the design of the struts, fuselage and landing gears of the airplanes. Scientific research and wind tunnel tests and the introduction of smoke through the wind tunnel have revealed the necessity of cutting down head resistance, thus decreasing what is known as drag on drift. The actual course of the air introduced into the wind tunnel and its consequent effect upon the wing can actually be seen by the eye through the introduction of smoke through the wind tunnel, and of course, accurate computations and decisions can be easily made in connection therewith. It indicated the necessity of changing the surface, the cross section of the wing panels, the section of the struts and other exposed surfaces to forms which would offer less resistance.

It is very easy to push a thing into the air but it is hard to get it out without creating a disturbance. If we take a broom handle for instance and sweep it through the air rapidly, we find if we could examine the air immediately following it that a vacuum is created just behind the stick itself, and thus causes an eddying directly behind it, creating a V shaped partial vacuum which decidedly increases the total power required to move the stick through the atmosphere. It was easily found by wind tunnel tests that by filling up this vacuum and changing slightly the entering surface, the stick could be passed through the air much more easily and a considerably smaller amount of power would be required to move it. Any person can observe these facts on any airplane at practically any aviation field. Notice the way the struts are streamlined, the shape of the fuselage and even landing gears how they are streamlined. To cut down wind resistance on some of the types of planes being turned out by the manufacturers even the flying and landing wires are streamlined. Even such small details as these are taken into account which incidentally adds materially to the speed of the airplane.

ACTIVITIES OF ARMY BALLOON SCHOOL, FORT OMAHA

The flying time at Fort Omaha for the past week shows a total of 916 minutes of which 243 minutes consisted of two free balloon flights. The first flight started from Fort Omaha at 1:20 P.M. March 23rd and landed at 2 miles North of Mandermin, Iowa at 2:40 P.M. the distance traveled being 40 miles and the trip consuming 1 hour and 20 minutes. The Balloon was piloted by Second Lieutenant J.R. Hall and carried as passengers Captain W.A. Gray, First Lieutenant C. H. Meranville, Second Lieutenants R. A. Gibson and H.R. Wells and Master Electrician Moody. The second flight left Fort Omaha on March 26th at 1:26 P.M. and landed 4 miles from Calhoun, Iowa at 2:53 P.M., the distance traveled being 13 miles and the time 1 hour and 27 minutes. The Balloon was piloted by Second Lieutenant W.E. Huffman and carried as passengers Captain H.T. Lewis and Second Lieutenants W.E. Connolly, C. Bowling, H.R. Wells and J.A. Physioc. At the conclusion of this flight Captain Lewis made a Solo Flight landing at Missouri Valley, Iowa and traveling 18 miles in 1 hour and 15 minutes.

There are two Balloon Companies scheduled to leave this Post on April 1st, for the Philippine Islands; each company having a strength of approximately 174 men, and carrying with them a large amount of equipment.

HIGH ALTITUDE FREEZES ENLISTED MAN'S FACE

The Commanding Officer of the 12th Aero Squadron, Douglas, Arizona reports that Lieut. Alexander Pearson, Jr., made what is believed to be a record for high altitudes reached by Squadrons on the border. Lieut. Pearson with M.E. Potter in a new D.H. 4-B reached an altitude of 19,400 feet above the airdrome at Douglas or 23,400 feet above the sea level. He had intended flying higher but had to descend on account of the intense suffering of M.E. Potter whose face became badly frozen on account of the intense cold. The thermometer at the highest altitude registered 10 degrees below zero. The entire time of the flight consumed one hour and twenty five minutes, maximum altitude 19,400 feet reached in 54 minutes.

At 15,200 feet in flying over a very large cloud the plane lost 1200 feet in altitude.

The log of this flight is as follows:

<u>Time</u>	<u>Temp. Fahr.</u>	<u>Altitude</u>	<u>Remarks</u>
10:16 A.M.	41 Deg.	0	Airdrome 4000 feet sea level.
10:20	32	2900	Air pressure 3 lbs. oil pressure
10:25	24	6800	22, Motor temp. 85, P.P.M. 1540.
10:30	16	11000	Air speed 50.
10:35	8	14500	Motor temp. 73, oil pressure 25
10:40	6	15200	
10:45	10	14000	Dropped in altitude due to flying
10:50	6	14800	over large cloud.
10:55	4	16300	
11:00	-2	17700	
11:05	-7	18900	
11:10	-10	19400	Or 23,400 feet above sea level. Oil pressure 25, R.P.M. 1520, Motor temp 70.

THE BRISTOL PULLMAN WELL ADAPTED FOR AIR TRAVEL

The Bristol and Colonial Aeroplane Company of England has recently completed an immense passenger or freight carrying triplane of more than ordinary merit, capable of carrying great weight on long distances without danger of forced landings.

In addition to the pilot and engineer this giant airplane has accommodation for 14 passengers. For their comfort and convenience a special Pullman car has been designed in which luxuriously upholstered arm chairs are provided for each passenger. Also an electric grill for cooking and a completely equipped washroom. For each passenger large triplex glass windows are provided and the plane is equipped with an electric heating and lighting system. The seats are so arranged that they may be removed to provide space for the storage of baggage or general cargo, and as much as 320 cubic feet can be made available. In addition to the two pilots the Bristol Pullman is capable of lifting 2700 lbs with fuel for 5 hours flight or alternately 4000 lbs. with fuel for 2 1/2 hours. The plane when fully loaded will average 105 miles per hour on three-fourths throttle or 135 miles per hour maximum full throttle. The Bristol is equipped with four American Liberty Motors with 400 horse power each and are arranged in tandem. The machine will fly on any two motors so that the danger of making a forced landing through engine failure is eliminated. Although this machine was built for commercial purposes it could be turned in the event of a necessity into a dangerous bomber within twenty-four hours by merely stripping down some of its excess weight adding a ten-hour fuel supply and increasing its bomb-carrying space.

AIR SERVICE OBSERVER DISCOVERS BODY OF DROWNED MAN

While on the Roma patrol last Saturday Lieut. Johnson of Flight B, 9th Aero Squadron, Laredo, Texas, discovered a corpse of a man stranded on a small island in the Rio Grande River, about ten miles below Laredo. The body, which has been dead for several days, lay on its back at the edge of the water, so that only the upper part was exposed. Its arms and legs were extended so that from above it assumed a most ghastly appearance. A report was made to the District Headquarters and a detachment of men sent out to bring the remains back in a truck. They were unable to locate it, however, and it was necessary to send a plane to guide them. The body, which proved to be that of a Mexican, could not be identified. It was supposed that he was drowned in an attempt to ford the river.

17 POUNDS GYROSCOPIC COMPASS TEST IN AIRPLANE

For the first time in the history of Aviation a gyroscopic compass was used successfully as a navigating instrument in an airplane. Gyroscopic Compasses embodying practically the same principles have been used for several years on American and Foreign war vessels as well as the merchant marine, and particularly on submarines who depend almost solely upon an instrument of this kind when submerged. The gyroscopic compass as used upon watercraft weigh 2,000 lbs. and are quite bulky.

The Chief problem in adapting a gyroscopic compass for aerial navigation was to design a similar apparatus where weight and bulk commensurate to airplanes with the same accuracy and dependability of the marine type as a result of laborious experimentation that looked hopeless, a model was made weighing only 17 lbs. 14 x 13 inches and tested in flight. The chief advantages over all former types or magneto compasses are:- compass card free from spinning; indicates a true geographic north; no magnetic effect.

The Test was successful in every respect and has definitely proved that a gyro compass will be the compass used for future aerial navigation.

OXYGEN HEATER BEING TESTED TO PREVENT FAILURE AT HIGH ALTITUDES

The Engineering Division, Air Service at Dayton, Ohio, are conducting tests on a new apparatus for heating oxygen at high altitudes to prevent a recurrence of failure at high altitudes, such as experienced by Major Rudolph Schroeder recently in his record climb at Dayton, which came so near to costing his life.

The apparatus consists of a confined thermostatic interrupter in connection with electric resistance coils, attached to a Prouty oxygen generator. The apparatus heats the oxygen as it leaves the exhaust valve of the container, and keeps it heated until it reaches the distributor. This prevents any moisture present from freezing in the delicate distributor, and it also heats the oxygen again before it enters the pilot's mask.

Tests so far have proved the new invention to be of material value, notwithstanding the fact that this apparatus functioned exceptionally well, further and more strenuous tests will be conducted and further improvements will be made.

FORMER OFFICER IN THE 1st PURSUIT GROUP VISITS RICH FIELD

During the week former Lieut. Clifford McElvain of the 27th Aero Squadron, First Pursuit Group, A.E.F. called on his old friends at Rich Field.

"Lieut. McElvain had quite a thrilling experience during the year he served with the First Pursuit Group. On August 1st, 1918 he was ordered in company with six others to escort a Photographic Salmson on a photographic reconnaissance in the vicinity of Fismes. The formation protecting the Photographic plane had to make three circuits into Germany and out again in order to give the observer time to change films. On the fourth trip the photographic plane went between two German Chasse formations of 8 planes each which had a distinct advantage over our chasse pilots because of higher altitudes. In the fight that followed four American planes were shot down including Lieut. McElvain who succeeded in landing safely behind the German lines. He was held a prisoner until after the Armistice was signed."

He is on his way to Houston, Texas to purchase a few planes which he intends to use for commercial flying in Iowa his home state.

HOW IT LOOKS AND FEELS TO FLY IN AN AIR-PULLMAN

A few facts as given by Mr. Robert J. Thompson, on his first commercial airship trip may prove of interest. This trip was made in the Bodensee, which flies daily between Friedrichshafen and Berlin. Mr. Thompson related that arriving at the Zeppelin works you are introduced to a vast shed in which the airship is waiting. It was held down by many bags of sand and by cables extending to trolleys running over tracks which extend outside of the shed for a long distance. The airship seemed small in its mammoth "dock", along the sides of which were numerous rubber pipes for filling the ballonettes with hydrogen gas.

These gas-cells of which there are 11 in the Bodensee are placed in a row like peas in a pod and enclosed in an aluminum framework, over which is stretched the fabric of the outer envelope. Sufficient for the first impression upon arrival. You then pass through a small gateway at which point your baggage is checked and weighed, each passenger being allowed 30 pounds free and the excess being charged at the rate of ten cents per pound. Trunks are loaded up in the hold with the gasoline and oil. Well forward and under the body of the airship is the passenger gondola. Its interior is very much like a Pullman chair car both in size and convenience. There are places for 25 passengers, and there were that number of comfortable willow chairs. The windows were removable so that one could look out and directly down on the earth. One thinks that these windows are glass but on lifting it is found they are as light as paper. Even the chairs which are large and roomy, are astoundingly light, in fact everything was substantial and strong but as light as if made of paper. Overhead there were network racks for hand baggage and parcels. Everything necessary was there and everything was complete. The forward end of the gondola is cut off by a partition and serves as a navigating room. To the rear and separated from the passenger compartment is the entrance gangway and buffet. There is most always a full passenger list and in addition to these a crew of 16 men are always available when needed, in their quarters in the hold of the airship. Hardly do the passengers get seated when they discover they are being towed out of the hall, and freed from the various moorings whereupon the mammoth airship arises into the air increasing its speed as the motors are started. During one's first airship flight minutes impress you as seconds and hours pass like minutes. It seemed that the famous Palace of Sans Souci had been hardly left behind, spread out like a souvenir card, when the Thuringen Forest hove into view way beyond, overcast by the clouds of a snow storm. Then with the dull dreary sub-tone of the motors gradually becoming less and less the Swiss frontier and the Alps seemed to reach up and greet one.

Directly over the landing field at Lake Constance the machine stopped for a moment and then moving slowly forward the airship steered for the ground at an easy angle. Five minutes later you are down and safely anchored. The flight had been made in about five hours which it would have taken 25 to cover the same distance by railroad. It would seem that the world looks a good bit like a movie thriller to the average man taking his first airship trip. He has never seen things from this angle before and had no idea they could even look that way. Bewilderment and strange impressions accompany the initial flying trip, and usually only one or two outstanding impressions remain. Mr. Thompson considered the pursuing black shadow of their craft as seen on the earth below as a phantom, and also the fact that there was no impression of being up in the air unless one looked out and saw the earth swiftly passing like a kaleidoscopic view below, as his two cherished memories of his trip.

A MEDICAL OFFICER'S IMPRESSION OF SECOND LIEUT. ON HIS FIRST FLIGHT

The following letter was written by a Medical Corps Major to a friend in the United States shortly after having a hop in a Salmson of the 99th Aero. The City of "Puncturing spires" is Chaumont, Haute-Marne.

"I must write to you about my first trip in an aeroplane: I had received several invitations to fly, but although I fully intended flying some day, had never found it convenient. This particular day, however, I was called to investigate the death of a French civilian at the Aviation camp, which civilian had persisted in dying, without the aid of a physician. (Isn't it strange how some men will die without any help at all?) This Frenchman by the way had heard a great deal concerning the burning and poisoning properties of mustard gas and had been curious to learn if the cartridges of this substance were really as dangerous as claimed. As he was dead when I arrived, I was unable to get a statement of his opinion but concluded that he found that they were.

But I digress from the flying trip. However, that is one thing one learns about a flying trip, they always consist of many diversions that have absolutely nothing to do with the trip itself. Well, Howard, being right at the camp, the Adjutant decided that I ought to take a trip in one of the planes while we were waiting for dinner. Hastily looking at my watch, I thought of several excellent reasons why I should return before dinner, but the Adjutant and the Commanding Officer were both so affable that I concluded to remain to dinner, but regretted that I could not go up as I was not dressed warm enough and feared chilling, also casually mentioning the fact that the high altitude might make a serious impression upon a heart which my friends have frequently assured me was much subject to impressions. They brushed these objections aside by bringing out their own coats and helmets for me to wear and conducted me out to the hangar. The grounds around which were pleasantly strewn with machines in more or less state of demolition that had crashed from time to time. Now you understand, Howard, that personally I was not at all timid about flying. I have always wanted to fly, but my first duty was to the flag and I realized the serious inconvenience that an accident to me would cause the Government. I mentioned this with much reticence to the Aviation Officers, but they seemed so intent on trying to find a suitable machine that they paid no attention to the remark.

At last they led me over to a low rakish craft and introduced me to a second lieutenant whose name I did not catch, but whose manner was all that could be desired. Howard, did you ever meet a second lieutenant? You must do so. It is really an experience. There are of course other ranking officers in an army, but they are only officers. A second lieutenant is a personage. If I went into another war, Howard, and was given my choice of commissions, I would choose to be either a second lieutenant or a top sergeant. This lieutenant seemed to take a great deal of pride in this particular plane which was a two seated affair of French extraction, with a machine gun mounting and had been used for bombing purposes. I walked around it, critically examining the engine and planes, hoping the bugle would sound mess, but finally told them, that while I preferred to ~~drive~~ drive a single seater, I didn't mind taking this for a short flight. They said, however, that it was customary to send a driver along for the first few flights and that the lieutenant would gladly take me. I reluctantly consented to this although I remarked that Ray Lowe had shown me how to take an Oldsmobile apart and Ed Haskell had sold me a Buick which could do stunts that would put a flying machine to shame.

They then swaddled me in overcoats until I was perfectly helpless and strapped me into the back seat of this murderous looking machine, pulling tight over my head and ears what they called the helmet but which reminded me of nothing but the cap pulled over the head of a criminal as he ascended the scaffold. The speaking tubes were adjusted and the lieutenant looked around with an engaging smile and said that if I were ready we would start. I said nothing but gave him a look of trustful confidence that I did not really feel. We started. He ran first several times around the field as though at least giving me a chance to say good bye to all the company, then we began to rise. I watched the plane very carefully but the wings which seemed to me to be far too frail, seemed to be holding well, my self confidence returned and I settled back to enjoy the flight.

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We were coursing merrily along, I was sitting very low, (to avoid the rush of wind), and holding to the machine gun rail with both hands. (Before we went up I had been told that if an accident occurred the crash would not be so dangerous if I held to this rail tightly). When I decided to ask how high we were and called to the lieutenant through the speaking tube. There was no response and after calling several times I ventured to raise up enough to peep over the front of the seat when to my dismay I saw that he did not have his tube adjusted; just then however he looked around and placed the tube to his ear. He said that we were up about a mile and a half and that we would not go up much higher as it might be quite cold and besides the engine was not working very well. I asked him if he would please keep the tube to his ear as I could get at my watch easier than he could and remind him so that we would not be late for dinner. He said he did not mind doing it for me, but that he had been up with another darn fool the day before and he had almost ruined his eardrum by holding the mouthpiece against the wind. I was much assured by his confidence in me and began to enjoy the wonderful panorama of the landscape flowing so far below and the fleeciness of the clouds which we were touching. We were passing over a French city just then and the lieutenant looked around with his pleasant smile and motioned me to look over the side the better to see it.

Howard, never put your faith in the smile of a second lieutenant. Unless you have experienced it, you cannot conceive the hellish disposition lurking behind the innocent and angelic smile of a lieutenant of the Aviation Corps. Just as I raised up to look over the side of that machine he tipped those planes absolutely vertically! Howard, when you promenade those quiet French cities and note the restful beauty of the architecture you would never believe, that, seen from above, they are a seething mass of puncturing spires and jagged, hideous pillories. I could see the whole city, Howard, and we were directly over the roughest part. I saw all of that city that I cared to see, but he must of thought I cared to see it from the other side for he had no sooner assumed the horizontal before he tipped entirely the other way! Right then I began to suspect that young man. I recalled the many instances of Hun espionage. His profile seemed to assume a squat, square, brutal outline. I tried to recall if his name had a Teuton sound. I regretted having mentioned how our army would be crippled by my loss. I resolved that if we ever reached the ground alive I would immediately place him in custody. Howard, he must have sensed my suspicion, for suddenly murder seemed to fill his heart. He dashed this way and that! The very machine appeared to be leagued in his diabolical design. It dove, dipped, bucked and bolted. It flirted with its tail and turned completely over! It leaped into the air and slid down backwards. It jumped to both sides at once with spiral twists ever and anon, his fiendish purpose masked by an angelical smile. That second lieutenant would look around to see if my pulseless body were crashing towards those waiting spires. I gave up. I wrapped both legs and arms around the machine gun and closed my eyes. Finally he seemed to decide that the only way to accomplish his fell intent was to sacrifice his own life. He turned the nose of that machine perpendicularly towards the earth and dashed directly at those spires! Down, down, down! The sky rushed and roared by. The bottom seemed to fall from everything. I had much the same feeling once when I was on a small steamer in a storm on Lake Michigan.

But we didn't hit the spires, Howard, he reckoned without his host. In falling a strong wind had blown us toward the aviation field and as soon as he realized that his subtle attempts on my life could be observed he righted the plane just in time to avoid striking the tops of some trees that lined the road to the camp, made a perfectly smooth landing and brought the plane to an even stop at the hangar. To my intense surprise, the Commanding Officers and his fellow flyers actually complimented this lieutenant on the splendid flight he had made.

At dinner I cautiously voiced my suspicions and suggested he be at least placed under surveillance, but as he appeared a young man of good habits, American born, and of unquestionable patriotism, no charge against him could be sustained, except perhaps before a Court-Martial composed of Infantry Officers.

COURSE OF INSTRUCTION AT WILBUR WRIGHT AIR SERVICE DEPOT

The Air Service requires trained personnel in every phase of its work. It is absolutely essential that a large part of its personnel must have a thorough and complete knowledge of airplanes, engines, machinery and tools, oils and lubrication, and in the Supply Department particularly, a thorough knowledge of property accountability. For this reason the Air Service Stockkeepers School was established at the Wilbur Wright Air Service Depot. In the class room instruction in the nomenclature of all active types of airplanes and engines is given. The method of instruction in both the airplane class room and the engine class room is very similar. The students are first taught the name of each individual part and the function it performs, the relation that each part bears to other parts which form a sub-assembly, the relation of the sub-assemblies which constitute the assemblies and so on.

In the engine class room the individual parts are mounted on boards and under each part is a card bearing its name. The Instructor points to the part, gives its name and function. A similar part is passed around to the class so that each student may hold it in his hand, examine it minutely and obtain a clear mental photograph of the part and the function it performs in the engine. The heavier parts such as crank cases and cylinders are mounted on low tables. When instruction is completed on one type of engine, all the parts that constitute the engine are placed on a table and the student is required to take in his hand each part, give its name and the function it performs and place it on a second table. By this method of instruction there is no doubt in the mind of the Commandant or the Instructor as to whether or not the students have a thorough knowledge of the nomenclature of the engine.

In the Machinery and Tools Course, a model metal working shop and a model wood working shop is being established. All the tools necessary in the metal and woodworking shops, peculiar to the types of machines used in the shops in the Air Service will be assembled with the machine to which they belong. It is not the intention to give instruction in turning out work with these machines such as would be given in an Air Service Mechanics School, but it is the intention to give sufficient instruction so that the students will become thoroughly acquainted with the nomenclature of the different types of machines and the tools used with each machine so that in case any part of a machine or any tool peculiar to a machine which may have been lost or broken can be immediately supplied or requisitioned by the Stockkeeper.

In the Oil and Lubrication course, instruction will be given in the different methods of refinement. A crude oil will be taken through the various processes of refining until the finished products are obtained and the students will be taught the correct uses of the various finished products. Physical, as well as chemical properties of mineral and vegetable oils, will be explained. Samples will be given the students for physical and chemical tests in the laboratory. The manufacture of the different greases will be taught. Methods of handling and storing the various products will be given, the reclamation of oils and the various methods employed will be explained and the students themselves will be required to reclaim oils in the laboratory.

In the Property Accounting Course, instruction will be given in the use of the forms prescribed by P.S. & T. Instruction will also be given in the special engineering forms of the Air Service.

A course in typewriting has been established and while it is not contemplated to turn out skilled typists, still it is the intention to give every man sufficient instruction so that when he is graduated as a Stockkeeper he will be familiar with the use of the typewriter and be able to make out legible as well as intelligent requisitions.

ACTIVITIES OF MARCH FIELD, RIVERSIDE, CALIFORNIA

The Naval Officers' Class is now taking flying instruction on the Thomas-Morse Scouts. Following this combat work on the S.E. 5's will be given. To complete the course, it is planned to hold an aerial gunnery course at Ream Field, San Diego, California. The necessary instructors and crews will be sent from this field as will also the necessary airplanes. The S.E. 5's will be used for this work, the target being towed by a D.H.-4.

March Field will operate two Fire Patrols during the coming season. One will go to Santa Barbara and Oxnard, covering the Angeles National Forest. The other will go as far south as San Diego; will patrol the two Cleveland Forests. The personnel for the work has not yet been selected.

CIVILIAN AVIATORS ARRIVE AT RICH FIELD, WACO, TEXAS

On Monday afternoon, March 22, 1920, Errett Williams, W. H. Hill and Cecil Lucas flew in from Houston, Texas, a distance of approximately 170 miles by air route, and landed at Rich Field for gas. They were flying standard planes equipped with Curtiss OX-5 motors and were enroute to Oklahoma City, Oklahoma, where they were scheduled to do some exhibition work. The planes were ultimately to be flown to Arkansas City, Kansas, which is the Headquarters for the Williams-Hill Aero Corporation managed and controlled by Mr. Williams and Mr. Hill. Both Mr. Errett Williams and Mr. W. H. Hill were formerly Lieutenants in the Air Service and they were accompanied by Cecil Lucas, formerly a M.S.E. in the 95th Aero Squadron, First Pursuit Group, with which organization he served about twelve months overseas. The flight from Houston to Rich Field, 170 miles approximately, was made with one tank of gas. They were assisted, however, with a strong south wind.

M. E. STEVENSON ONE OF THE ONLY ORIGINAL AIR SERVICE MECHANICS IN THE AIR SERVICE.

Calvin T. Stevenson, M.E., who came to Rich Field in December 1917, not only is one of those who has been on duty at this Station since its infancy, but he is also one of the soldiers who helped to nurse army aviation to convalescence in the day when it might now be said to have been experimental.

"Steve", as he is known in the army, enlisted in 1908, in the Infantry and did service in Cuba. After serving one enlistment he was discharged and remained out of the service a short while. In July, 1913, he again re-enlisted, in the Signal Corps this time, and immediately was assigned to various duties and training to fit him as an Airplane Mechanician. In May, 1915, the first Aero Squadron was organized at San Diego, California, and "Steve", then a Corporal, was assigned to duty with the organization as a Mechanician. Subsequently, he was with the first aero squadron during the Mexican difficulty in 1915, where he was the first "Crew Chief" of plane No. 52 which was wrecked by Lieutenant Rader who had been ordered to take a message to Colonel Dodd who was in command of a regiment at Parralle, Mexico. In his early aviation experience "Steve" became acquainted with many officers who have become famous in the recent World War and he often tells interesting army stories in which one or the other of them featured. Among these noted army officers are: Col. T. F. Dodd, A.S.A., who was recently killed in airplane accident; Arthur R. Christie, Lt. Col., A.S.A.; Thomas D. Milling, Col. A.S.A.; General B. D. Foulcis, A.S.A.; Charleton G. Chapman, Lt. Col., A.S.A.; Lt. Col. Ira A. Rader, A.S.A.; Lt. Col. J. E. Carberry, A.S.A.; and Lt. Col. Thomas S. Bowen, A.S.A.

NOTES OF INTEREST CONCERNING SQUADRONS ON THE BORDER

Continuous and consistent bad weather has considerably interfered with the operations of the 1st Surveillance Group for the past week. High winds, sand storms, low clouds, heavy rains and snow storms have contested with each other for first place in the weather reports. Weather conditions have hampered the photographic section and made it impossible to carry out more than one or two of the scheduled photographic missions. A new system has been devised by the photographic section for securing photographs of points that are inaccessible from the air. The Gaumont French Camera with the 26 cm. lens containing 18 x 24 cm. plates is mounted on the tourelle and obliques are taken at an angle of 15 degrees to the vertical. A little work is necessary in order to allow for the angle at which the photographs are taken, but it has one advantage in that the oblique gives a better idea of the elevations and depressions of the ground.

1ST DAY BOMBARDMENT GROUP

Radio.

The value of planes keeping in communication with the home airdrome by radio was again proven in this Group. Wednesday, March 24th, a head quarters plane was forced down by an overheated motor in the vicinity of Devine, Texas, and a brief report of the circumstances was made by wireless while the plane was gliding for a field. An S.C.R. 73 telegraph set was used and distance was thirty miles.

Within the next few weeks wireless as direction finder sets will be installed in planes of this Group so that the exact position of any radio equipped plane can be ascertained at any time. This will be of value not only as a safety measure but also as a check on the course of pilots who are out on cross country or distant missions.

The Headquarters Detachment of this Group is equipping a plane for special communications work. It will carry wireless telegraph S.C.R. 73, telephone S.C.R. 68, and interplane S.C.R. 57. By an ingenious system of switches and slight changes in contacts the observer can send and receive both telegraph and telephone using either a single trailing antenna or a double wing tip antenna for formation flying; the pilot can overhear the observer's transmitting and vice versa; the pilot and observer can talk to each other over the interphone at any time. Extensive successful ground tests have been made and as soon as the weather clears, air tests will be made. The S.C.R. 57 interphone set has not been satisfactory in De Haviland planes due to the excessive noise of the exhaust. To overcome this trouble the voltage on the line has been increased, by carrying additional batteries, to eight volts which on all tests has proven very efficient.

FIRST PURSUIT GROUP

Aerial Training Activities

Scheduled training activities have been carried on as usual in the Group, regardless of the fact that we have had few clear days during the past week. Planes have been in the air morning and afternoon on every day in which it has been possible to fly.

Test flights, practice formations, target shooting, combat and dead stick landings have been engaged in by the pilots of the group. Classes have been inaugurated in rigging and motors. Instructions received in these classes is thorough and practical, the work being in charge of an expert in each line. As the motor and ship are being dismantled and assembled every detail is carefully explained. Classes are held in hangar one and do not interfere with the regular work. In this way every man is given an opportunity to demonstrate his aptitude and initiative for this class of work. It also gives the Squadron Commanders the opportunity to choose the best men possible to place in the hangar, also this method furnishes a means of choosing proper men for the extensive course at the A.S.M.S., as all over-haul work on motors is done by the motor repair department, the men do not have an opportunity to delve into the inner workings of the motor, and this class gives them the experience and practice

necessary. The classes are very popular with the men, drawing out many intelligent questions and smoothing over seemingly impossible problems. It also encourages private study and conversation on the subject of plane and motors. To a Squadron confronted with the problem of filling vacancies caused by the recent discharges of experienced men, these classes present the only solution.

ACTIVITIES OF THE 7th AERO SQUADRON, FRANCE FIELD, CANAL ZONE

Liaison was maintained during the week between two parties of two companies each from the 33rd Infantry, which are on a ten (10) day reconnaissance hike thru the jungle West of Gatun Lake, the Chagres River and Infantry H.Q. at Gatun. Messages, sent by artillery and shutter panels were received each day from both parties and dropped at Gatun. The artillery panel work was successful, as is true in all cases where the panel is placed on the ground and not moved until acknowledged by the plane. With the shutter, however, although some messages were received they were not entirely clear, nor as fast as the artillery panels. It takes about five minutes to receive a word of five characters, for unless the sender has had a great deal of experience in using the shutter, it is hard to distinguish between dots and dashes. Another difficulty encountered was that few cleared spaces could be found in which to work the panel and give the observer a continuous clear line of vision to the sender. Dropped messages and Very lights were used to signal from the plane to the ground.

One very interesting mission in connection with this liaison was carried out on Friday, the 19th. Word was received at Gatun by means of carrier pigeon that the feed for pigeons had been exhausted. Message was received at 8:50 hr., and twenty minutes later a motorcycle messenger was dispatched from Gatun to this field with a paper bag of pigeon feed, arriving here at 9:25 hr. A canvas sack then had to be made, and upon its completion a plane piloted by Lt. Charles B. Austin, with Lieut. Dayton D. Watson, observer, who were to work with the troops at Escobal that morning, left the field. At 10:15 another pigeon arrived at Gatun with a message that the feed had been received. Escobal is fifteen miles from this field.

Rt. Advertiser

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE APRIL 21, 1920.

BALLOON COMPANIES LEAVE FORT OMAHA

The 17th and 27th Balloon Companies have left Fort Omaha, Neb. this week in a special train bound for San Francisco, thence to the Philippine Islands. Each company had a complement of 174 enlisted men and two officers. The 17th Balloon Company is in command of Captain H. T. Lewis and the 27th in command of Captain W. A. Gray. The wives of nine enlisted men are accompanying the Companies to the islands.

FLYING OFFICERS ASSIGNED TO GROUND DUTIES TO HAVE REGULAR

FLYING TRAINING

In order to maintain a maximum of efficiency for all flying officers stationed at Langley Field, Hampton, Va., particularly those officers who are assigned to ground duties, an order has been issued detailing them to squadrons for regular flying duty. In this connection a series of instructional missions for flying officers have been instituted. These missions include photographic, radio, formation flying and gunnery practice. These studies and flying missions are so distributed that all officers detailed with squadrons and squadron officers will receive approximately the same amount of flying training.

ACTIVITIES ARMY BALLOON SCHOOL, FORT OMAHA

Experiments with wireless telephones are being carried on with very good results, the voice being heard at a small town in Oklahoma a distance of about 300 miles. As the sending set is only a small one, made for field use this was a better distance than expected. Experiments will be continued and better distances yet are hoped to be reached.

Mr. A. Leo Stevens civilian balloon expert returned to Fort Omaha after a visit to practically every big balloon manufacturer in the country. Mr. Stevens with Professor David Todd of Amherst are to try to reach the altitude of 50,000 feet with a special made balloon in the near future.

The flying time at Fort Omaha this week shows a total of 761 minutes. This was in observation balloons only, no free flights being taken. This low amount of flying was due to the departure of the two companies, preparations for the trip taking up most of the time.

ENLISTMENTS FOR BALLOON AND AIRSHIP DIVISION, AIR SERVICE, NOW OPEN

The Director of Air Service announces that enlistments are now open for service in the Balloon and Airship Division. The lighter-than-air branch of the service offers opportunities to enlisted men in a variety of specialities. In connection with observation balloons, specialists are needed for motor transportation and for the operation of winch engines. The latter calls particularly for engine mechanics of the highest order. Men are also needed for telephone, telephone switchboard, telegraph, and radio work. The manufacture and use of hydrogen gas requires the training of a considerable number of men in chemistry and gases.

U-11
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Vol. 2

The varied and complicated instruments used in connection with the operation of balloons and airships and in connection with the collection of meteorological data necessitates the training of instrument repair men to adjust and calibrate delicate and sensitive instruments. In addition to this a large number of men will be needed to learn construction and repair of fabrics. Enlisted men will also be required as radio operators, engine men and steersmen on the flying crews of airships.

The advantages of learning any of these skilled trades will be of immeasurable value to the enlisted man when he returns to civil life because there are always large demands for skilled artisans. Men who are interested should apply to the nearest recruiting officer or to the nearest Air Service station for additional information.

CAPTAIN CECIL G. SELLERS, D. S. C. LEAVES AIR SERVICE

Captain Cecil G. Sellers, 12 Aero Squadron on duty at Fort Bliss, Texas, was honorably discharged from the Service during the week. Captain Sellers received his flying training at the Curtiss School, Newport News, Va. Upon the completion of his training he was sent to Kelly Field and commissioned there as a 1st Lieutenant. In July, 1917, he sailed for France and made a member of the 96th Squadron, 1st Day Bombardment Group. He participated in all engagements, and was made Commanding Officer of the 20th Day Bombardment Squadron a short time before the Meuse-Argonne Drive. In the final offensive for extraordinary heroism he was awarded the D.S.C. The following citation accompanied the decoration:

"Starting on a very important bombing mission with five other planes, Lieut. Sellers, pilot, went on alone when the other five machines were forced to turn back. On crossing the enemy line he was attacked by three enemy planes, but continued towards his objectives while his observer kept them at bay. In the face of this hostile opposition the objective was reached and their bombs dropped. On the way back four more planes joined in the attack, but fighting them off they reached our lines with valuable information after a fight lasting 38 minutes."

OFFICER AND ENLISTED PASSENGER HAVE A ROUGH EXPERIENCE

Sergeant Henry Freese of the Air Service Mechanics School at Kelly Field, Texas received a telegram that his brother was at the point of death in Waco, Texas. Within a half hour all arrangements had been made and Lieut. Burtis was piloting a De Haviland 4 toward Waco with Sergeant Freese as passenger.

Near Austin six cylinders of the motor refused to function further. Although Lieut. Burtis has been flying De Havilands off and on for ten months, he had never had a forced landing in one. Consequently the next few seconds were busy--very busy. Finally the ship consented to stop in a plowed field wherein a few tender shoots were showing their heads. The high speed jet in the front carburetor was relieved of a piece of rubber big enough to clog a cylinder. The stick was strapped back in the seat, the switch turned on, and pilot and passenger cranked. Finally it became necessary to open the throttle fairly wide, to make the Liberty take. When it did take both men rise to announce that it took nobly. Lieut. Burtis landed in the front cockpit in one kangaroo-like jump and succeeded in stopping the ship before damage was done. They made Waco in good time after they got started.

The field at Waco is a series of hummocks, diversified by mud holes, irrigation ditches, tasteful hillocks ornamented with pretty white flags on stakes, and occasionally other obstructions. The net result was a blown tire, which was much better than an upside down landing.

FREE BALLOON PARTY FROM OKLAHOMA COVERS 812 MILES, LANDING IN STILLWATER, MINNESOTA

A Free Balloon Party from Post Field, Fort Sill, Oklahoma, after traveling 19 hours and 44 minutes, covering a distance of 812 miles by air line, had a very exciting ending to their trip near Stillwater, Minnesota, about 18 miles from St. Paul. The landing came very near being fatal to all members of the party, as practically all the ballast had been used.

A few minutes before landing the basket struck the cross arm of a telegraph pole with such force that the arm was forced through one corner of the basket, smashing a suit case which was inside. The force of impact was so great, that the pole was broken off at the ground like one may snap an amber pipe stem. The final landing was accomplished in a none too large corn field at express train speed of 50 miles per hour. The velocity of the wind being so great, that it was impossible to make one of the usual free balloon gentle landings.

The balloon had just passed a large windmill, and at a height of 50 feet, it was ripped, covering two hundred yards before crashing into the ground. It rose again to about 40 feet as all the gas had not been expelled in ripping, and again crashed, this time in the center of a small corn field. The wind which was fully 40 miles per hour, caught the deflating bag, which acted as a sail, and dragged the basket on its side for a hundred yards, when it finally turned bottom-side-up, and remained motionless. During this last slide, Captain Palmer, a member of the party, in some way was thrown out, only to be dragged under the heavy basket. After extracting themselves, and locating their own arms and legs, the rest of the party looked around, very much surprised to see that all were alive, and apparently none the worse for the shake-up.

The balloon left Fort Sill at 5:36 P.M., with Lieutenant Carlton F. Bond as Pilot, Captain Bascom H. Palmer, passenger on the trip in connection with his research work as Flight Surgeon, Lieutenant John D. Goodrich, Engineering Officer, and Sergeant Burns M. Shalier, student pilot. The atmospheric conditions were splendid, with a 25 mile wind blowing North by East, which took the party almost immediately over Chickasha, Oklahoma. This was soon left behind, and at an equilibrium of 1500 feet, Oklahoma City was passed to the left. Darkness had closed in, but the light from the moon revealed the direction so clearly that towns and villages could readily be distinguished. Numerous oil fields were passed, and finally at 3:30 A.M. the lights of Kansas City loomed up dead ahead. The heart of the city was crossed at 2:56 A.M., and such a sight is seldom seen. For miles around the twinkling arc lights and numerous electric signs appeared as a wonderful garden of beautiful flowers, and it was with regret that the party was compelled to submit to the will of the wind and be literally blown into the dark unknown.

The night soon passed and dawn found them near Croydon, Kansas. They were not certain of their position, however, so to make sure they valved down after crossing the Des Moines River, and were informed by farmers that they had just passed Okaloosa, Iowa. As the ground wind was North West, and they desired a more easterly direction, the balloon was allowed to ascend to 5,500 feet, which was maintained until landing. Numerous small towns in Iowa were crossed and at 11:40 A.M. they passed just to the west of Rochester, Minnesota and crossed the ice covered Mississippi River at 12:25. The final landing was accomplished at 1:10 P.M. on the farm of Mr. Imholt in Wisconsin, 3 miles north of and just across the St. Croix River from Stillwater, Minnesota.

WATER REFLECTIONS IN THE STUDY OF BOMBS

Mar 1919

In the study of bomb trajectories at Aberdeen Proving Ground, Md., the Ordnance Department is using a method devised by Major F. C. Brown of the Aircraft Armament Division, Ordnance Department. Early in 1919 Major Brown made tests in which photographs were taken showing the water-reflected image of the airplane containing the camera. By this means, the true vertical can readily be determined - a very important factor in trajectory tests.

In the summer of 1919, a motion picture camera was mounted in a bombing airplane at Aberdeen and photographs were made vertically downward of a falling bomb and the airplane's reflection in smooth water. Subsequent films with bombs of various types indicate that the method can obtain very valuable data for the design of accurate bombs and bomb sights. The films show the oscillations of the bomb in flight, its departure from the theoretical vacuum path, its trail angle and time of fall. In addition, the ground speed of the airplane, its altitude variations, its periodic oscillations in flight and the effect on the airplane of a bomb explosion several thousands of feet below are clearly seen.

The methods used are to be applied in the near future to tests of gyroscopic stabilizers for bomb sights and cameras.

Recent improvements will broaden the scope and increase the accuracy of the method. An accurate watch and several instrument readings are photographed on the same film as is the bomb. Wooden crosses spaced at measured distances on the water's surface make a very accurate record of altitude on the film and serve to check the altimeter. Flight along the line of crosses in opposite directions with a constant air speed indication will permit an accurate determination of wind speed and a close check on the air speed indicator.

In addition to the study of bombs, then, this method provides means of studying airplane stability gyroscopes, altimeters and air speed indicators with a high degree of precision.

GIANT L-72 AIRSHIP BUILT TO BOMB NEW YORK ✓

An interesting report on German progress in aviation has just been turned in by Colonel William Hensley of the Balloon and Airship Division of the Air Service.

Colonel Hensley flew to Scotland on the return trip of the R-34 thru the courtesy of the British government, and shortly thereafter departed for Germany. He reports that the Germans were most courteous and gave him every opportunity to see their various creations in heavier and lighter than air planes and even afforded him the opportunity to pilot the giant passenger airship Bodensee.

He was shown thru the Zeppelin works at Lewenthal where he saw the giant L-72 which was designed and constructed for the sole purpose of bombing New York. He sought out the pilot of this machine expecting to find a lowbrowed repulsive sort that would ordinarily be fixed in one's imagination, and found a boyish soft spoken delicate appearing chap whose every movement indicated perfect self control and discipline. He learned that this man was the coolest, most daring and most efficient of German war pilots, and had successfully bombed London ten times, raked Dunkirk fore and aft, and caused havoc galore on the Russian front. As a reward for these services he was given the most coveted opportunity in the German airship service -- that of bombing our New York City.

He quite frankly told of his plans without any attempt at subterfuge or concealment, and to say that a greater majority was startling would be putting it mildly.

This enormous airship is most unique in many ways. In order to camouflage it to the minimum of visibility, the belly is painted black, its sides are splotted with cloud effect gray--- a neutral tint, while the top is painted a medium amber color. At between 5,000 and 10,000 feet these colors fit in almost perfectly with the sky. The L-72 is 779 feet long, has an 89 foot beam, height 95 feet, cruising distance 9,500 miles, 6 Mayback engines 260 H.P. each, total of 1560 H.P.; speed of 91 miles per hour, gas capacity 11,000 gallons. Total lifting power of 86 tons, disposable lifting power 50 tons, hydrogen capacity 2,470,000 cubic feet, and carried 5 1/2 tons of bombs in addition to the crew.

Colonel Hensley's report also covered in detail the progress of Germany in metal planes, of the pursuit type and monoplane boats, of enormous wing spread which will be covered in an article to be released at a later date.

AVIATORS ON COAST PATROL FORCED TO LAND IN CHESAPEAKE BAY ✓

Eight miles from shore, engine dead and at an elevation of only three thousand feet over Chesapeake Bay, was the predicament in which two aviators from Langley Field found themselves on a recent trip from Mitchell Field, N. Y. while flying the Mineola Coast Patrol, a bi-weekly flight between the two stations.

The aviators, Lt. Clyde Finter, Pilot and Lt. Morton D. Adams, Observer, left Mitchel Field without event, although each had expressed a strange feeling of certainty that trouble would occur on the trip. This feeling or "premonition", which most aviators have at times, was doubtless accentuated soon after they had taken the air when it was noticed that the oiling system was not functioning perfectly. No real trouble was experienced, however, until the plane, one of the DeHaviland 4-B type, had reached a point about eight miles off Cape Charles over Chesapeake Bay when the men were startled by several puffs of heavy smoke followed by a burst of flame from the engine. Presuming the plane to be on fire the pilot pulled the ship into a steep bank in order to save the observer and himself from the flames. The engine having floundered and stopped, the flame also was cut off before the plane caught fire, thus eliminating that greatest of all perils of the air, a plane on fire.

While their immediate danger from fire was thus avoided, the situation in which the men found themselves was still anything but to be desired and called for quick mental decision and action. For with an elevation of scarcely three thousand feet and the shore line eight miles distant, the pilot realized that the gliding angle was not sufficient to carry the ship to shore while the icy waters of the Chesapeake, with no sign of a boat in the vicinity, offered no aspect of rescue.

Nevertheless, there was a fighting chance and Lt. Finter headed his machine toward a small boat to which the observer called his attention. To reach the boat, which was about five miles distant, meant going still farther away from land, it was apparently the only possible means of rescue to which the men might hope to reach.

Intent on landing as near as possible to the boat, the pilot held his plane to the maximum gliding angle by keeping just on the verge of a tail spin and had his efforts rewarded by gliding to the surface within a few hundred feet of his goal, which proved to be the tug "Norfolk".

But to the dismay of the men, the tug continued on its way, the deck hands supposing the machine to be a seaplane and in no danger. But by signals and cries for help, the aviators, by this time standing waist deep in the water which was rapidly enveloping the sinking plane, finally succeeded in attracting the attention of the tug. The tug was then turned back and rescue made. An effort was made to save the airplane by tying the line which was thrown to the aviators, about the tail of the plane in the hope that the plane might be drawn up to the tug and taken from the water. When this attempt proved futile, Lt. Finter climbed once more to the wreck and saved two machine guns but in so doing, neglected to bring back his own boots which were also in the sinking ship.

CLIMB OF SERVICE TYPE D.H. TESTED AT LANGLEY

An interesting series of flights to determine the climbing ability of an ordinary service type DH has just been completed by Lt. Col. John N. Reynolds, Commanding Officer, Langley Field, and Captain Walter R. Lawson. A DH 4 was used on the 1st and 2d flights and a DH 4B on the 3d neither plane being selected for any particular climbing ability, but were just ordinary ships, the pilot having flown them only once or twice previously. They carried full military load, minus machine guns and camera.

A good average climb was charted which called for the first 5000 feet to be made in five minutes, 10,000 feet in 11 minutes and 30 seconds and 15,000 feet in 27 minutes and 30 seconds. When the first flight was made, it was noted that up to 4,000 feet the climb was very slow, this being due to overheating engine, but after passing 4000 feet, a consistent and fairly good climb was made.

The 2d and 3d climbs were made this week, the third being a little better from 10,000 feet up, while it was about the same from 3500 feet to 10,000 feet and on the second climb up to 3500 feet.

These climbs were not conducted with the intention of establishing an altitude record or a speed record for altitude, having been made merely with the view of determining the average climb that could be expected from a service type DH under ordinary conditions. Nevertheless, on the second flight an altitude of 19,000 feet was reached in 45 minutes. This can be considered fairly good climbing

COURSE IN PARACHUTE WORK UNDER WAY AT A. S. M. S.

Within a few days, between the hours of 3:30 and 5:30 in the afternoon, it will be possible to look into the section of sky which covers Kelly Field and perceive descending therein pairs of wildly waving legs upheld by a big umbrella. All that is needed are some new drop-forged rings which are on the way from McCook Field, and then the final touch -- live jumps -- will be added to the complete course in "Chute" work that is now being taught to two classes of officers and twenty enlisted men.

The chutes used are called the U.S.A. Irving model, and are very ingenious contrivances. A description of their operation shows the simplicity and effectiveness of their construction. When properly folded, the folds overlap and are held by a pin which passes through a small brad. The pin is attached to a string which the jumper pulls when free of the ship. This releases both folds. Attached to each fold are elastics which are stretched. When the folds are released, the elastics pull the chute open. Thus the jumper does not depend on the force of the air to open his parasol for him. When the parachute first opens, there is a hole or vent in the top. It is about forty inches across. As the force of the air stretches the chute, this vent gradually closes to about sixteen inches, thus gradually reducing the speed without the uncomfortable jerk there would be otherwise.

The course given at the School, preparatory to field work, is complete and detailed. Perhaps the most important single feature of it is the folding of the thing, for upon the absolute correctness of this operation depends the perfect working of the chute. It must be folded exactly, and in such a way that the elastics will work efficiently and that the parachute will open easily, symmetrically, and without tangling. The students spend hours doing folding alone, under the supervision of expert non-commissioned officers from McCook Field.

The proper sewing both silk and canvas are also taught. Parachute seamstresses will be graduated from the School in regular classes from now on. The students will be sent far and wide to develop the use and maintenance of parachutes on other Fields.

The care and maintenance of the chute are of course important, and is covered in detail. Testing with dead weights has already been carried on. The chute is attached to a dead weight in a different manner than when used for a live jump. Students are taught proper methods of testing the chute, both on the ground and in the air.

Attaching it to a person's body is a complicated and delicate job. Likewise, one must bear in mind that on every little detail depends the life of the man making a jump. The chute is attached so that it is high on the back of the jumper, held to him by means of several strong straps which connect with the chute itself through strong, drop-forged rings. The ring which is attached to the string pulling out the release pin of the chute is in front, within easy reach of the jumper. All he has to do is pull on the ring and the chute opens.

The course is under the Department of Training of the School, with Lieut. James S. Eldredge in charge. Lieut. Eldredge received his first flight when fifteen years old, by means of a number of large kites attached to strong twine. He is one of the veteran flyers of the army, with over 500 hours of flying as an instructor, and two or three hundred more on cross-country and in a single seater. He will pilot the DeHaviland B which has been assigned for parachute work for all live jumps, made by flying officers and enlisted men.

April 1920
The U.S. School of Aerial Photography at Langley Field is planning to make a Mosaic map of the Peninsula extending back from Langley Field and Fortress Montroe as a special instructional mission for officers and enlisted men of the 50th and 80th Aero Squadrons. The area to be mapped from the air comprizes 275 square miles. To photograph this it will be necessary to fly 400 lineal miles, or an actual distance of 800 miles, counting return trips of the various missions. The new type K-1 cameras, in special cradles, and especially fitted planes will be used. The scale of the completed map will be 1 - 10,000, and it will require 685 exposures in all.

7TH AERO SQUADRON GREET'S PRINCE BY WIRELESS

A formation of 2 De Haviland planes of the 7th Aero Squadron left Luke Field, Hawaii and flew out to sea to meet the Steamer Santa Cruz and extend greetings to Prince Mahidol, brother of the King of Siam. Wireless messages of welcome were transmitted from the planes to the steamer Santa Cruz. Prince Mahidol will remain in Honolulu for a few days, then will proceed to his home in India.

SPAD MAKES FAST TIME THRU STORM

A French Spad XIII was flown from the Aviation General Supply Depot to Bolling Field, during the week.

When Lieut. Ray Brown, pilot, left Middletown, he had a strong side wind blowing but, otherwise, the weather was very clear. About midway between stations he encountered a heavy rain, and then a violent snow storm. Finding he could not navigate against these elements he was forced to drop from 3000 feet down to 300 feet. He continued thru the storm for 20 minutes and immediately upon passing out of it he noticed the temperature of his motor increasing and oil pressure decreasing rapidly. Fortunately, however, Washington loomed up ahead of him and he managed to land successfully at Bolling Field.

The distance from Middletown to Washington is 118 miles by air, which the little Spad flew in 60 minutes.

BAKELITE PROPELLERS UNDER TEST

During the past few years there has been developed for various electrical uses and also for certain parts of automobiles a composition material called "Bakelite" after its inventor, Dr. Backeland. So successful has this material proven that experiments are now being made with airplane propellers built of it. From the results thus far obtained, it is evident that these propellers have several advantages over those constructed of wood.

Bakelite is a harmless and particularly inert composition material derived from the combustion of carbolic acid, cresol, or phenol, and formaldehyde. These when combined in the proper manner form a resin which in its primary state may be either solid or fluid, but in either case is essentially a soft resin easily affected by heat and solvents. If subjected to combined heat and pressure for a sufficiently long time, however, the material is carried over into a hard state not affected by ordinary solvents or temperatures that ordinarily would disintegrate a gum or resin. When in this condition bakelite is but slightly affected by acids or weak alkalis. It will not burn at all readily, but will char and burn slowly at temperatures in the region of 300 to 400 degrees C.

Bakelite, when properly formed and hardened under the influence of heat and pressure, is much harder, stronger, and more glass-like than practically any other organic material.

Bakelite Manufacturing Methods

There are two commercial methods for utilizing bakelite. One is to combine it, before heating and forming, with a filler, such as for instance wood flour or a very finely pulverized and prepared wood fibre, and mold the composition to the desired shape in accurately formed steel molds. The other process consists of building up plates or tubes from sheets of material which have been treated with bakelite in the form of a varnish. Automobile ignition distributor heads are good examples of the former method, and ignition wire tubes and similar forms are often made by the latter process.

Recently bakelite has been used in combination with strong craft paper or with cotton, duck, or similar materials in the making of various molded forms. The usual method of manufacture is to run the paper or cloth used as a base over a roller heated to the proper temperature, after coating the base material with a thin coating of bakelite. As this is wound on to the roller it is cemented by the bakelite. Tubes and various hollow sections are made in this way. Irregular hollow shapes are formed by removing the roller or mandrel when the compound is about half set and pressing it to the desired shape when in this condition.

By another method flat sheets of cloth or paper are coated with bakelite and pressed together to form solid blocks of various shapes. The material formed by coating a cloth or paper base with bakelite compound and pressing a number of these prepared sheets into a solid block is known by the trade name of Micarta. This propeller was run with a Curtiss OX-5 engine hub which may have helped to hold the propeller together until it burst at a speed of 2000 r.p.m. This propeller had no piano wire reinforcements in the leading edge.

Airplane propellers of Micarta

Because of various troubles experienced with wooden airplane propellers, efforts have been made recently to produce airplane propellers of micarta construction and it is believed that this can be accomplished successfully. Wooden airplane propellers are subject to warping, splitting at the laminations, chipping, etc. Moreover, the various laminations, in any one propeller are rarely of exactly the same moisture content when assembled, and their density also varies. This results in unequal absorption of moisture, particularly in cold weather. Various methods have been tried for protecting wood propellers from moisture, but none has proved entirely satisfactory.

Impervious to Moisture

Propellers made of micarta are practically impervious to moisture and in this respect are much superior to wood. They are also, if properly made, much more uniform in structure and are practically as strong as wood propellers. Micarta is slightly heavier than wood, but in the construction of airplane propellers this is somewhat offset by the fact that micarta propellers can be mounted direct on the propeller shaft of the engine without the intervening steel hub used with wood propellers.

Difficulties with Wood Propellers

Probably the principal objection to the use of wood for airplane propellers is warping, and the consequent changing of shape, due to unequal absorption of moisture in the different laminations or to inequalities in the rate of drying. It is practically impossible in the commercial manufacture of wood propellers to get all of the laminations of exactly the same moisture content. In addition to the variations in the amount of moisture content, the various laminations are rarely, if ever, of the same density. It follows, therefore, that the rate of moisture absorption of the different laminations will vary considerably with result in warping and changing of shape of the propeller as a whole. This is particularly true in cold weather on account of the wide differences in temperature and humidity between the cold outdoor air and the air in heated buildings.

Varnish coatings, no matter how carefully applied, do not prevent wood propellers from absorbing or giving up a certain amount of moisture with changes in atmospheric conditions. This has been proven in numerous tests.

Other methods have been tried of protecting the wood from moisture absorption, such as coating the whole propeller with metal-leaf applied over a sizing coat in the same manner that gold-leaf signs are applied to store windows. Electroplating and the application of hard rubber coatings also have been tried, but none of these processes has proven satisfactory. All of these methods add considerable weight to the propeller, and, moreover, are subject to chipping or breaking under comparatively slight abrasion, with the result that moisture gets in at one point and soon disintegrates the whole protective coating.

Metal Propellers

Various experiments have been conducted, both in the United States and different European countries with metal propellers, but all of these tests have proven uniformly unsatisfactory. The most serious fault in a metal propeller is the fatigue or vibration effect, frequently spoken of as crystallization. Weight and rigidity are other grave defects. In order to reduce weight, hollow propellers have been tried, but these are impracticable for manufacturing reasons. Attempts also have been made to produce metal propellers of thinner sections than wooden types, but these were not as strong as they should be, and moreover, it was found that reducing the thickness of the section by half resulted in a gain of only about 5 percent in efficiency.

It is considered possible that metal propellers may prove superior to wood at speeds between 2,000 and 3,000 r.p.m., but it will probably be some considerable time before these speeds are realized in practice, if ever.

Will withstand Abrasion

One great advantage of micarta over wood is that it does not split and that it is hard enough to stand the abrasion of service without being fitted with metal sheathing. This is of considerable importance in propellers designed for use with high powered engines.

Working Characteristics. In working this material, good results have been obtained with a fine feed and a cutting speed of a little over 100 ft. per min. The cutting tool should have a slight rake. In general micarta material cuts very much like hard wood. In cutting perpendicular to the laminations, as for instance, cutting spur gear teeth, keyways in propeller hubs, etc., it is advisable to back up the material with a hard wood blank to prevent fraying of the fabric where the cutter comes through.

Machining or other working of micarta forms is not always necessary, however, as it is quite possible to form this material to the exact shapes desired within quite close limits, provided the molds are properly made for this work and the manufacturing process carefully carried out.

It is possible to mount a micarta propeller directly on the propeller shaft, thus doing away with the metal hub. This not only reduces the weight somewhat, but decreases the number of parts to be made and fitted, which is an obvious advantage in turning out a large number of machines. Perhaps one of the strongest points in favor of micarta as a propeller material is the fact that propellers can be built much more quickly by this method than by making wood propellers in the usual way. Moreover, all of the micarta propellers made from the same mold will be exact duplicates of one another and will be practically finished when they leave the molds, requiring only balancing and slight tuning up before they can be put into service. From a production standpoint, therefore, micarta propellers are much to be preferred to wood propellers made in the usual way, provided that the two types are equal in other respects.

Self-Adjusting Pitch Feature

The micarta propeller only needs to be in process about one day, but it is, of course, necessary to provide considerable time for building molds before quantity production can be attempted. This is one of the disadvantages of micarta construction, as it is necessary in propeller work to allow from one to two months for making a set of molds, which means a corresponding delay in case any slight changes in propeller design are found necessary.

By incorporating wire reinforcements in the leading edge of a micarta propeller the virtual center of gravity may be moved forward slightly, which, of course, is not possible with a propeller made of wood or other homogeneous material. By locating the center of gravity slightly nearer the leading edge than the center of pressure, it is possible to provide a self-adjusting pitch feature, due to the elasticity of the micarta construction. The effect of locating the center of gravity forward of the center of pressure is to cause the propeller blade to flatten out slightly under heavy load, and thus decrease the pitch to a certain extent when climbing, while the pitch will automatically increase again under lighter load.

Propeller Hub Keys

It was found in some of the tests that the standard sized propeller shaft key used with wooden propellers and a metal hub, was hardly large enough for use with a micarta propeller. In the latter construction there was a tendency for the keyway to spread slightly and one or two propellers broke loose during tests on this account. On account of this feature, it is necessary to provide a micarta propeller with a somewhat larger key than is used with the wood construction and steel hub. That is the section of the key which fits into the propeller must be larger, but the other half of the key, fitting in the propeller shaft, can be made the same size as for wood propellers and metal hubs. A number of micarta propellers have been made up for test recently. Some of these were made with paper base, and others with duck base, the latter proving much more satisfactory in tests. One or two samples have also been made with piano wire molded into the leading edge which seems to increase the strength materially in some directions.

Bakelite is molded to an exact angle in a special mold. These same molds could, of course, be used for the making of large numbers of propellers of the one design.

The most satisfactory method of making micarta propellers has been found to be to press together tightly five or six sheets of cloth or paper impregnated with bakelite, forming a board. The boards thus formed are then sawed out in the shape of propeller laminations in exactly the same way that the laminations of wood propellers are cut out. About 175 such laminations are used in the manufacture of a propeller 4 in. deep at the hub.

These laminations are laid in the mold and the plunger of the mold is inserted and brought down to press the material into the final shape of the propeller. For this work a large press with a capacity of about 1000 tons is required. While the material is in the press, it is heated by means of steam coils to a temperature of about 350 deg. F. and the combination of pressure and heat first cements and then congeals the bakelized material into a solid mass. This process requires from 3 to 4 hours.

Accurate Molds Required.

It should be mentioned that the forms or molds are machined very accurately so that the plunger just fits into the main body of the mold and when the plunger goes down to the bottom of its stroke, the hole in the mold is of the exact shape and size of the finished propeller. A propeller made in this manner will have a smooth, highly polished surface, depending, of course, on the finish of the interior of the mold. After removal from the mold, the propeller must be bored true and key-slotted at the hub hole and balanced, and is then ready for installation on the plane. Micarta propellers are balanced in practically the same way as wooden propellers. In inserting balancing plugs however, it is important that they be located properly as there are one or two locations which would weaken the hub of the propeller considerably and might cause failure.

Five propellers were tested to destruction by running for 10 hours at 1800 r.p.m. and then increasing the speed until failure resulted. All of these propellers broke at a point about 32 in. from the axis, which checks closely with the computed stress. In addition to these five propellers, another made of paper micarta was tested to destruction. This propeller failed at the hub at a speed of 2200 r.p.m. and owing to this failure it was decided to make no further tests with paper micarta, but to concentrate on the duck construction. Another propeller was made with reinforcing wires in the leading edges. This propeller was keyed direct to the shaft without a metal hub and was run 10 hours at 1800 r.p.m. and then speeded up to 2350 r.p.m. without showing any signs of failure. This propeller was designed for 90 h.p., but at the maximum speed absorbed slightly over 800 h.p. without showing any defect.

Comparative Weights

The weight of this last-mentioned propeller is about 39 lbs. as compared to 29 lbs. for the Curtiss mahogany propeller and hub of corresponding design, and 35 lbs. for the Paragon oak propeller and hub. The weight of the micarta propeller can no doubt be reduced by further experiment, but this has not been considered necessary so far.

In addition to the above tests, a number of others were run at a later date with the following results:

Hub test to determine roughly the strength of the hub. Eight 1 in. holes were bored on a 2 1/4 inch radius around the tapered hole for the engine shaft. Two of these holes were spaced 22.5 degrees on either side of the transverse axis of the hub and the eight holes were 45 degrees apart. This propeller was run at speeds increasing in steps of 200 r.p.m. until it finally broke through the hub at 2200 r.p.m. Failure occurred through two of the 1 inch holes and the hole for the engine shaft. This propeller as run in the test weighed 40.5 lbs. No angles were measured in this test.

Machine gun fire test. This test was run primarily to determine the effect of machine gun fire on the strength of the propeller. Regulation 30 caliber ammunition was used. Sixteen shots were fired in a radial line through one blade.

Effect of firing Through Blades. The test showed that the thirty-three bullets fired through the propeller blades decreased its maximum speed only in the ratio 20 to 22. The pitch change as figured from deflection readings was practically the same as for the uninjured propellers. The horsepower absorbed at different speeds was the same as before the shots were fired through the blades. No angles were measured on this propeller.

Sand and water test. One propeller was tested by running 3.3 min. in a water spray and at the end of that time showed no appreciable wear or other bad effects. After the completion of the water test the same propeller was run at 1600 r.p.m. in a sand blast. Two runs were made, one of 1 minute, the other of 53 seconds. The sand blast was shot upwards from below to parallel conditions encountered in actual service when starting an airplane. After these runs the propeller had a sanded appearance but the wear was not noticeable.

Test for distortion. A micarta duck propeller was made with twisted laminations and reinforced with steel piano wire along the leading edge. It was run for 10 hours at 1800 r.p.m. and at the end of that time showed very little wear. The blade angles of this propeller were measured at various stations both before and after the test.

Seven test propellers were made up and sent to a flying school. One of these was run for 50 hours on a test block without showing any deterioration and the other six were tested in actual flights. The worst trouble encountered with these propellers was the tendency for the key to roll up. These tests showed the necessity of using a larger sized key in micarta propellers than is standard practice with wood propellers and steel hubs.

Two propellers with different keys were tested later at Wilbur Wright Field on the test blocks. Unfortunately, however, one of these propellers broke during the test partly as a result of having been weakened at the hub by improper location of a balancing plug which was in line with the transverse axis of the propeller hub. Examination of the broken hub ends of this propeller showed that the 1/4 inch key used had crushed the micarta due to the torque, making a 1/4 inch deep slot nearly half way around the taper hole for the engine shaft. This slot together with the hole bored for the balancing plug reduced the area of the working material on one side of the hub to less than half that of the other side.

Results Shown by Tests. As a result of the various tests run with different types of micarta propellers, it is apparent that a duck micarta construction reinforced with piano wire imbedded in the leading edge is the best type for airplane use. Moreover, micarta propellers when properly made show a number of advantages over wood propellers as follows:

1. Uniformity of texture.
2. Strength.
3. Proof against abrasion.
4. Proof against moisture, including oil.
5. Absence of warping.
6. Freedom from checking and splitting.
7. Elasticity.
8. Adjustable pitch feature, resulting partly from elasticity.
9. Absence of metal hub.
10. Ease and rapidity of manufacture in quantities, once the molds are made.
11. Uniformity of all propellers made from the same molds.

There are on the other hand, some slight disadvantages to the use of micarta propellers. These are principally the greater weight, the necessity for using a larger hub key when the steel hub is dispensed with, and the fact that one to two months are required to bring through any slight change in design.

All things considered, however, it is believed that micarta propellers will prove very satisfactory for airplane use when the few minor points still being worked out are perfected. Some further tests will be made in the near future with the idea of perfecting the design and construction details of this type of propeller.

50 of the micarta (Bakelite) propellers are to be distributed to the fields as follows: 40 to San Antonio, 5 to Mitchel Field and 5 to Langley Field.

WHO WILL GIVE A LANDING FIELD TO AVIATION'S FREEDOM ✓

Imagine the giant Leviathan having to search up and down our coast line trying to find a place to anchor in safety. The chances of the Leviathan surviving would be one to a thousand. Yet this is the same condition which faces Aviation in the form of landing fields. What the harbor of New York means to the Leviathan, the landing fields in cities mean to the future progress of commercial aerial transportation. We can have no real progress in aviation until we pave the way to safer flights and that depends on municipal landing fields, which in turn depends upon the support given by cities and their State Legislation. Aircraft manufacturers at this stage of progress in aviation would rather receive news of the building of new landing fields than to receive an order for aeroplanes.

Who will build these fields? So far the Air Service has built a number for training purposes, but they are situated as far as possible from towns to keep training airmen away from temptations of city life. Commercially but few of these fields are of particular value. If we are to have landing fields today, they must be near big cities. Aircraft manufacturers have tried to build several fields. A few scattered fields are being maintained by their agents. But where we need the fields most we haven't any available. The Aircraft builder should not be called upon to build a flying station anymore than we should ask our automobile manufacturers to build the roads. Why should we expect a striving and infant industry to combat such odds? Isn't it a municipal, a state or a Federal duty to provide a harbor for the airplane or airship where the line of flight goes over their jurisdiction. A few and growing number of cities fortunately realize the future of aviation. Here and there we find a movement to foster the new science.

But scattered fields here and there will not do. The Air Service is in a position to lay out routes, throughout the entire United States and has sufficient data on hand to help municipalities to establish fields. In fact tentatively speaking a greater part of air routes have already been laid out upon maps, all that is really needed in this respect is action on the part of the state and city governments. No doubt, when such action is taken, federal support will be given, by providing proper and standardized hangars. A charge should be made against every plane using the field to help pay for its upkeep. It is cheaper to land on a good field and pay a nominal sum than to take chances of breaking the landing gear on a poor field and endangering lives of passengers.

The biggest drawback to aviation in America today is the utter lack of good landing fields. Once established, aerial lines will be inaugurated everywhere. The modern limited railroad train will give away to the airplane and airship as the busy man's vehicle. Cities will be linked closer together by many hours than ever before. The wireless telephone will allow the passenger to talk to his office during flight. This is an advantage which the train traveler does not enjoy today, and is an indication of the advantage of commercial aerial transportation.

How are we to get such fields? The answer is simple. Over 15,000 trained pilots and equally as many observers and former ground Air Service officers are scattered throughout the United States as well as numbers of well organized Aero Clubs, and Aeronautical Engineering Societies. If these men organize themselves thoroughly and will lay out a comprehensive program on the problem of a laying out a landing field in their city in conjunction with the Chamber of Commerce, merchants and manufacturers associations, etc., and a feasible plan presented to city and state governments with the solid backing of business interests of their city behind them, there is but little doubt but what they will succeed.

The Director of Air Service will be glad to furnish any information on the subject available, and will willingly cooperate with the cities and state governments for establishing municipal landing fields to the best of his ability.

VALUE OF PHOTOGRAPHIC TRAINING GIVEN BY ARMY AIR SERVICE ✓

The Director of Air Service announces that enlistments are now open for a limited number of men in the Aerial Photographic Section of the Air Service for assignment to the U.S. School of Aerial Photography at Langley Field, Hampton, Virginia. This announcement should merit the serious consideration of the ambitious young man who desires to become proficient in a well paying profession, but due to his present circumstances is obliged to obtain such proficiency under the "Learn-while-you earn", plan.

Langley Field, at which the School of Aerial Photography is located, is just outside of Hampton, Virginia, and is one of the finest flying fields in the country. The school is in a large new building of brick and stone construction, which is thoroughly modern in every appointment and attractive. The space given the photographic school consists of an entire floor, which has been divided into well planned photographic laboratories and work rooms. There is a separate room devoted to each photographic process, and in the cases of the more important phases of the work, such as negative making, printing, and enlarging, there are several laboratories devoted to each process. These work rooms are equipped with the latest improved types of cameras and other photographic apparatus, and there is at all times sufficient material of the kind needed to conduct instruction in photography.

The commissioned as well as the enlisted instructors at the school include some of the most expert aerial photographers in the world. These men have received the highest honors for photographic work done overseas, and many of them before entering the army were famous photographers in civil life.

