

SPECIAL INSURANCE

593668

A.A.F.

9

EDITION

AIR FORCES

PROPERTY
OF
AIR CORPS LIBRARY
WASHINGTON, D. C.

NEWS LETTER

JANUARY, 1942



WAR DEPARTMENT
OFFICE OF THE CHIEF OF THE AIR CORPS
WASHINGTON

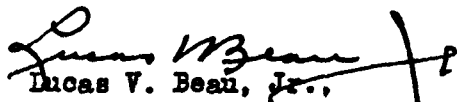
November 15, 1941.

SUBJECT: Life Insurance.

TO: All officers and enlisted men of the U. S. Army Air Forces.

1. As the Military Personnel Division is charged with the maintenance of an advisory service on insurance, many questions are presented from day to day. The need of competent advice on life insurance problems has been increased due to the heavy and rapid increase in the personnel strength of the Army Air Forces.
2. To meet this need Major Waddell F. Smith was some time ago designated as the Insurance Officer, his duties being to disseminate all information available in reference to aviation insurance protection and to conduct a continuous insurance educational campaign in the service.
3. In an attempt to answer the most general of questions and to publish insurance information of wide interest, a series of ten articles were published in the Air Forces News Letter, formerly the Air Corps News Letter. Most of this information is of such permanent value that the ten articles are reprinted herewith, verbatim.
4. All personnel are urged to study the contents of these articles. Due to the lapse of time, some of the information contained is inoperative. It should all be read, however, as a background, keeping in mind the dates on which the articles were released.

For the Chief of the Air Corps:


Lucas V. Bean, Jr.,
Lt. Colonel, Air Corps,
Chief, Military Personnel Division.

THE AIR FORCES NEWS LETTER

NO. 1.

NATIONAL SERVICE LIFE INSURANCE

Reprint from Air Forces News Letter,
December 15, 1940.

By Waddell F. Smith,
Major, Air Corps.

This is the beginning of a series of articles on life insurance, and its intent is to disseminate information to Air Corps officers concerning U. S. Government Life Insurance, National Service Life Insurance, relative merits of the various forms of policies and time limits within which it may be obtained. It is suggested that Post Adjutants keep file of this and successive insurance articles for the future reference of those interested.

On October 8, 1940, an Act was signed by the President, and that part relating to insurance is known as "National Service Life Insurance Act of 1940." By the provisions of this Act, Government Insurance is no longer obtainable by those in the service or who subsequently enter the service. Substituting therefor is what is to be known as "National Service" Life Insurance. The maximum is \$10,000, and it must be applied for on the 5-Year Level Premium Term Plan. This plan is low in cost and has no cash or loan value, but by law may, after one year or any time within the five years, be converted to Ordinary Life, Twenty Pay Life or Thirty Pay Life. The rates on the converted forms are not published yet and there will not be available any of the endowment forms that were offered in United States Government Insurance. Neither will the special disability clause be obtainable, as it was in the

U.S. Government Insurance for an extra premium. The rates for the 5-Year Level Premium Term policies obtainable now as National Service Life Insurance are listed below as the monthly premium per \$1,000 insurance:

Age	Monthly Premium	Age	Monthly Premium	Age	Monthly Premium
20	.65	33	.74	46	\$1.03
21	.65	34	.75	47	1.08
22	.66	35	.76	48	1.14
23	.66	36	.77	49	1.20
24	.67	37	.79	50	1.27
25	.67	38	.81	51	1.35
26	.68	39	.83	52	1.44
27	.69	40	.85	53	1.54
28	.69	41	.87	54	1.65
29	.70	42	.89	55	1.77
30	.71	43	.92	56	1.90
31	.72	44	.95	57	2.05
32	.73	45	.99	58	2.21

The law prescribes that those now in the service (as of October 8, 1940) may apply for this insurance at any time within 120 days of October 8, 1940, provided they submit to satisfactory physical examination.

Those entering the service after October 8, 1940, may obtain this insurance at any time within 120 days of admission into the service without physical examination.

The policies as issued will, of course, cover death from any cause, in-

cluding full aviation coverage, war coverage, etc., and if the policy holder leaves the service he is entitled to keep the insurance and enjoy all its benefits exactly as if he had remained in the service.

The insurance is to be administered by the Veterans Administration just as is U.S. Government Insurance, and the government will bear all the expense of overhead, etc., and premiums may be paid monthly by entry on pay vouchers (pay rolls for enlisted men.)

All policies will contain a free disability clause which provides that if the insured is disabled totally for a period of six months, that from that day on and as long as the insured remains disabled the premiums on the policy will be waived.

A total of no more than \$10,000 may be held of U.S. Government Insurance and National Service. Therefore, any persons not holding \$10,000 of Government Insurance may apply for \$10,000 of National Service Insurance or such amount as will make the total of both \$10,000. It must be remembered that those who were in the service on October 8, 1940, and who did not have Government Life Insurance, must apply for the National Service Insurance within 120 days of October 8, 1940.

A great many officers failed to obtain their U.S. Government Insurance by not applying for it within 120 days of admission into the service. This new act therefore enables those individuals to obtain insurance at low rates and, of course, the premiums charged need not be increased to cover aviation hazard, as is necessary in commercial insurance.

Application form, Veterans Administration - #739A, may be used pending publication of new applications. Form #739A should be changed as follows: At the top, delete the words "United States Government" and write above it "National Service." In paragraph 12 delete everything and insert "5-year Level Premium Term." Paragraph #14 should be deleted by drawing lines through it. Paragraph 16 should be deleted by taking out. In paragraph 18, all reference to premiums for disabili-

ity and allotment for disability should be deleted.

The War Department has issued under date of October 31, 1940, a Circular No. 125, which thoroughly covers this National Service Insurance, and if obtainable it is suggested that it be read carefully. This should be found on file in all post headquarters.

Although this National Service Insurance is excellent and the best obtainable, it is inconceivable that anyone would be justified in dropping the U.S. Government Insurance in order to buy the National Service Insurance, though it is permissible if done prior to 120 days from October 8, 1940. The Veterans Administration advises that such action could only result in loss to the U.S. Government Insurance policy holder.

No criticism of this insurance is justified, as it is lowest in cost. The entire administrative overhead and all death claims due to the extra hazards of the service are paid by the Government itself, and the premiums paid by policy holders represent only actual normal mortality costs. Furthermore, it cannot fail, as it is guaranteed in its entirety by the Government.

The rates and cash, loan, paid up and extended insurance values of the converted forms of policies will be printed as soon as they are published by the Veterans Administration, and will be quoted in a subsequent article on Insurance in the Air Corps News Letter.

Those who are on foreign service are advised that their applications need not be in the hands of the Veterans Administration within 120 days of October 8, 1940; rather, they will be accepted if the application is mailed and postmarked on or before 120 days after October 8, 1940.

SPECIAL MEMORANDUM TO WORLD WAR VETERANS

Following the publication of the rates for the new National Service Life Insurance, several individuals conceived the idea of cashing out their U.S.

Government policies in order to be able to buy \$10,000 of the new insurance within the 120-day limit. Upon superficial consideration it might appear advantageous under some circumstances to do this, but under no conditions is it advisable if the premiums are being paid regularly.

A great many war veterans have 20-Year Endowment policies which are soon to mature for their face value, leaving them with no more insurance. Several of these individuals have desired to cash out their endowments in the United States Government Insurance, just in time to be within the 120-day limit and then obtain new National Service Insurance. If it were not for the circumstances to be outlined later, it would be advisable to cash the endowment. In the past and until the last month, the Veterans Administration has consistently ruled that when an endowment policy (U.S. Government Insurance) matured and the insured received his face amount, that he had thereupon surrendered his rights, having had his full \$10,000 of insurance. However, a test case was made in spite of previous adverse decisions, and the last ruling of the Veterans Administration was that policy holders (World War veterans only) whose endowment policies matured and were paid at maturity could immediately or any time thereafter apply for and receive a new \$10,000 of insurance on any of the U.S. Government Insurance plans at his attained age and could also obtain the disability clause in addition. This ruling applies also to those whose endowment policies have already matured and been paid. There is no 120-day limit imposed on such cases, but satisfactory evidence of insurability must be furnished.

It is highly advisable for a war veteran to continue his endowment to maturity and then buy more U.S. Government Insurance than to cash out his endowment within 120 days and buy National Service Insurance. Even if a policy is heavily encumbered with a loan, it is still advisable. The United States Government Insurance is more desirable than National Service Insurance, as there are several more forms of converted policies from which to choose. Also, the special disability clause may be obtained in conjunction with Government Insurance. Further, the amounts of income to beneficiaries in event of death are higher in the Government Insurance policies than in National Service, as the rate of interest on which they are computed is higher. Nothing in this, however, should be construed to detract from the value of National Service Insurance.

If an insured's endowment matures, he may elect to take the face value in the form of a monthly income for a limited number of months or to take it as a life income. These options should be considered carefully, as they are computed on a basis of $3\frac{1}{2}\%$ interest, and that is better than can be obtained by investing. For example, \$10,000 may be received at the rate of \$57.50 monthly for 20 years or a total of \$13,800. The additional \$3,800 is $3\frac{1}{2}\%$ interest. Should an insured accept settlement of his matured endowment in the form of an income, that still does not bar him from obtaining an additional \$10,000 of new U.S. Government Insurance.

In each future issue of the News Letter, pertinent points concerning U. S. Government Insurance and National Service Insurance will be discussed.

NOVEMBER 15, 1941 POST SCRIPT: The rates for the converted forms of policies, Ordinary Life, 20 Payment Life and 30 Payment Life have now been published and will be found in Article 8, pages 22 and 23.

Application forms now in use are Veterans Administration Insurance Form Number 350 (without physical) and 350 A (with physical). All reference to Form Number 739 A should be ignored.



WAR DEPARTMENT
OFFICE OF THE CHIEF OF THE AIR CORPS
WASHINGTON

NO. 2.

**NATIONAL SERVICE LIFE INSURANCE
U.S. GOVERNMENT INSURANCE
SPECIAL DISABILITY CLAUSE**

Reprint from Air Forces News Letter,
January 1, 1941.

By Waddell F. Smith,
Major, Air Corps.

The December 15, 1940, issue of the News Letter published rates and facts about the new National Service Life Insurance which is now obtainable by those in the service or who subsequently enter the service. This is a reminder that a time limit of 120 days has been imposed, after which application for the insurance will not be considered. As the Act was signed by the President on October 8, 1940, then the time limit for those who were in the service on October 8, 1940, will expire on February 5, 1941. Those who entered the service since October 8, 1940, or who may enter subsequently, will have 120 days from date of entry within which to apply. This insurance is written at absolute cost by the Government as the entire overhead is assumed by the Veterans Administration. Also, the Act which authorized the insurance provided for the creation of a separate fund out of which all claims will be paid when such claims can be traced to the extra hazards of the service.

No extra premiums are charged to cover the extra hazard of aviation. The Office of the Chief of the Air Corps is very desirous that everyone in the Air Corps, Reserves on active duty and aviation trainees shall have this insurance. This information should be thoroughly disseminated to all individuals

now on foreign service, and any applications which are postmarked within the 120 days will be acted on. Any individuals who may buy this insurance may be assured that when they return to civil life they may continue their insurance, and the premiums they pay will not be used to pay any claims arising from the extra hazards of the service.

The unusual value of this insurance should be instantly appreciated, as the policies cover death from any cause, peace time or war time, in or out of service. Many individuals have for many years regretted not having had the old U.S. Government Insurance. They now can buy this new National Service Insurance. The time limit of 120 days is positive, and no exceptions can be made, and so it is urged that all post commanders and organization commanders continue to stress the value of this insurance to the officers and men of their command.

Many of the war-time officers have 20-year endowment policies written soon after the war, and which will soon be maturing for their face value. When this money is received from the Veterans Administration it must be reported as income for tax purposes, but the amount so received is exempt from tax. A test case was ruled on, and it established its nontaxability. For reference, this case may be found in the In-

ternal Revenue Bulletins and is known as I.T. - 3924, Bulletin 1939-2, page 151. This is an interpretation of a case under Section 3, Act of 1935. Any Internal Revenue agent will be able to find this ruling, and it should be cited in making out Federal income tax reports.

This paragraph is to call to the attention of holders of U.S. Government Insurance policies (not the new National Service Insurance) that they have the right to add a special disability clause to their policies by making application, passing satisfactory physical examination and paying the extra premiums required. Application may be made at any time to the Veterans Administration, but it should not be delayed. The value of this additional protection is considerably in excess of the premiums charged.

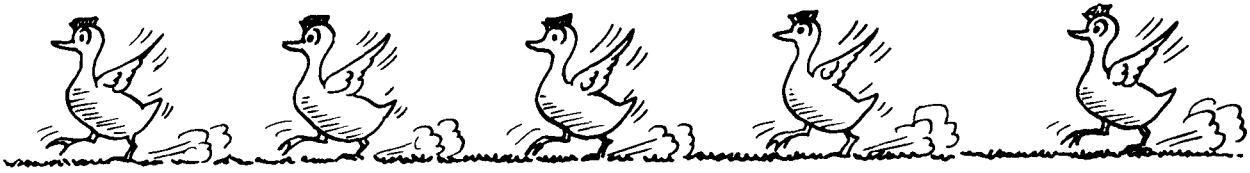
Any disability arising from aircraft accident or from war service is fully covered, in addition to disabilities from health causes or accidents. In general, its provisions are waiver of all future premiums on the policy and

payment of \$5.75 per month per \$1,000 of insurance without dissipating any of the principal of the policy, this upon proof of disability from any cause which is total and exists for 120 days or more.

One need not be retired from service to collect this disability, as cases are on record where disability payments have been made during disability without the individual having been retired. However, just the fact that an officer is retired from service does not mean that he will automatically qualify for this disability benefit. It is possible for individuals to be retired with disabilities which are insufficient to qualify, even though they may be of such a nature that they may last more than 120 days. The disability clause is of great value and should be had by all holders of U.S. Government Insurance policies. Full information, rates and application forms may be had by addressing an inquiry to the Veterans Administration, Washington, D.C., or any of its branches. Most supply rooms at army posts have these forms in stock.

NOVEMBER 15, 1941 POST SCRIPT. A new 120 day period, August 18, 1941 to December 16, 1941, within which certain military classes may obtain National Service Life Insurance, is now running. See Article 10, page 30.

All aviation cadets and aviation students are now by law automatically insured for \$10,000 of National Service Life Insurance, the premiums thereon being paid by the government (Public Laws No. 97 and 99, June 3, 1941).



NO. 3.

INSURANCE PROGRAMING AND
TYPES OF POLICIES DISCUSSED

Reprint from Air Forces News Letter,
March 1, 1941.

By Waddell F. Smith,
Major, Air Corps.

The institution of Government insurance during the World War was in effect a government stamp of approval on the principle of life insurance. Its effect was so wide spread that the entire population was brought to an acceptance and adoption of the utility and safety of life insurance. It has become the most positive means of transmitting the accumulations of one generation on to the next. Since the World War the total volume of life insurance in force in all life insurance companies has trebled. Life insurance has proven itself to be the most practical medium for army personnel to create and pass on their estates to wives and children. Now the Government has again approved of life insurance by offering National Service Life Insurance to all who enter the active service, whether they be Selective Service enrollees, National Guardsmen or Reserves on active duty. This new group is and will be of low average age and the great majority without dependents. Accordingly many will fail to purchase any National Service Insurance or as much as they should. It must be applied for within 120 days of induction and that rule cannot be voided. Even though one has no dependents a moderate amount is advisable inasmuch as life insurance is sure to be needed eventually by the individual.

All organization commanders should stress the importance of it repeatedly. Strange as it seems, even National Service Life Insurance must be "sold." National Service Life Insurance is provided by the U. S. Government and the premiums assessed are only enough to

cover normal mortality. All cost of administration is assumed by the Government as are all costs of extra hazards incidental to the service, either in peace time or war time. After the insured return to civil life he may retain his insurance on the same advantageous basis. (See War Dept. Circular 125, Oct. 31, 1940 and Circular 149, Dec. 10, 1940.) The Government has provided the insurance and it is now up to those eligible to recognize its merit and apply for it.

National Service Life Insurance must be applied for as a five year level premium term policy. At any time after one year and before the end of five years it may be converted to Ordinary Life, 20-Payment Life or 30-Payment Life. The one year period of deferment before converting is sound. First, if the term policy is dropped then the insured has not lost as he has had value received in protection. Second, the insured who converts after one year will be certain of his desire to continue the insurance for life and will have had a year to determine which policy he wishes to convert to.

Much discussion arises as to what is the best form of life insurance policy to carry. A brief discussion is herewith presented. Of the many various forms of life insurance policies, they may be divided into three classes, namely: term policies, life policies, and endowment policies. A term policy, as its name indicates, covers only a limited number of years and as it does not cover old age mortality and as it bears no cash or paid up value, the premiums are consequently low. Term

insurance policies may be converted to permanent forms of insurance, but if one intends to convert them it should be done as soon as possible to obtain the rates applicable to the younger ages.

Life policies are, as the name implies, life time contracts with level premiums payable for life and the face amount of insurance payable at death whenever it occurs. (Ordinary Life or Whole Life). This form is the lowest cost insurance which will provide a life time of protection. The one objection to this form of policy is that the insured does not want to have to pay premiums all his life. Insurance cost must be paid for, no matter what the form of policy, therefore, to avoid the necessity of payment of premiums for life, the premiums which normally would have to be paid over the years of expectancy of an insured are simply compressed into 20 years or 30 years and the result is a 20-Payment Life Policy or a 30-Payment Life Policy.

In the last two mentioned policies, if the insured is living at the end of the premium paying period, then no more premiums need be paid and the face amount of insurance is paid up and payable at death. The third type of policies are endowments. Any Endowment Policy must have a definite maturity date and if the insured is living on the maturity date, then the insurance ceases and the face amount is paid the insured in cash. An Endowment Policy is actually a term insurance policy written at term insurance rates with enough added to the term premium which, with earned interest, will equal the face amount of the term policy at expiration.

The three types of life insurance policy forms have been described and it is now pertinent to note that no endowment forms are available when National Service Life Insurance is converted. As the intent of the Government is to provide life insurance and as the purpose of an endowment is primarily savings, no endowment forms have been provided. The most popular form of policy is Ordinary Life (also

known as Whole Life) and sixty per cent of all insurance sold each year is Ordinary Life. It provides the greatest amount of permanent protection for the least cost.

This paragraph is devoted to the insurance planning of regular officers who, when young, want to plan ahead their course in insurance buying. In general, insurance is used for three purposes, namely family protection, education of children, and provision for additional cash or income for retirement. Under average conditions family protection should be bought first and increased from time to time until the amount is deemed totally sufficient for one's estate. Next, educational endowments for children are advisable.

The usual form is an endowment policy for such period of years which equals the differential between the child's age and college age. The insurance should be on the life of the father, with a trust agreement which, in event of death, will hold the insurance principal at interest until college age when the policy will mature for cash and thereby provide the necessary educational funds. This form of insurance should not be bought until the family has first been adequately protected with Ordinary Life (or 20 or 30 Pay) insurance as it is high in cost for the amount of insurance involved. After the family has been adequately protected and provision made for education of children, then the thoughts of the head of the family will naturally turn to some form of endowment which will mature at about retirement age to provide funds for the purchase of a home. Such a program cannot be completed until the officer has had several pay increases.

A good rule to remember in deciding what kind of insurance to buy is that the natural purpose of life insurance is protection and "protection insurance" is what should be bought. However, as aforementioned, education of children and retirement endowment are valid reasons for violating the rule, but only in moderate amount.

Air Corps Officers and Air Corps Reserve Officers are today confronted

with some difficulty in obtaining insurance without any restrictions imposed, such as aviation waivers and war clauses. However, insurance with out such waivers and clauses can be obtained, though the companies still writing it have established limits of from \$2,500 to \$5,000. Two companies will consider individual cases up to \$10,000. The Office of the Chief of the Air Corps advocates the purchase of insurance in adequate amounts by all

Air Corps personnel, especially the flying personnel. With conditions uncertain, it is not at all unlikely that the remaining companies who will write insurance without restrictions for service pilots, may at any time withdraw. The names of some companies who yet will insure service pilots will be furnished on request. Officers requesting this information should address the Office of the Chief of the Air Corps, Washington, D.C.

NOVEMBER 15, 1941 POST SCRIPT: A new 120 day period is now running, August 18, 1941 to December 16, 1941. See Article 10, page 30.



NO. 4.

AVIATION WAIVERS, WAR CLAUSES AND DOUBLE INDEMNITY PROVISIONS

Reprint from Air Forces News Letter,
March 15, 1941.

By Waddell F. Smith,
Major, Air Corps.

The most frequent question asked by military personnel about life insurance is this: Is the life insurance policy I bought from the John Doe Life Insurance Company still good since I am now in the service? In ninety per cent of the cases it is. However, one should not believe blindly that his policy is good. Neither should he believe to the contrary without fact. Many cases have been known where individuals mistakenly believe their policies did not cover military service or aviation and allowed their policies to lapse.

This article is intended to aid those individuals who are in the service, or who may be called into service to determine the coverage in their policies. Every word will be important and the article should be studied carefully by the individual who is concerned about a policy. However, it is impossible so completely to cover the subject that all questions may authoritatively be answered. Anyone in doubt about the coverage of his policy should write the home office, furnish the policy number and ask the question. An officer once said: "I am afraid to write the home office and tell them I am flying for fear they will arbitrarily cancel the policy." That feeling is wrong and should be dismissed. A company might be glad to have an aviator drop a policy which he obtained before he commenced flying. However, it is certain that no company would go on record in correspondence, stating that a policy was not good, unless it actually did not cover aviation.

Life insurance policies are presumed to cover death from any cause, and if

liability for any specific hazard is waived then it must be specifically waived by rider in the policy at time of issue. If any waiver of liability is put in a policy after it has been issued and accepted by the insured, it may only be done at the request of or with the permission of the insured. An example of this is a life insurance policy on the life of an aviator and on which he pays an extra premium to cover his occupational hazard. He quits flying and asks for removal of the aviation extra rate. The company does so at his request and then includes a rider providing that the policy no longer covers the insured for aviation except while riding as a fare-paying passenger on the air lines.

In addition to aviation coverage, policyholders often are concerned about two other occupational factors, namely, military service in time of peace and military service in time of war. All three of these occupational phases will be dealt with in subsequent paragraphs.

Life insurance companies are empowered to issue contracts of insurance, when such contracts involve the use of the mortality table or, in other words, when such contracts are based on the expectation of life of the one contracted with. Inasmuch as policies are life-time contracts, the issuing company is charged with responsibility for investigating and determining all requisite facts before entering into the contract. Then when a company once approves an application and the contract issued, the insured is considered to be insured for life, the insurance to be payable in event of death from any cause, no matter how, when or where

it may happen, so long as he pays the premiums. It is not the province of a life insurance company to be able to change or readjust the terms of a policy just because an insured chooses to alter his mode of living, develops heart trouble, or changes his residence to a feverish tropical country or learns to fly, or goes to war, etc. As mentioned, the burden of determining the expected physical and occupational risk is upon the company, based on their own informational sources and the statements made by the applicant in the physical examination and application. State insurance commissions are loath to permit the companies to put riders in policies eliminating liability in event of death from certain specific causes, as the mortality tables, when developed, included deaths from all causes. Life insurance policies, therefore, are presumed to cover death from any cause and can never be cancelled or raised in rate by the companies, though some exceptions will be noted later.

Until war was declared in Europe, the commercial insurance companies were not apprehensive about war hazard. Consequently in the regular routine of issuing policies they felt no necessity to use aviation, war or military service exclusion riders, and it is pretty certain that policies issued before that time on applicants in civil life contained no such restrictions. Many aviation cadets and Air Corps Reserve officers bought insurance policies at Standard rates and with no exclusion riders before they entered or applied for admission to the service. Such policies are perfectly valid even before expiration of the contestability period in the policy. However, if application had already been made for aviation training, and the answer "No" was given to a question in an insurance application "Are you now or do you have any intention of becoming connected with the military or naval service, either regular or reserve?", then that is a misrepresentation and, if the company learns about it, they can cancel the policy or, if death occurs

from an aircraft accident, they can contest payment of the claim, but cancellation or contest must begin within the contestability period in the policy, usually two years.

The point of expression intended in the preceding paragraph is that if at the time of application the individual is not already in military or naval service and is not then flying or has not in writing expressed a request for such service, a policy issued on such application is good from date of issue in event of death from any cause. That is true even if the insured subsequently enters the service, aviation or ground service. If death occurs, even in time of war, the face amount of the policy is payable.

Since war was declared in Europe, all the companies have considered use of military service, war service and aviation service exclusion riders and have used them in individual cases or on certain age and sex classes where it was felt the possible risk was too great to assume. The insurance companies are justified in this, for their first duty is to protect the interests and invested assets of the policy holders who already are in the company.

This article relates only to policies already owned and in force in commercial insurance companies; therefore, no mention is made of what, if any, restrictions might be found imposed in policies that may in future be applied for by those who are now in the military service.