The course of instruction in photography is thorough, covering a thirteen week course, in which the student is carried from the fundamentals of general photography up to and through the latest developments in the new science of aerial photography. The subjects taught are grouped under the following headings: cameras and magazines (manipulation and installation); chemical formulae (weights and measures); plate developing (negative processes); printing (contact and enlarging); lantern slide making; stereoscopic printing; photographic copying; camera repairing; making of photographic mosaics; drafting; interpretation of aerial photographs, and practical photographic work under field conditions.

There is a wonderful future in aerial photography, and the young man who enlists in the Air Service and is assigned to the photographic division if it thus becomes, from school and field training, qualified for a good paying profession.

Aerial photography promises to effect great saving of time and money in the making of maps. Moreover, marshy and other areas practically inaccessible to surveying parties may be mapped quickly and at comparatively small expense from the air by means of the camera. Already the Army has tried making overlapping aerial photographs of sections of the country, and pasting the photographs together so as to make a composite picture or photographic mosaic. This has been done with success over regions of the country around Fort Sill, Oklahoma where over 1600 square miles were mapped by commissioned and enlisted graduates, also mosaics were made of Camp Benning, Georgia, and over the city of Washington, and at a number of flying fields.

The making of photographs from the air will help not only the surveyor in map making, but also the construction engineer, real estate operators, architects, shipbuilders, navigators, and others. A complete list of the possibilities of aerial photography cannot be given at present because almost daily new uses are being found for the photographic records being made from the airman's viewpoint hundreds and thousands of feet above the earth's surface.

The vacancies that now exist in the school of Aerial Photography at Langley Field are limited in number. To be acceptable for this desirable assignment, the recruit must have at least a grammar school education, and in addition it is preferable that he shall have had some previous experience in photography, the repairing of fine instruments, drafting, or map making. Graduates of the school are assigned to Air Service units known as photographic sections. These sections are at various flying fields and engage in practical aerial photographic work. It is expected that much of this work from the air will be for use in connection with the preparation of maps.

The progress being made in aeronautics is developing so fast, that men who received a thorough training in Aerial Photography under the "Learn-while-you-earn" policy will no doubt be able to put it to excellent advantage upon their return to civil life.

Candidates for admission to the U. S. School of Aerial Photography should apply to the nearest recruiting officer or Air Service flying field. Additional information will be gladly furnished by the Director of Air Service.

ACTIVITIES OF THE 6TH AERO SQUADRON, FRANCE FIELD, PANAMA

This week has been one of the most interesting at France Field for some time. Infantry Liaison work was carried out on Monday and Tuesday with the 33rd Inf. On Tuesday one of the Infantry parties sent a message containing about eighty-five letters and twenty-two numerals by means of shutter panel. This message gave, in detail, the route the party was to follow on its march thru the jungle. When it was ropped to the other Infantry party, it enabled them to join forces and return to camp together. The message was sent to the plane by 2nd Lieut. John D. Barker, A.S.A., who was with the Infantry as a liaison officer. He used a small hand towel to send the message, attaching two short sticks to the ends. The message was received by Captain Harlan W. Holden, observer in a plane piloted by 1st Lieut. R.C.W. Blessley. It took thirty-five minutes to complete the message, the plane flying at an altitude of 2,000 feet.

Because an observer must get his information from the ground in short glances of a few seconds each, and spend the rest of the time looking at the sky, it is very unlikely that this means of communications will ever be of any use in the zone of advance; nevertheless it is good practice for the flyers and for the Infantry.

The testing of some large coast defense rifles was carried out Thursday and Friday, and planes from this field were used to patrol the danger zone and keep the batteries informed when there was a possibility of hitting any boats. The shots, seven from each gun, were fired at different ranges up to 30,000 yards. Panel exercises were carried on during the shoot, in this way giving the Coast Artillery practice in handling the panels. Most of the shots were spotted by the observers in the planes and located by lining the shot with two points on the ground, in the same manner as a building or important point is plotted when making a road map.

ACTIVITIES OF AVIATION GENERAL SUPPLY DEPOT, MIDDLETOWN, PA.

Middletown pilots are very enthusiastic over a Spad XIII which was assembled during the past week. A Breguet XIV A.P. 2, mounted with a Liberty 12-A engine, was also assembled and will be tested this afternoon. This ship promises to be another favorite as it is of special rigid construction, is of the weight carrying type and is slightly faster than a DH-4.

On April 19th, Captain D.J. Neumuller gave the Spad a trial and, being an extremely tall man, found it to be very uncomfortable owing to the controls being very short coupled and the cockpit very small. Considerable amusement was afforded the spectators watching Capt. Neumuller's attempts to land the Spad. After fifteen individual and distinct trials to force the little unruly ship to the ground, he finally succeeded in landing it upon the sixteenth trial, greatly to the relief of the spectators. He was trying to land at considerable higher rate of speed than was necessary. Captain Neumuller intends to wrestle with the Spad again soon.

NEW AIRSHIP HANGAR BEING BUILT AT BROOKS FIELD

Work has been started on the erection of the new Hervieu Airship hangar at the lower end of Brooks Field, San Antonio, Texas. The Hervieu Hangar is made on the same principle as the aeroplane hangar bearing the same name.

This shed is made on the same principle as large Aeroplane Sheds which have proved very successful as regards erection and resistance to the wind. It has been well designed and past experience in this class of structure is a guarantee that the designer of this Shed has endeavored to obviate all the inconveniences found in other Sheds.

The chief features of this Shed are as follows:

The whole roof is erected on the ground and does not reach higher than 15 feet at the apex.

The canvas is put on the roof when it is on the ground.

The stanchions enable the shed to be erected on any even or uneven ground and provide great flexibility in the structure, enabling it to withstand wind pressure. The canvas forming the walls slides along the part of the stanchion forming the buttress, like a screen, by means of pulley blocks placed at the cave parts, thus enabling the canvas wall to be raised and lowered in a few minutes.

The scantlings have been designed with a view to lightness combined with great strength.

The method of erecting is entirely novel and is a great advantage upon other types.

All outside guy ropes could be disposed with but are used as an extra security.

All ground space is made available for use within the Shed. All the woodwork is under cover, thus avoiding deterioration.

There is no reduction of entrance space, which is absolutely clear between the vertical columns.

The whole covered roof is raised to its normal position in 20 minutes by means of small windlasses at the foot of each column.

The entire canvas roof and walls can be lowered to the ground level in a few minutes in the case of an exceptional storm, or so as to disappear from the sight of the enemy. In 20 minutes the shed can be ready again for the balloon to enter.

Store space is available on both sides of the Shed and covers a surface of 5,600 feet.

No erecting tackle is required, as the Shed possesses its own means of erection.

It is not necessary for any man to climb on to the structure during any part of the erection, all the work being carried out on the ground.

This shed is so constructed that it can be erected on any unlevel ground, grass, sand, stones or earth, even on soft ground. It stands without any foundations and can be erected with a difference of level of 1 in 20.

The adjustment of the sleepers bearing on the ground is so arranged that the stanchions can be made to present a truly vertical surface on the inside, even with a slanting of the sills or sleepers.

ASSEMBLING The stanchions and truss sections are constructed at the works, all parts agreeing with the railway gauge. The roof is assembled and constructed on the ground and is so combined that the entire work of assembling can be performed on all parts of the roof at the same time, and the whole roof with its canvas covering is elevated at the same time by means of small winches attached to the stanchion thus avoiding the use of any other erecting tackle with the exception of a few ropes.

The fitting of the trusses together and the general erection take much less time than is the case with any other shed. Forty men can fully erect one of these Sheds in 10 hours.

Compared to other sheds, the Hervieu Balloon Shed requires the assembling of less parts, as one member can be used in any position, the entire member being interchangeable.

The trusses are built in four sections which present an arch when assembling. When the sections are assembled the whole truss forms a rigid arch.

The roof between the trusses is of very simple construction and in this respect constitutes a great advantage compared to any other shed.

All the scantlings are of "T", double "T" or "V" sections.

The number of iron fittings is reduced to only a few patterns thus reducing the part number. All the iron fittings are so arranged that they can remain on the member, which saves time and chance of loss.

PROPOSED AERIAL PATROL - LANGLEY FIELD TO CHARLESTON, S.C.
RECONNAISSANCE FLIGHT

In compliance with War Department S.O. No.53-0 and letter from the Director of Air Service dated February 24, 1920, Captain Walter R. Lawson and Lieutenant R.E. Davis, were dispatched on a reconnaissance flight to Charleston, S.C. to collect data and report on the feasibility of establishing an aerial patrol between Langley Field and Charleston, S.C. The reconnaissance plane left Langley Field on the morning of March 31 and covered the following points:

Camp Glenn, Moorhead City, N.C. (Naval Air Station)
Wilmington, N.C.
Pope Field, Fayetteville, N.C.
Charleston, N.C.
Pope Field, Fayetteville, N.C.
Langley Field, Hampton Va.

The flight was not a pleasure trip, but as the following detailed account shows, was solid work, a distance of 900 miles being covered with a total time in the air of 11 hours and 23 minutes:

Left Langley Field, 6:46 A.M. March 31
Arrived at Camp Glenn, N.C. 8:46 A.M. March 31
Left Camp Glenn, N.C. at 10:30 A.M. March 31
Arrived at Wilmington, N.C. 11:35 A.M. March 31
Left Wilmington, N.C. at 4:02 P.M. March 31
Arrived Pope Field Field, Camp Bragg, Fayetteville, N.C. 5:10 P.M. Mar.31

Left Pope Field, Camp Bragg, at 12:15 P.M. April 1,
Arrived at Charleston, S.C. 3:40 P.M. April 1,
Left Charleston, S.C. 7:08 A.M. April 2
Arrived Fayetteville, N.C. (forced landing on account storm) 8:32 A.M.
Left Fayetteville, N.C. 9:00 A.M. April 2
Arrived Pope Field, 9:18 A.M. April 2
Left Pope Field 3:07 P.M. April 2
Arrived at Langley Field, Va. 5:10 P.M. April 2

The average time made was 75 M.P.H. while the best time was 185 miles in 80 minutes or 2.31 miles per hour from Charleston, S.C. to Fayetteville, N.C.

While the results of his investigations and observations made during the reconnaissance flight show that it would be impossible to operate a patrol to Charleston, S.C. at the present time due to the lack of landing facilities, Captain Lawson reports that it would be feasible to conduct a periodical patrol between Langley Field and Wilmington, N.C. or even between Langley Field and Savannah, Georgia, by refueling at Wilmington, N.C. In time this patrol might be extended to Jacksonville, Florida.

The complete report on observation and investigations made on the trip as compiled by Captain Lawson follows:

(a) "Camp Glenn is to be occupied by the Coast Guard who are going to conduct water flying there to a very limited degree. The Landing Field facilities are entirely inadequate, it being a very poor emergency field even for a Curtiss plane. It is a National Guard encampment grounds for the state of North Carolina, and it is understood that the state will make it a suitable landing field which could be accomplished at a very small cost.

(b) "Wilmington, N.C. has at present a municipal landing field about nine hundred feet square, three miles south of the city, adjoining the Wrightville Beach carline, which could very easily be enlarged to one thousand by three thousand feet, which would make a very good field, even for DeHavilands. This expanding, they are willing to do, and the President of the Chamber of Commerce stated they would do, upon notification from us. There is a Marine Hospital there, which is now practically vacant, and it is believed arrangements could be made with the Navy Department to utilize one of the barracks at the Marine Hospital to quarter the detail of men which would be necessary to handle the planes.

(c) "Charleston, S.C. has no landing field facilities, whatever, and there is no immediate prospect of any being made, which fact eliminates the possibility of conducting a patrol to Charleston, S.C.

(d) "Savannah, Ga., was not visited but it is approximately the same distance from Wilmington, N.C. as Wilmington is from Langley Field, namely, about 280 miles, and information was obtained from the D.A.S.O. Southeastern Department, that there is a very good landing field, which can be used in Deffin Park, Savannah, Ga.

(e) "Jacksonville, Florida, was not visited but there is a field in Camp Johnson, about ten miles south of Jacksonville, which is used at all times by the D.A.S.O. which is entirely adequate even for DeHaviland planes.

(f) "The beach from Langley to Charleston could be used safely for landing for about 90% of the way, but taking it all in all, it is a very desolate section of the country to fly over."

NOTES OF INTEREST CONCERNING SQUADRONS ON THE BORDER FIRST DAY BOMBARDMENT GROUP

In spite of the tremendous demands made upon our enlisted personnel by fatigue details the past week, a considerable amount of flying was accomplished. Reconnaissance flights of varying nature were made to Brainerdville, Laredo, Eagle Pass, Ellington Field, Del Rio, and Dallas. Artillery Regalage and bombing missions have been accomplished through the successful use of the puff target and the camera obscura, i.e., whenever enough enlisted men could be found to operate the apparatus and service the ships.

PHOTOGRAPHIC MISSION TO YUMA, ARIZONA.

Lts. Ramey, Bell, Boaz, and Pooley of the 166th, 20th, 11th and 96th Squadrons respectively, have been detailed as pilots on a photographic mission to Yuma, Arizona. Yuma will be headquarters of the flight. A large section of the adjacent territory will be photographed for mapping purposes. This work will be under the direction of Lieut. N.L. Taylor of the Headquarters Southern Department Engineers Office. The outfit will carry on under campaign conditions, living in tents and providing their own mess. Four D.H. 4's have been set up and tested by the 20th Squadron for use in connection with this mission.

OFFICERS TAKE CAPRONI PLANE FROM ELLINGTON TO KELLY FIELD

Lts. G.M. Palmer, S.G. Frierson, and M.E.'s Johnson and English left for Ellington Field, March 29th in D.H. 4's piloted by Lieuts. Danton, McMoran, Stenson and Morton, for the purpose of bringing a Caproni triplane motorized bombing plane to Kelly Field. Lieut. Palmer intended to return with the Caproni the same day but upon taking off he found the big plane so tail heavy that it was with the greatest difficulty that he negotiated a circuit of the airrome and landed. By the time the rigging defect had been revealed it was too late to start for Kelly Field. The return trip was made the following morning in exactly two hours. Lieut. Palmer piloted throughout and brought the big plane in to Kelly Field in most expert style. The flight was without special incident although Lieut. Frierson reported that he was kept busy by frequent trouble with the gas line. The ship is equipped with one central tank and two fuselage tanks, the gasoline from all of which is fed under pressure. The contents of the fuselage tanks is used before the gasoline in the central tank is allowed to flow. The chance for trouble arises from the fact that the gasoline in the central tank is fed to the motors through the two fuselage tanks.

The process of clearing the fuselage tanks of air prior to establishing the flow of gasoline from the central tank requires the services of an expert to prevent air getting into the gas line between the fuselage tanks and the carburetors. Lieut. Frierson with the assistance of the mechanics was fortunately able to cope with the situation.

AIR SERVICE MECHANICS' SCHOOL DANCE, KELLY FIELD #1

The officers of the Air Service Mechanics School were the hosts at the bi-monthly dance given at the Aviation Club March 25th. According to the photographed invitations, the affair was scheduled to be the "Annual Mechanics Ball". What an annual mechanic is, puzzled everybody, but after the dance it was agreed that when they got busy they made up for their year of rest.

Naturally, the mechanics insisted that everybody come suitably clothed. Overalls, male and female style, were the order of the evening. Overalls are highly suitable for an occasion of this kind. Not only do they permit freedom of movement, but one can sit on the floor, climb on the musicians' platform, straddle the porch railing, or cock up their feet, with equal facility. In fact many of the gentler sex seized the opportunity to accept the privileges of the male in being comfortable. It was a joy to each and every girl present to sit with knees crossed and not worry about the precise location of the hems of their dresses.

The Club was decorated in character. A Liberty Motor was placed in a corner. Toward the end of the evening couples frequently ran into it and got some idea of the solidity and massiveness of the contrivance. Another innovation was the location of the musicians in the center of the floor on a raised platform. Traffic split two ways, and the fact that sometimes pilots who had been in a recent tale-spin got going the wrong way, simply made life a little more humorous for the hard working musicians. The only draw back to the scheme was that the musicians had such a good view and there was so much to look at that there was a strong temptation not to tend to business. They were members of the famous Gunter Hotel Jazz Band, however, and stuck to their knitting in a manner that caused everyone present to wriggle, squirm, shimmy and slide as they never had done before.

There were several outstanding features of the entertainment. The decorations; Major Stratemeyer's hat; Major Schaufiller's speech; Captain Kelly's whole hearted enjoyment of everything; Captain Adler's periodic absence from the scene; Lieut. St. John dancing with a 5 foot 10'er; Lieut. Wilson and his lucky glass container; all were high spots in the evening.

If the mechanics can run their motors like they do a dance, there will never be a miss. Not that there were not many misses at the dance, as well as madams, of course. As a trouble shooter, every mechanic from Major Stratemeyer down, was right on the job.

FIRST PURSUIT GROUP

This week saw a revival of aerial training activities in the 1st Pursuit Group. On Monday morning the 27th Aero Squadron furnished a patrol of three planes to patrol over the delineated battle sector, meeting hostile patrol near the I.G. & N. Railway, a combat was engaged in which soon assumed proportions of a regular dog fight. The red forces having by far the best of the engagement.

Camera guns are being used in these patrols, combats and fights to record the mistakes made by the pilots of both the Red and Blue forces. These films are later developed and thoroughly discussed in the school of the group.

On Tuesday morning an early morning patrol by the 94th Aero Squadron known as the Red forces for this date jumped the Blue forces near the vicinity of Lytle and after a hot fight managed to secure the advantage dispersing the Blue forces under the command of Lieut. Aldworth. These battle sector patrols will be engaged in daily at the various altitudes announced by the Group Operations Office for the purpose of not only familiarizing the pilots with patrolling a sector under actual battle front conditions, but also to teach them the necessity of seeing all things in the air and to teach them how to avoid and overcome an attacking formation, also the advantages of attacking a hostile formation from overhanging clouds or diving on them from the sun. Some of these patrols will be made at high altitudes in order to familiarize the pilot with the rarified atmosphere.

Practice flights have been engaged in for the purpose of checking over the rigging of some of our S.E.'s. Demonstration and acrobacy formations have been practiced until the most difficult maneuvers can be executed with precision and dexterity. Cross country formations to the border airdromes will be made a part of the regular training schedule for the ensuing week. The closest liaison will be maintained by the 1st Pursuit Group with the Bombardment Group. The Flight Commander will submit as soon as possible upon his return a report covering meteorological conditions, location and conditions of possible landing fields and all points of interest pertaining to any cross country trips contemplated by the Air Service.

Arrangements have been made with the Bombardment Group to have a patrol of D.H. bombing planes protected by S.E. planes (Pursuit) to patrol the battle sector.

The 147th Squadron suffered the loss of two very excellent men this week, when Sgt. 1st Class Donaldson with the rating as Aviation Mechanic was furloughed to the reserve and Master Electrician McGeachy with the same rating was discharged. Enlistment periods of the older non-coms are fast drawing to a close and a wonderful opportunity is being offered to the lower rating non-commissioned officers and privates for a rapid promotion. The men have just witnessed an example of this, when Corporal Davis who was qualified as a first class crew chief in the hangars was made first sergeant of the squadron.

Saturday afternoon forty-two members of the 27th Squadron left for New Braunsfelds, via the "Liberty Special", completely equipped for a week end in the field. Landa Park was chosen as the scene of the operations and according to the owners of this delightful recreation place the 27th Squadron are going to be more than welcomed any time they may wish to go there in the near future. Various sports were indulged in at the lake and owing to the number of fish that were not caught there must still be fish in the lake. The 27th played the New Braunsfelds High School Team and won to the tune of 11 to 2.

The outing cost the life of one of the best liked boys in the 27th Squadron, Clarence Y. Lee. About four miles from New Braunsfelds, Lee fell from the truck in an effort to recover his hat which had been blown from his head. When he fell beneath the truck the rear wheels passed over his body. He was immediately taken to the city hospital at New Braunsfelds where he died a few hours later.

12th AERO SQUADRON, EL PASO, TEXAS

"B" Flight of the 12th Aero Squadron is under orders to move from Fort Bliss to Nogales. Heretofore changes of stations by Air Service units have been mostly made by rail, but in this case, the Flight is to change station, using the motor transportation assigned to it, except for such heavy baggage and supplies as necessarily will have to go by train. It is planned to keep in touch with the truck train until its arrival at Nogales. This is to be done by sending a Radio station along with the truck train and by having the regular patrols keep daily contact with the advance of the truck train.

Additional Liaison work with ground troops is promised in connection with the change of station of the 9th Regiment of Engineers, which leaves Fort Bliss for San Antonio, Texas, the 15th of April. This is the first time the First Surveillance Group has worked with an Engineer Regiment, but no difficulty is anticipated as there will be an Air Service Liaison Officer to accompany the Engineer Troops. The Liaison work will be picked up and carried on by all the flights along the border and there will be one flight of the 1st Surveillance Group working with the Engineer troops from the time they leave Fort Bliss until they arrive at San Antonio.

166th AERO SQUADRON STATIONED ON THE BORDER TO CONDUCT LIAISON EXERCISE WITH CAVALRY

Arrangements are being made by the Commanding Officer of the 166th Aero Squadron to conduct liaison exercises with the 14th Cavalry during the march to Fort Ringold, Texas. This Squadron will be complete in every detail for these exercises. The Cavalry will move in two columns and should arrive at Fort Ringold about May 2nd. Aerial contact with the moving forces will be effected several times each day, mail will be delivered and joint maneuvers will be carried out.

ACTIVITIES OF THE PILOTS' SCHOOL AT MARCH FIELD

Vocational training at this field shall be retained at its present high standard. Incidentally arrangements have been completed for the employment of several civilian instructors who will direct the various classes. March Field has the highest percentage of the personnel attending school of any army camp on the Pacific Coast, if not in the country, according to a Western Department vocational officer who was here last week. There is no limit of studies offered and the opportunities presented to both the enlisted and commissioned personnel to take up and accomplish any one line of endeavor are exceptional. All are urged to take advantage of these classes.

Lieut. Morris in charge of athletics announced Friday that he has arranged a series of three games with the Perris American Legion ball club. The first game tomorrow afternoon on the Perris ball lot. The remaining two games are scheduled for April 8th and 25th. Next Saturday the Boston Bloomer Girls will be in Riverside to meet the Post nine. The game will be played at Evans Park. Miss Elizabeth Murphy, premier lady twirler of the world, will perform on this date. She will also endeavor to catch a ball dropped from an airplane which will fly over the diamond just before the game. On Sunday afternoon April 11th, the Bloomer Girls and the March Field team will again clash at Urbita Springs Park.

ACTIVITIES OF THE AIR SERVICE AT ABERDEEN PROVING GROUND

The weather was rather detrimental to flying this week and was so distributed as to keep the field muddy and soft most of the time. There were eleven (11) flights made, five (5) of which were bomb test flights. Fifty (50) French 90 mm. bombs were dropped, making the total weight dropped 100 pounds. There were to be two (2) flights for General Pershing Friday afternoon, but the field was too muddy to get any planes off, as it had rained all Thursday night and Friday morning.

General Pershing inspected the Post Friday, and with the cooperation of all, and the keen enthusiasm of officers and enlisted men, we endeavored to have the best appearing part of the Post. All the roads had been repaired, grass plots graded, and much fresh paint used. The men were drawn up in the Handley Page hangar between the Handley Page and the Martin Bomber, where they were inspected by the General. A reception and buffet luncheon were held at the Officer's Club at noon on Friday for General Pershing.

ACTIVITIES OF 7TH AERO SQUADRON, HAWAII

Heavy rains during the past week have seriously interfered with the performance of daily flying duties. The Engineering Department has however been greatly benefited by the inclement weather, and as a result has set up five new Curtiss Hispano Suiza planes, several DeHavilands and a HS2L flying boat.

Under the direction of Lieut. Duke the ground work in preparation for puff target practice has continued. All of the Officers are now acquainted with the system of conducting an artillery reglage. The value of both the ground and puff target practice which is coming next week, will be demonstrated next month when practice work with the Coast Artillery Batteries is begun.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE APRIL 28, 1920

NEW WIND COMPENSATOR FOR TURRET GUNS

During the latter part of the war, some attention was being directed, especially by the French, toward developing a mechanical means of counteracting the pressure of the wind on the observer's guns. It was realized that the exertion required of the gunner to shift these guns exposed to the air speeds then reached, constituted a serious military handicap, and that with the expected increase of speeds the usefulness of turret guns would be annulled altogether.

In order to learn something about this disturbing feature the Armament Section of the Engineering Division, Air Service, McCook Field, has made flight tests to determine the actual gun resistance at varying speeds. It may be of interest to those who have not tried to shift turret guns in flight, as well as to those who have, that this wind resistance which tends to blow twin Lewis guns backwards at broadside position, amounts to 52 pounds at only 100 miles an hour, air speed. Fifty pounds is an effort so awkward to apply laterally at the level of the waist, that it constitutes about the limit which an average man can apply to any advantage, working under the further handicap of a heavy suit and a blast of wind against his own body. Thus it may be seen that the further effort required at speeds above 100 miles an hour, lessens the value of the turret guns very seriously. At 120 miles per hour, which is a twenty percent increase, the wind resistance on the guns goes up thirty-three percent, that is, from fifty-two pounds to seventy.

The most obvious way of compensating for the wind's pressure was to add a similar dead resistance on the side of the turret opposite the guns. Such a device in the shape of a wind vane, was actually tried out in several French squadrons. It was equally obvious, however, that on the higher speed planes, it was not desirable to add to the increased gun resistance, that much again, if a mechanical device could be found which would not so obstruct the plane's progress.

The most promising French device was designed for rather a low speed, and due to imperfect compensation at four points of a circle, its operation was somewhat "bumpy", which probably explains why it never received the approval of general application.

The Armament Section investigated all forms of compensation proposed to that time, and developed an improvement of the French type which has recently been tried out in flights at McCook Field with highly satisfactory results. This compensator was installed on the commonly known "Scarif Turret" or "Ring Mount" with twin Lewis machine guns in a D.H. -4 plane.

Observers passed most favorable comment upon the new mechanical assistant who had handled such guns during the war on this and other types of planes, without mechanical aid.

The new wind compensator neither adds any dead resistance to the plane, nor is the turret operated by power. The angular position of the revolving turret ring is duplicated in one of the gears of the compensator train of gears fastened on the revolving ring. A spring acts upon this gear to approximate the wind's force in the opposite direction. The counterbalance, for a given air speed is so nearly perfect that the gunner can release the bow support in any position of the ring, with no rotation of the ring from wind pressure. To shift the ring, the gunner need supply only the slight force of roller friction of ring and compensator which is a negligible fraction of the wind's pressure, from which he has been relieved by at least eighty percent.

This device is being made in two sizes, one rated 110 miles per hour and the other rated 130 miles per hour. They cover a theoretical air speed range of from 20 to 180 miles per hour but may be used to practical advantage between air speeds of 75 and 140 miles per hour.

The wind compensator is mounted on a short cord of the revolving turret ring and does not interfere with the gunner's full use of the cockpit space. The device weighs less than fifteen pounds.

OFFICERS FLY FROM WASHINGTON, D.C. TO OTTAWA, CANADA AND RETURN

A successful cross country flight, authorized by the Director of Air Service, from Washington, D.C., to Ottawa, Ontario, Canada, and return, was accomplished in the past week by Lieut. Col. H. E. Hartney and Captain Howard T. Douglas, flying in a D.H.-4 B. The distance between the two Capitals is 400 miles and the flying time on the way north was 4 hours and 2 minutes. This was the first time that an American airplane ever landed at Ottawa.

These officers were sent to Canada for the purpose of conferring with the Canadian Air Board regarding some proposed flying operations. In addition to this conference a valuable interchange of ideas regarding aviation was accomplished.

The flyers left Washington at 3:30 on the afternoon of April 15th, 1920. They headed due north for Ottawa, crossing Maryland, Pennsylvania and part of New York State, landing on the Thomas Horse Field at Ithaca, after flying 260 miles in 1 hour and 57 minutes. The last 100 miles of the trip were flown in a rain storm. From Ithaca the direct route to Ottawa was followed along the east edge of Lake Ontario and over the One Thousand Islands in the upper St. Lawrence. As representatives of the American Air Service, Colonel H. E. Hartney and Captain H. T. Douglas were shown many social courtesies in the Canadian Capital, and it is the intention of members of the Canadian Air Board to return this aerial visit at an early date.

The trip was made by way of Toronto and Ithaca. On the way back across Pennsylvania, a landing was necessary on account of rain and strong head wind.

The flyers reached Washington on the afternoon of the 21st. While at Toronto, the American aviators were guests of Colonels Bishop and Barker noted British aces who are exploiting civilian flying in that country.

FORMER OFFICER TRANSFERS FROM MOVING TRAIN TO HIS AIRPLANE

Mr. Arthur Oakley, former commissioned flying instructor in the army, gave a very interesting as well as very dangerous demonstration of how a person could transfer from a moving train to an airplane in flight. The demonstration was witnessed from the air by a number of the officers from Ellington Field, who accompanied the party.

Mr. Oakley climbed to the top of the train which was moving at about 70 miles per hour while the airplane slowly crawled up on the day coach on which Mr. Oakley was standing. A suspension ladder weighted down at both ends was dropped from the fuselage of the airplane before the plane reached him. Gradually this ladder moved closer to Mr. Oakley and in a moment more he grasped it and was lifted from the train. Due to the wash of air from the swiftly moving train the pilot of the plane had a great deal of difficulty in climbing away from the train but in the course of a mile succeeded in doing so.

It is believed that this is the first attempt that has ever been made to transfer from a moving train to an airplane. Mr. S.E.J. Cox, oil magnate and aviation enthusiast of Houston, Texas, witnessed the demonstration from one of his own planes. He complimented Mr. Oakley upon the successful performance of the feat and presented him with 10 acres of oil land lease. The plane used was a Curtiss training plane belonging to Mr. Oakley.

SHORT PARAGRAPHS OF NEWS INTEREST

Colonel Eli A. Helmick, Chief of Staff, Central Department, made an inspection of Selfridge Field, Mt. Clemens, Michigan Saturday morning, April 17th, 1920. Colonel Helmick expressed satisfaction with conditions in general.

* * * * *

Master Edward Stanton, age six years, of St. Louis, Missouri, who was taken out on an auto drive past Scott Field, Belleville, Illinois, recently was so taken with the looks of the aviation field, that he ran away from home to enlist in the Air Service. The Belleville police picked the youthful aviator up some seven miles from the field and ended the young man's very laudable ambitions.

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The flying time for observation balloons at the U.S. Army Balloon School at Fort Omaha, Nebraska for the past week shows a total of 641 minutes and with the free balloon flight, a total of 879 minutes and 20 flights. This small number of minutes of flying time was occasioned by the departure of the two companies, preparation for the trip taking up most of the time.

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Seven Officers and twenty-five enlisted men are expected to arrive at Souther Field, Americus, Georgia, next week for temporary duty before proceeding to Camp Benning, Georgia, for duty with the Infantry school. Six D.H. 4 B aeroplanes have been ordered here for the use of this detachment.

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During the past week the Aviation General Supply Depot, at Richmond, Virginia has received thirty seven (37) cars of Aviation material, the majority of which consisted of D.H. 4 and DH-4B planes for storage. There also were received four small wooden models of the German planes LVG, Albatros Scout, Rumpler and Pfalz. These models are being repaired and will be placed on exhibition.

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For the past week planes from Pope Field, Camp Bragg, North Carolina, have been patrolling the military reservation of Camp Bragg, reporting on the forest fires that have been raging. This work has been carried on by Lieutenants Greene and Potter, pilots. The reports that have been turned in by these officers have been the only means the headquarters have had of the progress of the fires.

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The principal activity of the U.S. Army Balloon School at Fort Omaha, Nebraska is along experimental and research lines. This work is at present in the process of expansion and has not yet been thoroughly organized due to lack of engineering personnel. Efforts are being made to secure the necessary personnel which is made possible through allotments recently made. The work assigned to the station consists in the development of balloons and balloon material. Much of this work has been under way during the past year and very satisfactory progress has been made in the design and construction of balloon instruments, balloon winches, field gas generators, balloon fabrics, etc. New types of balloons have been experimented with and original investigations made into problems affecting ballooning.

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Lieut. Belvin W. Maynard made a stop at Middletown, Pennsylvania during the week while enroute to Mitchel Field, New York to visit his wife whom he has not seen since starting out on his recruiting campaign. Lieut. Maynard was flying the same plane in which he won the transcontinental reliability test. The plane's outward appearance was bad yet it had the appearance of a trusty war horse after many hard knocks.

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The Navy Department through an agreement between the Secretary of the Navy and the Secretary of War has turned over to the Army Air Service 12 H.S. -2 L flying boats from its surplus supply. These flying boats are to be sent to our insular possessions for the use of the squadrons located there.

The Army Air Service has used flying boats and sea planes in the insular possessions for a number of years, in fact it is the only type of aircraft that can be used in the insular possessions with any degree of success due to the rugged and mountainous nature of the country.

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At present eleven commissioned officers are taking the course for Aeronautical engineers at Kelly Field. Of these men six come from Kelly Field, one from the Air Service Mechanics School, and four from border stations. The enlisted students 393.

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The Secretary of War has designated Brig. General Wm. Mitchell to serve on the committee on photographic survey, Board of Survey and Maps as representative of the Air Service, U.S. Army.

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The 14th Cavalry which is on the march from Fort Sam Houston, Texas to Fort Ringgold recently had a very interesting experience in which an airplane passing overhead figured. The eagle eye of the observer of the airplane detected an error in the direction taken by the troops on the march. The Cavalry was seen to move off on the march in the morning and after having passed through the city of San Antonio they by error took the wrong road. It was noted by the observer in the airplane overhead that they were following what is known as the Sommersett Road instead of the Frio City road. They were immediately advised of their error by a message dropped in front of the moving column and the troops detoured to the correct road. The Air Service Officers reported the incident to the Chief of Operations at Kelly Field upon their arrival and 25 minutes later a map showing the route to their destination, viz; Fort Ringgold, was dropped in the middle of the column.

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THE AIR SERVICE MECHANICS SCHOOL AS AN EDUCATIONAL INSTITUTION

The Air Service Mechanics' School might be subtitled as the Air Service Military School with perfect propriety. It is probably the best practical technical school for men in the air game in the United States.

Red-blooded young men naturally feel the call of the air. It is so new, so immeasurably different from any other profession or sport, that it draws men as honey does bees. It presents a wonderful opportunity to a man. He can get in on the ground floor of a new profession with possibilities that are literally limitless.

This article is written with the idea of acquainting young men with the fact that they can not only learn the technique of this new profession in the best school in the United States, but that they will be paid for doing it.

There are hundreds of thousands of young men from nineteen to twenty two who are standing on the threshold of their real useful lives, wondering what to do. They have gone through High School, perhaps, and are now vacillating between going to work in a factory, a grocery store, or a garage. They have not the means, or perhaps the desire, to go further educationally and they must get to work and earn a living.

If a man be a real man, the call of an outdoor life and a profession such as the air game is, is infinitely more attractive than clerking behind a counter or keeping books. It is possible for such a man to become an expert in a new and well paid line, by enlisting in the Air Service of the United States and attending the Air Service Mechanics' School.

He will don the olive drab of the army, and find himself quartered in big, airy barracks with hundreds of other young men just like himself. He will be in Texas, and while the blizzards are raging in the north will be working comfortably in a big, open hangar in his overalls. Next door to his barracks he will find a big library and recreation hall to while away the time when he is "off duty".

He will tumble out of bed in the crisp dawn at the call of a bugle and fall on his breakfast with an early morning appetite. A half hour of snappy drill, and he is off to the hangars for school. All day he will be absorbing knowledge - tearing down and setting up the great Liberties, Hispano-Suizas, Curtisses and a dozen other mighty motors that drive the famed planes of the world. He will be taught by instructors who are experts - who have made themselves in two or three years until now they hold well paying positions of dignity and responsibility. They are picked men, and know a motor or a plane down to the last cotterpin.

All through his course the student will find himself actually in the game. Lectures are few - motors are many. He learns not only the theory of a gasoline motor, but how to scrape a bearing or change a carburetor jet. He is not in a school room, but a hangar. He has motors to the right of him, tools to the left of him and planes flying over him.

He helps install a motor in a plane that will be tested in the air on the morrow. He cranks motors. He goes out on the test blocks, listens to a motor run that is missing, finds the trouble under expert direction and remedies it.

If he prefers to be a rigger instead of a motor man, he will go through the airplane course, and learn to set stabilizers and adjust the stagger to a fraction of an inch. Here again he actually does all he will be called on to do when he goes out "on his own" as an airplane mechanic.

If he prefers automobiles, there is a course which will teach him to be an expert on motor trucks, Cadillacs, Dodges or Fords. If he has a leaning for electricity, there is an ignition course, under an electrical engineer, with instructors who know every inch of wire and every pin in a magneto.

All through his life at the school he will actually be in the game. He will get a few rides in a plane. He sees the planes of Kelly Field flying over him all day long. Out on the line he will see the sergeants and M. S. E.'s who keep the planes flying-expert, respected young chaps who hold positions of great responsibility. Every one of them was once a recruit, and learned his profession at the Air Service Mechanics' School.

Three months of this life will find the young soldier a bronzed, well set up man who is ready now to take his place in the Air Service. He may be sent somewhere along the border to take care of the great De Havillands which patrol the border line from Eagle Pass to California. He may become an instructor in the school. He may go to one of the Pursuit Squadrons, working on the fast, trim little S.E. 5's with their powerful Hispano Suiza motors.

For the next two years he will meet emergencies of all kinds. He will have remedied everything from a clogged jet to a broken oil line. He will have spent many hours in the air, and will have become familiar with every feature of the Air Service. Unless he is the kind of man who is of no use to the army - and that means he would be of no use anywhere, and is bound to be a failure - he will be a non-commissioned officer, perhaps entrusted with a flight of planes and with many men under him.

The salary he draws sounds small. Twenty five dollars a week sounds like a lot more than thirty dollars a month, or the forty eight of a sergeant. But when clothes at sixty dollars a suit, shoes at twelve dollars a pair, and meals at from fifty cents to a dollar are taken out of that twenty five dollars a week it begins to shrink. And board- and medical services- and dental fees all free in the army, bring the average civilian wage down to a very diminutive sum.

From one of the great army of unskilled, vaguely useful men who are working all over the country at insipid, monotonous work it is possible for a man to lift himself into the ranks of skilled professionals by an enlistment in the Air Service and a course at the Air Service Mechanics' School. It is worthy of the deep consideration of every young man who has not a definite profession and promising career in some other line. An aviation mechanic is a valuable man- either in the army or out of it.

DIRECTOR OF MEXICAN SCHOOL OF MILITARY AVIATION VISITS EAGLE PASS

Captain Benjamin Becerril, Director of the School of Military Aviation Mexican Air Service, while on a tour of inspection of the Mexican Air Service activities at Piedras Negras, Mexico crossed the Border and paid a visit to the members of the 90th Aero Squadron at Eagle Pass, Texas.

The Captain was very much interested in our Air Service and although it was rather difficult to converse with him through an interpreter, he seemed to be pleased with the reception he received.

The Mexican government is operating a number of planes in Coahuila, across the river from Eagle Pass and inland about 70 miles. They are assisting ground troops in driving bandits out of the broken country in Chihuahua.

Captain Becerril stated that the Mexican Director of Air Service, Captain Hermance, would visit the 90th Squadron in the near future.

FREE BALLOON FLIGHT OF JUDGE KENESAW M. LANDIS, NOTED CHICAGO JURIST

During the week a free balloon flight of unusual interest took place at Fort Omaha when one of the large hydrogen inflated gas bags left the ground carrying on his first flight the noted jurist, Judge Kenesaw M. Landis.

Judge Landis for many years has been an enthusiastic supporter of aeronautics and is not unacquainted with air travel for he has several times enjoyed the exhilaration of riding in a plane, but never before had he experienced that most delightful of all forms of transportation, the free balloon ride.

"It is perfectly wonderful", declared the Judge, "how quietly and peacefully one can sail along at these altitudes, without a jar or vibration to mar the beauty with which one is surrounded. How different from traveling in a plane! Why we can actually hear the birds singing in the trees, and the dogs and cows and pigs, and even the Fords chugging along. I have never felt anything like it before. It is marvelous. In all this beauty there is nothing to disturb the mind except one's own thoughts".

The trip was made in a 35,000 foot balloon piloted by Lieut. Colonel Jacob W. S. Wuest, commanding the Fort Omaha Balloon School. The two other passengers on the flight were Colonel Joseph C. Morrow, Aeronautical Officer of the Central Department, and Mr. A. Leo Stevens, Chief Balloon Instructor. A special feature of the equipment carried was a receiving set of the new type Signal Corps wireless telephone with which the balloon was kept in communication with the ground set at Fort Omaha. Several messages were received during the flight.

Although the conditions of the flight were the worst possible from the view point of piloting because of the broken masses of cumulus clouds, and the falling snow, the beauty of the trip could not have been excelled. A never ending procession of cloud billows now in brilliant sunshine and then in deep shadow rolled first below and then above the balloon, disclosing vistas of cloud and sunlit earth that were unsurpassed.

The balloon landed at Anita, Iowa, after four hours flight, upon which the Judge was initiated into the pleasures of packing up.

PILOT AVERTS A FORCED LANDING AMONG TROOPS

While engaged in carrying on liaison exercises with the 16th Cavalry enroute from Brownsville to Fort Sam Houston, Lieut. Fonda B. Johnson, pilot, and Lieut. John R. Glascock, observer, of the 8th Aero Squadron, flying a new model D.H. 4-B plane, narrowly averted a serious mishap by extraordinary skill, coolness and rare judgment on the part of the pilot. These officers were compelled to fly at a very low altitude on account of extremely low cloud ceiling in order to keep in touch with the ground troops on the march. While directly over the advancing cavalrymen the motor cut out. Rather than run the risk of injuring the troops below by trying to land in the road with them, the pilot veered the machine sharply to the right of the troops and pancaked his plane down from an altitude of 10 feet into a knoll of mesquite bushes, stopping the plane 30 feet from the place it struck. The landing gear gave way from the force of impact and the fuselage skidded forward without upsetting. Lieut. Johnson suffered numerous bruises, but the observer who was able to brace himself, was uninjured.

AERIAL AMBULANCE SUCCESSFUL IN TRIAL FLIGHTS

The first U. S. D.-4 Ambulance airplane has been successfully flown at Dayton, Ohio, by Lieut. Edwin Johnson. It was designed by A. V. Verville, Aeronautical Engineer, Air Service, and developed at McCook Field, Dayton, Ohio. Primarily the service needs for such type have been long established, for the purpose of rescuing and transporting wounded or stranded aviators back to immediate service hospitals, and also for commuting patients between fields, first aid hospitals and Major medical hospital bases back of the firing line. Each machine has accommodations for ambulance pilot and two patients. These patients are laid in Stokes Navy litters which are placed horizontally in fuselage. Provision is also made in the form of an auxiliary semi-cockpit for the transport and accommodations of a medical officer to scene of accident, and also for a first aid kit and medical essentials.

The motor is equipped with an Electric Starter and with overhead exhaust manifolds. The Landing Gear has been moved 7 inches farther ahead than in ordinary DH-4's, to obviate danger of "nosing over". A reversible pitch propeller is also to be installed to facilitate ease of landing within restricted area apart from suitable flying field, and to stop airplane after landing within shortest possible distance.

The airplane has been finished in white with Air Service star circle insignia at either wing tip; Red Cross insignia on either side of fuselage, radiator, top of center section, bottom of fuselage, and wheels. The Medical Caduceus Service insignia has been placed on either side of rudder.

It is quite evident that the development of the airplane ambulance will prove the advent of the general use of such craft in numbers for work on the Mexican border and at principal Air Service training fields and airdromes.

FIRE AT AVIATION REPAIR DEPOT, DALLAS, TEXAS

The fire originated on the unloading platform, or docks as they are called by the men. There were four watchmen on duty in the vicinity of the warehouses when the fire broke out. One of the watchmen saw a flash of light as if from an automobile headlight then almost immediately a flame arose. He rushed to the platform but found that the fire was too large for him to handle alone. By the time the alarm was turned in and the men with the fire apparatus were on the scene, the fire had spread to the supply warehouse. From the platform, storage shed and supply warehouse the fire rapidly spread to the dope house, lumber shed, kiln house, oil and paint house, and adjoining small buildings.

The fire fighting forces, which consisted of officers, enlisted men, civilian employees living on the post and enlisted men from Love Field (an adjoining flying field) who were under the supervision of the Fire Marshal, Captain C. F. Wheeler, did unusual work in preventing further spread of the fire, as they were working under a changing wind of twenty mile velocity. The sprinkler system did much toward checking the fire.

An accurate estimate of the losses cannot yet be made, but besides the buildings and records, there were many motors and a few airplanes destroyed, the planes being De Havillands. These planes and motors were awaiting repairs.

Too much credit cannot be given the fire fighting forces. The Chief of the Dallas Fire Department stated that his trained firemen could not have done better work under the circumstances and conditions.

14TH AND 24TH BALLOON COMPANIES TO COOPERATE WITH COAST ARTILLERY

The 14th and 24th Balloon Companies who departed from Fort Omaha, Neb. last week are to work in conjunction with the Coast Artillery on the Pacific Coast. The two companies each have a complement of one officer and 120 enlisted men, and will serve as the two ends of an aerial base line for observing Coast Artillery Fire. These experiments will be conducted at San Francisco, Seattle, Wash. and Camp Lewis, Washington. The mission of the two companies at the present is to determine by experimental observation, the best location for the two ends of the base line in the named Districts, in order that the construction of barracks, hangars, etc. may proceed without delay.

NEWSPAPERS CARRIED BY AEROPLANE ARE DELIVERED TO MEXICAN OFFICIALS

The Air Service Border patrols have inaugurated an airplane mail service between stations on the Mexican border. Mail is being dropped daily by the Lajitas patrol at Presido, Polvo Lajitas and Glen Springs. The El Paso patrol which patrols from Marfa to El Paso one day and returns the following day drops Mexico and Chihuahua city newspapers at Presido which are then forwarded across the river to Mexican officials. This aids in maintaining friendly relations with the Mexicans and incidentally cuts down time of delivery about 24 hours.

EX ARMY PILOTS TRAINING AT GOVERNMENT FLYING FIELDS

The Commanding Officer of Selfridge Field, Mt. Clemens, Michigan advises that since the Director of Air Service has granted authority to permit former army pilots to fly and keep up their training at Government fields he is receiving an increasing number of requests from ex-army pilots who reside in and around the state of Michigan to take advantage of the offer.

It is interesting to note the enthusiasm being displayed in Aeronautics by former pilots. That these men are determined to keep up their training is indeed encouraging.

Recently a new club of ex-army fliers was organized in Detroit. Many of these members are taking advantage of the opportunity offered until they have fitted up their own field.

The call of the air is hard to resist and it is particularly hard to shake off after having spent several hundred hours aloft. It is extremely difficult to keep away from a flying field when the hum of a motor is heard overhead, especially at this time of year when nature is just beginning to cover the earth with her natural wonders.

The majority of ex-army fliers since their discharge from the service have been engaged in the more prosaic things of life, but the lure of the air is so great that each day it is bringing back old faces to the Air Service flying fields where acquaintances are renewed, flights galore indulged in, endorsed by smiles of contentment and happiness. The language spoken by these men is one which is understood only by air men.

FLYING PERSONNEL FROM BOLLING FIELD GIVE AN EXHIBITION OF AERIAL COMBAT OVER WASHINGTON.

One of the most interesting exhibitions in aerial acrobatics ever seen in Washington was given during the week by the flying personnel of the 10th and 99th Aero Squadrons stationed at Bolling Field for the benefit of United States Naval Hospital at 23rd and B sts., N.W. in connection with the Arbor Day festival held at said hospital.

The fliers performed the latest acrobatics and demonstrated the newest things in aerial attacks. Three planes were engaged in this demonstration; one Nieuport piloted by Lieut. P. H. Logan, a German Fokker, piloted by Lieut. Geo. Wise and a British S.E.-5 piloted by Lieut. G.E. Haynes. One of the most interesting feats of this exhibition was the attack by the German Fokker made upon the French Nieuport and the British S.E.-5. The Nieuport did an Immelman turn and attacked the Fokker from above while the pilot of the Fokker immediately put his plane into a loop and sailed along in the air upside-down for about 150 yards. Upon straightening out he immediately attacked the British S.E.-5 but the little Nieuport came to the rescue and technically sent the German Fokker down in flames.

Brig. General William E. Mitchell, who delivered an address at the Arbor Day festival stated that it was the most thorough and perfect exhibition of aerial combat that he had ever seen either in this country or in Europe. The Secretary of War also called the Commanding Officer of Bolling Field and complimented the aviators on the excellent exhibition given.

This was the first opportunity that residents of Washington, D.C. have had to witness an aerial combat where real fighting pursuit planes were used and the speed with which the aviators attacked one another and the remarkable control of the machines during the attack has been the subject of much favorable comment by civilian spectators.

FARMERS TO LOCATE WOLF PACKS BY AIRPLANE

A novel and most unique request has been received by the Commanding Officer at Chanute Field, Rantoul, Ill. from farmers in the vicinity of this field. It appears that the blizzards in the wild country northwest of Rantoul, which occurred late this Spring, have driven a large number of wolves into the territory surrounded by Chanute Field. Farmers have requested the Commanding Officer to send an aeroplane to assist in locating the wolf packs. While it is regarded as doubtful whether the visibility of wolves running on the ground would be sufficient to render much assistance it will nevertheless be given a trial.

AIRPLANE PARACHUTES NOT BEING DISTRIBUTED

After a series of tests a satisfactory airplane parachute has been developed and adopted for use by the Air Service.

Supplies of parachutes are now being distributed to various organizations in the field.

The airplane parachutes are installed, tested and used under the supervision of graduates in this work in order to insure against the possibility of accidents.

Opportunities will be given to all officers and enlisted men who may desire to make actual use of them in connection with their flying activities. It is however, not compulsory for air service personnel to make jumps.

KING BUGGATTI AERO ENGINE CREATES INTEREST

The Aviation General Supply Depot at Wilbur Wright has received a number of the famous "King Buggatti" aviation motors. This engine is especially interesting because of the fact it was designed by an American for the French Government, and also has a number of novel features that are not embodied in our American Liberties. The engine is of the guard type has 16 cylinders, and delivers approximately 500 H.P. A 37 millimeter cannon is mounted between the cylinders which fires a shell thru the hub of the propeller. The motor was tested in periods of from one hour to 50 hours. During the test a total of 19,284 horse power hours were delivered.

PARACHUTE PLANE PAINTED WHITE

The Air Service Mechanics School at Kelly Field has fitted up a special D.H.-4 B aeroplane and painted it pure white for parachute jumping. The object in painting the plane white is to prevent interference with jumpers and warn aviators flying around in the air to keep a safe distance from the plane in order to prevent collisions with men who have jumped and are descending from the plane by parachute.

Whenever the white D.H. is in the air all planes either go down or go above it, until the jumper has cleared the plane and has proceeded well on towards the earth.

FRENCH BRUGUET PLANE FITTED WITH LIBERTY MOTOR

The Aviation General Supply Depot at Middletown Pennsylvania advises that they have mounted an American Liberty Motor in a French Breguet 14 A.P.-2 airplane which had been received from the A.E.F.

The plane was given a test during the week and proved to be a worthy craft. Its flying speed is fully equal to that of the D.H.-4, while the landing speed is considerably slower. One of the peculiarities of this plane is its exceptional lateral stability, another being its extreme nonsensitiveness to the aileron control, while the tail surfaces are so designed as to give maximum amount of control. The plane is capable of carrying 1000 lbs. of bombs, in addition to its regular armament of four machine guns, 4000 rounds of ammunition, pilot and observer.

OFFICER MAKES SAFE LANDING ON THE WATER WITH A LAND MACHINE

Lieut. F.L. Olssen on duty with the 7th Aero Squadron, Ford Island, Hawaii, had a narrow escape while piloting a Curtiss H.G. Airplane over Ford Island with a passenger.

He put his plane into a loop and while in an up-side-down position his engine cut out. A strong head wind prevented him from straightening his glide into the field and necessitated a landing in the bay about 100 feet from the shore line. Fortunately Lieut. Olssen's extensive experience with flying boats enabled him to make a successful landing upon the water with out injury to the passenger or himself and without damage to the plane.

NOTES OF INTEREST CONCERNING SQUADRONS ON THE BORDER

First Pursuit Group

Owing to the favorable weather conditions which prevailed during the better part of last week all aerial training activities increased materially. On Thursday the 27th Aero Squadron furnished a patrol of three planes to patrol the delineated battle sector from Lytle to Moore over the I. & G.N. Railway. This patrol flying at an altitude of 6000 feet, was attacked near the vicinity of Moore by a patrol from the 94th Squadron, and after a hard fight both flight commanders gathered their formations and proceeded to the airdrome.

On Friday morning, an echelon formation composed of all the available pilots from the 94th and 95th Aero Squadrons, under the command of Captain Donaldson formed an escort to a bombing formation from the 96th Day Bombardment Squadron which flew an inward loop over the designated enemy territory from Lytle to Moore. Another formation from the 147th Aero Squadron under the command of Captain Tyndall was sent out to attack the bombing formation, they were known as the red forces. The attacking formation dove upon the bombers near the vicinity of Moore on the I. & G.N. Railway. They succeeded in shooting down three of the bombing formation but in turn were shot down by the protecting flight under the command of Captain Brooks.

Wednesday a bombing formation of five planes from the 1st Bombardment Group protected by the 27th and 147th Aero Squadrons of the 1st Pursuit Group under the command of Lieut. Ellis flew an inward loop into the enemy territory bombing their objective at Yencey, northwest of Moore. Immediately upon reaching their objective they were attacked by the Red forces under the command of Captain Donaldson. The Red forces diving upon the bombers directly from the sun managed to shoot down three of the bombers without coming within range of the observer's guns. The 147th protection patrol managed to down two of the red forces before they could make their get-away.

A Wireless formation under the supervision of the Group Radio Officer has been making daily flights for the purpose of calibrating both the S.C.R. 57 and S.C.R. 68 radio telephone sets. A receiving and sending set has also been installed at New Braunfels and messages will be soon transmitted between New Braunfels and the home station. A recent flight disclosed the facts that very little is known about the inner working of the Radio Phone. An officer recently wandered about thru the sky for several hours wondering why no one would talk to him. Upon investigation it developed that he had forgotten to pull the plug out, and it was like trying to talk over a phone without taking the trouble to lift the transmitter.

First Surveillance Group

A new municipal landing field at Alamogordo, which is Northeast of El Paso, was tried out last week. Photographs and blue prints are being made. The field is a fairly good two way landing field.

Captain Myers of the Medical Corp had quite an exciting trip when the plane in which he was flying encountered a dust storm just as he was arriving in the vicinity of El Paso. The pilot, Lieutenant Pearson, lost control of the plane several times and narrowly escaped a crash in landing. Due to good piloting and luck this was averted.

Ellington Field, Houston, Texas

A weekly class composed of the non-commissioned officers from Fort Crockett, Galveston, Texas, has been sent to this field for the purpose of being instructed in air craft identification. Captain A.I. Eagle, Chief Engineer and Educational Officer, is in charge of the class. They will receive two lectures, some practical work in the hangars and a short flight.

Lieut. H. A. Johnson of the 11th Aero Squadron, with Lieut. Boyle as observer, landed here during the week, on his way from Kelly Field to the Agricultural and Mechanical College at Bryan where he will conduct a radio demonstration. Lieut. Johnson was flying a De Haviland equipped with a complete radio outfit, two Lewis Machine Guns on the scarfmount and two Marlin guns forward, synchronized through the propeller.

First Day Bombardment Group

Flight "B" of the 166th Aero Squadron was selected to maintain liaison with the 14th Cavalry during their march to the Mexican Border. Owing to the shortage of observers in the above flight it was found necessary to temporarily augment the organization by attaching 1st Lieut. B. A. Doyle and 2nd Lieut. H. L. Speck of the 11th Aero Squadron and 2d Lieuts. W. R. Maynard, J. H. Wilson, and A. Hornsby of the 96th Squadron.

The first patrol was over the Cavalry at Fort Sam Houston, Texas, at 6:45 A.M., April 1, 1920. The cavalry was seen to move off on the march at 9:33 A.M. After having passed through the city of San Antonio they took the wrong road. It was noted by the patrol that they were following the Somerset road instead of the Frio City Road. They were advised and immediately detoured to the correct road. The Operations Office of this Group was advised at 11:30, exactly twenty five minutes later, a map showing the route to their destination, Fort Ringgold, was dropped into the middle of the column. A plane was over them practically every moment from the time they started to form at Fort Sam Houston until they made camp at Von Ormy, Texas. This practice has been carried out by the aerial patrols each day.

On the morning of the 2nd, the trucks having started out ahead of the main body, encountered some very rough going and were considerably delayed. The patrol plane was able to communicate this fact to the main body by radio in time to permit them to detour around the stretch of bad road.

Major McNally, Lieut. Doyle and Lieut. Davis met at Devine, Texas, on the 2nd, and conferred on the subject of improvement of liaison and communications. As a result of the conference it was decided to have each observer automatically give the following information to the Cavalry both when he arrived on patrol and just before leaving.

- (a) Best road ahead.
- (b) Second best road ahead, if any.
- (c) Location of the wagon trains.
- (d) Location of the motor trains.
- (e) Watering places ahead.
- (f) Bad places in the road, if any.
- (g) Distance from main body to next town.

This system was put into effect on the 3rd and has proven satisfactory. It was also arranged that the following procedure would be followed when it is desired to have plane land. The liaison officer with the Cavalry will locate a suitable landing field, as soon as possible after camp is reached. The field will be located as near as possible to the camp and will be marked with a "T". The Regimental Panel station will display an equilateral triangle panel and also an arrow pointing in the direction of the marked landing field.

At the request of the Cavalry Commander, the Cavalry Mess Officer, Lieut. Peters, was ferried to Kelly Field in order that he might make supply arrangements in San Antonio. Lieut. Peters was ferried back to the command on the following morning, April 4th. He was thus enabled to make all arrangements for the evening meal at Pearsall, leave there at 5:30 P.M. and be back with his regiment on the march at 7:30 the following morning, having covered about 150 miles and attended to his business in San Antonio.

The daily mail for the men on march is delivered by plane each morning in time to permit its distribution at the noon halt. The outgoing mail is picked up upon signal from the ground and taken to Kelly Field where it is posted. Lieut. H. W. Beaton of the 11th Squadron has piloted the mail ship during the first week.

Contrary to general expectation a very general use of radio for communication between the planes and the Cavalry was found to be impracticable. This is due to the fact that the only radio apparatus available to accompany the Cavalry was a small single/antenna set transported by a pack mule and which is entirely inadequate to maintain any extensive communication with planes.

It has been expected that a radio truck would accompany the troops but owing to its absence, message dropping has been resorted to constantly. In this contingency, the value of the extensive training in message dropping undergone by the flying personnel of the Bombardment Group during the past several months has been clearly demonstrated. The message bags have been habitually dropped with most expert judgment and have been readily recovered by the troops.

Activities of Selfridge Field, Mt. Clemens, Mich.

The former personnel of Selfridge Field, Mt. Clemens, Michigan will be interested to know that one of their associates, former Lieut. Harry E. Slater, is one of the prime movers in the organization of the Detroit-Cleveland Aerial Transportation Company. This company is about ready to start operation between the above mentioned cities, using for this purpose a flight of flying boats, and all indications point to an immediate success.

On Tuesday evening, April 6th, 1920, Major N. J. Boots, Commanding Officer of Selfridge Field, addressed a meeting of the Pilots' Club, an organization of students at the University of Michigan who were formerly officers in the Air Service. Major Boots was enthusiastically received and it is believed helped to create a better understanding between the Air Service and a part of its former personnel in regards to present policy.

12th Aero Squadron moving from El Paso to Nogales

The 12th Aero Squadron is in the midst of moving from El Paso, Texas to Nogales, Arizona to take station. The truck train and forty seven men left the Airdrome during the week marching overland to Nogales. This train consisted of one Dodge touring car, two motorcycles with side cars, four one and one half ton White Trucks, one rolling kitchen, one ambulance, one Kelly Springfield Machine shop truck and one gas truck. The truck train is making good progress and camped in Douglas, Arizona on Thursday, April 15th. The truck train left El Paso at ten A.M. Monday and arrived in Douglas about three P.M. Thursday. Their route lay along the Rio Grande from El Paso to Mosquite, N.M. then across the desert to Aden, N.M., thence along the Southern Pacific Railway through Demming, N.M. to Gage, N.M., thence across the desert to Hachita, N.M. and along the El Paso and Southwestern Railway to Douglas. The truck train is expected to arrive in Nogales Saturday afternoon.

Planes from this Airdrome have kept in daily contact with the truck train and so far it has reported no break downs or other accident.

HIGH ALTITUDE DAY BOMBARDMENT MISSIONS Preparation and Execution

- (a) Maps and photographs of the objective must be arranged so as to be easily referred to when taken into the air.
- (b) The code board or chart must be accurately checked in order that all necessary codes are either known or easily accessible.
- (c) Pencils and shot record sheets in quantity should be available.
- (d) Message blanks for dropping will be checked with the armament officer to see that proper signals are furnished.
- (e) Before going on flight the bombardier and pilot should acquaint themselves with the terrain to be covered and the compass course to be flown.

(f) The operations order will include (1) Objective (2) Itinerary and probable duration of flight (3) How much gasoline will be necessary (4) Time and order of departure (5) Types of bombs to be carried and number (6) Assembling formation on the ground (if in formation) (7) Hour and place for assembly in the air altitude (8) Formation for bomb dropping (including maneuver for taking this formation, and maneuver for retaking the route formation) (9) Conduct to be followed in case of attack by enemy aviation (10) Place of dismemberment of the formation and order of landing (11) Indications of atmospheric conditions, speed and direction of the wind (12) Probable route, angle.

(g) The bombardier and the pilot must both be thoroughly familiar with the operations order and must have definite understandings between themselves as to their method of fulfilling the mission.

2. At the Hangar:

(a) Both bombardier and pilot will go over the following carefully:

(1) See that the radio officer has attended to the proper wireless adjustment; this should be checked over while motor is warmed up. (2) See that machine guns and magazines are properly installed and in the best possible working condition (3) See that message dropping bags or tubes are installed and in sufficient number (4) The Tourille or machine gun mounting should be inspected and tried (5) Inspect the Mark 11-A sight and see that same is thoroughly oiled and that sights and bars are not bent, that bubble is showing in level and that sight base is firmly attached to and in proper line with fuselage (6) Inspect ship thoroughly and see that it has been greased and oiled.

3. Execution of Mission:

(a) Upon leaving the ground the bombardier makes the wireless adjustment or connection to check out, during this period, the pilot is gaining altitude and testing the motor before leaving the vicinity of the airdrome.

(b) When the bombardier has "checked out" and received "understood" (in panels) in answer to the "call" he has been sending, the plane proceeds to join the formation.

(c) On the way, advantage is taken of any opportunity for testing machine guns which should always be tested in the air. The bombardier should make notes of all things that he sees that might be of military interest.

(d) The bombardier will keep a careful check of the course being flown.

(e) Upon arrival at the objective the leader only will make the sighting and, upon signal from him, the remainder of the formation will drop their bombs.

(f) After dropping the required number of bombs they will return to their home airdrome in accordance with the operations order.

(g) Immediately upon landing, the bombardier will report the result of the mission to the Operations Officer.

LOW-ALTITUDE NIGHT BOMBARDMENT MISSIONS Preparation and Execution.

(a) Map boards must be well arranged so as to be easily referred to in the air. (with maps showing lighted landmarks)

(b) The code board, or chart, must be accurately checked in order that all necessary codes are known or easily accessible.

(c) Pencils and pads in quantity should be available.

(d) Before going on flight the bombardier and pilot will acquaint themselves with all lighted landmarks, the terrain of the country and the compass course to be flown.

(e) The operations order, posted in the operations room, will give the following data, with which the bombardier and pilot will acquaint themselves: (1) objective (2) itinerary and probable duration of flight. (3) class and number of ships to be flown (4) how much gas, etc. will be necessary for the flight, (5) time of leaving and time interval between ships (6) types and number of bombs and flares to be carried (7) wing tip identification signals (8) altitude at which flight is to be made (9) the known danger zones to be avoided and the known misleading ground lights (10) the radio "call" signal to be used (11) the number of winker lights to be used when in trouble or in landing (12) the reconnaissance signal (13) pass word for the searchlight (14) atmospheric conditions and the speed and direction of the wind at various altitudes (15) the course to be followed to the objective or objectives, and return, due regard being taken in noting landmarks and the time of flight from one to another (16) mean altitude at which bombardment is to take place, depending upon the degree of visibility and the extent of objective (17) designation of Very pistol lights to be used (18) location of friendly searchlights.

2. At the Hangar.

(a) The bombardier and pilot will go over the following carefully: (1) see that radio officer has attended to the proper installation and adjustment of the wireless, this should be checked over while the motor is being warmed up by the pilot. (2) Examine armament. (3) Examine bomb racks, and see that they are in the best possible condition and that bombs are properly affixed. (4) Test winker lights. (5) See that the landing flares are properly installed. (6) See that proper number of parachute flares are in the ship. (7) Examine bomb releases. (8) Inspect ship thoroughly, and see that it has been gassed and oiled. (9) Test compass and time piece. (10) See that Very pistol and proper Very Pistol ammunition are installed.

3. Execution of the Mission.

(a) The pilot, on taking off will circle the airdrome while the bombardier is testing his wireless.

(b) The pilot will make a very careful study of his maps, locating the most prominent landmarks. By checking the distances and knowing the direction and velocity of the wind he will be able to make a schedule for passing above the selected points.

(c) When starting on a raid and the pilot has gained his traveling altitude above his home airdrome he will check his drift, by compass, observe the most prominent stars, check his route by means of his time piece and known landmarks.

(d) For short trips search lights are placed at known points, with their beams focused upwards and may be seen for a distance of thirty miles.

(e) Night bombing is done by individual action, that is each ship is on its own, arranged in continuous stops. Ships depart at regular intervals, arrive at the objective, drop prearranged number of bombs, proceed to other objectives, if any, and return to home airdromes according to prearranged time table. This procedure permits of concentrating the fire with precision on the objective, of any size, and the continuance of bombardment, which may last a whole night, adds to the destructive and demoralizing effect. Night bombers should find their complete utilization in the operations near the battle field for they can fly from twilight until daybreak, and drop their bombs continually on the most vulnerable points of communication, regulations, stations, etc.

(f) Firing according to the degree of visibility of the ground, each aeroplane approaches the objective at the altitude necessary to distinguish clearly the target, at least from a vertical position. The pilot insures the direction for aiming by keeping his machine in the vertical plane passing through the center of the objective. The bombardier takes the range and drops the required number of bombs at once in such a way as to strike the target at its greatest width. Dropping of bombs should be done when flying up wind. The dropping of flares insures a perfect visibility of the objective and permits of greater precision.

(g) Bombardiers are required to give the following information on their return from night bombing raids:

Bombardments of railroad lines and on the highways. The illumination of villages, towns, etc., all of the railroad stations in particular, the activity about fields, camps and cantonments, activity of enemy aircraft and anti-aircraft defense.

(h) Each aeroplane upon returning to the home airdrome approaches the ground at a low altitude, 500 m. usually, and signals its desire to land by means of signals previously agreed upon. A response is then answered from the ground. In the first case, landing follows immediately; in the second case, the machine waits until the landing ground is clear. Two adjoining stretches of lighted area, one for departure, the other for landing, facilitate these maneuvers.

(i) Immediately upon landing, the bombardier reports the results of the mission to the operations office.

Low Altitude Bombardment Mission against Troop
concentration or troop movements or move-
ments of convoys of trains.

1. At the operations room:

(a) Map boards and maps must be well arranged so as to be easily referred to in the air.

(b) The code board, or chart must be checked accurately in order that all necessary codes are known or easily accessible.

(c) Pencils and pads in quantity should be available.

(d) Message blanks, photographs and maps, for dropping, will be checked with armament officer to see that proper signals are furnished.

(e) The operations order posted in the operations room, will include the following data:

(1) Objective or objectives one to be bombed. (2) Itinerary and probable amount of fuel, and lubricant to be used (3) Time of departure (4) Class and number of bombs to be carried. (5) Very Pistols to be used (6) Indications of atmospheric conditions, speed and direction of wind, and probable route angle (7) Known danger zones to be avoided.

(f) The bombardier and pilot must both be thoroughly familiar with the operation order and must have definite understanding between themselves as to their method of fulfilling the mission.