The "Contestability Clause" in every life insurance policy is universally misunderstood by policyholders and usually adversely understood. An explanation of this clause, therefore, is necessary. Every company uses its own phraseology, but the general import is the same in all, so that an interpretation of one practically means all. When such a clause says: "This policy shall be incontestible after two years from date of issue," it does not mean that an insurance company can refuse payment within that time or cancel the policy within that time, and it does not mean that an insured

must wait two years to be sure of his protection. It does mean that, if a fraud or misrepresentation is imposed upon an insurance company to obtain an insurance policy and if the company discovers it within two years (some policies one year), they may sue to cancel the policy. If the company does not discover the fraud or misrepresentation and the insured dies within two years, then if the company can prove the fraud or misrepresentation they can contest payment of the insurance. The fraud or misrepresentation must have been made to obtain the insurance and it must be in the policy, as a part of the statements made in the application or to the medical examiner. If fraud or misrepresentation was committed and the insured dies within two years, even then in order to contest, the company must prove that the fraud related to the cause of death. If an applicant concealed the fact that he was an aviation cadet and obtained insurance, but died in an automobile accident within two years, the company's protest would not hold. As a matter of policy, no one would carry insurance payable upon death which might not occur until many years hence, if it was thought that the claim would be contested. Assurance is therefore given by the contestibility clause that, after two years, the company deprives itself of any right of contest except for non-payment of premiums. By repetition it is again stated that a policy may not be contested even within the two-year period unless fraud or misrepresentation was committed to obtain the policy.

All companies offer an additional feature with life insurance policies for an extra premium, known as a "Double Indemnity Clause" or "Accidental Death Benefit." Three clauses generally provide that if the death of the insured occurs from accidental causes that the face amount of the policy will be doubled. In the last few years, in addition to all deaths from natural causes, accidental deaths of all kinds have increased the rate by approximately 10%. These clauses are therefore good

added protection, but it must be remembered that these clauses do not cover all accidental deaths. The clauses generally state that "Provided, however, that no Double Indemnity shall be paid if the death of the insured results from suicide, sane or insane, participation in riot, insurrection, or civil commotion, or from submarine operations or aircraft flights (except as a fare-paying passenger) or from participation in military or naval service in time of war."

How many times have we erroneously heard: "My insurance doesn't cover me on flights in army aircraft," or "My insurance is no good in time of war." These misunderstandings can nearly always be traced to reading the exceptions in Double Indemnity Clauses, as noted in the previous paragraph. The insured carries the impression that war service, aviation, etc., are not covered when actually the policy is good, only the Double Indemnity feature being restricted.

Many commercial insurance policies which were obtained prior to entry into the Air Corps contain disability clauses which provide that, if the insured is disabled from either sickness or accident for 120 days or more (or varying period), the company will waive future premiums on the policy and, in addition, pay a disability income to the insured. These clauses do not generally exclude disabilities occasioned by war service, flying accidents, etc. Therefore, policyholders in service who have such disability clauses may doubly appreciate them, especially if any flying is being done.

Any reputable life insurance company will do exactly what its policy contracts provide. Therefore, it is important that every policyholder should read his policy. Most questions can be answered in that way. However, many questions do come up and matters of service are needed. Every policyholder should feel free to call on the agent who sold him the policy, or that office in which the policy records are carried, or the home office. One who

is away from home can easily obtain advice and service by calling on the nearest local office of his insurance company. However, whenever any change is made in a policy, or an amendment or an interpretation, it must come from the home office in order for it to be binding upon the company.

The foregoing article has dealt entirely with life insurance written by

private life insurance companies. No mention has been made of U. S. Government Insurance or National Service(U.S.) Insurance. The Government, through the U. S. Veterans Bureau, administers this insurance, and its purpose is to protect against all accident hazards. No military, war or aviation exclusion riders are ever used.

**"OLD LINE", "LEGAL RESERVE",
"STOCK" AND "MUTUAL" INSURANCE**

Reprint from Air Forces News Letter
April 1--15, 1941.

By Waddell F. Smith,
Major, Air Corps.



NO. 5.

What is an "Old Line" life insurance company? What is meant by "legal reserve," a "stock company" and a "mutual company?" These points are most generally understood but explanation should be of interest.

"Old Line" is simply a popular name for Legal Reserve, therefore they are synonymous, and any future reference to "Legal Reserve" insurance will also mean "Old Line" insurance. Any life insurance company which is chartered to do business as a legal reserve company must set aside the legally required reserve which is established by law as being required to make each policy financially secure. The reserve is nothing when a policy is issued, but it increases yearly as the policy increases in age and the increase is effected by impounding a part of the premium each year and investing and compounding it. The legal reserve (cash value) of an Ordinary Life policy must continually increase until at the age of 96 the reserve will equal the face amount of the policy. The mortality table runs out at the age of 96; therefore, any persons insured who are living at age 96 are paid the face amount of their policies. An Ordinary Life policy is, therefore, an Endowment at 96.

The amount of legal reserve must be continually increased even after a policy becomes paid up. A twenty payment life policy issued at age 20 is paid up at age 40, with a reserve value at 40 of approximately \$460 per \$1,000 of insurance. After age 40 the

reserve continues to increase, not from premiums but from interest earned and compounded on the reserve itself. The reserve on an endowment policy must be increased as rapidly as the age of the endowment increases. At maturity of an endowment the reserve must equal the face amount of the policy in order to pay the face amount in cash. From the foregoing it can be seen that every life insurance policy in force on the books of a company has an individually ascertainable reserve based on the age of the insured at date of issue of the policy, age of the policy after issue, type of policy, such as Ordinary Life, 20 Payment Life, or Endowment.

In perusing the financial statement of a legal reserve life insurance company, the item listed under Liabilities as "Legal reserve to protect the policyholders" is an amount equal to the sum total of each individually calculated reserve on each policy, for that year.

Legal reserve is of interest to policyholders in two ways. First, if every policyholder of a legal reserve life insurance company decided on the same day to surrender his policy for cash, then the legal reserve held by the company would be just the required amount to pay off every policyholder. Second, if a legal reserve life insurance company should cease doing business, then the legal reserve, which the various states can control, would be sufficient to pay all death claims as they occur and pay all endowments as they mature, provided those insured continue payment of their premiums. All

legal reserve funds are invested in state approved securities and at any time that a company is considered near to insecurity, the state in which it is incorporated can compel it to cease selling new insurance. The legally required reserve of course is adequate protection for the policyholders and if the state should deem it necessary to protect the policyholders, the entire legal reserve and the policyholders may be transferred to another company for management or merger.

In buying commercial insurance it is important to ascertain the rating of the company. All of the major insurance companies have now and have continuously had top ratings for years. Each company is rerated every year. These ratings may be obtained from the National Underwriter Company, Cincinnati, Ohio, or Alfred M. Best and Company, New York, N.Y. or your insurance agent. These institutions rate insurance companies just as Dunn and Bradstreet rate the credit of business concerns.

The legal reserve life insurance companies are divided into two classes, "stock companies" and "Mutuals." Both types by law establish the legally required reserves to protect policyholders. The difference is that the rates of stock companies are fixed at the lowest possible level and no dividends are paid to policyholders. The mutual company's rates are usually higher than the stock company rates, but the mutual companies refund this excess charge as a dividend to the policyholder and the amount of dividend is dependent on mortality savings, administration cost, and interest earnings.

Originally, life insurance companies would issue a policy only when an applicant was absolutely a standard risk, physically and occupationally. Probably half of the companies still refuse to issue a policy unless the risk is standard and can be issued at standard rates. A good many companies, however, now practice writing sub-standard policies for physical and occupational impairments. For example, a man who is overweight would be turned down by one company while another company would

accept the risk by adding to the standard premiums. An army pilot may be turned down by one company yet another will add \$1.00 per month per thousand and insure him.

The \$1.00 per month per \$1,000 extra rate for Air Corps officers was established in 1930 and except for some variations, has remained and is accepted today as the extra premium required to cover the aviation hazard. Years back the accident rate was higher than now. The present low accident rate, however, has not effected a reduction in insurance extra premium charges.

There are a number of good life insurance companies who several years ago adopted the \$1.00 per month per \$1,000 extra rate for Regular officers in the Air Corps. As these companies, with two or three exceptions had no one familiar with the army and aviation who specialized in this type of insurance, they have to this date had few applications from Air Corps officers. Having little or none of this aviation business, they have not felt impelled to withdraw their policy offerings to aviators because of the possibility of war exposure.

These companies have all, however, adopted a rule that they would not accept any applications from brokers. They will, however, issue policies when the applications come in from their full time civil life agents in their various offices around the country. Care should be exercised before accepting a policy to determine that it does not contain a war clause or an aviation waiver.

Air Corps Reserve officers on extended active duty have generally never been eligible for life insurance with aviation coverage. Their hazard while on active duty is comparable to that of the Regulars. However, a life insurance policy is a life time contract, and if a policy is issued while on active duty the company must continue on the risk after the active duty period. Not knowing what the post active duty risk may be, the companies have not been willing to issue to officers with aviation coverage. One company is re-

putedly willing, however, to accept Air Corps Reserve officers, and the identity of the company will be furnished on request.

The office of the Chief of Air Corps strongly advocates the purchase of life insurance. At the present time

there is no guarantee that insurance may be bought in the future. Any adverse headline of the newspapers can easily be such as to cause the insurance companies to withdraw their offerings until complete settlement of the international situation.



NO. 6

LIFE INSURANCE QUESTIONS AND ANSWERS

Reprint from Air Forces News Letter,
May 1, 1941.

By Waddell F. Smith
Major, Air Corps

QUESTION: Can my U. S. Government Life Insurance Policy (not National Service Life Insurance) be paid in installments to my beneficiary in event of my death?

ANSWER: Yes. All U. S. Government Life Insurance Policies (not National Service Life Insurance) are paid to the beneficiary in a lump sum unless the insured elects during his life time how the proceeds shall be paid and then the method of settlement he elects is a compulsory settlement. However, he may cancel the provision or change it at any time during his life time. If the insured makes no election, then the beneficiary may elect to take the proceeds in installments instead of a lump sum. However, since few beneficiaries will avail themselves of the opportunity, the insured should prescribe the method of settlement during his life time.

Option No. 2 in the policy provides for a limited number of monthly payments. The amount of the monthly installments depends on the number of months selected, which may be from 36 to 240 months. The installments are computed by figuring in $3\frac{1}{2}\%$ interest in advance and the table of amounts of monthly installments are in the policies.

Option No. 3 provides for a monthly payment to the beneficiary every month for life. The amount of the monthly income is determined by the age of the beneficiary at the time of the death of the insured. Two hundred and forty such installments are guaranteed and should the beneficiary die after the insured and before receiving at least 240 months installments, then the remaining installments will be paid to

the contingent beneficiary. This option has the advantage of a guaranteed monthly income to the beneficiary, so long as the beneficiary lives.

A Safe Investment

These options should be utilized by insured personnel. A widow can rarely invest a lump sum of money with the same degree of safety and get $3\frac{1}{2}\%$ interest on it. Even though a beneficiary should be frugal and not given to reckless spending, there still is the ever present possibility of improperly investing a lump sum of money. United States Government Life Insurance is a sound medium for the insured to create an estate, therefore it should be equally as sound in conserving the estate for the beneficiary. No reference has been made to National Service Life Insurance which is the form of insurance issued in the service since October 8, 1940. This insurance is made payable to the beneficiary in installments without any action on the part of the insured. Any installments that may be due a beneficiary are not subject to attachment for debts of a beneficiary.

Guardsmen Eligible

QUESTION: I am a National Guardsmen. Am I entitled to buy National Service Life Insurance?

ANSWER: The National Service Life Insurance Act of 1940, passed October 8, 1940, permits anyone who is ordered into active service for a period in excess of thirty days to apply for National Service Life Insurance. All personnel of the National Guard that have been inducted into Federal service under existing law are entitled to apply for this insurance. Application must be

made however within 120 days of induction.

Selective Service enrollees in active service and members of the Officers Reserve Corps and the Enlisted Reserve Corps who are ordered into active service for a period in excess of thirty days are also eligible within the 120 day limit. Officers in the Regular Army are eligible only within 120 days of commission. Upon promotion an officer is not given a new chance to apply. Enlisted men in the Regular Army may apply within 120 days of enlistment and each reenlistment. Aviation Cadets who failed to apply for any National Service Life Insurance or the maximum of \$10,000 may make a new application for the insurance or the balance to make a total of \$10,000, only after discharge to accept a reserve commission, and then must apply within 120 days of effective date of extended active duty.

QUESTION: I am in the Regular Army and have a \$10,000 U. S. Government Life Insurance Policy to which I have added the special disability clause. If I am retired from the service for disability will I be automatically entitled the benefits of this disability clause?

ANSWER: No, not automatically. Retirement from the Military Service is a separate procedure and does not automatically entitle you to the disability clause. Every U. S. Government Life Insurance Policy contains a provision that if the insured is discharged from the service...

When an insured has added the special disability clause, for which he pays an extra premium, he still may not expect automatic qualification in event of retirement. Though the special disability clause does not require permanent disability, it must be total disability for a period in excess of 120 days. There are cases on record of Air Corps officers who have collected the special disability payments for long periods, but who were not retired and who subsequently returned to a duty status. Although there is some misunderstanding which the foregoing exploration may clear up, anything said should not be considered derogatory to the value of this special disability clause.

The disability clause covers disability for any cause, whether sickness or accident, and it is an especially good value for its coverage in event of disability from aircraft accident and from disability incurred in war service. Anyone who has a policy of U. S. Government Life Insurance is authorized to add this special disability clause to the policy and should do so. It is a very good value as the insurance itself. Write the U. S. Veterans Bureau, Washington, D. C., and ask for a copy of the policy, giving your policy number.

QUESTION: What is the difference between U. S. Government Life Insurance and National Service Life Insurance?

U. S. Government Life Insurance is a life insurance policy issued by the U. S. Government Life Insurance Company, which is a part of the U. S. Government. National Service Life Insurance is a life insurance policy issued by the National Service Life Insurance Company, which is a part of the U. S. Government.

Veterans Bureau. These are the only two insurance bodies that are official governmental functions.

Policy Can Be Reduced

QUESTION: If I buy the full \$10,000 of National Service Life Insurance, then can I later reduce the amount of insurance if necessary?

ANSWER: Yes. The amount of insurance can be reduced at any time to any amount of \$1,000 or more. However, if less than \$10,000 is initially applied for, then the amount may not be increased except upon reenlistment in the Regular Army or upon being reordered to active duty. If an individual feels that \$10,000 may be too much insurance to carry permanently, the full \$10,000 still should be bought if possible in order to have the full amount of protection during the emergency. Any time after one year, and before expiration of five years, the insured can convert any part of the insurance to one of the three permanent forms. It is even permissible to convert any amount desired and still continue the balance as term insurance for the remainder of the five years. It is also possible to convert part of the insurance to one plan such as Ordinary Life and another part to 20- or 30-Payment Life.

QUESTION: What provision is made in National Service Life policies in event of disability.

ANSWER: If the insured becomes totally disabled for six months or more, then the premiums on the policy are waived for life or as long as the dis-

ability lasts. In event of death any premiums so waived are not deducted from the face amount of insurance. This disability clause is granted to all National Service Life Insurance policyholders without extra charge.

Hasn't Received Policy.

QUESTION: I applied for my National Service Life Insurance a month ago and have not yet received my policy. When should I expect it?

ANSWER: Up to April 19, 1941, the Veterans Bureau had received 336,000 applications for a total volume of \$1,150,806,720 of insurance. It takes time and great care to process all these applications accurately. However, the Veterans Bureau is getting out individual certificates to applicants, acknowledging the insurance liability of the Government and they generally reach the applicants within thirty days. This certificate will be replaced by a regular policy when the insured converts his policy.

QUESTION: What if I should lose my National Service Life Insurance Certificate?

ANSWER: The claim will be paid in event of death even if the certificate is lost or destroyed. Identity and the military status of the deceased will have to be established, also that of the beneficiary. If, however, a certificate is lost, the Veterans Bureau should be notified and the policy number furnished, if possible, along with a request for a duplicate.





NO. 7

NATIONAL SERVICE LIFE INSURANCE AND VETERANS ADMINISTRATION EFFICIENCY

Reprint from Air Forces News Letter,
May 15, 1941.

By Waddell F. Smith,
Major, Air Corps.

This article is directed to the attention of all classes of military personnel who have applied for National Service Life Insurance since October 8, 1940.

Since that date the Veterans Administration has received more than 395,000 applications for National Service Life Insurance and it can be seen that it is a Herculean task to process that many applications. This article is written to assure such applicants of the status of their applications and insurance coverage.

The Insurance Division of the Veterans Administration has always been very accurate in its contract relations with policyholders and is continuing to maintain its standards, but due to the sudden load since October 8, 1940, it has had difficulty in keeping pace. Applicants for insurance are urged to have patience and allow the Veterans Administration time to shoulder the load.

All applicants who have met the requirements in applying for the insurance and are paying the premiums may be sure that they are fully covered by the insurance, even though they have or may not have received certificate.

Following a practice during the World War, the Veterans bureau does not issue a policy for the application for National Service Life Insurance. The Act of October 8, 1940 authorized the issue of a five year term contract with privilege of conversion to a permanent plan of insurance after one year and before expiration of the five years. As the initial

contract is for term insurance, the Veterans Administration issues to applicants a "National Service Life Insurance Certificate." This designates the number of the contract, the amount of insurance, the effective date and the name of the applicant.

This certificate is full evidence of the contract of insurance and no policy will be issued unless or until the term contract is converted as provided by law after one year from issue and within the five-year term period. When the insured converts, he then will receive a regular policy on the plan of converted insurance selected.

Applications that are filled out correctly with service record properly verified are usually acted on and a certificate issued to the applicant within a month. However, some are delayed due to necessity of verifying service records with the Adjutant General, dates of induction, extension of active duty. There is an endless amount of work which must be done and done carefully and accurately in processing these applications before the time comes when the certificate can be mailed out.

It is suggested to new applicants that they be certain that their applications are made out correctly and within the 120-day period. Then they should pay the premiums regularly, preferably by deduction from pay, and in course of time they will receive a certificate.

Applicants should make an exact copy of the application to file as a part of their papers and to keep until the cer-

tificate arrives. It is also a good plan to put a memo with the copy of the application indicating how premiums are being paid, by allotment monthly, or by monthly, quarterly, semi-annual or annual check.

Whenever any money is sent to the Veterans bureau, whether check or money order, in payment of any premium after the first, it should be made payable to The Treasurer of the United States and sent to Director of Finance, U.S. Veterans Administration, Washington, D.C. Delay in crediting such sums will be avoided if, in communications a correspondent gives his full name, service number, amount of application, and age and date of birth. It readily can be seen that this will enable the Veterans Administration to identify his insurance record. There are so many duplications of names that action must be delayed until definite location of the proper individual's record. It is worthwhile to keep a copy of all such communications as evidence of the transactions.

Paragraph 14 in the application for National Service Life Insurance asks where and to whom the applicant wishes the certificate mailed. A large percentage of certificates issued by the Veterans Administration are mailed to the individuals designated in Paragraph 14 of the applications. Also a large percentage of such applicants forget that they requested that the certificate be mailed to some other individual and then wonder why they have not received their certificates.

Some applicants do not have any living beneficiary within the permitted classes, namely wife, child (including adopted child, step-child or illegitimate child) parent, or brother or sister (including whole or half blood) of the insured. Not having any relatives within the permitted classes does not preclude issue of the insurance. Paragraph No. 12 of the application should be completed "No living beneficiary within the permitted classes." The certificate will be issued to the applicant and should he subsequently marry

or have children he then is privileged to name such beneficiary. If an insured dies without having a named beneficiary, then search will be made and the insurance paid to beneficiaries in the following order: First, widow, if she survives the insured. If no widow, then payment will be made to child or children, equally. If no children survive the insured, then payment will be made to parent or parents if living, otherwise to brothers and sisters.

If an applicant has no beneficiaries within these classes, he should apply for insurance anyhow because of the probable future need of the insurance. Under normal conditions, such an individual could wait until the need arose. However, National Service Life Insurance must be applied for within 120 days of induction into the service. The extremely high quality of the insurance and the very low cost make of it a value which is too good to pass up.

This insurance should not be looked upon as temporary protection for the emergency; rather as permanent life time insurance protection by conversion to one of the regular permanent contracts, after one year and before expiration of the five-year term.

Following the World War, the War Risk Insurance Division of The U.S. Veterans Bureau received many claims by widows and parents for payment of husband's or son's insurance, when such insurance was never applied for. The Veterans Bureau was put in a bad light and had to face the unpleasant task of denying payment to supposed beneficiaries. Investigation in most cases revealed that the individual never applied for insurance, but for personal reasons advised wife, mother, or other supposed beneficiary that he had government insurance when he had never applied for it.

In recent weeks the author has talked with reserve officers, enlisted men, and selective service enrollees and found that some individuals were under the impression that they were automatically insured by the Government and had so informed their dependents. These conclusions were arrived at by casual

conversations with other uninformed personnel, whereas they should have sought accurate information from their organization commanders. The establishment of such misapprehensions as stated above may not come to light until years later.

Difficult situations also arose after the World War by veterans dropping their insurance but concealing the fact from the beneficiaries. The Veterans bureau then had the unpleasant task of convincing the beneficiaries that the insured and not the Veterans bureau had failed to live up to the terms of the contracts of insurance.

A little aside from the foregoing subject is the dating of National Service Life Insurance when it is applied for near the end of the 120-day period after induction. However, it is of such interest that it will be mentioned in this paragraph. The law allows only 120 days and the application must be made before expiration of that time. However, regulations will permit the effective date of the insurance to be the first

of the month following the month in which application is made, provided no cash payment is made with the application and also provided deduction of the first month's premium is made from the pay of the month in which application is made. Actually then it is possible to have the effective date of the insurance as much as 30 days later than 120 days after induction into the service and still meet the requirements. The date of application and not the effective date must be within the requirement of law of 120 days. If, however, the effective date is the first of the following month, no insurance coverage is provided from date of application until that date.

The Veterans Administration has always shown itself to be more than anxious and willing to go to any length to protect the interests of both insureds and beneficiaries. Add to that the intelligent cooperation of the individuals concerned and the result will be a life insurance service that is unequalled in quality and relative cost.

NOVEMBER 15, 1941 POST SCRIPT: Since June 3, 1941 aviation cadets and aviation students are automatically insured for \$10,000 of National Service Life. Cadets and students must, however, complete an application in conformance with War Department Circular No. 132, July 8, 1941.

conversations with other uninformed personnel, whereas they should have sought accurate information from their organization commanders. The establishment of such misapprehensions as stated above may not come to light until years later.

Difficult situations also arose after the World War by veterans dropping their insurance but concealing the fact from the beneficiaries. The Veterans bureau then had the unpleasant task of convincing the beneficiaries that the insured and not the Veterans bureau had failed to live up to the terms of the contracts of insurance.

A little aside from the foregoing subject is the dating of National Service Life Insurance when it is applied for near the end of the 120-day period after induction. However, it is of such interest that it will be mentioned in this paragraph. The law allows only 120 days and the application must be made before expiration of that time. However, regulations will permit the effective date of the insurance to be the first

of the month following the month in which application is made, provided no cash payment is made with the application and also provided deduction of the first month's premium is made from the pay of the month in which application is made. Actually then it is possible to have the effective date of the insurance as much as 30 days later than 120 days after induction into the service and still meet the requirements. The date of application and not the effective date must be within the requirement of law of 120 days. If, however, the effective date is the first of the following month, no insurance coverage is provided from date of application until that date.

The Veterans Administration has always shown itself to be more than anxious and willing to go to any length to protect the interests of both insureds and beneficiaries. Add to that the intelligent cooperation of the individuals concerned and the result will be a life insurance service that is unequalled in quality and relative cost.

NOVEMBER 15, 1941 POST SCRIPT: Since June 3, 1941 aviation cadets and aviation students are automatically insured for \$10,000 of National Service Life. Cadets and students must, however, complete an application in conformance with War Department Circular No. 132, July 8, 1941.

NATIONAL SERVICE LIFE INSURANCE.
ORDINARY, 20-PAY AND 30-PAY RATES

Reprint from Air Forces News Letter
July 1, 1941



By Waddell F. Smith
Major, Air Corps

NO. 8

The National Service Life Insurance Act was signed on October 8, 1940. It provided that the insurance was issued as a five-year level premium term contract and that it could be converted at any time after one year and before expiration of the five years to either Ordinary Life, Twenty Payment Life or Thirty Payment Life. On October 8, 1941, the first policies will be one year old and eligible for conversion. The following tables quote the rates on the three available forms. Rates for ages not quoted will be furnished by the Veterans Administration upon direct request.

Age	Monthly	Quarterly	Semi-Annual	Annual
35	\$1.80	\$5.39	\$10.73	\$21.31
36	1.85	5.54	11.03	21.90
37	1.91	5.72	11.39	22.61
38	1.98	5.93	11.81	23.44
39	2.04	6.10	12.16	24.15
40	2.12	6.34	12.64	25.10
41	2.19	6.55	13.06	25.93
42	2.27	6.79	13.54	26.87
43	2.36	7.06	14.07	27.94
44	2.45	7.33	14.61	29.01
45	2.54	7.60	15.15	30.07
46	2.64	7.90	15.74	31.25
47	2.75	8.23	16.40	32.56
48	2.87	8.59	17.11	33.98
49	2.99	8.95	17.83	35.40
50	3.12	9.34	18.61	36.94

ORDINARY LIFE
Premium Rates for \$1,000

Age	Monthly	Quarterly	Semi-Annual	Annual
18	\$1.18	\$3.53	\$7.04	\$13.97
19	1.20	3.59	7.16	14.21
20	1.23	3.68	7.33	14.56
21	1.25	3.74	7.45	14.80
22	1.28	3.83	7.63	15.15
23	1.31	3.92	7.81	15.51
24	1.34	4.01	7.99	15.86
25	1.37	4.10	8.17	16.22
26	1.41	4.22	8.41	16.69
27	1.44	4.31	8.59	17.05
28	1.48	4.43	8.83	17.52
29	1.52	4.55	9.06	18.00
30	1.56	4.67	9.30	18.47
31	1.60	4.79	9.54	18.94
32	1.65	4.94	9.84	19.53
33	1.69	5.06	10.08	20.01
34	1.75	5.24	10.44	20.72

TWENTY PAYMENT LIFE
Premium rates for \$1,000

Age	Monthly	Quarterly	Semi-Annual	Annual
18	\$1.91	\$5.72	\$11.39	\$22.61
19	1.93	5.78	11.51	22.85
20	1.96	5.87	11.69	23.20
21	1.99	5.96	11.87	23.56
22	2.02	6.05	12.05	23.91
23	2.05	6.13	12.22	24.27
24	2.08	6.22	12.40	24.63
25	2.12	6.34	12.64	25.10
26	2.15	6.43	12.82	25.45
27	2.19	6.55	13.06	25.93
28	2.23	6.67	13.30	26.40
29	2.27	6.79	13.54	26.87

Age Monthly Quarterly SemiAnnual Annual

30	\$2.31	\$6.91	\$13.78	\$27.35
31	2.31	6.91	13.78	27.35
32	2.39	7.15	14.25	28.30
33	2.44	7.30	14.55	28.39
34	2.49	7.45	14.85	29.48
35	2.53	7.57	15.09	29.95
36	2.59	7.75	15.44	30.66
37	2.64	7.90	15.74	31.25
38	2.70	8.08	16.10	31.97
39	2.76	8.26	16.46	32.68
40	2.82	8.44	16.82	33.39
41	2.88	8.62	17.17	34.10
42	2.95	8.83	17.59	34.92
43	3.02	9.04	18.01	35.75
44	3.10	9.28	18.49	36.70
45	3.18	9.52	18.96	37.65
46	3.27	9.79	19.50	38.71
47	3.36	10.06	20.04	39.78
48	3.46	10.35	20.63	40.96
49	3.56	10.65	21.23	42.15
50	3.67	10.98	21.88	43.45

THIRTY PAYMENT LIFE
Premium rates for \$1,000

Age Monthly Quarterly Semi-Annual Annual

18	\$1.49	\$4.46	\$8.89	\$17.64
19	1.52	4.55	9.06	18.00
20	1.54	4.61	9.18	18.23
21	1.56	4.67	9.30	18.47
22	1.59	4.76	9.48	18.82
23	1.61	4.82	9.60	19.06
24	1.64	4.91	9.78	19.42
25	1.67	5.00	9.96	19.77
26	1.70	5.09	10.14	20.13
27	1.73	5.18	10.32	20.48
28	1.76	5.27	10.50	20.84
29	1.79	5.36	10.67	21.19
30	1.83	5.48	10.91	21.67
31	1.87	5.60	11.15	22.14
32	1.90	5.69	11.33	22.49
33	1.95	5.84	11.63	23.09
34	1.99	5.96	11.87	23.56

Age Monthly Quarterly Semi-Annual Annual

35	\$2.03	\$6.08	\$12.11	\$24.03
36	2.08	6.22	12.40	24.63
37	2.13	6.37	12.70	25.22
38	2.18	6.52	13.00	25.81
39	2.24	6.70	13.36	25.62
40	2.30	6.88	13.72	27.23
41	2.37	7.09	14.13	28.06
42	2.43	7.27	14.49	28.77
43	2.51	7.51	14.97	29.72
44	2.59	7.75	15.44	30.66
45	2.67	7.99	15.92	31.61
46	2.76	8.26	16.46	32.68
47	2.86	8.56	17.05	33.86
48	2.96	8.86	17.65	35.04
49	3.08	9.22	18.37	36.46
50	3.20	9.58	19.08	37.88

All three forms of converted insurance will contain a table of surrender values consisting of cash or loan value, paid up insurance value and extended insurance value. The premiums charged for any of these three converted forms of policies are lower than any obtainable old line legal reserve participating insurance. Policyholders will receive a substantial annual dividend which will further reduce the cost of the insurance. No other insurance should be considered to be equal to these converted policies due to the low rates and dividends. The table of cash and loan values and paid up and extended insurance values will be equal to or greater than obtainable in any other commercial insurance issued at the same age and on the same plan of insurance.

New National Service Life Insurance Applications

The act authorizing this insurance provides that it must be applied for within 120 days (not four months) of induction into the service or extension of active duty. By reference to the following table the last day upon which application may be made and signed and put in channels or the mail may be readily obtained.

Daily Table Showing the Last Day of the Statutory 120-Day Period During Which Acceptable Application For Insurance may be Submitted.

Entry Date	Final Date	Entry Date	Final Date	Entry Date	Final Date
Jan. 1	May 1	Feb. 1	June 1	Mar. 1	June 29
2	2	2	2	2	30
3	3	3	3	3	July 1
4	4	4	4	4	2
5	5	5	5	5	3
6	6	6	6	6	4
7	7	7	7	7	5
8	8	8	8	8	6
9	9	9	9	9	7
10	10	10	10	10	8
11	11	11	11	11	9
12	12	12	12	12	10
13	13	13	13	13	11
14	14	14	14	14	12
15	15	15	15	15	13
16	16	16	16	16	14
17	17	17	17	17	15
18	18	18	18	18	16
19	19	19	19	19	17
20	20	20	20	20	18
21	21	21	21	21	19
22	22	22	22	22	20
23	23	23	23	23	21
24	24	24	24	24	22
25	25	25	25	25	23
26	26	26	26	26	24
27	27	27	27	27	25
28	28	28	28	28	26
29	29	29	29	29	27
30	30	30	30	30	28
31	31	31	31	31	29

Note: This table being constructed for February with 28 days, the proper allowance must be made for leap year.

Entry Date	Final Date	Entry Date	Final Date	Entry Date	Final Date
Apr. 1	July 30	May 1	Aug. 29	June 1	Sept. 29
2	31	2	30	2	30
3	Aug. 1	3	31	3	Oct. 1
4	2	4	Sept. 1	4	2
5	3	5	2	5	3
6	4	6	3	6	4
7	5	7	4	7	5
8	6	8	5	8	6
9	7	9	6	9	7

Entry Date	Final Date	Entry Date	Final Date	Entry Date	Final Date
Apr. 10	Aug. 8	May 10	Sept. 7	June 10	Oct. 8
11	9	11	8	11	9
12	10	12	9	12	10
13	11	13	10	13	11
14	12	14	11	14	12
15	13	15	12	15	13
16	14	16	13	16	14
17	15	17	14	17	15
18	16	18	15	18	16
19	17	19	16	19	17
20	18	20	17	20	18
21	19	21	18	21	19
22	20	22	19	22	20
23	21	23	20	23	21
24	22	24	21	24	22
25	23	25	22	25	23
26	24	26	23	26	24
27	25	27	24	27	25
28	26	28	25	28	26
29	27	29	26	29	27
30	28	30	27	30	28
		31	28		

Entry Date	Final Date	Entry Date	Final Date	Entry Date	Final Date
July 1	Oct. 29	Aug. 1	Nov. 29	Sept. 1	Dec. 30
2	30	2	30	2	31
3	31	3	Dec. 1	3	Jan. 1
4	Nov. 1	4	2	4	2
5	2	5	3	5	3
6	3	6	4	6	4
7	4	7	5	7	5
8	5	8	6	8	6
9	6	9	7	9	7
10	7	10	8	10	8
11	8	11	9	11	9
12	9	12	10	12	10
13	10	13	11	13	11
14	11	14	12	14	12
15	12	15	13	15	13
16	13	16	14	16	14
17	14	17	15	17	15
18	15	18	16	18	16
19	16	19	17	19	17
20	17	20	18	20	18
21	18	21	19	21	19
22	19	22	20	22	20
23	20	23	21	23	21
24	21	24	22	24	22
25	22	25	23	25	23
26	23	26	24	26	24

Entry Date	Final Date	Entry Date	Final Date	Entry Date	Final Date
July 27	Nov. 24	Aug. 27	Dec. 25	Sept. 27	Jan. 25
28	25	28	26	28	26
29	26	29	27	29	27
30	27	30	28	30	28
31	28	31	29		

Entry Date	Final Date	Entry Date	Final Date	Entry Date	Final Date
Oct. 1	Jan. 29	Nov. 1	Mar. 1	Dec. 1	Mar. 31
2	30	2	2	2	Apr. 1
3	31	3	3	3	2
4	Feb. 1	4	4	4	3
5	2	5	5	5	4
6	3	6	6	6	5
7	4	7	7	7	6
8	5	8	8	8	7
9	6	9	9	9	8
10	7	10	10	10	9
11	8	11	11	11	10
12	9	12	12	12	11
13	10	13	13	13	12
14	11	14	14	14	13
15	12	15	15	15	14
16	13	16	16	16	15
17	14	17	17	17	16
18	15	18	18	18	17
19	16	19	19	19	18
20	17	20	20	20	19
21	18	21	21	21	20
22	19	22	22	22	21
23	20	23	23	23	22
24	21	24	24	24	23
25	22	25	25	25	24
26	23	26	26	26	25
27	24	27	27	27	26
28	25	28	28	28	27
29	26	29	29	29	28
30	27	30	30	30	29
31	28			31	30

NOTE: This Table being constructed for February with 28 days, the proper allowance must be made for leap year.

BIRTH AND MARRIAGE CERTIFICATES
DIVORCE DECREES

Reprint from Air Forces News Letter
August 1941



By Waddell F. Smith
Major, Air Corps

NO. 9

Many claims by dependents of military personnel for Government Insurance, National Service Life Insurance, pensions, compensation, six months' gratuity and arrears of pay are unduly delayed because of not having at hand properly certified copies of birth and marriage certificates and divorce decrees.

Probably 75 per cent of people over the age of 35 are under the impression that they cannot obtain a birth certificate. Most all of these people can obtain a birth certificate if they write to the proper office of record.

Officers and enlisted men themselves do not need birth certificates except for passport purposes. However, it is always desirable to have one. It is paramount, however, that all military personnel should have on file authentic certified copies of the record of birth of wife and children and a certified copy of the record of marriage. If either husband or wife has been previously married, no certificate of that marriage is required but a certified copy of the record of the divorce is required.

Whenever a certified copy of the record of birth or marriage may be obtained, then no governmental agency charged with settling a claim will accept anything in its place. From this it may be seen that church records, records of family Bibles, affidavits of individuals who witnessed a marriage, ministers' certificates of having performed a marriage, etc., are all refused.

From the foregoing it may be seen that the first step is to determine if there is available a public record in the state, county or city in which born and in which married. Military personnel should write immediately to the proper authorities to obtain these documents. As the United States Veterans Administration has been constantly called upon to advise claimants where to obtain certified copies of these public records, Mr. Luther E. Ellis, of the Veterans' Administration compiled the names and addresses in all states and possessions of the offices charged with keeping the public records of birth and marriage.

The book is of such great utility that the United States Social Security Board asked permission to reproduce it. The author is glad to be able to advise that this book, under the name of "Custodians of Public Records" is in the hands of each of 477 field offices of the Social Security Board. These field offices are all being advised to make the information in the book available to Air Corps personnel who can visit any of the field offices.

In this volume will be found a separate listing for each state and where to write and how far back the records of marriages and births go. Where it is found that state records were not kept previous to certain dates it will show what county and city authorities may be written to to obtain the records locally. The book also

Advises on records of deaths and divorces.

Obtaining these necessary certified copies of the public records is very easy to put off. However, it must be remembered that it is much easier for the records to be obtained now than to leave the job to dependents, years later. The payment of many claims for Government insurance, pensions and compensation have been held up because of delay in obtaining certificates, frequently occasioning much financial embarrassment to dependents. Even when it is found that no state records are kept, many cities and counties have bureaus of vital statistics available and it always should be the rule to write to the bureau of vital statistics of your city or county, when no state records are available.

Much bad information and misunderstanding is extant about birth and marriage certificates. For example, in order to marry, a license must be obtained—but that is not sufficient to support a claim, for the marriage might not even have been performed. But let's assume that it was. Then the minister or church official who performed the service furnished a very beautifully engraved certificate that he did on a certain day perform said marriage. That still is not sufficient. However, the minister or church official, after performing the ceremony, makes a return affidavit with the license to the bureau of vital statistics which is charged with keeping the record. That office then makes an official record of the marriage. A certified copy of that record, issued under seal by that office is what is actually required.

Whenever a birth occurs, all physicians, hospitals and institutions are required to report the birth along with the name of the child, its sex, names of parents, etc., to the bureau of vital statistics charged with maintaining the public record. The birth then is a part of the public record and a certified copy of that record, issued under seal by the office or bureau in charge is the document required to support a claim.

It must be recognized, however, that in some cases there are absolutely no available public records of birth and marriages. In these cases then other proof will not be accepted until or unless a certified statement is obtained from state or county officials verifying that no public records of the birth or marriage is obtainable for

the period in which the birth or marriage occurred. That being established, it then is permissible to establish proof in other ways as follows:

PROOF OF AGE

1. A Certified Copy Of A Church Record If The Child Was Baptized In A Church.

Many churches maintain such records and the present registrar of the church will make a sworn statement of the record.

2. Sworn Statement Of Doctor Who Officiated At The Birth Of The Child. In many cases this cannot be obtained, due to death of the doctor or removal from the community. If obtainable, the doctor must swear to it before a notary.

3. Sworn Statement Of Two Witnesses Present At The Time Of The Child's Birth. This affidavit must be made by individuals who knew both parents at the time of and before the birth, but they do not actually have had to be present at the birth itself, but must certify that they knew of the birth and of the naming of the child, etc.

4. Notarized Certificates From Entry In Family Bible Of The Birth. There are many avenues for fraud in making certificates from entries in family Bibles; therefore, such certificates may be refused and other proof required. Or the family Bible itself may have to be produced.

5. Request Veterans Administration To Obtain From Bureau Of Census The Record Of The Family From First Record Of the Census Which Was Made After Birth Of The Child.

This method is only a last resort and is not requested by the Veterans' Administration unless they are convinced that no proof of age can be obtained as outlined under the previous steps. Then the Veterans' Administration must be requested to obtain it from the Census Bureau. Such census reports frequently require three months to obtain.

There is an unending delay in the settlement of claims, while awaiting proof of age and it is, therefore, incumbent upon all military personnel who are married to begin immediately to obtain acceptable records of birth of a wife and children. It will be noted that affidavit of parents to establish proof of age has not been listed as acceptable.

PROOF OF MARRIAGE

(see next page)

PROOF OF MARRIAGE

1. Certified Copy Of Church Record If Marriage Was Performed In A Church. See Proof of Age, No. 1.
2. Sworn Statement Of Minister Or Public Official Who Performed The Ceremony. See Proof of Age, No. 2.
3. Sworn Statement By Two Witnesses Who Were Present At The Performance Of Ceremony. See Proof of Age, No. 3.
4. A Notarized Certificate Made Up From Entry Of The Marriage In Family Bible.

DECREES OF DIVORCE

Whenever a widow is claiming pension or compensation for the death of a husband, and it is shown that either the deceased or the widow or both had a previous marriage, then a certified copy of the public record of the divorce proceedings must be obtained and submitted before the right of the claimant can be established.

In order to obtain copies of divorce decrees, a request should be addressed to the clerk of the court which granted the divorce. In a good many states, state records of divorces are kept, compiled from reports submitted by the county courts. Even though some states maintain records of divorces, they may not have any information other than the names of the principals and the date of dissolution of the marriage. For pension purposes a certified copy of the actual decree and the terms thereof is required; therefore, the copy of the decree should be obtained from the court which granted it.

The book, "Custodians of Public Records," also lists information for each state, giving the proper method of addressing the county courts and it also supplies information as to which states maintain state records of divorce.

Inasmuch as certified copies of divorce decrees must be presented in support of a claim, then they should be obtained at once. Many cases are on record of court houses burning, resulting in destruction of records. Get them now when it is easiest. Dependents when making a claim are always badly unnerved and it is the duty of all military personnel to obtain these necessary supporting documents in advance.

Certified marriage certificates are not required for the settlement of United States

Government Insurance, National Service Life Insurance or policies issued by commercial life insurance companies. However, as National Service Life Insurance is paid to the beneficiary only in installments, a certified copy of the record of birth must be submitted. Even if the beneficiary is under the age of 30 and receives the fixed installments of \$5.51 per month on \$1,000, for 20 years, a birth certificate is still necessary to establish that the age is under 30.

If the proceeds of either United States Government Insurance, or policies issued by commercial life insurance companies are to be paid as a life income to the beneficiary, then proof of age will be required as the amount of the income is based upon the age of the beneficiary.

A great deal of misunderstanding exists about photostats. Many individuals have had numbers of copies of birth certificates and marriage certificates photostated and it must be said that they are unacceptable. Actually the original itself in order to be acceptable would have to meet the requirements as set out in this article. Even if the original is acceptable, the photostats would not be.

Photostats are acceptable, however, when they are actually made from the public record by the bureau of vital statistics or other official agency in charge of the public record. It then is good only if before the photostat is made, a marginal indorsement is made certifying that it is an official photostat of the public record. It then must be signed under the seal of the issuing office.

Very recently the author wrote, and the Office, Chief of Air Corps published a pamphlet titled, "Insurance, Estate and Wills," which is now in the process of distribution throughout the United States Army Air Forces. It was not possible in that to go into detail about birth and marriage certificates and divorce decrees; therefore, the material in this article may be considered as a part of or an addition to that publication.

This article is the ninth of a series which has been published in the Air Forces News Letter. Following publication of one more article, all ten are then to be

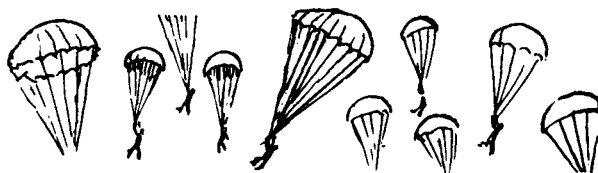
combined into a compendium on insurance
and printed for distribution throughout

the United States Army Air Forces.

SPECIAL INSURANCE OPPORTUNITY
FOR EMERGENCY FORCES

Reprint from Air Forces News Letter
October 1941

By Waddell F. Smith
Major, Air Corps



NO. 10

The Service Extension Act of 1941 was signed by the President and became a law August 18. This law gave the President authority to extend the periods of service of all military classes for periods not to exceed 18 months.

Section 3 of the act authorizes certain military classes whose periods of service are extended by the President, and who failed to apply for National Service Life Insurance or the full amount of insurance within 120 days of date of original induction into service, to apply for now and obtain the insurance without physical examination. The Act allows 120 days from signing or until December 16, 1941 within which time application must be made.

By this authority those who failed to apply originally for National Service Life Insurance or for the full \$10,000 may now make application, provided their periods of service are extended.

ORDER NOT ALL-INCLUSIVE

The President on August 21, 1941 issued an executive order. The executive order did not extend the periods of service of all military classes, therefore, only the military classes whose service was extended by the order are authorized now to apply for National Service Life Insurance.

This article is presented to inform all military classes of their rights to insurance and not as an interpretation of the law affecting their periods of military service.

Some military classes are not entitled to apply for National Service Life Insurance in the current 120 day period from August 18 to December 16, 1941, therefore, it is vitally important that all individuals concerned be certain of their exact military duty status.

Each military class will be taken up separately and their rights to apply for National Service Life Insurance during the current period set out.

REGULAR ARMY

Officers. No provision was made for regular officers in the United States Army inasmuch as it was not necessary by law to extend the periods of service of regular officers.

Enlisted Men. No provision was made for enlisted men in the regular army. The additional opportunity to apply for insurance within 120 days of August 18 was intended to be extended only to the emergency forces. Enlisted men in the regular army, however, are entitled to apply for National Service Life Insurance within 120 days of reenlistment without examination. If the current enlistment should be continued or extended, then application may be made within 120 days of such continuance or extension but subject to physical examination.

Aviation Cadets and Aviation Students. Special legislation enacted June 3, 1941 provided that all aviation cadets and aviation students shall be issued \$10,000.00 of National Service Life Insurance, the premiums thereon being paid

by the Government for the cadets and students. All classes of aviation cadets, assigned to pilot training, or as bombardiers or navigators, or to photography, engineering, armament, meteorology, or communications are included and the premiums therefor paid by the Government during training. Aviation cadets and aviation students are entitled either upon graduation or discharge from such status to continue their insurance by paying the premiums themselves.

Due to the foregoing, aviation cadets and aviation students are in no way concerned with the present period in which certain military classes may apply for insurance.

All aviation cadets and aviation students should familiarize themselves with War Department Circular no. 132, July 8, 1941, which may be found in any headquarters.

RESERVE OFFICERS ON EXTENDED ACTIVE DUTY

Air Corps Reserve Officers. All such officers now on duty should examine their orders. If they were originally ordered to active duty under authority of Public No. 18, 76th Congress, passed April 3, 1939, and extension of active duty if any, authorized under the same Act, then such officers are not entitled to apply for National Service Life Insurance during the 120 day period from August 18, 1941. The periods of service of Air Corps Reserve Officers on duty under authority of Public No. 18 may be extended by authority of that law for periods up to a total of seven years.

As there was no necessity, the executive order of the President, which extended the periods of military service of various classes, as authorized by the Service Extension Act of 1941, did not extend the periods of service of such Air Corps Reserve officers. Inasmuch as the executive order did not make such extensions, therefore the current 120 day period for making application for insurance does not apply to such reserve officers.

It must be remembered, however, that the already existing law en-

titles any reserve officer to a new 120 day period within which to apply for National Service Life Insurance, said period commencing as of the date on which reordered to active duty or the present tour is continued or extended. Upon being reordered with an intervening separation from service, application for the insurance is not subject to physical examination. If the present tour of duty is continued or extended, then a satisfactory physical examination must accompany the examination.

Reserve Officers, General. The reserve officers of all arms, branches, and services that are now on duty, excluding all but a limited number of Air Corps Reserve officers and a limited number of reserve officers of other branches, have been ordered to active duty under authority of Public No. 96, 76th Congress, passed August 27, 1940. The insurance provision in the Service Extension Act of 1941 extends to all such officers on active duty a new opportunity to apply for National Service Life Insurance within 120 days of August 18, 1941, subject to the following limitation. Only such reserve officers may apply whose current period of active duty expires within said 120 days and whose active duty is continued or extended within said 120-day period. Applications also must be made within the 120 day period.

NATIONAL GUARD IN FEDERAL SERVICE SELECTIVE SERVICE ENROLLEES NOW IN SERVICE REGULAR ARMY RESERVE ENLISTED RESERVE CORPS IN FEDERAL SERVICE

The periods of service of all of the above military classes were extended by executive order by virtue of authority granted to the President in the Service Extension Act of 1941.

Although provision is made in the executive order for blanket extension of all of the above classes of military personnel, the executive order authorizes the Secretary of War to release from active service such persons or units as may be released without impairment to the interests of national defense, the releases to be effected upon completion of the original twelve months of training and service.

The Service Extension Act (approved August 18, 1941) granted to all military classes whose periods of service, training, active duty, etc. were extended under authority of the aforementioned law, anew opportunity to apply for and obtain National Service Life Insurance. Therefore, the National Guard, Selective Service, Regular Army Reserve and Enlisted Reserve Corps all are eligible to apply within 120 days of August 18, 1941, and no physical examination is necessary.

Individuals who may have previously applied for less than \$10,000.00 insurance may in this present 120 day period apply for any additional amount, provided the total amount held will not exceed \$10,000.00.

The four above mentioned classes of military personnel are entitled to apply for insurance under this provision even though their periods of service may not actually be extended at the completion of the current year of training or service. It is necessary, however, that application be made while still in active service and on or before December 16, 1941, the end of the 120-day period.

In addition to the privilege of applying within 120 days of August 18, 1941 without physical examination, all personnel of the four above mentioned classes whose periods of service, training, or active duty are extended upon completion of present period of service, training, or active duty, are entitled to apply for National Service Life Insurance within 120 days of such extension, but subject to satisfactory physical evidence of insurability. Also any individuals in these four classes, who may be mustered out of service or relieved from active duty and who may subsequently be ordered back into active service, are entitled to a new 120 day period within which time application may be made for National Service Life Insurance. The 120 days period begins on the date of reentry into the service and no physical examination is required.

RETIRED OFFICERS AND ENLISTED MEN

Retired Officers. Inasmuch as retired officers who have been ordered back into the service are not ordered for any limited period of service, it was not nec-

essary to extend their periods of military service, therefore, they are not eligible to apply for National Service Life Insurance in the 120 day ~~per~~ expiring December 16. All such officers are, however, eligible to apply for National Service Life Insurance without examination within 120 days of date on which originally ordered back into service.

Retired Enlisted Men. The Service Extension Act authorized the President to extend the periods of service of retired enlisted men who are ordered back into active service. The President did by executive order extend such periods of service therefore, retired enlisted men now in active service are entitled to apply for National Service Life Insurance without examination during the 120 day period commencing August 18, 1941 and expiring December 16, 1941.

ONE YEAR ENLISTMENTS

(Army Of The United States)

The President's executive order did not extend or continue the periods of service of the above one-year enlistments. As these classes of military service were not extended, no additional opportunity to apply for National Service Life Insurance is applicable.

GENERAL REMARKS

War Department Circular No. 192, issued September 16, 1941, which may be found in any headquarters, furnishes information as to the rights of military personnel to this new 120-day period for obtaining insurance. It also sets out instructions for making the application. It is highly important that the application be completed in accordance with the instructions in the circular.

Any individuals who may be in doubt about their military status and rights to apply for National Service Life Insurance should make application before December 16, being careful to comply fully with all instructions contained in War Department Circular No. 192. Those applicants then determined to be ineligible by the Veterans Administration will be declined.

The value of National Service Life Insurance and the importance of its being applied for by all military classes cannot be

stressed too much. No charge is made against the premium deposits of the insured to cover administration cost. The entire expense of administration and overhead of National Service Life Insurance is paid out of general appropriations for the Veterans Administration. Whenever a death claim is paid and the cause of death is attributable to the extra hazards of the service either in time of peace or war, the claim is paid out of a separate appropriated fund and no such claims are paid out of the premiums deposited by the insured.