2. At the Hangar.

Both pilot and bombardier will go over the following carefully:

(1) See that radio officer has attended to the proper wireless adjustments. This should be checked while motor is being warmed. (2) See that machine guns, magazines, and ammunition are properly installed and in the best possible working condition. (3) Tourelle, or machine gun mounting should be inspected and tried. (4) See that message dropping bags are installed and in sufficient number. (5) Bomb racks and releases should be inspected and tried. (6) Inspect the Mark 11-A sight and see that same is thoroughly oiled and that the sight and bars are not bent; that bubble is showing in the level, that the sight base is firmly attached, and in proper line with fuselage. (7) Inspect ship thoroughly and see that it has been gassed and oiled. (8) See that Very Pistols and Very Pistol ammunition is installed and in good working order.

3. Execution of Mission.

(a) Upon leaving the ground, the bombardier makes the necessary wireless adjustment and "checked out". During this period the pilot is gaining altitude and testing the motor before leaving the vicinity of the airdrome.

(b) When the bombardier has checked out and has received "understood" (in panels) in answer to the "call" he has been sending, the plane proceeds on its mission.

(c). On the way, advantage is taken of any opportunity for testing machine guns, which should always be tested in the air.

(d) The bombardier will keep a careful check of the course observing and making notes of all things of military interest which he sees.

(e) Upon arriving at the objective, he will drop the type and number of bombs specified (unless atmospheric conditions do not warrant) this type of bomb being dropped. The bombardier will drop bombs preferably when flying up wind sighting on the broadest part of the objective. He will then proceed to other objectives, if any, and return to his home airdrome.

(f) On arriving at the home airdrome he will immediately report all the activities of the enemy, and the success of his mission, to the operations officer.

REPAIR DEPOT AT MONTGOMERY, ALABAMA THROWN OPEN TO THE PUBLIC.

On Saturday and Sunday last an innovation for this Depot was tried which proved so successful that it is contemplated making it a regular and periodic feature. On Saturday and Sunday afternoons from one until six o'clock the entire Post, including all the shops, was thrown open to the public and an invitation extended through the press to visit the Depot.

While this Depot has always been open to visitors and on numerous occasions parties of visitors taken through the shops, never before has the Depot been opened wide and a general invitation to the public issued broadcast. All enlisted men working in the various departments of the shops were on duty on their best equipment and entrusted with the entertainment of such visitors as came to their individual departments. A base ball game was staged on the Depot diamond between civilian teams, a large part of the members of which were civilian employees in the shops. At 4:30 a small flying circus was put on for about one half hour.

The attendance on Saturday afternoon was quite encouraging, but the attendance on Sunday afternoon far exceeded expectations. In the neighborhood of 500 automobiles were checked through the gate, and it is estimated that in excess of 2500 people visited the Depot during the afternoon. From the gossip overheard it would seem that all visitors thoroughly enjoyed their afternoon, each finding at least one feature of particular interest. The opportunity to inspect at leisure the various planes and engines in their various stages of completion seemed to be highly appreciated and of equal interest with the inspection of the finished product. Apparently not the least interested were the enlisted men who seemed quite proud of the opportunity to show their immediate friends what they were doing in the Service as well as to show their proficiency and knowledge of airplanes in general, particularly if their audience contained several smiling ladies' faces which was not infrequently the case. Taken altogether the scheme was considered most successful, the interest and attendance shown by the public being particularly gratifying to the Post Personnel.

ACTIVITIES OF THE 7th AERO SQUADRON, HAWAII.

Flying among the pilots of the Second Observation Group has been given considerable impetus with the appearance of a number of Curtiss H's on the line. The initial performance of the H's occurred on the 27th of March, 1920, when a formation of them accompanied a DeHaviland formation to Schofield Barracks, there breaking up and performing acrobatics for the entertainment of the thousands of people who had gathered for the annual horse show. On the 1st of April, a duplicate demonstration was given in greeting the U.S. Destroyer Fleet which steamed into Honolulu Harbor under the command of Admiral Wiley.

The H.S. 2 L mission which left last week on a tour of the islands of Maui and Hawaii, concluded its work on the 31st of March when Colonel Curry and Lieut. Maitland returned to the base. The other boat flown by Captain Oldys and Lieut. Seifert was unable to make the return trip, owing to damage to the plane while taking off in the Harbor of Hilo. The party was able to gather a great deal of information regarding landing fields and bases for aerial operations on the islands of Maui and Hawaii.

The steamer Matsonia, which came into Honolulu on the 30th of March, carried as its most distinguished passenger, Governor McCarthy of Hawaii, who was the recipient of radio greetings delivered from a DeHaviland formation which flew over the Harbor welcoming his return home.

A complete course of Artillery Adjustment has been added to the Curriculum of Unit School in the Second Observation Group. Under the able instruction of Lieut. Duke, formerly at Post Field the subject of liaison between the plane and battery was explained and discussed. A puff target range is under construction for use in the near future. All pilots as well as observers are taking the instruction and will be given opportunities to qualify in observing work of this nature.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE MAY 5, 1920

NOTED FLIERS DECORATED AT KELLY FIELD

During the week Major W. G. Schauffler, Jr., First Wing Operations Officer, Major Reed M. Chambers, Commanding Officer, First Pursuit Group, and First Lieut. James G. Williamson, Adjutant First Air Park Group all of Kelly Field, Texas were decorated before the entire command by the Department Air Service Officer, Col. J. E. Fetchet.

Major Schauffler and Major Chambers received additional citations for the French Croix de Guerre and the American Distinguished Service Cross respectively, and Lieut. Williamson received the medal and citation "Officier de Academic Francaise". This medal is of silver with crossed silver palms inlaid with purple enamel and is suspended from a purple ribbon. The citation makes Lieut. Williamson a member of the French Academy.

INJURED OFFICER FERRIED TO HOSPITAL IN AIRPLANE

One of the officers belonging to the 16th Cavalry stationed at Zapata, Texas was seriously injured while playing baseball. Upon the request of the Commanding Officer a plane was dispatched from Kelly Field to fly the injured officer to the hospital at San Antonio a distance of 350 miles for treatment at the Base Hospital.

The terrain immediately surrounding Zapata offers no landing fields but Lieut. McGowan, piloting the relief ship, showed nerve and exceptional skill by landing his De Haviland 4 on a road between mesquite, picked up the injured officer and started for home.

He had not gone far when one of his oil leads broke. He fought the disconcerting stream of oil that resulted for miles but when over Pearsall, Texas the second oil lead broke, he was forced to cut his switches and land. He had no more than done so when he observed another plane passing over him and signalled it down. Lieut. Johnson of the 8th Aero Squadron proved to be the pilot and he readily consented to bring the injured Officer to Kelly Field. This was done without further incident.

SALVAGED AIRPLANES STORED AT LOVE FIELD

Love Field, Texas although listed as a temporary storage depot, has been the scene of much activity during the past year due to its designation as a transfer point for the transfer of these airplanes sold by the War Department to the Curtiss Corporation. All airplanes from the various fields of Texas, Oklahoma and Louisiana listed on this contract for transfer were shipped to this field and the transfer accomplished here. To date, a total of 1061 airplanes of various types of Curtiss JN's and 1481 OX-5 motors have been received and 550 planes and 620 motors of this number have been released to the Curtiss Corporation.

9th OBSERVATION SQUADRON TO PATROL FORESTS IN CALIFORNIA.

Due to the depleted personnel and the small number of organizations available for this work there will be but one Squadron for forest fire patrol this year. This Squadron which is the 9th Observation, will patrol the forests in California only. Until squadrons are authorized especially for this work it will be impossible to patrol the forest area in the states of Washington, Oregon, Nevada, Utah or other states with extensive forests.

The headquarters of the 9th Squadron will be Mather Field, from there operations will be carried on over the various forest reserves in California. Equipment will consist of about thirteen airplanes and all the necessary auxiliary equipment and personnel for the operation of these planes.

The Air Service has recently completed a course of instruction for civilian foresters of the Agricultural Department at March Field. This course gave training to the foresters in the work of aerial observation, pertaining particularly to forest fires and also enough instruction in the means of communication to permit these men to act as observers on the patrols instead of commissioned Air Service observers.

It is planned that the patrols be put into operation about May 1st and will probably continue to the middle of September. Some of the patrols are as great a distance as 200 miles. In these longer patrols landings are made at the emergency landing fields at one end of the route. The Department Air Service Officer, Western Department is also contemplating the use of a flight for the patrol of the Santa Barbara forests and forest area between March and Rockwell Fields.

Airplanes used will be DeHaviland 4 B's. These being the old DeHaviland 4's remodeled with the gas tank in front of the pilot instead of between pilot and observer, thus permitting both occupants of the plane better inter communication, due to the fact that they are closer together.

For communication, each airplane will be equipped, either with wireless telegraph or telephone sets and the various stations equipped with the necessary receiving outfits.

Each airplane will be equipped with sufficient provisions for use of both occupants for several days in case a forced landing is made in inaccessible areas.

The airplane patrol provides much wider range of observation than the lookout stations, which were the only means the forest Service had in the past for detection of fires. In addition to the wider range of observation, another advantage over the lookout system is the fact that when smoke is discovered the plane is able to reach the area within a comparatively short time, while with other means of observation it would, sometimes take a week or ten days to arrive at the fire area, due to inaccessible ground travel.

Although the Forest Fire Patrol was, more or less, an experiment in 1919 results obtained were highly satisfactory to the Forestry Service and to the Air Service and it is believed that the work this year will be of even greater benefit due to the training and experience which was gained in 1919.

Liaison between the Air Service and the Forestry Officials has been excellent, both cooperating to the fullest extent for the successful carrying out of the patrol.

There are about twenty-four million acres of government forests that will be under observation and in addition vast areas of private lands.

THE GOVERNOR OF COAHUILA, MEXICO VISITS 90th AERO SQUADRON

Enroute to Los Angeles, California, on a visit to relatives, Governor Gustavo Espinosa Mireles, of Coahuila, Mexico arrived at Eagle Pass, Monday evening and during his stay paid a visit to the members of the 90th Aero Squadron. Accompanying the Governor was Mrs. Mireles, her mother, Senor Leopoldo Sanchez, the Lieutenant Governor and General Murguia, Commander of Carranza forces in the State of Coahuila.

Governor Mireles and General Murguia are very much interested in the needs of Aviation as is attested by the fact that they are bending every effort toward the upbuilding of the Mexican Air Service. Landing fields have been established at numerous points over the state and three airdromes have been constructed in towns on the border between Coahuila and contiguous Mexican states. Eleven planes are now doing service at these airdromes and frequently make flights to Piedras Negras, the Mexican city opposite Eagle Pass.

A test flight was in progress when they arrived and the visitors appeared to be very much impressed with the size and speed of the DeHaviland planes. They spent considerable time in investigating them and in comparing them with planes with which they appeared to be familiar. They deplore the fact that sufficient funds are not available to do the necessary experimental and construction work to build up a strong Air Service but believe that, in time the government can be interested to the extent that they will make the necessary appropriations. In the meantime they are building their own planes, in the field and at one factory located at Mexico City.

At present two types of planes are being constructed: A single seater, similar to the Bleriot Monoplane and a two seater biplane of Mexican design and manufacture.

PILOT BRINGS NIEUPOINT OUT OF SPIN WITH BROKEN CONTROLS.

Lieut. H.W. Sheridan, an expert flyer on duty at the pilot's school at Carlstrom Field, Arcadia Florida who has had a great deal of experience in flying single seater pursuit planes, had an experience in the air which warrants saying that he used extraordinary judgment while in difficulty.

He left the ground in a French Single seater Nieuport 28 equipped with a 160 H.P. Gnome rotary motor. This little plane is noted for its speed and wonderful climbing ability. In fact overseas it was a favorite among the flyers who were engaged in pursuit work. In a little less than a minute after leaving the ground he had reached an altitude of 3,000 feet and after circling around for a while decided that he wanted to kill some altitude so accordingly he put the plane into a spin and started down. After a few turns he attempted to straighten out but the manipulation of the controls in the usual manner helped not at all and he continued to spin with the ground coming up toward him at an alarming rate. One can gather an idea of how fast the Nieuport travels in a spin toward the ground when you consider that every turn made the machine drops 250 feet. Looking over his shoulder he noticed that moving the rudder bar had no effect on the rudder so he pushed the control stick well forward and applied the aileron in the direction opposite the spin. After considerable added speed had been attained the ship came out of the spin. No time was spent in purposely experimenting with a broken control but he found that the idly swinging rudder was pretty well streamlined behind and had little effect on the balance of the craft. Using his ailerons and elevators for turning he returned to the field, headed directly into the wind to obviate any drift and landed with difficulty.

Examination disclosed the fact that the wooden block to which both horns are attached had parted completely from the forward post of the rudder. With the exception of the spin mentioned no acrobatics had been indulged in nor had the rudder been applied snappily or harshly during the flight.

PILOT SCHOOL AT CARLSTROM FIELD, ARCADIA, FLORIDA BUSILY
ENGAGED IN INSTRUCTIONAL WORK.

The permanent flying instructors at the pilot school at Carlstrom Field, Arcadia, Florida are busily engaged in giving instructions to cadets at the present time. There are 70 cadets now under instruction and 15 have practically finished their flying training. The cadet is given a complete ground course in practically every subject pertaining to aviation which is considerably more thorough than the course given to cadets at the ground schools during the war. Besides the cadets there are 16 Naval Officers at Carlstrom who are receiving instructions in the operation of army land planes. These officers have taken to land machines like ducks to water. They are busily engaged in combat practice with the Nieuport 28's and are given a thorough course of instruction in the operation and manipulation of this type of machine. The Nieuport or a similar type of plane will be the one eventually used by these officers to fly from gun turret platforms or decks of airplane carriers. These naval officers are also taking the regulation army ground school course and are spending considerable time in theoretical and practical work with the various types of machine guns.

AIRPLANE OBSERVERS PHOTOGRAPH FOREST FIRES.

During the past week fire has broken out in various parts of the forest reservation at Camp Bragg, North Carolina.

The reservation, an area of 200 square miles, is covered with scrub oak and pine trees. The fire started on the outskirts of the area and increased in intensity. In order to keep a watch on the progress and location of the forest fire the Commanding Officer organized two patrols to fly over the entire reservation daily and photograph the burning area.

The only way in which information could be gained quickly was by the use of airplanes because of the fact that the reservation is nearly inaccessible due to heavy undergrowth.

TRAINING OF AERIAL OBSERVERS

The following instructions relating to the training of aerial observers are published for the information and guidance of all concerned:

The Air Service is responsible for the provision of aerial observation for the Army, and is charged with the training of all aerial observers, both airplane and balloon. Officers designated for this duty will be commissioned in or detailed for duty with the Air Service. They will be trained in Air Service schools and in the schools of such other arms as may be necessary.

Training of airplane observers.-- As a preliminary to becoming a flying officer all Air Service Officers will attend a pilot school where the course will include the instruction formerly given at ground schools and instruction in aerial gunnery, theory of flying and flying training in so far as is necessary to develop flying officers so that they can be classified and sent to one of the specialist schools (observation, pursuit and bombardment), for training in one of those specialties.

Having learned the fundamentals of flying, graduates, of a pilot school selected for further training as observers will be sent to the Air Service Observation School. The course at this school will include flying training for the purpose of developing observation pilots and observers of all types. Instruction will be given in map reading, visual reconnaissance, photographic reconnaissance, liaison with ground troops, surveillance, observation of and adjustment of Artillery fire, maintenance and operation of the radio telephone and telegraph, intelligence, aerial gunnery and meteorology.

The staff of the observation school will include one or more officers of Infantry, Cavalry, Field Artillery and Coast Artillery selected by the War Department, and these officers will be employed to supervise the instruction in all matters requiring a knowledge of the tactics or technique of their respective arms.

Before any student shall be qualified for rating as an Aerial Observer, he will be required to pursue a course at an Artillery School. The scope of this course will be determined by the Director of Air Service in consultation with the Chief of Field Artillery and the Chief of Coast Artillery. Should any irreconcilable difference of opinion exist as to the proper scope, the matter will be forwarded to the Adjutant General of the Army. The scope having been determined, the details of the course, including the time necessary to carry out the instruction will be determined by the Chief of Field Artillery and the Chief of Coast Artillery. Proficiency in this course will be determined by the proper authorities of the Artillery School. The staff of the Artillery school will include an Air Service Officer.

Observers who have successfully completed the courses above outlined, will continue their training with observation squadrons of the Air Service. During target practice of the Field and Coast Artillery, observation squadrons will train with the Artillery. During the period of field training, and especially during the period of maneuvers, observation squadrons will train with the Infantry, Cavalry and Artillery.

Training of Balloon Observers. -- The same general policy as that outlined above will be followed in the case of balloon observers. Their training will be conducted at a balloon school. The course at such a school will include training in balloon maneuvering and balloon observation. There will be one or more officers of Infantry and Cavalry, Coast Artillery and Field Artillery detailed by the War Department as members of the school board at the balloon school. These officers will be employed to supervise the instruction in all matters requiring a knowledge of the tactics and technique of their respective arms. Balloon observers will be required to take a course at an Artillery School, as outlined in paragraph 5. The training of balloon observers who complete the school courses will be continued with service balloon companies as has been already outlined for the heavier-than-air branch of the Air Service.

Officers of Other Arms -- It is the policy of the War Department to provide for the attendance of officers of all other arms at the Air Service schools, this attendance being followed by a short detail in an Air Service observation unit. These officers, already trained in the tactics and technique of their own arms, by securing Air Service training, will be better qualified to act as instructors at Air Service schools. They will be available for such special aerial observation as the conditions of service may render necessary. By thus coming in direct contact with the Air Service and acquiring a knowledge of the limitations and possibilities of the Air Service, and by disseminating this information in their own arms, cooperation and mutual understanding between ground troops and the air forces will be fostered.

The Air Service must furnish from its own personnel complete elements including observers for all the larger combat units, such as divisions and higher units, for which tables of organization prescribe air service elements. The Air Service shall be responsible for the efficiency of these elements until they are assigned to the larger combat units and become integral parts thereof and thereafter shall furnish all necessary replacements. After such assignment the commander of the combat unit must assume all responsibility for their efficiency and it further becomes his duty to select from other elements of his command and have trained by his air service such special observers as may be needed in connection with active operations in the field to make his whole combat unit operate most efficiently as a fighting force.

FRENCH BREGUET EQUIPPED WITH AMERICAN LIBERTY MOTOR MAKES ALMOST
TWO MILES A MINUTE

During the week Lieut. Col. Harold E. Hartney flying a D.H.-4 B lowered the record for fast flying between Middletown, Pennsylvania and Washington D.C. having accomplished the distance of 100 miles in 56 minutes from the time the wheels took off the ground until they landed at Bolling Field, Washington, D.C.

The record was formerly held by Lieut. Ray Brown who made the distance in a single seater Spad April 8th in 60 minutes. Upon hearing that Lieut. Col. Hartney had succeeded in breaking his record, decided that there was only one course to follow, and, taking advantage of an opportunity to fly to Washington, he had official time taken with a view of re-establishing his record, the result being that with Capt. D. J. Neumuller as passenger in a French Breguet 14 A.P. 2 mounted with Liberty 12-A motor, the trip was made against heavy side winds in 53 minutes from the time the wheels left the ground at Middletown until they touched at Bolling Field. This was the first cross country trip made with this plane since it was set up at Middletown depot and it proved to be a very efficient plane for cross country flying. Notwithstanding the fact that the generator on the motor was burned out and a heavy oil leak showed up when a few miles from Washington no trouble was experienced. The return trip was made in 51 minutes, Captain Neumuller piloting.

ACCIDENT AT MITCHEL FIELD, LONG ISLAND, N.Y.

On Thursday an accident happened at Mitchel Field just prior to the arrival of the Japanese Delegation which demonstrated the good qualities of the rebuilt D.H.-4 B. Lieut. Kendall, pilot, was taking off the field when his motor started to miss causing him to strike one wing against a number of flood lights on the field which resulted in a crash but fortunately without injury to the pilot. The observer came out of it with only a slight cut on his lip.

The De Haviland - 4 B is a modification of the old De Haviland 4. The gas tank has been taken out from behind the pilot and moved up close to the engine and the pilot's cockpit has been moved out beyond the wing. Upon examination of the wreck it was the unanimous opinion of all that had the pilot been flying a De Haviland 4 old type he without doubt would have been killed.

SHORT PARAGRAPHS OF NEWS INTEREST

Thruout the week three days were marked by very high winds at Puryear Field, El Centro, California. Despite these winds patrol was made on each day. Captain Smith, commanding, made the 60 miles from Calexico to Yuma in 23 minutes flying with the wind making 157 miles per hour for the distance.

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On taking over the Border Patrol from Calexico to Quitovaquita there was no exact knowledge of the number of border monuments that were up. The Pilots of Flight "A" of the 91st Aero Squadron had a monument hunting contest and succeeded in locating eighty per cent of the monuments on the 400 mile patrol.

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The Naval Officers class at the Army Pilot School at March Field, California, in command of Lieut. Commander E. W. Spencer, Jr., has progressed to combat work with the S.E.-5's, pursuit type, and the Thomas Morse Scouts. They are also taking puff target spotting, and in gunnery, having completed the Lewis and Marlin guns, are taking instruction on the Vickers gun, and also work with ring sights, deflection, and stoppages and jams. About May 1st the class will go to Ream Field, California where instructors from this field will give an aerial gunnery course, using live ammunition.

* * * * *

With the end of the Cadet course at the Pilots' School at March Field, California two weeks distant, the majority of the cadets are in the cross country or formation stage, on completion of which they will receive their final tests. It is probable that about fifty cadets will be graduated.

* * * * *

Two privates of the Supply Detachment, Souther Field, Americus, Georgia, narrowly escaped being gassed Saturday night by chlorine gas escaping from a chlorine gas container. This container was in the post supply warehouse and it was discovered that it was leaking quite badly and was therefore set outside. A large amount of gas collected, and two men attempted to remove the container without equipping themselves with gas masks. These men inhaled enough of the gas to make themselves quite sick. The container was finally removed to a remote point on the field by two additional men who wisely, equipped themselves with gas masks before attempting the work.

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Lieutenants Haizlip and Hickey of the 8th Aero Squadron on Border duty left for Douglas, Arizona on Saturday morning by plane. They will stay three days at each Airdrome between McAllen and that plane. This flight is being made in compliance with orders of the Group Commander, the intention being to familiarize all officers with the terrain of the entire border. Upon the return of Lieutenants Hickey and Haizlip to their proper station, another team will be dispatched on the same mission.

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A free balloon trip was made during the week with Captain A. C. McKinley, A.S.A. as pilot and 2nd Lieut. R. G. Conklin, A.S.A., 2nd Lieut. H. R. Wells, A.S.A., 2nd Lieut. A. H. Foster, A.S.A., Master Electrician C. M. Haricle and Sergeant First Class W. J. Mansfield as passengers. The balloon left Fort Omaha at 9:54 A.M., and made their first landing 4 miles north west of Fort Omaha at 10:49 A.M., their second landing 15 miles north east of Fort Omaha at 1:30 P.M., their fourth landing 20 miles north east of Fort Omaha and 3 miles North West of Honey Creek, Iowa, at 2:45 P.M. The highest altitude reached was 2300 feet on the fourth flight. All the passengers then got out, putting in enough ballast to compensate for their weight and Lieut. Wells then made his solo. He ascended to 16,000 feet and landed at Villisca, Iowa, 75 miles north east of Fort Omaha at 5:00 P.M. His barograph record shows a very even and successful flight.

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During the week Colonel Alonzo Gray, Commanding Officer of the Arizona District made another inspection of his district by airplane with Lieut. Alexander Pearson Jr., of the 12th Aero Squadron on border duty, as pilot. The inspection was made of the Western half from Douglas to Ajo and return. Colonel Gray has twice before made an inspection by airplane and has found it the only way that an idea of the terrain can be obtained thruout this country due to very bad roads and poor railroad connections. The plane landed at Nogales for gas on the western flight at a time when the Commanding Officer of that Sub-district was very anxious to have a meeting with his superior officer. The flying time for the trip was four hours and twenty minutes.

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Three new De Haviland B's were received at the Air Service Mechanics School, Kelly Field, Texas for use in the school. Pilots at the school are agreed that they are wonderful planes, but they feel somewhat strange sitting so far back. This gives the school five De Haviland B's -- the Parachute plane, the Armament plane and three for the Flying Department.

During the week, there has been an unusual number of airplanes that have landed at Rich Field. A consignment of planes to Kelly Field, San Antonio, Texas from the Aviation General Repair Depot, Dallas, Texas, was flown to Kelly Field by Kelly Field pilots and stopped at Rich Field which is the only station in this part of the state where gas and oil can be secured. There have also been many visitors from other fields. In the consignment of planes to Kelly Field were De Haviland 4's, S.E.-5's and Spads.

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During the week Lieut. Woolridge of Barron Field, Texas took his flying test for a Junior Military Aviator on the Air Service Mechanics School flying field, in an SE-5, and passed a remarkably good test, considering the fact that he was out of practice on scout planes. The test was conducted by Major Stratemeyer, with Colonel J. E. Pechet and Major Ralph Royce, respectively, Department Air Service Officer and his Chief of Staff, also present. One trial for each test was all that was necessary. The cross-country trips were made in a De Haviland - 4.

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Lieut. Boggs, pilot and Lieut. Dunn, observer, left Folling Field, Washington, D.C. during the week for Camp Bragg, Fayetteville, N.C., in a De Haviland plane. The first stop was made at Langley Field, Virginia. The flyers were forced to land at Ivanhoe, N.C. due to engine trouble and landed in a field too small to get out of. Mechanics from Pope field have been sent to Ivanhoe to salvage the plane. The detail encountered poor roads on the trip and it was necessary for Lieut. Potter, pilot and Lieut. Hopkins, Observer to fly from Pope Field to Ivanhoe, N.C. to drop an auto spring and other spare parts needed by the salvage crew to repair their trucks.

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S.E.J. Cox, President of the General Oil Company, Houston, Texas, flew into Rich Field Friday evening, April 16th, 1920, in his three seater Curtiss Oriole which he left over night. Mr. Cox was enroute from Houston, Texas to Wichita Falls and left Saturday morning after receiving gas and oil. Mr. Cox uses an airplane for his business entirely. It will be remembered that about six months ago his wife and son flew from Texas to New York, where Master Cox was placed in school.

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Two records were established during the week by officers of the 1st Surveillance Group, El Paso, Texas, for covering patrol in the shortest length of time and the other for covering the patrol in the greatest length of time. Lieutenant Douglas flying from Douglas to El Paso made the patrol which is approximately 210 miles in one hour and eighteen minutes averaging 160 miles per hour. Captain Arthur covered the patrol from Marfa to El Paso in three hours and thirty minutes. This patrol is usually covered in one hour and forty five minutes.

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During the week a message was received under exceptional conditions by the Air Service Squadrons in the Canal Zone engaged in exercises with the Infantry. Clouds were so low that they obscured the tops of the mountains nearly all of the time, and it rained every few minutes. One Infantry party was located by Pilot Lieut. C. B. Austin and Observer, Lieut. D. D. Watson, in a valley between two ridges, the tops of which were in the clouds. To receive the message it was necessary to fly between the ridges, and after the plane finished its work with the Infantry the pilot had to travel the length of the valley and got out by flying thru a low pass which the clouds had not obscured.

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Two planes made a cross country flight from France Field, Canal Zone to Santiago, Canal Zone, Tuesday, a round trip of about 290 miles. While at Santiago the pilots learned that chickens could be purchased at less than half the Canal Zone cost; consequently, on the return trip each plane carried a number of chickens which were greatly appreciated by the Officers on the field. During the trip one of the hens in each plane laid an egg; evidently they were endeavoring, in their own way, to repay the pilots for the joy ride. As the trip to Santiago is over the mountains it is believed that this is the highest that eggs have been in this country.

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The members of the 90th Aero Squadron Sanderson, Texas suffered the loss of one of its most popular officers and non-commissioned officers when Lieut. Don M. Hansell and Sgt. W. G. Maxwell, both of "B" flight, 90th Aero Squadron, were killed in an airplane crash at Sanderson on the morning of April 15th. Lieut. Hansell's motor cut out while taking off and to avoid running into a hill he was forced to try to turn, causing him to fall into a spin which resulted in a crash.

TRANS PACIFIC FLIGHT FOR AN AIRPLANE WILL BE EXTREMELY DIFFICULT

The shortest route possible to fly across the Pacific Ocean would be somewhat similar to the Great Circle Route, but would cut the Aleutian Islands, passing north of the center of the group and through the Unimak pass at Unalaska. Presuming that the aviator flies from Victoria to Sitka, thence westerly to Unimak pass, in the Aleutian group, following the shortest possible route to Yokohama, he would have to travel only some 3,500 to 2,700 nautical miles.

Of the two routes suggested, speaking strictly of the Northern passage, and not dealing with the southern route via Hawaii, the Great Circle Route would appear to be the best for aircraft work.

If the voyage by air was merely a matter of getting above the prevailing and fluctuating weather conditions on the surface, it would probably be simple to construct a machine that would give the requisite speed and flying endurance to accomplish the trip. Unfortunately, in this experimental stage of knowledge of the upper stratas of air, it is impossible to say what conditions would be met with - say at 20,000 feet above the steamship route from Victoria to Yokohama.

The fogs vary as to the height to which they extend, sometimes only the hull of the vessel being obscured and at other times the fog takes on the form of a cloud bank extending apparently several thousand feet into the air. There is no data on hand, nor is there any formulated anywhere just how high these fogs cloud the air.

From December to February these fogs are not so much in evidence, and that period may be taken as being of fairly good visibility from the airman's viewpoint.

Gales are stated as coming, broadly, from two main sources, and operating in two different directions. A strong southeasterly wind operating from the southern end of Japan up across the Pacific towards the Aleutian Islands. The second class of hurricane is said to blow from off the Southern American coast up the coast in a Northwesterly direction. Cyclones are experienced near the coast of Japan.

The only land that could be made to coincide with a short aerial route across the Pacific is the Aleutian group of islands.

The use of the directional wireless for aerial navigation has been in operation during the last two years of the war in the air. By its means the R-34 kept a strict watch on its course in the trans Atlantic flight. By this means the operator can get the bearings of various known sending stations in relation to the aircraft, it being then a matter of simple plotting.

The operator on board a trans-Pacific aircraft will have to take 'back bearings' from the Canadian and American coastline, until within receiving radius of Dutch Harbour, in the Alutian Group, flying by back bearings again until within radius of the stations on the Japanese coast. Outside these land stations, the operator will have to try and get in touch with such ocean traffic as may be in transit.

Looking at the project from any point of view, it will be the most difficult feat ever attempted by aircraft, and the men who succeed in crossing the Pacific by air will indeed have won the highest place in aeronautical annals.

✓ ✓ ✓
SAFETY IN LANDING AN IMPORTANT FACTOR

After being in operation for nearly a century, neither railroads nor ocean steamers are immune from accidents, and it is probably useless to expect that travel by the air can be rendered more secure than these older methods of travel by land and sea. But it is reasonable to hope that the frequency of accidents may be reduced, thus providing aviation with a relative security, at least equal to that of other methods of locomotion.

The solution of the problem of safety in airplanes may be considered from two standpoints namely; by improving the airplane itself and by the use of safety devices.

For the public safety, and especially in order to give confidence to the passengers, it is necessary henceforth to study devices for absolutely avoiding fires and all danger of impact on landing.

As a matter of fact, the landing chassis of the large airplanes have received little attention up to the present time. For the war planes, we have certain fixed rules, and landing chassis with V struts, jointed axles, and rubber shock-absorbers have been generally adopted. But with such devices, if the pilot makes an abrupt landing, the fuselage receives a considerable shaking up.

In 1911 and 1915 everyone was working on devices such as the Oleo, and Voisin, and the Breguet, having heavy springs and oil shock absorbers on the struts; but these landing chassis were found to be too heavy and hardly necessary for the military airplanes.

Tests have also been made with devices having shock absorbers on the struts at the point where they join the fuselage, the rear strut being jointed; The advantage of this device is that its wheels have the tendency to go forward under the impetus of the shock, thus avoiding the danger of turning turtle. It has been assumed that the shocks are practically deadened in the following proportions:

- 30% for the pneumatic tires.
- 15% by the flexion of the non-jointed axles.
- 55% for the shock absorbers.

For the war airplanes, nearly all the builders have placed the center of the wheels in front of the center of gravity at a distance about equal to one quarter of the height of the center of gravity from the ground, corresponding to about 13° or 14°. This gives a device which practically avoids the danger of over turning, but which in certain cases subjects the tail skid to rather severe strains, especially if the fuselage is short.

Several concerns have studied out special landing chassis for their bombing airplanes, which have the wheels in tandem with a common shock absorber; this device gives a compensation between the two axles, and appears to be rather satisfactory.

For the airplanes intended to carry heavy loads, the question of tail skid shock absorbers is an important one, as there is little use of easing the landing if, at the moment when the tail skid touches the ground, all of the passengers are to be rudely jostled about in their seats.

SERIES OF ACCIDENTS AT BOLLING FIELD DURING THE WEEK

1920
During the week of April 19th there were a series of accidents at Bolling Field which at the end of said week totaled five.

On April 19th Lieut. George Wise, one of the most capable fliers at Bolling Field while piloting a German Fokker over Washington in the direction of Walter Reed Hospital, was compelled to make a forced landing because of engine failure in a little field near the National Seminary School at Forest Glenn, Maryland. Mechanics were sent out to Forest Glenn to give the plane an overhauling. He took off from this field and when he had reached an altitude of 1000 feet his engine again went dead; result he landed safely in the same field. Again the machine was carefully gone over; another take off; this time the engine went dead at an altitude of 50 feet; result, he crashed into a fence and totally wrecked the machine. He managed, however, to escape with only a few bruises.

The same afternoon Lieut. R. Haynes from the same field flying an S.E.-5 pursuit plane over Washington, because of engine failure was compelled to make a forced landing, opposite the Soldiers' Home but the field was so small that he had great difficulty in trying to get into it with the fast little S.E.-5. He crashed in making a landing and hopelessly wrecked his plane. When he was extricated from the wreck it was found that he had received a number of painful bruises and scratches but was not seriously injured.

On April 22nd three accidents figured on the day's program. Lieut. H. McGinnis and Captain L.N. Keesling while engaged in practice flying over Bolling Field had the most miraculous escape of all. These officers were flying at an altitude of 5000 feet when for some unknown reason the engine back fired and set the plane on fire under the engine causing the flames to shoot out on all sides.

Lieut. McGinnis who was riding in the front seat as pilot, immediately put the DeHaviland into a steep side slip which kept the flames from him and the pressure caused by the side slip served to hold down the flames a great deal. He succeeded in landing safely and jumped out of the plane as soon as the wheels were on the ground followed by Captain Keesling.

Enlisted men rushed from the hangars to the plane with Pyrenne Extinguishers and put out the flames. The front cockpit was completely burned out and the engine practically destroyed, however, before the fire was entirely extinguished. Neither officer was any the worse for his thrilling experience.

Hardly had this accident passed and the personnel on the field finished congratulating these officers on their successful escape from death when Lieut. George Wise, who had figured in a series of crashes on Monday, took off the field in an Avro. He reached an altitude of 150 feet when his motor suddenly cut out. Before he could recover himself the plane fell into a spin and crashed to earth. Everyone rushed over to the wreckage and after considerable difficulty managed to extricate him. Fortunately he was not killed but it was found that he was seriously hurt and a record run was made with him in the field ambulance to the Walter Reed Hospital. Authorities at the Hospital state that he has a serious fracture of the right leg extending into the knee but he was not injured internally.

The last accident of the day happened to Lieut. Col. Christie, of the Aeronautical Board. Col. Christie flying a DeHaviland 4 attempted to land his plane on the field. He struck a soft place on the ground at full flying speed which caused the plane to nose over and roll over on its back. The force of the impact threw his head against the cowl and cut his nose and face so badly that several stitches were required to close up the wounds. Colonel Christie received a severe shaking up and a number of minor bruises. However no bones were broken nor was he injured internally and it is expected that he will return to duty within a few days.

TEST OF MONEL METAL FOR ENGINE VALVES

The present day aviation engine operates at much higher temperature than was considered possible a few years ago. One of the greatest problems in the development of such engines has been the securing of a suitable material out of which to construct the valves. The life of ordinary valves is so short and their service so unsatisfactory that an improved material is urgently needed.

A test was recently conducted at the Bureau of Standards of monel metal, a material which recent tests at the Bureau of Standards indicate to be deserving of serious consideration for this class of work. Exhaust valves of this material have given satisfactory performance in a 180 H.P. Hispano Suiza engine during 130 hours of running time. Of this time, the first 90 hours were devoted to tests made primarily to study the behavior of the lubricating oils. The engine was operated for periods of about 6 hours each during which time it was developing between 130 and 140 H.P. at 1800 r.p.m.

Examination of these valves at the end of 45 hours showed them to be badly pitted; they were ground just enough to reveal the condition of the valve seats and these, too, were found in the same condition, although no considerable drop in power had been noted. During the next 45 hours, the horsepower was substantially the same as during the first 45 hours, although a slight increase appeared during the first run following the replacement of the valves. The valves were then subjected to 40 hours service under conditions far more severe than those encountered in normal operation. The engine was being used in connection with a study of preignition and for this purpose was operated at 1800 r.p.m., under full load for a period of from 4 to 20 minutes. During the greater number of these runs, preignition was intentionally produced resulting in extremely high engine temperatures. An evidence of these high temperatures was furnished in one instance by the fusing of the chrome electrode of a specially prepared spark plug, the electrode's melting point being 1500° C. In fact, one of the evidences of preignition was that when the engine was shut down the exhaust valve in a cylinder that had been preigniting would remain red for nearly a minute after the valves in the other cylinders had become black. In spite of the severity of these tests, there was no evidence of power drop from leaky valves. At the end of 130 hours of running time, the condition of the valves and valve seats appeared to be no worse than at the end of the first 45 hours. It would, therefore, seem that the pitted appearance which is a characteristic of this material has little effect on the gas tightness of the valve.

CALIBRATION OF IMPROVED AIR SPEED INDICATOR

An air-speed indicator of the Robinson Cup anemometer type with a centrifugal indicating mechanism has been calibrated by the Bureau of Standards. This instrument, which is of German manufacture, is small, very compact, and well adapted for use on dirigibles. It is very nearly independent of changes in air density and gives the actual air speed. On the other hand, air speed instruments of the pressure type are calibrated on the assumption that the density is uniform and give actual air speeds only when the air density is at its standard value.

LIEUT. MAYNARD RETURNS TO MINEOLA WITH A BADLY BATTERED PLANE

Lieut. Belvin W. Maynard, Air Service recently returned to Mineola from his long recruiting drive in the South, flying old No. 31 that won the Trans-continental Race. During October, 1919 this plane flew to San Francisco and return. Shortly after the return it was flown by Lieutenant Maynard to Savannah, Georgia, and thence to Miami, Florida, and return to Mitchel Field, on a special recruiting trip. In February, Lieut. Maynard was assigned to duty with the General Recruiting Service and he was immediately sent on a recruiting drive covering a number of the states in the South, where he flew approximately 10,000 miles, from city to city, while recruiting.

Upon the return of Lieutenant Maynard to Mitchel Field his plane was condemned as being unsafe to fly. The radiator had come loose and the cowling had split so that it hit the propeller, wearing a large piece out of each end. The lower wings had been scratched and written on by people all over the South and five ribs were broken in the lower right hand wing and four in the lower left/wing. All the wires were loose and part of the horizontal stabilizer had been broken. In spite of all of this Lieut. Maynard was ready to fly the plane from Mitchel Field to Washington, when ordered there to make his report to General Recruiting Service.

It is believed that this plane has set a record for continuous flying and time in the air. The motor has been changed only once in all this time, and the motor now in the ship is the one that was borrowed from the Martin Bomber that was flown by Captain Francis in the Transcontinental Race.

AERIAL PHOTOGRAPHIC MAPS OF THE CANAL ZONE

During the week a De Haviland -4 plane piloted by 1st Lieut. R.C.W. Blassley with 2nd Lieut. D. D. Watson, observer proceeded on an aerial photographic mission. This mission photographed an area of approximately thirty square miles, including the Gatun Road from Mount Hope to Fort Davis and around the Gatun Lock, Canal Zone. This work was done for the Department Engineers who are using the photographic maps to bring their maps up to date. During the past three or four months six such photographic maps have been completed for the use of the Engineers, covering about seventy square miles and there still remains about eighty square miles to be surveyed by aerial photography. All of this work has been carried on over a more or less mountainous country covered with a dense jungle which makes it almost impassable. As a result of these conditions, an hour or so of aerial photography by the Air Service saves the Engineer Corps months of work on the ground.

9TH AERO SQUADRON READY TO DEPART TO MATHER FIELD

The 9th Aero Squadron is preparing to transfer to Mather Field to engage in forestry patrol service. Transportation will be by motor lorries, accompanied by kitchens and photographic laboratory, all planes composing the 9th Aero Squadron will be flown thru to Bakersfield. Enroute to Mather Field, the 9th Squadron will engage in an intensive recruiting campaign, being supplied with a large amount of literature for this purpose. Stops will be made at Bakersfield, Tulare, Fresno, Merced and Stockton enroute. At Bakersfield the squadron will be joined by its airplanes and from thence onward, the organization will move from city to city, both by planes and lorries, giving flying exhibitions at each of the cities where it is scheduled to stop.

U.S. -9 AIRPLANE MAKES FAST TIME ON NON-STOP CROSS COUNTRY FLIGHT

Records for the longest non-stop flight on the Pacific Coast were broken Saturday when Lieut. F. D. Hackett flew from Mather Field to Ream Field a distance of 490 miles, in a De Haviland U.S. 9 plane equipped with a Liberty motor, in four hours and one minute. A new record was also established in the length of time the flight was made, this being the shortest time consumed in covering the airline distance between the two fields.

Lieut. Hackett left Mather Field Saturday morning, at 11:30 o'clock and landed at Ream Field at 3:31 o'clock without stopping. He carried with him Chester G. Cole, aviation mechanic.

The nearest approach to the record established by Lieut. Hackett was made by Captain Lowell H. Smith last summer, when he flew from Rockwell Field to San Francisco in four hours and six minutes, the distance being 20 miles shorter than Lieut. Hackett flew.

PASSENGERS MULTIPLY DURING AIR VOYAGE

During the week order was received for the 12th Aero Squadron to move its equipment and personnel from El Paso, Texas to Nogales, Arizona. Six officers in D.H.-4 B planes piled their baggage in the rear seats and two cats were taken along as passengers.

The planes stopped at Douglas, Arizona where the officers and passengers had lunch and then proceeded to Nogales, their destination.

After unloading the baggage it was found that the passenger list which originally consisted of two adult cats, had been increased by the addition of four healthy looking kittens enroute.

The incident afforded quite a little amusement among the officers and men when the announcement was made that four new mascots were attached to the 12th Aero Squadron.

DIRECTOR OF MEXICAN AIR SERVICE PRESENTS AMERICAN FLIERS WITH POTTERY.

The 90th Aero Squadron, Eagle Pass, Texas is in receipt of a barrel of Mexican hand made pottery from 1st Captain Hernanes, Director of the Mexican Air Service, who is at present stationed at Musquiz, Mex. in command of all aviation operating in that vicinity.

A letter accompanying the present stated that the pottery was sent in appreciation of the friendship formed between the American and Mexican Air Service personnel while one of the Mexican flights was stationed at Piedras Negras some weeks ago. The Captain and several of the other officers of the flight were frequent visitors at the Airdrome and the officers of the 90th Squadron found them to be excellent and affable gentlemen.

AERIAL PHOTOGRAPHERS PHOTOGRAPH CAMOUFLAGED TRAIN

A well camouflaged motor transport train encountered a disappointment when they attempted a movement from Honolulu, Hawaii to a point on the north side of the island.

The Air Service forces, 2nd Observation Group, were in the air adjusting artillery fire in conjunction with the Coast Defense, Artillery Shoot and while so engaged an observer noted a movement on the ground which did not altogether resemble the movement of troops.

Word was sent back by telephone and a photographic plane was immediately dispatched to ascertain what was on the move. He discovered a full fledged motor transport train partially camouflaged on the move with the intention of reaching a point on the island to encamp under concealment free from observation.

Planes were then dispatched from the field which kept them under constant surveillance and photographs made of the entire trip. Had this been an enemy the Air Service forces could have destroyed the entire train with little difficulty.

CASUALTY AT RICH FIELD

There was one casualty at Rich Field during the week. Sergeant Gleason E. Shealer took off from the ground and reached an altitude of 200 feet when his motor cut out. He evidently did all he could to prevent a crash and apparently "nosed" his plane down at the appropriate time, and attempted to glide to the ground.

The controls failed to respond and apparently the plane went into a momentary stall with a resultant fall into a side slip. The right wing touched the ground first and his plane "nosed over". When the debris was removed and the remnant of the plane moved away it was learned that Sergeant Shealer was unhurt but that a young and innocent four weeks old rabbit had been struck in the collision and his lifeless form lay prostrate on the ground, mute evidence of his short and feeble attempt to survive as one of the fittest.

BIG BIRD PUZZLES FLYING OFFICERS

Major John G. Whitesides, Commanding Officer of Rich Field, Texas is thinking of instituting a course in zoology for the benefit of his airplane pilots and enlisted fliers at Rich Field. During the last week a huge bird has been occasionally noticeable in the air and on the flying field. It was first discovered one morning in the early part of the week when Lieutenant Richard H. Magee had stood in one place, in front of Officers' Quarters for about 20 minutes, wonderingly observing the most bewildering feats of acrobacy in the air that he had ever witnessed. Lieutenant Magee is some pilot himself but his own feats of daring paled into insignificance compared with the spectacle that so entertainingly and surprisingly compelled his attention. He decided that the performance was worthy of comment and beckoned Lieutenant Edgar E. Glenn to come and behold and see with him, at the same time inquiring of Lieut. Glenn who the pilot was. To Lieut. Glenn this was a great joke. "Why, Magee," he replied, "That is a big buzzard that has taken his place of abode with us during the last few days". Lieut. James B. Kelsey who came along about this time did not agree with Lieut. Glenn in his classification of the bird and proceeded to inform the now embarrassed officer, the bird was a wild goose similar in appearance to those he was wont to see on the banks of the Missouri River near Leavenworth, Kansas, where he had lived before the war.

On the afternoon of the same day Sergeant William E. Beigel reported at Headquarters that he had seen a peculiarly carved stone, giving all the appearance of a monument, in the north east corner of the Field as he was landing his plane, and with two or three others, went out to investigate only to see a large bird "take off" and fly away at their approach.

The next morning, however, Major John G. Whitesides "took off" for a practice flight and when he returned informed the Lieutenants and Sergeant Beigel with elementary knowledge of Zoology that the bird they had seen was neither a buzzard nor a goose nor a monument but a real American Eagle.

REPAIR DEPOT INDIANAPOLIS, INDIANA

Through the kindness of the Secretary of the K.C. all enlisted men at this Depot have enjoyed a ride and a chance to root for the home team. On Wednesday afternoon a holiday was declared and everyone from the K.P.'s to the top Sergeant dug out their best uniform and prepared for an afternoon of real pleasure. Three Liberty trucks were shined up and decorated with Air Service posters and recruiting flags and filled with a happy lot of enlisted men. The trucks joined in the parade which was quite large and proceeded through the business section of the city and thence to the ball park. A whole section of the grand stand had been reserved for our men.

Not only did every one have a good time, but quite a lot of publicity was given the Air Service.

AVIATION REPAIR DEPOT, MONTGOMERY, ALABAMA.

Having received three appropriations from the War Department for educational work, classes have been organized, teachers hired, text books and all necessary supplies purchased, and the first classes are well under way. The men have volunteered for the studies, and both teachers and pupils are taking a great deal of interest in the work. Since the first classes were held more men have asked to take up studies and it is hoped that when the work has progressed and is running smoothly more men will take up studies. The courses at present are in penmanship, spelling, arithmetic, history, English, algebra, plane and solid geometry and trigonometry. Over 50% of the men are enrolled.

FIRE PROTECTION

Several new buildings have recently made their appearance at the repair depot, Montgomery, Alabama with their fresh coat of white paint and looking at a short distance like stylish bee-hives, have excited quite a little curiosity. Close examination discloses the fact that they house about 200 feet of fire hose, one end of which is permanently fastened to a hydrant which happens to be conveniently near, while the other end, terminates in an efficient nozzle, and projects from one end of the building within easy reach. The location of these buildings has evidently been considered with a view of making use of this hose for speedy and effective work in case of fire, and while the Post is blessed with a pretty efficient fire department, these little first aid stations should prove a wonderful assistance in nipping a fire in its early stage. Close inspection reveals even a key for turning on the water.

Sergeant Ragnar T. Frenz of the Supply Detachment, Aviation Repair Depot, Montgomery, Ala., successfully passed all requirements of an application for training as pilot and has been recommended to Washington for this training.

ACTIVITIES OF THE SUPPLY DEPOT SOUTHER FIELD, AMERICUS, GEORGIA.

Lieut. Colonel H. B. Claggett, Air Service, Department Air Service Officer, Southeastern Department, arrived Sunday morning to make an inspection of the field. This inspection lasted during Sunday and Monday morning, and Colonel Claggett left Monday afternoon about two o'clock for Savannah in a DH-4, accompanied by M. E. Johnson, who will fly the plane back to the field.

Lieut. K. B. Wolfe, A.S.A., arrived Saturday evening from Dallas, Texas in a Fokker D 7, which will be used at this field. Lieut. Wolfe made the flight via Lonoke, Arkansas, Park Field, Tenn. and Taylor Field, Alabama. His only trouble experienced during the trip was at Lonoke, Arkansas. Lieut. W. B. Warde, A.S.A., left Dallas the same time in a Fokker, but is being held up at Lonoke, Arkansas with motor trouble.

Capt. Emert Shields, A.S.A., has reported here for duty from the Army Base at Norfolk, Va. Capt. Shields has been assigned to duty as Engineer Officer, Souther Field and Aviation General Supply Depot. His work will include the preparation of a large number of motors for long time storage.

ACTIVITIES AT THE STORAGE DEPOT, LOVE FIELD, DALLAS, TEXAS

A very ingenious and efficient method of storing airplanes has been adopted at this station. The wings are removed from the fuselage, the fuselages dovetailed on the floor of the hangars, and the wings, placed on racks above the fuselages. By this method 68 uncrated D.H.'s have been stored in one hangar of standard size.

Approximately 300 crated airplanes are stored out of doors under temporary sheds constructed from old packing boxes. These sheds are all covered with roofing paper and the crates all raised from the ground and, to date, those crates that have been examined, demonstrate the efficiency of this method of storage.

Practically all the material from Taliaferro Field, Fort Worth, Texas, has been shipped to Love Field, preparatory to the abandonment of Taliaferro Field. This great influx of material, with the consequent work of storage and preparation against deterioration, provides more than enough work to keep busy ten officers and 112 Air Service enlisted men at present on duty at Love Field.

The month of March lived up to its usual Texas reputation, Love Field having experienced the destructive power of wind, fire, and flood. Heavy winds proving veritable cyclones, rising during the month of March, creating havoc among the temporary storage sheds constructed there. Sections from the roofs of four steel hangars were strewn promiscuously around the field after a particularly cyclonic disturbance.

ACTIVITIES OF ROCKWELL FIELD, SAN DIEGO, CALIFORNIA

May 1st is the date set for the establishment of an Aerial Gunnery School at Ream Field. Three Officers and twenty enlisted men from March Field, Riverside, California and six naval fliers, headed by Lieut. Commander E.W. Spencer, Jr., will be the first contingent to take up aerial gunnery and acrobatic flying at the advanced flying school.

Ream Field has not been used extensively as an aerial gunnery base since the war, although the 91st Aero Squadron recently carried out aerial gunnery and bombing practice there. The 91st Squadron, under the command of Major Wm. A. Robertson, is now stationed at that field.

Colonel H. H. Arnold, A. S. A. Department Air Service Officer, Western Department flew down from San Francisco in a Le Pere airplane on Saturday, April 17th for conference with the Commanding Officer in connection with the Aviation Supply and Repair Depot.

The work of organizing the Aviation Supply and Repair Depot, Rockwell Field is progressing satisfactorily. There are at present approximately 190 civilian employees, most of this force having been employed within the past few weeks. A further temporary increase is contemplated in order to hasten the erection of the large number of hangars necessary for storage. The work of merging the Aviation General Supply Depot, Los Angeles with this depot is in progress, but the latter organization is still functioning as a supplementary supply depot of this post and will continue to do so until all supplies have been either issued or removed.

First Lieut. Wm. M. Randolph, Inf. and 2nd Lieut. Warren A. Maxwell, A. S. A. took off from Rockwell Field, Saturday, April 17th enroute to San Francisco to deliver one Fokker and one Spad airplane, which are being sent there for exhibition purposes at the Aeronautical show being given under the auspices of the Pacific Aero Club.

NEWS FROM SQUADRONS ON THE BORDER

DANCE GIVEN IN HONOR OF COLONEL AND MRS. ARCHIE MILLER

The Officers of the First Wing Headquarters, First Air Park Group, and the Medical Corps at Kelly Field gave a dance on Friday night in honor of Colonel and Mrs. Archie Miller. Both the rooms of the Officers' Club and the indoor tennis court just outside of the club were used for dancing and the space used was none too large to accommodate the guests who numbered nearly five hundred.

Previous to the large dance a dinner dance was given by Colonel and Mrs. Miller and the Officers Ball Teams to the Officers and ladies of Brooks Field. Fifty-four people sat down to dinner at three long tables placed in the form of a hollow square. During the dinner the Post Orchestra played for dancing in the dining hall and after dinner the tennis court was used for dancing.

At nine o'clock the Post Orchestra was relieved by two orchestras from San Antonio, one played in the ball room and one out of doors. These orchestras alternated so that there was little time lost between dances.

Just before the fourth dance "Assembly" was blown and Chaplain Swanson on behalf of the Groups giving the dance presented Mrs. Archie Miller a huge bouquet of flowers.

FIRST DAY BOMBARDMENT GROUP

Cavalry Liaison

The first column of the 14th Cavalry has arrived at Fort Ringgold, having completed a march replete with incidents in connection with which the Air Service figured prominently. In spite of handicaps due to the climatic conditions, the Bombardment Group has maintained daily contact with the moving forces and the assistance rendered them has, without doubt, been of no little value.

The routine of the daily patrols and the daily delivery of mail by plane have been previously covered in these sheets. Several officers have been ferried by plane back and forth between San Antonio and their command for transaction of business, conference, etc.

The second column of the 14th Cavalry leaves the 16th and it is expected that an even more efficient liaison will be maintained than was the case with the first column, as a result of experience gained.

Lieut. Paul H. Davis, the Air Service officer who accompanied the first column, landed at Kelly Field Thursday and brought a message from Major McNally commanding the first column, extending the latter's hearty thanks and appreciation to the officers of the Bombardment Group for their able cooperation with his command.

On Friday 2d Lieut. H. S. Johnson, pilot and 1st Lieut. B.A. Doyle, Group Operations Officer flew to Bryan, Texas in a De Havilland 4 for the purpose of demonstrating current methods of Air Service liaison with various ground units for the edification of the Military Cadets of the Texas Agricultural and Mechanical University. The trip was made under authority from the Department Air Service Office, the demonstration having been requested by Captain Muller of the Cavalry who is assigned to duty at the University as the Senior Military Instructor.

Upon their arrival the officers were received with great courtesy and every consideration for their comfort was shown during their stay. Lectures on aeronautical equipment and its use in liaison were given and demonstrated where practicable. For instance, a simulated snoot was conducted with the Artillery Detachment. The officers took the air and sent down radio messages of typical character such as would be used in a series of varied artillery problems. These corrections were received by the Artillery Cadets who made the proper resulting changes in the laying of their guns.

There seems to be a very healthy military activity at this institution as Lieutenants Doyle and Johnson reported that there was plenty of evidence of good discipline and efficiency. There are about 2000 students at the University of which nearly 50% have attained the status of a Cadet. The standard is kept high and all do not qualify. The body of Cadets is divided into four detachments which are respectively trained in the work of the Infantry, Cavalry, Artillery and Signal Corps.

Bryan, Texas is about 100 miles from Ellington Field at which latter place the flying officers made landings for service both going and coming. Lieut. Doyle telephoned Captain Muller from Ellington on the way to Bryan and was requested to send frequent radio messages to them while enroute from Ellington to Bryan. This was done and the messages were received by the Signal Corps Detachment of Cadets without difficulty as soon as the plane had arrived within a radius of 25 miles of Bryan.

The following letters of appreciation for the work done by the liaison team of the First Bombardment Group at the Agricultural and Mechanical College of Texas, on April 9, 1920, were received by Colonel Archie Miller, Commanding Officer, Kelly Field. It is hoped that in the future we may be able to conduct a more extensive liaison program with the Cadets at the Agricultural and Mechanical College of Texas.

Fort Sam Houston, Texas,
April 15, 1920.

To: The Commanding Officer, "B" Flight, 8th Aero Squadron, Laredo, Texas.

The undersigned officers of the 16th Cavalry and attached Medical Personnel desire to express to you and your officers their thorough appreciation of your hospitality and courtesies extended to them while passing through Laredo.

Your consideration has only been exceeded by the efficient and conscientious manner in which your squadron has functioned during the march of this command from the lower Rio Grande to Fort Sam Houston, Texas.

By your hearty cooperation and the opportunities that you have afforded us to observe our own movements, you have demonstrated to the Cavalry your unlimited powers in the service of information. We have no doubt, that in actual hostilities, you would demonstrate a corresponding amount of efficiency in the service of security.

Our earnest hope is that should we be called into active service we would be fortunate enough to have you and your officers direct and secure us.

A. J. Myers, Jr.
Captain 16th Cavalry, USA.

Daniel Van Voorhis,
Col. 16th Cavalry, USA.

William C. Chase,
Captain 16th Cavalry, USA

R. K. Meade,
Captain 16th Cavalry, USA.

James I. Gibbon,
1st Lt. Cavalry DOL, USA.

H. G. Paullin,
1st Lt. Cavalry, DOL, USA.

Thomas T. Thornburgh,
2nd Lt. 16th Cavalry, USA.

James V. McDowell,
1st Lt. 16th Cavalry, USA.

C. E. Pickering,
1st Lieut. Veterinary Corps, USA.

Daniel L. Heidrick,
1st Lt. Medical Corps, USA.

Headquarters,
Agricultural and Mechanical College of Texas Units
of the Senior Division of
THE UNITED STATES RESERVE OFFICERS TRAINING CORPS,
(Department of Military Science and Tactics)

COLLEGE STATION, TEXAS,
April 12, 1920.

From: Professor Military Science and Tactics.
To: Department Air Officer, Southern Department.
Subject: Visit by Plane.

1. I desire personally to express my appreciation of your accommodation in sending Lieutenants Doyle and Johnson to this college on April 9th. They reported on that date and were most obliging in every way, and gave us an interesting exhibition. After consulting them it was decided that the best method of demonstrating the use of the wireless was to utilize the plane for observation purposes in the firing of a battery, using panels on the ground. This we did and was worked out perfectly by the plane. Such shortcomings as were found were on the ground.

2. This visit has demonstrated that on another occasion we can get a great deal of benefit out of such a visit in connection with the subject "Liaison for all Arms" and I expect to ask, probably the next session, for such a visit for this purpose.

C. H. Muller,
Captain Cavalry, U.S. Army.

ACTIVITIES OF THE AIR SERVICE MECHANICS SCHOOL, KELLY FIELD

The Sopwith Camel, a type of ship never before seen or heard-- it is easier to hear than see, by the way-- on Kelly Field was set up and flown at the Air Service Mechanics School during the week. Its initial test was conducted by Lieut. St. John, test pilot. Later in the week it was taken up for a brief slide through the ozone by Lieut. Hurtis, who returned with a dazed expression on his usually placid countenance. He and Lieut. St. John agreed that it was a highly individualistic ship. If one leans forward a little the propeller is apt to slice a morsel off his proboscis; lean a little to one side and the little air pressure propeller will do the same trick by his ear; while the very sensitive fore and aft movement of the ship reminds one of a bucking bronco.

An interesting speed test was engineered by various and sundry pilots of the school recently. A month or two ago Lieut. St. John lost fifty cents which he had bet with Captain Adler that a Fokker could beat a De Haviland-4. He never paid the bet, being somewhat short at the time, but last week he staked another fifty that the Camel could beat the De Haviland-4. A Curtiss was entered by Lieut. Stromme, one of the most efficient fliers in the Air Service, to fly with a handicap. The course was laid to Brooks Field and return, the Camel and the De Haviland to start from scratch and the Curtiss to make one trip to Brooks and back while the other ships were to make two. Everything started all right and in a moment or two Lieut. Stromme and his roaring Curtiss came back over the field-- backwards. It seems that he got in the propeller wash of the other two ships about half-way over. If he had kept a De Haviland flying backwards behind him he could have won the race. When the finishing line was crossed the De Haviland led by approximately seven miles. The course covered twenty-eight miles.

THREE LIVE PARACHUTE JUMPS

Three live parachute jumps were made by M.E. Nichols, Sergeant Kominsky, and Sergeant Olsen, since discharged and now a civilian instructor. The parachute ship, painted a chaste white in order to distinguish it easily in the air, was piloted by Lieut. Weddington, Officer in Charge of Training, and one by one the boys went up and came down. M.E. Nichols, an experienced jumper, made the first effort and came down in a mess of wildly waving legs. Sergeant Kominsky essayed it next. Olsen followed successfully. In every case the parachutes worked perfectly, and great interest has been aroused at the Field. There are a large number of men looking for a chance to jump.

ACTIVITIES OF THE 7TH AERO SQUADRON, HAWAII

The first of a series of Artillery Adjustment problems to be conducted during the month of April, was carried out on the 6th. This work is practice nature for both the Second Observation Group and the Coast Defense stationed at Kamehameha. The first observations were made of one of the 4.7 rifles of Battery Bombardment, on a stationary target anchored about 4000 yards outside of Pearl Harbor. The customary radio and ground panel communication was employed between the air and ground. Three De Haviland fours were engaged in the work. One flying at about 2500 feet did the observing while the other two, flying at a higher altitude and carrying two Artillery Officers as passengers, gave the latter an opportunity to witness both their own fire from a point of vantage in the air and the work of aerial observation and correction of fire. The result obtained was very satisfactory to everyone engaged in the work.

All pilots of the group have participated in practice formation flying during the past week. This practice is necessary owing to the large amount of demonstration work required of the organization. With the arrival of the Destroyer Fleet in our Harbor it has been the pleasure of the Field to provide rides for a number of the visiting officers.

1ST PURSUIT GROUP

Joy reigned supreme in the hangars of the 95th Aero Squadron for the "Kicking Mule" had the only completely set up Spad in the Group, then curses; the motor developed trouble as is generally the case with the two twenty Spad, and had to be pulled to have certain important repairs made to it. The two-
twenty Spad is not a plane for low altitude work. In a hot Texan summer it will work better with all cowling removed and at that should not be kept for many minutes below six thousand feet. The best temperature for motor efficiency is between 65 and 70 degrees.

The 27th Aero Squadron also received a Spad XIII and in the words of Lieut. Mathews, just to sit in one is the best reminder in the world as to how our teeth did rattle when flying in one over two hours at a time when flying over the old flitting ground of Suzzet.

LIEUT. JAMES WELCH KILLED IN AIRPLANE ACCIDENT AT CHANUTE FIELD

During the week Lieutenant James Wells Welch was killed in an airplane accident at Chanute Field, Belleville, Illinois.

Lieutenant Welch left this post on April 17, 1920 at about one P.M. for Danville, Illinois, carrying the Commanding Officer of the Post as a passenger. After landing at Danville he returned alone to the field. His plane was seen over the field at an elevation of about one thousand feet. The plane then started to descend in a spiral, but after about one turn had been made it was seen to assume an unusually steep bank and turn over on its back at an altitude of about 300 feet. It then descended rapidly to the ground, apparently out of control. About fifty feet from the ground the descent appeared to be checked somewhat and it seemed as if control was partly regained. It was too late, however, to prevent a crash, and the plane struck the ground at an angle, partly on one side and partly on its back.

Mr. H. A. Collison, a civilian, who was flying his own plane in the vicinity of the field, landed as soon as possible near the scene of the accident and was at Lieutenant Welch's side within two or three minutes after his plane struck the ground. He found that he had unbuckled his safety belt and had either jumped or had been thrown out of the plane and was lying on the ground a few feet away in an unconscious condition. His death followed in a very few moments, without his having regained consciousness. The doctor, who arrived about fifteen minutes after the accident, stated that death was due to a fracture at the base of the skull. No other injuries were apparent. This accident has been investigated by a Military Commission, but absolutely nothing has been found which would reveal the cause of this tragic occurrence. The wreck of the plane was very carefully examined and so far as could be determined, owing to its broken condition, there were no failures of any of the controls or structural parts. Lieutenant Welch's reputation as a pilot was such that it seems unbelievable that an accident of this sort should be the result of any error on his part, so it will be seen that the difficulties surrounding an attempt to discover the cause of this accident seem almost insuperable.

Lieutenant Welch enlisted in the military service of the United States on October 8, 1917. Served at the School of Military Aeronautics, Austin, Texas until December 1, 1917, when he was transferred to Kelly Field, South San Antonio, Texas, for flying training. He was commissioned a Second Lieutenant in the Aviation Section, Signal Reserve Corps on January 29, 1918 and was transferred to Wilbur Wright Field, Dayton, Ohio, March 20, 1918. There he served as flying instructor until August 20, 1918, when he was transferred to Chanute Field for duty as a Stage Commander. He was promoted to First Lieutenant, Air Service, September 2, 1918. He was appointed Officer in Charge of Flying at Chanute Field in the month of December 1918 and continued on that duty until his death, and in addition thereto he performed the duties of Engineer Officer, Post Exchange Officer, Transportation Officer and other important duties.

Short funeral services, were held for Lieutenant Welch at the Methodist Episcopal Church, Rantoul, Illinois, under the auspices of Rantoul Lodge No. 470 A.F. & A.M., of which he was a member, assisted by officers from the Reserve Officers' Training Unit, University of Illinois, Urbana, Illinois, who acted as pall bearers, and by the officers and enlisted men of Chanute Field. Many beautiful floral pieces were received from officers and enlisted men, civilian employees, Rantoul Lodge #470, A.F. & A.M., Champaign Lodge of Elks, and friends. His remains were escorted to the train by the Masonic Lodge of Rantoul and the military personnel of Chanute Field. Second Lieutenant Jack Greer accompanied the remains to the home of the deceased, Corpus Christi, Texas. The funeral was held at 5:30 P.M., April 22nd in the Episcopal Church at Corpus Christi. The Commanding Officer at Kelly Field sent the Headquarters plane from that field and four planes from the Border Patrol Station, McAllen, Texas. These planes flew in battle formation as an escort from the church to the cemetery and after the services at the grave they descended in bombing formation, dropping roses on the grave. The planes were nosed up in such a manner that the propeller blast blew the flowers down, forming a blanket of roses over the grave.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE MAY 11, 1920.

AMERICA SEEN AS A GREAT RELIEF MAP

Within the relatively near future when a person will be able to board aircraft at New York for a transcontinental journey to San Francisco it is interesting to consider how the United States will look from this new point of view as seen by the air traveller. This birdseye view obtained from a moderate elevation will reveal much of interest and practical value regarding geography and geology and in fact some of the other natural sciences, and particularly is this advantageous point of view of extreme value in cases of continents or communities similar to Africa, composed of arid plains and continuous dense vegetation, for in the latter case, owing to the covering of scrub, travellers might proceed by foot or on horse back for days and see nothing beyond a few hundred yards on either side of their route, while any useful survey is physically impossible. On the other hand, however, a view from above shows all the essential features, and in addition makes it possible to formulate ideas and impressions as to the broad general characteristics with their inter relations, whereas on the ground one can grasp usually but one characteristic component at a time thereby losing often the basis for very reasonable hypothetical conclusions.

Consider leaving New York at moderate elevation bound for San Francisco in one of the air liners of the next few years, back toward the east the somewhat humpy morainal mass of Long Island is seen extending seaward, diminishing in the distance to merge its greenish silvery strand with the waters of the Atlantic. Southward the broad spread glacial outwash plains of New Jersey become monotonously flat. The Hudson River extending north as a silver ribbon across the landscape is finally lost in the somewhat distant yet apparently chaotic mass of the Appalachian Mountains which rear themselves to the north. We are now crossing the up turned and up folded strata of Carboniferous rocks which compose the Allegheny Mountain system just west of the Atlantic coastal plain. The bluish aspect of these jumbled peaks extend to the north and south as far as the eye can see and ahead to the west appears a more flat but rolling country of the Ohio River Valley, covered in the portion of our route which crosses this area by several layers of glacial till, which are underlaid by lime stone and shale of the Carboniferous rocks which are domed as a result of the Appalachian uplift and from which is obtained much oil and building stone. Next to the northward appears a shimmering silvery spot which grows larger and larger as we approach Cleveland, as our first stop. This spot is slowly recognized as Lake Erie.