Pay your premiums by deduction monthly from your pay. (War Department A.G.O. Form No. 29-3). Although it is permissible to pay premiums monthly, quarterly, semi-annually, or annually by check or money order, deduction from pay is surest. When once the deduction from pay is properly commenced then the insurance is sure to be kept in force. Many situations may

arise in times of emergency which may separate a man from contact with his personal affairs, causing temporary inattention to premiums falling due. The insurance, therefore, might lapse when it is needed the most unless premiums are deducted from pay.

All present holders of National Service Life Insurance should give thought to converting their insurance. Conversion is permitted any time after one year and before expiration of the 5 year term. Rates and descriptions of the converted policy forms are contained in War Department Circular No. 149, issued December 10, 1940. This circular may be found in any headquarters. National Service Life Insurance is not only unexcelled protection while in service, but is of such superior permanent value that all holders should plan on converting sooner or later so that they may continue to have the benefit of the insurance throughout life.

WAR DEPARTMENT
OFFICE OF THE CHIEF OF THE AIR CORPS
WASHINGTON

(1-A)

December 22, 1941

SUBJECT: National Service Life Insurance

TO: All officers and enlisted men of the United States
Army Air Forces.

1. On December 20, 1941, the opportunity to apply for National Service Life Insurance at any time by all classes of personnel of the armed forces was granted by Section 10, Public Law No. 360, 77th Congress, approved December 20, 1941.

2. The above-mentioned act amends the National Service Life Insurance Act of 1940 as follows: "Any person in the active service, and while in such active service, shall be granted such insurance without medical examination upon application therefor in writing, made within 120 days after the date of enactment of this Amendatory Act, and upon payment of premiums: Provided that after the expiration of such 120-day period any such person may be granted National Service Life Insurance at any time upon application, payment of premiums, and evidence satisfactory to the Administrator showing him to be in good health."


3. The Veterans Administration has released Insurance Form No. 398, titled "Information and Premium Rates for National Service Life Insurance." This pamphlet contains no reference to the new 120-day period above mentioned, (December 20, 1941 to April 19, 1942" as it was printed prior to passage of the Act. However, it contains full and complete information about National Service Life Insurance and should be studied thoroughly by those who are interested in applying and also those who already have purchased the insurance. Insurance Form No. 398 may be had by direct request to the Veterans Administration, Washington, D. C.

4. Nothing in the foregoing should be construed to mean that insurance may not be obtained without evidence of insurability after April 19, 1942, by persons entering the active service after the passage of the act. Such persons are entitled to apply without examination within 120 days from admission into the service, and at any time thereafter upon submission of evidence of good health.

5. National Service Life Insurance contains no restrictions as to residence, travel, occupation, or military or naval service and covers death from any cause. All claims arising from the extra hazards of the service, either in peace or war, are paid by the government and not out of the policy-holder's premium fund. All expense of administration of the insurance is borne by the government, through the United States Veterans Administration, giving the policy-holder the benefit of insurance at absolute cost.

6. It may well be said here that the United States Veterans Administration maintains a very large and highly organized and trained insurance department under the direction of the Director of Insurance, United States Veterans Administration. This division of the Veterans Administration is charged with the issue of the policies, collection of premiums, service to the policy-holders and the payment of claims. The whole organization is highly trained and scientifically directed, and in addition the organization has been imbued with a spirit of cooperation and understanding to the end that any National Service Life Insurance policy-holder may depend on liberal, exact and preferential treatment. In addition to this service, the policy-holders should unfailingly recognize that the Director of Insurance, United States Veterans Administration, through that agency and based upon the laws authorizing the insurance, is providing the finest, soundest and lowest cost insurance obtainable. The insurance is of such great value that all policy-holders should plan on converting and continuing the insurance throughout life.

7. At the close of November, 1941, 682,195 policies had been issued for a total of \$2,381,451,000 of insurance. With the opening up of the present new opportunity to buy National Service Life Insurance, it is expected that the number of policies and gross amount of insurance will be vastly increased. This vast body of insurance actually is a form of social security and is endorsed and guaranteed by the government. The benefits of it can only be had by applying for it.

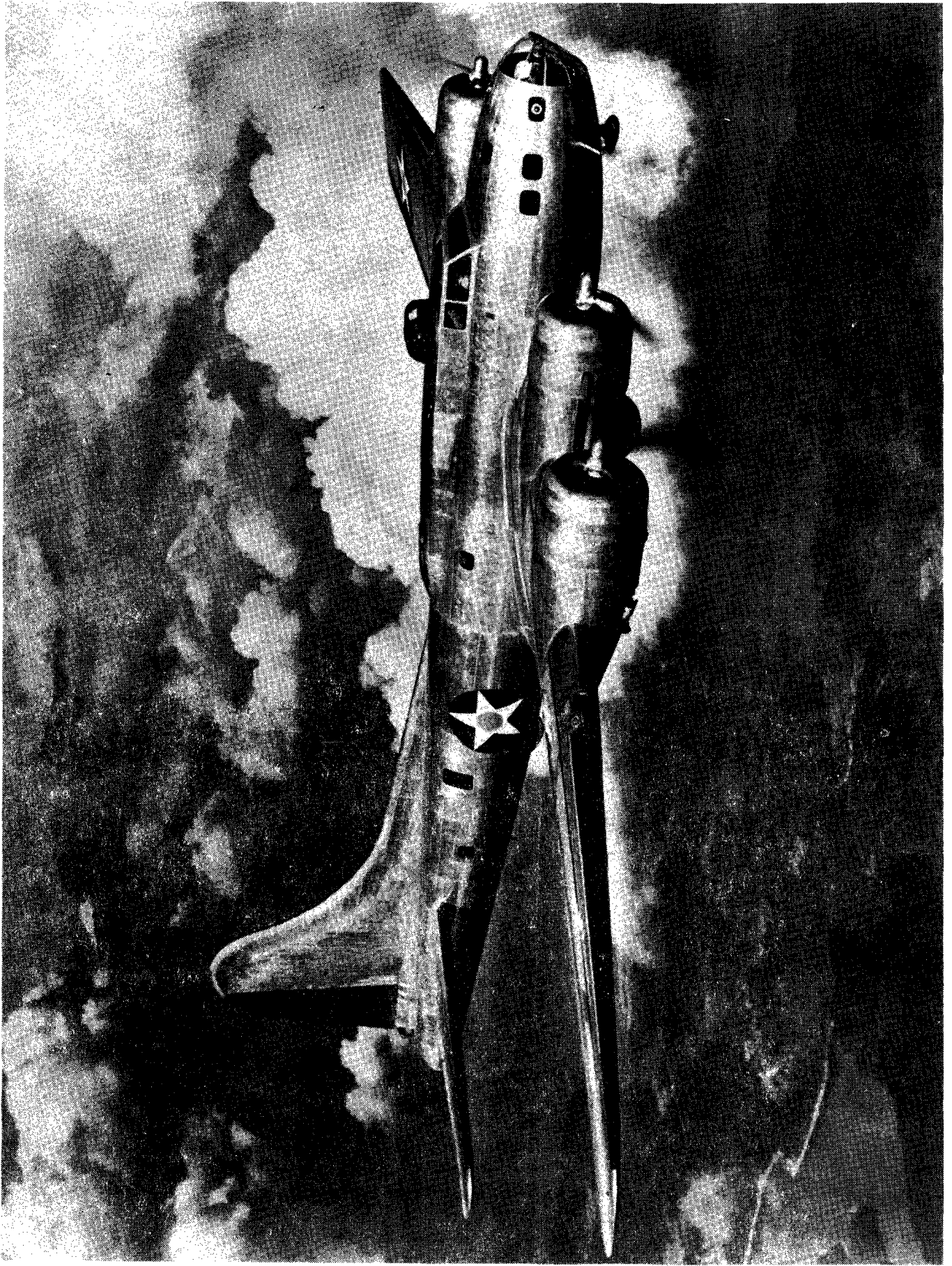


Waddell F. Smith

Major, Air Corps

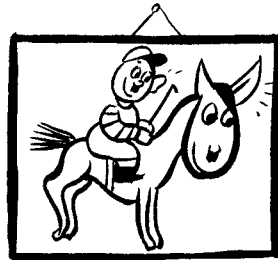
Insurance & Morale Officer

Military Personnel Division

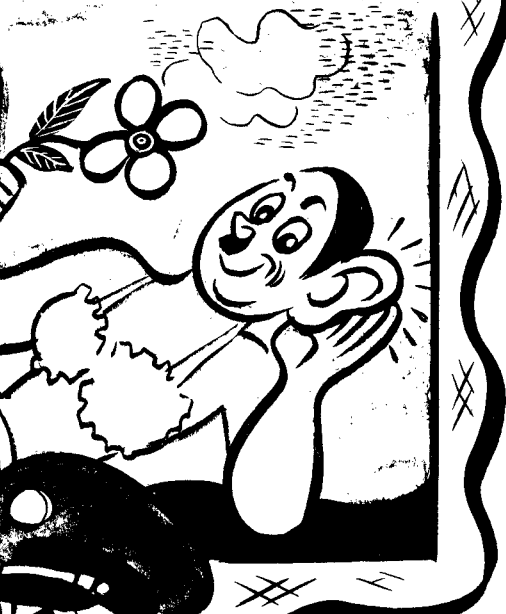


The New B-17E, Latest Flying Fortress

DON'T TALK!



YOU THINK YOU
HAVE A GOOD
OUTFIT!
LET ME TELL YOU
ABOUT ALL THE
NEW BOMBERS
WE'RE TAKING
TO



PIPE DOWN!
SOMEONE
MAY BE
LISTENING!

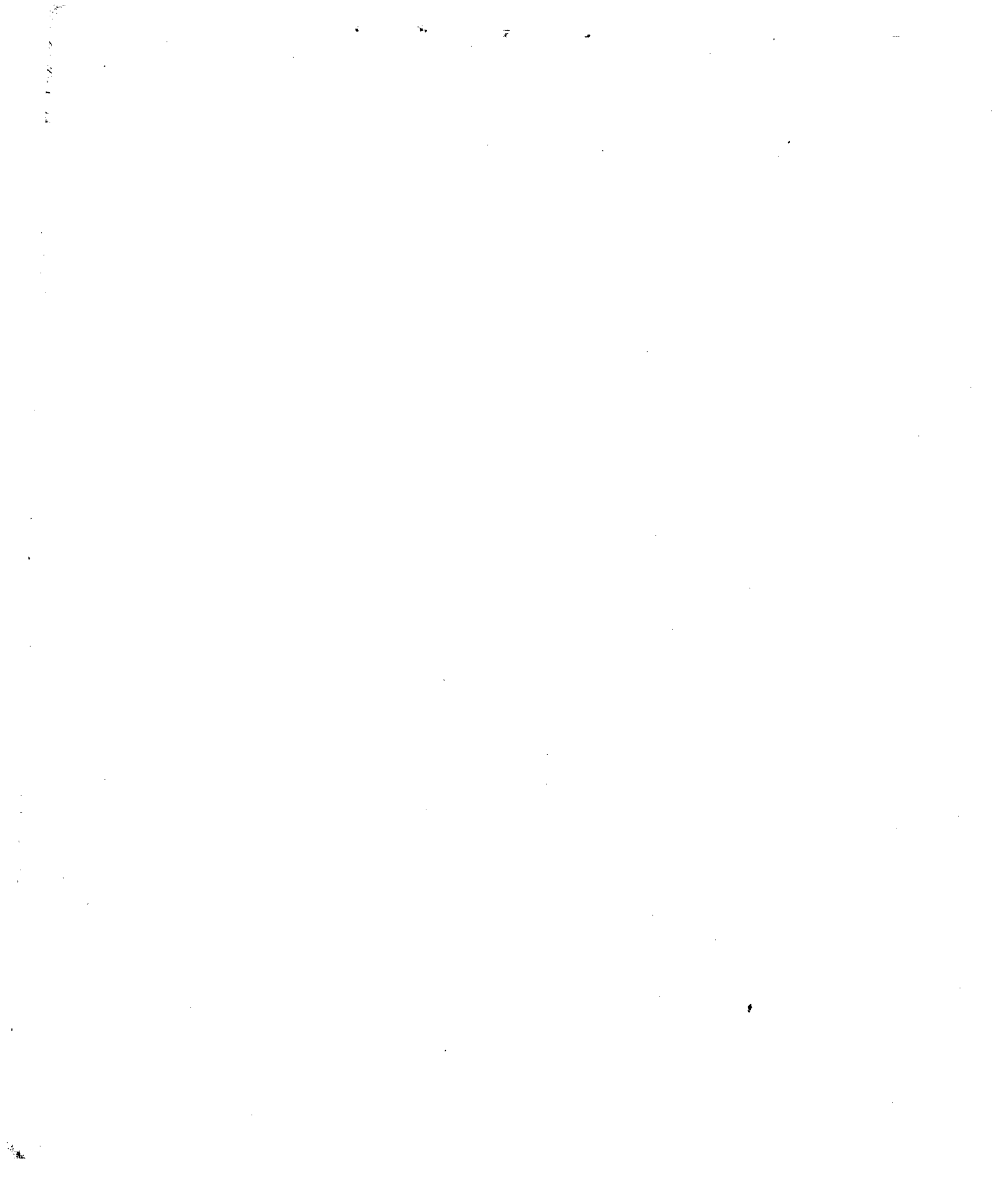


AIR FORCES NEWS LETTER

SIBERIA
FEBRUARY 1942

PROPERTY
OF
AIR CORPS LIBRARY
WASHINGTON, D. C.





A War Message to the Air Forces

THE DECLARATION OF WAR BY THE CONGRESS OF THE UNITED STATES ON DECEMBER 8 WAS A RINGING WARNING TO THE WORLD THAT THE ARMY AIR FORCES IN COOPERATION WITH OUR GREAT AIRCRAFT INDUSTRY WOULD STRIVE FOR AERIAL SUPREMACY IN EVERY THEATER OF OPERATIONS.

OUR COMMANDER-IN-CHIEF PROMISED THAT NO MATTER WHERE THE ENEMY WAS FOUND DEVASTATING WARFARE, PARTICULARLY IN THE AIR, WOULD BE BROUGHT TO HIM. WE OF THE ARMY AIR FORCES ARE DETERMINED TO ATTAIN THIS OBJECTIVE--WE SHALL ATTAIN IT.

NO DECISIVE OFFENSIVE OR DEFENSIVE ACTION OF THIS WAR HAS BEEN EXECUTED SUCCESSFULLY WITHOUT AERIAL SUPERIORITY OR AT LEAST SUFFICIENT AIR STRENGTH TO CHALLENGE THE SUPERIORITY OF THE ENEMY.

THE JAPANESE ATTACK ON PEARL HARBOR AND IN THE PHILIPPINES STARTLED A COMPLACENT AMERICA OUT OF ITS HABIT OF PASSIVE THINKING. THESE LIGHTNING STABS AT OUR VITAL DEFENSES CONVINCED EVERY REAL AMERICAN THAT WE MUST GO INTO THE AIR WITH SUFFICIENT STRENGTH TO DESTROY THE ENEMY.

OPERATIONS OF THE ARMY AIR FORCES OVER THE PHILIPPINES, MALAYA, MACASSAR STRAITS AND DAVAO HAVE DEMONSTRATED THE SUPERLATIVE QUALITY OF OUR COMBAT TEAMS AND AIRCRAFT. VETERANS OF OUR AIR FORCE CONTINUE TO EXCITE THE WORLD BY THEIR EXPLOITS OVER RANGOON AND THE BURMA ROAD.

WE HAVE JUST BEGUN--MUCH REMAINS TO BE DONE. TEAMWORK IS THE ANSWER TO SUCCESSFUL AERIAL WARFARE. THE ENTIRE ARMY AIR FORCES MUST OPERATE AS A TEAM SMOOTHLY AND EFFICIENTLY--WITH MINDS, HEARTS AND HANDS.



CARL SPAATZ
Major General, U.S. Army
Commanding General
Air Force Combat Command

THE AIR FORCES NEWS LETTER

HEADQUARTERS ARMY AIR FORCES

WASHINGTON, D. C.

VOL. 25

FEBRUARY, 1942

NO. 1



U.S. TIGERS CLAW JAPS	1
GEN. PATRICK WAGED EARLY FIGHT FOR AIR POWER.	3
WAR CHANGES HIGH COMMANDS	5
A GERMAN VIEW OF JAPANESE AIR POWER	9
FIRST WAR HEROES HONORED.	13
BRITISH REVEAL OBSERVERS TECHNIQUE.	15
"FLIGHT STRIPS" FOR THE DISPERSION OF AIRCRAFT.	17
COMBAT CREW ELIGIBILITY EXTENDED.	21
THE CRUISE OF THE ARABIAN NIGHT	23
180 MILES WITHOUT A MOTOR	25
AIR CORPS REORGANIZED	27
AIRACOBAS STRIKE OVER BRITAIN.	29
SUPPORT COMMANDS PROVIDE LIGHTNING PUNCH.	31
PATROL BOMBERS CORRAL SUB AT SEA.	33
HOW TO BUNDLE FOR BRITAIN	37

Art Work By James T. Rawls



Ten For One

U. S. Tigers Claw Japs

AMERICAN pilots in the Chinese Air Force are giving Japanese airmen their worst licking of the war. Trained in new and devastating pursuit tactics by a former acrobatic ace of the U.S. Army Air Corps, the American Volunteer Group in China is knocking down more than 10 Jap planes for every loss of its own.

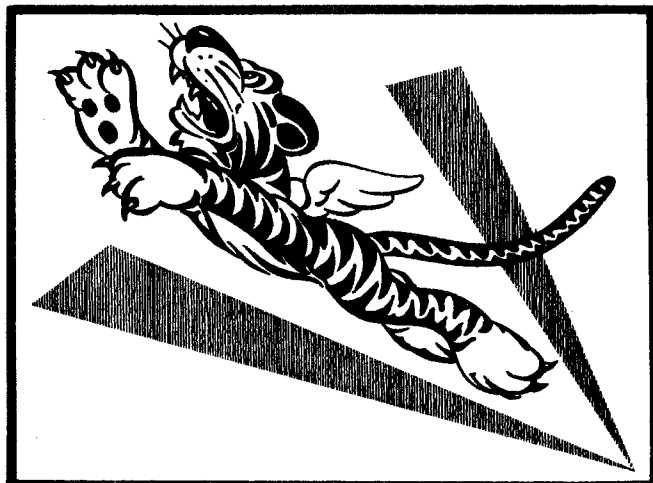
In less than two months they have driven Japanese bombers from the vital Burma road, parried heavy aerial thrusts at its chief port, Rangoon, and blasted Jap air bases in Thailand and Indo-China. At January's end these American pilots had destroyed at least 135 Jap planes in the air and wrecked another 50 on the ground, and had lost only 11 of their own pilots. They have become national heroes of the oft-bombed Chinese who hail them as "The Flying Tigers".

All Former U.S. Flyers

The story of the Flying Tigers is one of the strangest sagas of American aviation—a saga of American planes and young American pilots touched off by a spark of military genius in a battle 6,000 miles from home. The pilots were fresh from American military flying schools. All of them resigned commissions in the U.S. Army, Navy and Marine air forces to fight the Japs over China. Their fighter planes came from American factories that had already learned to make more potent pursuits. The spark of genius came from a tall, taciturn, Texas school teacher, Claire L. Chennault, retired U.S. Army Air Corps captain and now a brigadier general in the Chinese Air Force.

Chennault and his planes and pilots got together in China last summer. Six months later they celebrated Christmas together by clawing 48 Jap planes from the sky over Rangoon in the most spectacular victory of the Asiatic air war.

Sixty Jap bombers roared toward Rangoon at 15,000 feet the day before Christmas. A Tiger squadron of 18 planes sped up to 18,000 feet, swooped down to make the interception and send their first victims spinning into the jungles and rice paddies around Rangoon. The Tigers darted at the heavier Japs in wide weaves from above and below instead of making the conventional side approach. The Jap formations broke



and fled with Tigers hunting them far into Thailand.

On Christmas Day the Japs came back for more and got it. Formations totalling 70 planes made the attack and again 18 Tigers went up to meet them. In this fray the Tigers brought their two day score to 48 enemy planes against a loss of three of their own planes and two pilots. Instead of climbing to 18,000 feet as ordered, both of the American pilots lost mixed with a British squadron, apparently became confused and met the Japs on their own level at 15,000 feet. There they were caught in heavy cross-fire from an enemy bomber echelon.

The tactics that enabled the Tigers to hang up this remarkable record were developed by Chennault during 18 years as one of the hottest acrobatic pilots ever to kick around an Air Corps pursuit ship and four years of observing the Jap air force in action.

The first World War jolted Chennault from a career as a business college teacher and high school principal. He joined the Aviation Section of the Signal Corps in 1917 as a ground officer and stayed with it to become one of its greatest pilots. But throughout his aviation career he never lost interest in teaching and seemed imbued with a deep seated desire to pass on the knowledge he had accumulated.

As leader of the "Three Men on a Flying Trapeze", he originated, taught and performed formation acrobatics that have never been equalled. In the early 1930s Chennault, then a captain, and his companions—first, Lieut. H.S. Hansell (now a lieutenant colonel) and Lieut. J.H. Williamson, and later Williamson and Lieut. W.C. McDonald kicked their P-12 pursuits around in incredible formation acrobatics at all of the major air shows.

They flew as if a single hand controlled the sticks of the three planes. They did spins in perfect unison and once flew through an entire

acrobatic routine with their ships linked by string. So perfect was their co-ordination that the thin cord remained unbroken. They finally invented a climax to their act in which they did a formation roll while each ship barrel-rolled individually.

Out of these acrobatics and a two and a half year stretch as commander of the 19th Pursuit Squadron in Hawaii, Chennault evolved his pursuit tactics. In 1931 he spent a year at the Air Corps Tactical School at Maxwell Field, finally becoming chief instructor of the pursuit section and writing a text on pursuit tactics.

Maj. Gen. John F. Curry, then commandant of Maxwell Field reported that Chennault was "one of the outstanding authorities on pursuit aviation, a fearless pilot and an able air leader." Chennault was frequently called to Air Corps headquarters for expert opinions on new pursuit designs and supervised many service tests of new equipment in the field.

In 1936 his two partners on the Trapeze team, Williamson and McDonald, left the Air Corps to run Chiang Kai-Shek's Central Aviation School in Hangchow, China. But Chennault's flying days seemed over in 1937 when he was retired for physical disability incurred in line of duty.

But Williamson and McDonald persuaded Chennault to join them and he arrived in China shortly after the outbreak of the Sino-Japanese war to teach pursuit tactics to the Chinese Air Force. The Chinese air effort waned as the war continued but Chennault stayed on, studying Jap tactics and helping organize an air raid warning system, now so efficient that Chinese headquarters are warned of raids while Jap bombers are still warming up at their bases. Chennault also set up air bases in the interior, preparing for the day when China could strike back.

Last summer Chennault was made a brigadier general in charge of Chinese Air Force combat units and became responsible only to Chiang Kai-Shek. The American Volunteer Group was formed, with its main task to drive Jap bombers from the Burma road and insure delivery of American war supplies to the Chinese armies.

Chennault spent six months moulding his planes and men into as fine a fighting force as had ever left the ground, despite a shortage of spare parts, ammunition and fuel. In spite of minor miracles performed by the ground crews, many of their plane losses have been due to overworked engines rather than Jap bullets. To conserve ammunition, the Tigers were trained to get their Japs with their first burst. Combat



*Brigadier General Claire L. Chennault
of the Chinese Air Force*

reports show that about 8 of every 10 Japs downed fall during the first "squirt" from the Tigers' guns.

Chennault trained his men like a college football team. He quartered them in special hostels where American food and drinks were served and American chocolate and tobacco were available. Every Tiger carries a bottle of alcohol to sterilize eating utensils and be used on minor injuries in the field.

The Tigers were whipped into perfect physical condition with daily calisthenics and plenty of baseball and football. In addition to tactical maneuvers, Chennault taught them all he knew about the Jap airmen until they were able to anticipate almost every enemy tactic and maneuver and always keep one jump ahead.

They finally went into action in the middle of December and by December 27 the Burma road was free of bombs. The wrecks of 47 Jap bombers east of the road marked the limit of Jap aerial

(Continued on Page 8)

First Air Corps Chief Dies

Gen. Patrick Waged Early Fight for Air Power



DEATH came to Major General Mason Mathews Patrick at a time when the United States was engaged in building the most powerful military air machine ever conceived.

This gigantic air structure will serve as a living memorial to General Patrick, who as the first Chief of the Army Air Corps laid its foundation.

As Chief of the American Air Service in France during the first World War, he foresaw air power's potential importance in any future conflict. As first Chief of the Air Corps he waged a peacetime struggle preparing a framework for the aviation expansion he knew must come.

He was 78 when he died. But age meant little to General Patrick. At the age of 60 he became a qualified airplane pilot—the first major general and the oldest Army officer ever to receive that rating. Exact, punctual and studious, it was typical of the General. At a banquet commemorating the event, he explained to fellow airmen that he had taken up flying, not in search of personal glory, but to gain a clearer conception of the skill required of a pilot. (His instructor was Major General Herbert Dargue, then a major, who has been unreported for several months after an official flight while commanding the First Air Force at Mitchel Field, N.Y.)

Becoming a pilot was more than an outstanding personal feat for General Patrick. By insisting on being a flying air chief, General Patrick built up the morale of the Corps; in his constant emphasis on flying as an essential mode of transportation he did much to convince the public of its great usefulness in time of peace.

Followed Aviation Developments

Active until about a month before his death on January 29 at Walter Reed General Hospital in Washington, General Patrick had kept in touch with recent aeronautical developments. Following his six-year administration of the Air Corps ending in 1927, he carried on his fight for aviation progress as an expert on air traffic, lecturing on this subject before military and private audiences. From 1929 to 1933 he served as a member of the Public Utilities Commission

in Washington, where he made his home. His wife, the former Grace Cooley of Plainfield, N.J., died in 1938. Their one son, Capt. Bream C. Patrick, is now on duty with the Headquarters Army Air Forces.

General Patrick's genius was organization. It was organization that was needed when he became Chief of the American Air Service in France, and organization was demanded in setting up the post-war air program. A trained engineer, he applied his construction skill to aviation. General Patrick had graduated from the United States Military Academy at West Point in 1886 as number two man in a class of 77, and was commissioned in the Corps of Engineers. At the close of the Spanish-American War, he was named Chief Engineer Officer with the Army of Cuban Occupation.

Fine Showing In World War I

By 1917 he had reached the rank of colonel. He sailed for France that year in command of the First Engineers. After a few months overseas he was promoted to brigadier general and placed in charge of all construction and forestry in the AEF. Only soldiers who knew the vast camps, great cantonments and vast docks which sprang up almost overnight can appreciate the magnitude of that task. For six months General Patrick served as Commanding General of the Line of Communications. Then seeking a man with vision and a strong hand, General John J. Pershing, his classmate at West Point, appointed General Patrick Chief of the Air Service.

The success of General Patrick's administration is a matter of record. American airmen shot down 776 German planes while losing only 290 of their own. Within the short space of a year America had turned out 7,118 airmen from her flying schools, built up an air force of 149,000 men and produced 11,760 planes and 30,630 engines. The air force thus created was more than twice the size of America's entire army before the war.

But General Patrick's work in aviation had just begun. Following the Armistice he was assigned the job of tearing down the tremendous edifice he had built up overseas—the job of re-

turning the men to civil life, disposing of surplus property and building for peace.

There was no settling down for General Patrick. He was detached from the AEF air force and assigned to the Inter-Allied Aviation Commission, representing the United States on air matters at the Peace Conference. He returned to this country in July, 1919. For his war service he was awarded the Distinguished Service Medal, the French Legion of Honor, the Italian Order of St. Maurice and St. Lazarus, the Belgian Certificate of the Order of Leopold and the Order of the British Empire.

After serving as commanding officer of the Engineer School at Fort Humphreys (now Fort Belvoir, Va.) for two years, General Patrick in October, 1921, was appointed Chief of the Air Service. The Air Service became the Air Corps in 1926, and he served as Chief until reaching the retirement age of 64 on December 13, 1927.

Reorganized American Air Power

These were aviation's formative years in the United States and one of the most crucial periods for military aviation. General Patrick's task was the complete reorganization of the Air Corps. Having already been subjected to several investigations, Army aviation was ultimately placed under scrutiny by some 13 separate boards and commissions appointed by the Executive Branch or by Congress to examine its structure and make recommendations for changes. To many, General Patrick is best known as the firm, far sighted air leader and orator who appeared before committee after committee on Capitol Hill, sending home his message of progressive thought on aviation. The record of his testimony reads like prophecy of what has now come to pass.

While conducting the fight for adequate legislation, General Patrick was putting his words into action. He saw the great need for building up the American aircraft industry. But faced with the necessity of operating with the greatest possible economy, he had to make maximum use of the equipment at hand and the large stock of war-built planes which could be rebuilt and reconditioned at about half the cost of new ships.

To stimulate aircraft production and air-mindedness on the part of the public, General Patrick built up a new interest in aviation by fostering spectacular but scientifically valuable air exploits. The public soon sensed the future in store for aviation by such achievements by Army flyers as the around-the-world flight, the good will flight around South America, the flight to Puerto Rico, the non-stop

flight across the American continent, the dawn to dusk cross-country hop, and the flight from Oakland, Calif., to Honolulu, Hawaii.

No opportunities were neglected to demonstrate the practicality of the airplane in peacetime. General Patrick directed the greater use of planes in spotting forest fires, patrolling flooded areas and directing rescue operations, dusting cotton and other crops to eliminate insect pests, and in aiding in mapping areas inaccessible by foot.

Supported Technical Developments

Building up what finally became the Materiel Division, located at what is now Wright Field, Dayton, Ohio, General Patrick fostered the production of new planes and the standardization of types into pursuit, attack, bombardment, observation and cargo ships. In the six years from 1921 to 1927 work was intensified on air-cooled and water-cooled engines and on numerous instrument aids to aerial navigation; the parachute and other flying safeguards were perfected and wearing of a parachute by Army flyers made mandatory; a network of landing fields and airways was begun; air navigation maps were developed on a new status, and aviation medicine and radio came into being on a modern scale.

Training kept pace with technical advancement. General Patrick directed the establishment of Randolph Field, Texas, and the coordination of courses of instruction at primary and advanced flying schools. Every effort was made to turn out airmen accomplished in aerial gunnery and bombardment, and competition in bombing among tactical squadrons was fostered. Impetus was given to the training of Air Corps Reserve Officers, and aviation training applied to National Guard and R.O.T.C. Officers. In 1926, summer training camps for Reserve Officers were held at virtually all Air Corps fields.

The persistent efforts of General Patrick to secure an increase in Air Corps personnel culminated in the appointment by the Secretary of War, in 1923, of a board of officers known as the Lassiter Board to make recommendations on reorganization of the Air Corps. The program formulated by this body contemplated a minimum peacetime strength of 4,000 officers, 2,500 flying cadets, 25,000 enlisted men, 2,500 airplanes and some lighter-than-air equipment, all to be secured by progressive development over a 10 year period. Although the Secretary approved the proceedings of the Board in principle, no

(Continued on Page 40)

Air Power Recognized War Changes High Commands



THE first two months of war brought a series of promotions and transfers to Army Air Forces senior officers, and again emphasized the increasingly important role of air power in the grand strategy of the United Nations.

Maj. Gen. Henry H. Arnold, Chief of the Army Air Forces, was promoted to the grade of lieutenant general. Maj. Gen. George H. Brett, Chief of the Air Corps, was named Deputy Supreme Commander of the Allied Forces in the Southwest Pacific with the rank of lieutenant general. Lieut. Gen. Delos C. Emons, former Chief of the Combat Command, was appointed military commander of the vital Hawaiian area. Brig. Gen. Joseph T. McNarney was made a member of the board investigating the Japanese attack on Pearl Harbor and promoted to major general.

Maj. Gen. Millard F. Harmon, former commander of the Second Air Force, was appointed Chief of the Air Staff succeeding Brig. Gen. Carl Spaatz who was promoted to major general and made chief of the Combat Command. Maj. Gen. Walter R. Weaver left his post as commander of the Southeast Air Corps Training Center at Maxwell Field to become Acting Chief of the Air Corps.

Maj. Gen. Frederick L. Martin was given command of the Second Air Force in the vital Western Defense Command on the Pacific coast. He was relieved as commander of the Hawaiian air force to testify before the Pearl Harbor investigation board. General Martin was succeeded by Brig. Gen. Clarence L. Tinker, former commander of the Third Interceptor Command, who was promoted to major general.

Arnold's Rise Rapid

General Arnold's elevation to lieutenant general climaxed a series of promotions from brigadier general commanding the First Wing of the GHQ Air Force at March Field in 1938 to the post of Chief of the Army Air Forces, Deputy Chief of Staff for Air and represented American air power at the important Anglo-American military conferences held in Washington during the visit of

(It is interesting to note that the Roberts' report covering the investigation at Pearl Harbor gave no intimation of dereliction of duty on the part of any Air Forces personnel.--Ed.)

British Prime Minister Churchill. General Arnold is also president of the Air Council.

General Brett several months ago began an extended tour of the world war fronts and flew General Wavell, British Commander of India and Supreme Commander of the Allied Southwest Pacific forces, to the conference at Chungking where plans for the unified command were formulated.

Brett A Specialist

General Brett learned to fly in 1915 after service as a lieutenant of the Philippines Scouts. He has been a specialist in air supply service and administration and has also served as commander of several tactical units and air bases. In October, 1940, he was promoted to major general and the following month was designated Assistant Chief of the Air Corps. He succeeded General Arnold as Chief of the Air Corps last May.

General Emons served as Chief of the Combat Command (formerly GHQ Air Force) since 1939. He returned to familiar territory in taking over the Hawaiian command for he served a tour of duty in Hawaii as commanding officer of the 18th Composite Wing shortly after his graduation from the Command and General Staff school at Fort Leavenworth, Kansas, in 1933.

Harmon Served In Philippines

General Harmon came to AAF headquarters with a long record as a commander of tactical units. A West Point graduate, General Harmon began his army service in the Philippines with the infantry. He was assigned to the Aviation Section of the Signal Corps in 1916, served with the First Aero Squadron on the Mexican border and accompanied a special expedition into Mexico. A month before the United States entered the first World War, General Harmon sailed to France on an observation mission and attended French aviation schools. He was assistant chief of the Air Service Advance Zone in AEF headquarters for six months, and later served as a pilot with a French combat group near Soissons, where he won the Croix de

Guerre with a bronze star. In April, 1918, he returned to AEF headquarters to select airdrome sites and types of motors for American equipment. After the war he served a year as a member of the Air Service Advisory Board. He graduated from the Command and General Staff School and the Army War College and served on the War Department general staff before being appointed as commandant of the Air Corps Primary Flying School at March Field, California, in 1927.

General Harmon also served as an instructor in the Command and General Staff school and assistant commandant of the Air Corps Tactical school at Maxwell Field, Alabama. Among the tactical units he has commanded are the 3rd Attack Wing at March Field, California, the 20th Pursuit Group at Barksdale Field, Louisiana, the 7th Pursuit Wing, Mitchel Field, Long Island, and the Fourth Interceptor Command, Riverside, California, and the Second Air Force, at Fort George Wright, Washington.

Tinker Holds Medal

General Tinker wears the Soldier's Medal, awarded with the following citation:

"For heroism on Sept. 21, 1926, in rescuing Commander Robert Burg, U.S.N., from a burning aeroplane near Kenley Aerodrome, London, England. Although injured and in a semi-dazed condition due to the crash, Major Tinker was able to get clear of his burning plane, but when he realized that Commander Burg was still in the cockpit, he rushed back into the flames in an attempt to rescue his passenger. He was driven back by the intense heat, but returned to the other side and after repeated and determined efforts, being badly burned in the attempt, he extricated Commander Burg and dragged him, unconscious, to a place of safety."

General Tinker spent many months in English and American hospitals recovering from the injuries he suffered in the crash. After his recovery he served as assistant commandant of the Advanced Flying School at Kelly Field, Texas. He subsequently commanded Mather Field, California, and then began a series of tactical unit commands. He was in charge of Route 18 from Oakland while the Army Air Corps flew the air mail and then commanded pursuit and bombardment units at March and Hamilton Fields. After a tour as Chief of the Aviation Division of the National Guard Bureau and Chief of the Supply Division of the Office of the Chief of the Air Corps, he again resumed command of tactical units, leading the 27th Bombardment Group at

Barksdale Field, the 3rd Bombardment Wing at MacDill Field, Florida, and finally the Third Interceptor Command at Drew Field, Florida. General Tinker began his military career as a second lieutenant in the Philippines Constabulary in 1908 and learned to fly in 1920.

General Weaver comes to the Office Chief of Air Corps from the command of the Southeast Air Corps Training Center at Maxwell Field. He was assigned to the Air Corps during the World War after 10 years service in the infantry. General Weaver learned to fly in 1920 and has since specialized in Air Corps administration. Among his notable achievements in this field was his handling of flood relief in southern Alabama during the Mississippi River flood of 1929 during which 28 tons of food and medical supplies were delivered by air to stricken communities. General Weaver has also devoted much time to the development of aircraft radio.

General McNarney learned to fly in 1917 and spent nearly two years in France with the Air Service of the AEF. He commanded the Observation Groups of the First Corps in the Chateau Thierry offensive, the Fourth Corps in the St. Mihiel drive and the Fifth Corps in the Argonne operations. After the Armistice he remained in Paris for several months writing a manual on observation techniques. Since the war General McNarney did several tours of duty in the War Department and commanded various flying schools and tactical bombardment units. He was appointed to the joint Army and Navy Planning Committee in 1939.

General Eaker is another colorful veteran of the Army Air Forces with a reputation as an author as well as a pilot. He collaborated with General Arnold in writing "Winged Warfare" and "This Flying Game", and was decorated by three foreign governments for his participation in the Pan American Goodwill Flight in 1927. He also wears the Distinguished Flying Cross with an Oak Leaf Cluster. He was chief pilot of the "Question Mark" which set a world endurance flight record in 1929, and made the first blind flight from coast to coast. He commanded the 34th Pursuit Squadron and the 17th and 20th pursuit Groups. His present permanent station is with the First Air Force at Mitchel Field, Long Island.

General Olds, 45-year-old chief of the Ferry Command, is one of the youngest generals in the Army. He is a pioneer in the field of heavy, long range bombardment and commanded the famous Second Bombardment Group at Langley Field, which service tested the original B-17s. He commanded

AIR FORCES GENERALS IN WAR SPOTLIGHT



GENERAL HENRY H. ARNOLD



GENERAL GEORGE H. BRETT



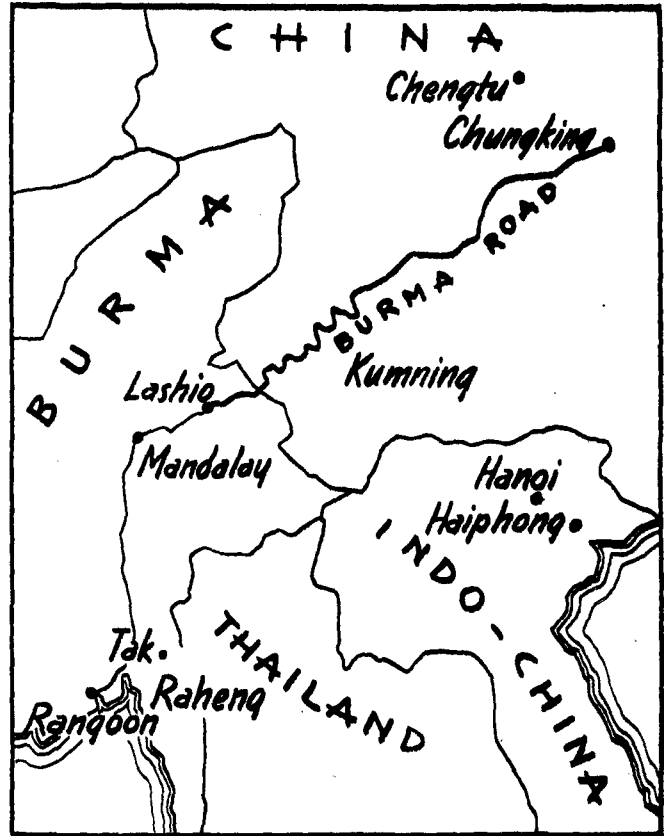
GENERAL DELOS C. EMONS



GENERAL CLARENCE L. TINKER

a group of six B-17s on a Goodwill Flight from Langley Field to Buenos Aires and return and a year and a half later participated in another mission under the command of General Emmons which took seven B-17s on a round trip to Rio de Janeiro. For his South American flights, General Olds received the medal of the International League of Aviators, the Mackay Trophy, the Distinguished Flying Cross and decorations from Latin American countries. General Olds served as an air traffic expert for the Army Air Forces shortly before his assignment to organize the Ferrying Command. Originally organized to speed bombers to Britain, the Ferrying Command is now the largest air line in the world, girdling the globe to supply the combat units of the AAF and of its allies with planes, parts and equipment.

U.S. TIGERS... (Continued From Page 2) operations. The world knows now how the pilots from Texas, New York, California, Ohio, Florida and a dozen other states routed the Japs again in the blazing holiday battle over Rangoon; how they carried the war to the enemy by escorting Chinese and British bombers to burn and blast the big Jap air bases at Hanoi, in Indo-China and Raheng, Tak and Mesod in Thailand and a half dozen other fields.



DEPOT EMPLOYEES COOPERATE

All of the employees of the Waco Sub-Depot Supply, Waco, Texas, signed a letter addressed to the commanding officer of that Air Service Command activity, reading as follows:

"During this period of extreme emergency, we, the undersigned employees of the Waco Sub-Depot Supply, Waco, Texas, volunteer to work as many hours per day, seven (7) days a week, if and when necessary, as the Sub-Depot Commander may direct, with the understanding that no compensation will be derived."

Employees who signed the letter are: George W. Whitlock, Amos D. Alley, John H. Mack, Alvis T. Barkley, Elroy C. Untermeyer, David Comb, Joe B. Reed, Harry P. Ankerson, Jr., Earline Carpenter, Carmon F. Beavers, Maurice Cole, Martin J. Arnold, Elmer Cunningham, Wynell L. Woodall, Marie Helen Adler, Catherine Camp and Francis Collis.

"Wings" were recently presented to the first group of Royal Air Force cadets undergoing instruction under the American flying training program. These cadets graduated from the Advanced Flying School at Turner Field, Ga., which is under the jurisdiction of the Southeast Air Corps Training Center. Colonel John B. Patrick, commanding officer of Turner Field, delivered the graduation address, and Major Norris B. Harbold, the director of Training, presented the "wings" to the Englishmen.

A 30-minute coast-to-coast radio broadcast featured the graduation exercises, and the program was sent to England over short wave.

Civilian pilots between the ages of 21 and 45, who possess 500 certified flying hours, of which 250 hours have been on aircraft of 400 h.p. or better, are eligible for employment in ferrying aircraft for the U.S. Army Air Corps Ferrying Command. They will receive temporary employment under the Civil Service for an initial period of 90 days, beginning at a salary of \$3,600 per annum. A per diem expense allowance of \$5.00 will be paid on all domestic ferry trips away from home station, and \$6.00 on trips outside the United States.

Advancements may be effected at the end of each 90-day period, upon the recommendation of the Control Officer of the Air Corps Ferrying Command, who may at that time also recommend ferry pilots for reserve commissions, grades of rank being dependent on age and experience.

The Setting Sun

A German View of Japanese Air Power



IT is difficult to get an exact picture of the air power of the land of the Rising Sun, for everything that concerns its military power is concealed behind a heavy veil of secrecy.

Japan has no separate, independent air power. All planes are divided between the Army and the Navy. The highest estimate of the total number of Japanese planes is 4,500. The British magazine *Aeroplane*, in the March 7, 1941, number, places the total at 3,000 or less. The German *Handbuch der Luftfahrt* of 1939 estimates 2,600 planes, training planes and reserve material included, with a total personnel of 33,000 men. These are divided between the Army and the Navy at a ratio of two to one.

French And German Influence

Originally the air arm of the Army was influenced strongly by the French and Germans, both in planes and instructors. French and German influence are still plainly noticeable in Japanese plane construction. Only in recent years has American influence made itself felt. The Japs have no originality either in plane construction or in the field of tactics.

In the Army air force the regiment is the highest tactical unit. The regiment has its own flying fields, ground service and training schools. The regiment consists of two to five squadrons of about 10 planes each. The planes are of the same type, although squadrons appear in China which have three heavy bombers and six planes of a lighter type which are also scouting planes. Among the planes in the first line is an approximately equal number of bombers, pursuit planes, and scouts. The Army has six training schools for its air power: a flying and technical school at Tokorozawa, and air fighting school at Akeno, an observers' school and specialist training school at Shimoshizu, bomb-dropping training school at Hamamatsu, a flying school at Kumagi, and an air defense school at Inagemachi. There are said to be 3,000 Army flyers. The Navy is supposed to have 2,100. The training schools produce a bare 700 a year.

In the field of warship construction Japan patiently followed and imitated the great West-

ern Powers for many years. Neither did she do any pioneer work in the field of aviation. Before 1914 only a few officers of the Army and Navy had voluntarily dedicated themselves to the air service and had gotten training as flyers abroad, particularly in France. After the World War Japan began to use planes more generally in its military operations in Siberia. In 1919 the systematic building up of the air services was begun. The first flying field for the Navy was at Kasumigaura, and for the Army, at Tokorozawa. Just as once under the shoguns and at the beginning of the Meiji period between 1845 and 1875 foreigners were called in to organize the Army and the Navy, so now also foreign instructors were taken in to organize the new war weapon.

In the spring of 1919 an English commission of 40 men under Lieutenant Stempthill arrived to organize the naval flying service, and a French commission of 60 men under Lieutenant General Faure for the Army air service. Interest in flying clubs and aeronautical companies was stimulated. Now Japan stands among the great powers in respect to its air force.

The Naval Air Force

After the first Navy flyers returned in 1912 from training in France and the United States, a training field was constructed at Opama near Yokosuka. English officers shared in this training from 1919-22. During this period the Japanese air weapon thrived and an extensive construction program was set up. In 1923 there were already 9 squadrons with 8 machines each, a few reserve planes at the land bases, together with a number of planes for the ships. From 1927 on this naval air force grew quickly. In that year a special bureau for the Naval Air Force was set up in the Navy Department. In 1937 there were 19 naval bases with 33 squadrons. These bases were in the bay of Tokyo: Opama (Observers' School), Tateyama, and Kisaruzu; to the north was the large flying school Kasumigaura; on the inland sea; Kure, Hiro, Saeki, and Kishimota; on the west coast of Kiyshu: Sasebo, Omura, Kagoshima and Kanoya; on the west coast of Honshu: Kuritza near Mazaru; in Korea: Chinkai; in the north: Ominato and

Namuro; in the south: Chichima on Bonin Island together with Saipan and Palau. In addition there are bases in all larger cities of the main islands growing steadily.

According to the latest information, the Navy has 39 squadrons with between 1,000 and 1,500 planes. The greatest number of these planes are shore-based. These planes have an active share in the war on land in China. The ships which carry planes are the carriers, the battleships, cruisers, and plane tenders. The carriers are the Hosho with 26, the Kaga with 80, the Akagi with 60, the Ryujo with 24, the Soryu, Hiryu, and Koryu, each with 40 planes. The tenders are the Notoro, Kamoi, Chitose, Chiyoda, and Midzuhu. These ships have no flight deck, but carry a number of seaplanes. The nine battleships, modernized after 1928, have a catapult and three planes aboard. The 37 cruisers over 5,000 tons have one or two catapults and one to four planes. No information is available on newly constructed warships.

The Planes

The negligible pioneer work in the Japanese airplane industry has already been pointed out. A closer view of the types of planes shows that the Japanese are far behind their contemporaries abroad. This is true at any rate for the machines designed in Japan. In addition there is much construction under license, which furnishes good copies of original machines and plane motors. The airplane industry has to fight against various difficulties. First of all there is little cooperation in the air field. There is no central organization that regulates development and production. The military air service is under the Naval Ministry; the civilian service under the Department of Commerce; whereas aeronautical research belongs to the Ministry of Instruction. Furthermore, the air service industry lacks, in spite of its privileged position, trained workers, modern machinery, and above all the necessary raw materials. In the field of raw materials, machinery and technical workmen, Japan is dependent on other countries. German technicians are now trying to supply the necessary schooled personnel. Estimates concerning the output of Japanese airplane industry vary. Insiders consider it to be from 1,500 to 2,500 planes a year from the 40 or more factories. This means that Japan will not be able to supply its own needs if it becomes involved in a war against the United States or even in a War against the Russian air power in the Far East. According to reliable

information the construction of 1938-39 was little more than 1,000 planes.

The great airplane firms are Kawanishi, Kawasaki, Mitsubishi, Nakajima, and Tatikawa. These are the factories from which the Army and Navy draw almost all their planes and supplies. In addition, in the last years Japan has been able to import a great number of foreign planes or to build them under license. These are the Junkers G 38, 86, and 87, the Heinkel 112, the Fiat CR 42 and BR 20 M, the Koolhoven FK 58, the Hawker Nimrod, the Lockheed 14, the North American 16, the Seversky P 35, and the Martin 166. Kawanishi builds among other kinds Short seaplanes and Rolls Royce motors under license for the Navy. Kawasaki furnishes pursuit planes and bombers, and has licenses from Dornier and B.M.W. Mitsubishi builds for the Army and the Navy, has licenses for Blackburn scout planes and torpedo planes, Curtiss pursuit planes, Junkers dive bombers and Hispano Suiza, Sydney and Junkers motors. Nakajima builds its own designs, has licenses from Douglas and Fokker for commercial planes, and for Lorraine and Bristol motors.

The Navy and Army air power both operated in the Chinese conflict. The Naval Air Force seems to have specialized more on bombings behind the front, insofar as one can still speak of fronts here. The distribution of the naval air fields along all the Japanese coasts and over the captured islands in the mandated territory shows, however, that the real task of the shore-based naval air power is the guarding of the coasts and adjoining seas in collaboration with the other naval units. The Japanese Naval Air Force combines, like the Dutch East Indies Naval Air Service and the U. S. Naval Air Force, the tasks of the British Coastal Command and the British Fleet Air Arm. The main task of the Japanese Naval Air Force is not much in evidence in the Chinese conflict, for China has no sea power, and the sea war can be limited to a blockade.

Something About Japanese Tactics

Four years of war in China have shown a few things about the methods of the Japanese air force. Japanese bombers are assigned the following activities: Bombing of enemy plane bases; operations against railroads and shipping (coastal and river); bombing of enemy military forces on the battlefield and behind the battle lines; and bombing of large industrial and political centers.

The Japanese air force precepts prescribe as first task of the air arm the annihilation of

the enemy air forces in their bases. As a rule, the Japanese bombers undertake flights up to 250 miles past the front, accompanied by fighters, with which they frequently assemble along the route. Raids on flying fields are carried out by large groups (30-40 planes), and seldom by less than one squadron. Preliminary reconnaissance flights over air fields without simultaneous bombardment are never made. The accompanying fighters (15-30) fly in groups of three, echeloned at two or three levels, above, behind, right and left of the bombers, at a distance of 3,000 — 6,000 feet. The bombers usually approach at a height of 6,000 — 12,000 feet with the sun behind them, in formations dependent on the number of bombers. If they come upon enemy fighters, the bombs are immediately dropped from this formation. If there is no active air defense, a run is made over the objective, and finally test bombs are dropped. After that the flight is divided into groups of three or into squadrons, which attack separately their own assigned objectives. The bombs are dropped in horizontal flight.