After leaving Cleveland we skirt the shores of Lake Erie, and can see in the distance Lake Huron to the north and Lake Michigan ahead, the latter appearing like an overgrown summer squash. The peninsula of Michigan displays its flat lands and forests. Proceeding, after having crossed the southern end of Lake Michigan we arrive at Chicago just as the lights begin to appear and twinkle, dotting the landscape, showing the location of towns and hamlets spread out on the landscape below. Shortly after leaving Chicago one can discern the lobate orienting of the drumlin hills and can see from its southern tip the triangular till-less area where the lobes of the Keewatin and Labrador ice sheets met in pushing their way southward. We are now passing over the broad and well watered Mississippi Valley where an abundance of rain fall is indicated by the numerous branching streams, scudding now south over the limits of glaciation in the United States, as we approach the great Missouri River and our third stop, Omaha.

Leaving Omaha behind, with the muddiest of American rivers stretching north and south, and the North Platte River stretching west we leave the lakes and till behind as we enter upon the Great Plains Province, gradually rising to the west with constantly increasing dryness, finally becoming what was formerly known as the Great American Desert. Far away to the north can be seen dimly the hog-back dome of the Black Hills in south western South Dakota while westward looms the snow capped mass of the Rocky Mountains with Longs Peak and Pike's Peak to the north and south respectively as we approach Denver. After a short stop at Denver we rise into the air for the last stretch of the journey to San Francisco. Greater altitude on this portion of the journey is necessary in order to cross the almost continuous series of mountains between Denver and San Francisco, in fact the seating capacity of our air liner is limited from Denver to San Francisco in order to enable it to successfully maneuver over the distance of this broken and disrupted country. We soon see below entrenched among the western foot hills the Rocky Mountains the Grand River and the Green River, and to the north appear the Uinta Mountains and to the south the Colorado Plateau can be dimly discerned while crossing the state of Utah. Shortly before leaving Utah we enter the physiographic province of the Great Basin, which lies between the mountains we have just passed to the east and the Sierra Nevada Mountains on the west. Here there are many north and south ridges of fault-block mountains, and on the east and west borders of the basin can be seen the terraces of the ancient lakes which intermittently filled this area. We climb still higher to negotiate the Sierra Nevadas as we leave the borders of Nevada, and as we cross the top of the Sierras, spread out before us is the Sacramento Valley to the north the San Joaquin Valley to the south and the coastal ranges lifting their pathetic heads between the valleys and the coast and away beyond is the blue Pacific, endless in extent. Gradually getting over the top we begin to rapidly lose elevation as we come down into the Sacramento Valley, and leave behind us the heavily wooded slopes of the Sierras with their many scenic beauties and giant red woods. Almost before we know it we are over Oakland and the inner bay with the Golden Gate and Mount Tamalpais to the north as we circle for the landing field at San Francisco.

To tell the story completely would take several volumes. We have followed history westward, we have crossed stage after stage of former frontier territories, we have seen nothing of the Columbia Plateau, Washington the Snake River in Idaho and its magnificent lava formation. Nothing of Crater Lake or the Grand Canyon. We have mentioned nothing of the arduous or courageous history over which we have passed of how the Mormons migrated through this former wilderness or how the forty niners beat their way by slow stages to that golden land of the west, but the main points we have shown reveal the obvious value of seeing America first from this new point of view.

SHADOW TESTS MADE TO DETERMINE ACCURACY

Major F.C. Brown Aircraft Armament Division, Aberdeen, Maryland has devised a method of studying bomb trajectories in connection with experimental work now being conducted at the Aberdeen Proving Grounds. Early in 1919 he made tests in which photographs were taken showing the water reflected image of the airplane containing the camera, and by this means the true vertical was determined. In the summer of 1919 a motion picture camera was mounted in a bombing plane and the motion pictures of bombs of various types indicated that this very valuable data for the design of accurate bombs and bomb sights could be obtained by this method. The methods used are now to be applied to tests of gyroscopic stabilizers for bomb sights and cameras. Later the tests are to be applied to the study of stability gyroscopes, altimeters and air-speed indicators.

HELIUM PLANT MOVED TO LANGLEY FIELD, HAMPTON, VIRGINIA.

The entire equipment of the Air Reduction Company used in Texas for the purpose of extraction of Helium from natural gas, better known as Helium experimental plant #2, has been moved to Langley Field, Hampton, Virginia.

The plant equipment was considerably damaged in shipping and it will be with considerable difficulty that parts will be replaced due to the intricate nature of the equipment.

The original plant with certain modifications is now being designed by D. Harvey N. Davis, Professor of Mechanical Engineering, Harvard University and will be erected primarily for the purpose of repurification of helium gas after it has been used in airships and has lost a percentage of its lifting power because of oxygen and nitrogen impurities entering through the fabric. These impurities by the process of liquefaction will be extracted and the helium used over and over again in this way.

The plant will also be utilized for experimental and development work of new processes for the production of balloon gases such as liquefaction of blue water gas for the extraction of its hydrogen content; this differing from the present method used at Langley Field; namely- the steam iron contact process by which practically two thirds of the blue gas produced is utilized in the reduction of the ore used in the hydrogen generator. If the proposed process proves successful the present plant production will be greatly increased.

It is also proposed to use this plant for the repurification of hydrogen gas by the process of liquefaction, removing the oxygen and nitrogen impurities which become mixed in the envelope which are taken in from the outside atmosphere through the balloon fabric. In this way the gas can be used over and over again with a great saving.

LANDING FIELDS BEING SECURED IN GEORGIA

The Commanding Officer of Souther Field, Americus, Georgia advises that an effort is being made to obtain municipal fields throughout the state of Georgia. Letters have been sent to over one hundred cities and towns in the state, requesting the establishment of municipal fields. These letters contain a description of a field which would be suitable for aviation purposes, and a questionnaire is attached to be filled out and returned. So far fifteen cities in the state have been heard from and all of them have expressed a willingness to establish landing fields; and in some cases, assistance is asked of the government. It is intended to make an effort to visit all points which have municipal landing fields or which contemplate establishing municipal fields to chart them for future purposes.

THE OVERHAUL OF AN AVIATION MOTOR AT THE AVIATION REPAIR DEPOT, MONTGOMERY, ALABAMA.

The question is often asked, "What happens if the motor stops? Can the pilot come down"? Many a witty story in reply has been told by flyers and mechanics of sending another plane up to make the necessary repairs to the motor, and the joke of the biscuit gun to shoot food to the pilot has grown hoary with age. But the care and skill of the Inspection Department and the Motor Repair Department has made the use of the flying repair shop and the biscuit gun almost obsolete. Let us follow a motor thru the different branches of the Aviation Repair Depot at Montgomery, Alabama, and review the methods which have wrought the change.

Upon its arrival on the field the motor is checked and is immediately given a work order to guide it on its way and make possible a careful record of its repair and cost. It is first taken to the dismantling room, carefully taken to pieces and transferred to the wash rack, carefully washed with kerosene and gasoline, all carbon removed and pistons carefully polished to remove all roughness, that carbon might not adhere so readily. From the wash rack it is transferred to the Inspection Room where it is given a most thorough inspection. Parts which are worn or damaged to such an extent that they cannot be repaired are immediately salvaged. Parts that are repairable are transferred to the Small Parts Repair where the necessary repairs are made and returned again to the Inspection. A triplicate list of all parts repaired and condemned is made, one following the motor, one to the Engineer Officer, and one kept on record in the Inspection Room. After the motor is passed by the Inspectors, the Stock Chaser checks up by the

Inspection Report the parts which have been condemned and draws from stock new parts to take their places. He also draws a complete set of gaskets for every motor and tries to deliver the motor to the Motor Assembly Department as near complete as possible.

The motor now becomes the property of the Motor Assembly. It has gone safely thru the Inspectors, and all parts supposed to be in perfect condition, but the mechanic has a perfect right to reject from his motor any part which he finds at fault, and as there is friendly rivalry between the two Departments, the mechanic as a rule loves to hang something on the Inspection Department. Thus a double inspection is developed. In this Department the bearings are reamed and scraped, all bearings tested by dial indicator tests for clearance, valves ground and tested for leaks. Cylinder blocks which have been drawn from stock and valves which have passed the factory inspector's test, after assembly are often found leaking and do not come up to A.R.D. test. This test consists of filling the intake port hole with gasoline and from inside the cylinder around the seat of the valve forcing a 60 pound air pressure. A valve which is, after testing by gasoline seepage, to all appearances O.K. will frequently fail with this air test. After the different parts are assembled and the motor is ready for timing, the ignition parts are drawn from that department and installed.

The motor is now ready for test and again becomes the property of the Inspection & Test. This is where they try to hang the crepe on the Motor Repair, carefully looking for loose bearings, oil pumping, cranky magnetos and carburetors, too much or not enough oil pressure, overheating, insufficient valve clearances, water and oil leaks and the many other faults which develop on the block. At times the crepe is hung on the Motor Repair, but not infrequently on their own department in the Inspection Room. Then the motor Repair does the laughing, also the crabbing, as it hurts their production for the week. If the motor is rejected a report is made by the Test Block giving reason for rejection and remedy if possible. A report is made by the Chief of the Motor Repair of what was found wrong and the correction made. Both reports go to the Engineer Officer, who then does the heavy growling. After a second and successful block test the motor is tagged O.K., the tag showing R.P.M., running time, oil pressure and the kind of propeller used. Here again it becomes the property of the Engine Repair. If the engine is to be placed at once in a plane it passes to the Final Assembly, but if its destination is unknown, the intake and exhaust ports are closed, cylinders filled with oil, the entire motor sprayed with a protective coating of cosmoline applied rapidly and efficiently with an ingenious air gun and is then ready for shipment, or for storage, leaving the Aviation Repair Depot in either case, a thoroughly rebuilt, inspected, tested and in the case of a Rotary, a properly cussed motor,

AERIAL PHOTOGRAPHS MADE OF FLOODED AREA

During the recent high water stage on the Miami River when portions of the district surrounding Dayton, Ohio were flooded, numerous flights were made over the flooded districts for the purpose of taking photographs. Permission was granted to the local newspapers to publish some of these photographs, which created wide-spread interest in the activities of the Air Service at McCook Field. These pictures demonstrated the use of airplanes in relief work in flooded sections as the pilots report that it would have been very easy to drop packages of food to isolated sections in case such action would have become necessary.

MAJOR HOFFMAN USES NEW TYPE OF PARACHUTE

Major E. J. Hoffman, Equipment Section, Engineering Division, Dayton, Ohio made two parachute leaps from the United States D-9 airplane from an altitude of about 1500 feet. The first jump was made from the wing by releasing the parachute before jumping and the second by jumping from the cockpit and releasing the parachute after being clear of the airplane. Major Hoffman reported the sensation very delightful and was much pleased with the action of the parachute.

MARCH FIELD GRADUATES FLYING CADETS

On June 15, 1918 the Air Service Pilots' School was opened at March Field, Riverside, California. Since that date 820 cadets have been assigned for flying instruction. Of this number 655 have been graduated. A class consisting of 92 cadets under instruction will complete their course and graduate within the next two weeks. In addition to the above there have been 60 officers and 10 non-commissioned officers graduated at this school. From June 15, 1918 until the present date approximately 3,900,000 aerial miles have been flown in 60,000 flying hours.

FORMATION MAKES FAST FLIGHT FROM DAYTON TO WASHINGTON

During the week Brig. General Wm. Mitchell flying a single seater S.E.-5 pursuit plane, Lieut. Col. H.E. Hartney, Major Wm. Ocker, Captain Fred Place, Lieut. P.H. Logan accompanied by enlisted mechanics Meyers and Chamberlain flying D.H. 4's returned to Washington, D.C. from Dayton, Ohio by air.

Shortly after leaving the ground the planes assembled in formation, which they held until reaching Moundsville, West Virginia where a stop was made to replenish the S.E.-5 with gasoline.

The flight was then resumed and the formation crossed over the mountains passing over the city of Cumberland, from which point the course was veered slightly to the north towards Baltimore. At Baltimore another stop was made for gasoline, thence to Washington, D.C. No forced landings were made during the entire trip. General Mitchell selected the fields then proceeded down and landed while the heavier planes flew around until he placed a landing tee upon the field, whereupon all planes landed.

The fields selected were excellent to land in, and no difficulty was experienced in either landing or taking off. The total flying time from Dayton, Ohio to Washington, D.C. consumed 3 hours and 20 minutes which breaks the record between the two cities recently made by the Martin Transport by four minutes.

SHORT PARAGRAPHS OF NEWS INTEREST

During the week an experiment was made at the Army Balloon School at Fort Omaha, Nebraska with a new type of basket shock absorber. The basket was dropped from 500 feet with approximately 400 pounds of sand therein. The parachute opened in 1 2/5 seconds; the drop taking 11 seconds; the average velocity being 45 feet per second and the striking velocity being equivalent to a free drop of about 14 feet.

This type of basket shock absorber will, no doubt, prove a success with a few modifications which are expected to be made in the very near future.

* * * * *

Colonel H. H. Arnold, Department Air Service Officer, Western Department, paid a brief visit to March Field, Riverside, California over last week end. Piloting a La Pere biplane, the Colonel left March Field for San Diego, returning to San Francisco via the coast route the first of the week.

* * * * *

Lieut. D. K. Bell of the 20th Aero Squadron on detached service with Army Engineers at Yuma, Arizona, landed at March Field, California Wednesday and hopped off again Thursday afternoon after his De Haviland had been repaired and extra parts were supplied. Owing to the railroad strike Lieut. Bell was cut off from his base on the Texas border and came to this field for spare parts. He is engaged in making a mosaic map between Yuma and the western coast.

* * * * *

2nd Lieutenant W. K. Phillips of the Air Service Detachment, Aberdeen, Maryland, while in Baltimore recruiting, flew to Ellicott City, Hagerstown, Maryland and several other towns and succeeded in getting twenty-two recruits. He is now in Wilmington, Delaware, accompanied by Captain Swaboda, the District Recruiting Officer. So far Lieut. Phillips has secured thirty recruits.

* * * * *

On Thursday a Japanese delegation visited Mitchel Field and much exhibition flying was done for their benefit. Formations and acrobatics were carried on and two members of the delegation were given rides in planes of the 1st Aero Squadron.

* * * * *

The Engineering Division, Dayton, Ohio has completed eighty-six sets of Landing Gear Struts for DH-4 airplanes during the week making a total of two hundred and eighty-one sets finished to date.

Shipments are being made as soon as a total quantity required for one supply depot is finished.

* * * * *

During the week a very successful shoot was conducted with the Battery of the Coast Artillery, Pearl Harbor, Hawaii. Ten shots were fired from one of the 4.7 guns at a stationary target, the last two shots of the group being hits. In the next group of nine shots at a moving target, the fire was regulated from the air and sensings made in 9 minutes. Three hits were registered in this group of shots.

* * * * *

Air Commodore L.E.O. Charlton, British Air Attache at Washington paid Luke Field, Ford Island, Hawaii a visit during the week. After a tour of the Field, Colonel Curry, Department Air Service Officer, with Major Brooks took the Commodore around the Island of Oahu in one of our HS2L flying boats.

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ACTIVITIES OF THE AIR SERVICE MECHANICS' SCHOOL, KELLY FIELD

An innovation is being introduced in the Weekly News Letter this week in the form of a few remarks from some of the instructors who have been working in the various Departments of the Air Service Mechanics' School at Kelly Field, Texas for the past three years. It will commence with a short notice from the Chief Instructor in the Course for Motor Mechanics, William H. Jackson: "Introducing the Liberty 12 Motor as one of the finest and most reliable internal combustion motors now in practical use: Inasmuch as no internal combustion motor will run any great length of time without repair and overhaul, the problem arises as to who will repair the thousands of Liberty Motors in operation today. The average mechanic who has not received instructions on the above named motor is lost when it comes to this work, not because of his inability to do the work but to his lack of knowledge in regard to the motor. In substantiation of the above statements the following instance in regard to the motor is cited: The aluminum crank-case expands when the motor is in operation due to the conduction of heat from the cylinders having a tendency to carry the generator drive gear closer in mesh with the crank-shaft gear. If excessive amount of backlash is not placed between these gears when the motor is cold probable breakage of the teeth will result. Another instance is the oiling of the thrust bearing which must be oiled at certain intervals by the mechanic to prevent its failure. Detailed Liberty motor instructions are given by competent instructors to all men entering the Air Service Mechanics' School, Kelly Field No. 1, Texas".

Some seven (7) months ago the Air Service Mechanics' School was jarred out of its usual routine by the information from the Director of Air Service in regard to some six hundred (600) students who were to report about November 1, 1919. This news caused considerable excitement among the various officers in the Training Department because during the summer, very few students had under gone courses

of training in this notable institution. The activity of the various departments had been devoted to the instruction of classes of officers for short courses and a few classes of enlisted men and to doing a great deal of repair work and over-haul for Kelly Field No. 2 and the prospect of entering regular students and getting back to regular work put additional pep into all concerned.

Needless to say, all Departments had to be reorganized and enlarged and material for instruction brought out from the warehouses, courses were refreshed, instructing personnel increased and trained. In all projects there are always stones in the road and such little stones as changing the length of the courses from three to four and one-half months, whipping raw recruits into shape and any number of other details which always arise were steadily passed over. Today the first class graduates, a group of trained mechanics who will return to their squadrons capable of doing any work along this line and who are good soldiers as well. The Air Service Mechanics' School is now on its feet and "hitting on all twelve cylinders", turning up 1800 R.P.M.'s.

The second class of officers was graduated from the parachute course this week. Among the officers who jumped were Major William G. Schauffler and Lieut. J.C. Wilson, both officers made successful jumps, from the rear cockpit of a De Haviland 4 B. It is interesting to note that there is not the slightest danger of entanglement with the tail group of a plane when jumping from a plane with a U.S. Army type parachute. The jumper follows the same course as a bomb and travels downward and forward. Experiments have also proved that there is no danger of becoming entangled when jumping from a plane in a spin as the centrifugal force will throw the jumper to the outside of the spin and not backward and upward. All Air Service Mechanics' School Officers are now taking the course in Parachute maintenance and folding and all are looking forward to jumping next week.

Lieut. A.M. St. John, Engineer Officer, made a flight to Kerrville, Texas, a distance of seventy miles in a Fokker airplane. The distance was covered in thirty-seven (37) minutes, fly throttle.

Mr. H.G. Williams, Chief Instructor in the Course for Motor Transportation is wearing a broad smile this week and going about his work with additional zeal. When asked the reason for his conduct he replied that Sunday morning he went around the Golf Links in 87. This caused some comment among the golfing element of the school for the previous scores of this gentleman have been around 130. It was later learned, however, that Mr. Williams kept his own score and no mention is made of the number of balls lost.

Captain Forrest evidently believes in the old saying, "If you can't get a thing make it", for he is turning out a set of jets to be used on Liberty Motors in hot weather. It is found that the 165 main and 170 compensator jets give the motor too rich a mixture so he is turning out 160 main and 165 compensator jets on the lathe in his Department. These jets are very successful with a thirty-six choke.

ACTIVITIES OF THE PILOT SCHOOL CARLSTROM FIELD, ARCADIA, FLORIDA

The flying time for the week totaled approximately two hundred hours.

Cross country flights were made without incident by five cadets to Sarasota, Okeechobee and Fort Myers during the week.

The naval officers detailed to Carlstrom Field for instruction on land types of planes are doing excellent work in aerial gunnery, formation flying and combat practice. Patrol flights are being made under conditions approaching as closely as possible to those which would influence an actual offensive. The handling of the formation as a whole and of each plane by the individual are carefully checked by accompanying instructors. An interesting flight was made during the week. A photographic plane flying at an altitude of ten thousand feet was sent over a line between Carlstrom Field, Punta Gorda, North Labelle and the home station with a protection of Thomas Morse scouts close at hand, the skies in the region of sixteen thousand feet being scoured by five Nieuport single seaters.

Punta Gorda and Fort Myers were passed and Labelle had been reached without incident but just as the formation was turning for home the two rear Nieuports were pounced upon by two Spads which had approached in the sun at a great altitude. Beating off the assailants the flight returned to the field but one pilot failed to appear. Lieutenant Anthony Fehr, embroiled in the melee following the sudden descent of the Spads, was carried into an area of clouds and lost sight of his adversary. In the minute or two which elapsed before he again obtained a clear field of vision the rest of the planes had disappeared, the visibility being none too clear. Lieut. Fehr dropped down to look the terrain over for landmarks. Nothing familiar was in sight so he picked a road which he thought would lead him home but after following it for a short distance he realized that he was heading in almost the opposite direction from the field. Turning he started to retrace his course and wound up in a field near the town of Bigler, twenty miles from Carlstrom, with his gas tank almost dry. Upon telephoning in, a De Haviland with a supply of gasoline was sent to replenish the Nieuport's tank and start it home. The field with its activities and bustling about below, the perpetual drone of motors from above brings one back to the rattling days of nineteen seventeen and eighteen.

NEWS OF THE SQUADRONS.

SELFRIDGE FIELD, MOUNT CLEMENS, MICHIGAN

Selfridge Field, Mount Clemens, Michigan was visited during the week by Major E.M. George, Inf., Assistant Department Utilities Officer, Central Department. Major George's visit was in connection with the maintenance and utilities work now under way at Selfridge Field.

The number of men applying for enlistment in the Air Service is increasing daily and the majority of the applicants are well above the average in intelligence and trade qualifications. Selfridge Field is handicapped to some extent in this campaign for recruits inasmuch as there are no medical facilities available, but this difficulty is surmounted by sending qualified applicants to the General Recruiting Station, Detroit, Michigan, where enlistments are completed and assignment made to the Mechanics' School, Kelly Field, Texas.

ELLINGTON FIELD, HOUSTON, TEXAS

An intensive recruiting drive is being planned for May 1st and 2nd at Galveston, as on these days the formal opening of Galveston Beach for the 1920 season will be held and since the railroad rates throughout the state have been reduced for this occasion, it is estimated that tens of thousands of visitors will throng the city. A recruiting booth consisting of a De Haviland set up ready to run, and a complete field lighting unit, bombs, etc., has been installed along the midway and a formation is to fly over the city each day, bombarding the crowds with recruiting literature. The trucks from this field are decorated with flags and bunting.

ACTIVITIES OF THE 91ST AERO SQUADRON, AT EL CENTRO, CALIF.

This week marked the close of the first month of the activities at Puryear Field, at El Centro, California. During this period the flying field which formerly was an eighty acre corn field has been dragged and rolled until it is in the best of shape. The mess hall and kitchen has been completed. The framing of sixteen tents for quarters is nearing completion and the field piped for city water. In addition to doing all this work with the thirty Air Service men assigned, the Border Patrol has been successfully flown every day in spite of high wind storms. All planes and transportation have been kept in commission.

ACTIVITIES OF RICH FIELD, TEXAS

There have been an unusual number of planes flying by and landing at Rich Field during the last week. The flights have mostly been between Kelly Field and Love Field, Dallas, Texas. Most of the planes in the flights have been De Havillands and the sound of the Liberty Motor has been of unusual interest to most of the citizens who live along the route of the flight. Most of the citizens of Texas had become accustomed to the buzzing of Curtiss Motors during the training days of the war and were educated, intuitively, to understand the behavior of a plane by the sound of the motor when distant and when near at hand. The sound of the Liberty, however, is so different that the excitement attendant upon the passing of a flight of De Havillands is yet sufficient to attract attention of all who chance to live within a few miles of the route of the flight. Many persons who have been within their houses as the De Havillands approached have felt that the planes were flying unusually low and have rushed out to observe them at close range only to learn that they were flying rapidly onward at a greater altitude than they had expected.

ACTIVITIES OF CHANUTE FIELD, BELLEVILLE, ILLINOIS

Great activity is expected at this station in connection with Air Service recruiting, commencing Monday, May 10. This station has been assigned a quota of seventy-two recruits for the month of May, and with the limited personnel available, it is expected that the coming month will be a very busy one for all concerned. There are only three officers at Chanute Field, including the Commanding Officer, and two of these officers are to be on recruiting detail three days out of each week during the month of May. The plans for recruiting provide for one officer and one enlisted man to travel by plane, and one officer and two enlisted men by motor truck. The airplane is expected to arouse interest by exhibition flying and distribution of literature from the air, while the party in the motor truck will follow up this work on the ground by explaining the advantages of enlistment in the Air Service to interested persons, distributing literature, posting advertising, etc. Arrangements are being made to have recruits examined by a civilian physician, as there is no medical officer at this station.

NEWS FROM THE REPAIR DEPOT, DALLAS, TEXAS

During the week fifteen De Haviland -4 airplanes were ferried from Kelly Field to Love Field, Dallas, Texas to be stored at this station until such time as they can be overhauled and remodeled in De Haviland -4 B's at the Aviation Repair Depot.

The pilots who were engaged in this work deserve to be complimented on the fact that every plane reached its destination without an accident of any kind in spite of the particularly high winds prevalent in Texas during this period of the year. The distance by air from Kelly Field to Love Field is approximately 280 miles and in nearly all instances the trip was made on one tank of gasoline, the time consumed amounting to from about two hours to two hours and thirty minutes, depending upon the direction of the wind.

9TH AERO SQUADRON ESCORTS HIS MAJESTY'S SHIP, THE RENOWN

During the recent visit of the Prince of Wales to San Diego, Rockwell Field, California played a considerable part in the magnificent reception tendered the Prince. A formation of thirteen planes of the 9th Aero Squadron was sent out to greet His Majesty's Ship the Renown, on which the Prince was quartered. These planes were decorated with both American and British flags. The Renown was met about three miles off shore, where the planes dropped to about 300 feet above her, their greeting being returned by the Renown. The visit of the Prince was made a holiday in the city and the Air Service, both the Army and the Navy being prominently connected with practically all the features of entertainment given him.

ACTIVITIES OF THE STORAGE DEPOT, SOUTHER FIELD, AMERICUS, GA.

All airplanes in storage at Souther Field, Americus, Georgia which are not in commission or held in immediate reserve are being dismantled and stored. Sixty fuselages are placed in one hangar, leaving a fire aisle lengthwise of the hangar and another at right angles to it through the center of the hangar. All wings are being stored in a separate hangar on double barred racks. The wings are marked with the number of the plane from which they were taken. Struts are suspended from a steel rod. There are no motors in any of the planes being stored, all of them having been turned over to the Curtiss Company.

2nd Lieut. Wildrid B. Warde, A.S.A., returned to the field from Lonoke, Arkansas. Lieut. Warde started from the Aviation Repair Depot, Dallas, Texas in a Fokker D-7 airplane, intending to fly to this field; encountered motor trouble at Lonoke, and though he called on Dallas for assistance, he was unable to have the motor repaired and was obliged to ship the airplane back to the Repair Depot at Dallas.

ACTIVITIES OF THE AVIATION GENERAL SUPPLY DEPOT, MIDDLETOWN, PA.

Mr. Paul Wilson of Thomas Morse Aircraft Corporation, Ithaca, New York paid a visit to Middletown depot Sunday to arrange for shipping in gas and oil for his use later in the week when he expected to fly from Ithaca to Bolling Field, Washington, D.C., stopping at Middletown enroute. Mr. Wilson landed at Middletown on Friday flying direct from Ithaca and making the trip in 2 hours and 5 minutes. The Thomas Morse Scout airplane, mounted with 80 H.P. Le Rhone rotary motor, which Mr. Wilson was flying, was exceptionally unique in design and very well constructed and braced. Mr. Wilson only spent a few minutes at the Middletown field as he was very desirous of reaching Bolling Field, Washington, D.C. as soon as possible. Just as soon as he replenished his supply of oil and gas, he took off for Bolling Field.

Orders were received during the past week, for Lieut. Samuel M. Lunt, who has been acting as Chief Engineer Officer at this post, to report for duty to Post Field, Fort Sill, Oklahoma, to take the course in radio telegraphy and telephone school starting May 15th at that post. Lieut. Lunt will be greatly missed by all who have known or been associated with him since his tour of duty at this station.

AIR SERVICE NEWS LETTER

Information Group
Air Service

May 11, 1920

Building B
Washington, D.C.ACTIVITIES OF THE OPERATIONS DIVISIONACTIVITIES IN THE CANAL ZONE

Infantry contact work with the 1st Battalion of the 33d Infantry has been continued with success despite the unfavorable conditions that have existed during the past few weeks. The area over which this work has been conducted is extremely mountainous and heavily grown with jungle making it almost impossible for the infantry to find clearings of sufficient size to be located by planes and clearings in which the panels could be worked. Low hanging clouds, frequently below the mountain tops, and heavy rains added to the difficulties of the work. Daily contact was maintained however and Regimental Headquarters at Gatun was kept informed.

INFORMATION OBTAINED FROM OPERATIONS REPORTS
OF TACTICAL UNITS FOR WEEK ENDING APRIL 24TH, 1920.STATIONS, FLYING TIME AND AVAILABILITY OF PLANES

<u>Name of Squadron</u>	<u>Location</u>	<u>Flying Time</u>
1st Aero - Obs.	Mitchel Field, Mineola, L.I., N.Y.	22:55
2d " "	Fort Mills, Philippine Islands	19:30
3d " "	Camp Stotsenburg, Pampanga, P.I.	16:25
5th " "	Mitchel Field, Mineola, L.I.	31:06
2d Obs. Group (4th & 6th Sqdrms)	Luke Field, Ford's Island, Hawaii	43:59
7th Aero Squadron - Obs.	France Field, Panama, Canal Zone	49:29
8th-A " " Sur.	McAllen, Texas	50:10
8th-B " " "	Laredo, Texas	49:16
9th " " Obs.	Enroute to Mather Field, Sacramento, Cal.	79:36
10th & 99th " "	Bolling Field, Washington, D.C.	49:48
11th Aero Squadron-Bomb.	Kelly Field, San Antonio, Texas	14:30
12th-A " " Obs.	Douglas, Arizona	61:14
12th-B " " "	Nogales, Arizona	19:15
20th " " Bomb.	Kelly Field, San Antonio, Texas	49:35
27th " " Pursuit	" " " " " "	24:30
50th " " Obs.	Langley Field, Hampton, Va.	30:25
88th " " "	" " " " " "	52:55
90th-A " " Sur.	Eagle Pass, Texas	37:20
90th-B " " "	Sanderson, Texas	31:55
91st-A " " Obs.	Purveyer Field, El Centro, Calif.	21:55
91st-B " " "	Ream Field, Imperial Beach, Calif.	20:10
94th " " Pursuit	Kelly Field, San Antonio, Texas.	17:40
95th " " "	" " " " " "	31:30
96th " " Bomb	" " " " " "	6:50
104th-A " " Sur.	El Paso, Texas	71:10
104th-B " " "	Marfa, Texas	53:05
135th " " Obs.	Post Field, Fort Sill, Oklahoma	19:10
147th " " Pursuit	Kelly Field, San Antonio, Texas	26:50
166th " " Bomb.	" " " " " "	39:15
Air Service Troops	Aberdeen Proving Grds., Aberdeen, Md.	8:56
" " Detachment	Pope Field, Camp Bragg, N.C.	9:30
" " "	Godman Field, Camp Knox, Ky.	2:35
Hdqrs. Det. 1st)		
Pursuit Group)	Kelly Field, San Antonio, Texas	8:25

TOTAL FLYING TIME.....I, 030:54

TACTICAL OPERATIONS, INSTRUCTION, AND MISCELLANEOUS
ACTIVITIES BY FIELDS AND UNITS

BORDER STATIONS

DOUGLAS, ARIZONA - 12th Aero Squadron, Flight A

With 89% of daylight suitable for flying, a total of thirty-three (33) flights was made including eleven (11) Border patrols, two (2) photographic, nineteen (19) reconnaissance and one (1) test.

Tactical instruction was carried on as specified.

EAGLE PASS, TEXAS - 90th Aero Squadron, Flight A

With 85% of daylight suitable for flying, a total of twenty-one (21) flights was made including ten (10) surveillance, two (2) protection, four (4) special missions and five (5) practice.

Tactical instruction was carried on as specified.

EL CENTRO, CALIFORNIA - 91st Aero Squadron, Flight A

With 100% of daylight suitable for flying, a total of fifteen (15) flights was made for the purpose of Border patrols, cross-country and test.

Tactical instruction carried on as specified.

EL PASO, TEXAS - Headquarters and 104th Aero Squadron, Flight A

With 80% of daylight suitable for flying, a total of forty-six (46) flights was made including nine (9) Border patrols, five (5) Presidio and Bosque Bonita patrols, three (3) Douglas and Monument 40 patrols, one (1) Nogales patrol; two (2) liaison exercises with 7th Field Signal Battalion and 9th Engineers marching to Camp Travis, Texas; three (3) special liaison missions to Columbus and Hachita, N.M.; six (6) test flights.

Tactical instruction carried on as specified.

LAREDO, TEXAS - Headquarters and 8th Aero Squadron, Flight B.

With 100% of daylight suitable for flying, a total of fifty (50) flights was made including thirty-six (36) command missions, six (6) surveillance missions, four (4) Cavalry liaison flights and four (4) test flights.

Tactical instruction was not carried out because of shortage of pilots and necessity of maintaining liaison with the 2d Squadron, 16th U.S. Cavalry enroute from Fort Brown to Fort Sam Houston.

One (1) plane on Cavalry liaison mission crashed at Encinal, April 22d, Pilot and Observer were uninjured.

McALLEN, TEXAS - 8th Aero Squadron, Flight A

With 75% of daylight suitable for flying, a total of twenty-five (25) flights was made including ten (10) Border patrols, eight (8) protection, two (2) special, seven (7) cross-country and three-plane formation.

Tactical instruction carried on as specified.

MARFA, TEXAS - Headquarters and 104th Aero Squadron, Flight B

With 75% of daylight suitable for flying, a total of eighteen (18) flights was made including ten (10) surveillance, one (1) protection, and one (1) command mission.

Tactical instruction carried on as specified.

NOGALES, ARIZONA - Headquarters and 12th Aero Squadron, Flight B

With 100% of daylight suitable for flying, a total of twenty-one (21) flights was made including four (4) Border patrols, three (3) command missions, and one (1) flight for the purpose of ferrying plane from Douglas, Arizona to Nogales.

Tactical instruction was not carried on due to the non-arrival of squadron's property which is held up at Tucson, Arizona.

BEAM FIELD, IMPERIAL VALLEY, CALIFORNIA - Hdqrs. and 91st Aero Sqdrn., Flight B

With 85% of daylight suitable for flying, a total of eighteen (18) flights was made including six (6) Border patrols, two (2) bombing; several flights were made to Rockwell and return and one (1) flight was made to Newport Beach and return.

Nothing of unusual interest occurred during the week.

BAKERSFIELD, CALIFORNIA - Hdqrs. and 9th Aero Squadron, Flight B

(ENROUTE TO MATHER FIELD FROM ROCKWELL FIELD)

With 100% of daylight suitable for flying, a total of sixty-six (66) flights was made, including forty-five (45) cross-country flights.

No instruction was carried on due to squadron being enroute to new station at Mather Field via airplane and motor truck train since April 20th.

SANDERSON, TEXAS - 90th Aero Squadron, Flight B

With 85% of daylight suitable for flying, a total of fifteen (15) flights was made including ten (10) surveillance, three (3) protection and two (2) special missions.

Tactical instruction carried on as specified.

OTHER STATIONS

ABERDEEN PROVINCE GROUNDS, ABERDEEN, MD. - Hdqrs. Air Service Troops

With 75% of daylight suitable for flying, a total of twenty-nine (29) flights was made, including one (1) bomb test, two (2) meteorological, one (1) photographic, three (3) training, three (3) co-operation and nineteen (19) miscellaneous.

Tactical instruction carried on as specified.

Two (2) MK V American bombs were dropped Thursday, April 22, for a committee from Washington. Six (6) incendiary bombs were set off statistically on armor plate, but made no impression.

BOLLING FIELD, WASHINGTON, D.C. - 10th & 99th Aero Squadron.

With 100% of daylight suitable for flying, a total of one hundred forty-eight (148) flights was made, including the following - one (1) flight to Aberdeen, Md., one (1) to Mitchel Field, L.I., one (1) to Langley Field, Va., five (5) to Charlestown, Md., and one (1) to Camp Meade, Md.

Thirty-four (34) officers from the Office of the Director of Air Service made flights during the week.

FRANCE FIELD, PANAMA, CANAL ZONE - 3d Obs. Grp., 7th Aero Sqdrn.

With 90% of daylight suitable for flying, a total of sixty-two (62) flights was made including fourteen (14) cross-country, nine (9) reconnaissance five (5) reconnaissance and photographic, one (1) demonstration, two (2) photographic and one (1) dual control.

A new section of the Republic of Panama was explored Wednesday, April 14th, and Thursday, April 15th. Six (6) planes left the field the first morning and flew to Aquadulce where two (2) planes left the formation and went to Santiago. The other four (4) planes flew over the province of Los Santos and landed at Ocu, a thriving little town where several American and English mining men have their headquarters. The landing field here is an excellent one, about 2,000 feet long and varying from 500 to 1,000 feet wide. It is approachable from all sides and with its natural drainage system and hard soil, should make a good landing field during the wet season. The average time of flight from this field to Ocu was an hour and twenty-five minutes, and the distance is about 145 miles. A few officers made a flight over a neighboring country and located another fine landing field about seven miles east of Ocu but it is doubtful if this field would be serviceable during wet weather.

The four planes left Ocu at 10:40 A.M. and making a wide circle in order to look over the country, headed for Las Tablas, the capital of Los Santos. The flight leader landed at this town thirty-five minutes later and found the field very rough. The last plane to land hit a pole and broke the shock absorbers but otherwise the pilots negotiated this difficult field with remarkable skill.

The planes were given an excellent reception by the inhabitants headed by the Governor. After dinner with the Governor, three planes set out at 3:20 P.M. for Chitre, the largest town of the province. The landing field here was found to be too small for landing and as no other field could be located near by, the planes continued to Aguadulce, arriving there at 3:50 P.M. Gas and oil were replenished here and at 5:30 P.M. the planes left for France Field, arriving home at 6:35 P.M.

Tactical instruction was carried on as specified.

GODMAN FIELD, STITHTON, KY. - Detachment Air Service Troops

With 30% of daylight suitable for flying, a total of ten (10) flights was made to include nine (9) practice flights and one (1) flight with wireless telephone for test with Camp Ordnance Officer as observer.

The test of the radio telephone was not completely satisfactory, communication was established but it was impossible to tune fine enough to hear distinctly.

Tactical instruction was not carried on.

KELLY FIELD, SAN ANTONIO, TEXAS

1ST BOMBARDMENT GROUP

95% of daylight was suitable for flying during the week.

11th Aero Squadron

A total of fifteen (15) flights was made for the purpose of radio tests, ferrying and Cavalry contact.

Nothing of importance noted.

20th Aero Squadron

A total of forty-six (46) flights was made for the purpose of carrying mail, ferrying ships to Dallas and liaison with the 14th Cavalry.

Nothing of importance reported.

96th Aero Squadron

A total of six (6) flights was made including three (3) Cavalry liaison flights.

Nothing of importance noted.

166th Aero Squadron

A total of thirty (30) flights was made including Cavalry liaison, practice and reconnaissance.

Nothing of importance noted.

1ST PURSUIT GROUP

With 75% of daylight suitable for flying, a total of fourteen flights was made, all within the vicinity of airdrome.

27th Aero Squadron

A total of thirty-eight (38) flights was made, all within vicinity of airdrome.

Nothing of importance noted.

94th Aero Squadron

A total of twenty-six (26) flights was made within the vicinity of the airdrome.

Liaison was carried on with the 16th Cavalry at Cotulla.

95th Aero Squadron

A total of twenty-nine (29) flights was made within the vicinity of the airdrome.

Nothing of importance noted.

147th Aero Squadron.

A total of forty-two (42) flights was made within the vicinity of the airdrome.

Nothing of importance noted.

LANGLEY FIELD, HAMPTON, VIRGINIA

85% of daylight was suitable for flying during the week.

50th Aero Squadron

A total of twenty-eight (28) flights was made including five (5) instruction, three (3) photo reconnaissance, three (3) cross country, one (1) radio, nine (9) practice and one (1) aerial gunnery, three (3) coast patrols.

Tactical instruction carried on as specified.

An attempt was made to send Radio Messages to Langley Field, thru Naval Radio, Cape May, on return Coast Patrol flight from Mitchel Field, but was unable to get message thru.

88th Aero Squadron.

A total of forty (40) flights was made including six (6) cross country, four (4) coast patrols, six (6) reconnaissance, three (3) radio, two (2) aerial gunnery, one (1) radio set test and six (6) visual reconnaissance.

Tactical instruction carried on as specified.

LUKE FIELD, FORD'S ISLAND, HAWAII (4/16)

2d Observation Group - 4th & 8th Aero Squadrons

With 100% of daylight suitable for flying, a total of seventy-two (72) flights was made including twenty (20) practice formation, three (3) photographic, one (1) reconnaissance, four Artillery adjustments and four (4) dual instruction.

Artillery adjustment with Battery Barri Fort Kamehameha (4.7 Coast Defense Guns) Two strings 10 shots and 9 shots were fired. Adjusted by radio from a DeH-4 plane.

Formations were flown over the H.M.S. "Renown" as it entered Honolulu Harbor and over the Centennial Parade.

Tactical instruction carried on as specified.

MITCHEL FIELD, MINEOLA, L.I., N.Y.

64% of daylight was suitable for flying during the week.

1st Aero Squadron

A total of seventeen (17) flights was made including four (4) special missions, one (1) instruction, two (2) demonstrations and four (4) coast patrols.

Nothing of importance noted.

5th Aero Squadron

A total of thirty-one (31) flights was made including seven (7) demonstration, ten (10) special missions and two (2) coast patrols.

POST FIELD, FORT SILL, OKLAHOMA - 135 Aero Squadron

With 100% of daylight suitable for flying, a total of forty-two (42) flights was made for the purpose of dual, cross country and photographic training.

Ten (10) officers and sixty (60) enlisted men of the 135th Aero Squadron will entrain for Ft. Leavenworth sometime next week. Five (5) DeH-4-B's will fly to Fort Leavenworth and be there by May 1st, 1920.

Instructions carried on as specified.

POPE FIELD, CAMP BRAGG, N.C. - Air Service Detachment

With 60% of daylight suitable for flying, a total of nine (9) flights was made including two (2) cross-country, one (1) reconnaissance, four (4) practice and one (1) photographic.

FORT MILLS, P.I. - 2nd Aero Squadron (4/5)

With 75% of daylight suitable for flying, a total of twenty (20) flights was made including six (6) transportation flights between Fort Mills and Manila, nine (9) visual observation flights and three (3) instruction flights.

Tactical instruction carried on as specified.

CAMP STOTSENBURG, PAMPANGA, P.I. - Detachment 3d Aero Squadron

With 85% of daylight suitable for flying, a total of thirty-three (33) flights was made including five (5) trips to Manila.

Tactical instruction carried on as specified.

May 26, 1920.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE MAY 27, 1920.

1ST ANNUAL AIR TOURNAMENT, BOLLING FIELD, ANACOSTIA, D.C.

The week of May 15 was one of extreme historical interest at Bolling Field. The First Annual Army Air Tournament was held here under the auspices of the field, and marks the turning point in the Air Service from the post-war indefiniteness to the peace time reorganized, progressive, and constructive regime.

The tournament was conceived and organized in a very short time and yet was a complete success in every sense. Its purpose was to acquaint the public with the progress, extent, and limitations of aeronautics together with an insight into what the future has in store in this line. Everyone who attended was thoroughly and rightfully amazed at the achievements and it is felt that they also conceived to a better degree how their own faith and convictions when constructively bent toward aeronautics would hasten the unquestionable benefits to be derived from the daily use of aircraft both from a military as well as a civil point of view.

The first day of the tournament, Friday, May 14, dawned with lowering skies and threatening rain. To many still skeptical, the thought came that the tournament would have to be postponed but aeronautics have outgrown the days when weather conditions were an absolutely controlling factor and today only the more violent of meteorological conditions can prevent or endanger the operation of aircraft. Punctually at ten in the morning the first event scheduled which was a formation flight directed by wireless telephone from the air was carried out perfectly. From this time on during the rest of the day all the events were carried out as planned and noticeably each event scheduled was on time. The punctuality of such a program as was presented is considered remarkable for even in ground meets of a similar competitive nature it is doubted if the adherence to schedule as was the case in this instance has ever been bettered.

The ground exhibit was complete to the last detail. Within the hangars were to be found on all three days of the show many exhibits of extreme interest. In Hangar 8 at the south end of the field was an exhibit of air bombs. These bombs were for every conceivable purpose and were of French, English, American, and German design and construction. There were also bomb sights, anti-aircraft guns, and ammunition. Of the bombs the most impressive was the 1100 pound Mark I American Demolition Bomb. This bomb was designed for destroying factories, warehouses, power plants, large railroad terminals, public buildings, big gun emplacements, fortifications, docks, canal terminals, and so forth. The other bombs were of varied size and shape exhibiting many unique details in their handling and operation, and also showing in some cases how certain difficulties in the early part of the war were overcome by ingenious adaptations as for instance turning obsolete artillery materiel into up to date and extremely effective air weapons.

In Hangar 7 was the exhibit of the Engineering Department. This consisted of fuselage and wing repair, construction, and covering, showing to good advantage the intricate nature of the present day aeroplane. Propeller repair and construction was also seen in this same exhibit. At the other end of the hangar one was able to view the Hispano-Suiza Motor complete and in various stages, of assembly, together with the Liberty Engine and rotary engine.

Hangar 3 displayed a small model of the regulation army observation balloon constructed by the men in the vocational school at Lee Hall, Va. This model was one-fifth actual size and was complete in every detail.

The radio hut was open for inspection and proved to be a very popular exhibit. Here all phases of wireless communication and directional work were demonstrated together with the military and tactical employment of radio apparatus.

Aerial operations were displayed in the operations' office where aerial maps, observation and weather reports were on display.

In the enlisted mens' recreation room was a small exhibit of aerial photography composed chiefly of the photographs brought back from England by the Assistant Secretary of War Benedict Crowell.

On all three days of the tournament there were a series of extremely interesting competitive events. First on the program daily was a unique closed course air race. The entrants in this event were lined up on the field and made a common take off after which they negotiated twice a course around the Washington Navy Yard Chimneys, the Dome of the Capitol, the Washington Monument, and the Steel Mill Chimneys. This formed a somewhat triangular course of about twenty five miles. The fastest time for this course was eight minutes and forty seven seconds. The contestants were at all times in full view of the spectators at the field and there was keen rivalry and interest in these races which included also an enlisted men's race. The planes entered were SE-5's, DH's, Sopwith Snipe, Cleopatra, Spad, and Fokker.

Shortly after the race, an acrobatic contest took place. In this event the contestants had to perform two reverse turns, five loops, two barrel rolls, a tailspin with six turns, and a falling leaf within five minutes after reaching the prescribed altitude in order to be rated.

Variations of aerial combat formed an added attraction daily, and then an attack on the observation balloon being demonstrated during the tournament was staged whereupon the observers jumped in their parachutes as the closing event of each days tourney.

On the line were to be found the Martin Bomber that went around the rim of the United States, a D7 German Fokker that came in from Middletown Depot, 133 miles in 58 minutes, a Martin Torpedo Plane, with a regulation Naval Whitehead Torpedo suspended beneath, a giant Handley Page, a diminutive SA 5, a Martin Bomber with a Baldwin Automatic Cannon mounted on it capable of firing 120 one pound shells per minute, a DH 4 equipped with German bomb releases and carrying German 100 kilogram bombs, a DH 4 with eight machine guns and practically no blindspots, a Breuget Bomber with Liberty Motor, a DH 4 and DH 4-B, a Vought, an Ordnance Scout, a Spad, a Bristol Fighter, a Curtiss JN with wireless equipment, an Avro, and a Loening Monoplane.

On the three days of the tournament it is conservatively estimated that the events were viewed from some vantage point or other by at least eighty thousand people. All the events were run off without a single mishap of any sort or kind and this even in the face of some of the most incessant difficult flying exhibited in this country since the close of the war program. The First Annual Army Air Tournament closed a tremendous success and everyone voted it an extremely commendable and magnificently conducted affair. Our sorrow is that it only comes once a year.

SHORT PARAGRAPHS OF NEWS INTEREST

The 91st Aero Squadron moved from Ream Field, California to Rockwell Field during the week. This move was made in order that the Squadron might continue its intensive training at Rockwell Field and also for the reason that Rockwell Field is a better base for the border patrol work on the section which has been assigned to them. This move included the detachment of twenty five men which has heretofore been doing guard duty at Ream Field, this latter duty being now performed by civilians.

X

X

X

X

X

BORDER STATIONS

DOUGLAS, ARIZONA - 12th Aero Squadron, Flight A

With 78% of daylight suitable for flying, a total of seventeen (17) flights was made including six (6) Border patrols, six (6) reconnaissance, four (4) formation and one (1) test.
Tactical instruction was carried on as specified.

EAGLE PASS, TEXAS - 90th Aero Squadron, Flight A

With 95% of daylight suitable for flying, a total of twenty-four (24) flights was made including ten (10) surveillance, one (1) protection, eight (8) special missions and five (5) practice flights.
Tactical instruction was carried on as specified.

EL CENTRO, CALIFORNIA (Puryear Field) - 91st Aero Squadron, Flight A

With 100% of daylight suitable for flying, a total of ten (10) flights was made for the purpose of Border patrols.
Enlisted men on flying status were given instructions as observers.

LAREDO, TEXAS - 8th Aero Squadron, Flight B

With 100% of daylight suitable for flying, a total of sixty-four (64) flights was made; daily patrols were made to observe activities in and around Nuevi, and special surveillance missions were made for the purpose of making reports on activities in Mexico, at various points along the patrol.
Tactical instruction was carried on as specified.

McALLEN, TEXAS - Headquarters and 8th Aero Squadron, Flight A

With 90% of daylight suitable for flying, a total of forty-five (45) flights was made including fourteen (14) Border patrols, three (3) protections, six (6) command missions and five (5) test.
Tactical instruction was carried on as specified.

MARFA, TEXAS - Headquarters and 104th Aero Squadron, Flight B

With 75% of daylight suitable for flying, a total of fourteen (14) flights was made including eight (8) surveillance, three (3) cross country, one (1) test, one (1) practice and one (1) liaison flight.
Tactical instruction was carried on as specified.

MATHER FIELD, SACRAMENTO, CALIF. - Headquarters and 9th Aero Squadron

With 100% of daylight suitable for flying, a total of twenty-four (24) flights was made including cross-country flights, which were made for the purpose of familiarizing pilots with the terrain.
Tactical instruction was carried on as specified.

NOGALES, ARIZONA - Headquarters and 12th Aero Squadron, Flight B

With 100% of daylight suitable for flying, a total of nineteen (19) flights was made including eleven (11) Border patrols, two (2) command missions, three (3) test flights and three (3) practice flights.
No instructions were given due to the shortage of ships in commission.

ROCKWELL FIELD, CORONADO, CALIFORNIA - Headquarters and 91st Aero Sqdrn, Flight A

With 50% of daylight suitable for flying, a total of sixteen (16) flights was made including three (3) Border patrols, two (2) practice flights; one (1) trip was made to Los Angeles and return, and one (1) flight was made to March Field; and five (5) test flights.
No instructions were given during the week.

SANDERSON, TEXAS - 90th Aero Squadron, Flight B

With 85% of daylight suitable for flying, a total of twenty-three (23) flights was made including ten (10) surveillance, eight (8) special missions and five (5) tests.
Tactical instruction was carried on as specified.

OTHER STATIONS

ABERDEEN PROVING GROUNDS, ABERDEEN, MARYLAND - Hdqrs. Air Service Troops

With 75% of daylight suitable for flying, a total of thirty-three (33) flights was made including three (3) meteorological, one (1) photographic, eight (8) training and twenty (20) miscellaneous flights. Tactical instruction was carried on as specified.

BOLLING FIELD, WASHINGTON, D. C. - 10th & 99th Aero Squadrons

With 90% of daylight suitable for flying, a total of one hundred sixty-one (161) flights was made.

Twenty-nine (29) officers from the Office of the Director of Air Service made flights during the week.

A formation of four (4) DH-4's flew to Baltimore, Md., and distributed pamphlets in the interests of recruiting in the Air Service. Flights were made to Leesburg, Va., Fredericksburg, Va., Easton, Md., Manassas, Va., Warrenton, Va., Frederick, Md. and Martinsburg, W. Va., in the interest of recruiting.

A formation of C.H.'s equipped with Radio phones and formation of DH-4's flew over Washington, D.C., during the Army Essay Parade.

Instructions were given to officers during the week.

FORT LEAVENWORTH, KANSAS - Headquarters and 135th Aero Squadron, Flight A

With 50% of daylight suitable for flying, a total of ten (10) flights was made including cross country flights from Post Field, Fort Sill, Oklahoma, to Fort Leavenworth, Kansas.

Tactical instruction was carried on as specified.

GODMAN FIELD, STITHTON, KY. - Detachment Air Service Troops

With 72% of daylight suitable for flying, a total of twelve (12) flights was made including ten (10) practice and two (2) with officers of other branches of the service in connection with the wireless telephone.

No instruction was carried on.

KELLY FIELD, SAN ANTONIO, TEXAS

1ST BOMBARDMENT GROUP

95% of daylight was suitable for flying during the week.

11th Aero Squadron

A total of sixteen (16) flights was made including two (2) cross country and fourteen (14) practice flights.

20th Aero Squadron

A total of thirty-two (32) flights was made for the purpose of carrying mail and practicing.

96th Aero Squadron

A total of sixteen (16) flights was made including six (6) cross country flights to Austin, Texas, and ten (10) test flights.

166th Aero Squadron

A total of twenty-five (25) flights was made for the purpose of practice.

1ST PURSUIT GROUP

With 100% of daylight suitable for flying, a total of twelve (12) flights was made.

27th Aero Squadron

A total of nine (9) flights was made, all within the vicinity of the airdrome.

94th Aero Squadron

A total of fifty-five (55) flights was made during the week, all within the vicinity of the airdrome.

CAMP BRAGG PHOTOGRAPHIC MAP

The aerial photographic mosaic of Camp Bragg, North Carolina, which work has been under way for a long period of time, is reported as nearing completion. The aerial photography is practically ninety five per cent complete and the laboratory work is seventy five per cent complete. The complete map will be sent to Langley Field, Hampton, Virginia, for reduction. This photographic mosaic map covers approximately 400 square miles and is at a scale of 1:10000. Besides the reservation of Camp Bragg itself containing 225 square miles, the map includes towns of Fayetteville, Southern Pines and Aberdeen. The photographic assemblage itself measures about 16 feet by 6 feet.

TANK ATTACK EXPERIMENTS CONDUCTED AT MCCOOK FIELD

During the week a number of very interesting as well as instructive tests were conducted to determine the relative value of bombs and the new 37 m.m. cannon when used to attack tanks at low altitudes.

The first flight was made by Lieut. H. R. Harris in a Martin Bomber on which a 37 m.m. cannon was mounted on the nose. He flew over the target a number of times at an altitude of 100 feet travelling at the rate of 120 miles per hour while Lieut. O. G. Kelly operated the cannon. The first three shots fell a foot short; the remaining five were direct hits.

Then a De Haviland 4 was flown over the target loaded with 6 fragmentation bombs. The bombs were dropped singly to obtain the range and dropped about 30 feet wide of the target. On the next circle of the field the remaining six bombs were dropped in salvo, two bombs made direct hits, and the remaining four passed over the target at a height of three or five feet striking less than 30 feet beyond the target.

If the target had been an actual tank all six bombs would have registered direct hits. The results are considered quite remarkable as the entire test was carried out below 100 feet at which altitude ground speed has to be contended with plus very accurate judgment in firing.

TESTS MADE OF AMERICAN PURSUIT PLANES

During the week at McCook Field, Dayton, Ohio, the new biplane observation plane U.S. N.B.1-A with 300 h.p. Hispano Suiza engine was flown by General Mitchell who was very much impressed by the performance.

Combats to determine the relative value of American pursuit planes as compared to the French Nieuport and German Fokker pursuit planes were staged at various altitudes.

4th BALLOON COMPANY SENT TO FORT LEAVENWORTH, KANSAS

During the week the 4th Balloon Company under command of Lieut. Harry Catman with 170 enlisted men left Brooks Field, Texas for Fort Leavenworth, Kansas for the purpose of giving practical demonstrations of the uses of balloons with line troops to students of the general service schools at Leavenworth.

The company will participate in exercises and give the students a better understanding of the air units by having them make ascensions as observers with definite missions.

T. N. T. SHELLS SCARE PARTY

A party of young folks evidently on a picnic furnished an incident of interest at Ellington Field, Texas. While on an outing to the South of Houston they came across two objects buried deep in the mud near the Rice Institute. Not knowing what it was they reported to the Adjutant the strange objects they had seen sticking out of the mud.

The Adjutant and several officers of the post investigated the matter and found the strange looking objects were 60 lb. shells loaded with T. N. T. which for some reason or other had not exploded on impact. The theory is held that the shells were fired during target practice of the 33d Division at Camp Logan. The members of the picnic party were somewhat scared when they learned how close to a real T. N. T. shell they had been.

POLICE REQUEST ASSISTANCE IN LOCATING HOLD UP MEN

The Commanding Officer of Selfridge Field, Mount Clemens, Michigan advises that he was requested by the police Headquarters of Detroit, Michigan to send a plane out over the territory surrounding Detroit to pursue a gang of hold-up men who held up and robbed a bank messenger and escaped in a high powered automobile.

A description of the car and the route taken were given but as it was raining hard at the time with a resultant soft field and extremely poor visibility, pursuit of the hold-up men was not undertaken.

This incident tends to illustrate the fact that Municipal Authorities are becoming alive to the possibilities of an aerial Police Force.

An Aerial Policeman equipped with a high powered observation lens focused on a ground glass similar to the method of a photographic camera could locate an object on the ground without difficulty, while with his machine gun he could swoop down and wreck a motor car or kill its occupants with ease.

HUSKY ENLISTED MEN HOLD PLANE TO THE GROUND

During the week a terrific wind storm swept over the territory occupied by the 8th Aero Squadron at Laredo, Texas. Practically all of the tent hangars were blown down and the planes therein were more or less damaged. One plane left outside could not be put under cover quickly enough. It required the combined efforts of five husky enlisted men to hold this plane and prevent its being broken to pieces. The force of the storm became so great that with all five men clinging to the plane it hung suspended in the air for several seconds at a time. They fought the elements for over an hour but succeeded in saving the plane.

Arrangements are being made to equip all Border Units with steel hangars.

NEXT GENERATION FAST BECOMING AVIATORS

Masters Charles Longanecker and Richard Leonard aged 10 and 11 respectively are the youngest aviators who have ever gone on a cross country flight from Chanute Field, Rantoul, Illinois. On Sunday May 2nd these young men received an invitation from a civilian aviator at Urbana, Illinois which is a short distance from Chanute Field, to accompany him on a trip to Collison, Illinois about twenty-five miles away. The boys were delighted beyond restraint and made the trip which took about twenty five minutes. The return trip was made successfully in fifteen minutes.

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ALTITUDE RECORD OF MAJOR R. W. SCHROEDER

The Director of Air Service announces the following altitudes attained by Major R. W. Schroeder, February 27, 1920, at McCook Field, Dayton, Ohio:

A Le Pere biplane using a Liberty 12 cylinder engine equipped with a super-charger was used.

Altitude computed by Federation Aeronautique
Internationale, 1919, method..... 38,180 feet.
Most probable altitude,
(Bureau of Standards method)..... 33,000 feet.

MAJOR REED CHAMBERS LEAVES THE AIR SERVICE

Major Reed Chambers Commanding Officer of the 1st Pursuit Group, Kelly Field, Texas has been granted a leave of absence at the end of which he will receive his discharge in accordance with his own request. His career in the Air Service has indeed been an interesting one.

He was one of the first to answer the call to the colors as a member of the 1st Tennessee Infantry, National Guard when that organization was called into active service. He made application for transfer to the Air Service and was accepted and upon the completion of his ground school training was sent to Chanute Field, Rantoul, Illinois where he was graduated and commissioned a 1st Lieutenant. Shortly after being commissioned he was sent overseas. Upon his arrival in France he was assigned to the American Pursuit School at Issoudon later known as the 3rd A.I.C., where he was given a thorough course in pursuit training and contributed his share toward the building up of that school. After completing his training at the pursuit school he was selected as an instructor and sent to Tours for duty. In January 1918 he was relieved from duty at Tours and sent to the Cavaux School of Aerial Gunnery for advanced training and graduated with high honors.

Shortly after completing his training in gunnery work Major Chambers, then a Lieutenant, was assigned to the 94th (Hat-in-the-ring) Squadron which afterwards became a part of the 1st Pursuit Group consisting of the 94th, 95th, 27th and 147th Aero Squadron.

He participated in all of the great offensives and distinguished himself by his gallant conduct. He was promoted to Flight Commander, advanced to the grade of Captain and made a Military Aviator and on December 24, 1918 he succeeded Captain Rickenbacker as Commanding Officer of the 94th Squadron. Upon his arrival at the port of debarkation, New York, he received his Majority and the 94th Squadron, the last squadron of the 1st Pursuit Group was sent to Mineola and demobilized. It was later reorganized in skeleton form at Selfridge Field, Mount Clemens, Michigan and sent to Kelly Field, Texas for border duty, commanded by Lieut. Colonel Davenport Johnson, the original commander of the 1st Pursuit Group with Major Reed Chambers commanding the reorganized 94th and 95th Squadrons. Upon arrival at the Border Major Chambers trained most of the officers and men in pursuit work and squadron administration and has brought the squadrons up to a high state of efficiency.

The following is quoted from the official records:

"1st Lieut. Reed M. Chambers, A.S., U.S.A., 94th Squadron was awarded the Distinguished Service Cross for extraordinary heroism in action over the region of Epinonville, France, September 29th, 1918. While on a mission Lieut. Chambers accompanied by another machine piloted by Lieut. Samuel Kays, Jr. encountered a formation of six enemy machines (Fokker type) at an altitude of three thousand feet. Despite numerical superiority of the enemy Lieut. Chambers and Lieut. Kays immediately attacked and succeeded in destroying one and forced the remaining five to retreat into their own line.

"A Bronze/^{Oak} Leaf is awarded to Lieut. Chambers for each of the following acts of extraordinary heroism in action.

"Near Montfaucon and Vilosnes-sur-Meuse, France, 2nd of October 1918, Lieut. Chambers, while on a mission at an altitude of two thousand feet, encountered an enemy two seater (Halberstadt type). He immediately attacked and after a brief combat, succeeded in shooting it down.

"Near Montfaucon and Vilosnes-sur-Meuse, France on the 2nd of October, 1918 at 7:40 o'clock Lieut. Chambers saw four enemy machines (Fokker type) attacking another American machine (Spad type). He immediately succeeded in shooting down one."

He was also awarded the Legion of Honor, and the Croix de Guerre, Bronze. He has six airplanes and one balloon to his credit (official) and he engaged in 27 combats.

ARMORED AIRPLANE FOR GROUND "STRAFFING"

During the week the new armored triplane designed and built by the Engineering Division of the Air Service has been tested at McCook Field, Dayton, Ohio. The tests proved to be a great success, and the performance greatly admired by all who witnessed the tests.

The armored craft is of the triplane type, equipped with two Liberty Engines. Both engine and fuselage are completely armored. It carries 8 machine guns and a 37 m.m. cannon and performs and handles very good in the air. This plane is well equipped and protected for battle in the air at high altitudes, or for ground strafing troops close to the earth.

LIEUT. PATRICK LOGAN GAVE A REMARKABLE EXHIBITION, AT MCCOOK FIELD DAYTON, OHIO

Lieut. Patrick H. Logan gave a remarkable exhibit of acrobatics with the Thomas Morse Scout during an official demonstration of the various types of single seater pursuit planes among which were the Thomas Morse, Ordnance and Verville all equipped with 300 h.p. Hispano Suiza engines. Lieut. Logan maneuvered and stunted the Thomas Morse Scout for more than half an hour continuously, during which time on one occasion he rolled out of the top of a loop, held the plane steady on its back for over half a minute and made vertical zooms of more than 1500 feet.

MARTIN TORPEDO PLANE FLOWN TO DAYTON, OHIO

During the week Lieut. H. R. Harris of the Engineering Division Air Service piloted the new Naval Martin Torpedoplane on its first flight from the Martin factory, Cleveland, Ohio to McCook Field, Dayton, Ohio. This plane has a different wing section from the original Martin Bomber and has the engines placed on the lower wing. The wings are so arranged that they may be folded to store the plane in the hangar. On the following Friday Lieut. Harris flew this plane from Cleveland to McCook Field, Dayton, carrying full load, including regulation size Navy Whitehead Torpedo. Even though strong head winds were encountered during the trip the time was only 2 hours and 40 minutes.

RECRUITING LITERATURE DROPPED FROM AIR BY AIR SERVICE OFFICER'S WIFE

During the week Lieut. Donna B. Leonard, Chanute Field Rantoul, Illinois flew to Decatur, Illinois on a Recruiting mission accompanied by Mrs. Leonard.

At first glance it would seem that Army Regulations had been badly violated, particularly that part which prohibits the carrying of women passengers. Mrs. Leonard was intent upon accompanying her husband to Decatur. It so happened that former Lieut. H. A. Collison of the St. Louis Aircraft Corporation was in the neighborhood making arrangements to open a passenger service between the cities. It took Mrs. Leonard but a few minutes to make arrangements with Mr. Collison to fly her to Decatur.

While Lieut. Leonard took off from Chanute Field his wife and pilot took off from a field almost a mile away. Both planes after circling around headed for Decatur dropping Recruiting literature enroute.

MAJOR CHRIS FORD PLACED IN CHARGE OF TRAINING AT
CARLSTROM FIELD, FLORIDA

Major Christopher Ford, formerly of the Liquidation Division in the office of the Director of Air Service has been transferred to the pilots' school at Carlstrom Field, Arcadia, Florida and placed in charge of training activities.

It would have been impossible to have selected a man more fitted for the training of cadets in the art of flying in both primary and advanced stages, because of his extensive experience in every branch of the game.

Major Ford started his military career as a 2nd Class Soldier in the French Foreign Legion, later became identified with the Lafayette Escadrille and upon our entry into the war, transferred to the American Army, 103rd Aero Pursuit Group with the grade of Captain, towards the latter part of the war he received his majority.

It may be of interest to those who do not know him so well to quote from the office records regarding his wonderful record.

"For repeated acts of extraordinary heroism in action near Rheims, France, 27 March, 1918, and near Armentieres, France on the 21st of May, 1918 he was awarded the Distinguished Service Cross.

"Near Rheims on the 27th of March, Captain Ford, while on a patrol with two other pilots, led his formation in an attack on eight enemy planes. After twenty minutes of fighting, the American formation shot down three German machines, of which one was destroyed by this officer. Near Armentieres on the 21st of May, he again led a patrol of six planes in attacking twenty enemy aircraft. The attack resulted in ten individual combats. Captain Ford shot down one hostile plane and with his patrol, routed the others".

He also received the Croix De Guerre with two palms and star, the Escadrille ribbon and the French Foreign Service Ribbon.

The cadets at Carlstrom Field are indeed fortunate to have Major Ford at the head of their training activities.

FIRE AT ELLINGTON FIELD, HOUSTON, TEXAS

The magazine building at Ellington Field, Texas was destroyed by fire on Thursday afternoon. While the Air Service Supply Officer and the ordnance sergeant were checking over the property in the building, a defective flare caused an explosion which started the fire. The two men barely had time to escape from the building uninjured. The building burned to the ground rapidly, but the fire was held in check and not allowed to spread to the surrounding buildings, one of which was the powder house, in which a vast quantity of dynamite was stored.

ACTIVITIES OF THE AVIATION REPAIR DEPOT, MONTGOMERY, ALA.

During the week, Lieutenant W. F. Robinson from Taylor Field, Lieutenant Lloyd Barnett and Lieut. William K. Moran of this depot flew in formation, three (3) De Havillands, 150 miles, to Souther Field, Georgia. This delivery is the first of twelve (12) De Havilland Fours to be used by the Air Service Detachment now being formed at Souther Field for duty at the Infantry School at Camp Benning, Georgia.

Six more De Havilland 4's are ready and will be flown to Americus during the coming week by pilots from this Depot.

The performance of these twelve (12) De Havillands and their engines will be watched with the greatest of interest by the personnel as they were all rebuilt here.

Two planes piloted by Lieutenants Moran and Skow have made four trips so far, this week to the towns of Luverne, Greenville, Andalusia and Troy; landing was made at Andalusia. The field there is very small and it required quite a bit of maneuvering to drive the people off the field so the planes could land. Four recruits were obtained in Andalusia. One was brought back by plane to this Depot to his great enjoyment. The other three upon being approached as to their desire to fly back, stated: "We don't calculate to go back that way". After their arrival at the Aviation Repair Depot and finding the men who had come by plane still alive they changed their minds on the dangers of flying.