Planes First Objectives

The objectives are first of all planes on the ground, then hangars or buildings. For the first target small fire and fragmentation bombs of 25 to 50 lbs. are used. These bombardments do not have much success. There are cases known where 40 Japanese bombers have let more than 200 bombs fall on a certain terrain, after which the Chinese could still use the field for taking off and landing. The return trip is often divided into groups of three (two bombers and one fighter). These return along different routes, thus making reconnaissance flights.

Night bombardments are little used. They had little success and were not made necessary by great Japanese losses in day attacks. The daylight attacks on flying fields, however, seldom caused the Chinese great losses, for they could spot the approach of the enemy and move their planes to a place of safety in plenty of time.

Railroads and ships are attacked with small formations of several planes and often in dive bombardments from 2,000 to 2,500 feet. Hits on railroad bridges are the greatest damage they can cause although this seldom occurs. Seldom do they cause a delay of more than 24 hours. Many river craft are sunk, however.

Against land military forces one-motored bombers are used exclusively. They attack by diving with fragmentation bombs of 25 lbs. Thirty to forty bombs are carried in one plane

along with machine gunners. They seldom come lower than 300-400 feet. The cooperation with the Army must be very good for this.

Incendiaries Used

In industrial and political centers the Japanese have a preference for bombing the Chinese quarters of cities, universities, government buildings, and hospitals. Against Chinese quarters they use incendiary bombs. In European quarters they use bombs of 500 to 750 lbs. When the Chinese air defense was still in a chaotic state, these massacres took place from low altitudes and were accompanied by formation demonstrations. Later when the Chinese had anti-aircraft protection and fighters, the Jap bombers flew at 10,000 to 12,000 feet, and a protecting screen of fighters was taken along.

In a defensive fight the Japanese bombers keep a closed formation for mutual firing support. The Japanese flight precepts prescribe: "Don't fire on the one whom you attack by chance, but on the one whom your comrade can't fire against." With a view to bringing all machine gunners into the firing, the Japanese groups change their formations during the air battle, and go above and below the pursuing planes to get them away from their leader. When once in battle the Japanese squadron as a rule attempts no dodging maneuvers which might result in the separation of a plane and its certain destruction. In other words, the defense of the squadron is such that the expedition continues, with mutual fire support, while transfers can be made within the group. Mutual firing support is considered to have little value in a squadron group when the planes are too far apart. The Japanese prefer a short firing distance (50 to 200 yards) for all types of planes.

- Reprinted from *Seemacht (Sea Power)*, a German magazine published in Berlin.

●
Lost during a cross-country flight, an aviation cadet made a forced landing in a plowed field near a Nevada town when his fuel supply became exhausted. Since the town residents had only once before seen a plane at close range—a Cub during a county fair, the cadet was accorded quite a reception, especially since the picture "I Wanted Wings" was shown that night at the local theater.

Negotiating with one of the citizens to guard the airplane during the night, the cadet was surprised to see that individual reappear shortly with a rifle, a pistol and two dogs. But, then, everyone in town carried a gun.



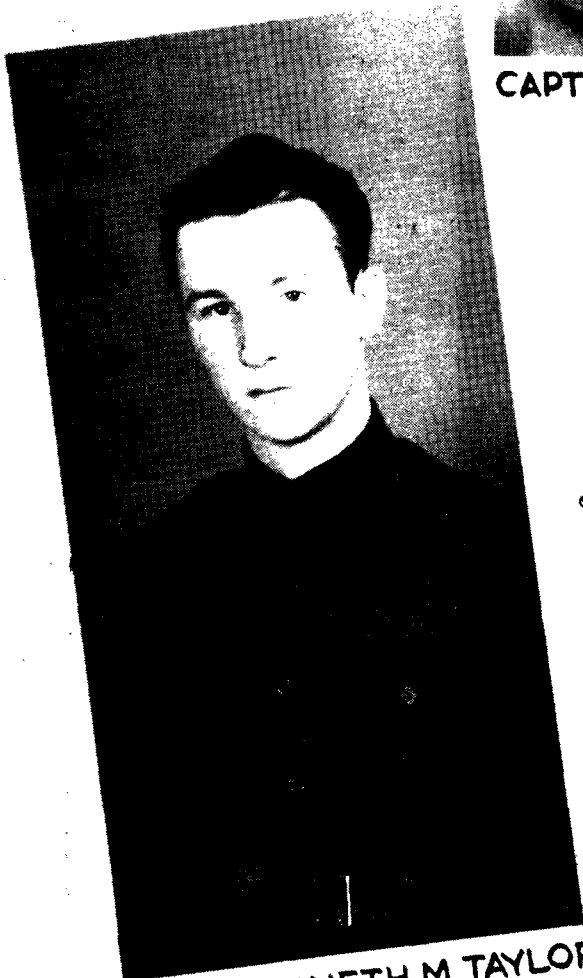
LIEUT. BOYD D. WAGNER



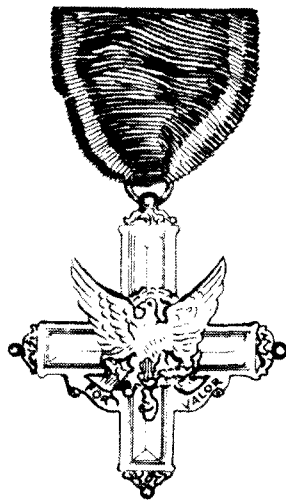
CAPT. COLIN P. KELLY JR.



LIEUT. GEORGE S. WELCH



LIEUT. KENNETH M. TAYLOR



LIEUT. J. D. DALE

Airmen Awarded DSC's First War Heroes Honored

By Lieut. Robert Hotz



ARMY airmen are writing a new chapter in the annals of winged warfare. The tradition that began more than 20 years ago over the fields of France has been transplanted to Pacific skies where American air power stands astride the Japanese path to conquest.

Surprised and outnumbered during early phases of the battle, the pilots, gunners, bombardiers, and navigators of the Army Air Forces fought a magnificent action against swarms of Japanese attackers. Ground crews did a superb job to "keep 'em flying". After more than six weeks of bitter battle against superior enemy forces, AAF pilots were still in the air over Luzon and P-40s were still knocking down Jap bombers. Over the Indies, AAF bombers are pounding Japanese sea power with ever increasing violence.

Battle confusion and overloaded cables make it impossible to single out all the heroes of the AAF's baptism by fire. The names of many a young lieutenant who plunged his P-40 into a formation of enemy bombers and of many a bomber crewman who came through in a pinch are missing from the dispatches. To these unsung heroes is due a share of the formal honors given to airmen whose spectacular deeds have been recorded. All possess the skill and valor that is the invisible badge of the AAF.

Captain Kelly A Symbol

The story of Capt. Colin P. Kelly, Jr., has been indelibly engraved in public prints and the hearts of his six fellow crewmen. Together Captain Kelly and his crew brought their big B-17 across Pacific wastes from Hawaii to the Philippines as part of the most spectacular trans-oceanic formation flight ever made by land planes. Flying a circuitous and uncharted route to avoid Jap patrols, they arrived in the Philippines less than two months before the outbreak of war.

Together at 23,000 feet, Captain Kelly and his crew found, bombed and sunk the 29,000 ton Japanese battleship Haruna off the northern tip of Luzon. Homeward bound, their mission completed, they were attacked by a pair of Jap fighters. Their bomber was badly hit and began to burn.

Captain Kelly, as pilot and commander, ordered his six companions to bail out and held the ship steady as one by one each crewman dove to safety. Captain Kelly vanished with his flaming ship. To the American people Captain Kelly has become more than a hero. He is a symbol of American air power victorious in combat.

Captain Kelly was awarded the Distinguished Service Cross posthumously at a ceremony which saw General MacArthur pin the Cross on Capt. Jesus Villamor of the Philippines Air Force and Lieuts. J.D. Dale and Boyd Wagner of the AAF. Captain Villamor was credited with knocking down a trio of Japs while leading his squadron of Filipino pilots. Lieutenant Wagner was the first AAF pilot to officially shoot down five enemy planes in World War II and was also credited with destroying a score of enemy planes in a daring ground strafing of a Japanese airfield near Vigan. Lieutenant Dale was credited with sending a pair of Japanese planes down in flames during the early days of the battle of Luzon.

Lieut. Marshal J. Anderson was described by General MacArthur as "one of the most intrepid pilots in the Philippines." The General personally decorated Lieutenant Anderson with the Distinguished Service Cross at a Luzon airfield almost immediately after his return from a foray in which he led his squadron to attack and disperse a strong formation of Japanese dive bombers and then strafed an enemy truck column. Lieutenant Marshal shot down a Japanese observation plane during this attack and several days later sent a Jap fighter down in flames. His own ship was damaged during the latter attack and Lieutenant Anderson bailed out. Two Jap fighters followed his parachute and shot him to death while he dangled helplessly in mid-air.

Col. H.H. George and Maj. Emmett O'Donnell have been singled out for special mention in heavy bombardment operations. General MacArthur recommended Colonel George for promotion to brigadier general as a result of "distinguished leadership and gallantry in action". A veteran in heavy bombardment, Colonel George won the Distinguished Service Cross as a pilot in the

first World War and participated in the famous B-17 flights to South America.

Major O'Donnell was the leader of the mass flight of B-17s from Hawaii to reinforce the Philippines. Early in the war Major O'Donnell's bomber attacked Japanese naval units covering a landing at Legaspi. While pressing home the attack, a squadron of Japanese carrier-based fighters attacked the AAF bomber. Continuing the attack on the naval units, the crew of the bomber shot down five Jap fighters and arrived safely at its base after Major O'Donnell made a perfect landing despite a pair of flat tires on his landing gear.

Others Cited For Bravery

Other fighter pilots cited in dispatches from the Philippines include: Lieut. Randolph Preator, credited with being the first AAF pilot to knock down an enemy plane over the Philippines; Lieut. Joseph Moore, who destroyed two of five Japanese planes engaged in machine gunning an AAF pilot who had bailed out, and Lieut. Samuel Merrett, who was killed leading his squadron in an attack on Jap naval units.

Outstanding heroes of the attack on Hawaii were Lieuts. George S. Welch and Kenneth W. Taylor. Both were awarded Distinguished Service Crosses for "extraordinary heroism over the island of Oahu on December 7, 1941".

Surprised by the early morning Jap attack on Oahu, Lieutenants Welch and Taylor drove 10 miles under fire from Wheeler Field to Haleiwa Field where their P-40s were stationed. They took off on their own initiative without making an effort to determine the number of Jap raiders. Over Barbers Point they sighted a formation of 12 planes 1,000 feet below and 10 miles away. They closed to attack, Lieutenant Welch shooting down a dive bomber and Lieutenant Taylor a pair of Jap planes. Lieutenant Welch broke off the attack after his guns jammed and an incendiary bullet passed through his plane just behind his back. Clearing his guns in cloud cover, he returned to the attack and shot down another Jap plane. Both AAF pilots returned to Wheeler field for more fuel and ammunition. While still on the ground another Jap formation attacked the field. Lieutenant Welch took off with three Japs on his tail and went to the assistance of another AAF pilot who was being attacked from the rear. Lieutenant Welch shot the Jap off the AAF plane's tail and pursued another Jap plane five miles out to sea where he shot it down. Lieutenant Taylor took off despite the fact that his guns were not

fully loaded and escaped into the clouds with a quick take-off ending in a chandelle. He eluded a formation of eight enemy planes.

Four other AAF pilots were cited for heroism under fire by Lieut. Gen. Walter Short, Hawaiian military commander. They were Lieut. Lewis M. Sanders who destroyed a Jap plane that had just sent an AAF ship down in flames; Lieut. Gordon Sterling, who attacked a Jap formation of six planes and destroyed one of them; Lieut. Phillip Rasmussen, who engaged a Jap pursuit over Schofield barracks and shot it down after a furious battle, and Lieut. Harry Brown, who suddenly found himself in the midst of a Jap formation and shot his way out after destroying one plane without damaging his own.

No story of the Pacific air war would be complete without mention of Marine Fighting Squadron 211 of Marine Aircraft Group 21 and its commander Major Paul A. Putnam. The initial Japanese attack on Wake Island by 24 bombers knocked out eight of the squadron's 12 Grumman Wildcats but it took weeks for fantastically superior Jap formations to knock the other four from the air. During that period Marine flyers shot down five Jap planes, sank one ship and one submarine. Never were there more than four Marine planes in the air at a single time and never did the Jap formations number less than 27 bombers.

Lauding the work of his ground crews, Major Putnam wrote in his last report: "Since the first raid, parts and assemblies have been traded back and forth so that no airplane can be identified. Engines have been traded from plane to plane, have been junked, stripped rebuilt and all but created. I wish to comment particularly on the indefatigable labor, ingenuity, skill and technical knowledge of Lieutenant Kinney and Technical Sergeant Hamilton. It is due solely to their efforts that the squadron is still operating."

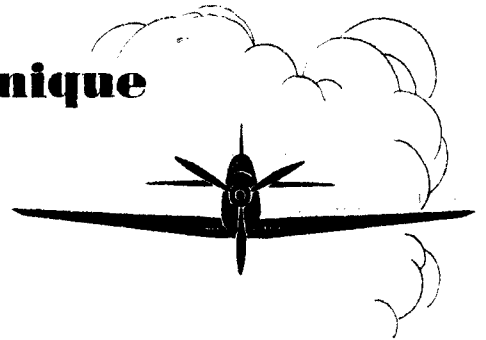
The Japanese actually shot down 13 Marine planes, since Marine mechanics fashioned a new plane from the parts of the planes wrecked in the first bombing attack. The last Marine planes were knocked from the air on December 22, exactly 14 days after the first Jap attack. They were flown by a captain and a second lieutenant against a force of more than 60 Jap carrier and land based bombers. The captain was forced down, wounded, his ship a total wreck. The lieutenant was reported "lost". Thus ended the epic of Marine airmen over Wake Island, a performance that will stir toasts from AAF men everywhere.

Spotting the Enemy

British Reveal Observers' Technique

By Air Commodore H. Le M. Brock

Vice Commander, Royal Observers Corps



THE man who has, so to speak, been brought up with aircraft will have no difficulty in distinguishing the peculiar features of the various types. He knows the whys and the wherefores of the constructional details, he knows the function of each type, he is interested in engines and performances, and notices new features. His knowledge is always up-to-date and he seldom fails to recognize anything he sees, or, if he does, he wants to know what it is. He is in much the same position as the countryman who has known all the common birds of the countryside since childhood and notices the rarer species that occasionally visit his neighborhood.

The novice in aircraft recognition is in a very different position. He will, no doubt, know by now that there are fighters and bombers, that some alight on land and others on the sea, or on the decks of ships, that some have only one engine and others two or more, that there are monoplanes and biplanes; but he will know the names of only a few that have been much written about in the press, and he will not know how to start distinguishing them in the air. It is the novice that we are considering in this short article, and one who cannot afford the time to attend courses, but must acquire the knowledge and skill at home.

Silhouette Is Basic

It is now generally accepted that the silhouette is the foundation of all instruction in recognition. Silhouettes are easy and quick to produce on paper, they can be accurate and up-to-date, and can be distributed easily. They can be studied in the home and carried about in the pocket, in the form of books or, better still, as packs of cards.

Three views of the aeroplane are essential, the plan, the side and the head-on-view. If a three-quarter front view can be supplied as well, all the better.

There is no need, to start with, for any description of the aircraft, but only for their names, which should be printed on the backs of the cards. Alternatively, the cards can be num-

bered and a key of the numbers printed on a separate card.

The silhouettes should not be all-black for learners. White continuous or dotted lines should be used to show the constructional details of the aeroplanes, such as the flaps, rudders, undercarriage, engine nacelles, etc. Although some of these features may not be visible at a distance against the sky, they are of great assistance in learning to distinguish the silhouettes, and also for instilling into the mind of the learner an incipient interest in the parts of an aeroplane.

Novice Should Learn 50

The number of types presented to the novice to learn in the first instance must be limited. Fifty is a convenient number. Three silhouettes of each will make a pack of 150 cards. Someone with full and up-to-date knowledge of the most common or important types, i.e. those that every observer ought to know, must compile the list. This is a very important part of the proceedings and must receive careful consideration. Biplanes should be omitted from the first 50 aircraft, and seaplanes and flying-boats can be omitted from the packs made for inland observers.

The pack of 150 cards can then be presented to the observer. It has been found that complete beginners can learn to recognize and name every card in a pack of 150 in 10-12 hours study.

A learner should start by dividing the pack into categories. A convenient division of the aircraft is those with:-

- (a) Single radial engines.
- (b) Single engines in line.
- (c) Twin engines with single fin and rudder.
- (d) Twin engines with twin fins and rudders.
- (e) Three and four engines.

By this means he can work up from the simplest and fewest to the more complex.

All he need do is to sit in his chair, lay out the cards on a table, starting with category (a), and note their names and distinguishing features. Then he should pick up the cards,

shuffle them and go through them repeatedly until he can name every one correctly. He may then get a member of his family to display them in turn for him to name *aloud*. This is important. He must learn to say the names quickly. Having learnt the first category, he can proceed through the pack in the same way until he knows them all. It is easier than it seems at first sight.

Takes "Screen Test"

He is then ready, along with others, to be put through a test with a prescribed number of the silhouettes projected on to a screen for, say, 10 seconds each, each competitor writing the names down on a piece of paper. When he has passed the prescribed test he has completed the first and most important stage of his career as an observer.

It is worth while saying here that not every observer has started in this way, yet the silhouette must be the foundation on which every beginner has had to base his learning. No doubt, if accurate scale models were available of every type, they would be of great value, but they are not easily produced in large numbers and they are apt to become obsolete rather quickly.

So far, the observer has only an arm-chair knowledge of silhouettes. This alone will not make him a good observer in the field, but he will have gone a long way towards becoming one. First of all, he will have become interested in aircraft, and, secondly, he will have begun to learn exactly in what way aircraft vary in their appearance or construction. He will also have learnt a lot of names, many of which are likely afterwards to be coming constantly to his notice in the picture papers. He will see photographs of them from different angles and come to know their uses, and who makes them. He has reached the stage when he feels he ought to be able to recognize them in the air.

Total Depends On Circumstances

Unfortunately, a difficulty immediately arises here, in that the number of types seen in any locality is usually very small, and very often they may be just those which are not on the list of the first 50. This brings us to the necessity of further lists and further packs of cards. The total must depend on the circumstances. In the tests of the R.O.C. Club there are 65 in the 3rd Class list, 55 in the 2nd, and 80 in the 1st Class list, a total of 200. The

2nd and 1st class lists include a number of Italian and French types which might be seen over Britain, as well as the less likely German types. The 3rd class list includes, of course, all the more important German types. It is reckoned that the total of British, American, German, Italian, Russian and Japanese types is at least 650.

The observer should now be in a position to learn to recognize at sight everything that he sees every day from his post and to notice and name new types whenever they appear. The assistance of an expert at this stage will be invaluable. The novice will discover quickly that in spite of near resemblances of many types, nearly every aeroplane has its peculiar 'sit' in the air. After a time it will often be the 'sit' that is recognized and not any particular feature, though an observer should never allow himself to take anything for granted in this respect. First sights are very often deceptive and there are too many "catches" in recognition for anyone ever to be certain of first impressions. The use of binoculars is often essential.

At this stage the observer must begin to seek practice. He must not only go on with the additional packs of silhouette cards, but he must study photographs and be shown films. A keen interest must be maintained amongst observers by the perusal of periodical literature dealing with aircraft, especially with new types coming into the service of the several countries. Interesting descriptions of aircraft, their performances, armament and functions will help to impress on their minds their salient features. Very often neither silhouettes nor photographs will be available of new enemy types. Odd bits of information about them may be picked up which, if remembered, may help an observer to recognize an aeroplane as soon as he sees it. He may know that it cannot be anything else.

Films Are Valuable

The use of films, with commentaries, may be a very valuable method of teaching the elements of recognition, and might, if there is the opportunity, form the ground-work of instruction. Their development in this country has been slow, but they take time and care to make and require the facilities to show, which may not exist in country districts.

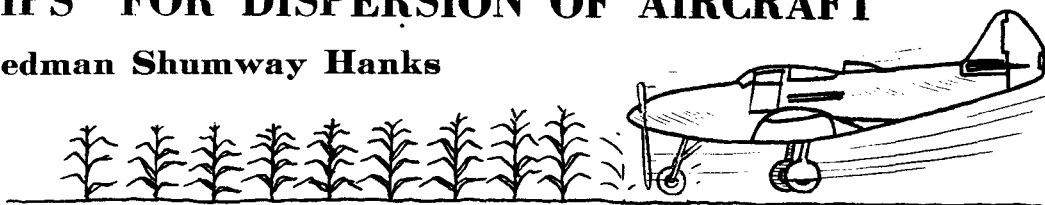
Lastly, competitions of all sorts should be arranged with silhouettes, photographs, models, etc., and even with parts of silhouettes, such

(Continued on Page 39)

Landing 'Em Important, Too

"FLIGHT STRIPS" FOR DISPERSION OF AIRCRAFT

By Lieut. Col. Stedman Shumway Hanks



A N important contribution to National Defense can now be made by State and County highway departments in the construction of "Flight Strips" in highway rights-of-way or roadside development areas near main and secondary roads. Under sections 8, 9 and 14 of the Defense Highway Act of 1941, \$10,000,000 has been authorized at the present time from Federal funds for the construction of "Flight Strips."

The entire project is to be carried out in cooperation with the Army Air Forces and the Commissioner of Public Roads is authorized to make the necessary engineering surveys and plans, and also to enter into agreements with the various State highway departments to acquire such new or additional rights-of-way, or lands, which may be required.

Primary Importance

In signing the Defense Highway Act, the President sent a letter to Congress in which he stated that the Secretaries of War and Navy regard the authorization for the construction of access roads to military and naval reservations and defense industry sites to be of primary importance and urgency.

"The Secretary of War also places in the same category the authorization for the construction of "Flight Strips" for the landing and take-off of aircraft. Under these authorizations, estimates of appropriations may be provided, in such amounts and for projects in such areas as will best meet our defense needs."

The accepted definition for a "Flight Strip" is "a landing area not less than 200 feet in width and not less than 1,800 feet in length (the area could be as large as 800 by 8000 feet) with clear approaches, located in a highway right-of-way or adjacent to a public highway, on public land, developed with State and/or County funds, including Federal aid."

Idea A Sound One

In testimony before the Senate in connection with the Defense Highway Act, General Arnold stated that he felt the "Flight Strip" idea was

a sound one in that it was believed by using a minimum amount of money, by taking straight stretches of road pointing generally in the prevailing wind direction, that the Air Forces would be able to get landing areas with the least possible expense. He said they could also be used for parking of military convoys.

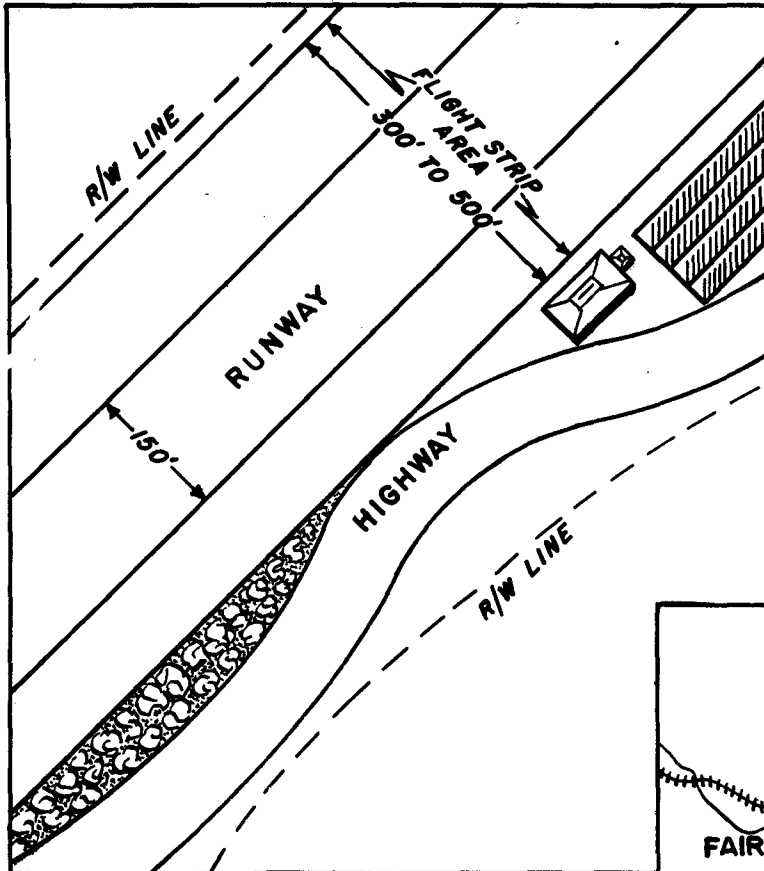
When General Brett appeared before the House Committee on Roads he stated that the Air Corps was primarily interested in "Flight Strips" from the standpoint of coordinating with the people who do the work in connection with the actual location of the "Flight Strips", as well as the actual specifications to be used, such as surface width, construction and length of the "Flight Strip" area.

General Brett pointed out the extreme importance of the "Flight Strips" in the movement of large numbers of airplanes from one part of the country to another, and also as making it possible for the Air Forces to disperse their airplanes so as to prevent their loss on the ground in case of attack.