This being the busy season on the farm, this whole section being a farming district, the attitude of farmers toward recruiting is not particularly agreeable, as they say they need the young men, as they put it, "to make a crop".

AN OFFICIAL HUNT AT FAIRFIELD, OHIO

The recent rains have raised the small creek back of the hangars to a flood stage and some one who should have been unloading tons of freight instead of watching the creek discovered several animals disporting themselves in the muddy water. Forthwith he reported the fact through channels to the Supply Officer, Captain Charles W. Stolze, who in turn told the Commanding Officer, Major Geo. E. A. Reinburg. These two gentlemen armed themselves with shot guns and repaired to the creek bank, followed by a numerous retinue of gun bearers and spectators armed with various weapons ranging in size and caliber from a sling-shot to a 37 millimeter gun. When they reached the point from which the animals had last been seen an executive session was held. For a short time it seemed as if they were about to decide that the creek was inhabited by sea serpents, but saner reasoning finally prevailed and it was unanimously agreed that the animals in question must be guampuses. Some, however, expressed doubt in regard to the existence of such an animal as a guampus, but they were willing to admit that if such an animal did exist, then the creatures in the creek must be guampuses. For what but a guampus would be contented to disport himself in a muddy creek in the vicinity of Dayton, Ohio? They agreed that the name certainly fitted him whether he was one or not.

The hunt proceeded. Major Reinburg and Captain Stolze walked up along the left bank of the creek followed by the crowd. They had gone some distance when suddenly Captain Stolze spied the short thick muzzle of some animal sticking up out of the water near the bank and a pair of small eyes watching him with a baleful glare similar to the expression so often seen in the eyes of a discharged civilian employee. Captain Stolze fired. He fired again. Then his gun jammed. The guampus gave a roar, or perhaps it was a grunt, then leaped out of the water and charged. As it raced along the bank straight at the Captain who stood there striving to adjust the mechanism of his shot gun, the gun bearers fled away in terror. Just as the guampus was about to spring upon the Captain, Major Reinburg stepped out in front directly in the path of the charging beast and, dropping on one knee in the exact position always assumed by a certain great American hunter when shooting charging animals in Africa, he fired one shot. The guampus shrieked, or perhaps it was a bark, and fell dead in its tracks.

As soon as it was seen that the creature was past doing harm to anyone, the crowd reassembled and again went into executive session. After much disputing, it was concluded that the dead animal was a muskrat. The noise it made with its dying breath must have been a squeal.

NEWS FROM THE BORDER SQUADRONS

While making a patrol from Nogales, Arizona to Douglas, Arizona, Lieut. E. D. Jones pilot and Lieut. W. S. Gravely Observer of Flight "B", 12th Aero Squadron, made a forced landing at Naco, Arizona on account of a broken oil lead. The Observer sent out the forced landing call by radio, giving his location. The call was picked up by Flight "A" 12th Aero Squadron at Douglas and by Flight "B", 12th Aero Squadron at Nogales. A plane left each airdrome with a mechanic to repair the plane which had been forced down. Douglas being the nearer Lieut. Pearson with M. E. Potter arrived from that airdrome in a very short time. The plane was repaired and started to return to Nogales. While crossing the Huachuaca mountains the oil lead became broken in another place, and the plane was forced down a second time. Lieut. Jones had climbed to a high altitude while crossing the mountains and was able to glide to the foot of the mountains where a successful landing was made on a Messa between Bear Creek and Joaquin Canyon. Radio aerial had been lost at Naco and the officers found themselves twenty miles from a telephone. One ranch house located on Bear Creek was the only habitation in miles, and cow ponies were the only means of transportation. Pitching ponies failed to enthruse the officers - walking was better. Ten minutes after this forced landing a plane passed over going toward Naco. An hour later it appeared again and the marooned aviators made frantic efforts to attract the pilot's attention with an engine cover displayed as a panel, and to their joy they saw the plane turn slowly and circle their position; to spiral down and down until it was just above, then straighten out and glide in for a landing. The plane was piloted by Lieut. Merton H. McKinnen who had left Nogales in answer to the first call for help. Lieut. McKinnen went to Naco and landed expecting to find the cripple there. Upon being told that Lieut. Jones had returned to Nogales he decided that Jones had gone a second time, as he had passed no plane on the trip over. Lieut. McKinnen determined to look for a plane on the ground and was thus able to pick up Lieut. Jones and Lieut. Gravely. Corporal Hyatte accompanying Lieut. McKinnen had all the necessary equipment to repair the plane and by seven P.M. it was ready to fly. It was then too late to take off, so the aviators spent the night there and returned to Nogales next morning.

The field proved to be an excellent emergency field four hundred yards wide, north and south, by two miles east and west. It is one and one half miles north of the border, and immediately at the foot of the western slope of the Huachuaca Mountains, elevation 5500 above sea level. There are no obstructions on the upper half of the field and has a four way approach.

ACTIVITIES OF THE AIR SERVICE MECHANICS SCHOOL, KELLY FIELD, TEXAS

The first class of Air Service Mechanics' School officers graduated successfully from the Parachute Course. These officers will begin their live jumps in the near future. The second class of officers will be entered next week for the same course. Parachute work is one of the most important branches in the Air Service today. Within the next three months, it is safe to say, no pilot will consider going into the air without his parachute. The selection of men to take the course in parachute maintenance can not be given too much consideration. Enlisted men for the work in the care and folding of parachutes should be old non-commissioned officers who understand and appreciate the responsibility placed on them. They should also be men who have had some time in the air. Folding a parachute is the work of a half hour. It does not involve any great amount of labor or mental ability on the part of the folder but it does require a full appreciation of the importance of correct folding, for the speed and smooth opening of the parachute depends wholly on the attention given to details during the folding process.

Cross country flying is very popular among the Air Service Mechanics' School Officers. Trips to other airdromes are frequent. The planes used are kept in condition by students in the Advanced Training Division. This Division is filled with students who have completed technical work in the various Departments and who are placed in the Advanced Training Division for practical work under the supervision of expert instructors. Through cross-country flying experience is gained in the handling of a motor, the study of different sections of the country and the

handling of planes and the performance of motors under weather conditions different from those of the home airdrome. During the past week cross-country flights were made to Laredo, Texas by Lieutenants Harry Weddington, Officer in Charge of Training, E. L. Eubank and J. S. Eldredge. Lieutenant Eldredge also made a flight to Corpus Christi, Texas. Lieutenants Weddington and Eubank will make a cross country trip to Hugo, Oklahoma on May 15th, a distance of five hundred miles returning the following day. These flights bring the Air Service into closer contact with the public. A Compass Block is to be installed near the Flying Stage so that all Officers of the School may practice in preparing a plane for cross country flights.

90TH AERO SQUADRON, EAGLE PASS, TEXAS

The Officers of the 90th Aero Squadron, Eagle Pass, Texas together with the Officers of the Garrison at Piedras Negras, were guests of the Casino Club, Piedras Negras, Coahuila on the evening of May 4th, at their annual Conco de Mayo eve ball.

Conco de Mayo, or the Fifth of May is the date of Mexican Independence and calls for the most elaborate celebrations and entertainments during the entire year. Prominent visitors from over the state and friends, military and civil of the members of the club, look forward to this particular event and make every effort possible to be present.

The Club was beautifully decorated, special attention being given to the Grand Ball room where the National and State colors predominated. The subdued lighting, vari-colored costumes, gold lace uniforms and feminine beauty presented a picture that brought to mind the olden days when gold lace and the "Blues" were included in the wardrobe of the officers of our army.

Dancing was the order of the evening, and dancing, to one of the Castilian descent, means that, nothing more. To be a member of the orchestra one must possess above all things, great power of endurance. Do not misunderstand this statement, for they must also be artists, but they know nothing of the fashionable five minute principle and three minute encore selections prevalent in this country. Their numbers consume from thirty to sixty minutes and the encores, which are always demanded, are almost as generous. Midnight means nothing to them and it is not until the fingers of gray dawn, reach through the draperies of the windows and dim the bright lights that one realizes that the festivities are most over and that another year must pass ere there will be an opportunity to participate in another such event.

Officers of the Mexican and American Army fraternized throughout the evening, the pleasure of the former appearing to consist almost wholly in making sure that nothing was left undone that might contribute to the pleasure and entertainment of our officers. They proved themselves genial hosts and gentlemen of the highest type.

NEWS FROM THE AIR SERVICE MECHANICS SCHOOL, KELLY FIELD, TEXAS

The course of English Mechanics (Aviation Motors) may be considered exemplary of the courses offered the student at the Air Service Mechanics School. This course is under the supervision of Lieut. Harry Weddington, Officer in Charge of Training and is headed by Captain Charles R. Forrest, an expert Engineer Officer and has an instruction staff of civilians and enlisted experts with Mr. Wm. H. Jackson as Chief Instructor. The course covers a period of eighteen weeks (4-1/2 months) during which time the student is given thorough instruction in internal combustion engines from the elementary principles of gas engines and mechanics through overhaul, upkeep, repair, ignition, lubrication, carburetion and ends with testing and actual field work under the supervision of the Field Engineer Officer.

The student, before entering the school, is Trade Tested, to determine his fitness for the course in this Department. It is essential that only qualified men be admitted as the expense of instruction and equipment involved is considerable.

Upon entering, the student is assigned to the Mechanical Instruction Division and remains there four weeks where he is taught the correct use of tools, principles of gas engines, construction, design and preliminary overhaul. This work is very important as a foundation for the higher instruction.

The fifth and sixth weeks are spent in the ignition laboratories under the watchful eye of Mr. H. E. Johanson, Chief Instructor, where the students are taught elementary electricity, magnetism, magnetos, battery currents, storage batteries and the battery circuit system. The equipment in this laboratory is the most complete in the south and is unexcelled anywhere. The latest and most modern testing and experimental equipment is found here which makes possible the most efficient instruction and repair, upkeep and care of every known make and type of magneto and generator. The installation and timing of these ignition systems is fully covered by lectures, demonstrations, and practical shop work. Special attention is given to the charging and upkeep and repair of storage batteries and particularly to the Delco Battery Circuit System used on the Liberty Aviation Engine.

The next six weeks are spent in the Adjusting and Motor Repair Division. Here the student is taught the overhaul and repair, replacement of parts and the adjusting of Hispano Suiza and Liberty Aviation Engines of the fixed cylinder type, and the rotary motors, Gnome Monosoupape and Clerget. He is also taught the correct timing assembly and adjustment of the various auxiliary parts of the motor such as the oil pump, water pump, valves and magneto drives. The student is now qualified for more advanced work. Sgt. 1st Class M. J. Perrin is Chief Instructor in this section.

The thirteenth week is spent in the Carburetor Laboratory where the student is taught carburetion in all of its branches, lubrication and the correct method of determining the value of fuels. Carburetion is taught by a series of lectures covering the development of carburetors, modern design and especially its highest specializations, the airplane carburetor. Fuels and lubricants are taught by lectures, and the crude oil is distilled and refined by the use of laboratory equipment so that the student may know and be able to choose between the good and the bad.

The next three weeks are spent on the Test Blocks where the motors assembled by the student in the Motor Repair Department are installed on the blocks, run adjusted and put in perfect condition. The instructor then introduces troubles of various sorts in the motor and the student is taught to eliminate these methodically. He soon learns to distinguish between a motor running properly and one which is not.

The last two weeks of the course are spent in Advanced Field Training, the class reports to the Field Engineer Officer who gives them an opportunity to put into practice the things they have learned in the class room and at the bench. Motors are installed in planes, troubles developed in the air are eliminated and the things the student will do when assigned to duty with his organization are made more familiar to him here. The student now gets his diploma and is ready to go to work.

The equipment of this school is of the very finest, all the motors with the refinements developed in actual use are available to the student. A valuable adjunct is the Motor Museum where may be found foreign motors, freak motors and motors of ancient design dating back as far as the prehistoric period of Flying, A. D. 1910. The development of Aviation in ten short years may be readily seen, by a comparison between the Renault air-cooled, 8 cylinder model of 1912 which produces all of 80 horse power at a weight of not over 700 pounds and the new 12 cylinder Liberty whose business end puts forth 440 horse power with the total weight of 860 pounds. Instruction, theoretical by the use of lectures, charts and graphs and practical by means of actual work, is nicely balanced and the Officer and enlisted man who is fortunate enough to be detailed to this school may consider himself lucky, indeed, for in no other way will he receive a course nor find anywhere so highly specialized and capable instruction staff as is maintained in the Air Service Mechanics School, Kelly Field, No. 1, Texas.

12th AERO SQUADRON, DOUGLAS, ARIZONA

During the week Colonel Copeto, Chief of the Mayo Indians, now in the service of the Sonora State Troops, and Colonel Rodriguez, Chief of the Yaqui Indians, now in State Service were given authority by Col. Alonzo Gray, Cavalry, District Commander, Arizona District, to take flights to view Agua Prieta, Sonora, Mexico from the north side of the border. The two Mexican Officers expressed themselves delighted with the flight.

FIRST PURSUIT GROUP

Dance given in Honor of Major and Mrs. Reed Chambers

During the week a Pursuit Group dance was given at the Aviation Club in honor of Major and Mrs. Chambers.

The invitation announced that "Tacky" clothing only would be worn, with the warning that all who appeared in regulation uniforms or evening dress would be promptly shot at dawn. No executions were found necessary.

The main feature of the evening was the presentation to Major and Mrs. Reed M. Chambers of a beautiful silver tea service. Captain A. R. Brooks officiated at the presentation with appropriate remarks, hiding in a humorous vein the extreme regret of the 1st Pursuit Group over the loss of their popular Commanding Officer.

Two orchestras were provided, one in the club and one outside on the wooden tennis court, affording the dancers the cool fresh air of the moonlit court pavilion.

Another special feature of the evening was the introduction of dance music by wireless. An amplifying radio telephone set was installed in one corner of the club and a phonograph was connected to a sending set in a building several hundred yards distant. After satisfying their initial curiosity, the guests of the 1st Pursuit Group were soon dancing to the "jazzy" strains of music coming thru the air. To Lieut. George H. Burgess and Lieut. Stanley Smith, together with their enlisted staffs, is due the credit for the success of this unique experiment.

This dance was one of the most successful of the popular Kelly Field parties and a fitting send-off for one of Kelly Field's best liked Officers and one of its most popular hostesses.

Adaption of Spandau Loading Lever to Vickers Gun

To Lieut. D. F. Duke and Private Young, Armament Section, 94th Aero Squadron is due the credit for having worked out a method of adapting the German Spandau loading lever to the Vickers gun in place of the awkward Cox's lever. This achievement is the result of extensive research and experiment work carried out on the spandau gun taken from the Fokker to determine what, if anything, could be learned from it to improve the Vickers aerial gun.

In order to adapt this device to the Vickers gun, certain small changes to the gun were found necessary, it is necessary to mill down the charging handle about an eighth of an inch to fit the cam and tail piece. Next an upright post must be secured to the right place of the breach casing just forward of the crank slot. This post has a roller at the top for the thrust cam to act against. The operating arm is attached to the tail of the thrust cam by a short cross bolt which forms a simple bearing. This cam is fitted to the extension of the crank bearing outside the charging handle, so that when operated it rotates the charging handle. The operating arm is guided by a slot in a bracket held in place by a bolt which takes the place of the fixing pin and is slightly longer.

The principle of operation is the same as on a spandau gun, excepting that the operating arm is pulled instead of pushed. The tail of the cam is drawn to the rear with the rotary motion, causing the charge handle to rotate. At the same time the cam bears against the roller on the fixed post, pushing the crank pin to the rear, the full length of the crank shaft slot, thus operating the loading mechanism just as the recoil would. When the gun is firing, the loading attachment is free to move back and forth with the crank shaft and charging handle.

By changing the position of the cam tail from top to bottom, the loader can be operated by a push instead of a pull, with the cam tail fixed in an up position. This device makes the Vickers Gun as easy to load in the air as the Marlin. This is an improvement over the old Cox lever which requires a downward thrust to operate. Such a motion, where any strength is required is very difficult for a pilot in a small scout plane, forcing him to temporarily relinquish control of his ship. On the other hand the straight horizontal pull is comparatively easy and does not interfere with the pilot's position or his control.

New Carburetor that will allow ship to fly in any position

It is a well known fact in the 94th Squadron that M. E. Rector is perfecting a carburetor that will allow a ship to fly in any position. He will not allow the model to be seen nor will he give out any information that will lead to its identification. Nevertheless, information has leaked out that it is on the order of an adaption to the Hispano Suiza, of the mixing valve idea as found on rotary motors of the Le Rhone and Clerget type.

Changes on the Fuselage of the SE-5 A

Lieut. Perry Powers, Group Engineering Officer, reports the completion of changes that he has been making on the fuselage of an SE5A plane to enable the pilot to wear the new parachute pack that has been so successful in a large number of live jumps made at this field. Lieut. Powers claims the change is a simple one and as soon as authority can be obtained from the Technical Branch, he will make the necessary changes on all service planes.

The simple changes found necessary are as follows: The back of the present seat is removed, also the bow that supports the turtle back and head rest streamline; the compression strut that crosses directly back of the present seat and extends between the two top longerons, is also removed; the two brace wires that cross between the two top longerons, in the station directly back of the present seat are also removed. The turtle back was then cut back about five inches and the old bow support was fitted into its new position; a new compression strut was designed to take the compression from the same position on the longeron as the strut which was removed, this new strut had an offset of five inches, the material used was of wood. A steel plate was used at either end of the new strut and extended over the full width of the strut and acted as a fitting for the new wires, that replaced the wires removed. As the strut was about five and one-half inches wide at the ends, the new wires were shorter than the old. A step was used from the seat bottom up four inches and back five inches to clear the cross action wires. The old seat back was refitted to its new position which is five inches back of the old position. The step up from the seat bottom and back to the seat back also acts as rest for the parachute, relieving the weight from the pilot's shoulders. All parts are carefully streamlined with aluminum to conform with the original lines of the fuselage. All objects around the seat were faced with aluminum in such a way that there is no chance for any part of the pack or the pilot's clothes to catch on part of the plane to prevent a rapid getaway. In all it appears to be a finished job at small expense. The time which is required to finish the work is three days. Lieut. Powers and Sgt. Nelson did the job. Lt. Powers seems to think that two men with a little practice could turn out three planes a week. Lieut. Powers is confident that with this new feature added to the S.E.-5A plane, all the boys can give up their insurance.

ACTIVITIES OF THE 4th AND 6th ^{AERO} SQUADRON LUKE FIELD, HAWAII

The Department Commander, General Morton, was a visitor at Fort Kamehameha, during the weekly shoot of Battery Barri, for which observation was conducted by airplane from the Second Observation Group. Altho weather conditions were unfavorable and a great deal of delay occurred from unavoidable sources, twenty shots were fired and sensings sent in by radio. Thus far in our weekly observations of Coast Artillery fire the fact has been demonstrated that better results can be obtained when the aerial observer regulates the firing, rather than when he observes fire which is done at the will of the Battery Commander, or at regular intervals of time.

A Policy adopted several months ago was recently carried thru, with great satisfaction to the Operations Department of the Group. A list of the names of all enlisted men of the field was kept in the office and a record of flights. Each day's schedule found several flights set aside as rides for the enlisted men. In this way it was possible to give everyone a thoroughly enjoyable flight. The strengthened morale and other benefits arising out of this policy have been so marked that a roster system is to be adopted to insure future rides for all enlisted men.

Mayor Rolph of San Francisco, Mayor Wilson of Honolulu and Senator Hind of Hawaii, visited Luke Field during the week and were made ardent enthusiasts of aviation after flights over the Island of Oahu.

ACTIVITIES OF FRANCE FIELD, CANAL ZONE

Two cross country flights were made during the week. Six planes left the Field on Wednesday morning and flew to Aguadulce where two planes left the formation and went to Santiago. The remaining four flew over the Province of Los Santos and landed at Ocu, a small town where several American and English mining men have their headquarters. The landing field there is very good, being about 2,000 by 1,000 feet and approachable from all directions. With its natural drainage and hard soil it will make a good landing field during the wet season. Average time of flight from this field to Ocu was an hour and twenty-five minutes, the distance being about 145 miles.

After about an hour at Ocu the flight took off for Las Tablas, the capital of Los Santos. The landing field there was very uneven and contained a number of ruts and holes. Upon landing, one plane struck a hole and broke the shock absorber, but otherwise good landings were made. The planes were given a first class reception by the inhabitants, headed by the Governor. After dinner with the Governor, three planes set out for Chitre, the largest town of the province, but the field here was found to be too small for landing and as no other could be located nearby, the planes continued to Aguadulce. Gas and oil were taken on here and at 5:30 P.M. all three left for France Field, arriving home at 6:35 P.M.

The two planes that went to Santiago made the trip without mishap, landing on a field previously located there.

The people at Las Tablas stated to Second Lieut. Elmer F. DeGon (one of the pilots, who was left there until the next day, awaiting repair parts for his plane), that if the "airplanes" ever returned to Las Tablas it would never again rain there. As two planes returned to that town with repair parts the next day, and the wet season is about due, this superstition will shortly be done away with.

The people at Chitre and Los Santos were very disappointed because the planes did not land at those towns, and sent several telegrams requesting that the planes visit them, but until a better landing field is located this cannot be done.

Cross country flying in Panama is just a little more interesting than in the States, for most of the inhabitants have never seen a plane and are very superstitious about them. Forced landings in the jungle, even if one landed successfully, would mean days and in some cases weeks before a rescue party could get to them. So little is really known about the topography of the country that every time one gets the correct altitude and location of a mountain they feel as tho they have done something really worth while. These conditions all tend to make flying in this country just that much more fascinating.

ACTIVITIES OF ARMY BALLOON SCHOOL, FORT OMAHA, NEBRASKA.

During the week a free balloon night flight was made from Fort Omaha with 2nd Lieut. Wm. E. Connolly as Pilot and 2nd Lieuts. R. G. Conklin, H. R. Wells, and R. A. Gibson, Master Electrician G. H. Benn and Sergeant First Class B. T. Starkey as passengers. After remaining in the air three hours the balloon was landed four miles northeast of Smithland, Iowa, or 65 miles northeast of Fort Omaha. All of the passengers then got out except Lieut. Gibson, putting in enough ballast to compensate for their weight and he went on and made his solo flight. He started just ahead of a rainstorm and keeping just ahead of it, landed at Aurelia, Iowa, 69 miles northeast of Smithland, Iowa, where he started, after being in the air one hour and 31 minutes. While rolling up the balloon the storm overtook him and thoroughly drenched everything.

Lieutenants Wells and Gibson qualified as spherical balloon pilots, the former after the night flight and the latter after the solo.

On May 1st, the United States Army Balloon School was well represented in a long patriotic May Day Parade. A Barrage Balloon of French type was carried by the enlisted men. A truck was fitted up with both receiving and sending wireless apparatus and communicated with Fort Omaha, about 6 miles distant, during the parade. Other trucks were fitted up to demonstrate the vocational training carried on at the Post. A winch was also used. About 20,000 people witnessed this parade.

9TH AERO SQUADRON TRAVELS UNDER DIFFICULTIES

The 9th Aero Squadron, under orders from Headquarters, Western Department, recently arrived at Mather Field by Motor Transportation and airplane, from Rockwell Field, California. The planes, fifteen in number, departed Thursday and stopped on the road at March Field, Bakersfield, Fresno and arrived at Mather Field the following Monday. Flying time for the trip was approximately 105 hours. It was planned to combine with the transfer a recruiting campaign, to include stop-overs, in addition to the towns and cities above named, at Tulare, Merced, Modesto and Stockton, but, due to the poor condition of the fields at most of these places, the Squadron was forced to abandon a greater part of the recruiting campaign. At Fresno an exceptionally large crowd attended the field to view the entire equipment of the Squadron which had been assembled at that point, and excellent speeches were made by officers of the Squadron who were best qualified to talk on the educational advantages of joining the Air Service. However, no results by way of recruits were accomplished. It is believed that the scale of wages throughout the San Joaquin and Sacramento Valleys, which were covered in a great part by this trip, is far too high, and that, under these circumstances there is small inducement for men to enlist.

The Motor Transportation Train, consisting of approximately 32 pieces, including vehicles from the three and five ton Liberty trucks down to the Harley Davidson Motorcycles, departed from Rockwell Field two days in advance of the planes. Due to the inability of the organization to secure adequate parts to keep these vehicles in proper condition, difficulty was encountered all along the line in keeping them up, so that many delays were necessary for the purpose of making field repairs. The trip of approximately 625 miles, was made by the train in eight days, all vehicles reaching Mather Field.

South of Oceanside one Dodge truck driven by Chauffeur Herman H. Lavinsky, was wrecked by running into a telegraph pole and the passenger, Chauffeur Alvino Sanchez, unfortunately was killed. Both of these men were immediately removed to Camp Kearny Hospital, a distance of thirty miles, where Lavinsky is rapidly convalescing.

Of the fifteen planes one suffered a broken gear on the cam shaft at Fresno and it was necessary to leave this plane behind.

It is planned that on May 10th Flight B of the Organization will move to Red Bluff, California, and one half of Flight A will move to Fresno, California, while the other half of Flight A, together with the Headquarters Section of the Squadron will remain at Mather Field. From these places extensive forest patrol of the California National forests, from a point approximately 75 miles south of Fresno to a point approximately 50 miles north of Red Bluff and east to Tahoe and Yosemite will be conducted. It is expected that six officers will shortly join the Squadron, together with ten cadets, to aid in forest patrol piloting and observing.

During the past few months this Organization has suffered a decrease in personnel, due to the discharge by reason of termination of enlistment, of nearly 50 men, which is approximately 40% of the authorized strength, and during the next few months 31 men will be discharged, leaving the 9th Aero Squadron with approximately 57 men to operate.

NEWS FROM THE AVIATION SUPPLY DEPOTS, RICHMOND, VIRGINIA.

There has been established at the Aviation General Supply Depot, Richmond, Virginia a small aeronautical library including approximately sixty volumes of technical Air Service books. These books may be drawn by any employee of the Depot and considerable interest is being displayed by the majority of the employees endeavoring to further their knowledge of Air Service equipment and its functions. It is believed that the establishing of such Libraries at Air Service activities is one step in the right direction towards educating and interesting the Air Service personnel in all branches of aeronautics.

ACTIVITIES OF THE PILOTS' SCHOOL, MARCH FIELD, CALIFORNIA.

More than a thousand people, civilians throughout the community, joined with members of the Command on Thursday in commemorating the second anniversary of March Field. A thrilling air show lasting practically all afternoon was the feature event and was carried out with great success. The visitors were plainly enthused and showed considerable interest in every department of the air game, as displayed for their benefit, under the direction of Lieut. Colonel B. K. Yount, Commanding Officer.

The visiting throng began arriving shortly after lunch. By 1 o'clock according to the official program, Major Clark, Officer in charge of flying had everything in readiness for the big show. Motor cars lined the highway while several hundred spectators took advantage of the reviewing stand and seats arranged for them between hangars No. 3 and 9.

The opening event was formation of six planes passing in review. Lieut. McHenry displayed the new Le Pere in good fashion; Lieut. Schramm piloted a De Haviland 4; Lieut. Brinker, a Thomas Morse Scout; Lieut. Snow, an Hispano Curtiss; Lieut. Brand, an S.E.-5 and Lieut. George, the Spad. On his first lap around the field, Lieut. George, who is one of the few American Aces remaining in the service was forced to land with a dead motor. Due to vibration his propeller was shattered and the plane temporarily disabled.

In the second event six cadets, who are graduating today, flew formation over the field, led by Lieut. Foster. Those participating in the flight were Cadets Caukins, Keadle, Fowler, De Garmo and Guile. Spectators agreed that with but four months training these men were exceptionally good pilots. Mimic combat at from three to five thousand feet altitude entertained the audience for the next ten or fifteen minutes. Pilots were Lieutenants Brinker and Schramm in S.E.-5's.

Lieutenants Foster, Brand and Colliver in Curtiss H planes then displayed with credit practically every known "stunt" in aerial navigation. In unison they performed over the field for fully half an hour. Then followed one of the most interesting experiments of the day. Lieut. Clark piloting the radio ship took aloft with him a phonograph and by means of an intensifier attached to the wireless receiving apparatus transmitted the music from several "jazz" records to the audience below. The plane at times was a mile or more from the field and the music was clear and distinct throughout the demonstration. Radio messages, both by wireless telephone and telegraphy were also transmitted.

The next event illustrated how an instructor releases a cadet for his "first solo". Lieut. Schramm was the instructor while Lieut. McHenry, for the time being, acted the cadet role. Their antics on the ground and in the air proved very amusing to both civilians and soldiers. The trials and tribulations of the cadet were well portrayed.

The Los Angeles reserve will include a part of the Santa Barbara district, a landing field having been selected Monday by Colonel B. K. Yount, Commanding Officer, and Lieut. Harold Brand, who were in that vicinity. One route is four hundred fifty miles in length and will necessitate from four to five hours flight to cover; the other is two hundred fifty miles in length and requires about three hours flight.

Assignment of personnel and of planes is anxiously awaited by members of this command.

Orders from Washington received the first of the week occasioned the transfer of Major Follett Bradley, then Commandant of the Pilot School Detachment, to Fort Sill, Oklahoma. Major Bradley, who is a Field Artillery Officer, was assigned to this field for flying instruction. He was very popular with both the enlisted and commissioned personnel.

Forty cadets out of the original class which began intensive training early in January have practically completed the course and will be graduated from March Field this week. Twenty-six of them have already been assigned various aerial squadrons for field duty and the remainder will proceed to advanced training schools.

ACTIVITIES OF CHANUTE FIELD, RANTOUL, ILLINOIS

Almost the entire personnel of Chanute Field has been absent on recruiting duty during the past week. Two trips were made during the week, one to Clinton, Illinois and the other to Gibson City by way of Le Roy, a portion of the party travelling by air and a portion travelling in a motor truck. A number of interesting incidents occurred during the trips. When the party in the motor truck passed through Weldon, Illinois on the way to Clinton, they noticed a small white fox terrier standing at attention on the sidewalk, with an American flag and a toy rifle at order arms. The Officer in charge of the party being interested in this display of patriotism stopped and asked permission of the owner to take a photograph of the dog beside the car in which the recruiting party was travelling. The dog is owned by Mr. J. J. Colescott of Weldon, Illinois a Civil War veteran. Mr. Colescott wished the party success on their recruiting mission and said that he envied the young men who had an opportunity to join the Air Service and to serve their country in such an interesting and profitable manner. He gave the impression that were he of military age, the Air Service would have obtained a new recruit then and there.

During the week Air Service recruiting literature was dropped on the following Illinois towns: Savoy, Tolono, Sadorus, Ivesdale, Deland, Weldon, Clinton, Mahomet, Dewey, Fisher, Lotus, Belleflower, Glen Aven, Le Roy, Arrow-smith, Saybrook and Gibson City. A trip to Paxton and Hoopston, Illinois scheduled for Wednesday, May 12 was postponed until Monday, May 17th on account of rain and northeast winds, which continued for two days. The recruiting party will visit Tuscola and Arcola on Saturday, May 15th. On the trip to Le Roy and Gibson City, Illinois a peculiar situation, with regard to wind currents, was noted. A considerable amount of recruiting literature was dropped on the city of Le Roy at about 11:00 A.M. some of which it was noticed did not fall on the town like the rest, but went in a northeasterly direction in a slightly ascending current of air, and at a high rate of speed. The plane did not leave Le Roy until the middle of the afternoon, but when the party travelling by motor truck reached Gibson City, at about 2:30 P.M., they were told that there must have been a plane there, as a number of "aerial bombs" had been dropped in the town. Members of the party saw several of these bombs in the possession of small boys around the town and were at a loss to account for their presence there, until it was decided that they must have been carried in a current of air from Le Roy. The distance from Le Roy to Gibson City is about twenty five miles by air, in a northeasterly direction. It is believed that considerable interest is being aroused by these recruiting trips and the results of the trips will soon begin to show in Air Service enlistments at the general recruiting stations in this district. No enlistments can be made at this station, owing to the lack of medical personnel.

ACTIVITIES AT SELFRIDGE FIELD, MT. CLEMENS, MICH.

During the past week eleven reserve flying officers made practice flights at Selfridge Field, Mount Clemens, Michigan. In each case it was necessary to have them accompanied by either Major N. J. Boots or Lieut. J. B. Machle, the only pilots stationed there because none of these officers have been physically examined for flying since the first of the year. Considerably more than this number made applications for flights, but in view of the routine work to be performed it is impossible to accommodate all who have applied.

Recruiting activities constituted the major portion of the work done last week. Numerous flights and motor vehicle expeditions were sent out to neighboring towns, posters billed and literature distributed. It is believed that this work as it is followed up will bear satisfactory results.

Former Master Electrician, Elmer J. Spencer felt the call of the Service after a year's absence and has re-enlisted.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE JUNE 3, 1920.

LANDING FIELDS NEEDED EVERYWHERE

Two announcements recently made in the press advise the public of two large Transportation Companies that have been organized. One to do a general passenger business over short routes in the middle west, while the other intends running a line of giant airplanes from New York to the Coast with ten trunk lines operating from the Grand Trunk and expects to do a general express and mail business.

Again we face the question of adequate municipal landing fields and naturally enough the question is rightfully asked, "What has been done by the municipalities towards solving the question"? It has been proven beyond a doubt that the airplane and airship has any other mode of travel outclassed by 50%, in many cases 75%, in speed. A great deal of illuminating information has been compiled regarding the performance of the airplanes. Reference need only be made to the Postoffice Department's operations report to verify all that has been said regarding the practicability of commercial aerial transportation.

Here we face a situation in companies under the process of formation, who at least on the face have every intention of putting their projects into operation. What will the cities on their routes do? Will they take time by the forelock and make immediate arrangements for landing fields, or will they let it pass by? These cities could lease these fields to good advantage and make commercial aviation an assured success from the start.

There must also be emergency landing fields between stops. Airplanes have not reached the stage where they will stay in the air indefinitely and from time to time it will be necessary to make forced landings although such landings are not often these days. Commercial companies on long hauls will no doubt use twin or four motored planes. Such planes will cost in the neighborhood of from \$80,000 to \$100,000. It is certainly unreasonable to expect a concern to invest this money into equipment and have the chance of having it smashed in a forced landing and equally as unreasonable to expect them to purchase landing fields in every city across the continent. A corporation undertaking a landing field project in addition to its equipment would have to be capitalized at a billion dollars. Surely the examples provided by the English government in providing landing fields for commercial service throughout England have been the means of their huge success in establishing a number of highly successful and profitable air lines extending all over the island and to Paris and Brussels. Then certainly our cities should see to it that we are equally as well provided for.

It is to be remembered that landing fields mean the successful promotion of aeronautics. Active commercial aeronautics means highly trained personnel, special equipment, - adding them all together it will spell our success or failure in the next war should there be one.

This is the point of view all trade organizations should see, and realize that in cooperating in the establishment of municipal landing fields they are materially adding to our country's National Defense.

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Vol. IV

PHOTOGRAPHIC MAPPING FROM THE AIR

Back in the year of 1916 nothing was known concerning the science of Aerial Photographic Mapping. Like the airplane machine gun it had its birth through the necessity of the opposing armies to photograph the enemy's activities on a plate or film for all to view, rather than upon the brain of a single man. Like the machine gun, which developed from aviators shooting at one another with pistols, and passing through the evolutionary stage until it reached shooting through synchronizing propellers, so the aerial photographic camera was developed from a box camera of the Ango type, held in the hand like an ordinary kodak to a motor driven entirely automatic camera, using a plate or film 18 x 24 c.m.

Aerial Photography started from ordinary picture taking, thence it reached out to artillery locating, spotting of machine guns, nests and troops; the methods were continually improved and towards the last two years of the war actual making of photographic maps, or so-called mosaics of the entire battle area were being turned out for the information of the Intelligence Departments.

Now this story does not pertain to what future benefit the military establishment will derive from aerial photography. Only in such instances as it is necessary to bring out the facts. The army has proved that it was entirely feasible through the necessity and pressure of war to turn out excellent photographic maps by means of aerial cameras properly suspended in an airplane or an airship. Therefore, the commercial world should pick up the threads where left off by the army in 1918 and begin to start the actual operation of mapping the country from the air.

The airship is the ideal vehicle for photographic mapping in as much as it can be stopped in midair easily raised or lowered to any altitude desired, two very important considerations for the aerial photographer, who must know the exact angle and the exact height from which to take pictures and to maintain it. The war has helped to give aerial photography an impetus which it would probably never have received, and as a result of the amazing development a new peace time industry is not only probable but distinctly feasible from a commercial and financial view, by means of which new methods of survey, particularly of the hitherto impenetrable, and uncharted regions can be accomplished, as well as making comprehensive progress and valuation reports available to utility corporations, etc.

The airship or the so-called lighter-than-air machine, is ideally adapted for such work and there is no doubt but what it will figure prominently in this new field of endeavor.

It is not the intention of the writer to cast aspersion upon the airplane as a medium of aerial photographic mapping; in certain kinds of reconnaissances, particularly where speed is the primary factor of importance such as would be demanded in war photographs, it is in a class by itself, but for commercial uses the one item of suitable landing fields will make it impractical in many places. A landing field must at all times be near, by, or within gliding distance in the case of engine failure, otherwise it would be entirely hazardous. Photographic maps will be especially needed in mountainous, rocky, wooded and swampy regions where heretofore no comprehensive surveys have been possible. Territory such as this would be difficult indeed for the airplane to traverse, indeed extremely hazardous with single engined machines.

The small type of airship suitable for aerial photography on the other hand can be moored to a mast, or tower, or even to a tree, if necessary, and the hangar at its base used as a repair shop. Shelter is not absolutely necessary as has been proven in the A.E.F. where airships were anchored in the open for months without damage. If a landing field is desired it can be made in an area as small as ten acres, which does not necessarily have to be clear of stumps, shrubbery, etc., as would be the case for airplane landings.

Airship bases can be maintained on property adjoining railroads, rivers, etc., so that the problems of transportation are greatly simplified. In the duration of flights the airship is decidedly advantageous. Four or five hours in an airplane is about the limit a man can endure as a photographic operator at one time; in an airship there is no such strain and the photographic operator and his assistants may be in the air for 30 hours or more if necessary without worrying about a place to land in, nor suffer the slightest inconvenience. A feature of the airship which lends itself especially to aerial photography is the ease with which a small dark room may be installed aboard for the purpose of developing and testing for exposure, etc. The ordinary water ballast carried would supply him sufficiently for all his needs. The convenience of a dark room cannot be over-estimated. Add this to the freedom of movement and the absence of restraining belt used in airplanes, and it is easily conceivable how this type of aircraft will come into its own.

Everyone who has been in the air knows that a certain haze hovers close to the earth's surface, which comes particularly in summer when it has a tendency to blend and it is accordingly difficult to pick out objects by the naked eye. It is equally as difficult to photograph the earth by ordinary methods. When an airship ascends to an altitude of 10,000 feet on these days, the haze is so dense as to practically cut off the view entirely. Now the aerial photographer has had developed for him a special panchromatic plate which is sensitive to practically all colors of the spectrum, and by the use of his specially made Ray screens, he controls the ultra blue, violet ray, which is the predominating ray, to which ordinary photographic plates are sensitive, while the other rays of the spectrum are equalized permitting the penetration of the haze and consequently thereof he ultimately photographs the object on the ground.

It is often necessary in various localities to test for exposures due to the varying light and haze conditions in order to get the correct penetration of the haze below him. This is easily accomplished in his small dark room above, and, of course, in this way he absolutely insures himself against the failure and the quality of the ensuing photographic maps.

The airship can also be successfully used for special photographic views, stereo-obliques and regular obliques of large building projects for progress reports, photographing manufacturing plants, public utilities covering trackage, etc., as well as for advertising pictures and many other projects too numerous to mention, because of its flexibility and the ability of the pilot to maneuver it into the desired position of height and lower it and hold it there without vibration and danger of forced landings. The biggest field for the airship, however, lies in the future of aerial photographic mapping. At a height of 10,000 approximately two square miles (depending on the size of lens and plate used) can be photographed with single exposure. At lower altitudes the area covered is proportionately smaller. The scale of the map is decided upon before starting and a standard formula of computation is used in determining the relation to height, focal length of lenses, size of plate covered, the result being time intervals necessary to make the exposures, overlap each other about one third of its total size. The airship flies up and down the course laid out and the resulting photographs are pieced together into a very accurate mosaic, giving all the details as it is actually on the ground. Trained draftsmen then trace it and make a map from it. Think how quickly maps can be brought up to date over the slow and laborious land methods of survey, particularly in isolated places, for when one understands that approximately only one-sixth of the earth's surface has been mapped, of which a greater part is more or less obsolete, it takes but little to realize the paramount importance of the air method of mapping for the future.

The factor of danger in the airship, namely, hydrogen gas, will be eliminated entirely by the use of helium gas. It is non-explosive and has about 85% of the lifting power of hydrogen. Mixed with 15% of hydrogen it has about 95% lifting power and is still non-explosive. It is the opinion of some that a large number of men are required to land an airship and the cost of hauling makes it prohibitive. This need not necessarily be so of a small airship such as would be required for photographic expeditions. Ten men upon the ground could easily handle it and on calm days even fewer men could accomplish it. Moreover, since an airship can give warning of its approach and can hover over its landing place until the men can get it, arrangements can always be made with neighboring farms, mines, or factories to have men on hand for landings and departures in advance.

The probabilities are that commercial concerns will soon be ready to embark in the field of aerial mapping, then comes a hitch. Where can we secure trained men for this work, will be the question asked. To this question the answer is the Air Service trained approximately 300 officers and 3,000 enlisted men and gave them a most elaborate and comprehensive course in all phases of aerial photography, topography, drafting and mapping at the schools in this country and abroad and to say that these men are skilled would be saying the least. The majority of these men are not only thorough and competent aerial photographers, but they are college men skilled in geology and engineering in general. The services of these men are available to the commercial world, in fact, the majority are keenly desirous to use the extensive knowledge of the new science of aerial photography, which they learned during the war to practical use. Commercial companies who are seriously entertaining the idea of promoting commercial aerial photography in this country, have an excellent opportunity to secure these men, and put their business on an organized basis from the very start.

CONCERT GIVEN OVER THE WIRELESS TELEPHONE

The enlisted personnel of the Aviation Repair Depot at Indianapolis, Indiana were treated to a surprise by the Commanding Officer at a dance held by the enlisted men to which relatives and friends of the soldiers were invited. The enlisted men and their friends were thoroughly enjoying themselves dancing to the music of a modern jazz band when suddenly the band ceased playing in the middle of a two step and in its place music from another jazz band floated through the air from a Victrola. This created somewhat of a sensation and everyone stopped to investigate but could not find the Victrola anywhere. However, one of the enlisted men found a large Magnavox amplifier concealed in the upper part of the hall. The Victrola was located in a building over 500 yards from the dance hall. A waltz was next played and every note was as distinct as if it had been played in the room where the dance was being held. The expression on the faces of the guests illustrated that they were clearly mystified but nevertheless, thoroughly enjoyed themselves with the wireless music.

The commanding Officer carried this experiment a little further the following day. A Victrola was connected to the wireless telephone and a concert was given for the benefit of amateur and professional radio stations surrounding Indianapolis for a distance of 400 miles. Numerous reports have been received from amateur and also professional stations stating that the music was very distinct. So successful have these experiments been that recruiting parties being sent out are equipped with wireless apparatus and concerts were given from the main stations and also exhibitions of wireless communication with airplanes in the air. The most difficult problem is to convince the average person that airplanes in flight can be communicated with from the ground.

PATIENT FLOWN TO HOSPITAL

While on recruiting duty at Beeville, Texas, private Joseph Sullivan, Air Service, was suddenly taken severely ill. A request for a plane was immediately sent by wireless to Kelly Field. The message was received at 12:45 P.M. and at 1 P.M. a plane was enroute. It arrived at 2 P.M. and Private Sullivan was placed aboard and strapped in and in a few minutes the aerial ambulance took off and arrived at the Base Hospital at 3:15.

The distance is 90 miles in an air line and was covered in one hour in each direction.

The medical officers were greatly pleased with the speed and efficiency with which the emergency call was handled.

BALLOON RECORDS OF INTEREST

In these days of speculation as to the extent and limitations of aircraft as applied to commercial transportation there are some balloon records that are of interest insofar as they bear on this muted question. The following tabulation gives the total accident record to date with causes and casualties.

1. On April 16, 1918 a kite balloon was wrecked at Cape May, N.J. due to a high wind with no one injured or killed.
2. On May 16, 1918 a dirigible was wrecked at Rockaway due to its being unfit for further use with no one injured or killed.
3. On July 11, 1918 a kite balloon was struck by lightning, while on board a U. S. battleship with no one injured or killed.
4. On July 24, 1918 a dirigible was partly destroyed by fire at Miami, Fla. Part of the car was damaged. No one was injured or killed.
5. On January 14, 1919 a dirigible drifted away, due to the motor cutting out, at Miami with no one injured or killed.
6. On January 20, 1919 a dirigible was disabled at Pensacola, Fla., due to the rudder getting out of order. A landing was accomplished successfully although the fabric was ripped, with no one injured or killed.
7. On February 11, 1919 a dirigible was forced to land at Collett and the fabric was ripped, with no one killed or injured.
8. On February 19, 1919 a dirigible sustained a stripped gear and made a free balloon landing with no resulting injuries or deaths.
9. On July 1, 1919 a dirigible exploded and burned at Baltimore due to a static spark with no resulting injuries or deaths.
10. On August 5, 1919 a kite balloon was destroyed by fire due to a static spark at Coco Solo with no resulting injuries or deaths.
11. On October 14, 1919 a free balloon had the fabric ripped due to roping at Cape May with no resulting injuries or deaths.

This record was accomplished during a period of time when U. S. airships patrolled a distance of over a million miles and carried several thousand persons. Such a record as this speaks well for the future of commercial aeronautics especially from the point of view of safety. Taking this record into conjunction with the accident percentages accomplished in Europe since the war, we get rates that are equally as low as any other means of transportation and in many instances considerably lower even when compared on equivalent performance basis, and this has all occurred in the pioneering stages of aerial transport.

LIEUTS. JOHNSON AND MCKIERMAN MAKE FORCED LANDING

During the week Lieutenants Fonda B. Johnson and F. McKierman of the 8th Aero Squadron on Border duty had a very unpleasant experience while flying over desolate country along the border. The officers were returning from Kelly Field and had altered their course in order to make the river patrol and while directly over a very rough strip of country without a landing field in sight the temperature of the radiator went up against the peg. There was not a single open field in sight and it was very doubtful whether the plane could be crashed without serious injury to the pilots so it was decided to hold the plane in the air as long as possible with the hope of reaching a landing field. For ten minutes the motor was kept running without any forced water circulation in the cooling system while the steam shot out from the holes in the radiator which had spread apart in several places due to the high pressure within. At the end of the ten minutes a very small field was located and the officers managed to side slip the plane without serious damage. Upon examination of the plane it was discovered that the nut which holds the fans of the water pump in place had dropped off, allowing the shaft to turn without forcing the water through the cooling system of the motor. The sides of the radiator had bulged out until the cone was torn apart in several places before it had bursted. The bursted radiator was within a few millimeters of the revolving propeller but fortunately it did not strike. Had it done so it probably would have torn the motor from the plane. It is considered remarkable that these officers managed to land the plane safely considering the territory they were compelled to land in and the narrow margin the propeller missed striking the radiator.

CAPT. ARTHUR R. BROOKS, D. S. C. PLACED IN COMMAND OF THE 1ST
PURSUIT GROUP, KELLY FIELD, TEXAS

Captain Arthur R. Brooks, formerly Commanding Officer of the 95th Aero Squadron has been placed in command of the 1st Pursuit Group, Kelly Field to relieve Major Reed Chambers who has requested that he be discharged at the expiration of his leave.

Captain Brooks is a graduate of the Massachusetts Institution of Technology and in civil life was engaged in electro mechanical engineering. Shortly after the outbreak of the war he became identified with the Aviation Section of the Signal Corps and was sent to the University of Toronto to take the ground school training and upon the completion of his training at that school he was sent to the Royal flying Corps school at Hicks Field, Fort Worth, Texas and was graduated and commissioned a 2nd Lieut. in January 1918 and shortly thereafter was sent overseas. After the prescribed course at Issoudon he became a part of the 199th Pursuit Squadron, 2nd Pursuit Group. He served through all the American campaigns from the time the Americans appeared on the front until the Armistice was signed and received a total of 6 German planes (official) and 4 unofficial to his credit. He was promoted to 1st Lieutenant and later to Captain and was awarded the Distinguished Service Cross for extraordinary heroism in action over Mars-la-Tour, France on September 14, 1918. When his patrol was attacked by 12 enemy Fokkers over Mars-la-tour, 8 miles within the enemy lines, alone fought bravely and relentlessly with eight of them, pursuing the fight from 5000 meters to within a few meters of the ground and though his right rudder control was out and his plane riddled with bullets he destroyed two Fokkers, one falling out of control and the other bursting into flames.

Captain Brooks is a splendid type of man and is popular among his fellow officers in the Air Service. With his wealth of experience attained overseas together with his love for flying and an ambition to advance the pursuit work in the Air Service to the highest order of efficiency it must be stated that the 1st Pursuit Group is indeed fortunate to have Captain Brooks take hold of the reins and guide their destinies where left off by their former distinguished Commanding Officer.

NEWS FROM THE 2ND AERO SQUADRON, FORT MILLS, P. I.

In May 1919 the 2nd Aero Squadron was reorganized at Rockwell Field and was designated for duty in the Philippines. After an intensive course of training at Rockwell Field in practically all types of planes, liaison, border patrol work, etc., the Squadron was sent overseas in small detachments, the last detachment arriving December 24, 1919.

The first flight was made at Fort Mills by Lieut. Carroll V. Stein on September 24, 1919 in a Burgess N9H seaplane. From that date to the present a total of 648 flights have been made, total flying time 472 hours and 26 minutes. No serious accidents have occurred although one plane was crashed in a spin in Manila Bay from an altitude of 500 feet and another had a forced landing and drifted out into the China Sea for eight hours before being found. A number of forced landings have been made in the bay on rough water resulting in minor damage to planes and which incidentally tested the endurance of the pilots and observers. An aerial mail route has been opened between Corregidor and Manila. This plane makes the trip daily and transports all of the official mail.

The N9H Burgess hydroplanes were used exclusively until a few weeks ago when a shipment of HS2L flying boats were received. Due to the lack of hangars and beach facilities it has only been possible to put one of these planes in service. Several of the HS2L planes were damaged beyond repair in shipment. All flying is done from the old air station on Corregidor. Construction of the new station on the east end of the island is progressing favorably at the present time and it is expected that the large steel hangar under construction at the present time will be ready for use in about a month's time. The new hangar will accommodate about 7 of the HS2L planes.

The officers and their families are gradually becoming used to the tropical climate. The hot season is just starting at the present time and will soon be followed by rains and typhoons. Flying conditions in the Islands are quite different from those found around San Diego, California. The weather here is noted for its rapid changes. On taking off the water may be as smooth as glass and within a few minutes it will be changed to white caps and heavy rollers, causing launching and beaching of seaplanes and boats to be made under the most difficult conditions. Another peculiarity of the Islands different from other places is that the local winds change direction very frequently and it very often happens that in making a flight from Manila to Fort Mills the direction and velocity of the wind will change three or four times in a distance of only 30 miles which makes navigating by the compass quite a difficult matter.

A very essential part of the squadron's equipment which is now in daily use and renders valuable service in assisting during forced landings in beaching planes during rough weather is a 35 foot Naval type barge with a speed of about 18 knots. This boat is equipped with wireless telephone and telegraph, stretchers, life preservers, emergency rations, International Code flags, etc., and has the Air Service insignia painted on the front. The Master of the boat Lieut. Charles G. Ellicott, has been designated as Admiral of the Squadron's fleet which consists of the barge, an Evin-Rude row boat and a native Banko. The barge has been christened the "Pete Puryear" in honor of George W. Puryear who was the first American Air Service officer to make a successful escape from a German prison camp and who afterwards lost his life in an airplane accident while on duty on the Mexican border.

TOTAL NUMBER OF OFFICERS COMMISSIONED IN THE AVIATION
SECTION SIGNAL RESERVE CORPS UP TO MAY 7, 1920

Rating	Col.	Lt. Col.	Maj.	Capt.	1st Lt.	2nd Lt.	Total
Military Aviators			1				1
Junior Military Aviators		1	7				8
Junior Military Aeronauts		1					1
Reserve Military Aviators	1	21	129	422	3167		3740
Aerial Observers		1	22	55	72		150
Fight Observers						238	238
Bomb Observers				2	18		20
Balloon Observers		1	4	8	18		31
Observer					8	442	450
Bomber					1	201	202
Balloon Aerial Observers						67	67
Balloonist			1	6	2	4	13
Flyer		1	2		5	8	16
Maneuvering Officer						39	39
Non Flyer	6	3	94	329	537	1269	2244
TOTAL	6	13	128	490	1040	5543	7220

ACTIVITIES OF THE AIR SERVICE MECHANICS SCHOOL,
KELLY FIELD, TEXAS

Foreword: The article on Carburetion and your life was contributed by Sgt. C. W. Manning, one of the enlisted instructors.

CARBURETION AND YOUR LIFE

The average pilot, the man who has simply learned to control his plane in the air and to perform stunts, very seldom has the opportunity given him to learn just exactly what makes his engine function properly.

Ninety per cent of engine failures will be found to be due to either faulty carburetion or lubrication, so it behooves the man who flies to understand just what is wrong when his engine begins to mis-behave.

The carburetor has passed beyond the point where the mixture of gasoline and air in the proper proportions is a hit or miss proposition, the instruments of today being absolutely scientifically perfected by means of which we can deliver a mixture to the engine composed of any proportions of gasoline and air we may desire.

Once adjusted to the needs of your engine, a modern carburetor will continue to function properly for an indefinite period of time, but with foreign matter always present in our gasoline, some little passage is bound to become stopped at some time, and, if you happened to be over dangerous country at the time, a bad crash will probably result.

Every pilot should be able to make necessary carburetor adjustments, for after all, it is your life which is endangered- not the mechanic upon whom you rely. Most any man can so adjust a carburetor that the engine will run- but the man who knows just exactly when his carburetion is correct, and how to make any necessary changes from the running of his engine is the only man who can be said to be capable of keeping his plane in the air by any other means than luck.

Carburetion covers a far larger field than at first appears, and the subject is too great to be taken up here, but if any pilot, who at present possesses only a superficial knowledge of this vital part of his engine will conscientiously make a study of it, it will make him shudder to look back over his flying past and consider the chances he has taken.

This work is taken up in detail in the carburetor department of the Air Service Mechanics School, Kelly Field.

Three Crashes During the Week

Bad luck always comes in threes, and the year's run of this kind of luck came to the Air Service Mechanics School in the past week in the shape of three unavoidable crack-ups. While Lieut. Aldredge was ferrying a D.H.-4 B from Dallas, Texas to Kelly Field, the motor developed Bolshevistic tendencies over the one strip of bad ground in the entire three hundred miles. It was necessary to set this plane down which landed in good shape, but rolled into a slight wash in the center of the field which was unobserved by the pilot prior to his landing. It is needless to describe what happened,- the landing gear collapsed causing a very nasty wreck. The pilot crawled out of the plane and walked six long weary miles in the hot sun to a telephone and respectfully made a report of his mishap. A plane was sent from the school with tools for the dismantling of the wreck. This plane landed in a good field some eight miles from the wreck, but due to the collapse of the left wheel on striking a slight rut it also posed up which filled the pilot of the first wrecked plane with unholy glee. To cap the climax a "Jennic" some five days later gently but firmly refused to work just after taking off. The result was a three point landing on a Mess Hall. In these wrecks neither pilot nor passenger in any case was scratched. It was an additional testimony for the steadiness of a D.H.-4 B for the fuselage was in excellent shape.

The treatment accorded two De Haviland pilots while in Austin, Texas, where the first two landings occurred was of the very best. The Commanding Officer of Camp Mabry gave the pilots much valuable aid. The attitude of the different branches of service in different camps in general in this part of the country is very much to be commended, as in no case where Air Service men have been in trouble have they failed to obtain everything possible for their comfort and for the carrying on of their mission at these stations through Texas.

Engineering Department working on DH-4B's

The Engineering Department has been busily whipping three new DH-4-B's which have just been put into commission into shape. The motors are being carefully broken in, for the life and reliability of any motor is dependent on the treatment of the motor during the first ten hours of service. The DH-4-B's are liked very much by the pilots of this school, both because of their flying qualities and easy handling.

Parachute Course to be opened soon

The daily strength report of the training department showed a total of 390 students with the total strength of the Department of 509. Several new courses will be opened up as soon as supplies are obtained. The parachute department has its full quota of students who were sent from the different border stations. The training of these men will be completed in three weeks and they will be sent back as qualified parachute repairmen capable of doing any work around an airplane parachute. This course though short is very intensive. The parachute is the Aviators "Ace in the hole", and no pains are spared to qualify the parachute students to do this very important work in the best manner possible.

THE IMPORTANCE OF AIR SERVICE PUBLICITY

During the last three months there has been a very apparent laxity on the part of the officers at the Air Service Stations and fields charged with the mission of gathering the news items and other publicity matter and in forwarding such items to the office of the Director of Air Service.

In order to make matters clear for all concerned attention is invited to the letter under date of December 3, 1919 subject of which is "Weekly News Items". This letter requires the Commanding Officers of Air Service posts and stations to appoint an officer to compile all items of interest and forward them in a letter the subject of which is "Weekly News Items".

The publicity department in the office of the Director of Air Service, Washington, D.C. is in touch with practically the whole newspaper and magazine field of the United States because of the fact that nearly all of the newspaper and magazine companies keep a representative in the city of Washington the year around. Requests are being received daily for all kinds of information concerning the Air Service activities and so great has this demand become that this office has been unable to comply with these requests. In times like the present every bit of information which is of the slightest news value should be recorded and forwarded to this office.

The news letter is published in two sections; one section which covers the press news and the other section goes to all Air Service activities and places other than the press.

The officers in charge of securing publicity at the fields have often sent in three line paragraphs of happenings at their fields which had all of the earmarks of a good story but could not be used because of the fact they omitted such important items as the type of plane used, names of the personnel, distance covered, altitude, weather, experiences encountered, etc. From the character of the material received from a number of fields it is evident that the sending in of news items has not been given serious thought. Items as above stated should be enlarged upon and the facts given in detail. A number of letters have been received during the past three weeks all of which have been filled with recruiting matter. News concerning recruiting is of little news value unless something of special nature occurs. For instance; the Commanding Officer of the Aviation Repair Depot at Indianapolis, Indiana, sends out over the wireless telephone a message to all amateur stations requesting the cooperation of all who receive the message to aid the recruiting drive being made by the Air Service. This would be a piece of news that is of some value and could be enlarged upon and given wide publicity providing the facts were set out in detail before being sent in. Another suggestion: encourage your officers and enlisted men to write up special stories and to help you gather news. Invite them to write stories about their air experiences, mechanical subjects, commercial aviation, military aviation, etc., and by all means give them latitude. In this connection attention is invited to an article which was printed in the News Letter of May 25th entitled "Carburetion or Your Life". This article was written by an enlisted man in the Air Service mechanics school at Kelly Field, Texas. At least fifty requests have been received from various sources for additional copies.

Who among the officers, enlisted men or the public would not be interested in reading about the wonderful performance of an army airship and the way the personnel is trained to operate them or how these giant gas bags are handled by the crew on a cross country trip? We have a number of these machines in service and publicity as outlined would make good reading.

It has often been stated that the Air Service schools are second to none. Here you have another suggestion. Stories in connection with the operation of the Air Service vocational, pilots' and photographic schools as well as stories on the training of cadets and the many humorous and serious incidents of a cadet's life should fill four or five pages each week.

Many times we read small paragraphs on some new idea such as the electric ignition system specially rigged up to instruct students but we are unable to publish it because of the fact that it is not written in detail. Whenever it is possible to secure photographs of news events, write up a story immediately caption the photographs giving details and if of sufficient importance, sent in by special delivery. News items concerning the following are always desirable: Long cross country flights, setting forth details such as time, personnel, experiences etc., activities in connection with securing landing fields, articles on commercial aviation, on rigid and semi-rigid airships, observation balloons, free balloons, trips, former air service officers who arrive at the fields en-route to other places, training of Reserve Military Aviators who arrive at the fields to keep up their practice in flying, R.O.T.C. units, Aero Club activities where such clubs are in the vicinity of the field, accidents, narrow escapes, training of foreign officers, also the training of officers from other branches of the service, celebrities taken on flights, forest fire patrols, number of fires discovered, new methods devised for fighting fires in connection with the Air Service, tests, new inventions, and experiments, navigation, altitude flights, field news consisting of news concerning the officers and enlisted personnel and their doings, border news, etc.

This office will be glad to aid those who are in charge of securing news whenever possible. However, the best ideas will be found with the personnel at your own field or station. It is simply a question of taking the matter serious and seeing that it is accomplished and expedited.

NEWS FROM SQUADRONS ON THE BORDER

8th Aero Squadron, McAllen, Texas.

Owing to the activities of the revolutionists across the Border during the past week, the Squadron put in over sixty eight hours of flying time. Much valuable information was gained and messages were dropped confirming the radio report already sent in.

A little luck coupled with a favorable wind and quick action made possible the speediest message ever delivered to McAllen by the 8th Aero Squadron. The Brownsville District Headquarters received a message to deliver to the District Intelligence Officer who was on the road between Fort Ringold and Sam Fordyce in a touring car. Fifteen minutes later the touring car was located at a point twenty miles from the McAllen Airdrome and the message was dropped and acknowledged.

Captain George C. Kenney, pilot and Lieut. Rosenbam Beam, Observer pushed the border altitude record up another notch while testing out a plane. The altimeter was set at Zero on the field and one hour and ten minutes later an altitude of 19,800 feet was registered on the altimeter. Another half hour was spent in trying to jockey the plane up to an even twenty thousand feet but the limit had been reached.

12th Aero Squadron, Douglas, Arizona.

During the week Lieut. Bunting of the 12th Aero Squadron crashed while attempting to take off at the airdrome at Nogales, Arizona. In taking off the motor cut out at an altitude of 150 feet. He attempted to make a landing by turning to the right which was his only chance. Just as he started to turn the wind caught his plane crashing it into the ground. Neither Lieut. Bunting nor Captain Ottzen his passenger were injured. The plane however, was demolished.

The 91st Squadron at El Centro, California.

Twenty border patrol flights were made during the week with a total time of twenty six hours and forty minutes. A great deal of interest in the Mexican situation is being displayed by all of the pilots.

An altitude test flight was made during the week in a D.H. -4 B carrying a pilot and three passengers. An unofficial altitude of 17,100 feet was reached as shown by two non-recording instruments and witnessed by all the passengers.

Col. Miller, Kelly Field addresses the University of Texas Aero Club

Under orders issued by the Commanding General of the Southern Department and at the request of the Air Service Reserve Officers' Club of the University of Texas, Colonel Archie Miller, Commanding Officer of Kelly Field, Major W. G. Schaufler, Jr., First Wing Operations Officer, Captain Clayton Bissell, Commanding the First Air Park Group and Lieut. D. H. Dunton of the First Day Bombardment Group flew to Austin during the week to attend a banquet given by the University Air Service Reserve Officers.

Colonel Miller and Lieut. Dunton flying a DH-4 made a record breaking flight covering the ninety miles in thirty two minutes. Major Schaufler flying a DH-4 the one which made the trip from Ellington Field to the Pacific Coast and return, and Captain Bissell in an SE-5 landed a few minutes later.

The party was met by Captain Frank B. Tyndall, Commanding the First Pursuit Group Recruiting Party, and was immediately driven to the city to the Recruiting Detachment Headquarters.

After an inspection of the exhibit the party was driven around the city and entertained at a luncheon given by Dr. and Mrs. Payne at their home. Dr. Payne is one of the professors at the University and Lieut. Payne, his son, was an old Kelly Field Pilot.

The banquet given at the Cactus Club was well attended by the Reserve Air Service officers and their friends. Captain Joe Dawson, A.S.A. in a short speech introduced Colonel Miller, who gave a very interesting talk illustrated with slides and motion pictures, on the arrival and departure of the British dirigible R-34 last summer. Major Schaufler on the Border Patrol and Captain Bissell told the Reserve Officers how they might benefit by the provisions of Circular #137 D.A.S. which allows the Commanding Officer of an Air Service field to grant practice flights to Reserve Officers on the presentation of proper credentials.

First Day Bombardment Group

All operations of the First Day Bombardment Group have been greatly handicapped by the shortage of both officers and enlisted men. However, if the recruiting unit continues as successful as the first few days our efforts will be well rewarded. Several recruits have been obtained and also a great deal of publicity and praise for the Air Service.

Captain Hoag, Commanding the unit, has made every effort to show the people the possibilities and limitations of the service. At every town he has had flying exhibitions, demonstrations of both wireless telephony and wireless telegraph from plane to ground, and machine gun straffing. At Kennedy and Beeville he gave dances and open air concerts by the Kelly Field orchestra which were greatly enjoyed by all. Every evening there are free movies at the camp, one reel of comedy and several showing the file of an enlisted man in the army, which greatly assists in drawing a large crowd.

Captain Pascale and Lieut. McIver both of the 96th Squadron, made a cross country trip to Dallas. On the return trip Captain Pascale was forced down near Austin with generator trouble but safely landed. He remedied the trouble, successfully took off and made the remainder of the trip without further incident.

ACTIVITIES OF THE 99th and 10th AERO SQUADRON AT BOLLING FIELD

During the week the Japanese Ambassador M. K. Shidehara and a delegation of his countrymen, Count Nils Bonde, Royal Swedish Legation, General Peunte, Military Attache, Peruvian Embassy, Col. A. Mikalaieff, Military Attache, Russian Embassy and United States Senator Furman H. Newbury were visitors at Bolling Field, Washington, D.C.

The distinguished visitors were shown thru all the shops and hangars and great interest was manifested in all Departments. The Commanding Officer was highly commended.

During the week Major Rudolph Schroeder, holder of the world's altitude record, who was a visitor at Bolling Field during the three days tournament and an active participant in a number of flying events, took off in an Ordnance Scout for the return trip to Dayton. Major Schroeder appeared none the worse for his thrilling and harrowing experience incident to his last altitude flight and was eager to make another trial.

Lieut. Harris piloting a Martin Bomber, with Major Reed Chambers, Sergeant Steckel and Sergeant Harding, as passengers, took off enroute to Dayton, Ohio, their home station. These officers and men were visitors during the tournament as representatives of the Air Service Engineering Division. It was their intention to make the entire trip of three hundred and sixty miles in one flight and a later report has it that they were successful.

Lieut. Marshall Boggs and Lieut. Harold A. McGinnis in a DG Bluebird made a 75 minute flight to Middletown, Pa. Repair Depot a distance of 133 miles, for the purpose of securing engine parts. Lieut. Boggs flew back an SE-5 which had been flown to Middletown by Major Brett the previous week on an inspection trip and who had to return by rail, owing to inclement weather. Lieut. McGinnis returned the same day with the Bluebird, making the return trip in 65 minutes. A hazy atmosphere necessitated flying around one thousand feet.

NEWS FROM THE SECOND OBSERVATION GROUP, LUKE FIELD, HAWAII

Infantry contact flying was begun during the past week. It is the present plan to set aside one day a week for practice flying of this nature. In this way a high degree of proficiency should be attained by all pilots and observers in the Group, by the time the actual practice work with troops takes place in the summer maneuvers. A zone of advance was designated from the base, or Battalion Headquarters. The problem consisted of locating the exact position of the imaginary advancing organization and receiving all messages put out by them in ground panels. These messages were sent back to the base by radio and a complete report dropped in a message bag upon completion of the advance and return to the base.

A puff target range was installed on Ford's Island and practice observation work was begun during the week by the pilots and observers of the Second Observation Group. The battery station with wireless receiving set was installed at one extremity of the Island and a dummy enemy battery, as target was laid out at the other end of the Island, a distance of about 4000 yards. The work is being conducted along the latest approved methods. Although the panel system of signaling from the ground to the air is in use at the present time, the radio department has begun equipping the De Havillands used in this work with receiving sets. Should this prove practicable it will be a progressive step toward more efficient observing and regulation of fire.

The regular weekly practice in observing fire for the Coast Defense Battery, at Fort Kamehameha was very successful. The first string of ten shots for which fire was directed by the observer, was completed in less than ten minutes, or averaging slightly under a minute per shot. The last twenty shots were fired at regular intervals of 60 seconds. The observer was able to send in sightings for every one of these shots, and in some cases they were received within 30 seconds after the gun was fired. Most of the firing by the Coast Artillery is done at regular intervals of time or by the "bell system". It is this kind of observation, therefore, in which the Second Observation Group is endeavoring to become the most proficient.

We still have a fighting chance for the handsome silver Loving Cup which will be presented to the trap shooting team winning three out of five shoots. This in spite of the fact that the Oahu team surprised everyone by decisively defeating the officers' team, by a 439-411 score. The shoots at present are two won by Oahu and one tie.

Present indications are that Luke Field will have several winners in the Department preliminaries for the Olympic Games. The track entrants although few in number have been working very industriously and should be in excellent condition when the try-outs take place.

NEWS FROM THE PILOTS' SCHOOL, CARLSTROM FIELD, FLORIDA

An extensive recruiting campaign is being carried on in Florida by the personnel from Carlstrom Field. Trucks are used in conjunction with the planes, the former covering the country thoroughly at first hand while the planes fly from the field and meet the party at prearranged points to lend assistance to the drive as well as to ferry to the field all men joining the colors. The ground personnel equipped with trucks consists of a Medical Officer, an Air Service Officer and eight non-commissioned officers. The party carries tentage, rations and supplies and lives in the field during the tenure of its recruiting service. Every ten days the field party is relieved by another outfit. Four expeditions are being planned for the Month of May.

The practice of flying recruits from the point of enlistment to Carlstrom Field has indeed proved to be a popular one. These men start the very beginning of their career in the Air Service with a flight and when they arrive at Carlstrom Field they are bubbling over with enthusiasm and the first thing a recruit does after landing at the field is to write a letter and sent it back home to the folks. It is of course circulated throughout the entire town and this tends to materially stimulate recruiting. By the time he has oriented himself at the field he suddenly realizes that he did not make a mistake when he enlisted in the Air Service because he sees many opportunities around him to learn all about mechanical engineering and electrical work. In addition to this he has an opportunity of joining classes in English, mathematics, shorthand and typewriting. Many of the men enlisting in the service have not had an opportunity to acquire a high school education while others have grown somewhat rusty. However, the enlisted man is required to take all of these courses and by the time his enlistment period is up he realizes that enlistment in the Air Service was a good investment and the slogan "Earn while you Learn", is absolutely true from every point of view. The thorough manner in which the instructors at the Army Aviation Fields have been handling the problem of vocational training has done more good, in so far as securing enlistments are concerned, than any other method yet devised. Due to the fact that invariably the recruit will write glowing descriptive letters back home he little by little breaks down the barriers which have made it so difficult to secure enlistments in the past.

THE AIR SERVICE PILOTS' SCHOOL AT MARCH FIELD, CALIF.

Fully 88% of the enlisted and commissioned personnel of the pilots' school, March Field, Riverside, California is attending the school daily. This is believed to be the highest percentage of any army camp in the Western Department and will no doubt compare favorably with the school enrollment of other camps throughout the country.

In order to stimulate recruiting as much as possible a great deal of publicity has been released throughout the Western Department, with the result that each day new recruits are arriving to take advantage of the educational and vocational courses. Thirty five different vocational classes are held each week and cover practically ever subject including classes in languages.

Seven March Field athletes, possibly more, who will have qualified in various track and field events, will leave here the first of next week to participate in the Western Department elimination contests for places on the Army Pacific Coast team which will compete in July at Camp Grant, Illinois for Olympic honors. Both commissioned officers and enlisted men participated in the local meet.

During the week W. U. Handy of the naturalization bureau examined 8 students from the pilot school detachment and issued citizenship papers.

Two hundred high school cadets from Riverside high school were guests of the Commanding Officer Friday afternoon. They were taken in charge by officers of the command and escorted through every department on the field. An aerial program was arranged for their entertainment. Many of these youngsters are interested in aviation, particularly the cadet course, which opens June 1st.

William and Charles Marley, brothers, from Tucson, Arizona, arrived at March Field Tuesday and enlisted for three years for the sole object of attending the March Field motor school. Both were employed in the Arizona cotton/pine country operating tractors. They expressed a desire to learn more about gasoline motors and were assigned to the engineering and repair departments.

Captain W. H. Henderson, U. S. Engineers and Lieut. R. Baez, Air Service, engaged in survey and aerial photographic work along the border, were visitors at March Field, Tuesday. They departed for Yuma, Arizona negotiating the distance in a De Haviland in 1 hour and 54 minutes.

L. C. Brand, president of the Title Guarantee & Trust Company of Los Angeles and his pilot Elon Brown, formerly stationed at this field were among the visitors during the week. Mr. Brand is having a Le Pere airplane built for his personal use. He proposes to make week end trips from Los Angeles to his summer home in the high Sierras.

NEWS FROM THE SQUADRONS

Scott Field, Belleville, Illinois.

Former Lieutenants Al Redfield and Jack Blackburn visited Scott Field last week. Mr. Redfield is pushing the idea of a club for Reserve Pilots in the vicinity of St. Louis to meet at Scott Field on week ends. By opening up its officers' club and swimming pool, in addition to the "chance to fly", it is believed the scheme will work. The main drawback is that there is no Flight Surgeon at Scott Field to certify to the physical condition of the Reserve Aviators.

Selfridge Field, Mt. Clemens, Michigan.

Major N. J. Boots, Commanding Officer of Selfridge Field has been elected an honorary member of the Aeronautical Society of the University of Michigan. This organization is made up of former service pilots who wish to keep in touch with the game.

Captain Charles W. Stolze, A.S.A. and Lieutenant Karl DeV Fastenen, A.S.A., landed at Selfridge Field during the week in a DH-4 after making a fast trip from McCook Field, Dayton, Ohio. The purpose of this trip was to enable these officers to make an inspection of Air Service activities in Detroit.

7th Aero Squadron, Panama, Canal Zone.

During the week an attempt was made to carry out two Artillery Observation missions, both of which were failures so far as actual results obtained in adjusting the fire of the guns is concerned. This was due to the Artillery Officers either forgetting the arrangements that they had made with the field, or else they decided to give an exhibition of rapid firing without accuracy, during the short inspection of the battery made by General Pershing.

On the Pacific side they fired a 16" rifle, and the plane was to give the sensings (after the first four shots had been fired) by dropped message, and then observe the sixteen that were to follow. Although 1st Lieut. J. W. Gastreich, A.S.A., Observer, with 1st Lieut. C. B. Austin, A.S.A. pilot, in a De H-4 plane, observed the fire and located each of the twenty shots, they did not get an opportunity to drop the sensings till after the entire shoot was over.

At Fort Sherman Captain H.W. Holden, A.S.A., Observer in a De H-4 piloted by 1st Lieut. R.C.W. Blessley, A.S.A. made an attempt to adjust by radiophone, as he was to report after every salvo. As he could not send from a very great distance it was necessary for his plane to fly toward the battery and after the first salvo, while they were sending the sensings, the battery fired the other salvos; as a result the last two were lost.

Another use was found for the airplane. A special duty flight was made to Fort Amador and return for the purpose of carrying travel orders from Department Headquarters to the post on the Atlantic side of the Zone. The carrying of these orders by plane saved a day's time in the delivery and made it considerably easier for the organizations on this side to get their men ready to sail for the states.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE JUNE 11, 1920.

FORMER AMERICAN AIR SERVICE OFFICER ORGANIZES AIR SERVICE IN BOLIVIA

Foreword: The following paragraphs are quoted from a letter received from R. O. Albaugh, assistant to former Captain Donald Hudson. Captain Hudson is now organizing a flying corps for the Bolivian Army.

"In March a location was chosen for field and hangar. The field was laid out 1000 by 1500 meters and from this space was taken approximately 85,000 tons of rocks, averaging two pounds apiece. This work was done by Indian labor at about thirty-five cents gold a day. The cost of clearing field and construction of hangar amounted to about \$30,000 gold. When the field had been cleared of the loose stones and the hangar completed, the government became rather sarcastic in their replies to requests for more money and time in which to surface the field properly. Captain Hudson then decided to sacrifice the factor of safety that a smooth landing place would give us and make the first hop.

"Two days after the machine was received in crates, together with tools, supplies, etc., it was rigged, motor adjusted and the bus ready for the hop. Captain Hudson came to the field at 4:30 P.M., jumped into the machine, 'reved' it up, and in two minutes from the time he arrived we were in the air- 65 gallons of gas, 5 gallons of oil, 8 gallons of water, the Captain and myself.

"We 'took off' into a ten mile wind and got off in less than 70 meters. Stayed up about 35 minutes in which time we stunted over the city of La Paz, the Capital, and due to radiator shutters refusing to stay open we had to quit for the first flight in the history of aviation from an altitude of 13,623 feet. The landing was perfect 'three pointer' on rough ground and was at least ten miles slower than a DH-4 lands at sea level.

"To me the best part of the affair was the business-like manner in which our work was done.

"The Minister of War paid this tribute to us-'You Yanks are men of actions, not words'.

"You can imagine the surprise of the officials and people here to suddenly see flying over their capital an airplane after they had witnessed twenty-one unsuccessful attempts to fly in this country. Not until thirty minutes before the flight did anyone know it was to be pulled off, and then only Mrs. Hudson and the American Minister.

"Within three hours after the flight there had been raised a fund of about \$20,000 gold to be used for aviation.

"As a result of this flight the Bolivian officials have decided to establish and maintain permanently two aero squadrons of at least eighteen planes. They say this is only a starter.

"This country really does offer an opportunity for the commercial end of aviation as it is today, considering the high cost and present day inefficiency of the modern airplane. There are certain routes in Bolivia today which require travel of twenty-five to thirty days, in the dry season, employing train, auto, mule coach and mule back, which can be covered by air in less than four hours."

South America has been keenly alive to the possibilities of aviation both from a military and commercial view point. The enthusiasm for aviation received a start during the war and has been accelerated since the armistice by the arrival of aviation Missions from England, France, Italy and America. The British interests have been by far the most active and have paved the way in practically every South American country toward the establishment of permanent commercial air routes. That these missions mean business cannot be doubted by anyone as they have trained engineers, flying personnel, and complete equipment in every country, and such types of planes as the Handley Page bomber, Vickers Vimy, DH9, etc. in many South American countries, are in active operation. The success which these Missions have met with has been largely due to the fact that they have secured concessions over certain routes, mail contracts and last but not least, training South American personnel in the art of flying.

Splendid opportunities are available to all. The native South American likes our methods of getting results as may be seen from the letter and the quotation "You Yanks are men of action, -- not words". This should be the slogan for American aviation interests.

It is to be hoped that the American interests will be represented in the South American field. The business is there, it is but a question of going after it.

FOREST PATROL NOW OPERATING OUT OF MARCH FIELD, RIVERSIDE, CALIFORNIA

Airplane forest patrol was started from March Field Wednesday. Two patrols are being maintained; one over the Los Angeles Reserve between March Field at Santa Barbara and the other over the Cleveland Reserve to San Diego and return. Remodeled De Haviland 4 B's are being used for the patrols.

Major Ernest Clark, officer in charge of flying, is directing the forest patrol and has assigned the following personnel: Lieutenants R. J. Kirkpatrick, A. F. Herold, O. L. Stevens and R. N. Ott as pilots and Cadets Eckerson, James, London, Crew, Caukins and Rouse as observers. One complete flight or round trip between the two terminals is made each day. Radio communication with the home base being maintained at all times.

Landing fields are maintained where planes may re-fuel. Each plane carries four days emergency rations, repair kit, water cask, parachutes, panels for signalling and additional emergency equipment for liaison work with rangers in the forests below.

Mr. C. R. Benton of the U.S. Forestry Service has been assigned to duty as Liaison Officer. He will make all reports of the patrols from March Field.

LIGHT UP YOUR LANDING FIELD

Speaking of thrills; one was experienced by the members of the 8th Aero Squadron on Border duty at McAllen, Texas when the stillness of a pitch black Texas night was broken by the jazzing of a Curtiss OX-5 motor overhead.

The night being exceptionally dark, not having any landing flares, not much hope was entertained for the unknown flyers. Down came the little training plane lower and lower the motor humming beautifully. Crash !!! Everyone's heart almost stopped beating but the old motor kept on humming much to the relief of everyone. Then a soft purr and rolling sound informed the experienced ears of the officers that a safe landing had been made.

The crash heard was the little Curtiss JN-4 plowing thru the wireless masts on its way to a landing. Only one wing was slightly damaged. The pilots were Mr. E. E. Cleveland and Mr. N. B. Ison, former Air Service officers.

Flying has indeed advanced when night trips and safe landings are being made in this early state of aeronautics. However, it is an argument to light up your landing fields.

REACHES 27,400 FEET IN A DH 4B WITH STANDARD EQUIPMENT

During the week all altitude records for the Aviation Repair Depot at Dallas, Texas as well as the Southern Department were broken when Major Douglas B. Netherwood, Commanding Officer of the Depot piloting a DH-4 B reached an altitude of 27,400 feet. He was accompanied by A.L. Everetts, assistant foreman of the engine test department.

Major Netherwood left the field at 10:35 A.M. and reached the maximum of his climb in 72 minutes, remained there two minutes and decided to return to lower levels when his plane refused to climb higher. In all, he was in the air 121 minutes.

The plane used was rebuilt at the Depot from a DH-4 and differs in no way from the standard product. Standard equipment and adjustments prevail throughout.

The Liberty engine used in this plane is slightly faster than the average making 1900 revolutions per minute in horizontal flight.

Both Major Netherwood and his passenger were dressed for Texas summer weather at ground level and found it quite warm at the peak of their climb.

The climb to this altitude was made in a standard plane without the use of a supercharging oxygen device.

THE VALUE OF HIGH ALTITUDE FLYING.

The question has often been asked, "What does Major Rudolph W. Schroeder, Chief test Pilot of the Engineering Division of the Air Service, hope to accomplish in ascending to such enormously high altitudes"? In this connection many interesting articles were published by the press. In the press articles all were willing to concede to Major Schroeder the glory he deserves in his many attempts to break the world's altitude record but the editors were practically unanimous in commenting on the uselessness of making such flights. One editorial noted was headed "Suicidal altitude flight made by Major R. W. Schroeder". Other papers were more reasonable but all were more or less mystified.

Notwithstanding all that has been said, the Air Service went at the problem of high altitude flying from a scientific point of view. The flights were only attempted after a long series of careful planning, research and a great number of experimental tests. The results thus far obtained have been very satisfactory and by no means were the flights made by Major Schroeder as useless as they apparently appeared to be on the surface.

Future wars, should there be any, will be fought in the air to a great extent. Anti-aircraft guns will have reached a greater degree of efficiency and development than in the World War.

During the early part of the war 5000 feet was considered a high altitude but aircraft manufacturers in all countries improved their machines so rapidly that toward the latter part of the war chase planes were flying at an altitude of 20,000 feet. Therefore, it is apparent that higher altitudes must be reached and devices supplied which will maintain both the aviator and his machine at altitudes far in excess of 20,000 feet. In so far as the military is concerned this is practically the main reason for seeking higher flying levels. However, there is another phase of high altitude flying, namely commercial aviation. Flyers in the commercial service will be largely benefitted by the experiments conducted by the Air Service as will be considered in the last paragraph.

Two problems enter into high altitude flying, namely keeping the pilot alive by furnishing him oxygen and furnishing a means of introducing air pressure somewhere near that of sea level to the airplane engine to increase its efficiency. An airplane when it reaches an altitude of 5000 feet due to the decrease in density of air loses its climbing efficiency rapidly. In order to overcome this

difficulty, experiments were instituted with a number of devices which would supply the air pressure needed at high altitudes. The most successful of these was a device called the Moss Supercharger, and in addition so as to secure the maximum of efficiency from the supercharger a propeller was made and experimented with on which the pitch could be changed at will.

The supercharger increases the power of the internal combustion engine above that which it would normally have with the particular atmospheric pressure under the given circumstances. A supercharger as applied to aeronautical engines does not imply the increase of air density above that which would obtain at sea level, but means simply the approximating of sea level atmospheric conditions in the air supplied to the engine as the altitude is increased. An engine without a supercharger loses about 45% of its sea level power when operating at an altitude of 15,000 feet. Equally as important for the efficient operation of an airplane at high altitudes is the use of the adjustable pitch propeller in order to properly utilize the full power of the engine available at high altitudes when equipped with a supercharger.

A series of tests conducted by the Engineering Division of the Air Service disclosed problem after problem in connection with the supercharger which had to be overcome before further tests could be made. Some of these difficulties were:

Obtaining a means of keeping the air and gas mixture ratio of the carburetor constant throughout a wide range of altitudes.

The difficulty of delivering fuel to the carburetor against varying pressure.

The difficulty of cooling at high altitudes and the rising boiling point of water.

The problem of providing a drain valve to let the water out of the radiator at high altitudes in case the engine stopped, so that the engine cooling system would not be ruined by the water freezing, and at the same time it was necessary for this valve to be arranged so that it would not freeze, thus making it impossible to operate it.

A special instrument had to be developed to show the pilot how to handle his exhaust bypass gates, in other words to control supercharger pressure in the carburetor without the need of making any calculations.

Considerable trouble was also encountered from pre-ignition when running with a supercharger due to the fact that air delivered to the carburetor is at very high temperature. Future designs, however, will overcome this trouble. The fuel feed system prior to Major Schroeder's record flight operated quite satisfactorily but in spite of this fact it was necessary for Major Schroeder to close the vents in the gasoline tank and pump pressure in them with a hand air pump in order to help the fuel pumps deliver fuel at extreme altitudes.

In order to reduce the pre-ignition difficulty which was anticipated on this flight, a specially prepared fuel was provided. This fuel proved to be of very great assistance as it caused the engine to run much more smoothly, than it otherwise would have done. The supercharger used by Major Schroeder was the original model designed by Dr. Sanford A. Moss, tested in 1918 on Pikes Peak. On this supercharger no effective means had been provided for blowing off the exhaust gas which issued, consequently throughout all flights the exhaust gas has bothered the pilot to a certain extent, due to the fact that it sweeps past his face. On Major Schroeder's record flight it appears that the gases expanded more rapidly than on previous tests in the thin air encountered at great altitude and enveloped him more than he had heretofore experienced. Judging from the physician's report it seems that he suffered more from carbon-monoxide poisoning than from the lack of oxygen.

It is an interesting fact that the instrument which shows the pilot what pressure is being delivered to the carburetor, recorded a pressure close to that of sea level even when he was at the highest point of the flight. The functioning of the supercharger was excellent throughout the flight, and the apparatus was found to be in good condition afterwards.

Another interesting fact in connection with this altitude flight was that after certain low temperatures were reached the exhaust gases issuing from the engine became snow white caused by the condensation of the vapor in the gases. The long white clouds formed by this exhaust were visible from the ground. This resulted in ice forming on all of the wires and struts coming in contact with the stream of exhaust.

In military work an automatic oxygen feed apparatus is used which regulates the amount of oxygen in proportion to the altitude so that the pilot need not think of making any adjustments. Major Schroeder had been in the habit of using a simple rubber tube from the neck of the oxygen flask to his mask in such a manner that he could adjust the flow by hand as he has often had trouble in the oxygen freezing and stopping at high altitudes. On his record flight he knew that he would be up for a long time and desired to use the automatic apparatus as long as possible and believed it would work until he reached an altitude of 29,000 feet. He therefore, took one bottle of oxygen connected through the automatic oxygen feed and one connected direct. He found however, that the automatic apparatus did not work at all and it became necessary for him to start using his emergency bottle at about 18,000 feet. He realized that it might run short but thought it would last long enough for him to accomplish his record. It was probably due to the large amount of exhaust gas Major Schroeder was breathing which caused him to use an excess amount of oxygen. This, of course, resulted in his reaching the end of his supply sooner than he expected.

At the top of his climb he actually reached warmer temperature. The coldest temperature recorded was -67° F. It was determined that the trade winds at this altitude blew from west to east, with a velocity of 175 miles per hour. These winds existed above 20,000 feet and their velocity increased with the altitude.

The military value of the supercharger will be very great. It will considerably increase the speed of the airplane at high altitudes and enable them to travel much more rapidly as far as comparative ground speed is concerned. It will be useful for extreme high altitude photography because the photographer will not be hampered by attack if the plane goes high enough. An airplane with a supercharged engine will be of value in carrying dispatches or high ranking officers over great distances with celerity. When applied to heavy bombers it will enable this type of machine to reach a ceiling well above anti-aircraft gun fire and also increase the speed and climb.

For the commercial aeronautical world the use of the supercharger will be advantageous in enabling the heavy passenger airplane to climb over the highest mountains or above thunder storms with the use of comparatively low powered engines. Without the supercharger very high powered engines would have to be installed in order to have sufficient power to sustain the airplane at high altitudes. It is believed that passenger airplanes could be provided with superchargers to supply air to properly constructed cabins so that the density and temperature, providing oxygen content is introduced, may be maintained and the proper degree of comfort necessary for passengers in airplanes which would travel at high altitudes in order to take advantage of the greater speed possible by the favorable winds prevailing at such altitudes.

As stated above Major Rudolph W. Schroeder has definitely proven on his last record breaking flight that the trade winds blow from west to east. It is believed that at an altitude in excess of 40,000 feet the trade winds will be discovered which will blow from east to west. This will be determined later on by further altitude experiments.

The enormous advantage to be gained by having the trade winds blow from east to west and vice versa cannot be over estimated. From a military point of view it is highly desirable and it will be equally as desirable and important to commercial aircraft. Speed after all is one of the chief advantages of air travel over other methods and by taking advantage of these winds the speed of the aircraft will be enormously increased.

The supercharger and many other devices necessary for high altitude flying have been perfected by the Engineering Division of the Air Service at McCook Field, Dayton, Ohio. The famous American Liberty engine was used in all tests. The first test was made September 6, 1919 by Major Schroeder and he reached an altitude of 28,500 feet with an observer. On October 4, 1919 he reached an altitude of 31,000 feet with an observer. In this flight both pilot and observer carried parachutes,

three hours fuel and about 35 pounds of miscellaneous equipment. On February 27th, 1920 he reached an altitude of 38,180 feet as computed by the Federation Aeronautic Internationale, breaking his own record. This flight was made without an observer. The Bureau of Standards after computing this last record breaking flight in accordance with their method have given out that the most probable altitude reached by Major Schroeder on this flight was 33,000 feet.

AEROGRAPHIC STUDIES ASSIST. AERONAUTICAL PROGRESS

Aerography or the geography of the air is a subject that has been attempted for many years from an academic point of view. Naturally with practically no medium or platform such as is provided by aircraft from which to make this study, progress has been slow, localized and heterogeneous. The chemistry and physics of the atmosphere together with its generalized physical components and characteristics are rather well understood but these broad relationships are of but little use for the daily and universal operation of aircraft.

Altitude flying is of assistance in the completion of this work and when it becomes more generally possible or rather more widely distributed some of the details will begin to come out. With the appearance of these details then the navigation of aircraft can become as prosaic as the operation of ocean craft.

Hitherto the sounding balloon has been the means of furthering this study and it will still have to be used to a considerable extent. It is quite fascinating to consider that as one stands on the earth and gazes skyward that you are looking right through great continents and rivers and oceans but metaphysical as it may seem such things exist even if only of phantom composition.

The plotting and charting of these characteristics is another feature of interest for thought. Up to this time we have been mapping things generally in one plane but the charting of the atmosphere will be analogous to the mapping of a mine or mining operations. There will have to be plan views of different levels as well as vertical sections both north and south and east and west. The air map of the future may well look like the architects pastboard model of his proposed building.

Aerography holds forth a fascinating field for the scientist with pioneering instinct and no better contribution can be made for the progress and promotion of aeronautics both civil and military than in this field, at the present.

FIRST ANNUAL ARMY AIR TOURNAMENT RECORD

The First Annual Army Air Tournament which closed so successfully on May 16th, 1920 shows records of extreme interest. During the entire three days there was almost constant flying consisting of from normal flying to the most intricate air acrobatics and there was not even the slightest intimation of mishaps of any sort or character. The official records show for the formation flights and races a total of 14.8 hours of flying on the three days. Fully an equivalent amount of time was consumed in the acrobatic and combat contests. With practically 30 hours of the most difficult kind of flying in the three days especially with the adverse weather conditions that existed on the first day is considered an excellent and noteworthy record.

AIR SERVICE OFFICER TESTS OUT SAFETY SUIT

Lieut. J.B. Machle of Selfridge Field tested out a dreadnaught non-sinkable safety suit. This suit was designed for the use of aviators who are compelled to fly over water. Lieut. Machle jumped overboard into water registering 20° Fahrenheit and remained in the water for 35 minutes submerging himself many times. The result of this test was very satisfactory due to the buoyancy and water proofness of the suit. The required warmth is obtained by wearing the proper clothing underneath. The suit allows the necessary freedom of action for the pilot and its weight and bulk are not excessive enough to detract from the usefulness of the garment. In view of the fact that the U.S. Irving parachute for airplane pilots is now available it is of interest to state that the type of parachute harness used in connection with said parachute may be worn over the suit which is another point in its favor.

LANDING FIELD CONDITIONS ALONG THE BORDER

Good landing fields along the Border are few and far between but when they are good they are exceptionally good which makes the poor ones seem all the worse. With daily aerial activities it is hoped that all the fields necessary for constant safe cross country flying in this district can be secured.

From the Gulf of Mexico along the Border to McAllen, Texas, a distance of approximately 88 miles and from McAllen to Roma, Texas, a distance of approximately 70 miles, there are no municipal landing fields. Emergency landing fields are available at Ringgold, Fordyce, San Benito, Brownsville, Estrella Ranch and Pt. Isabel. In order to make the distance from the Gulf through McAllen to Roma, Texas a safe flying route, landing fields at the following points are very much desired: Roma, Mission, Donna, Mercedes, Falfurias, Alice, San Diego, Oakville, Kingsville and Hebrosville. The only existing field along this route which could possibly come under the classification of a first class field at the present time is the Army Airdrome at McAllen. So far Kingsville, Victoria, San Diego, Hebrosville and Falfurias have promised to cooperate in providing municipal landing fields. This action on the part of these few cities is extremely praiseworthy and it is hoped that within a month the other cities along this route may also be counted in on this necessary and extremely laudable undertaking.

The terrain along this route is fairly flat and either cultivated or covered with cactus and mesquite. Forced landings do not present a particularly serious danger except from the point of view that they invariably will in all cases result in a total wreck of the airplane on account of the number of irrigation ditches which cut up all of the cleared land which in addition is generally too soft to make a landing without "nosing over". In addition to the promised cooperation on the part of the cities mentioned above it is also considered possible that similar cooperation may be forthcoming from ranch owners and towns along the route to San Antonio for marking emergency landing fields there.

Proceeding westward from Roma to Laredo a distance of approximately 95 miles and from Laredo to Blocker's Ranch, a distance of approximately 60 miles the landing fields become even more sparse and especially so during the spring and summer months when everything but a few grazing fields is put in a state of cultivation. To eliminate the danger of forced landings through this area would be almost impossible as the terrain is nothing but rolling country covered with mesquite and disclosing but very few traces of civilization. On this second part of the route there is only one town of any size which could boast of a Chamber of Commerce and that is at Laredo, Texas. There are, however, places to land at Dolores Mines, Zapata, San Ygnacio, Texas. Only the former has a suitable landing field and at the latter two landing fields could be constructed with very little difficulty. It is to be hoped that emergency landing fields will be established at these points and also at Palafox, Bigford's Ranch, Blocker's Ranch and at Cleareno which is about 12 miles below Zapata. An effort to land at these places and arrange with the owners to mark fields with a circle and wind funnel will undoubtedly bring forth the necessary cooperation.

Northward from Laredo the main route of air travel is along the I and G. N. Railroad to San Antonio. This route could be made much more attractive and the danger minimized by arranging with the various village authorities and ranch owners to install landing "T"s thus designating to the travelling air men where safe landing could be made if necessity demands. There is a permanent landing field just east of the tracks and 1/4 of a mile north of Webb which is owned by Mr. Hill of Webb, Texas and it would take but very little work to make this field safe at all times. Mr. Hill's cooperation with the Air Service in this regard has been very magnanimous. At Cactus there is a good landing field somewhat east of the railroad track and about 1/4 of a mile north of the station. Again about three miles south of Artisia on the west side of the railroad track is a good all-year field which needs but little work in clearing out the remaining mesquite. Between one and two miles west of Cottula there are several good all-year fields which are available except at certain seasons of the year. At Dilly and Von Ormy there are good fields.

Turning back to the westward and journeying back to Blocker's Ranch to Eagle Pass, Texas, a distance of approximately 95 miles, and from Eagle Pass to Comstock, Texas, a distance of approximately 90 miles, is a country which is comparatively rough, broken with canyons, and arroyos and covered with mesquite which in this section grows to a height of ten or twelve feet. An excellent field is maintained at Eagle Pass which is a city of about 10,000 inhabitants and on the northerly route there is another excellent landing field at Del Rio with both oil and gas available. The Chambers of Commerce of these two cities are fully alive to the advantages accruing to their municipalities in having available landing fields and have done their utmost to provide all the necessary aid for airplanes enroute. These are the only cities or villages on this route and the remaining country is very sparsely settled with only an occasional ranch here and there. Landing fields to be used only in cases of absolute necessity have been spotted at points along this route and with which most pilots are familiar but the danger of disabling the plane is so great that such fields could not be used except in cases of forced landings. The only exception to this is a landing field at Blocker's Ranch near the Rio Grande River which has been used on several occasions. This field is of suitable dimensions and little work of clearing, marking and grading this field would materially increase its value.

Further to the west from Comstock, Texas to Hefeta to Sanderson, a distance of approximately 125 miles and from Sanderson to Boquillas, a distance of approximately 85 miles there are no towns of any size and the railroad stations consist generally of a depot, water tank and one or two houses. Landing fields for emergency purposes have been built by the Army Air Service personnel at the following railroad stations: Shumla, Langtry, Pumpville, Dryden, Longfellow, Tesnus, Marathon, Altuda and Alpine. These fields are all small being mostly two way fields of about 300 yards in length. Larger fields are almost impossible in this territory without considerable effort on account of the terrain being so rough and broken and larger level tracts are not available.

From Boquillas to Marfa via Presidio, a distance of approximately 120 miles and from Marfa to Bosque Bonita via Presidio a distance of approximately 175 miles there are municipal landing fields. At Almagordo, New Mexico there is a good field properly marked and which is being used by both commercial airplanes and planes from the Army Airdrome at Marfa, Texas when on cross country missions and also at Santa Fe, New Mexico there is a poor field which, however, is properly marked and improvements are being made by the Chamber of Commerce there upon the recommendations of the army officers from the Marfa Airdrome who have landed there on cross country missions. There are a number of good emergency fields in this portion of the route although most of them could probably be somewhat improved with very little effort. At Presidio, Texas there was formerly an excellent field but the building of a Polo Field on a portion of the ground by the army unit which was stationed there makes landing somewhat dangerous. At Hester's Ranch there is a good field about 500 yards square which has a three way approach. A small field at Fort Hancock, Texas allows for a safe landing under expert piloting. At Columbus, New Mexico there is a good field which is properly marked giving a two way landing with west winds prevailing. At Deming, New Mexico there is an excellent field on the race track but there is no marking on this field as yet. At Machita, New Mexico there is a good field which is properly marked allowing approach from any direction and at Garcia Ranch which is located near the Border Monument No. 67 there is another good field with approach from any direction.

In order to make this portion of the route free from all danger and available for daily aerial activities, landing fields should be established at Valentine, Sierra Blanca, Texas, Pecos, Texas, Roswell, New Mexico, Clovis, New Mexico, Las Cruces and Albuquerque, New Mexico. Undoubtedly these cities will be glad to cooperate in preparation of fields at these points.

Further west from Bosque Bonita to El Paso, a distance of approximately 120 miles and through El Paso to Lone Cabin Hatchet Ranch in New Mexico, a distance of approximately 65 miles there are some good fields.

Hurrying west from Lone Cabin Hatchet Ranch to Douglas, Arizona, a distance of approximately 115 miles and from Douglas to Dowling, Arizona via Nogales, a distance of approximately 215 miles, there is a municipal landing field at Tucson, Arizona named Macaulay AR-49. It is marked in the northwest corner in concrete. The field is somewhat square in shape and from 1500 to 200 feet in length each way. The ground is level and has been dragged and rolled and grass has been planted. The approaches from the east, west or south have telephone wires and on the north is a wire fence but there are no buildings. Generally level country in the vicinity affords an excellent facility for forced landings. The marking of the field is a white circle 100 feet in diameter which is made by a concrete band three feet wide in the center of the field. There is a wind indicator and cone in the northwest corner of the field. The accommodations are two steel hangars with aviation gas, oil, tools and repair equipment. There are no transportation facilities as yet although attendants are available.

There are emergency landing fields at Fort Huachuca, Arizona. One field is approximately 600 x 1200 feet with the longitudinal axis north and south. The prevailing winds are west and a poor white circle is in the north center of the field and the "T" on the north end of the field points toward the long axis. In general the field is level sloping generally north with grassy surface and excellent drainage making wet weather landing entirely feasible. There is a low stone fence on the approach from the east which has been whitewashed. There is a ditch on the north and barbed wire fence on the south with small boulders along the edge of the field. This field is 1/4 mile north of the wireless tower at the Fort and is 5200 feet above the sea level.

Another emergency field in the shape of an irregular rectangle 300 x 100 feet is at Naco, Arizona. This field has the longitudinal axis east and west with a possible approach from the west but is not marked. The surface is clay and has a slight slope to the east. The surface is smooth except at the west end of the field where there are road ruts and drainage ditches on the east and north, a 50 foot hill on the south edge of the field and telephone lines and also a 50 foot hill on the west, one fourth of a mile north east of Naco and just west of the Naco Bisbee road. The elevation of this field is 4600 feet. This territory is very rough and mountainous. From Douglas to Nogales, a distance of approximately 65 miles there are three mountain ranges to cross and with the single exception of Naco, which is a village of 300 people there are no towns between the two cities. The country between is so sparsely settled that there are no telephones closer than 30 miles of the border except at some of the army camps.

West of Nogales the country is even worse and the only settlement between Nogales and Dowling are isolated ranches and small mines. There is not even a small village between Nogales and Dowling. There is only one municipal landing field within this territory namely the one at Tucson, Arizona, which is about 70 miles north of Nogales. This field is very well kept and is large and smooth. At the present time the field is bordered on three sides by telephone lines but these lines will be removed in the near future and 40 acres of land will be added to the present field.

The Tucson field was secured as a result of an energetic campaign carried on by the Tucson Chamber of Commerce and by Mr. R. E. Fishburn of Tucson. This field is of no benefit to flyers along the border as it is too far away. At the present time there is only one emergency landing field between Douglas and Dowling. At Naco a small field has been cleared and leveled off for the use of aviators between Douglas and Nogales. This field is very small but it has been used. In fact a forced landing on this emergency field saved the government a considerable amount of money. An oil lead on a plane broke and the pilot had to land immediately. The country around Naco is very rough and but for the opportunity of landing on this field the plane would have been destroyed in landing at any other point with a good chance of injury to both the pilot and passenger.

The Army Air Service is building a landing field at Ajo, north of Dowling. There has been very little aerial activity west of Nogales and data on fields in that territory is very meager. There are no towns to call upon for assistance in any such work and the building of these fields in this territory would have to be done by the government. A field at San Miguel, Arizona which is the converging point for several roads would be of assistance as this is the only point at which a field west of Nogales could be established without enormous amount of labor. It is to be hoped that all these points and many more will work together in establishing landing fields so that the blazing of this first trail through the south and southwest from the Gulf of Mexico to the Pacific Ocean can be made available as safe military and commercial routes within the present year.

LIBERTY IGNITION SYSTEM INSTRUCTION SET

A class at the Air Service Vocational Training School at Aberdeen, Maryland has recently developed an interesting test board for instruction purposes. The apparatus used consists of a complete ignition set as used on the Liberty 12 cylinder engine mounted and operated on an upright panel. Many working parts of the mechanism are open to view, as are all leads and connections, making it easy to trace the path of the current and to understand the general method of operation. Moving parts of the outfit are driven by means of a small electric motor mounted behind the instrument board. The gears, pinions, etc., used in transmitting the power from the electric motor to the distributors are Liberty engine parts.

An interesting feature of the board is that should it for any reason become of no further use for instruction purposes, it can be utilized to advantage in the repair shops as a test panel.

CAPTAIN CLAYTON BISSELL LEAVES THE FIRST PURSUIT GROUP

The officers of the 1st Pursuit Group, Kelly Field, Texas in general reluctantly bid farewell to Captain Clayton L. Bissell who has received an order to report to the Director of Air Service, Washington, D.C. for duty. This officer has a splendid record and was one of the first to join the Air Service after graduating from the 1st Officers' Training Camp at Fort Benjamin Harrison, Indianapolis, Indiana in 1917. Upon his graduating from the R.O.T.C. he was transferred to the Aviation Section of the Signal Corps and assigned to the Royal Air Force ground school at the University of Toronto, Toronto, Canada. Upon the completion of his training he received his R.M.A. In addition to receiving this he was also given the Royal Air Force rating of Military Aviator and was sent to Taliaferro Field, Texas as instructor.

He was sent overseas in January 1918 and was assigned to the Royal Air Force in England for scout training. After completing this course he was assigned to the 148th Squadron, an all American outfit which was attached to the English Squadrons on the British front. He served through all of the great offensives and put in 185 hours over the lines. He has 8 official victories to his credit. When the 148th Squadron was transferred from the British to the American front Capt. Bissell was transferred to the 41st Squadron, 5th Pursuit Group as flight Commander. Later he was placed in command of the 638th Pursuit Group. He remained in command of this group throughout the remainder of his career in France and Germany. Shortly before leaving France he was promoted to the grade of Captain.

Upon his arrival in this country he was sent to Kelly Field, Texas for border duty and was placed in command of the 27th Squadron and remained in charge of this squadron until ordered to Washington, D.C.

He was awarded the Distinguished Flying R.A.F. Cross for skill and gallantry overseas. The following is quoted from the official record:

"On October 28th, this officer with his flight attacked 8 Fokker Biplanes and after firing a short burst succeeded in shooting down one E.A. which crashed North of Jenlain. He was then attacked by 3 other Fokkers but out maneuvered them and finally shot down one which crashed close to the other. He finished this fight about 200 feet from the ground and was being severely machine-gunned by enemy infantry. This officer has served over 4 months with his squadron and has destroyed 4 E.A. and driven three out of control. His courage, skill and disregard of danger have been worthy of the highest praise."

PHOTOGRAPHIC MOSAIC OF CAMP BRAGG COMPLETED.

The 14th Photographic Section at Pope Field, Fayetteville, North Carolina in command of Captain John Howry has completed the photographic mosaic of the Reservation and Artillery Fire center. The mosaic covers over 400 square miles of territory and it is scaled 1-10,000.

The photographs were made with the new Air Service K-1 camera taking a picture 18 x 24 C.M. This camera is a great improvement over the L type of camera 4 x 5 used for training purposes during the war, particularly because of the wide expanse of territory it covers.

In the making of this mosaic 10 1/2 rolls of film were used the length of which would be approximately 787 1/2 feet and a total of 945 exposures were made.

The entire mosaic was assembled and mounted at Pope Field and measures 16 x 6 1/2 feet. It was made at the request of the Chief of Artillery.

Reproductions of the original are now being made at the U. S. School of Photography, at Langley Field, Hampton, Virginia. Copies will be furnished to Artillery and other arms of the service for instructional purposes.

ENLISTED MAN MAKES PARACHUTE JUMPS

An interesting Aerial Exhibition was given in Corpus Christi, Texas, Tuesday when two planes from the Air Service Mechanics' School piloted by Lieut. Harry Weddington, Officer in Charge of Training, with Sergeant Kemenski, an instructor in the parachute department of the school, as passenger, and Lieut. J. S. Eldredge, Officer in Charge of the Parachute Department, flew down from San Antonio, Texas, and gave a live parachute jump for the benefit of Recruiting. The planes left Kelly Field at 2:45 in the afternoon, arriving at Corpus Christi at 4:25. Landing was made at Camp Scurry, now abandoned. Lieut. Weddington piloted the plane, a DH-4 B, for Sergeant Kemenski to jump. Lieut. Eldredge took charge on the ground. Sergeant Kemenski jumped from 2,000 feet from the rear cockpit of the plane. He gave a very good exhibition of side slipping and landed exactly in the center of the small flying field which was the mark that had been decided on previous to the jump. The exhibition was a good testimonial for the U.S. Type A Army Parachute. The jump was made in a fifteen mile wind. No trouble was experienced by the jumper in guiding the parachute by side slipping to just where he desired to land. In making practice jumps a good bit of responsibility rests with the pilot who is the man to judge just when the jumper should leave the plane so that he can land to his best advantage. Sergeant Kemenski was released over the ocean and dropped back just far enough to land in the field.

RIGGING AND SPEED

It is the natural desire of every pilot to have his particular machine the fastest in his flight squadron or group. Laying aside the fact that a fast plane must necessarily have a good power plant and be in good condition the correct alignment of a plane determines its speed. It will pay pilots who find some slight defect in rigging, such as wing heaviness, to glance over the entire alignment of the fuselage before giving the mechanic orders to increase or decrease the droop. Many times the fuselage is slightly out of line causing the stabilizer to tilt either way. When additional droop or a change in the angle of incidence is put in a plane it corrects the fault and gives the plane more stability, but because the first cause of the trouble has not been remedied the increased droop causing greater resistance pulls against the stabilizer-cutting down the plane's speed slightly.

Sometimes too great a dihedral angle will lower a plane's performance. It will pay a pilot who finds another plane of the same type slowly but surely slipping past him to check his dihedral. It is better from a standpoint of speed to have a slightly smaller dihedral than a large one. If a smaller dihedral affects the stability of a plane the wing tips from the inter-mediate strut on out can be "washed out" slightly. This will increase the stability and the ease with which a plane rides bumps, it will also increase the sensitiveness of the ailerons. One of the principles of the speed of the French Spad and the American Le Pere is the fact that they have no dihedral. Decreasing the dihedral will mean from two to five miles an hour increase in speed. It will also increase the landing speed slightly, but some sacrifices must be made to attain performance.

A good propeller naturally stands for speed, but how many pilots are there who think to cover up a propeller when in the sun to protect its finish from becoming blistered, and to protect it from the weather when the plane is standing even for an hour at a time. The mechanic should keep the surface polished at all times. Care of the propeller aside from lengthening its life will not make such a great deal of difference in the plane's performance but it may add just a mile or so an hour to the speed of the plane but by picking up a mile here and a mile there we are soon able to slide past other planes whose pilots wonder how it is done.

WELCOME METAL AEROPLANES

Announcement has just been made of a new aircraft corporation in New York which is to manufacture and sell all metal airplanes. It has been felt for a long time that the added efficiency of the all metal plane both in operation and upkeep will assist the development of commercial aeronautics to a large extent. Naturally this plane can stay in the air no better than its brother of wood and fabric failing its motor power and so the question of engine failure is just as much of a problem here as before. However, that question as a problem has been rather satisfactorily solved by the use of multiple engined planes where the chance of motor failure and its attendant dangers is reduced to a minimum and this solution is just as applicable to the all metal plane as to any other.

The all metal plane is fireproof and weather proof. These are two highly essential factors from the point of view of both military and commercial use. In the former case the danger from fire which in a wood and fabric plane are always omnipresent is practically eliminated completely. As to weather proofness, this is a point of decided value from the point of view of upkeep. Depreciation is slight as compared to wood and cloth and also the necessary truing and tightening is eliminated to a large extent. Where the life of a plane may be as high as 150,000 service miles today this figure can be considerably enlarged in the case of the metal plane.

A further advantage of metal construction is an old advantage in a new place, namely the fact that with metal construction the necessity for struts and wires is largely eliminated on account of the inherent strength of the constructing medium. The scarcity of wood and fabric relative to the obtainability of metals is a factor in its favor as is also the fact that the discarding of struts and wires removes a great deal of parasitic resistance. The removal of this resistance works advantageously in several ways. It may mean that one can obtain equivalent speed with lower horsepower or that the additional horsepower is a reserve or that the plane can accomplish greater speed than heretofore as compared to others of equivalent size and horsepower.

The development of the all metal plane to a size that will allow its operation as an economical unit within the scope of the activity to which it is to be applied should in all probability assist materially in the advancement and rapid expansion of commercial and military aeronautics.

At present this new corporation is offering the following character of craft as described below:

Type	- All-metal monoplane.
Span	- 48 feet - 6 inches.
Length Overall	- 31 feet - 6 inches.
Height to top of cabin	- 10 feet - 2 inches.
Motor	- 6 cylinder, 165 H.P., 1400 Rev.
Cabin capacity	- 6--8 persons, including pilot.
Weight of machine empty including cooling water	- 2245 lbs.
Gross weight	- 3695 lbs.
Fuel capacity, at full speed, fully loaded	- 6 - 7 hours.
Fuel capacity, at most economical speed, fully loaded	- 10 hours.

Landing speed, fully loaded	- 50 miles per hour
Average speed	- 112 miles per hour, at 12,000 ft. altitude, fully loaded
Climbing speed	- 12,000 feet in 35 minutes, fully loaded.

As this airplane has been especially designed for passenger traffic unusual attention has been given to the construction and arrangement of the passenger and pilot's cabins.

The pilot's compartment is arranged for two people and is fitted with dual control mechanism so either person can act as pilot.

The passenger cabin is entirely enclosed with suitable windows in the sides and in front, and it is fitted with two, large comfortable bucket type front seats, and an especially wide rear seat, which holds three persons, making the normal cabin capacity five persons. The cabin has large doors on either side affording easy entry and exit for the passengers.

The interior of the cabin is luxuriously upholstered with very comfortable cushions and arm rests, and all modern accessories, such as would be found in high class limousine cars. All seats are fitted with safety belts, and the floor is so arranged as to provide comfortable foot rests.

The windows in the sides of cabin are arranged so they can be lowered to admit fresh air, if desired. There is also a large space provided for baggage, access to which is by means of a hinged rear seat cushion. By means of a suitable window in the front cabin the passenger can observe the principal instruments on the pilot's dash, such as revolution, height and speed indicators.

Owing to the construction of the wings they are easily and quickly removed and replaced and as no truing up is required this can safely be done by any mechanic, thus making storage easy.

The landing chassis is especially designed for commercial airplanes and is made with shock absorbing devices in all four load carrying struts, thus making landings as free from harm to the machine as possible, and as the wheels are located well forward there is little danger of the machine nosing over, if landing on soft ground.

NEWS OF THE SQUADRONS

135th Observation Squadron, Fort Leavenworth, Kansas

During the week nine officers and forty-two enlisted men composing Flight "A" of the 135th Observation Squadron, Post Field, Fort Sill, Oklahoma were ordered to Fort Leavenworth, Kansas for duty in connection with the officers' School at this post.

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Lieutenants J. W. Adams, James F. Armstrong, J. D. Givens, M. A. Norton, P. T. Wagner and K. N. Walker, with four enlisted mechanics, left Post Field in five De Havillands enroute for Fort Leavenworth. Lieut. Walker's forced landing at Hennesy, Oklahoma, resulted in a total wreck and his return to Post Field by rail. Lieut. M. A. Norton, after losing his bearings, landed for gas and broke the landing gear and propeller at North Platte, Nebraska. Lieut. Adams broke landing gear, propeller and radiator upon landing at Fort Leavenworth so that of the five planes that started, only two arrived in good condition.

A sudden rise in the Missouri River necessitated a hurried move to the field originally selected.

A great deal of difficulty has been experienced due to poor grade of gasoline used which was purchased locally. The gasoline used caused a number of forced landings and very near ended disastrously for Lieut. Givens who was compelled to crash his plane in landing. Flying has been discontinued until the arrival of high test gasoline from Fort Sill.

Selfridge Field, Mt. Clemens, Mich.

During the week former Lieut. Harry E. Slater, now a reserve flying officer, accompanied by Pathe Weekly Photographer, visited Selfridge Field for the purpose of "shooting" a weekly news item for the Pathe Weekly. This publicity was obtained in the interest of recruiting and as this picture will be widely shown it is believed it will be of considerable aid in the present recruiting drive.

Air Service Observation School, Ft. Sill, Okla.

The observation school at Fort Sill is having the hardest kind of a time in trying to organize itself in order to start the School of Aerial Observers on scheduled time, - June 1st. This is due entirely to the unprecedented shortage of personnel both officer and enlisted. The bulk of the instructional work is being done by Captains W. H. Murphy, B. H. Mills and F. Bradley.

Captain Follet Bradley, Field Artillery has been detailed to the Air Service and has been appointed Director of the School. It is hoped to fill the instructional vacancies from the graduating personnel. However, the main difficulty to be faced is the fact that practically all the best enlisted men will be discharged within the next ten days, which will prove disastrous unless new recruits are secured.

Recruits are not easily secured in Oklahoma. Four recruiting trips were made during the week to nearby towns, but without success. The natives although friendly, and keenly interested in aviation, show no desire whatsoever to enlist. The reason is a very apparent one. First, this section of the country is largely devoted to farming. The help situation is acute insofar as the farmer is concerned. Notwithstanding the fact that they pay good wages. This situation is due entirely to the fact that the oil fields thru high wages have the first call. Therefore both the Air Service and the farmer are out of luck.

Landing speed, fully loaded	- 50 miles per hour
Average speed	- 112 miles per hour, at 12,000 ft. altitude, fully loaded
Climbing speed	- 12,000 feet in 35 minutes, fully loaded.

As this airplane has been especially designed for passenger traffic unusual attention has been given to the construction and arrangement of the passenger and pilot's cabins.

The pilot's compartment is arranged for two people and is fitted with dual control mechanism so either person can act as pilot.

The passenger cabin is entirely enclosed with suitable windows in the sides and in front, and it is fitted with two, large comfortable bucket type front seats, and an especially wide rear seat, which holds three persons, making the normal cabin capacity five persons. The cabin has large doors on either side affording easy entry and exit for the passengers.

The interior of the cabin is luxuriously upholstered with very comfortable cushions and arm rests, and all modern accessories, such as would be found in high class limousine cars. All seats are fitted with safety belts, and the floor is so arranged as to provide comfortable foot rests.

The windows in the sides of cabin are arranged so they can be lowered to admit fresh air, if desired. There is also a large space provided for baggage, access to which is by means of a hinged rear seat cushion. By means of a suitable window in the front cabin the passenger can observe the principal instruments on the pilot's dash, such as revolution, height and speed indicators.

Owing to the construction of the wings they are easily and quickly removed and replaced and as no truing up is required this can safely be done by any mechanic, thus making storage easy.

The landing chassis is especially designed for commercial airplanes and is made with shock absorbing devices in all four load carrying struts, thus making landings as free from harm to the machine as possible, and as the wheels are located well forward there is little danger of the machine nosing over, if landing on soft ground.

NEWS OF THE SQUADRONS

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France Field, Cristobal, Canal Zone

During the week a telegram was relayed to France Field thru Major P. D. Prescott, requesting that the airplanes make a flight to Pese Herrera Province, R.F. The telegram stated that the inhabitants had cleared a level field 400 meters long and over 300 meters wide. The message was signed by B. Polo, Governor of the Province.

Everybody at France Field is now a basket-ball enthusiast, for there is a six-team league on the post. Each of the departments has a team and two games are played at the "y" each of the first five nights of the week. At the end of the week prizes are awarded the winning team in the form of hunting passes, etc. The Aero Supply team won this week, but competition is strong and next week that team will have a hard fight to stay in the lead. From these six teams the France Field Basket Ball team will be picked to play in the Service League of the Zone. Basket ball is one of the leading wet season sports in the Canal Zone.

NEWS FROM SQUADRONS ON THE BORDER

FIRST PURSUIT GROUP, KELLY FIELD.

Captain Donaldson returns to duty

Captain John C. Donaldson has returned from leave and is now on duty as Commanding Officer of the 94th Squadron. The "Hat-in-the-Ring" boys have missed their young Commanding Officer while he was away on leave and they are very glad to have him back again. The Officers of the Group join in extending him a hearty welcome home.

Training at Kelly Field

In assisting the recruiting parties the personnel at Kelly Field are using airplanes for about everything that an airplane can be used for. In addition to the liaison flights and long distance exhibition patrols they are carrying officers back and forth on official business, bring expired term men back for re-enlistments, and even lending a hand to other outfits from Kelly Field by dropping mail and daily newspapers to them. To date they have ferried in three recruits and three men for re-enlistment. That is better than six recruits because three well trained men beat three new "Rookies" any day. Also officers have been carried to and from the recruiting parties on three occasions, thus enabling them to transact official business in person with clearness and dispatch. Lieutenants Stewart of the 95th Squadron and White of the 94th Squadron have been making most of the biplane liaison and passenger carrying flights.

The SE5's while primarily used for long distance patrols and demonstration flights, often do other duty. Lieut. T. W. Blackburn carried mail to Taylor during the week. A broken water connection forced him to land at Camp Mabry, Austin, on his way home. The following day Lieut. Tourtelot carried a new connection to him in another SE5 plane, both returning the same evening. It so happened that Camp Mabry which is well drained was the only place to land in the vicinity of Austin.

Speaking of the exhibition patrol, it is reported that the two recruits signed up at Taylor, Texas enlisted on the strength of the aerial demonstration. Flying gets 'em, that's all there is to it.

A hurry up call came from Post Headquarters for a formation of five planes to give a demonstration flight for the Ford Educational Motion Picture Weekly, which is shown in 10,500 theaters throughout the United States. Captain Brooks announced that he would lead the formation and placed the matter in the hands of the Group Operations Officer.

In less than thirty minutes from the first call, the plane formation was assembled and in the air. The operator was well pleased with the show in every respect. He was kept so busy with his camera that he cut his hand on a part of the machine in his haste to catch all of the maneuvers.

FIRST DAY BOMBARDMENT GROUP

Recruiting and Securing Landing Fields

The First Day Bombardment Group with complete land and air equipment and personnel have started on a trip through southern Texas.

The object of the trip is twofold in its purpose. One is to obtain recruits for the Army Air Service, the other, which is equally as important, to the Air Service as well as to commercial Air Service, is the securing and locating of landing fields thru the cooperation of Citizens Trade Bodies. The trade bodies are being made acquainted with aerial navigation and its possibilities and the impression is being forced upon them that travel by air will be as commonplace as travel by automobile within the next few years. Mr. All-of-us will not think any more of stepping aboard an airliner than he does at present of travelling in a street car or train. Indeed travel by air in Texas is fast reaching that stage now. Many civilian craft are operating in Texas.

Efforts from now on will be devoted to securing landing fields whenever it is practicable to do so.

Other Planes in turn have Difficult Time

Lieut. Nelson returning from Eagle Pass was unfortunate, for when near Hondo his motor cut out completely and he crashed in the mesquite. His passenger, Lieut. Berman, did not have his safety belt fastened and when the plane turned turtle he was thrown a distance of forty or fifty feet, fortunately into a plowed field and was not severely injured.

Lieut. Shankle was caught in a storm near Corpus Christi and as he expressed it "had the hardest fight of my life". Lieut. Shankle had flown to McCoy to aid Lieut. Beaton who was down there. The following is his own account of the incident:

"For a moment I thought that I had joined the naval Air Service and had made a forced landing in the middle of the Atlantic. I went to McCoy to take a propeller and radiator to Lieut. Beaton. Soon after I landed a full sized cloudburst hit us. All took refuge under the wings of my plane but the water followed us. As the water rose higher and higher bugs, snakes, and even mud turtles joined us and finally drove all of us out. Even Sergeant Jensen who is noted for the altitude of his head could not reach air. We made a mad rush for the road and finally reached a house with no casualties. Later the sun came out and I flew back with Lieut. Beaton while Lieut. Billet and Sergeant Jensen proceeded home by train".

New Name for Tail Skid

Lieut. Beaton was forced to land in a cotton field near Beeville, Texas. The old farmer inspected the field and said, "I don't estimate the wheels done much harm but that stinger (tail skid) tore up quite a bit."

Commanding General Interested Spectator.

During the week an Artillery Reglage was conducted in cooperation with the 2nd Field Artillery. On Tuesday Brigadier General George V. H. Moseley, Lieut. Colonel Lewis F. Craig, Captain C. F. Hogan, Lieut. David Loring and Lieut. LeCount H. Slocum were flown on Puff Target reglage at Kelly Field. General Moseley was very much pleased with the flight and is very anxious to have his officers thoroughly trained and experienced in aerial observation.

Wednesday the first practice shoot was made at Camp Travis with Lieut. Harry Johnson pilot and Lieut. B. A. Doyle observer. An SCR 73 wireless telegraph set was used on the plane and an SCR 59 receiving set on the ground. The work was a decided success and will be continued throughout the week.

Passenger almost causes Disaster

On Saturday five planes were caught in a storm. Lieut. Dunton and Lieut. McIver ran into the storm on the return trip from Beeville and both had a very hard fight to make the home airdrome.

Lieut. Dunton's passenger became excited because of the rough air, fog and rain, and jammed the controls while they were near the ground. Lieut. Dunton had his hands full fighting the storm but when his passenger entered the struggle it came near ending disastrously. However, he righted the plane and climbed clear of the ground.

Officers of the Air Service Mechanics' School, Kelly Field have merry time at "get together" dance

Tuesday evening the officers of the Air Service Mechanics' School held a get-together session in the shape of a banquet at the Gunter Hotel at San Antonio. This was the first gathering of its kind ever held in the school. It was held partly as a celebration for the fact that the Air Service Mechanics School is now a Service School and partly so that each officer would have an opportunity of seeing the un-official side of his brother officers. The banquet was noted for the fact that real food was served which is something that does not happen every time in parties of this sort. After the coffee was disposed of and the long, black cigars were lit, the time for speech-making began. One by one the officers arose and spoke on various subjects. The speeches though extemporaneous were polished, pithy, and full of wit. Every officer had something good to say. Every man had his horn out and had left his hammer at home. Towards the close of the evening the party broke up, but not before it was decided to have another gathering of the same kind in the future. One of the subjects discussed during the banquet was the coming formation of the Air Service Mechanics School Officers' Club. It is the determination of every officer to have this club so attractive that it will be a place where an officer would rather stay in camp than to go into town. Thirty-seven officers were present at this meeting.

AERONAUTICS TO BE A FEATURE DURING THE OLYMPIC GAMES

In connection with the Olympic Games this year in Antwerp, Belgium an aviation fete is to be held to which members of the different allied armies have been invited to attend.

The following is quoted from the program of events and gives an indication of the tournament in which military aviators will be permitted to participate. Dates of games to be published later.

Article 1. This event will simulate the battle of one plane against another, by two planes. The accuracy of the fire will be determined by means of machine gun photographs. (Note: If control by camera gun does not give satisfaction, the judgment will be rendered by calculation or other available means)

Article 2. The event is open to all military aviators of the allied nations or their associates still under arms or demobilized. Each nation will be represented by four planes, two single-seaters and two two-seaters, and as a team, one single-seater and one two-seater.

Article 3. Only airplanes constructed by allied countries or associates will be admitted in the event.

Article 4. The pilots of the winning outfit will receive the Aero Club of Belgium Medal.

Article 5. A program made in the presence of one of the delegates of each nation participating will fix the order of combat and will designate the opponents he will have to combat. The fight will take place single-seater vs. single-seater, biplane vs. biplane. Two entries from the same country will not be able to fight against each other.

Article 6. If an entry does not leave at the moment set, a substitute should be sent to replace him. If the latter is unable to leave the Contest Committee will make such decisions so as not to harm the interest of the opponent.

Article 7. The mock combat will be carried on as follows:

(1) The opponents will take the air at given signals and immediately proceed to circle a point previously designated to each respectively.

(2) The signal to commence fight will be given after five minutes and will be made by a Very's light.

(3) At this moment the contestants will rush one to the other and engage in combat which should take place between 500 and 1000 meters above a zone and within the perimeter of a circle to be indicated to contestants beforehand.

(4) During the combat the opponents must take by means of the photographic gun camera, eight snaps according to special instructions which will be given beforehand to the contestants.

(5) The fight will last ten minutes and will be indicated from the ground by means of Very's light, at which signal the contestants will as soon as possible land at the turning point.

Article 8. Any contestant who has taken his eight photographs before the ten minutes are up cannot leave the combat zone before the signal "combat ended". The same applies to anyone who has a gun stoppage.

If motor trouble or other machine failure causes a contestant to land before the signal, his team mate will take over the combat with the same opponent to complete combat time so interrupted. The snap shots taken by the contestant and his team mate will not in any case exceed eight in number.

Article 9. In the combat of the two-seaters the photographs must be taken by the observers' guns.

Article 10. The Contest Committee will be composed of delegates from the different participating countries.

Entry before the fifteenth of June.

Prizes: 1st Prize. 7,000 fr.
2nd Prize. 2,000 fr.
3rd Prize. 1,000 fr.

Lieut. Col. Hartney Makes Inspection Tour and is forced to land enroute to Mitchel Field, Long Island.

During the week Lieut. Colonel Harold E. Hartney, in the Training and Operations Division, flew from Bolling Field, Washington, D.C. to Mitchel Field, New York in an SE-5 single seater pursuit plane.

After taking off at Bolling Field he encountered stiff head winds and was compelled to land at Aberdeen, Maryland for gas. After leaving Aberdeen nothing unusual happened until he was directly over Coney Island when the engine started to die down and finally stopped entirely with less than 3000 feet altitude. He had his choice of landing in the water or in the Gravesend race track which appeared to be within gliding distance. Arriving at the race track he had only 400 feet of altitude which was not sufficient to allow him to maneuver his plane to land down wind. Seeing that the race track was full of hurdles and other obstructions he put his plane in a side slip and landed very heavily breaking a wheel and a number of wires but fortunately escaped injuring himself. He was ferried the balance of the distance to his destination by one of the pilots from Mitchel Field flying a DH4 B plane.

Testing out a Twin Engined DH-4

Arriving at Mitchel Field Colonel Hartney tested out a remodeled DH-4 twin engined plane. Considerable difficulty was experienced in the test because of the fact that it was impossible to hold the pressure in the gas tanks and the smoking of the motor. In the second test one motor cut-out entirely in taking off compelling him to make a straight way landing. Once in the air the machine handled very well, has good lateral control and good maneuverability for a twin motored plane. Colonel Hartney has made a number of recommendations to remedy the defects which he found.

Witnesses Test at Atlantic City

From Mitchel Field he flew to Atlantic City to attend the third Pan American Aeronautical Congress arriving there just in time to witness the demonstration test of Brady's fire proof paint for airplanes. The airplane was coated with this paint and the wings were covered with gasoline and oil. After ascending it was set on fire, and the pilot brought the plane down without damage to the structure or the fabric proving definitely that a wood and fabric wing covered with this compound would not burn. The inventor stated that the compound was lighter in weight than the ordinary paint per volume.

Comments on the Larson Metal Airplane

Colonel Hartney stated that the Larson metal mono-plane was one of the most unique airplanes that he had ever seen. Everything about it, inside and out, is metal with the exception of the propeller which is of wood. Even this is unique because of the fact that it is the regulation JN-4 propeller and has not been altered whatsoever. The plane is equipped with 160 H.P. engine, low compression, and carried 8 passengers to a height of 16,000 feet. He was told by the demonstrator that it would cruise on 5 gallons of gas per hour and maintain a speed of 65 miles per hour. The plane is elaborately upholstered and is made of duralumin channel construction. The controls are extremely light and balanced almost as lightly as the famous Morane mono-plane. The Larson Company stated that they would send two of these planes to Washington for demonstration.

Inspection of Landing Field.

Leaving Atlantic City he flew to Perth Amboy, New Jersey to inspect the landing field. The following is quoted from Colonel Hartney's report: "An excellent landing field with good approach, dimensions 1600 x 400 feet, is one half mile north west of the town of Perth Amboy, on a direct line from Washington to New York. It is 1/2 mile northwest of the town and 1/2 mile west of 5 large oil tanks, high test gas is available. The surface is good and will make an excellent emergency field for traffic between New York and Washington.

The balance of the trip from Perth Amboy to Bolling Field was made in 78 minutes without incidents of any kind.

NEWS FROM THE STORAGE AND REPAIR DEPOTS

Souther Field

The storage of all reserve planes at Souther Field, Americus, Georgia was completed during the week by assigning every available man and laborer on the field to this work. All reserve planes are now stored in Hangars 10, 11 and 12. The wings are stored in double tiered racks and on top of these racks are placed the smaller parts such as ailerons, rudders, etc. The fuselages were placed end-to-end in hangars 10 and 11. Hangar 11 contained approximately 65 fuselages. All other parts are stored in the extra space in hangar 10.

The Construction Division of the Army has been requested by the Director of Air Service to remodel one of the cadet barracks at the field and make it suitable for married officers' quarters. It is not known when this work will be started, but this action is an indication that Souther Field will probably be continued as an Air Service Field.

Repair Depot, Indianapolis, Indiana

During the week there were completed at the Aviation Repair Depot, at Indianapolis, Indiana one DH4 and one JN6H1 planes and 9 Hispano Suiza Model A and 5 Liberty 12 engines. The production at this station is on the increase. There are at present six officers, 95 enlisted men and 204 civilians employed in the Engineering Department.

Wilbur Wright Depot

In order to advertise and stimulate the work of recruiting for the Air Service in this vicinity, the Wilbur Wright Air Service Depot furnished two floats for the Ship by Truck parade in Dayton, Ohio. Each float was mounted on a truck and a trailer, and was prepared in such a manner as to show the various educational advantages offered by the Air Service and the opportunities extended to men who enlist for learning a trade that would be of value to them in civilian life.

One float was prepared by the School of Motor Transport Work now being conducted at this depot by the Education and Recreation Officer. A chassis and several motors were mounted, all opened up and taken apart, in a way that showed very clearly and quite strikingly the work being done at this school and the practical methods used in teaching.

The other float was prepared by the Air Service Stockkeepers' School. It consisted of a De Haviland 4 fuselage, complete with motor and tail services. The old De Haviland was in complete disrepair with the fabric covering all removed and all the interesting parts exposed to public view, causing no end of comment. It was easily the best float in the parade.

Aviation Repair Depot, Montgomery, Ala.

Lieut. Colonel H. B. Clagett, Department Air Service Officer, Southeastern Department, left Friday for Camp Jackson, Columbia, S.C., flying a De Haviland remodeled at this depot with the 172 gallon gas capacity.

Lieutenants Barnett and Moran delivered two De Haviland Fours to Americus thus completing the delivery of twelve De Haviland Fours by air.

During the week the Board for examining applicants for flying training examined two civilians.

During the week a boxing entertainment was held for the entertainment of the personnel of the Depot. A number of interesting bouts were held with a jazz band to help keep things humming.

By far the most interesting event was a Battle Royal with four colored men participating.

They paired off some until the first man was knocked out of the ring. Then the two smallest men went after the largest man. For fully twenty minutes they fought, but finally the two small men had to give up to the larger man. The whole of the entertainment made up a successful evening.

ACTIVITIES OF THE ARMY BALLOON SCHOOL, ARCADIA, CALIFORNIA

Ground School Course

The six weeks common ground course for Flying Cadets, commenced on March 22, 1920, the class consisting of twenty-seven cadets from the ranks of the Air Service, from all parts of the country. This course included the following subjects: Captive Balloon; Theory of Ballooning; Meteorology; Radio; Wind; Physics; Topography; Army Paper work; Organization and Administration; Telephony; Customs of the Service; Chart Room; Courts Martial; Military Hygiene; Field Service Regulations; Mechanics; Gas; Military Correspondence; Mess organization; Calisthenics; totaling 228 hours, and including a large amount of laboratory and field work. At the end of the six weeks common ground course, two weeks were spent in reviewing and examinations. The five weeks aerial ground course for Flying Cadets began on May 17th, 1920. The course includes the following subjects: Artillery; Aerial Photography; Observation; Aerostatics; Aero Dynamics; Topography; Laboratory and Field Work; Panoramic perspective; Army Regulations; Manual of Interior Guard Duty; and Pigeons; covering 190 hours. The fifth week is devoted to examinations. A great deal of laboratory work is taken up in this course.

Recruiting and Photographic Trip

The recruiting party returned today from a six weeks' tour by trucks. This trip covered approximately 1200 miles, via Bakersfield, Modeste to Oakland and San Francisco and return via San Jose, Salinas, San Luis Obispo and Santa Barbara. The party was commanded by Captain George F. Parris and consisted of 60 picked enlisted men and non-commissioned officers from various companies. This recruiting party reached the first Pacific Aeronautical Show at San Francisco, in time for the opening of the show and remained after the show was over for approximately ten days, during which time the city of San Francisco was photographed for the Chamber of Commerce. Pictures were taken, particularly of the docks and piers along the water front; the Type R Observation Balloon being used on a barge which was towed. At night the balloon was bedded down on the barge. The balloon proved especially useful in this work which the Chamber of Commerce has been endeavoring unsuccessfully to accomplish with civilian aeroplanes for some time. Excellent results were obtained by using the balloon for making the necessary obliques and panoramas. While at the Aeronautical Exposition, the 37,500 cubic foot capacity Type R. Observation Balloon was inflated, and a 19,000 cubic foot Free spherical balloon also inflated with air and exhibited at the Civic Center in San Francisco, attracting a great deal of attention and proving one of the chief features of the show. The spherical balloon was inflated with hydrogen and three flights were made over the city and bay, and back over the city and mountains. On one of these flights, Captain George F. Parris, piloted Major B.H. Atkinson and marked expansion was noted while passing over the heated air currents from the city, and marked contraction occurred when the balloon passed over the bay; the balloon descending almost to the surface of the water but not striking the same. Lieutenant W.E. Galentine, piloted Sergeant S.C. Burnham on one of these flights, making a trip of about 100 miles.