Will Be Auxiliaries To Bases

Each Air Force commander will cooperate in the selection of "Flight Strip" areas, and the regional managers of the Civil Aeronautics Administration will be consulted regarding the general location of these areas in relation to other landing facilities. In general, military "Flight Strips" will be located within a radius of from 5 to 50 miles from air bases and will serve as auxiliaries to those bases.

In modern warfare air bases and airports are the first targets of bombing operations by enemy planes. For this reason it is better to avoid concentrations of bombers and fighting planes at the central air bases, and have them serviced and stored by squadrons scattered from the main base. Properly camouflaged "Flight Strips" provide a good part of the strategic answer to this problem. Using rubberized cement, such things as fences, stalks of corn, tobacco plants, brooks, trees, etc. can be outlined on the "Flight Strips", while the operation offices may easily be disguised as farm buildings.

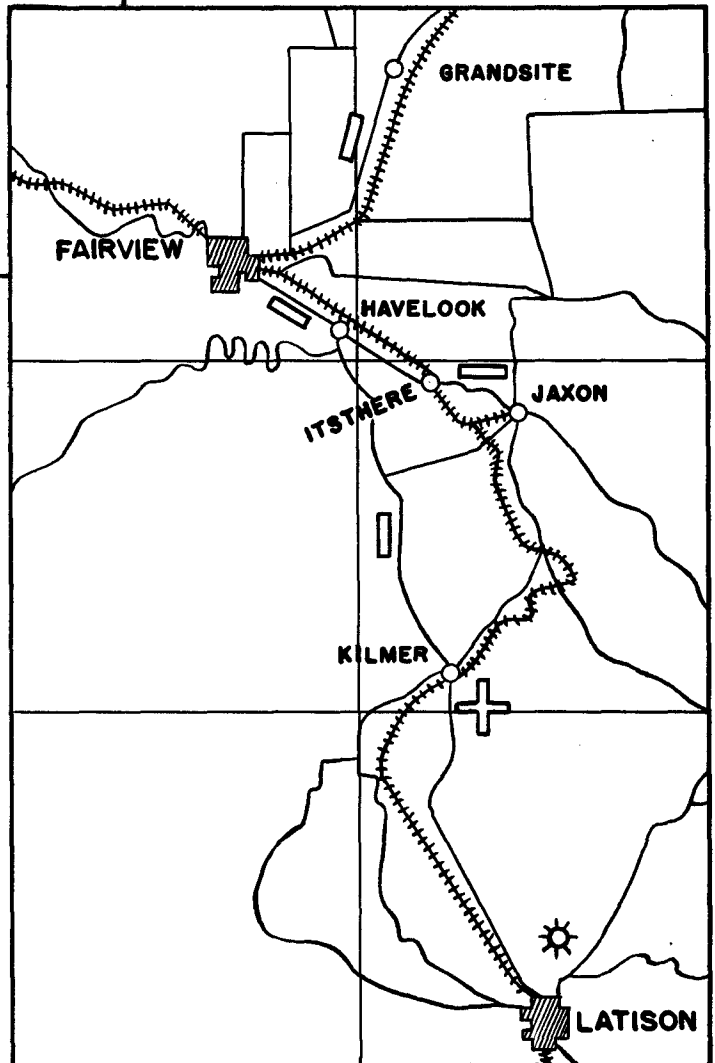


← DIAGRAM shows how "flight strip" can be laid out beside highway "right-of-way" line.

R/W INDICATES BOUNDARIES OF RIGHT-OF-WAY.

DRAWING of specimen area. This illustrates how flight strips should be located near airports and auxiliary landing fields. →

SPECIMEN AREA



- SYMBOLS:**
- ⊕ Auxiliary Field
 - ☼ Municipal Airport
 - ▭ Flight Strip Locations
 - Railroads
 - Roads and Highways

AIR SERVICE COMMAND

Complete servicing and repair facilities must necessarily be located at the main air base, but airplanes may be flown easily to the base for these overhauling operations from nearby "Flight Strip" areas and thus prevent a heavy concentration of planes at one point at any given time.

The question of maintenance is of great importance. All "Flight Strips" must be maintained by some responsible authority. If and when the Army should require these areas for their permanent operation, then the "Flight Strips" should be maintained by the military authorities.

First Thing Is To Build Them

On the other hand, if and when the civilian authorities are to use these "Flight Strip" areas, then the Federal Government, through Congress, may have to pass further legislation and appropriate funds for their maintenance, or the States affected may wish to do so.

The first thing is to get some actual "Flight Strips" built. When the Federal authorities realize how effective these areas are, the Federal Commissioner of Public Roads and the Chief of Army Air Forces will be in a position to know more about the provisions that will be necessary to take care of their maintenance, and appropriate recommendations can be made then.

When it is found that a hard surface is difficult to obtain without considerable expense, due to a lack of granular soil, etc., it may be necessary for the Army's aviation engineers to place portable airplane steel plate runway mats on the "Flight Strip" area. The cost of maintaining such a runway would be negligible and would probably be assumed by the Army Air Forces as long as these mats remain on the ground. These runway mat installations proved highly successful during the recent "Battle of the Carolinas".

Already many States have planned for the construction of "Flight Strips". Now that Federal legislation has been enacted and funds are available, speedy action may be expected in view of the recognition on the part of the President and highest military authorities of the primary importance of "Flight Strips".

Air Corps officers recently detailed as members of the General Staff Corps with troops were Lieut. Cols. Emil C. Kiel and Robert E. Douglass, Jr. Detailed as members of the War Department General Staff and assigned to the Office of the Chief of Staff in Washington were Majors Leonard H. Rodieck and George F. Schulgen.

A new Air Service Command has been established to supply, maintain and store materiel and equipment and provide essential services for the Army Air Force. With headquarters at Dayton, Ohio, the new Command replaces the old Air Corps Maintenance Command.

Although the Maintenance Command operated as a part of the Materiel Division, the new Air Service Command will function as a separate organization. This change has been made because under the expanded Air Corps program the Materiel Division is concerned primarily with experimental work and the procurement of new aircraft.

General Miller Is Chief

Chief of the Air Service Command is Brig. General Henry J.F. Miller. His organization will be equal in importance to the Materiel Division, which operates directly under the Chief of the Air Corps, Major General George H. Brett.

Slogan of the command is "We Keep 'Em Flying". This is an accurate description of its duties, which are to keep every airplane of the Air Force ready to fly. Specifically the command is charged with supply, maintenance, warehousing and air transport between stations, and is responsible for the adequate stocking, proper cataloging and rapid distribution of supplies and equipment.

For the purpose of executing these functions the Command has divided the United States and its possessions into seven divisions, four in the United States and three in outlying territories. Mobile units will operate in these areas for the purpose of maintaining and supplying field operations. These regions were formerly served by the nine corps areas, but in July all service elements and functions were placed under the control of the Chief of the Air Corps.

\$2,500,000 Building

Now under construction on a government-owned tract of land located near Dayton, Ohio, is a \$2,500,000 building which will house the headquarters of the Air Service Command. It is expected that construction will be completed sometime in the spring.

In addition to the 800 civilians now employed by the command, approximately 2,400 will be added before staffing is complete. A large number of prospective employees are now in training at air depots for supervisory jobs.



.. HERE are three aviation cadets on the way to their positions in a bomber. Together they constitute one of the many "Three Musketeer" combat teams of the Air Forces. Left to right, they are a navigator, a bombardier and a pilot.

More Musketeers Combat Crew Eligibility Extended

By Oliver Townsend



THE "Three Musketeers" of the Air Forces—bombardiers, navigators and pilots—can now be recruited from an eligibility list increased to approximately 2,000,000 by the lowering of the age limit for aviation cadets to 18 years, the extension of eligibility to married men and the abolition of formal educational requirements.

Under the new rulings any male citizen of the United States between the ages of 18 to 26 inclusive, including Army enlisted personnel, may apply for training. If married, the applicant must furnish an affidavit that his wife and family have adequate independent means of support.

Immediate Appointment

As part of the overall changes in Air Corps recruitment and training technique the procedure for enlistment has been changed so that appointment as an aviation cadet immediately follows enlistment. This has been made possible through the establishment of an increased number of Cadet Examining Boards in each of the nine Corps Areas.

Under the new procedure applicants apply directly to the nearest Cadet Examining Board, where they must present three letters of recommendation signed by citizens of established standing in the community, and a birth certificate or other documentary evidence of date of birth and proof of at least 10 years' citizenship.

At the local Cadet Examining Board the prospective cadet is given a preliminary physical examination (Type 63), and a mental "screening" test, designed to determine the applicant's fitness to pursue successfully Air Corps courses of instruction.

Physical requirements are similar to those of Reserve Officers called to active duty, except that the prospective flying officer must have "20/20 eyesight" and normal color perception. The "screening" test is designed to test the applicant's aptitude for Air Corps training, not his knowledge of certain academic fields. The "screening" test is a "multiple choice" type of examination, in which the examinee chooses the

correct answer from a list of five possible answers for each question. The Local Examining Board also holds formal proceedings to determine whether the applicant possesses the required moral and character qualifications.

If successful, the applicant is enlisted at once, appointed an aviation cadet, and sent immediately to one of the Three Air Corps Replacement Centers. There he is given additional tests to determine the type of training he is to receive, including a Type 64 physical examination for flying duty.

Depending upon the results of his aptitude tests at the Training Center, and provided he passes the physical examination for flight duty, he is assigned for aircrew training as either a bombardier, navigator or pilot. All aircrewmembers who successfully complete the Air Corps training program, which includes 10 weeks at a Replacement Center, 10 weeks at a primary training school, 10 weeks at a basic school, and 10 weeks at an advanced single or twin-engine school, will receive commissions as second lieutenants. In addition all aviation students who have applied for but not yet begun enlisted pilot training may apply for cadet status. During the training period aircrew cadets receive \$75.00 per month, plus \$1.00 per day subsistence. They also receive necessary clothing, equipment, medical care, and a \$10,000 life insurance policy during the period of training. On assignment to active duty they may continue the policy by paying the premiums. Upon graduation each cadet receives an initial uniform allowance of \$150 cash. On release from active duty in the Air Corps Reserve, he receives \$500 for each year of active service.

May Be Ground Officers

New aviation cadets who fail to pass the advanced Type 64 physical examination at a replacement center are immediately considered for training as Air Forces ground officers.

Ground courses offered by the Air Forces and leading to commissions as second lieutenant are in the fields of armament, engineering, meteorology, communications and photography. Eligibility for armament training is extended to

civilians, aviation cadets, and to former aviation cadets now in civil life—preferably to those who have had training in engineering or physics. Aviation cadets and former cadets must be recommended by the commanding officer of the Air Corps training detachment for armament training for their mechanical aptitude, and may not have failed any ground school subject.

Candidates for engineering training must have completed at least three years of engineering studies at an accredited college or university. Communications training is open to aviation cadets who have completed either two full years of engineering studies or have had two years of college and hold an amateur radio license.

Many Ground Courses

Those eligible for meteorological training are college graduates who have specialized in science, engineering or similar technical subjects. They must have satisfactorily completed courses in mathematics, including differential and integral calculus, and physics, including heat and thermal dynamics.

Applications for photographic training are not being accepted at present, but when they are needed only applicants who have had at least three years of chemistry or geology in an accredited college will be accepted. Preferably, applicants should also have had some professional or considerable amateur experience.

In addition to the many courses leading to commissions open to aviation cadets, the Air Corps also offers many other technical and professional courses leading to non-commissioned officer appointments for new applicants and for aviation cadets who do not take flight training or a ground-officer's training course.

Generals Transferred

In connection with the revised and expanding Air Corps training and recruitment program three general officers of the Air Forces have been ordered transferred to new stations. These are Major General Barton K. Young, who has been assigned to the Office of the Chief of the Air Corps from the West Coast Training Center; Brig. Gen. George E. Stratemeyer, who has left the Office of the Chief of the Air Corps to go to the Southeast Air Corps Training Center as Commanding Officer; and Brig. Gen. Ralph P. Cousins, who has been relieved of duty as chief of the A-1 Division of the Air Staff and ordered to command the West Coast Air Corps Training Center.

AUTOMATIC CLOUD COPS

THERE are no cloud cops at Randolph Field, but night flying traffic probably couldn't be controlled more efficiently even if there were—thanks to a cleverly devised system which enables instructors to maintain close watch from the ground over all students aloft.

Needless to say, safety is paramount. Each ship must have a definite place in the field pattern and each student must know where and when he is to make an approach for a practice landing. This problem of traffic control in night flying has become even more involved with the aviation cadet training program now nearing its peak.

By dividing areas on the east and west sides of the field into quarters, this system makes it possible for as many as sixteen planes to be in the air at once. It's accomplished by stacking two planes in each zone, of course, at different levels.

One flies at an altitude of from 1,000 to 1,500 feet, while the other circles at from 2,000 to 2,500 feet. White blinking ground lights spaced at five-mile intervals clearly define the boundaries of each quarter and eliminate the possibility of ships flying into zones other than their own.

Night flying is inserted into the cadet course beginning with the fourth week of the ten-week basic training program here, or after the embryo pilot has had approximately 25 hours of dual and solo daytime flying in his basic trainer. On his first night flight, the student is accompanied by the instructor until he has mastered the trick of after-dark landings. After that, which usually requires about 30 to 40 minutes of instruction, he's on his own.

Normal communication is by radio, but often light signals govern landings. Of these, there are two types—bar signals and circle lights atop a hangar, and the spotlight. The bar signals are used to indicate that the plane in a certain zone is to land. One bar of light indicates the first zone, two the second, and so on.

One Bar For First Zone

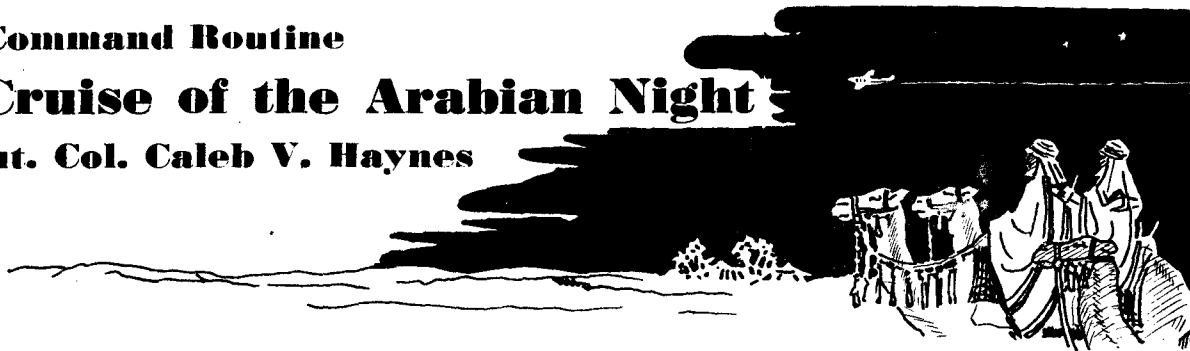
If it is desired to bring in the ship in the lower section of the first zone, one bar appears in bright red lights. The student in that zone flashes his landing lights to indicate he has received the signal. He drops down to 600 feet where he enters the traffic pattern and lands.

(Continued on Page 28)

Ferry Command Routine

The Cruise of the Arabian Night

By Lieut. Col. Caleb V. Haynes



EARLY in June I was ordered to Washington for sixty days duty with the Atlantic Division of the Air Corps Ferrying Command. After three months, in which I made North Atlantic Trips No. 1 and No. 4 to England, I was discussing my return to Puerto Rico with Colonel Robert Olds, Chief of the ACFC, when my phone rang. A trip to Africa and the Middle East was in the offing, to transport Maj. Gen. George C. Brett, Chief of the Air Corps, and staff on an inspection trip.

General Brett asked me to suggest an itinerary and smiled when I told him we might expect motor trouble in the vicinity of Borinquen Field, P.R. as this is my home station. A relay cutout did catch fire just out of Borinquen, and forced a lay-over of two days. At that point, the General said, "C.V., I knew we'd have a layover at Borinquen Field, but I didn't think you'd have to set the plane on fire to do it!"

Picked Crew

However, I'm getting ahead of my story. I was very fortunate to secure a picked crew for our mission. Navigator was Major Curtis E. LeMay, copilot and assistant navigator Capt. Carlos J. Cochrane. Special credit is due to our enlisted men. M/Sgt. A. Cattarius, the air engineer; M/Sgt. B.R. Martin, assistant air engineer; M/Sgt. J.E. Sands, radio operator, and Mr. H. Parker, British assistant radio operator, performed all the functions usually performed by a combat crew of five men, plus all ground maintenance necessary on our trip. Ground maintenance for a ship of this type, the Consolidated B-24, normally takes twelve to eighteen men.

We left Bolling Field (at 9.18 A.M. EST) on August 31. After an uneventful trip we reached Miami at 1.20 P.M. that day. We were there joined by General Brett, his aide, Lieutenant Jack Berry; Colonel Ray Dunn, and Colonel H.B. Newman, of the Office of the Chief of the Air Corps, and Mr. H.C. Short of the Middletown Air Depot.

The following day we proceeded to Borinquen Field, P.R., where the relay cut-out fire mentioned above occurred and was repaired.

We left Puerto Rico (at 13.20 GMT,) reached

Port-of Spain, Trinidad, at 16.55 GMT, September 3.

Gassing Done By Hand

Pan American Airways weather facilities, radio and maintenance were used from Trinidad to Belem, Brazil. Belem lacks hangars. Gassing was done by hand pumps from drums, and we took forty-five minutes to service. The same day (September 4th) we flew on to Natal, arriving there at 19.55 GMT.

We were greeted at Natal by Colonel White, the American Attache, who boasts a most unusual collection of tropical fish. One fish could swim as well backwards as forward. Due to a shortage of transient accommodations, our party spent the night in the Catholic hospital.

Our ship departed Natal at 00.28 GMT the night of the 6th. Although we had considered landing at Bathurst, Sierra Leone, decision was reached enroute to land at Free Town on the Gold Coast. Weather was poor on the West, Southwest Coast of Africa. We spent the night with the governor of the colony, continuing on to Takoradi on the seventh.

Warned About "Guppy Tummy"

On our arrival in Africa we were warned against a disease known as "Guppy Tummy." A particularly painful and vicious form of stomach-ache, the only treatment seems to be doses of whisky and aspirin. Some times the aspirin is deleted from the prescription. Major LeMay was to suffer a very severe attack of it in Cairo. (He was advised to consult a certain Dr. Hamilton, who is conceded the East's leading authority on this malady, but on further inquiry learned that the good doctor himself was in bed with "Guppy Tummy"!)

With permission of the Liberian government we flew over Liberia enroute to Takoradi. We remained over night at Takoradi.

In order to avoid passing over Vichy-French territory, we flew to Kano via Lagos. An exotic village where the jungle meets the desert, Kano is the junction of a railhead and several important caravan routes. There are no hotels, and

most of the buildings are conical mud huts. The town is very old. It has some remarkable primitive dye works which are still in operation. These are mentioned in the Bible. Here our party bought a supply of fine leather goods, learned the art of African bargaining—never pay more than one-fourth the first price asked by the seller.

Natives Curious

The native chief and some two hundred villagers were out to see our plane land. Their presence proved fortunate, as our wheels broke through the runway. At a signal from the chief, the natives started to push us off. At first all pushed in different directions, but they were finally straightened out, and to the thump of tom toms rolled us to firmer ground. We deflated our tires to 45 pounds and had no further trouble of this kind.

The face of the engineering officer at El Fasher dropped when we mentioned our gas requirements. He had what we needed, he hastened to explain, but almost every gallon was brought 425 miles in small drums on truck or camel. El Fasher also is a caravan center whose markets offer elephant tusks and strange animal hides. Giraffes and other big game are plentiful. It was near this point that General Brett carefully photographed a herd of "gazelles", only to learn on developing his negative that the gazelles were the common garden variety of goats.

Colonel Perrin asked permission to join our party at El Fasher, but Colonel Dunn protested vigorously. I wondered why, until I realized that Perrin would make the thirteenth passenger. Fortunately a British official also wished to go to Cairo. His presence made fourteen instead of thirteen and Colonel Dunn was happy.

The governor, who had entertained us hospitably, urged us not to fly to Cairo direct, as a forced landing in the Sahara desert would be most dangerous. Accordingly we took off on the morning of the tenth in the direction he advised.

Use Secret "Corridor"

Flying over the ruins of the Nile valley, we approached Cairo along the secret "corridor" which must be used by all friendly aircraft in that area, giving the signal of the day when required. In Cairo we were met at the airport by Mr. Kirk, American Minister; Colonel Burwell, Lieutenant Atkins, Major Nick Craw and several British officials. Major Craw has had many exciting experiences including Greece, Crete and

so forth. He was a prisoner for several days on one occasion.

On our third day in Cairo we were advised by British Intelligence of an expected air raid and advised to move our ship. However, we felt that with its conspicuous markings the B-24 was safer in the hangar. The raid came off on schedule, and thirty-nine people were killed, some ninety injured.

While in Egypt we had an opportunity to visit several advanced British outpost air units in North Africa. Most of the men are Colonial troops: Australians, New Zealanders, South Africans. Their morale appears high and they are doing a wonderful job in face of almost incredible hardships.

Dust Worse Than Heat

Dust is more of a problem than heat, yet mechanized equipment appears to function in spite of it. I talked with several British officers who were enthusiastic about the quality of such American equipment as they had received.

On September 23 several members of our party, accompanied by British Air Marshall Dawson, flew to Basra, Iraq. On the way we were requested to fly low and give the signal of the day at several desert outposts. Bagdad has a fairly well-developed airport which still bore some scars of a recent Iraq uprising. Basra, at the head of the Persian Gulf, was the most easterly point of our travels.

After a night spent in Habbaynia, Iraq, we returned on the morning of the twenty-fourth to Lydda, Palestine. Weather facilities and maintenance appear excellent through the part of the Middle East covered. Following a day of sight-seeing the party, with the addition of Wing Commander Brown, who had entertained us royally in Jerusalem, departed for Cairo. Commander Brown flew the "Arabian Knight" (as we had unofficially dubbed her) about a hundred miles and expressed himself well pleased with her performance. In Iraq we had been promised the chance to fly a captured German ME-110, but were told it was out of commission when we accepted the offer. We reached Cairo on the twenty-fifth.

General Brett and Lieutenant Berry left us at Cairo. They were replaced on the return trip by Colonel Burwell and Wing Commander Harris, whose brother is at present stationed in Washington.

Food Plentiful

Food is quite plentiful in Egypt, but far more expensive than it is in London. Accommodations,

(Continued on Page 40)

New Army Record

180 Miles Without a Motor

By Lieut. Claude L. Luke

Several months ago Lieutenant Luke established a distance record for Army glider pilots when he flew a soaring plane from the Army Glider School at Elmira, N.Y., approximately 180 miles to a farmer's field near Fort Dix, N.J. Recently he told the story of the flight to Corporal George Eckels, editor of the Middletown Air Depot publication, "Wings Over Olmstead."

Last November Lieutenant Luke was killed in the crash of an Army Air Forces glider at Patterson Field, Ohio. His was the first fatal glider accident to be recorded since The Army Air Forces began its experimental program in the use of powerless aircraft for military operation.

IT was clear and bright the morning of the flight. The United States Weather Bureau's meteorologist, Barney Wiggins, attached to the Army School at Elmira, forecast that this would be an excellent day to soar cross-country.

My plane was a Wolfe, produced in Germany by Wolfe-Hirth. It has a wingspread of fifty-two feet and weighs about three hundred pounds. In soaring circles the Wolfe has a good name for speed and lightness. It has very sensitive controls and heel-action pedals. Most United States gliding airmen are familiar with toe-action. Flying the Wolfe must be very like flying one of the earliest type motor-driven ships. It is unstable and requires constant attention to keep it in flying position.

I had been away from the Army School at Elmira for about forty-five days. Having flown nothing but transports during this interval, I admit that I felt no little trepidation in preparing to fly cross-country in a plane I still found somewhat foreign and unfamiliar.

But the officials smoked a barograph and after checking it installed it in the Wolfe. They handed me a chocolate bar and a wide necked bottle filled with orange juice. It was 10.30 A.M. I was towed off Harris Hill and as the tow line reeled out to the end I reached an altitude of some six hundred feet. For a while I soared up and down the slope in front of a thirty-five



Lieut. Claude L. Luke

mile wind blowing out of the north. I nosed around for some thermals. I found one or two but my turns in a plane so strange to me caused much grief. Each one felt like an incipient spin. (Some of you may wonder what a 'thermal' is. A thermal is a mass of moisture-laden air that rises from spots on the ground heated by the sun, until it reaches the inversion point - or where cold air turns the thermal into a cloud. The logical indication of a thermal is a cloud, although not always. When clouds build up over a widespread area, 'lift' results.)

Other gliders had taken off, some before and some after me. They all seemed to climb much higher than I could. For about ninety minutes I slope-soared over Harris Hill. Time after time, the Wolfe's nose nuzzled the warmth of a goodly thermal. I would rise several thousand feet. Each time I believed there were not enough thermals to permit me to leave the air over Harris Hill. And each time I came back to slope-soar and wait. I was intent on staying up five hours at least, to qualify for the Silver-C award, granted by the Federation Aeronautique Internationale. (Other requirements: Altitude, 3000 feet; distance, 30 miles.) I hoped I could meet some of these qualifications by slope-soaring alone.

From time to time I headed back to the field after riding thermals to several thousand feet and had several very close calls. About noon-time I hooked on to a strong thermal that shot me upward to four thousand feet in two and a half minutes. This was encouraging. For the first time I believed I really had a good chance to take off cross-country. Overhead the sky had begun to form into small cottony cumulus clouds. I found enough lift, hopping from cloud to cloud, to gain altitude little by little. Circling to stay in the area of lift I began to drift down wind. In the next five minutes I would have to decide whether to shove-off, or go back to Harris Hill. The wind decided for me. I was too far to "get in" to Harris Hill. So I was on the way!