Students manifest interest in Balloon Equipment

On the return journey the Type R Captive Balloon was maneuvered 56 miles by land and water, being towed by launch to Alviso, and thence drawn by the winch and by hand over land to San Jose. At every important town halts were made and the observation and free balloons were inflated with air. The school authorities were consulted and special invitations were issued to the juniors and seniors of the high schools to visit the balloons, using Army trucks with an idea of interesting them in Aeronautics. Everything of interest was carefully explained, including the operation of the winch; telephone system; chart room; balloon operation, including inflation, deflation and bedding down; parachutes; and the elements of the theory of ballooning.

Military Activities of Seaplanes

Telegraphic instructions were received from the Department Air Service Officer at San Francisco, to make certain observations on Seaplanes flying from San Diego to San Francisco, and to report the results of the observations by wire to various forts and military posts, extending over an area of about 520 miles. At 1:00 P.M. Thursday Lieutenant Harold E. Weeks, commanding, Lieut. Benjamin B. Cassidy with 77 enlisted men and a truck train proceeded 41 miles from Arcadia, to San Pedro, reaching there in about three and a half hours, and within two and a half hours thereafter, telephone lines were strung, the balloon bed was built, radio station in operation, and balloon inflation begun. 175 cylinders of hydrogen gas were put into the balloon that evening and 25 cylinders reserved for topping up early the following morning. Camp was pitched early in the evening, and at 5:30 the next morning the balloon was in the air with Lieut. Weeks as observer and Lieut. Cassidy as maneuvering officer. All of the seaplanes were picked up and the necessary messages promptly dispatched. The ascension site proved to be well chosen as a considerable haze extended over the country a few miles back from the shore line and some of the planes were five miles or more out at sea in passing Point Furman. Observations were also made of submarines maneuvering, and gun drill on the mortars belonging to Fort McArthur. Upon the completion of the required observations, the Type R. Observation Balloon was deflated and as much of the hydrogen as was required, was used to inflate a 19,000 cubic foot free spherical balloon. The free balloon was inflated but

on account of a thirty-mile ground wind, considerable difficulty was experienced in weighing off. It was impossible to get out of this wind which bore down over the hills, tending to smash the balloon to the ground and into houses and telephone poles above which it seemed impossible to rise. Five bags of sand ballast were thrown during the flight, which was of a very small time interval, and the balloon finally caught in some telephone wires and slid on to some power wires which were wrenched from their insulators. The balloon slid along the telephone wires for about half a block. The drag rope was let down and Lieutenant Weeks and the two passengers, M.E., A.B. Watson, 25th Balloon Company and Sergeant Hughes of the 25th Balloon Company, were safely pulled to the ground. Linemen soon repaired the damage to the telephone wires and replaced the power wires in their proper positions.

Course in Meteorology.

For several months a number of the officers and non-commissioned officers belonging to Ross Field, have been taking a course in Applied Meteorology, at the Southern Branch of the University of California, in Los Angeles, through the courtesy of the University authorities including Dr. Ford S. Carpenter, lecturer on Meteorology. These lectures are given on Tuesday mornings, the period covering one hour. A thesis is required at the end of each half year, and college credits are being granted for the successful completion of each half of the course. In connection with this course, the Meteorological Detachment of this post has assisted Dr. Carpenter by demonstrating the method of obtaining "wind aloft" data and actual demonstrations have been made at the University, using theodolites and pilot balloons. This course is probably without peer in the United States because of Dr. Carpenter's wide experience along meteorological lines while with the United States Weather Bureau, and his experience in aeronautics and close liaison with Rockwell Field and Ross Field.

Lieutenant Gallentine's New Invention ✓

Recently a spherical balloon of 24,000 cubic foot capacity, designed by Lieutenant Norman E. Gallentine, and Master Electrician Boland, flying with ballast, the equivalent of the weight of two men, was ripped at an altitude of 800 feet and parachuted most successfully. The basket struck the ground with so slight a shock that passengers would not have been injured had there been any in the same. This balloon does not use the customary net for sustaining the basket, but has the basket attached to a rigging band about the equator of the balloon.

Base Ball Game via Seaplane

During the week four officers from Ross Field and ten men constituting the baseball team, were invited by the Naval Air Station, to visit the Naval Air Base at North Island, San Diego, California, for the purpose of playing the Navy's baseball team at that station. The party proceeded by truck to the Submarine Base at San Pedro, where the men were messed by the Navy and the officers entertained at the Officers' Mess. The party from Ross Field, left in two twin-motored seaplanes, A-9 and A-10, each carrying fourteen passengers to San Diego.

The trip of approximately 100 miles, was made in about 65 minutes, the seaplanes flying at an altitude varying from 1000 to 2000 feet. Carrier pigeons belonging to Ross Field, were released five miles out at sea from one of the planes while speeding at 80 miles per hour, off San Juan Point. These birds reached camp in excellent time, bearing messages to the Commanding Officer. The Army detachment was royally entertained at the Navy Air Station, but was defeated by their ball team. The officers, consisting of Lieutenant Joseph I. Sullivan, Lieutenant Clarence H. Welch, Lieutenant Norman E. Gallentine, and Lieutenant Harold E. Weeks, were quartered with the Navy's Aero Officers in the luxurious new quarters and were given ample opportunity to study the Navy's hydrogen plant and hangars, and to examine the dirigible, C-6 and the other lighter-than-air craft which the Navy has at this station. After a visit of nearly 42 hours, the party returned by sea plane to San Pedro, and back to camp by truck. It is believed that this is probably the first time that an Army baseball team has travelled 200 miles in the air to play a game of baseball.

Pony Blimp creates Interest

A flight was made by the Navy dirigible, C-6 from North Island, San Diego, to Los Angeles and return. This trip was made in excellent time and was successfully done from every standpoint. During the week, a number of flights were made by the Pony Blimp belonging to the Goodyear Manufacturing Company, in Los Angeles. Officers from the post who have witnessed the maneuvers of this dirigible, are highly enthusiastic over its maneuvering qualities and all are most desirous of having one at the camp.

ACTIVITIES OF THE PILOTS SCHOOL AT MARCH FIELD, CALIFORNIA

A new class of cadets is expected to arrive at the March Field Pilots' School within the next ten days. Preparations are being made to care for the instruction of about 100 men. Several high school graduates of the surrounding community are interesting themselves in the cadet course, some few having made application for such status. Those who are unable to qualify are urged to enlist and take up one or many of the special educational and vocational courses being offered at the school. Others are enlisted for special instruction at the Mechanics School at Kelly Field.

"Top" Paine, former flying instructor at March Field landed on old "Jennie" on the field Thursday afternoon enroute to Mexico. Paine is hopeful of selling a plane to Governor Cantu of Lower California.

Captain James A. Noland of the War Department Real Estate Service arrived at March Field Friday noon. He is there to complete the purchase of the school site from the Riverside Chamber of Commerce. There is 640 acres in all for which the government is paying \$64,000 or \$100 per acre.

Lieut. H. H. George, famous overseas flyer, stationed at March Field, while in San Bernardino last week on a recruiting mission addressed members of the Rotary Club. He made an excellent appeal for recruits pointing out the fact that army pay under the new schedule can now be favorably compared with that of the civilian. He also pointed out the excellent opportunities for trade and professional education in the army citing the fact that over 86% of the command at March Field was attending school daily.

Sergeant First Class R. E. Hornbrook, A.M., formerly sergeant major of the Second Aero Squadron, has returned from the Philippines and re-enlisted in the Air Service. He has been assigned to recruiting duty at March Field.

Eight cadets recently graduated from March Field left for Kelly Field Thursday where they will receive advanced instruction. They were: J.C. Annis, H. Brawley, R.L. Corbett, L.A. Dannison, R.W. Ellington, J.L. Mc Nutt, J. Mountain, and E.J. Snyder.

ACTIVITIES OF RICH FIELD, WACO, TEXAS

Major H.C.K. Muhlenberg, A.S., reported for duty at Rich Field during the week and assumed command. The major was formerly Chief of the Materials Section, Engineering Division at McCook Field, Dayton, Ohio. He expresses himself as much pleased with the surroundings at Waco and Rich Field.

A recruiting party for the "Lighter-than-air" branch of the Air Service arrived at Rich Field during the week and were given quarters for their temporary stay while recruiting in this vicinity. The party was from Brooks Field, Texas, and was in charge of Captain Harry J. Vogel. Captain Wm. White, M.C., and Lieutenants O'Hara and Trumbull and twenty-four (24) enlisted men comprised the remainder of the party. They departed the latter part of the week after having, through their Commanding Officer, Captain Vogel, expressed their appreciation to Major Muhlenberg for the hospitable and courteous treatment received while quartered at Rich Field.

Major Muhlenberg has directed that the Officer in Charge of Flying requisition four parachutes, two back and two seat, for instruction and use at Rich Field. While it does not seem to be the intention of the Major that jumping be inaugurated immediately, yet he very pointedly expressed a well taken idea when he stated that the pilot's "Factor of Safety" is necessarily increased when the plane he pilots is equipped with parachutes.

The week that has just closed has been one during which many visiting planes have taken advantage of Rich Field's ideally located position for the landing and gassing of passing planes in this part of Texas. Among the visitors who landed were Captain Charles H. Howard of Love Field, Lieut. Idwal H. Edwards, Adjutant at Love Field, Lieutenant Paul H. Prentiss of Barron Field and Lieutenant Henry E. Woolridge, Adjutant at Barron Field.

During the week the last of Rich Field's enlisted pilots will have been discharged and Rich Field will be without the able corps of enlisted fliers that have made Rich Field famous for the past two years. Sergeant 1st Class Wm. E. Beigel, Sergeant Walter H. Beech and Sergeant Cleason E. Shealer are still on duty but they will don their "civies" and go out into civilian life to battle with the H.C.L. by the end of the week. Not only have they been able mechanics who have materially maintained the high efficiency of the Rich Field Engineering Department, but they have also proved their ability as pilots. It is still remembered that they were three of the twelve fliers of Rich Field, who, in the fall of 1919, assisted in piloting 150 Curtiss JN 4 D planes for a total distance of more than 14,000 miles when a consignment of JN 4 D's, under orders, were transferred from Rich Field to Love Field, Dallas, Texas.

Since the inauguration of the May recruiting drive, Lieut. Edgar E. Glenn has been zealously engaged in originating and devising a number of incentives for stimulating recruiting. As Officer in Charge of flying, he, under the direction of the Commanding Officer, has volunteered Air Service assistance to the local recruiting officers, has scoured the country around Waco covering a radius of about 100 miles over which territory he has dropped recruiting literature from the air, has overhauled and put into usable condition the Rich Field swimming pool and put into operation many other minor incentives. To date he has enlisted 8 recruits and all of them appear to be willing and bright young men who have a high regard for the army and especially the Air Service.

NEWS FROM THE SQUADRONS

Selfridge Field, Mount Clemens, Mich.

First Lieutenant George W. Rogers, pilot accompanied by Second Lieutenant Roy Brandi, flying a JN4HG landed at Selfridge Field, Mount Clemens, Michigan during the week. These officers are on recruiting duty from the Speedway, Indianapolis, Indiana, and report a successful trip.

Dr. Frank C. Anderson, formerly First Lieutenant, Medical Corps, and who served as flight surgeon at Selfridge Field prior to being transferred to Kelly Field, Texas, last fall, has been discharged from the service. Dr. Anderson has returned to Mount Clemens for the purpose of practicing his profession.

HERE AND THERE WITH THE EDITORS

Starting with this number of the News Letter a page each week will be devoted to a Review of the Daily Press and Recent Periodicals. All articles pertaining to Aviation that are of interest, particularly those of national importance will be published in condensed form.

AIR TRAFFIC CONTROL

On last Saturday "an Administration measure" proposing regulation of aerial navigation within the United States and its possessions was introduced by Chairman

Wadsworth of the Senate Military Committee". In transmitting the bill, Secretary Baker asked for its prompt enactment. It was referred to the Commerce Committee.

The bill would "create Air Navigation Commission of eight members, which would draft rules and regulations affecting air navigation. It also would require that all aircraft, operators and airdromes be licensed and placed under the commission's jurisdiction. Licenses would be granted only to American citizens but provision would be made for foreigners flying under certain regulations".

(Springfield Republican 5/30/20)

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URGES AIR LAWS

Another plea for Federal air laws is made by Ede B. Newman, Secretary of the Aeromarine Plane and Motor Company of Keyport, N. J. Mr. Newman believes that, unless the "Federal Government takes steps at once toward providing uniform air rules, the States and cities themselves will attempt to solve the problem, with the result that a myriad of varying and conflicting laws, good and bad, will spring up, throughout the country". This would cripple aviation, he warns. He calls attention to the great advancement Great Britain has made by regulating airplanes.

Mr. Newman realizes that some one will probably argue that "State regulation of automobiles has not prevented the growth of that industry". The answer is, he says, "That no possible legislative stupidity can kill either flying or automobil- ing but it can hinder and retard the growth of both". Furthermore, he believes comparison of the airplane with the automobile is a mistake. "There are now in the air, planes and dirigibles far larger and carrying far heavier loads than an automobile can possibly carry, and in the future there will be vastly greater ones. The airplane is not an automobile of the air; it is a ship, and like the ship, it can be regulated adequately only by the Federal Government".

(N.Y. Times 6/1/20)

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UNRELIABLE AIRCRAFT

Altho the editor of the London Times believes there is no limit to the advancement of aircraft he urges that "belief in the future of aviation should not be allowed to color judgment of its present position". He declares "facile optimism may be as harmful as lack of vision".

The London Times disagrees with the statement recently made by Lieut. Col. Lockwood Marsh, that "there are comparatively few climates in the world which have not been tested for aeronautical purposes" and that "we have practically arrived at the stage when it is merely a question of organizing aerodromes". The Times asserts that "it would be nearer the truth to say that the testing of aeroplanes in many different parts of the world has shown our ignorance of the exact effect of climatic conditions on aeroplanes and their engines, and the urgent need for re- search and experimental development. When the aeroplanes and their engines do not break down, flights can be made under the most varied climatic conditions. Unfortunately, they do break down as often as, if not more often than they succeed when long flights are attempted and more often than they should during short flights"

It is pointed out that Dr. Chalmers Mitchell has laid stress upon the "unreliability of existing aeroplane engines", and that Captain Cockerell, the brilliant pilot of the African flight has remarked that "the great art in flying is knowing how to crash". The Times adds that "manufacturers know it and the Air Ministry has recognized it". It is urged that "routes be surveyed and opened up, aerodromes and stores organized; and is warned that "it be not forgotten that air- craft are fragile and costly and that technical improvement in their construction and reliability is the prime necessity of the day".

(London Times 5/8/20)

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ADVOCATES AERO BOARD

"Creation by Congress of a board similar to the Interstate Commerce Commission to control aerial navigation, the inspection of machine licensing of pilots, the granting of rights to operate commercially between given points, even to the extent of granting a monopoly for a limited period of years to justify the hazard of original undertakings as a means to encourage development of the industry", was advocated before the third Pan-American Congress in Atlantic City yesterday by Congressman Charles Pope Caldwell.

Mr. Caldwell believes that under such an organization private enterprises could be induced to operate aircraft between our principal cities, and consequently the demand for airplanes and balloons would keep alive our factories.

Senator S. P. Spencer declared that the "whole aerial programme is at once a national opportunity and a national need". He said "transportation of the air has ceased to be a novelty and has become a necessity".

(N. Y. World 5/25/20)

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GERMANS HERE TO SELL CRAFT

Alfred Colsman, William E. Dorr and Otto Milatz, three high officials of the Luftschiffbau Zeppelin Company, Friedrichshafen, Germany arrived in New York yesterday. It is believed that they are here for the purpose of selling dirigibles to this country. The former is the general manager and head of the company and the other two are directors. Accompanying them was Commander Maebacher, United States Navy, who has been abroad to get technical pointers regarding the big rigid dirigibles.

Altho the German officials would not commit themselves they did "not deny that Col. Hensley had obtained an option on the projected L-Z 125, 775 feet long and holding 3,500,000 feet of gas, which is the largest of the Zeppelins". According to statement they are "accredited with plans for disposing of the optioned LZ 125 to the army, the navy or to private interests, for interesting American capital in the inauguration of a line of rigid dirigibles between New York, London and Berlin and for negotiating for the undertaking of the commercial manufacture of Zeppelins in the United States". It is understood that they are "even considering the possibility of transferring their company bag and baggage from Germany to the United States".

Army and Navy officials are quite anxious that the Government acquire the LZ 125 or a like craft, as a model of the latest achievement in rigids. The Zeppelin company has offered to build the LZ-125 in ninety days and the option price is \$700,000.

Mr. Coleman stated that the Germans intend to operate their works, which have been closed since the armistice, on July 10th of this year. Mr. Dorr testified that "industry and business are going on in Germany in a general way, but we are still handicapped by the uncertainty as to the amount of the reparation and how they are to be financed".

(N.Y. Tribune 5/28/20)

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AIR TAXIS IN CANADA

In Western Canada, there are seventeen aerial taxi companies being formed a number of which have already been licensed by the air board, according to the N.Y. Tribune 5/25/20. Lieut. Col. Scott who has active charge of the certificates branch of the air, reports "great activity and possibilities for very real development of commercial flying in that part of the Dominion".

It is further stated that "six routes of transcontinental flights are established" but Col. Scott points out that aerodromes have been neglected.

"Four commercial flying companies have been floated in Winnipeg, one to be formed in Brandon. An aerodrome is to be built at Virden, Man. There is one commercial flying company in Regina, one in Moose Jaw, two in Saskatoon, two in Edmonton, one in Hanna, Alta, one in Calgary, on the Lethbridge and one in Banff also two in Vancouver".

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The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE JUNE 19, 1920.

ANNOUNCING THE FORMATION OF A ROYAL AIR FORCE MEMORIAL FUND

Announcement has just been made regarding the formation of a Royal Air Force Memorial Fund. Briefly the object of the fund is to create an organization to secure lasting benefits to the officers, N.C.O.'s and men of the Royal Air Force and their dependents worthy in every sense of the achievements commemorated.

The material objects in view are firstly, the erection of a commemorative monument; secondly, the establishment of places of residential education for the children of airmen, and, thirdly, the provision of bursaries for the children of officers.

Part of the appeal reads as follows:-

"We know that in many hearts the memory of these services glows unforgettable. To some it is intertwined with the agony of bereavement; to some it speaks of happy friendship and pleasant reminiscence; but by all who endured the anxieties and rejoiced in the glory of the great war, not the least honored place in the proud and thankful recollection of its checkered days, is given to the skill and nerve of the brave men who now first made war in the unbounded arena of the air, and to the ingenuity and industry of those who rendered that gallant fighting so fruitful to the cause of victory.

"This appeal is brought to notice on account of the many American Officers who served with the Royal Air Forces both under the British flag and under their own colors, many of whom lost their lives in the Services of the Air. It is thought that the parents or relatives of these might wish to be identified in such a memorial, and the opportunity is here presented of having their names placed on the subscription list."

Illustrated pamphlets descriptive of the purpose of the fund and the particular appeal which it makes to those who have been connected directly or indirectly with the Royal Air Force can be obtained, on application, from the British Air Attache, British Embassy, Washington, D.C.

Newspapers and magazines are requested to give this the widest possible publicity.

PILOTS IN PANAMA SCARE NATIVES

During the week four DH-4 planes made a reconnaissance flight to the interior of Panama. The first stop was at Anton, a town of 1200 people approximately 100 miles from France Field. The landing field is an excellent four-way one and is located at the edge of the town. It is hard and level and can be used the entire year as it does not become muddy during the heaviest rains.

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The children of the town presented the flyers with a large bouquet of flowers and the Alcalde (Mayor) of the town promised all the co-operation possible in connection with any future landings made there. They had arranged a dinner for the flyers but because of other stops that were planned for that trip they were unable to accept the hospitality offered.

After an hour's stop the planes left Anton and flew across Parita Bay to the towns of Los Santos and Chitre. A landing field had been prepared here by the Governor of the province but it proved too small and the flights were forced to continue without landing. This was evidently a disappointment to the 3000 people from the two towns who had gathered at the field to get their first look at a plane.

A landing field was finally located near Macaracas where the planes landed. One plane, piloted by 1st Lieut. R. C. W. Blessley, flight leader, broke an axle in landing and it being impossible to repair the damage, this plane remained until the following day when replacements were taken there by two other planes. Upon examination it was discovered that the axle had become crystallized and gave way upon a fairly smooth landing.

The inhabitants near this field are all Cholo Indians and when the planes first landed they would not come out of their huts. Later, several of the men ventured out but they all brought their machetes. They conversed in Spanish with the officers, and finally sufficiently overcame their fears and superstitions to venture close to the planes. One of the characteristics of this tribe is that they file their teeth to points. It was also noted by the officers that these people certainly combat the H.C.L. with reference to clothes, wearing nothing more than the law demands.

The three remaining planes stopped at Aguadulce, R. de P. for gas on their return trip to France Field. First Lieut. J. W. Gastreich acted as official photographer and took five pictures of landing field and adjacent towns. The personnel of the flight was as follows:

1st Lieut. R.C.W. Blessley, Flight Leader,	and
Capt. Harlan W. Holden, Chief Observer;	
2nd Lieut. H.B. Chandler,	and
1st Lieut. J.W. Gastreich, Photographer;	
2nd Lieut. J.D. Barker,	and
Private 1st Class Haenel;	
2nd Lieut. Kenneth Garrett,	and
Major R.D. Prescott, U.S.R.	

The next day, after repairing the broken axle, the three planes made the return flight to France Field.

An atmospheric condition exists in this country that is worthy of note. Throughout the dry season there is nearly always a ground mist but now during the wet season all the moisture seems to be gathered in the clouds, leaving the rest of the air clear and dry thus making it possible on this trip, while at 5500 feet over the Pacific, to see the Atlantic Coast, Colon, and many miles out to sea on the Atlantic side. Due to this condition the three planes on their return trip Thursday flew direct to the field from Macaracas. In order to do this it was necessary to attain an altitude of 10,000 feet. Due to the wonderful visibility the pilots could see Colon as soon as they ascended above the mountains.

SHORT PARAGRAPHS OF NEWS INTEREST

During the past week 8 of the 150 DN-4 B airplanes remodeled by the Gallaudet Aircraft Corporation were received at the Aviation General Supply Depot, Middletown, Pennsylvania, for storage; also several Spad XIII airplanes which had been used in active service by the Air Service squadrons overseas. One of the Spads had 43 bullet holes in the fuselage and wings.

Pilot Robinson of the aerial mail force, visited the Aviation General Supply Depot, Middletown, Pennsylvania, shortly after noon Saturday enroute to Bellefonte, Pa., from New York City. Mr. Robinson stopped long enough to re-fill fuel tanks and then proceeded to Bellefonte. Middletown has been visited very frequently by airplane mail pilots while on this leg of their journey, as bad weather forces the pilot to follow the river bed thru the mountain gaps. The Middletown field is very accessible on this route inasmuch as it lies within a few yards of the river and is very noticeable from the air due to the fact that it is marked with a large P-53 and a 150 foot circle in the center of the field.

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During the week Captain John D. Jones, A.S.A. left Brooks Field, Texas in charge of a party of 22 enlisted men, for recruiting duty in the vicinity of Lockhart, Luling, and Seguin, Texas. While at Luling, Texas one of the members of the party was accidentally drowned while bathing in the San Marcus River. The accident caused a halt in the scheduled plans for the trip and the party returned to Brooks Field from Luling on the same evening.

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During the week Private Gene Willard of the 12th Aero Squadron, Douglas, Arizona made a successful parachute jump from a height of 2500 feet. Private Willard climbed out of the cockpit, on to the wing walked out to the outer strut of left wing, pulled the pack release letting the parachute pull him off of the wing. Lieut. R. C. Milyard, Engineering Officer this flight piloted the plane. The Irving parachute was used. The descent was made in 2 minutes and .05 seconds.

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During the week two civilian planes landed on the airdrome of the 8th Aero Squadron at Douglas, Arizona. These planes were enroute from Venice, California, to Chicago, Illinois. They were piloted by two ex-Air Service Officers, Pilots E.L. Remelin and Fred Hoyt.

These planes are used by Al Wilson in air stunts, changing planes, etc. These flyers are booked to fill all of former Lieut. Omar Locklear's bookings at State Fairs and carnivals in the Middle West. One of the planes is a JND4 equipped with an OX motor, the other is a Curtiss "Canuck" with the same type motor.

The only trouble experienced, so far, was a single forced landing by the "Canuck" caused by fouled plugs. The average altitude flown was about 7000 feet.

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Captain Frazier Hale and Lieut. Potter flying a DH-4 B flew from Pope Field, Fayetteville, North Carolina to Wilmington, N.C. to confer with the Commanding General of Fort Caswell in connection with an artillery shoot to be held during the latter part of the month. In landing Captain Hale broke a propeller but no one was injured. A new propeller was ferried from Pope Field via airplane.

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Active Border Patrol out of Puryear Field, El Centro, California by the 91st Aero Squadron will cease this week. Sixty-nine patrols were made and two hundred and twelve flights were made during the temporary stay of the 91st Squadron. It is interesting to note that the patrols were carried on successfully notwithstanding weather conditions and to date not a single accident has been recorded.

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ALL METAL AIRPLANE AT BOLLING FIELD

The first all-metal airplane in the United States arrived at Bolling Field this week. This innovation in aeronautics is an extremely welcome one and promises to revolutionize aircraft and to speed up the utilization of aircraft for commercial purposes besides providing an excellent weapon for war.

This plane known as the Larsen JL-6, is the product of the post war research and development in aeronautics, and will surpass in performance all other aircraft even at the present. The plane itself is not a beautiful thing, but beauty is of little importance as compared to efficiency. The landing gear is of interest for it is the only parasitic resistance that the plane has. It is composed of a compensating axle which allows the wheels to take up their camber on contact with the ground and then run true. The shock absorbers are designed differently from customary methods and are equipped with a special type of sandow cord which accomplishes its work in a very superior fashion. Next of interest on a superficial examination is the fact that there are absolutely no wires or struts any where on the machine, except a wire control to the rudder. The materials used in the plane are a special alloy aluminum. Aluminum tubing and corrugated sheet aluminum are used exclusively throughout. The engine is a BMW-3A. The engine is so braced that in case of an accident it is impossible for it to injure the occupants of the plane. Eighty gallons of gasoline, which is sufficient fuel for ten hours are carried in the wings of the machine. The speed of the machine is around 115 miles per hour. Its weight is 2233 pounds net with water only aboard. On some of the tests seen here it only took four men to handle the ship on the ground. On other tests it is said that there have been 43 men placed on each wing as a negative load and that the flexure of the wings from this weight was no more than would be normal if the stress were positive. Production is promised beginning this fall. Four passengers can be easily accommodated in the cabin and the pilot and mechanic have a separate cockpit outside. While flying recently near Atlantic City a distance of 100 miles was covered with eight people aboard at a total operating cost of \$3.00. Considering the fact that the life of this ship in service miles is from three to four hundred per cent greater than has been possible heretofore the commercial possibilities of this plane are very apparent.

CONFEDERATE VETERANS VISIT POPE FIELD

At the reunion of the Confederate Veterans of North Carolina held at Fayetteville, North Carolina during the past week an invitation was made by Colonel William S. McNair, F.A. Commanding Officer, Camp Bragg, N.C. for the veterans to inspect the artillery fire center, Camp Bragg, N.C. The invitation was accepted and the old soldiers were entertained by the Air Service detachment of Camp Bragg, known as Pope Field. This field was a place of great interest to these men. Every effort was made by the non-commissioned officers to guide the men about and explain to them the art of flying an airplane. Many had never seen a plane before, others only in the air. In the afternoon, Lieuts. Potter and Hopkins made an exhibition flight over the camp much to the pleasure of these visitors.

MAJOR CULVER HONORED

During the commencement exercises at the University of Nebraska this past week, the honorary degree of Electrical Engineer was conferred upon Major Clarence C. Culver, Air Service in recognition of his work in wireless as applied in aviation and of his Military record since leaving the university in 1898, for service in the Spanish American War.

BALLOON FLYING RESUMED AT FORT OMAHA

During the week there were three Free Balloon flights made at the Army Balloon School at Fort Omaha, Nebraska, one of which was a night flight and one a solo.

The night flight left Fort Omaha at 3:21 A.M. on Friday with Lieut. James B. Jordan as Pilot and Major Henry C. White, Captains S.B. Hall and C.F. Adams, Master Electrician C.M. Maricle and Sgt. first class W.J. Mansfield as passengers. The balloon left in a heavy mist and in five minutes was above the clouds where it remained for two and a half hours when the party descended to find where they were. They remained close to the ground for twenty minutes and not being able to determine their whereabouts they ascended above the clouds once more and remained there for one hour. They then started down once more to locate themselves and when close enough to the ground to see it they discovered they were over a large lake, whereupon they immediately ascended to 3,800 feet. After remaining aloft a sufficient length of time to pass over the lake they again descended and finding terra firma beneath them landed 5 miles west of Lyons, Nebraska which is 75 miles northwest of Fort Omaha. The flight lasted 4 hours and 48 minutes.

Of the above named passengers all but Captain S.B. Hall and the pilot, Lieut. James B. Jordan, got out and put in enough ballast to compensate for the loss of their weight. The two officers resumed the flight, reaching an altitude of 14,000 feet. At that altitude there was practically no wind. They started at 3:30 A.M. and landed at 11:41 A.M. 6 3/4 miles east of Rosalie, Nebraska, a distance of 20 miles from their starting point. The flying time for this flight was 3 hours and 11 minutes.

BORDER PILOT LANDS TWICE IN WATER WITH A DH4 B

The old saying that you can lead a horse to water but you can't make him drink, has been proven in another way by Lieut. Jimmy Haizlip of the 3th Aero Squadron on Border duty at McAllen, Texas.

Lieut. Haizlip has demonstrated to the world that you can fly a DH-4 B to water but you can't make it swim. Pilots like all others have streaks of hard luck, but in this instance it was particularly bad. Only thru the skillful maneuvering of the plane did he prevent serious injury to himself and Lieut. Grimes, who incidentally has been known to land in other places than in the waters of U.S.

It seems on taking off at Point Isabelle his motor cut out and he was forced to land in the Gulf but fortunately managed to keep his plane right side up.

Another plane was sent to bring Lieuts. Haizlip and Grimes back to the air-drome. While passing over Mercedes, Texas the motor quit again. He stretched his glide as much as possible towards a landing field only to find it full of obstructions. He had no alternative but to land in water again, this time in the Mercedes irrigation canal. The force with which they struck the water was so great that Lieut. Grimes occupying the rear cockpit was thrown a distance of 100 feet clear of the plane sustaining a dislocated shoulder.

AIR SERVICE OFFICERS PULL A NEW ONE

During the week the members of the 4th and 6th Aero Squadrons on duty at Luke Field, Hawaii celebrated Organization Day in honor of Lieut. Frank Luke, for whom the field is named. The field was thrown open to the public and a wonderful program such as only the Air Service men can arrange was arranged for their entertainment.

The crowds were intensely interested in watching the graceful maneuvers of an SB-5 airplane engaged in acrobatics when suddenly everyone was electrified to see a young lady dressed in the height of fashion step out of the crowd, and climb into a plane the motor of which was running at idling pace. Before the startled mechanics could recover themselves, her arm accidentally hit the throttle off she went across the field in a series of leaps, twists, turns and bounces of the wildest kind. Mechanics rushed madly out on the field to prevent suicide while the hearts of the spectators were fluttering around the stopping point.

After much difficulty she apparently found out that by manipulation of the "joy stick" the airplane could be pulled off of the earth. Around the field came the plane at break neck speed, diving, zooming, skidding and slipping, each move headed for a crash. Finally a safe landing was made much to the relief of everyone. Every available officer and enlisted man on the field rushed out to be first to grab her, all congratulating and reprimanding the fair one at the same time, when suddenly off came the wig and out of the plane stepped Lieut. C. Y. Banfill, the star acrobatic flyer of Luke Field. Some of the things said after the would be rescuers had recovered from their surprise would not look good in print. This stunt was a real thriller and also original. Not a soul knew anything about it in advance except the mechanic who carelessly left the motor running.

The crowds were keenly delighted when they learned the whole thing was a hoax. However, the officers and men who were kidded were not so delighted.

The apparent ease and unconcern with which Lieut. Banfill handled the plane thru the difficult maneuvers made it most realistic, and also reflects great credit upon him as a flyer.

CRASH AVERTED WHEN PROPELLER BREAKS IN THE AIR

During the week a very peculiar accident happened to Lieut. George W. Rogers of the Aviation General Repair Depot, Indianapolis, Indiana while in the air. Lieut. Rogers took off in a German Fokker-D-7. When at an altitude of only 200 feet the propeller broke in the center and flew to pieces. The plane immediately became unstable due to the sudden racing of the engine. What appeared to be certain nose dive and a crash was narrowly averted by the extraordinarily good judgment used by Lieut. Rogers. He pulled his plane out when within a few feet of the ground and landed in a plowed field. The plane was slightly damaged but fortunately the pilot escaped injury.

WILLIAM S. HART PREFERS A BRONCO TO AN AIRPLANE

During the week William S. Hart, of silent drama fame, and twenty actors were visitors at March Field, California. By permission of the Director of Air Service "Bill" and his assistants withdrew from the western drama field long enough to photograph a few scenes about the aviation field.

Dolled up in the uniforms of the Canadian Northwest mounted police they disported themselves around the grounds for several hours much to the amusement of the soldier population who enjoyed the occasion immensely.

Mr. Hart, however, refused to forsake the bronco for an airplane although admitting that such an experience would undoubtedly furnish a thriller such as is seldom experienced in Hollywood.

SUPER RIGID AIRSHIPS VITAL TO AMERICA'S NATIONAL DEFENSE

At the beginning of the war, back in the early part of 1914, there was much speculation about the possibility of aerial attacks upon England. It was common knowledge that Germany owned at least 15 super-rigid airships capable of flying at about 40 miles per hour, and supposedly having a cruising radius of between 1800 to 2000 miles maximum. The tendency in England was to minimize the possibility of serious danger from such raids, and even, at one time question the possibility of aircraft being of any service in the war. In fact, to quote a little of 1911 history the then Master-General of Ordnance, who at that time was in charge of Aeronautics, said, "We are not yet convinced that either airplanes or airships will be of any utility in war". One favorite theory was that, while a Zeppelin airship might reach England it would find it very difficult to escape, believing that the ground archies and airplanes would get them. Subsequent events have shown that the British, at that time, did not have a great deal of inside information on German airships, nor did they allow sufficiently for the great height at which the airship could operate at night. At that time this high

elevation was least suitable for airplanes in the stage of development they had reached, on account of the difficulties of starting and landing in the dark, seeing and hearing and the comparative low ceiling of airplanes.

From the lessons of the great war out of which we have just emerged there stands out prominently the fact, that henceforth a great deal of attention in the future planning of Military Aviation must be paid to the super-rigid type of airship. We ourselves, as did England, doubted the merits of the airship, notwithstanding rumors of the creditable performance of the early type of Zeppelins which occasionally leaked out thru the newspapers, in which it was said that this particular type of craft stayed aloft for as long as 35 hours.

The superiority of the Zeppelin type of aircraft today cannot be doubted by anyone. In the past it was often a source of amusement, ridicule by others, and famous for the cartoonist's pencil and story. Others would point out how apparently easy these types of craft would be to bring down, by gun fire and airplanes, but as demonstrated by the British in the early stages of the war, archies were practically useless, while airplanes could not get off the ground at night. Even towards the end of the war, the airplane did not have such an easy time of it as one may imagine. Let us proceed a little further when night flying airplanes commenced operating. Figuring the number of successful raids the super-rigid airship engaged in over England and on all fronts against the actual number brought down by both the archies and airplanes, the ratio is indeed small to an unbiased mind. It is true that when single seater pursuit planes were developed and put into night service they succeeded in holding down raids somewhat but not to an appreciable degree until the tracer or incendiary bullet had reached the apex of perfection.

Then came a new type of super-rigid airship with machine gun turrets and gun crews mounted fore, aft and center, on top of the bag, and fore and aft in the engine gondolas underneath. With 18 or 20 machine guns shooting at an airplane at one time it was quite a difficult and hazardous matter for a pursuit plane to get within range of an airplane, particularly when it was known that the German airship crews were using explosive bullets entirely on night raids. Nevertheless the raids became less and less frequent as the war drew to a close.

With this record of efficiency to the credit of the super-rigid airship, covering the period from 1914 to 1918, saying nothing concerning the damage consummated by these Leviathians of the air, during the period covered which undoubtedly would be estimated in millions, if not billions, it must, therefore, be apparent to those who are unfamiliar with the science of aeronautics that in another war they must live in a constant state of terror and fear, dreading at all time attacks out of the skies, unless adequately protected by an airship service second to none, in fact, greater than any, because the super-rigid airship of tomorrow will be a more formidable affair than is in use today. It will not be 700 feet long but in all probability from 1500 to 2000 feet, carrying 20 tons or 41,000 lbs. of bombs, possibly more. It will not have a covering of skins, or cloth drawn tight by cellulose easily penetrated by incendiary bullets, but will be covered with armored metal. Its gas compartments will not be exploded by bullets again, because of the fact that the compartments are filled with Helium gas (non-inflammable) instead of hydrogen (inflammable). Nothing short of explosive shells would penetrate or damage such a craft as this. Same reasoning therefore, must warn that the super-rigid airship of tomorrow will be a highly effective weapon against our national safety in the hands of an enemy with a superior and greater airship service than our own. Even at this reading it may be believed by the layman that a great deal of what has been said is propaganda or that those who have the country's interest at heart from an aeronautical point of view are delving into a realm of clouds. Just go back to the sixth page, and remind yourself that England thought likewise. Nevertheless a few actual facts substantiated by officers of the American, British and French armies and corroborated by the Germans themselves will not be amiss at this time.

On the 11th day of November, 1918 (Armistice Day) Germany was prepared to send across the Atlantic the very latest type of super-rigid airship to bomb the metropolis of New York. For months prior to this date experiments were conducted, meteorological data compiled and other scientific data gathered. To cap the

climax an L type of super-rigid airship was sent from the Interior of Germany to Khartum, South Africa with supplies for hard pressed German troops. Arriving there they found the troops had surrendered and were recalled by wireless. The airship made the trip back to Germany without once alighting during the entire journey. This trip surpassed the performance of the R-34 by about 2,800 kilometers. Now to come back to our story. Silently and feverishly the giant airship L-72 was built to better the performance of her sister ship, which had successfully plied to South Africa and return. This airship, when completed surpassed anything built heretofore. It was streamlined to perfection, equipped with 6 Maybach engines 240 H.P. each, total 1440 H.P. The length of this Leviathan is 770 feet- capable of making 62 miles per hour under load. It carried 11,000 gallons of gasoline, and could cruise a distance of 9,500 miles with its load of 5 1/2 tons of bombs.

By the grace of Dame Fortune, the armistice saved New York City from destruction. It is terrifying to even think of it, yet it is an absolute fact that this would have happened. We think this a marvelous achievement, but the L-72 is already obsolete insofar as performance is concerned. There is one still better, and capable of greater things than the L-72. This airship is known as the L-Z 125, although only 5 feet longer, the L-Z 125 has a disposable lift of 69 tons, a cruising radius of 10,000 miles, carries 12 Maybach 300 H.P. (3600 H.P. total) engines, has an average speed under load of 91 miles per hour and can carry three times the amount of bombs carried by the L-72 viz; 16 1/2 tons or 33,000 pounds.

From these cold facts the average mind must be able to conceive what the morrow will bring forth.

To the trained military mind one thing is everlastingly apparent, and that is, we must develop in aeronautics faster than ever heretofore. Money must be spent in large sums, to bring us up to the pinnacle of perfection. Only with such ideals before us, backed by the whole-hearted and unstinted support of all our people as well as by the Government, mentally, morally and financially can we ever hope to reach such attainments.

No longer can we retain that feeling of national security which has governed the pulse of Americans that thru our isolation we are removed from all danger of first hand contact with war. The Air Forces know no such thing as isolation. It is a word without meaning to them. The Air Forces have no such difficulties to surmount as enormous sea waves, mine fields, nor areas of mountains and hundreds of other obstacles which must be combatted by land and sea forces before reaching the objective. The airship travels in a straight line direct to its objective, whereas the land forces have circuitous routes to take, mountains to either climb or avoid, and are never free from attack by air and even with modern motor transportation it is a slow process to move great bodies of troops. Figuratively speaking 25 miles a day is a good estimate of the distance troops can cover. The sea forces are somewhat better off in speed, but they also have the difficulties of the elements to combat, detour great distances around mine fields, while in the theatre of operations, it would be suicidal to travel fast, and in addition to these dangers they are always open to attack from the air.

The airship loaded with bombs travels with greater speed than both of the other forces combined, viz; 100 miles per hour in a direct line. The crew has a vision on a clear day at an altitude of 10,000 feet of at least 75 miles on all four sides, can attack either land or sea forces at will, as well as bomb the enemy's cities and destroy his railroads and shipping facilities to break the monotony. With a 12,000 mile cruising radius it is indeed a dangerous craft to be feared by an enemy, and a source of rejoicing to the country fortunate enough to have a fleet of super-rigid airships. Nothing will shake the morale of an enemy so quickly as an attack upon him out of the skies, together with news of airship attacks on his home city.

In conclusion, let us hope America will see the impending disaster which would ultimately face us should we allow ourselves to lag behind in the air. It will cost millions of dollars to put us in front, and millions more to keep us there, but the feeling that our homes are adequately protected, that as a nation we are second to none, should create a feeling that every dollar spent on the promotion and furthering of aeronautics to attain such ends, although expensive, is cheapest in the long run and is therefore, worth it.

MIDDLETOWN, PA.

Lieutenants Graves and O'Connor of the Aviation General Supply Depot, Middletown, Pa., took off for Bolling Field, Washington, D.C., one day last week at about 9:48 A.M. At noon word was received that their voyage had been somewhat interfered with, as Lieut. Graves reported that he had radiator trouble and was forced to land, and in so doing his landing gear collapsed causing a few minor damages. Pilot and passenger were none the worse for the experience. It was expected that they would get in touch with Bolling Field for the necessary repairs and resume their journey.

A record to be fairly proud of was established during the month of May by the pilots of this post; while on recruiting duty, approximately 25 strange fields were visited and landed in without a single mishap to any of the four planes engaged in this recruiting drive. Anyone familiar with the terrain of Pennsylvania can realize how scarce good landing fields are. Approximately every city within a radius of 100 miles was visited by the fliers of the post, and at the close of the month the reports show that only one motor change was made, much to the credit of the mechanics of the Engineering Department.

The recruiting Officer of the Harrisburg district has commended the work of the officers of the post for their co-operation in the present recruiting campaign. From all indications, enlistments have been greatly stimulated during the past month.

WILBUR WRIGHT

The Officers of the Wilbur Wright Air Service Depot at last have an officers' mess. Any officer who has ever been stationed at a post that did not have an officers' mess can appreciate what this means to the five homeless and world weary bachelor officers of this post. For the past six months they have been trying to start a mess, but for some reason or other their plans have always been upset, so they have been eating at first one place and then another and longing for any kind of a mess, Officers' or otherwise, that they could call their own. They would have even been satisfied with a mess similar to the one at Kelly Field last summer where the chinamen served soup and radishes three times each day and the mess bills were seventy-two dollars per month.

About two months ago one of the bachelors succeeded in obtaining the services of a middle aged woman, at least she said she was. This woman came out to the field and cooked for the five bachelors for one day. Then she resigned, giving as her reason for doing so that she was not a contractor.

Some ten or twelve days ago Lieut. Karl de V. Fastnau announced that, in addition to his other duties, he intended to run a mess, and apparently without any effort at all he is now running what is without a doubt the best Officers' mess in the entire Air Service. The motto is "Eat when you want to and pay when you can".

SCOTT FIELD

Three Reserve Military Aviators visited Scott Field, Bolleville, Illinois last week hoping to secure flights but because of the fact that there is no Flight Surgeon at Scott Field it was impossible for them to solo. From the number of requests being received it appears there is a large number of R.M.A.'s in the vicinity of Scott Field who desire to keep in touch with the game. On account of its central location Scott Field would make an ideal training center for ex-pilots.

Mr. John Robinson, former service man, has secured the Curtiss agency in Missouri. He has formed the Curtiss Robinson Airplane Corporation. The Company has leased a 160 acre landing field some ten miles from the center of St. Louis. They expect to sell Curtiss planes and parts; conduct a flying school; enter passenger carrying trade and promote an advertising campaign for St. Louis business concerns.

RECRUITING AT THE AVIATION REPAIR DEPOT, INDIANAPOLIS, INDIANA

During the week there were three men enlisted at this station for a period of three years and nine men for one year, making a total of 26 men enlisted during the month. The recruiting at this station is progressing very slowly. There were several flights made to nearby towns during the week with very poor results. It is expected that if the recruiting drive continues during the month of June, to secure several young men from among the high school boys. It is our intention to try to induce boys who cannot complete their studies at high school to enlist in the Air Service where they will be allowed to finish their course of studies. We are only accepting the very best material for the Air Service but are working with the local recruiting party to secure men for all branches of the service.

Increased output of the Engineering Department of the Aviation Repair Depot, Indianapolis, Indiana

The Engineer Department of the Aviation Repair Depot, Indianapolis, Indiana has been increasing its output until at the present time they are turning out double the amount of work. During the week 11 Hispano Suizas and 6 Liberty engines were completed while 26 Hispano Suiza Model A and 1 Liberty engine were received.

NEWS FROM THE FIRST DAY BOMBARDMENT GROUP, KELLY FIELD

ARTILLERY REGLAGE

Artillery Reglage shoots are being made daily. Lieuts. Doyle, Johnson and Guidora have been doing the observing while officers of the 2nd Artillery Brigade have been flown overhead to see the firing from a flyer's point of view. Planes from the 1st Pursuit Group have acted as attacking planes and so actual war conditions were well simulated. The artillery Officers are very much pleased with the work and it is believed that they now have a better understanding of the difficulties encountered, the possibilities and limitations of the Air Service.

RECRUITING NOTES

The Recruiting Unit has moved from Corpus Christi to Sinton, Victori and Cuero. A great amount of interest has been aroused by the complete Air Service exhibit and particular interest was manifested by crowds viewing the new motion pictures recently received depicting the American Air Service activities in the A.E.F. Lieut. McDarmot has proven to be a most valuable officer in this line of work. His lectures and untiring efforts to explain to applicants the life in the army are extremely interesting.

PERSONNEL.

Major Ralph P. Cousins, Commanding Officer of the 1st Day Bombardment Group recently departed on a sixty day leave of absence. Captain M.H. Rice, formerly Commanding Officer of the 166th Aero Squadron will command the Group during Major Cousins absence.

Lieut. E.H. Nelson has been ordered to Mitchel Field, Long Island, New York. Lieut. Nelson has been a most valuable officer to the Group, having served as Engineer Officer of the 20th Aero Squadron and as Officer in Charge of Headquarters Flight. He is one of the oldest flyers in the service having flown for the Curtiss Company before the war. He received Ground School training in the East and during the war was cross country instructor, acrobatics instructor, and test pilot at Ellington Field. The Group regrets Lieut. Nelson's transfer and all hope that he will return after completion of his duties at Mitchel Field.

Lieut. Ralph Scherzer of the 20th Aero Squadron was married on May 8th at Houston, Texas. Mrs. Scherzer is the daughter of Mr. and Mrs. Blair of Houston. Mr. Blair is a prominent business man of that city and the family is well known in social circles. The wedding altho attended by only the immediate members of the family was very impressive and beautiful. At present Lieut. and Mrs. Scherzer are at home at Kelly Field, No. 2 where they have been extensively entertained by many of Mrs. Scherzer's friends, formerly of Ellington Field.

QUOTATIONS FROM THE ARMY REORGANIZATION ACT, APPROVED JUNE 5, 1920 ✓

Those officers who are confused as to their status will find it to their advantage to read this act.

Many newspaper comments throughout the country on the subject of reorganization of the army and the retention of emergency officers in the service have come to the attention of the officers interested. Some of these comments are misleading and may be misconstrued. Attention is called to the following paragraphs which are quoted for the benefit of all. All officers are urged to read this carefully before taking any action which would separate them from the service.

"REGULAR ARMY REORGANIZATION"

Section 13 a and 127 a of the National Defense Act, approved June 5, 1920, reads as follows:

"There is hereby created an Air Service. The Air Service shall consist of one Chief of the Air Service with the rank of major general, one assistant with the rank of brigadier general, one thousand five hundred and fourteen officers in grades from colonel to second lieutenant, inclusive and sixteen thousand enlisted men, including not to exceed two thousand five hundred flying cadets, such part of whom as the President may direct being formed into tactical units, organized as he may prescribe: PROVIDED, That not to exceed 10 per centum of the officers in each grade below that of brigadier general who fail to qualify as aircraft pilots or as observers within one year after the date of detail or assignment shall be permitted to remain detailed or assigned to the Air Service. Flying units shall in all cases be commanded by flying officers. Officers and enlisted men of the Army shall receive an increase of 50 per centum of their pay while on duty requiring them to participate regularly and frequently in aerial flights; and hereafter no person shall receive additional pay for aviation duty except as prescribed in this section: PROVIDED, That nothing in this Act shall be construed as amending existing provisions of law relating to flying cadets."

"That the President is authorized to retain temporarily in service, under their present commissions, or to discharge and re-commission temporarily in lower grades, such emergency officers as he may deem necessary; but the total number of officers on active duty, exclusive of retired officers and disabled emergency officers undergoing treatment for physical reconstruction, shall at no time exceed seventeen thousand eight hundred and twenty three. Any emergency officer may be discharged when his services are no longer required and all such officers shall be discharged not later than December 31, 1920. All officers of the Regular Army holding commissions granted for the period of the existing emergency, in whatever grade, shall be discharged therefrom not later than June 30, 1920."

Sec. 127 a

"Hereafter no detail, rating or assignment of an officer shall carry advanced rank, except as otherwise specifically provided herein: PROVIDED, That in lieu of the 50 per centum increase of pay provided for in this Act any officer or enlisted man upon whom the rating of junior military aviator, or military aviator, has heretofore been conferred for having specially distinguished himself in time of war in active operations against the enemy shall, while on duty which requires him to participate regularly and frequently in aerial flights, continue to have the rank, pay, and allowances and additional pay now provided by the Act of June 3, 1916, and the act of July 24, 1917."

"The War Department has announced that beginning July 7, 1920, examinations for permanent appointment will be held for those emergency and former emergency officers who have submitted (prior to June 23, 1920), applications for Regular Army Commissions. It is understood that the War Department contemplates that all examinations will be completed and the appointments published on or before October, 1920."

The Air Service is authorized to have 1514 officers; all but 10 per cent of each grade must qualify as pilots or observers within one year.

NEWS FROM THE AIR SERVICE OBSERVATION SCHOOL
POST FIELD, FORT SILL, OKLAHOMA

Flying for the past week has been almost entirely suspended at Post Field. On account of Flight "A", 135th Observation Squadron, being at Fort Leavenworth, and the fact that three planes were sent there to replace wrecks it has made it necessary to concentrate all energies upon setting up new planes. The work is progressing very nicely and by the end of the week six new De Haviland -4 B's will be in commission. One of these has been tested and accepted. Flying has been confined to test flights of this plane and to two recruiting flights made by one of the old 4's still in flying condition.

ACTIVITIES OF RICH FIELD, WACO, TEXAS

The very cordial relations that have always existed between the members of Rich Field and the inhabitants of the city of Waco were extended toward the new Commanding Officer of the Field several times during the week, when Major Muhlenberg was invited to lunch with the Rotary Club on Monday, with the Knights of Columbus on Tuesday and with the Lions Club on Wednesday. He was unanimously elected a member of the Rotary Club and the Lions Club which are business men's organizations.

Negotiations are now under way with a view to leasing Rich Field for another year. Some difficulty is being experienced with one of the land holders, who has doubled her rental, but it is believed that this trouble will be overcome by the Chamber of Commerce of Waco, which organization already owns most of the land occupied by Rich Field.

The recent rains have stimulated the growth of grass and wild flowers on the flying field to such an extent that there has been danger of chipping propeller blades. This is now being taken care of by a neighboring farmer who is keeping the field cut down for the hay.

It has always been the policy of this field to give the best possible service to aerial visitors, as was evidenced when Captain Fyndall of Kelly Field, Texas arrived at the post at 10 A.M. on Thursday and left twenty minutes afterwards reloaded with gas and oil. At that, most of this time was really spent taxiing in and out between the piles of hay and the hay gatherers.

Waco is rapidly becoming one of the most thoroughly recruited districts known to men. Stationed in this city are the permanent recruiting parties of the general recruiting service of the army, the marine corps and the navy as well as a party from Rich Field. In addition to these, the city has been visited during the month by parties from Brooks Field, San Antonio, Texas and Kelly Field, San Antonio, Texas.

In addition to the above, Rich Field does considerable recruiting as is evidenced by the following recruiting trips made during the month of May: Gatesville, Oglesby, Mexia, Mullen, Dublin, Lomeda, Hico, Lott, Comanche, Brownwood, Marlin, Valley Mills, Clifton, and Meridian, Texas, with a total of nine recruits.

It is very questionable whether the invasions of outside parties entering a district covered by an Air Service Field are worth while. Certainly the appeal to young men of any other branch of the Army and possibly the navy cannot possibly be as strong as that of the Air Service. Hence the competition of a recruiting party from any other branch of the service in such a district would be negligible, and the competition of a recruiting party from any post other than the nearest local post with a recruiting party of the local post would not necessarily be keen, as prospective recruits would naturally be more strongly inclined to enlist at the local field.

The local post, on the other hand, can obtain a constant flow of recruits from its district, a small flow to be sure but steady nevertheless. It is extremely doubtful if the present method of sending out recruiting parties into districts already covered by local Air Service Posts would be continued if the total expenses of the trip, including the salaries of the officers and men and other expenses were checked up against the number of recruits obtained.

NEWS FROM THE FIRST PURSUIT GROUP

PURSUIT MISSIONS

By the Commanding Officer of the 1st Pursuit Group

GENERAL.

Pursuit work is always offensive, the mission of the chasse machine being to harass the enemy in all ways that present themselves. Special missions of a limited nature may of course be ordered, but primarily the mission of pursuit is to seek out and shoot down the enemy; to obstruct him in his efforts to interfere with our observation and bombing planes; to maintain supremacy of the air by aggressive tactics that prevent the enemy from assuming the offensive.

PREPARATION

Preparatory to the execution of the mission the pilot should take minute pains in precisely carrying out the following:-

Previous inspection of motor and plane with crew- chief, made after last patrol should be checked to see that first class condition exists throughout.

Check all armament with Armament Officer, or N.C.O. Use only calibrated ammunition. Belt links should be tested after assembly and stiff links rejected before placing in machine. Coat links with thin film of gun oil.

Report to Operations Officer. Note assignment. Learn all details pertaining to same. Have maps ready. Study objective route.

Report to Flight Commander for further instructions. Know position of patrol and substitute in case of necessity. Understand all signals to be used. Know rendezvous in case of patrol disintegration from any cause. Ask questions. Prevent possibility of misunderstanding.

Be on line of machines half an hour before scheduled time of departure. Be strapped in machine and start motor upon indication from leader, five minutes before time to leave airdrome. (In cold weather more time will be allowed)

FORMATION OF FLIGHT.

Planes take off at even intervals or in massed flight.

If at intervals, where one plane leaves the line as soon as previous plane has taxied out, the Flight Commander will be second or third to take off.

Flight Commander or Deputy Flight Commander (No. 2 position, first on left) with remainder flight, will make wide climbing turn to appointed altitude and location in proximity of aerodrome where patrol is usually formed. Flight Commander (or Deputy) will circle to right to gathering patrol, other members will circle left, if for any cause, waiting at rendezvous.

Endeavor to be in position within five minutes after leaving the ground. Flight Commander will give the signal "Attention" by sharply moving aileron control left and right with other controls neutral. Then leave aerodrome for destination, gaining altitude on the route.

If patrol takes off in massed formation planes will take up approximate position on the ground. At hand signal by leader all throttles are opened together. Leader "revs" down after reaching buoyancy to allow planes to assume normal positions. Altitude is gained by climbing into friendly territory for less than half the required altitude, returning over aerodrome, still climbing, to allow any delayed planes to join the patrol, or to allow troubled planes to land.

On cloudy days patrol is formed just under clouds, even though clouds are broken. Patrol leaders will use discretion in maintaining patrol climbing through clouds.

The ideal formation is one of five or seven planes in the usual echeloned "V", as this sized group is handled with greater facility than larger numbers. If more planes are to be led by a single leader, the total number should be divided so that the formation will consist of a number of smaller groups of five, or thereabouts, echeloned in height at least 2500 feet, apart and far enough to one side to follow all movements of the leading flight.

REQUISITES DURING PATROL

When plane or motor fails enroute to enemy territory, members of patrol will nose down to position beside leader and perform two or three slight zooms (alternate backward and forward motion of elevators with ailerons and rudder neutral) until answered by "attention" signal of leader, if failure occurs in enemy territory remain with patrol after signalling distress. Questions of leaving patrol, and protection, are decided in conference in operations office previous to patrol.

Leader of patrol should know position of all specks, indicating planes, in friendly and enemy territory, and must at all times use caution and judgment in leadership.

Where patrol member other than the leader invites attention to an objective, he will glide to a position near the leader, point machine in indicated direction giving "attention" signal at same time. Continue until leader returns signal "Attention" whereupon the patrol member will resume original place in patrol.

During a patrol no member is permitted to conduct an individual tour of inquiry or observation unless so directed beforehand. All leadership must be invested in the leader, who does the thinking and indicates the execution. The members of the patrol must execute with the leader and must not anticipate the leader.

Members of patrol fly sufficiently far apart at all times to have an eye to leader's indicated actions, while also investigating territory in their own behalf.

At conclusion of patrol, formation is held until the leader indicates breaking up by zooming. Leader lands last and must know the disposition of all planes of his flight.

PURSUIT MISSIONS

Pursuit planes may be called upon to execute the following missions each of which is a combat patrol, differing merely in its limits, i.e., offensive patrol for the destruction of hostile machines; protection patrols; balloon attack; ground attack and light bombing; rapid reconnaissance mission.

The chief function of pursuit being to combat enemy planes in the air, it is of primary importance that all available facts concerning the enemy air force, as brought to light by the Intelligence and Engineering Sections be assiduously studied and assimilated.

Tactics and conduct of patrols for strictly combat performance involve subjects of such an extent that none but general rules may be applied. New departures in aeroplane construction, constantly changing methods of fighting, clouds and weather conditions, number and nature of enemy airplanes present, consideration of distance and altitude into enemy territory, types of enemy planes, whether or not friendly airplanes are available for protection and succor, gasoline supply (Controlling time element), direction and strength of wind, proper exercise of judgment under the several conditions at hand; all bear upon, and influence decision in tactical maneuvers.

The following General rules apply:

Know silhouettes of all friendly and hostile planes. This is absolutely essential in order to make a decision as to mode of attack.

Gain advantage of position i.e., have superior altitude and sun at back.
Endeavor to make surprise attack.

Be cautious of attacking beneath clouds within enemy lines.

When diving to attack, one or two rear high men should remain above for protection or for purpose of combat at most opportune time after "dog fight" is in progress. Similarly in case of echeloned flights.

Remain close enough in formation to note signals of leader. Watch carefully for enemy planes endeavoring to leave their formation to gain altitude for purpose of attacking friendly attackers.

Never follow an enemy below the main fight. If drawn under, regain altitude by withdrawing to side, reentering combat from above.

Know numbers and proximity of all planes before attacking.

Individual combat is not the height of attainment. Team work is essential to final success of squadron or flight.

If surprised either outdive enemy, returning, after gaining altitude, to rendezvous; or maintain integrity of patrol and make climbing turn to gain altitude; or engage in "milling dog-fight" during course of which main endeavor is to collect flight above the attackers. The first and last methods mentioned are most feasible.

Biplane machines are attacked concertedly. For a single biplane without turret gun beneath fuselage, three planes attack; one in line of empenage, other two "worrying" from the side.

Several biplane, or a circling enemy single seater formation, must first be split by diving and zooming tactics, afterwards attacking individual planes.

Be wary of enemy bait tactics. Seek out protecting planes above photographic or reconnaissance machines of enemy. Make feints at low groups to draw out protection if in doubt.

Speed in attacking and breaking off combat are necessary. All members of patrol must conform with flight leader's judgment in this matter, reforming with all dexterity, after leader signals.

Withhold fire until well within effective range. Deflection is not dependable, therefore endeavor to get close enough to actually see pilot before shooting.

In an awkward predicament maintain as much altitude as possible, side slip frequently to spoil "sitting shots" and head for friendly lines. When free, regain altitude, and if able to remain over battlefield, rejoin patrol at fight or rendezvous for continuance of combat or for morale support.

An enemy that dives straight away is generally panic stricken or in trouble and may be easily shot down, whereas a zigzagging and fighting enemy has to be more closely watched.

To disconcert ground and anti-aircraft observers of enemy, leader changes direction and altitude occasionally during the patrol.

PROTECTION PATROLS.

The following general rules apply in the accomplishment of Protection Patrols:

Arrange liaison with observation or bombing operations to fully understand rendezvous point to be reached with minimum loss of time and gasoline supply. Also know signals of identification: "ready to proceed with mission", "mission accomplished", "I must go home", "Enemy plane".

Protection position for pursuit planes is:- echeloned to rear and side approximately 2500 feet from plane protected. This allows mission to cross lines attracting minimum attention, also allows pursuit planes to survey complete panorama and to have maximum range of action.

Under no circumstances leave protected planes for purpose of attacking enemy planes unless enemy is in position to threaten particular mission at hand.

If enemy threatens to attack protected planes, pursuit must accept combat under all conditions whether adverse or not.

In turning, over objective, pursuit flight will maintain same relative position and protect retreat of protected planes until friendly territory is gained.

BALLOON ATTACKS. are carried out, recognizing the following principles and methods:-

Previous to flight test quality of incendiary ammunition, study exact location of balloon nest, nearby forests, and nature of clouds.

Attack should be made after morning dampness has disappeared from balloon fabric, best time being twilight hour, at that time when balloonists are withdrawing for the day and are most lax in precaution, and when an airplane has best chances of surprise attack. (Landing to be made after dark by flares).

Full advantage should be taken of banks of clouds to gain enemy territory without being observed by enemy. Glide towards balloon with throttled motor along path of sun's rays if possible. Otherwise, attain balloon position by flying at 100-1000 feet altitude.

One or two planes should be delegated to the actual attack. One plane or two planes should appear at 3500 feet in vicinity of balloon position at time of attack for protection against enemy aircraft and for the confusion of ground defense.

Hydrogen balloons collect a film of the inflammable gas close to the skin of the fabric, hence the firing should be along the long axis of the balloon causing the bullet to skim the top surface as closely as possible in order that the incendiary may have maximum effect.

If necessary to make more than one attempt the turn after the first sortie should not be near enough to the balloon, or gradual enough in evolution to enable the ground defense to obtain a still shot. The path across the balloon should be always continuous and without hesitancy. The vicinity of an enemy balloon is heavily protected and, as such, should be duly respected.

GROUND ATTACK AND BOMBING

Pursuit may inflict heavy casualties and appreciably damage the morale of the enemy by ground attack and low altitude bombing.

Motor temperature is the controlling factor in the altitude to be chosen for this work, skimming as close to the ground as consideration of temperature and proper functioning of motor will allow.

Cross roads, except in the distant enemy territory are normally bombarded by friendly artillery, as are all the important battle field objectives of friendly troops, and the flight must fly thru this barrage. Unless on voluntary mission, all attention should be concentrated on specific mission in view, and once in the proximity of ordered objective, machine gun firing, light bombing, diving, propaganda-- dropping, the whole range of harassment - should be accomplished by the entire flight flying in loose formation-- particular attention to be paid to moving bodies of troops or supply trains, gun crews, dugout headquarters, etc. All planes must take the general route indicated by Flight Commander and imitate leader's movements. Care must be taken not to become so far separated as to cause Flight Commander to experience any difficulty in following movement and position of all planes.

Care must be taken not to expend all ammunition in rear of enemy lines. Enough should be preserved for use in combat if attacked between objective and friendly territory. If no opposition is encountered on way to aerodrome remainder of ammunition may be expended on convenient enemy targets along front lines just before patrol regains its lines.

Pursuit bombing is not feasible for accuracy unless bombs are released with plane in line of flight and according to aim of sight similar to gun sight. Merely dropping bombs has only morale effect and requires much practice for even an approach to accuracy. Ordinarily single seater pursuit planes carry two 20 pound personnel bombs, to be dropped from 1500 to 2500 feet, from which altitude pilot may sight and observe effect.

RAPID RECONNAISSANCE

Occasionally where speed is vital, planes are dispatched into enemy territory on missions of rapid reconnaissance involving train movements, evacuation or occupation of certain towns or territory and other special missions, generally to be executed by one or two planes, the second plane being for corroboration and protection.

Altitude and course will depend upon circumstances of weather and disposition of enemy aerodromes, choice being made to gain favorable visibility and maximum amount of area, commensurate with accuracy of observation and freedom from suspicion by enemy planes and anti-aircraft stations.

Message dropping and other disposition of results of patrol will be properly accomplished as given in instructions to observation planes. In this connection it is essential that pursuit pilots should familiarize themselves with duties and peculiar knowledge of observers.

REPORT OF MISSION

After flight lands at aerodrome each pilot and flight leader will act as follows with maximum efficiency and minimum confusion:-

Repair to operations room immediately after leaving machine.

Verbally give all information that is to be transmitted to higher authority. Flight Commander reports first and then receives, with Operations Officer, any further facts from members of patrol.

Each member of the patrol will immediately write or dictate his full account of happenings of patrol. This report is the consolidated leader's report and must be as comprehensive as possible, aided by memoranda taken from "memory pad" carried on pilot's knee, and should include the following:-

Squadron report number, date, and time of writing.

Type of mission,

Names of pilots and flight leader,

Visibility,

Hour of departure,

Hour of return,

Altitude,

Number and type of enemy aircraft seen (with region, time and altitude)

Number of enemy aircraft encountered (with region, time and altitude)

Combat,

Aircraft destroyed (in flames or out of control)

Confirmation requested? Credit to which pilot?

Working of guns, O.K.?

Shots fired or bombs dropped?

Detailed account based on above data, of pilots. Also additional observations.

After giving full information at operations office, patrol members will report to respective airplanes for detailed inspection with crew chiefs, at which time plane will be made ready for next patrol.

ACTIVITIES OF THE 4th and 6th OBSERVATION SQUADRONS, LUKE FIELD, HAWAII

The biggest item of activity during the past week indeed the biggest day ever enjoyed by the men of Luke Field was Organization Day, May 19th, 1920. This day was chosen as Organization Day in Memory of Lieut. Frank Luke, Jr., whose day of birth was May 19th, 1898. It seemed but fitting that Luke Field, bearing the name of the second greatest American flyer, whose valorous deeds and dramatic death stand as an example to all true fighting Americans, should have set aside May 19th as Organization Day.

The program of the Day opened with an address by Major Wheeler, who presented the medals and loving cup to the Luke Field winners in the recent swimming events held in Honolulu. Major Curry, Department Air Service Officer, delivered an inspiring address in which he gave the history of Organization Day and recounted the extraordinary career of Lieutenant Frank Luke, Jr., and eulogized the spirit of self-sacrifice, perseverance and courage shown by this daring American flyer.

The swimming contests brought out all of the star aquarians, Corporal Campbell won the 50 yard and 100 yard events, Sergeant Ragle was first in the plunge. Private Anderson did the best diving of the afternoon and Private Dahl won the 100 yard breast stroke event. The Fourth Aero Squadron won the four man Relay Race.

At the Department tryouts for the Olympic Games, held Thursday, Luke Field placed a relay team consisting of Sergeant Russell, Corporal Beagle and Privates Stone and Johnson. These men and Lieutenant D. Duke who took first place in fancy diving will proceed to the States next month to compete for places on the American Team.

A detachment of five officers and eighteen enlisted men have been detailed for duty at Schofield Barracks. First Lieut. H.H. Young is in charge; Lieut. C.Y. Banfill will be operations Officer; Lieut. M. Ellicott Adjutant; Lieut. Thomas Brooks, Engineering Officer, and Lieut. Ralph Gray, Radio Officer. Their work for the next several weeks will consist of school and demonstration flying at the Reserve Officers Training Camp. Following this they will conduct a Liaison School for the Officers of the Cavalry and other branches of service stationed at Schofield Barracks.

NEWS FROM THE U.S. ARMY BALLOON SCHOOL, LEE HALL, VA.

During the past week, 8 ascensions were made by the 26th Balloon Company, and 4 ascensions by the 30th Balloon Company, - a total of 12 ascensions.

Early in the week, the student observers were given practical instruction in observation of land and water targets at various altitudes, and preparation was made for the observation of the Artillery firing which took place later in the week with the following results:

Number of shots fired.....50
Number of shots observed.....48

The battery consisted of four 12" inch Mortars, on railway mounts, firing at targets over a twelve thousand yard range. The Balloon Observations coincided with the terrestrial observations taken near the targets.

SOME NEW SPINS FROM THE 8th AERO SQUADRON, LAREDO, TEXAS

There is always a great deal of discussion between the pilots of the Laredo Station as to which has the best plane in the flight and heated arguments, involving tales of tests and feats such as are only read about, often arise. "Barracks Flying" is the usual name used for this phantom work, and the man who held the highest rating was usually the one who flew the least. There doesn't seem to be a great deal of difference in this work even after the flyers have had several hundred hours, except that by frequently relating these perilous escapades they develop an eloquent force that almost leads you to believe them sometimes. One day last week a pilot flew a distance of one hundred miles, from Roma to Laredo, Texas without touching the stick, making an adjustment on the stabilizer, or moving the throttle. It was a pretty rough day and we all opened our eyes a bit when the observer confirmed the statement. Just about the time the tale had begun to assume something like an official record among the members present, a pilot who has always been extremely sincere in his Barracks Flying entered the ring of conversationalists and after listening for a few moments smiled slightly and modestly claimed to have doubled this distance by flying to Roma and returning without unfolding his arms. The air is getting pretty rough down here and it is even too hot for a great deal of Barracks Flying, so it is likely that this flight of two hundred miles cross country "with hands off stick" will not be contested for awhile, but we do wish that somebody else would beat this air "bird's" record, so he would quit being peeved and talk again.

Last Wednesday a lady who resides in the outskirts of Laredo, Texas called the Aviation Camp by telephone and left word that the monkey wrench that was dropped on her house wasn't damaged and that it could be secured if some one would be sent after it. None of the officers would go, as they thought it was a joke, so an enlisted man was detailed to get the wrench and report on the damaged building. A mechanic had left the wrench lying loose on the plane and it had dropped off just in time to strike the roof of the house, making a hole large enough to admit the remainder of the tool kit had it been along. The lady didn't seem at all excited or angry over the affair and "she'd be very much obliged if the damage could be repaired" which was willingly done.

For several weeks the camp has been infested with an immense breed of black tarantulas. It was several days before the men could accustom themselves to the thought of having them near, but it soon seemed that they behaved themselves well and were even more desirable than some species of non-poisonous insects. When the tarantulas first came they were killed as soon as discovered, but the men soon found that it was sport to let two of them fight, so they were kept in cans or boxes until a fight could be staged. Bugs and beetles of all kinds have been caught and given their turn at battling the big spiders. With but two exceptions the tarantulas were victorious. One was a large wood beetle with a bony shell and large pinchers and the other an insect that very much resembled a black wasp. The beetle will pinch off every leg of its opponent and kill him gradually, while the "Tarantula killer", as the other insect is called, stings the tarantula causing sudden death. It is great sport to watch the fights through screen wire or glass cages and attracts much attention.

NEWS FROM THE PILOTS' SCHOOL MARCH FIELD, RIVERSIDE, CALIFORNIA

New Cadets Arrive

About 80 cadets, most of them from Kelly Field units, have arrived at March Field. Their course of instruction will begin immediately under the direction of Major George Peabody, Commandant of the cadet detachment. Class room instruction will be in order first, actual flying to follow under Major Ernest Clark, officer in charge of flying. The course at this field will cover a period of four months at least. A big majority of the new cadet class is composed of former non-commissioned officers from Texas and California Air Service units.

Overseas Flyer after new cadets

Lieut. H. H. George, one of America's premier flyers and assistant recruiting officer of this command, addressed the high school cadet class in San Bernardino last Tuesday noon. A number of these lads are interested in the next cadet course to be started at this school.

Eliminations for the Olympic Games

Five commissioned officers from March Field left Friday evening for San Francisco where they will participate in the Western Department elimination track and field meet. They will compete with other army athletes for positions on the team that will in turn enter elimination events at Camp Grant, Illinois in July, winners to make up the Army Olympic team which will go to Belgium in August.

Charting from Airships

Word was received during the week of an entirely new project to be undertaken by the lighter-than-air department of the Naval Air Station at San Diego. It is planned to chart the entire Pacific coast line from Mexico to Canada photographing the route from the air, the work to be accomplished from dirigibles of the C-6 and B-18 types.

ACTIVITIES OF CAMP BENNING, GEORGIA

The work at Camp Benning, Georgia consists of giving the student officers a ride over the camp and the surrounding country. Before taking the flight a short talk on aviation and aerial observation is given the student in order that he will appreciate the possibilities of aerial reconnaissance. Two canvas hangars have been completed and six De Haviland 4's being used for instruction work. The field is being leveled and obstacles removed.

NEWS FROM THE 1ST PURSUIT GROUP

A Careful Recruit.

The following letter was received by Chaplain Swanson of the Air Park Group recruiting party.

Georgetown, Texas.
May 20, 1920

"Chaplain E. E. Swanson,
Camp Kelly.

Dear Sir:-

I have decided to enlist in the Air Service.
I shall be very glad to take the trip in aeroplane providing the weather is good and the pilot is much experienced in aerial navigation.

I prefer to fly with an officer who does not use tobacco. I will go up if I can start early in the morning, not later than seven o'clock. The reason I want to go up early is that the air is more free from falls or "pockets" at that time. I also request that the officer who pilots the plane shall go up until a height of 5000 feet is reached and to keep at that height until we come within sight of Kelly Field.

The reason that I wish to travel at that height is that in case of motor trouble we can pick our landing place.

yours truly,

Frank E. McNett."

The prospective recruit was given every opportunity to enlist and his wishes would have been complied with but he finally balked at the last minute.

Lieut. Smith Qualifies.

Lieut. Stanton T. Smith 1st Pursuit Group recently returned from Camp Travis. While at Camp Travis he qualified for the All American Olympic Eliminations; also completed a course of the new approved methods of trench fighting without the use of weapons. This method consisted of boxing, wrestling, jiu jitsu and the savatte. He has been assigned as athletics instructor of the group and will give the officers a thorough course in training in the methods of weaponless trench fighting.

Planes accompany Funeral and drop flowers.

Funeral services for Lieut. Alvin M. St. John, Air Service, who was killed several days ago at Kelly Field, when his plane crashed into a steel flag pole, were held at 3 o'clock Sunday afternoon, from the Post Chapel Fort Sam Houston, Major Chaplain C.C. Bateman officiating.

A platoon of Cavalry escorted Lieut. St. John's remains from the chapel while three airplanes operated by pilots from the Air Service Mechanics School, circling overhead, dropped wreaths of flowers upon the casket. All officers of Kelly Field and a detachment of enlisted men of the Air Service Mechanics School, Kelly Field, commanded by Lieut. Vogel, attended the funeral services.

The honorary pallbearers were: Major Stratemeyer, Lieut. Motley, Lieuts. Fox, Shovlin, Sherry and Hodge.

The active pallbearers were Master Electricians Bilker, and Beck, Sergeants First Class, Sicord, Manning and Brown.

Lieut. St. John's body was taken to Memphis, Tenn., for burial. Captain E.E. Adler, Kelly Field, accompanied the remains to Memphis, Tenn.

HERE AND THERE WITH THE EDITORS

In this column all articles pertaining to aviation that are of interest particularly those of National importance are covered in condensed form.

CONTROLLING THE AIR

Realizing that aviation is in its infancy and that "what is novel and untried today, by tomorrow often is obsolete" the editor of the Dayton Herald 6/2/20 is asking "how can it be said that Great Britain controls the air?" He reminds us that "planes which today represent the newest thought in aviation, tomorrow, no doubt will be of discarded vintage, or at least replaced by improved models". This being true, he asks "how can it be said that any nation controls the air"? What can be said and what undoubtedly is true, he points out, "is that Great Britain as well as France and perhaps some other foreign nations, are making greater strides forward in the development of aviation. They lead perhaps, but it is a leadership that depends entirely upon what efforts are made in other countries".

The editor declares that "no nation today controls the air. Perhaps no nation ever will". But he regrets to say the United States is being outdistanced by other governments. "The more the United States is outdistanced the greater the effort that some day will have to be made to catch up. That is why the government should devise means of encouraging the development of all manner of aircraft, both military and commercial now."

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R - 80

As announced from Barrow, England the airship R-80 built for the admiralty will be launched in two or three weeks. The R-80 embodies the latest improvements in aircraft design and it is believed that she could fly across the Atlantic with ease.

The huge craft is described as being "535 feet in length and seventy feet wide. Her lifting power is thirty-eight tons. Four engines, each of 240 horsepower will give her a maximum speed of sixty-five miles an hour. She will carry a crew of fifteen. Originally intended for war purposes the gun platform and fighting paraphernalia have been discarded that more accommodation may be provided for passengers. She may be used to carry tourists over the battlefields of France and Flanders." (Philadelphia Ledger 6/4/20)

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40 HOUR FLIGHT TEST

With the idea of a cross Atlantic flight, two French airmen, Boussoitrot and Bernard rose into the air at 5:30 o'clock yesterday morning in an attempt to fly forty continuous hours. The two airmen arranged to work in six hour shifts, one resting in a specially constructed cabin while the other was piloting the machine. For the flight they took aboard 3,300 litres of gasoline and 300 litres of oil. Every few hours they dropped bulletins reporting their progress. They were making the flight in a Goliath Farman type, with a Salmson engine. (N.Y. Times 6/4/20)

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NEW YORK -- BOSTON AIR SERVICE

Regular aerial passenger service between New York and Boston was inaugurated yesterday. The plane which made the flight was a HS2L, with a 400 h.p. Liberty motor. It was originally a navy plane designed for long distance bombing and was recently reconstructed for passenger service. It was piloted by Harry Rogers who established a record in a flight up the Atlantic Coast from Miami not long ago.

HERE AND THERE WITH THE EDITORS (Continued)

According to statement, the "service to Boston will be carried on regularly, the planes leaving New York three times a week, on Mondays, Wednesdays and Fridays. The crafts are equipped to carry six passengers including the pilot and mechanic."
(N.Y. Eve Post 6/2/20)

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MUNICIPAL LANDING FIELD

Seattle is busy discussing her need of a municipal landing field. Lieuts. Ralph M. Kelly and Leland W. Miller pilots in the 9th Aero Squadron, U.S.A. stationed at Mather Field, Sacramento have been designated by Col. H. H. Arnold chief of the air service of the Western Division to set forth the needs of landing fields for airplanes.

The field under consideration in Seattle has 230 acres and is planned so that "the prevailing wind is north and south and 3,000 feet of take-off space is provided either with the prevailing wind or from the east and west. It is asserted the field would have only one superior in the country and that on North Island, embracing 2,500 acres in San Diego Bay."

(Seattle Times 5/30/20)

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June 25, 1920

Bulld
Washington, D.C.

The purpose of this letter is to keep the personnel of the Air Service both in Washington and in the field, informed as to the activities of the Air Service in general, and for release to the public press.

FOR RELEASE JUNE 26, 1920.

ARGENTINA NOT IN NEED OF AVIATORS

The following letter was forwarded by the American Consulate General Buenos Aires, Argentina.

"The Honorable,
The Secretary of State,
Washington.

Sir:

I have the honor to hereby advise the Department that both this consulate general and our embassy have been receiving a number of inquiries during the last month or two from aviators in the United States desiring to become aviation instructors in Argentina, and I would respectfully suggest that wide publicity be given to the fact that, in reply to a recent inquiry made of him by our military attache here, the Argentine Minister of War has written that the Argentine Government does not entertain at the present time the idea of utilizing the services offered by American aviators.

The Minister gives as a reason that Argentina now has officers in France studying aviation, and he states that it is the plan to utilize these Argentine officers as instructors in the Argentine Military Aviation School as soon as they terminate their studies abroad.

Anything that the Department may do towards imparting this information generally to American aviators will save both them and this consulate general the trouble caused by useless inquiries upon this subject.

I have the honor to be, Sir,

Your obedient seryant,

W. Henry Robertson,
American Consul General."

HOW MEN ARE TAUGHT THE ART OF PARACHUTE JUMPING

Air Service Mechanics School having great success
with Irving Parachute.

In the past two months some forty live Parachute jumps, using the U.S. type "A" airplane Parachute have been successfully made for the purpose of instruction at this school. The plane used is a DH-4B which has the scarf mount removed and which has a small step 5" wide and 2' long attached to the left side of the fuselage just above the elevator rocker-arm.

When the jumper is climbing around getting ready for a jump, it is hard for him to tell just the proper time to jump to land safely in an open space. The responsibility for the success of the undertaking rests upon the pilot. The plane is headed into the wind at an altitude of about 2500 feet, the motor is throttled until the plane is making about 60 miles an hour, gradually settling, then the pilot signals to the jumper to climb out on the step. In the meantime the plane is approaching the edge of a flying field and the jumper then hands his goggles to the pilot. This precaution is necessary to avoid having any article which might catch on the reserve chute in case it has to be opened and which belt worn on the crest would open in front of the jumper. Also it has been found that goggles are of little value when jumping.

When the pilot has checked the jumper, seeing that he is holding to the fuselage with his right hand and has his rip cord ring in his left, then the motor is throttled down to its minimum and the jumper is told to go. Throttling the motor gives the jumper a better chance to make his get-a-way and naturally reduces the chances which are very small of being blown into the stabilizer should he not get away properly. One second after leaving the plane the rip cord may be pulled releasing the chute. The jumper may take any position when leaving the ship. He may jump backward, or jump facing the direction of flight, or straight out from the step. The danger of following the stabilizer is practically nil as long as the chute is not released while the jumper is on the ship. The jumper travels the same course as a bomb, downward and forward, keeping under the plane until his chute opens. Men must be instructed in side slipping and landing before ever they attempt a jump. This type of parachute can be landed within a 100 foot circle nine times out of ten under average conditions, due to the ease with which they may be side slipped. The jumper should also be instructed to release his reserve chute when about 100 to 150 feet from the ground, to lessen his weight when striking the ground. He should be instructed to turn his body so that he faces with the wind when descending as he has a better chance of keeping his feet when landing. No difficulty will be experienced with a DH-4 P after the jumper has left the cockpit if a 100 pound bag of sand is put behind the stool in the rear cockpit.

When jumping inexperienced men, the importance of a good pilot cannot be over estimated, for the success of the entire undertaking depends on his judgment.

ALTITUDE FLYING THE RAGE AT THE AIR SERVICE MECHANICS SCHOOL, KELLY FIELD, TEXAS

During the past two weeks altitude flying has been the rage at the Air Service Mechanics School, Kelly Field, Texas.

A short time ago Lieut. Weddington noted that some aviator in the East made over 17000 feet with three passengers. This bothered Lieut. Weddington just a little for he figured that records of this sort ought to belong down in Texas, so he took an ordinary DH-4P off the line and packed three men in the rear cockpit, sardine fashion and went up 18,000 feet. He came down quite satisfied and went to supper only to find an Associated Press Dispatch staring at him from the evening paper which said that somebody else in the East had bettered his mark by just 100 feet or so. The next afternoon three men were again packed in the old DH and with just one and a half hour's gas, he went up 20,031 feet, but he didn't stop there. That afternoon and the next morning experts from the Motor Department came down and looked the motor over with a critical eye, adding a touch here and doing something else there until the motor was tuned up like a new piano, and when a Liberty motor gets tuned up, it has "some pep".

On Friday of this week three passengers were put in the rear cockpit, one was worked over until he was at last fitted in just behind the gasoline tank in the front cockpit and with four passengers he took off. Spectators say the DH creaked as it lifted itself off the ground, but at that she kept on going and when Lieut. Weddington landed, one barograph showed 20,131 feet and the other 19,357 feet. These barographs were officially examined and found to be correct by a Board of Officers. When this record is broken he will find a new place to pack an additional passenger and go on up again.

NEW TYPE OF BALLOON FOR MACHINE TARGET PRACTICE, LEE HALL, VIRGINIA

The Balloon Construction Class of the Vocational School at Lee Hall, Virginia, which recently completed the miniature Type R balloon exhibited at the First Annual Army Aerial Exhibit, held at Bolling Field, Anacostia, D.C., May 14-15 and 16th, has completed the T-1, a target balloon designed by Lieut. Lober. This balloon is an elongated sphere having a vertical axis of 18 feet and a maximum horizontal diameter of 12 feet. A cloth target is to be suspended below the balloon, which will be used as either a stationary or movable target for the purpose of giving machine gunners aerial target practice. It will be towed by a motor vehicle.

A NEW USE FOR AIRSHIPS

The owner of rights to one of the most promising airplanes in the United States told a story recently which reminds one of the good old days in Rome when chariot races were popular. The pictures depict the utmost luxury of the spectators who are protected from the burning rays of the sun by enormous canvas canopies. Our story however, deals with A.D. 1919 when after luxurious entertainment in the Mediterranean a return visit was made to the guests in Berlin. To return the many favors in war stricken Germany was beyond hope but the former guests were able to secure through their connections the exclusive use of one of Germany's most famous post war commercial airships. So at the close of one of many of its successful voyages it was turned over to this gentleman and his friends to do with as they pleased until the following day. The crew and pilot were available and so a short journey was initiated. After toying with the craft to their mutual amusement a race track was discerned in the outskirts of Berlin and the ship was accordingly headed toward it. Below the spectators could be seen standing in the sun which happened to be severely hot that day and from their shifting it could be seen that they were far from comfortable. The pilot of the airship then swung his ship into such a position as to cast a huge shadow over the crowd below and throttled his engines down so as to hold the ship's nose into the slight breeze and to act as a wind anchor, the ship stayed there until the races were over and the guests on board followed the events with keen delight, while from below the cries of "bravo" reached up to the ship from which the waving of delighted hands and handkerchiefs signified the appreciation of those below, who were thus relieved of the torture of the sun's rays by the shadow of the ship floating above them.

SHORT PARAGRAPHS OF NEWS INTEREST

Major V. G. Schauffler, Jr. Wing Operations Officer at Kelly Field flew an S.E.-5 to Austin, Texas to take spare parts which were badly needed for the Liberty Trucks being used by a recruiting party. After passing thru a thunder storm at San Marcus the motor heated up due to a water gasket blowing out. Flying with a throttled motor Austin was finally reached and a safe landing made with half a bucket of water left in the radiator. Mechanics had the trouble fixed up by seven o'clock and Major Schauffler returned to Kelly Field landing at eight o'clock by moonlight.

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During the past week 90% of the daylight hours were suitable for flying. The First Day Bombardment Group, Kelly Field, Texas made a total of 186 flights for 112 hours and 5 minutes. These flights were of the following types: Long distance reconnaissance, recruiting, artillery liaison, smoke bomb practice, altitude test and formation.

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During the week Major J. N. Boots and Lieut. J. B. Machle, of Selfridge Field, Mt Clemens, Michigan, accompanied by mechanics, flew in DH-4's to Dayton, Ohio, making the trip in two hour's time. After a short inspection of the General Supply Depot at that place, the trip was continued to Speedway, Indianapolis, Indiana, where an interesting inspection was made of the General Repair Depot. The return trip to Selfridge Field was made direct in one hour and fifty-five minutes on Wednesday. Flying conditions were good, with the exception of very low visibility on the return trip.

STEAM MOTORS FOR AIRCRAFT SHOULD PROVIDE FOOD FOR THOUGHT

With the advent of metal aircraft which is now conservatively assured in quantity together with the development in rigid airship design an old and much muted question again comes to the fore. This question is "Can steam power be adapted to propel aircraft"? Going on the basis that everything is possible it remains for some one man to do it but in doing it he must bear many points in mind to successfully develop a complete steam motor apparatus that will meet all the requirements and still at the same time be such as to replace the present unreliable internal combustion engines.

Germany and England have produced motors of this type that have at least shown promise in their trials and it is high time that the United States produce the finished product especially considering that we already lead in this type of motor as applied to automobiles. In order that this motor may be of value however it must not only equal existing internal combustion engine performance to be acceptable but must supersede that performance.

It is hoped that inventors and those who are technically familiar with steam engine performance will contribute their experience to the solution of this problem.

As late as 1913 the consideration of steam for powering airplanes was met with candid disfavor but owing to the rapid progress made in aeronautics since that time it is believed that the time is ripe to make such overtures as would meet with reasoning. Simultaneously the developments in steam engines and boilers have been so progressive as to suggest that the impracticabilities formerly pointed out may have been almost entirely eradicated. Below one hundred horsepower there would seem to be little demand for the steam aeronautical motor but for powers over that it is felt that there is a large field of utility. As multi-motored planes become more frequent the limitations imposed formerly by the amount of fuel and water will not seriously impede the radius of action, but this point must be watched carefully in the design of such a motor even now and the maximum efficiency procured. The question of weight of motor and boiler is today not of such vital importance even as is this problem of fuel and water, for the design and progress in the former two essentials has come to a point of easy adaptability.

Naturally high pressure steam will have to be used, and the efficiency of such an engine is most marked in its non-condensing designs to which aeroplane uses will be undoubtedly limited. In that case the steam consumption will have to be reduced to the minimum and high steam pressure carried. This will involve a problem of securing the same efficiency as is obtained in engines operating against low steam pressures. With ordinary steam engines there is a great difference of temperature in the cylinders which causes additional cylinder condensation. Multiple cylinders or multiple expansion engines have heretofore cared for this somewhat but condensation in this fashion offsets the benefits of high pressure. The problem of cylinder condensation however has been satisfactorily solved so that high pressure steam can be used in one cylinder without loss due to the wide range of temperature.

This is accomplished by allowing the exhaust steam to remain in the cylinder near the head where it is superheated by the jacket in the head and then when compression increases the temperature of the steam in the cylinder the walls are simultaneously heated to a temperature above that of the entering steam so that there is no initial condensation. This status obtains throughout expansion also. The single acting steam engine is particularly adapted for this purpose as a type primarily due to the fact that it eliminates stuffing boxes and simplifies this problem of expansion in that there is a gradual difference in temperature between the bottom and the top of the cylinder. Simplification is also achieved in this design in the valve motion and obviation of the reversal of strains both of which become serious problems at high speed.

Probably the most advantageous arrangement for a steam aeronautical motor will be found to be that of three cylinders set at 120 degrees in the one plane. In this design a good turning torque is obtained with a minimum of base while the valve motion is very simple. The latter consists of one cam directly on the main driving shaft driving the valve push rods. Exhaust is cared for in allowing the piston to uncover a port at the bottom of the stroke. A variable shut off is accomplishable by tapering the cam. While this design offers considerable head resistance it seems to be more reliable than others and with the boiler will compare favorably with other designs and motors.

An engine designed to develop 200 horsepower at 900 r.p.m. on 150 to 500 pounds steam pressure ought not to weigh more than 400 pounds and the condenser with it ought not to weigh more than 100 pounds. Such an engine would require about one and one fourth pounds of liquid fuel per horse power hour and 14 pounds of water. Condenser efficiency is so high today together with the conditions of flying which are favorable that at least 80% of the water ought to be reclaimed.

The boiler which will be considered in a later article must overcome all the problems of pressure decrease which include the rising boiling point, increasing pressure per square inch, and so forth. In general it is felt that the reliability of this means of propulsion will appeal heavily and with the advent of all-metal airplanes is sufficiently attractive to warrant trial although it should be undertaken by someone who is familiar with aeronautics as well as a specialist in steam engineering.

CURTISS CURTAILS

A New York news report states that the Curtiss Aeroplane and Motor Corporation will virtually abandon the manufacture of commercial aeroplanes at their factory in Buffalo, New York on or before July 1, 1920. The factory will be turned over to the production of other products. The reasons given for the necessity of this move are that the lack of legislation relative to the introduction of foreign planes to the United States makes it impossible for the Curtiss Corporation to compete and exist. The Curtiss organization claims three-fourths of the output of the American aircraft industry. It is regretted to see that this move has become necessary, for the Curtiss Company has done a tremendous amount of educational work that is now making itself felt and since the future bears an unquestionably rosate existence for the aircraft industry and aerial transport, it is too bad that contributors in the pioneering can not see their way to curtailing but still continuing so that they may participate in the business stability of the future in this game.

LIEUT. NELSON - NO LIFE SAVER

The popularity of Lieut. Fred Nelson of the Aviation General Supply Depot, Middletown, Pa., and the high place he holds in the minds of the residents of the vicinity of Middletown, as an aviator, was loftily illustrated, but slightly over estimated during the past week when his telephone rang and upon answering was nearly struck dumb to hear a sweet feminine voice on the wire requesting him to fly to her home and rescue her favorite pet kitten that was mounted in the top of a tree and refused to be coaxed down. The lady suggested that Lieut. Nelson swoop down by the tree, reach out and rescue kitty in passing and she was greatly disappointed when Lieut. Nelson told her that it was impossible from a practical point of view. After a great deal of explaining the lady thanked him for his kind words of sympathy and rang off, much to Lieut. Nelson's relief. Nelson says that the cat life saving business might have a wonderful future before it, but not with airplanes.

CUB WOLVES CAPTURED OUTSIDE OF CHANUTE FIELD, ILL.

In the News Letter of June 5 there appeared an article entitled "Locating Wolves by Airplane". The original story was based on information received from Chanute Field. A number of officers who trained at Chanute Field read the story and several have asked "How Come, No Wolves around Rantoul", etc. Well, there are, for we have a letter from the Commanding Officer of Chanute Field telling of the capture of two cub wolves and to back up his statement he submitted photographs of them. Lieut. Charles Leonard of Chanute Field was sent to the home of Mr. Alfred Johnson a farmer living 6 miles northwest of Rantoul to secure pictures of the two cub wolves captured by him.

Mr. Johnson stated that several large timber wolves have been about in the vicinity of his home ever since the early part of the past winter. The farmers in the vicinity have organized a number of hunts to attempt to capture and destroy the creatures, but have always been unsuccessful. On several occasions they were surrounded, but they always succeeded in slipping away. At one time, a large den was found, more than five feet under the ground and from four to five feet in diameter in the largest part. The little wolves were found about one half a mile from this den in a shallow hole, dug under the hedge. The cubs have become quite tame, being special pets of the Johnson children, but whenever they are allowed to run loose in the yard they show their wolfish nature by immediately pursuing the

chickens, rabbits and other small creatures around the farm. The farmers in the vicinity have requested the Commanding Officer to assist them in capturing or destroying the older wolves by having an airplane sent out to help locate them. It is not thought by the Air Service Officers, however, that it would be possible to see wolves running in the grass on account of their protective coloring. However, attempts are being made and a report will be made later whether these animals can be spotted from the air. The young wolves captured are arousing great interest in the vicinity and Mr. Johnson's home has been visited by a large number of automobile parties each Sunday, since their capture.

PHOTOGRAPHIC LENS DROPPED FROM THE AIR

During the week the radio officer of the 1st Bombardment Group on recruiting duty at Gonzales, Texas sent a radio call to headquarters Kelly Field requesting that a projection lens for their moving picture machine be dispatched to them. It was learned that the nearest place that a lens could be secured was at Dallas, a distance of 250 miles. Accordingly Lieut. H. H. Spencer flew to Dallas in a DH-4B secured the lens and returned to Kelly Field, having completed the flight of 500 miles in five hours. From Kelly Field to Gonzales a distance of 90 miles was flown by Lieut. Drum. On his way he passed thru a bad storm, only to find upon arriving at Gonzales that there was no aviation landing field there. The Observer wrapped the lens in cloth and paper and dropped it, from the airplane to the men waiting below. It landed safely in the hands of an enlisted man. A large crowd was waiting to see the outcome of the demonstration and they expressed great surprise that an airplane could travel 690 miles in 7 hours.

Demonstrations of this character are going a long way toward educating the people to the fact that the airplane has gone far beyond the experimental stage and is a reality and not merely a possibility. Hundreds of incidents like this have been happening all over the country. Just such convincing facts as these have been responsible for a live wide awake surgeon in Kansas purchasing an Oriole which he uses for visiting patients in far away places. Railroad trains would get him to his destination in four or five hours traveling over hills and dales, his airplane gets him there in from 50 to 75% less time.

A year from now will see many of the things in aeronautics which are now considered dreams a reality.

Remember the locomotive, steamship and automobile passed thru the same stage of evolution.

NEW LAKE DISCOVERED BY AIRMEN IN PANAMA

During the week two planes from the 7th Aero Squadron made a reconnaissance flight to locate a lake reported in the mountains north of Anton, R.P. The planes located this lake about fifteen miles west of Chame Bay and eight miles from the Pacific Coast. It is not shown on any maps and is the first fresh water lake to be found in Panama.

A landing field was located near the lake but as one of the planes was having motor trouble a landing was not attempted there. Both planes glided to open country and landed at Bejucom R.P. where they were received with much enthusiasm. The natives presented the flyers with large bouquets of native flowers. These people are interested in the English language and with the assistance of an English instructor, are attempting to learn it.

ARMY AIRPLANE AMBULANCE

There can be little doubt that much of the success which attended the efforts of the Army Surgeons in the World War was due to the short time which elapsed between the wounding of a man and his arrival at a well equipped hospital. Stationary warfare alone made this possible with our present means of transportation, the evacuation and base hospitals being brought almost to the firing line. But what would the situation be should we be called upon to carry out active extensive military campaigns in such regions as our own great Southwest with its scattered railroads and undeveloped desert roads?

Here indeed is a field of development for the airplane, and that our military aviation authorities are fully awake to the possibilities of this is indicated by the construction of airplane ambulances, a new design of which was recently completed at the Air Service Experimental Station, McCook Field, Dayton, Ohio, and flown to Bolling Field at Washington.

Many previous models of airplane ambulances were in use at the flying fields in this country during the war and rendered valuable service on many occasions, proving both actually and potentially the value of such a service. These old models were all simple modifications of the Curtiss training planes, but in the new ambulance, for the first time, a fuselage designed primarily for the transportation of the sick or wounded is used, providing space for two litter patients, a medical attendant and a pilot.

The basis for this new ambulance is the DH-4 type of airplane, but many modifications have been made to increase its safety and stability. Thus the landing gear has been moved forward about twelve inches and the dihedral angle increased to 2.75%. The wings have a 12 inch stagger and the angle of incidence is 3°.

Necessary accommodations for the wounded are provided by increasing the depth of the fuselage behind the pilot's seat and dividing the space thus provided into an upper and lower compartment by means of a longitudinal partition. These compartments are reached through doors running their entire length opening on the side of the fuselage. Each compartment is furnished with a Stokes litter which can be securely fastened in its compartment and is easily handled by two men. Adequate light, and ventilation is provided by means of windows in each compartment. Above the upper compartment is a cockpit with a portable seat which can be used by a medical officer going to aid of the injured.

The entire plane is finished in white paint with the Air Service insignia on the wings, the Red Cross on the sides of the fuselage and landing wheels and the Medical Corps Caduceus on the rudder.

The performance of this ship on its trial flights has been most creditable. After the usual preliminary flights at McCook Field, it was flown to Washington and from there to Langley Field and return, the flight from Washington to Langley Field being made in 65 minutes and the return in 105 minutes, the distance each way being approximately 130 miles.

Several ambulances of this type are now being constructed for use on the Mexican Border and what they will mean for our soldiers on the Mexican Border can best be appreciated by those who have seen duty at the hospitals at that section. No longer will the luckless recruit who has been bested in a contest with the famous Western bronco miles from adequate medical facilities for his care, be jolted for hours in a rough riding automobile over cactus and mesquite but borne on silvery wings, cushioned by a mile of air, will be conveyed in the twinkling of an eye to the rest and comfort of a modern hospital.

AIR SERVICE MECHANICS SCHOOL, KELLY FIELD, TEXAS

Lieut. Alvin St. John loses his Life in Accident.

NOTE: Due to a delay in mail this office could not secure details concerning this accident. In last week's News Letter a notice was placed therein concerning the funeral of Lieut. St. John.

Those of us who knew "Little Saint" knew his personality, his flying ability, and his many other sterling qualifications were indeed shocked when the news of his death was received. The following letter was received from the Air Service Mechanics School where "Little Saint" was stationed.

"On Friday, May 21st, 1920 at 1:55 P.M. one of the saddest accidents in the history of the Air Service Mechanics School occurred. This was the death of Lieut. Alvin M. St. John, caused by striking a flag pole in landing with a DH-4B. Lieut. St. John was one of the best liked officers of the school and his death left a gap in the ranks of the Air Service Mechanics School which can never be quite filled.

Lieut. St. John's home was in Memphis, Tenn. He was buried in Hollywood Cemetery, Jackson, Tenn. May 25th, 1920.

Services were held at the Post Chapel, Fort Sam Houston, Texas, by the school. A formation composed of planes piloted by Lieut. Harry Weddington, Lieut. Byron E. Gates and Lieut. E. E. Eubanks, flew over the procession and dropped armful after armful of flowers on the casket of the man they knew so well.

The following are extracts from a letter written by Lieut. St. John Sept. 20, 1919. This letter was discovered after his death.

Sept. 20, 1920

"When I am killed, I would like very much for the following to be carried out as far as possible:

That my sister, Mrs. E. H. Hickman, #3 Avava Aptmts., Nashville, Tenn. - my brother, Joe M. St. John, 1244 Court Ave., Memphis, Tenn. - my foster mother, Mrs. James B. Gillespie, Box 888 Phoenix, Arizona - The Jackson Daily Sun, Jackson, Tenn., - be notified by wire immediately of my death (paying for wires with money in my possession).

That a military funeral be held by Captain Rand at First Presbyterian Church, San Antonio; following pall bearers: Honorary: Major Stratemeyer (who is an army Prince), Capt. D. Buckley, Lieuts. D. R. Phillips and H. S. Kenyon. Pall-bearers: Lieuts. C. B. Sherry, W. R. Carter, N. D. Brophy, L. Motley, Capt. W. R. Holcomb, Lieut. George Hodge - and how I would much like for Lieuts. Bowen, Gates and Brockenfeld to fly over the train or the funeral procession, but not to endanger their lives at any time in so doing. This I would appreciate more than any other request.

I would like for Lieut. D. R. Phillips to accompany my remains home, and for him to bother with my personal and funeral arrangements. Thanks, "Slick", for the trouble, but we only die once.

That my remains be buried at Henderson, Tenn., in the family burying grounds, by my mother. That a piece of the propeller of my ship I am killed in be placed at the head of my grave and always allowed to remain there."

Signed, Alvin St. John,
2nd Lieut. A.S.A.

The arrangements mentioned in the letter were carried out with the exception of the formation and there was only one of those officers named left in the service Lieut. Gates - who led the formation. All officers mentioned in this letter who remained in the services officiated in the capacities desired by Lieut. St. John.

NEWS FROM SQUADRONS ON THE BORDER

Flight "A" 8th Aero Squadron, McAllen, Texas

The third anniversary of the birth of the 8th Aero Squadron was fittingly taken care of on Thursday evening when friends of the squadron gave a dinner to the

officers at the residence of J. R. Glasscock. A delegation from Flight B at Laredo, Texas has been expected but at the last minute something interfered with that part of the program so it developed on the McAllen contingent to accept the honors. After a dinner replete with clever features, the party adjourned to the McColls Ranch for a dance which was in turn followed by a swimming party at the Squadron swimming hole.

On Wednesday Captain Kenney led a formation of five planes to Laredo for the combined purposes of cross country formation work, the examination of candidates for the title of Aviation Mechanician and to engage in an athletic tournament with the members of Flight "B".

The tennis tournament ended in a tie, Lieuts. Hickey and Harwood of Flight "A", and Captain Kyce and Lieut. Glasscock of Flight "B" each defeating their opponents. This quartette will settle the contest later at McAllen in a return match.

At the traps, Flight "B" outclassed the pigeon busters of McAllen all the way. The usual alibis of sore shoulders, strange guns, did not suffice so the visitors blamed their poor luck on the fact that the leader had taken the formation up to an altitude of 12,000 feet and had frozen everyone until they were out of condition.

On Thursday the formation returned from Laredo, landing at Ringold on the way to pay their respects to Col. Brown the Ringold District Commander. The Colonel was very much interested in the formation work, promised to improve the field still further, and after lunch came out to the field to bid the aviators good bye. The formation then continued on to McAllen and after practicing several close turns over the airdrome, the formation broke up and landed.

One of the prettiest formations ever formed was led by Captain Kenney Friday morning from McAllen to Falfurrias and Alice, for the purpose of selecting municipal landing fields. Five planes from Laredo flew to Alice from Laredo and three planes of Headquarters and Flight "A" flew from McAllen to Alice via Falfurrias. Good landing fields were located at both towns and will be marked with the usual white circle and wind vane. In the afternoon the Squadron team took on the Alice nine and up to the ninth inning not an Alice player was permitted to pass second base while the flyers had already crossed the rubber eleven times. Lieut. Beam the Squadrons third baseman was injured during the last half of the ninth and will probably be out of the game for a couple of weeks. After the melee one of the town fans announced that the home team would take the aviators to a real beating on the morrow but as was expected the home team again went down in defeat. The Squadron played excellent ball on the whole and many good contests are expected this season.

NEWS OF THE STORAGE AND REPAIR DEPOTS

Chanute Field

Captain Stolze, Zone Supply Officer, from Wilbur Wright Air Service Depot, flew from Dayton, Ohio to Chanute Field, Rantoul, Illinois in a DH-4 B airplane, on Wednesday to inspect the surplus property at the station. As a result of his visit, a considerable amount of surplus property will be shipped to Wilbur Wright Depot during the coming summer. The weather has been very hot for the past week and the flying officers have been taking advantage of the opportunities offered by the airplanes for enjoying the cool breezes of the high altitudes. A considerable number of flights have been made during the week.

Repair Depot, Indianapolis, Indiana

Immense crowds poured into Indianapolis last week from all over the United States to attend the 500 mile automobile race held at the Motor Speedway.

A number of Air Service officers from McCook and Selfridge Fields arrived at the Repair Depot via the air route to attend the occasion. The commanding officer made all arrangements in advance of their arrival. A temporary landing field was laid out and reservations secured for them inside the speedway.

The Service Club has undergone considerable change since the arrival of the new director, Mr. J. Oscar Robinson. The interior of the Club has been made more attractive by a complete remodeling of same. The exterior of the building and adjoining grounds are undergoing considerable change. Everything is being done by the Commanding Officer of this station to improve the morale of the men. There is a good supply of athletic equipment on hand and the base ball team is in fairly good condition. The team plays games regularly with the local teams of Indianapolis.

During the week there were received at the Repair Depot six engines and five planes. There were completed during the week eight Hispano Suiza Model A and one Liberty 12 and 1 Le Rhone engines, one DH4 and one Fokker DV11 plane. No shipments were made. There are at present three officers, 97 enlisted men and 259 civilians in the Engineer Department.

NEWS FROM THE ABERDEEN PROVING GROUNDS,
ABERDEEN, MARYLAND.

On Monday of this week the Commanding Officer of the Air Service Troops at Aberdeen, Maryland issued instructions for a recruiting drive on Chester, Pa. 60 miles distant. An officer was dispatched immediately to that city by airplane to make the necessary preparations and by 9:30 the next morning the detachment consisting of about half the squadron, was on the road arriving in Chester that night where they pitched camp in a vacant lot in the center of the city, and set up an exhibit consisting of machine guns, bombs, airplanes, cameras and radio equipment.

At noon the following day a flight of four airplanes arrived over the city from Aberdeen and performed acrobatics, after which they landed at the Springhaven Golf Club. At 3 P.M. the same day a DH-4 B arrived over the city from Aberdeen. This machine was equipped with a radio telephone operated by one of the enlisted men and as he passed over the various cities and towns enroute he spoke to the amateur radio operators on the ground. The following is the message sent out by the enlisted radio operator:

"This is an Army airplane 5000 feet over (name of Town)
Corporal Miller, of the 258th Aero Squadron speaking. We
are on our way to Chester, Pa. on a recruiting drive.
Join the Air Service and get a job like this.
An aviation mechanic gets \$145.80 per month, board,
clothing and rations for family. If you have the proper
qualifications you may enlist for one year."

This method of recruiting was quite an innovation and would probably have given better results if time had permitted of more advance publicity, giving the time and wave length on which the operators should listen in. This novel means of recruiting gets in touch with the type of young men desired in the Air Service especially radio mechanics.

The detachment returned the latter part of the week bringing with them 34 recruits who appeared to be excellent material. The trip was acclaimed by all to be a huge success.

NEWS FROM THE PILOTS' SCHOOL, MARCH FIELD, CALIFORNIA

Plans have been made for a big celebration on Flag Day at March Field, California. It is proposed to stage an air show in the interests of recruiting in which both heavier-than-air and lighter-than-air craft will participate. The show has been widely advertised throughout Southern California and it is hoped to welcome several thousand visitors to the Air Service school on that day.

Lieut. Col. B.K. Yount, Commanding Officer, announced that plans call for a company of men from the balloon school at Arcadia who will launch a big observation balloon. It is probable that one of the Navy pony blimps from the North Island Naval Air Station will also participate. Thus the show will afford an opportunity to display all manner of aircraft while attractive ground displays will supplement the aerial program.

It is the general comment that the new cadet class is A.-1. Major George H. Peabody has started class room instruction and among the new pilot candidates appear to be many who will make the grade. "They're a fine body of men and every man an aviator", has followed them from their respective stations in Texas and California. They will enter the shops and hangars the first of next week and gradually enter into the flying program in about four week's time.

Corporal Paul B. Nelson and Cadet Stephen W. Coutores have been ordered to report at the West Point Military Academy not later than July 1st. Both have been granted ten day furloughs preparatory to their trip east.

Goin' fishin' by airplane is the popular outdoor sport among the commissioned personnel of March Field. W. R. Whittier, owner of Hemet Lake in the San Jacinto Mountains has extended an invitation to the soldier population to visit his mountain resort. To facilitate matters a landing field has been cleared near the scene. The lake is at about 2,000 feet altitude and less than an hour's journey via air from this school. Major T.G. Lanphier returned Tuesday with two large rainbow trout. There is nothing on record, however, as to who caught them.

Six naval officers from the Naval Air Station at San Diego are completing their course of instruction in land planes at March Field. They are Lieutenants A. I. Lake, E. H. Bartless, G. R. Pond, C. McLaughlin, T. B. Lee and Ensign E. E. Reber.

Lieut. Col. B. K. Yount, Majors Clark and Lanphier, journeyed via air Friday to Newport Beach where they witnessed naval target practice. They were the guests of Lieut. Commander Mitscher, formerly stationed at this field for a course of instruction in land planes.

First Lieut. E. B. Bayley has been detailed to Camp Kearny where he will undergo a course of instruction in physical and bayonet training. He will return to March Field upon completion of the course.

BOLLING FIELD NEWS

During the week of June 9th-16th Bolling Field has been the center of unusual flying activities and the amount of work performed is especially noteworthy. Although May 31st marked the close of the intensive drive for Air Service recruits this station continues its efforts to secure much needed personnel and frequent cross country trips are made with this end in view, the results obtained being decidedly satisfactory. It is felt that this Field is the terminus of more cross country flights than any other flying field, and more cross country flights have their inception here than at any other field. This is not strange when considering the fact that Washington is the center of all military activity; that all roads lead to Washington and that many air lanes converge at Bolling. Situated on the banks of the Potomac River directly across from the War College, with Washington's Monument, the Nation's Capitol, the Senate and House Office Buildings, the Congressional Library, the Navy Yard and the city proper in the immediate foreground and within ten minutes ride of the field, it is readily accessible to those officials whose business necessitates a quick journey by aerial route to any of the numerous important cities and stations within flying radius and the number of flights made by high ranking army officers, state and war department officials, senators and members of congress and the results obtained by reason of the time saved in their transportation is proof conclusive of the absolute necessity for such a station. On the route from New York to Langley Field and other Southern points, it is decidedly convenient as a filling station for the visiting planes as well as a repair depot.

Not only do Air Service planes use Bolling as a terminus but the Navy, Marine Corps and numerous Civilian Flyers are daily visitors and it is well to add that every courtesy is shown and every effort made to assist in every possible way those "brothers of the air" to whom we are host. That our hospitality is appreciated is plainly evidenced by the frequency of their visits and by the letters of appreciation so often received by our Commanding Officer. The development and perfection of aerial instruments and the development of scores of other features closely related to aerial travel is being carried on daily and Bolling Field is more and more being used to assist in this development. At the present time the United States Bureau of Standards, the United States Geological Survey and many other Bureaus whose primal object is research and perfection in many different lines of endeavor, are making flights from Bolling Field, the nature of which must of a necessity be kept as official secrets. Enthusiasm and keen satisfaction are constantly manifested by the department heads over the results obtained and a continuance of these endeavors is to be hoped for.

Bolling Field is now on the itinerary of nearly all of the sightseeing expeditions in and around Washington and scores of visitors on daily trips are shown about the field and shops. The interest displayed by these people, who come from all parts of the world, augurs well for an awakened interest in aeronautics and its possibilities and Bolling Field is serving as one of the mediums for the development of national thought favorable to aeronautical advancement and the impetus given this thought will be reflected in commercial aviation to an unusual and unthought of degree.

On June 9th Lieut. Grissom Haynes, in a DH4, accompanied by Sergt. Manuel Rose, and Lieut. Leo F. Post in an SE-5 took off for Scranton, Pa., a distance of 210 miles, for the purpose of stimulating recruiting in that locality. Lieut. Post was forced to descend at the Bustleton mail field near Philadelphia on account of motor trouble, Lt. Haynes continuing on to the destination. Scranton is situated in one of the most mountainous sections of Pennsylvania and being unable to locate a suitable landing field Lt. Haynes returned to Bolling by way of Aberdeen, Md., after dropping considerable recruiting literature over the city of Scranton. Several letters have been received from men in and around Scranton inquiring as to the possibilities in the Air Service, with a view to enlistment, and these letters are the direct outcome of this recruiting flight.

June 10th Lieut. Lyman Patterson, in a Curtiss 'H', with Corporal Hammer as mechanic, proceeded to Martinsburg, West Va., on a recruiting trip, returning the same day. The city authorities cooperated in every way possible with the recruiting party and it is well to add that extraordinary interest is continually being manifested by the people of Martinsburg in making these trips worth while from a recruiting standpoint. A civic aviation club has been organized under the direction of Mr. A. B. Parks and a plan has been formulated for the purchase of an aeroplane which is to be used to advertise the city. Every individual in the city is a strong booster for aviation.

June 10th General Mitchell left Bolling Field in an SE 5 on a flight to Langley Field, Virginia, making the trip for the purpose of explaining to the officers at that station the different features of the Army Reorganization Bill. While there he outlined a plan of attack against the Atlantic Fleet, which was at the time anchored in Hampton Roads nearby, by several formations of battle planes, and himself directed their movements from the air. The attack was a complete surprise to the fleet and a decided success from a military standpoint. General Mitchell returned to Bolling from Langley Field on Sunday.

A number of other flights were made to Langley Field on the above date for the purpose of participating in the flying manoeuvres, the following officers and enlisted men going from this field and from the Office of the Director of Air Service: Lieut. Harmon and Sergt. Hardin in a DH4; Lieut. Carrol and Lieut. Schneeberger in a DH4; Major Fitzgerald and Colonel Oscar Westover, the latter named being Administrative Executive to Major General Menoher, Director of Air Service, their ship being a DH4 Bluebird; Lieut. Pat Logan and Sergt. Myhres in a DH4-B, and Lieut. Grissom Haynes in a SE-5. Lieut. Beau piloting a DH4 from Mitchell Field and having as his passenger Colonel Gerald Brant, Dept. Air Service Officer for the Eastern Department, landed at Bolling only long enough to replenish their gasoline supply and proceeded on to Langley Field.

Bolling Field however, has inaugurated the plan of 'going and getting' repair parts which can be carried by plane, thus saving valuable time. June 11th, Lieut. Charles Colt and Corporal W. Meek flew to Middletown, Pa. and return, the round trip of 266 miles and the time spent in obtaining necessary engine parts consuming but three hours and five minutes.

Saturday June 12th, Sergeant Roy S. O'Neal in a Curtiss 'H', with Corporal F. Fox as mechanic, left Bolling enroute to Denton, Maryland, for the purpose of recruiting. A safe landing was made at Denton and recruiting literature was freely distributed. An unfortunate accident, in which no one was in any way injured, marred in part, the visit to the city. Saturday afternoon Sergt. O'Neal was in the act of making a short flight over the city and had barely left the ground when an ejection of gas from the engine was blown on to the upper wing and immediately ignited. With commendable presence of mind the pilot slipped his machine to a landing in an adjoining field and lost no time in climbing to safety, his passenger preceeding him by several seconds. All inflammable parts of the machine were entirely consumed in the fire and none of the instruments were saved.

On Monday June 14th, Sergeant Harry Myhres in a DH4, with Dr. Burka, of the Bureau of Standards as his passenger, climbed to an altitude of 16,400 feet in a short flight, for the purpose of testing a new type of altimeter and barometer. A higher altitude was not attempted in-as-much as the instruments were not calibrated for a higher altitude. The experiments were entirely satisfactory and it is quite probable the Air Service will adopt the new types of instruments.

The same day, Lieut. Harold A. McGinnis, acting as Accident Investigation Officer, and accompanied by Lieut. Woodward, Salvage Office, made a flight to Denton, Md., in a Curtiss 'H' for the purpose of reporting upon and disposing of the wreck of Sergt. O'Neal which occurred on Saturday. Sergt. O'Neal was exonerated from blame, the investigation disclosing that the flames had their inception in a back-fire from the engine. The only usable portion of the plane remaining was the engine and arrangements were made for its return to Bolling Field.

June 15th, Lieut. McGinnis in a DH4, accompanied by Mr. W. T. Lee, made a 100 mile flight from Bolling Field, and return, each way following a course two thousand feet above the channel of the Potomac River. This trip was for the purpose of survey and map correction, observations being made of the river channel and of sand bars and other obstructions which could be plainly viewed from the air. The advantage of mapping from the air has long been recognized and now comes the plan of mapping the endless and ever shifting obstructions of our navigable rivers. Considerable of this type of work is being planned by the bureau having in charge the geological survey of our rivers and harbors, especial attention being given to the shore lines.

After a visit of several days the two JL-6 All-metal monoplanes, whose appearance has occasioned comment as to their far-reaching influence upon aeronautical advancement, left Bolling and proceeded to Langley Field June 11th, returning to Bolling Field the day following and thence proceeding on to New York, from which place they are soon to start on a long westward cross country flight embracing stops at a number of cities along the route. While at Bolling Field one hundred and thirty-two passengers were carried for the purpose of demonstration and scores of test flights indulged in for purposes of demonstration to Army and Navy officials. The only Air Service officer to fly one of these types of planes was Lieut. Colonel Harold Hartney, who speaks enthusiastically of its manoeuvreability and very highly of its practicability. On June 10th a moving picture operator piloted by Lieut. Harold A. McGinnis, in a DH4, secured some excellent pictures of both machines in flight, a close formation being flown by the three machines and some remarkably close pictures obtained of different aerial manoeuvres. The features of the passengers in both planes can be easily recognized. These moving pictures are to be released at an early date and will be shown throughout the country.

From June 1st to June 16th, inclusive, thirty-five visiting planes have arrived and departed from Bolling Field. During the same period a like number of cross country trips have started from this field. When one considers the amount of time and work necessary to service and care for this number of ships and at the same time keep up the routine work of the field, it must be granted that excellent effort is being expended by the entire command. It is truly said that busy men are happy men and especially is this true at Bolling Field.

NEWS FROM THE SQUADRONS

Rich Field, Waco, Texas

On Thursday evening of this week the members of the Waco Chelsea Club and their lady friends were the guests of Lieutenant Edgar E. Glenn of Rich Field who entertained with a swimming party in the Rich Field Swimming Pool. After the party had thoroughly enjoyed the ecstasies of plunging and bathing in the pool, they were entertained at the quarters of Major and Mrs. Muhlerberg, by an informal dance. Since Major Muhlenberg has assumed command at Rich Field, it has been one of his zealous efforts to promote a spirit of social co-operation with the citizens of Waco.

The pool has been placed in a thoroughly sanitary condition for the use of the enlisted and officer personnel and is taken advantage of in a most beneficial way.

9th Aero Squadron, Mather Field, California

Forest Patrol

It is a keen regret of the members of the 9th Aero Squadron that, due to the extraordinary extent of its activities and consequent requirement of all personnel to stand by fourteen hours per day, it has been little short of impossible to devote the desired amount of time in keeping the rest of the Service informed of its doings through the medium of the Air Service News Letter. The members of the squadron have read with much interest of the recreational activities of both officers and men of other units who seem, somehow, to find the time, but, however, on the other hand, have rather rejoiced and overlooked the loss in the belief that the 9th Aero Squadron is one of the Air Service Units, that is doing real work in demonstrating the practicability of Aviation to the commercial world, in its work of patrolling the vast national forests throughout California. What is of great value to all at this time is the fact that the patrol of the forests by the Air Service is a work appreciated by the people of the territory covered. These people cannot help but realize that, rather than being an extravagance, the forest patrol branch of the Air Service is beyond dispute a national benefit and a vast saving in private and national natural resources, although the scope of such operation is confined at present to a very small section of the country. This attitude is apparent through the manifestations of good will and well wishing toward the officers and men.

At the present time seven patrols are being flown of not less than 2 1/2 to 4 1/2 hours duration each day over what can be truthfully said to be as treacherous a country to fly over as may be found in the United States, with but 65 officers and men. It is hoped that in the near future adequate personnel to continue this work will be furnished.

The work of inauguration of forest patrol just completed has been an arduous task under the circumstances involved, such as the location and installation of radio stations, location and preparation of emergency and flight station landing fields, the designation of permanent patrol routes calculated to cover the greatest area with the least flying and the instruction of pilots and observers, the latter procured by necessity from among the enlisted men. At the present time the distribution of flights, personnel and work allotted is as follows: Flight "A", Fresno, California, Patrols Stanislaus, Mariposa and Yosemite National Forests. Lieut. John R. Morgan, Flight Commander, pilots- Lieuts. Frank T. Honsinger and Jesse A. Madarasz. Flight Surgeon, Captain William E. Squier, M. C. Flight "B", Red Bluff, California, patrols Modoc, Lassen, Shasta, Klamath, Trinity and California National Forests. Flight Commander Captain William J. Hoover, pilots Lieuts. Raymond S. Coward, I. J. Williams, Mark R. Woodward, Flight Surgeon, Captain J. J. France, M.C. M.E. Theodore J. Robins and Sgt. Wayman Haney, enlisted pilots. Headquarters Flight, Mather Field, Major Henry L. Watson, Commanding Squadron, Lieut. G. W. Pardy, Adjutant, Operations and Information Officer, Lieut. P. L. Williams, Transportation, Lieut. Amos B. Chapman, Supply, Lieut. Luke J. McLaughlin, Engineer, Lieut. Le Roy W. Burns, Radio, pilots, Lieuts. Spencer Hall, Floyd A. Wilson and Douglas E. Martin and Lieut. R. L. Maughan. To date forest patrol has been carried on for a period of fifteen days, during this time thirty fires have been discovered.

There has been but one forced landing on forest patrol during its operation. A recent shortage of gasoline was experienced that necessitated a delay in operation of several days, during which no patrols were made as it was found that the commercial gasoline was of such poor quality as to make it extremely dangerous to go beyond gliding distance of the valley. A forced landing on any one of the seven patrols flown means almost sure death to both pilot and observer.

Cooperation of the forestry Service in laying out routes, guiding pilots through new territory with which the forestry men are remarkably familiar, and the knowledge of these men in woodcraft has been of great assistance to this organization in its work.

Lieut. Ralph M. Kelly assists in putting over Bond issue

On orders from the Department Air Service Officer Lieut. Ralph M. Kelly was sent by plane to Eugene, Oregon, for the purpose of assisting in putting over a bond issue at an election to be held for that purpose there. From Eugene, Oregon, Lieut. Kelly proceeded to Blaine, Washington, for the purpose of accompanying the motor transport caravan starting from that point for a tour through Washington, Oregon and California, in the interests of good roads. During Lieut. Kelly's wanderings, his work was so successful in the interest of aviation fields, bond issues, etc., that upon his return here the Commanding Officer was besieged with telegrams and letters requesting his return to Washington for the purpose of aiding in the putting over of a bond issue at Seattle. It was necessary to give Lieut. Kelly leave for the purpose of returning.

4th and 6th Aero Squadrons, Luke Field, Hawaii

A Trip around the Islands

During the week two HSSL boats carrying Major Curry, Lieut. Wooten, Lieut. Lanfall and Lieut. Maitland, Pilots; Lieutenants Gowans, Radio Officer and Corporal Black, mechanic, made a flight to the Island of Kauai, which is the western Island of the Hawaiian Group. This is the first time airplanes have ever visited the Garden Spot of Hawaii and was marked by great excitement among the inhabitants, most of whom had never seen a plane in action. The party remained for three days, making demonstration flights and gathering information of military value. Thru the generous hospitality of several of the influential citizens, motor cars were constantly at the service of the members of the flight, who were thus able to make extensive tours to all parts of the Island and gather information from the ground as well as from the air. This completed the tour of the Islands by Major Curry, Department Air Service Officer, under whose direction the flights have been made.

Newest Recruit

The latest recruit to arrive at Luke Field was Sheldon Harley Wheeler, born April 17th to Major and Mrs. Wheeler. A silver cup was presented to him by the Officers of the Air Service.

Infantry Contact

The practice in Infantry Contact flying was continued during the week. A zone of advance by an imaginary battalion was established at Diamond Head on the east coast of the Island. Planes were dispatched at various intervals during the day to pick up all parcel messages in the theater of action. These messages were transmitted back to Regimental Headquarters in the region of Ahua Point and upon the completion of each mission, message bags with written reports, were dropped at this point. Messages put out by Regimental Headquarters were then observed and recorded and reports dropped at Division Headquarters, established at Luke Field. This practice was found to be of excellent value, and aroused a great deal of interest among the men engaged in it.

A Letter from a Candidate

A letter was received at Headquarters a few days ago which has given the men at Luke Field a hearty laugh. It ran as follows:

"Celebrated Officer:

I wish to enlist as a flying cadet, am a faithful American citizen of twenty and of Portuguese-American descent, and a strong believer of Uncle Sam.

My imagination of the future aeroplanes, known as an entirely new branch in aeronautics may prove a success, and therefore Uncle Sam may profit by its merits.

My mental nourishment is FLYING.

Awaiting your reply and application papers, I am Celebrated Officer,

Respectfully Yours"

Photographing Motor Train

An ambulance train of ten vehicles was observed by our patrol during the week leaving Schofield Barracks. It was kept under surveillance until it reached its destination at Fort Schafter. The following day it again was observed, this time making the return trip back to Schofield. Photographs were taken both days of the train on the road.

NEWS FROM THE AIR SERVICE MECHANICS SCHOOL,
KELLY FIELD, TEXAS

Commercial Gas used over boggy Country. ✓

During the week Lieut. James S. Eldridge flew a DH-4B from New Orleans to San Antonio in five hours and three minutes. Owing to numerous rain storms which had to be circled, instead of being 500 miles it can be figured as over 600 miles.

Brewster Goldsmith spark plugs were used. After eleven hours of flying, using all kinds of oil the engine did not miss on a single plug.

Commercial gas was used and no trouble was experienced.

The country within a radius of 250 miles of New Orleans is very poor. It is practically impossible to make a landing outside of the recognized landing fields, due to its boggy nature.

RECORDS OF FREE BALLOON FLIGHT JUNE 3, 1920 ✓

Note: This flight was piloted by Lieut. H. H. Holland with four passengers from Aberdeen Proving Grounds, Aberdeen, Maryland.

Time (P.M.)	Altitude	Observation	Temperature	Met'l Conditions
1.59	0	Over Balloon Field, Aberdeen Proving Ground, Maryland.	31.3	Sky Overcast and threatening.
2.04	2000	Short distance south east of Balloon Field	28.2	Hazy to S. and SW with showers in NNW
2.09	2340	SE of Balloon Field and nearing edge of Bay. Having difficulty in gaining altitude.	28.5	Sun obscured.
2.14	2900	Over shore of Bay	27.8	Change in direction had been met at 2800 ft. carrying us more to E. First thunder heard at 2.12 P.M.

Time (P.M.)	Alti- tude	Observation	Tempera- ture	Met'l Conditions
2.19	3500	Over Bay using considerable ballast in effort to rise above clouds	25.2	Rain approaching and thunder sounding nearer
2.24	4100	Moving slowly over Bay in general SE direction	22.9	Still thundering yet appearing less threatening
2.29	3500	Still over Bay losing altitude	22.7	Showers appeared receding in the N and gave some indication that we would escape this.
2.34	1800	Over Bay opposite SassafRAS River, Losing altitude too fast for comfort	25.0	Storm appeared passing N of Balloon
2.39	1800	Do.	24.7	Do.
2.44	2000	Nearing eastern shore of Bay slowly	24.8	Few scattering drops of rain heard hitting on balloon.
2.49	1100	Over shore line. We had dropped alarmingly and used much ballast in effort to check the fall. By this time we were rising rapidly.	25.5	Raining harder now and thunder again nearer. No light has yet been observed.
2.54	4500	In large cloud now and losing sight of ground	19.5	Raining hard and thunder close at hand. Vertical motion of cloud particle observed.
2.59	4520	Inland slight distance and S of SassafRAS, Rapid rise momentarily checked.	19.4	Appeared to be passing to edge of Cu. NB Still thundering.
3.04	5220	Moving west over shore and south of SassafRAS, Sun shining on balloon and causing us to again start to rise.	23.3	Openings appeared above us. False cirrus observed. We were in a pocket between large cu Nb cloud the tops of which were a great way above. Hail of moderate size observed falling past balloon evidently coming from upper portions of cloud.
3.09	6250	Moving slowly inland in ESE direction	22.0	Still at edge of cloud.
3.14	7020	Rising rapidly. Sun shining on balloon	26.5	Sun still shining on us and growing hot.
3.19	7600	Encountering a more westerly wind now but of only moderate velocity	28.0	Oppressively hot probably some heat reflected from sides of nearby clouds. Thunder still audible.

Time (P.M.)	Alti- tude	Observation	Tempera- ture	Met'l Conditions
3.24	7800	We had reached an altitude of 8200 feet about two minutes before this observation and are now descending.	23.5	Again entering Cu. Nb clouds. The rising tops of nearby clouds indicated very active convection.
3.29	7550	Descending rapidly	21.5	In clouds, Temperature falling. Thunder noaror and rain starting again.
3.34	4850	Descending rapidly	21.5	Raining very hard.

This was the last regular observation made during this flight. We were falling rapidly and drifting toward a wooded ravine. Drag ropes catching in tree tops. Much ballast used here in effort to escape settling in tree tops. Basket scraping the tops of several trees, the balloon continuing to follow down the ravine. End of drag rope finally caught in branches and held taut until cut loose by farm hands summoned from nearby road. Balloon then drifted to edge of ravine and was valved down in a corner of a grass field. This field is owned by the Cochran heirs. The place of landing was about three miles west-northwest of Kennedyville, Maryland, being about 30 miles air-line distance from the starting point.

HERE AND THERE WITH THE EDITORS

BRITISH AERIAL INVASION

The Sun and N.Y. Herald of June 6th editorially terms the British aerial dumping deal as a "wise and foresighted trade" from the British point of view. The editor declares "England and the English are not open to criticism for acting in this way. They deserve praise for energy, foresight and courage" he says.

But he insists that "America and Americans do not want their airships or their airship policy made in England. America and Americans do not want British airships dumped here to smother our airship industry. America and Americans want the American airship industry in all its branches encouraged, not for the profit of individuals but for the defense of the nation. Consequently America and Americans want the anti-aircraft dumping bill now in Congress enacted in law. It should be passed promptly, signed promptly, enforced rigidly, for this country must never be dependent on any other for its defense in the air".

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"THE RECORD CONTINUOUS FLIGHT"

"By remaining in the air for 19 minutes and seven seconds more than a full 24 hours, the giant Farman airplane Goliath has established a new world record to replace the one held since 1914 by the German Landmann, who remained aloft 21 hours, 48 minutes and 40 seconds. The Goliath covered 1,915 1/5 kilometers in its record flight, and its achievement is more than a 'stunt'. It is proof of some of the contentions that friends of the airplane have been making as to the adaptability of the airplane to material needs."

(Dayton Journal 6/7/20)

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The first Buffalo, Cleveland, Detroit hydroairplane of the United States Aerial Express Co. is scheduled to land at Cleveland next Saturday or Sunday. Former Lieut. Thomas F. Dunn will pilot the machine on its initial trip.

(Cleveland Plain Dealer 6/8/20)

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HIGH RECORD FLIGHT FOR LONG TRIP ✓

What is claimed to be a record high flight was made yesterday when Pilot Hopson of the United States Aero Mail Service flew from New York to Bellefonte at an altitude of 16,000 feet. "He drove a De Haviland plane and carried more than 600 pounds of mail." After reaching Bellefonte twenty minutes were required for landing.
(N.Y. Times 6/16/20)

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AIRCRAFT INSURANCE C

Aircraft Journal of June 14, 1920 tells us that at the present time, the following kinds of aircraft insurance are written: "fire (floater form); collision (meaning damage to plane); liability (meaning injury to individuals other than passengers); property damage (meaning damage to property other than the plane); life and accident insurance for passengers in aircraft covering specific flights". These are written by two classes of companies one of which is known as the casualty company and the other as the fire company. In the former there are two American companies and in the latter there are seven.

"Writers of aircraft insurance are of the opinion that a fair system of rates and an adequate extension of insurance protection cannot be brought about until the government accepts the responsibility with which it is confronted by proper supervision of pilots, establishment of adequate landing fields, elimination of stunt flying for exhibition purposes and concentration of aeronautical activities under one department of the government."

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NEED OF AERODROMES

During the month of May "more real progress has been made in the science and business of flying in Canada so far as governmental action is concerned than has been accomplished in any previous period of several times a month's duration", according to the June issue of the Aeroplane and Auto Age (Montreal). "Indeed it may be said that the month just ended possesses all the earmarks of the dawn of a new era for Canadian aeronautics". The most important event it is pointed out is the arrival of the British gift machines at Camp Borden. On May 24th there had been received at Camp Borden no less than 99 machines, consisting of DH-9-As, DH-4s, SE-5-As, Avros, H 16 flying boats and wireless equipment and several tons of spares.

And now the editor of Aeroplane and Auto Age realizing the need of aerodromes makes the following appeal: "The crying need of the times in Canadian aviation circles is the establishment of municipal aerodromes thru out the breadth and a portion of the length of the country. Before any transcontinental services can be inaugurated, all municipalities of any size or pretensions in the Dominion must come to realization of this fact. It is to their own interest as well as to the interest of aviation--- which spells civilization as a whole".

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SURVEY BY AIRPLANE ✓

Having learned that \$20,000 will be asked of the State Legislature to conduct New York State's part of the United States geological survey this year, the Federal authorities are seriously considering utilizing the airplane in revising the topographic maps. There are many sections in the State where conditions have changed since the survey was made and it is believed that by means of aerial photographs the work can be most economically done.

It is pointed out by Mr. A. C. Birdseve, Chief Topographic Engineer of the United States Geological Survey that the greatest problem connected with the aerial survey is that of a sufficient number of aviation fields and landing stations. It is essential that they be properly established thru out the state. Mr. Birdseve believes that they "should be located in every block 100 by 1,000 miles in extent so as to cover the area of 10,000 sq. miles". He suggests that eight or ten stations be established thru out New York. To do this he stresses the necessity of complete cooperation between the States, its cities, towns and communities.
(N.Y. Times 6/13/20)

EFFICIENCY OF BRITISH AIRSHIPS

"British airships have flown more than 90,000 hours, the equivalent of a period of ten years", as reported by the N.Y. Eve Post 6/12/20. "They have totalled 2,245,000 miles equal to ninety circuits of the earth. Fatalities have numbered only forty-eight, including deaths in training and in action against the enemy. This averages one death for every 46,787 miles". It is stated that the R-34 is capable of cruising 7,700 miles at reduced speed.

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Col. W. K. Wilson of the General Staff of the U.S. Army defeated Col. W. E. Gilmore, chief of the Supply Group of the Air Service yesterday in an air race from Washington to Central Park, L.I. Col. Wilson's flying time for the 248 miles was 2 hours and 25 minutes while Col. Gilmore's was 2 hours and 31 minutes. Both pilots used an all metal monoplane. (N.Y. Times 6/13/20)

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