The simplest way to fly cross-country in a glider is to go down wind. You must circle to hold altitude because the cross-section of a thermal is very small. Sometimes they are only "bubbles." These drift with the wind. If your objective lies down wind, that much distance is gained. In other words, it is logical that a cross-country gliding flight is no more than a series of spirals, while flying with the wind.

Senses Chance At Record

When I left Elmira I chose Middletown Air Depot as a tentative goal. It was almost due south. I would have liked to land there at my home station. But the wind was coming out of the northwest now - it must have been one o'clock - and progress was so rapid that I felt I had an outside chance to establish some kind of record if I continued on a straight down wind course. The upper Susquehanna river was my compass.

Northwest of Scranton I was down to 2000 feet and losing altitude rapidly. There was a range of mountains to cross if I were to go on. I circled to gain altitude. A thermal picked me up under a cloud and soon I was half across the mountain ridge. I had to go on. In this region I put to practical use a bit of information given us by instructors at Elmira. I watched hawks wheeling over the mountain tops and crowded one of them out of his own thermal. I gained altitude on hawk-course just south of Scranton's excellent airport.

There are many mountains between Scranton and Allentown. Scranton looked tempting. Besides, I was hungry! To go up or come down, that was the question. But clouds, gleaming in bright sunlight, were favorable to staying up. Lift was good up to the inversion point at the base

of the clouds - almost constant at 8000 feet - but no higher.

Upward 500 Feet Per Minute

Many times during the flight I got down to one thousand feet or even less and picked out tentative landing fields to come in on if the sky gave out on thermals. But again and again I found one of these up-currents to ride. They were well-defined, if not numerous. When I did find one my rate of ascent was well in excess of five hundred feet per minute. Visibility was excellent. I had no compass and was sitting on my map. I had to depend on memory for local geography. With relief I found towns turned out to be what I had guessed they were.

After crossing another range of mountains north of Allentown, where I found no emergency fields within range of my gliding angle, I got hungry again. Now for that chocolate bar, I thought! But my heavy winter flight jacket pressed too snugly against the sides of the cockpit and I couldn't reach the candy - or the map I was sitting on, when I wanted it badly. Another handicap was the hood that fitted over my head like a cowl. I must have looked like a turtle, sitting up there in the cockpit with only my head showing! While juggling for the chocolate bar I dropped a thousand feet of precious altitude and actually dragged out by my shoe tops.

Somehow I arrived over Allentown, down very low. I looked overside for a spot to land on. There were the fairgrounds enclosed in a race-track and packed with people! I circled the field several times. Surprised fairgoers looked upward and began to clear the field. I saw a plane on the grounds. I suppose the pilot gave the sign to clear the field.

Suddenly my variometer indicated a thermal and I soared upward again, almost a mile. I could come in at Allentown airport now if I wanted. I was hungry enough to want to. But warm air from the city held me comfortably aloft. Far off I could see the gap where the Musconetcong river cuts through the hills to reach the Delaware. I saw smoke rising from a factory stack and headed off to ascend its artificial thermal before wind dispersed it. But I came too late. Still, I got on another hawk's beam. But this time I didn't crowd him and we shared the useful warmth of his thermal! Round and round we soared, up to eight thousand feet - enough to cross the mountains. Trenton, New Jersey was in sight!

(Continued on Page 40)

Important Changes Made Air Corps Reorganized



IN a sweeping reorganization, the old division breakdown of the Office of the Chief of the Air Corps has been revised and a new organization under a series of "assistants to the chief" has been set up.

The reorganization was made in order to meet the demands of full-scale aerial combat called for by the President in his war message to Congress. The biggest step in the adjustment of the internal organization of the Air Forces since their creation as a semi-autonomous part of the War Department last June, the new plan provides for closer coordination of effort both within the Office of the Chief of the Air Corps, and with the Headquarters Army Air Forces and Air Combat Forces.

Will Speed Up Procurement

Instituted soon after the appointment of Major General Walter R. Weaver as Acting Chief of the Air Corps, the reorganization for the first time gives the Air Corps an Adjutant General, Judge Advocate General and a Fiscal Officer. These and the other changes are expected to speed up the procurement of equipment, the training of personnel and the delivery and maintenance of combat aircraft in theaters of operation—the primary functions of the Air Corps in its place in the Air Forces.

Serving directly under the Chief of the Air Corps under the new organization is an Executive Assistant. The Adjutant General performs the normal duties of such an officer, the Judge Advocate General performs those functions formerly charged to the Chief of the Legal Division, and the Fiscal Officer performs those duties formerly charged to the Chief of the Fiscal Unit.

Another newly created office is that of the Inspector General, who performs those functions formerly charged to the Chief of the Inspection Division.

The series of assistants to the Chief of the Air Corps provided for in the new organization includes an Assistant for Procurement Services, an Assistant for Supply and Maintenance Services, an Assistant for Personnel and Training Services, an Assistant for Ferrying Service,

and an Assistant for Army Air Traffic Services.

The Assistant for Procurement Services replaces and performs the duties formerly charged to the Chief of the Materiel Division. The Assistant for Supply and Maintenance Services replaces and performs the duties formerly charged to the Commanding General of the Air Service Command, the Chief of the Building and Ground Division, and the Chief of the Ammunition Unit and the Airplane Unit of the Operations Division.

The Assistant for Personnel and Training Services replaces and performs the functions formerly charged to the Military Personnel Division, the Civilian Personnel Division, Training Division, the Intelligence School Section, and the Medical Division—less those functions transferred to the Air Staff. The Assistant for Ferrying Services replaces and handles the functions formerly charged to the Commanding Officer of the Air Corps Ferrying Command.

Intelligence Remains

The Assistant for Army Air Traffic Services will take care of the Administrative Regulations of Army Flying, the operation of the Army Airways Communication Service, the Weather Service, Bolling Field, the duties now charged to the Map Section of the Intelligence Division, the functions of the old Operations Division, and the allocation of aircraft to activities and agencies under the control of the Chief of the Aircraft.

Under the new organization the Intelligence Division will be continued for as long a time as is necessary, until the absorption of its activities is accomplished by other agencies.

Executive Assistant to General Weaver, under the reorganization, is Lt. Col. L.S. Smith; Assistant Executive for Administrative Planning and Coordination is Lt. Col. Byron E. Gates; Assistant Executive for Technical Planning and Coordination is Lt. Col. James G. Taylor; the Air Corps Adjutant General is Col. William F. Pearson; the Judge Advocate General is Lt. Col. E. H. Snodgrass; the Fiscal Officer is Lt. Col. A.W. Martenstein, and the Inspector General is Lt. Col. G.H. Beverley.

Brig. Gen. Oliver P. Echols is the new Assistant for Procurement Services, Brig. Gen. Henry J.F. Miller is the Assistant for Supply and Maintenance Services, Brig. Gen. Robert Olds is the Assistant for Ferrying Services, Col. Walter F. Kraus is the Assistant for Personnel and Training Services, and Col. Oliver S. Ferson is the Assistant for Air Traffic Services.

Lt. Col. J.G. Taylor remains as Chief of the Air Corps Intelligence Division.

FLIGHT REQUIREMENTS

MAINTENANCE of piloting skill will be given first consideration among the duties assigned to personnel holding flying ratings, according to a new Army Air Forces Regulation listing the minimum annual flight requirements for Air Corps pilots.

Under the new Regulation commanding officers are directly charged with the responsibility for seeing that regular and frequent flights are made by all personnel holding flying ratings, and by all non-rated officers placed on flying status by the Chief of the Air Corps.

Commanding officers are further held responsible for assurance that pilots are thoroughly qualified to "pilot", and that they have sufficiently demonstrated familiarity with the various aircraft types before they are permitted to fly them.

Flight Requirements

The minimum annual flight requirements which must be met by all personnel holding flying ratings, and by all non-rated officers on flying status, are as follows:

1. One hundred hours of flying time. Not less than 40 of these hours must be accomplished during each six months' period of the fiscal year.
2. Ten hours of night flying. Not less than four of these hours must be obtained in each half of the fiscal year.
3. Twenty hours of instrument flying. Not less than eight of these must be accomplished during either six months' period.
4. Two instrument tests. Pilots of limited status whose limitations do not prohibit instrument flying must meet these instrument tests as "pilots". At least one of the tests is performed in an airplane if possible. Rated pilots assigned to duties involving piloting who pass this test are furnished a certificate showing they have qualified as instrument pilots. This applies alike to Regular Army, Reserve and National Guard officers.

Officers and men rated as pilots but not technically qualified to fly the planes with which their units are equipped, due to lack of flying hours, are given credit for co-pilot time in meeting the annual flight requirements.

Other rulings instituted by the new regulation are that personnel placed on a limited flying status must meet all requirements in conformity with their duties, ratings and limitations; and that non-rated officers on flying status must meet requirements similar to those of "unlimited" pilots.

It was also provided that personnel on flying status for only part of a fiscal year must meet a proportional amount of the requirements.



CLOUD COPS... (Continued From Page 22)

The circle lights atop the hangars are used in conjunction with the bar signals to bring in the upper zone planes. After the plane in the lower zone has landed, a combination of one red bar and a green circle is the signal for the plane in the upper section of Zone 1 to drop down into the lower zone and make his landing approach. Planes in other quarters are handled in similar manner, the number of bar lights indicating the zone.

Spotlights are used as an auxiliary to the regular bar light control, but take precedence when used. They are used in three colors—green to indicate that the plane is cleared for take-off or landing, red to warn that something is wrong and that the pilot about to land should return to his zone, and white for identifying ship numbers, to assist the pilot in parking. When flashed intermittently, it's a signal to taxi into the line.

The student is drilled in three phases of night landing. First he must set his plane down with all the field's floodlights on, then with only his ship's landing lights and the boundary markers of the field. Third phase is on a small runway outlined only by small beams of light shining parallel to the thus improvised runway and visible only from a point directly opposite the entrance to the runway area.

This last phase of training needs a portable lighting system and generator recently invented and developed at Wright Field, Ohio, which can be set up and in operation in from 30 to 40 minutes and enables the operators to transform into an airdrome what a few moments before had been a cow-pasture. Thus are simulated actual conditions encountered by pilots engaged in tactical problems.

Yanks in the R. A. F.

Airacobras Strike for Britain



A Squadron Leader who won the Distinguished Flying Cross in the Battle of Britain and has had eight confirmed victories over enemy aircraft, now commands a famous fighter squadron which has recently been equipped with the Bell Airacobra fighter aircraft. He is very proud of the distinction, and so are his pilots; they include men from all parts of Great Britain, from three of the great Dominions, several Czechs, and recently there was also a Singalese pilot. To a representative of *Flight* the Squadron Leader explained that the Airacobra is in some ways the most modern aircraft in the world, at any rate the most modern fighter. It is a specially designed machine, full of new ideas. Its outstanding features are the position of the liquid-cooled Allison engine (of 1,150 h.p.) behind the pilot, with shaft drive to a tractor airscrew in the nose, and a nose-wheel undercarriage.

Pilot's Back Is Safe

Naturally, two questions which the Squadron Leader was asked were whether the nose-wheel stood up well to rough landings, and whether the engine showed any tendency to move forward into the small of the pilot's back. To both he was able to give satisfactory answers.

The Airacobra was designed to work off runways, and the aerodrome where his squadron is stationed is far from resembling a croquet lawn, but all the same the nose-wheel has stood up well. It ought to do so, for its strut looks very solid, not to say heavy; and, as a matter of fact, the machine altogether is heavier than British standard single-seater fighters. The squadron has had one breakage of this member from an unusually heavy landing at night, and three other cases of damage, which were not serious.

There have been no serious accidents, but in some landings which might have been better the engine did not move from its bed, and showed no sort of inclination to do so. The squadron feels no anxiety on that point.

No Trouble From Engine

As for maintenance of the engine, it was treated with the same care as the Merlins in

British fighters, and the squadron did not know what its flying life would be before it had to be taken out for a major overhaul. Up to the present it has given no trouble.

Few facts can be stated about the performance of the Airacobra, but in the U.S.A. it has been published that the top speed is in the neighbourhood of 400 m.p.h. The pilots say that air combats now are decided by speed and fire power. The Airacobra certainly has the first, and it excels at its own favourite height. Its armament likewise is formidable. Several versions are possible. The machines of this squadron have one 20-mm. cannon firing through the airscrew hub, two machine guns in the nose which fire through the arc of the airscrew, and four machine guns in the wings. The amount of ammunition carried is impressive, and no doubt the enemy would like very much to know the precise figures.

The Airacobra as built for the R.A.F. is in some particulars different from the form in which it is used in the United States. Our men, too, after receiving their machines, have themselves introduced some modifications. These will be notified to the manufacturer and will be incorporated in future deliveries.

Spares A Little Late

It was mentioned also by the squadron that all the spares did not arrive with the machines, and this was a bit of a nuisance. But R.A.F. aircraftmen are ingenious, and the machines have not been kept aground by the non-arrival of the spares. The squadron presumes that the said spares had been dispatched, but had gone astray somewhere on the way. We may recall that something of the same sort happened in the case of machines delivered to the Russians, who had to manufacture the necessary tools before they could erect the aircraft. But things will sometimes go astray in time of war, and it is not suggested that the Americans were careless in the matter. Everyone knows how anxious they are to help the Allies.

One very good point about the Airacobra is the splendid view which the pilot gets behind him by simply turning his head. It is a very important

matter in a dogfight, and this American machine is about the best of the lot in that respect. The entrance to the pilot's cockpit is through a side door, not through the opening at the top. In fact, the top of the transparent cover does not open, and this means that very tall pilots can hardly be comfortable inside.

Short Pilots Best

It is preferable to pick pilots of not over 5 ft. 10 in. The Americans also suggested putting a limit on the weight of the pilot, but so far this squadron has not found it necessary to stick to the limit which the designers suggested. When a pilot has to do a "brolley hop" (it has not yet been necessary) there is a quick release of a door in the side, and the pilot rolls out on to the wing, and then off that into open air. That obviates the manoeuvres which are found advisable when a man has to quit a Hurricane or Spitfire.

Of the flying qualities of the Airacobra nothing but high praise was heard from the pilots, even though some of them who had been before in Hurricane squadrons had got so attached to their old machines, as pilots will, that they felt rather homesick for them.

Condensed From FLIGHT

Eleven-year-olds may still be a little young for enlistment as aviation cadets, even under the newly lowered age limits, but that didn't stop Thaddeus Schultz of Manoa, Pa., from applying. Thaddeus wrote the 33rd Pursuit Group at Philadelphia and said: "I would like to join the Army Air Corp. My father was a fighter in a boxing ring and I would like to be in the Air Corp. I am 11 years of age and in good health. P.S.—I am a Polish decente not a German decente."

Thaddeus was told the Air Corps appreciated his "fine spirit and willingness to serve", but that he'd have to wait a few years, under present regulations, before he could take flight training.

There is quite a sprinkling of so called "G-Men" and "Bobbies," the British equivalent of American policemen, "Cops," "Flat Feet," or what have you, among the Britishers undergoing flying training at the Southeast Air Corps Training Center. The majority of 66 former representatives of the law are patrolmen, the remainder being ex-detectives and special investigators who were associated with Scotland Yard.

NEW S. E. T. C. INSIGNIA



THIS is the new official insignia of the Southeast Air Corps Training Center. The image on the crest is that of a Griffon, mythological half-lion, half-eagle which could never be taken by an enemy. The clenched fist directly below stands for defensive action, and the seven shafts of lightning symbolize the seven phases of instruction—elementary, basic, advanced, bombardiering, navigation and gunnery—which prepare cadets for aerial combat. The background of the shield is azure, and represents the clear skies of the States included in the Southeast Training Center.

Approximately 10,000 persons were present at the dedication recently of Gardner Field in Taft, Kern County, Calif., one of the four basic flying schools in the West Coast Air Corps Training Center.

New Combat Teams

Support Commands Provide Lightning Punch

By Col. William E. Lynd



AIR support aviation has been developed to provide ground forces with the close air support essential to their success in combat.

All designated air support units are contained in the Air Force Combat Command. A staff section exists in headquarters of this command, with an Air Support Officer as chief. As the functioning of air support aviation is in close conjunction with the operations of ground forces, the Air Support Section has been located at the Army War College, the location of the General Headquarters of the Army.

Five Air Support Commands are organized, one within each numbered Air Force and the fifth directly under the Combat Command to work with the Armored Force.

Works With Ground Forces

The function of Air Support Commands is to handle all types of aviation working in direct connection with and support of ground forces. This type of aviation includes light and dive bombardment, observation, photographic, and other elements such as tow target, and transports for air-borne and parachute troops.

Before the war there were eleven observation groups, including forty observation squadrons. Additional group headquarters and observation squadrons are now being authorized by the War Department. There is now one photographic group of four squadrons with new authorization for still more. Observation organization is designed to provide a group for each corps, containing one squadron to support each division, and one for corps use. In addition to corps groups, one observation group is being provided for the support of each army.

One of the major changes being made in observation aviation is the utilization of two-engine bombardment and pursuit type planes for assignment to observation squadrons. The war has proven rather conclusively that the medium speed ordinary two-engine observation airplane cannot live in modern combat. The old theory of continuous observation or surveillance of an enemy area can no longer be employed. Observation beyond the enemy lines will now consist principally of going in to observe a particular point

or some particular activity and returning as soon as that information is obtained. Either speed or defensive fire power or both must be depended upon to obtain this information. The information or verification ordinarily will be secured by photography. A considerable number of the light type un-armed liaison planes is also being provided to observation units for courier and messenger service.

Provides Close Support

One of the principal functions of Air Support Commands is to provide both close and direct combat air support. Combat support is provided by light and dive bombardment. Light bombardment groups of four squadrons each with one additional squadron, are now included in the five Air Support Commands. It is hoped to provide light bombardment for air support in the ratio of two squadrons per each Armored Division, and one squadron per each infantry and motorized division. The present light bombardment airplane is the A-20-A fast two-engine horizontal bomber. Dive bombers now being used are the A-24 type, the same as the SBD-3 in use by the Navy. Much attention has been paid to the tactics and technique of combat air support of ground troops. Several exercises and maneuvers have been held in this connection, particularly with armored forces.

Signal communication plays an important role in air support, as ground organizations must be able to contact their supporting air unit and ask for the destruction of a certain objective or for the reconnaissance of an area. The commander of the air organization must then be able to contact his various squadrons either on the ground or in the air. For this purpose, Signal Companies Aviation are included in the Air Support Commands.

In order to furnish aviation for the towing of targets for antiaircraft artillery fire, tow target detachments are included in the Air Support Commands. These detachments are to be equipped with airplanes and equipment for towing and tracking missions to assist the antiaircraft artillery in their training.

Transport aviation for the movement and conveying of both parachute and air-borne troops will be provided by Air Support Commands. One transport squadron was utilized for this purpose in the Louisiana maneuvers and a transport group of three squadrons was used during the Carolina maneuvers.

Practice At Maneuvers

The Air Support Commands of the different Air Forces support and assist in the routine training of the army with which the Air Force is associated. Air Support Commands as such have participated in maneuvers only during the GHQ control portion of the Carolina maneuvers. All aviation operating during this phase of the Carolina maneuvers was included in the First and Third Air Support Commands supporting the First Army and Fourth Corps respectively. The results obtained from this first maneuver employment of Air Support Commands were very gratifying. It developed the conclusion, as expressed by several high commanders, that the air support organization is sound and logical. Of course there are many details yet left to be worked out and adjustments made, but the fact that air support as now organized is functioning along correct lines, augurs well for the future development of aviation support of ground forces.

News Letter Changes

NO AIR FORCES NEWS LETTER was issued for the month of December or January because of the extra pressure of work placed on the Headquarters Army Air Forces by the war.

Conditions have so been adjusted however, that it is expected publication on a regular monthly schedule can now be resumed. In the future the NEWS LETTER will be published on or about the first of each month so long as publication does not interfere with necessary war business.

A number of changes have been made recently in the instructions covering the preparation of material for the NEWS LETTER and in the method of distribution of the publication. Potential contributors and officers assigned as local NEWS LETTER correspondents should familiarize themselves with these changes, which are outlined in detail in Army Air Force Bulletin No. 41-8; Army Air Force Regulation No. 5-6 and Army Air Force Policy No. 5-1.

Distribution of the NEWS LETTER no longer is on a personal basis. With the exception of a few general officers, active and retired, no individuals receive the publication as individu-

als. Distribution to the field is on the same basis as Army Air Forces regulations, except that Wright Field, like Washington, receives one copy "for each headquarters or division and one additional copy for every four officers and key civilian personnel assigned thereto." Requests from individuals to be placed on the mailing list cannot be granted.

Personal Items Not Wanted

The bulletin outlining the type of material desired and the method of preparation states specifically that "personal items are no longer wanted" and that public relations officers and other contributors "should not send information on such matters as squadron picnics, dances, the promotion of enlisted men (unless the circumstances were unusual) or of officers, descriptions of athletic events, etc." It says further that news releases ARE NOT SUITABLE as a substitute for material prepared especially for the NEWS LETTER.

The bulletin states that material considered appropriate for publication includes stories on technical developments in the Materiel Division, changes of policy with respect to aviation, descriptions or discussions of new airplanes, outstanding flight achievements, articles discussing in detail innovations of military technique worked out by Army Air Forces personnel, and detailed accounts of maneuvers, including descriptions of the problems encountered and how they are solved.

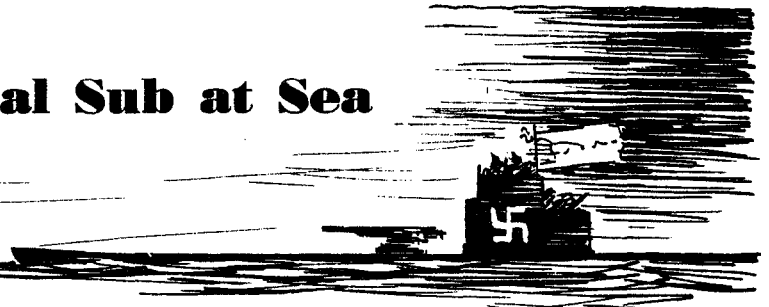
Contributors may save themselves and the personnel in charge of the NEWS LETTER a great deal of trouble by reading the bulletin, policy and regulation governing publication of the NEWS LETTER before sending material to Washington. Articles of the sort carried in the current issue are wanted. Provided he knows what he is talking about, the author may be of any rank or from any organization.

With the establishment of sub-depots in Merced and Lemoore, Calif., a total of eight subsidiary depots of the Sacramento Air Depot have been established during the past year in California and Nevada.

Training aviation cadets in night cross-country and formation flying is an experiment started at Goodfellow Field, San Angelo, Texas. Heretofore such training was conducted only at advanced flying schools. If successful, it is possible that this type of flying will be inaugurated at the various other basic flying schools.

Bolt From The Blue

Patrol Bombers Corral Sub at Sea



AN aircraft of the R.A.F. Coastal Command has captured a German U-boat—the first time a land aeroplane has forced a submarine to surrender outright.

They fought out one of the strangest duels in history, with one adversary in the sky, the other beneath the sea. The sky won. After the aircraft, a Lockheed Hudson bomber, had attacked the U-boat the crew of the submarine came tumbling out of their conning tower, waving a white shirt as token of surrender.

The Hudson, completely unaided, held the U-boat prisoner for nearly four hours. A Catalina flying-boat of the Coastal Command then arrived, to relieve the Hudson. The Catalina acted as gaoler, assisted by other Hudsons and Catalinas of the Coastal Command, for nearly ten hours more.

Ship Takes Over

One of His Majesty's ships was able to arrive, just as daylight was fading, to take over from the aircraft. By then the U-boat had been held prisoner from the air, without any actual contact except the threat of machine-guns, for nearly thirteen hours.

The Hudson took off early in the morning, and headed out over the Atlantic. Visibility was poor, frequent rainstorms swept across the sea. The water below was angry and rough, covered with white caps.

They were "toddling along with George (the automatic pilot) doing most of the work," when suddenly there was a shout from the navigator's cabin in the nose of the aircraft.

"There's one just in front of you," (shouted the navigator.) The pilot gazed out where the navigator was pointing, at the same time pulling out the automatic pilot and taking control. There, about 1,200 yards away on the port bow, was a U-boat.

Navigator Watches

The pilot thrust the nose of the aircraft down, and dived. The navigator stood with his face pressed to the cockpit window, keeping the submarine in sight.

"Let me know when its time to drop, Jack," called the pilot quickly.

The navigator nodded, and a few seconds later yelled "Now!"

The rear gunner, who had been hastily winding in the aerial, popped his head into the astro-dome just in time to see a column of water shooting high into the air.

Then the pilot turned the Hudson steeply, and climbed. Below him he could see the wide area of churned waves. As he watched there was another shout from everybody in the aircraft. The U-boat had come to the surface. The gunner, who had rushed into the rear-turret, had the best view. He saw the U-boat surface rapidly, on an almost even keel. She came surging up through a mass of foaming water.

The navigator reached for his camera and called to the rest of the crew.

"Machine-gun them, let's machine-gun them."

The wireless operator dropped to the floor and rapidly wound down the belly-gun. Then the aircraft dived across the U-boat, all guns blazing tracer bullets—front guns, rear-turret and belly-gun.

Crew Tumbles Out

As the Hudson dived, the U-boat's conning tower hatch was thrown open, and about a dozen of the crew tumbled out and dropped on to the deck. The Hudson crew thought they were manning the guns so they kept their own guns firing hard. The red streaks of the tracer were peppering into the conning tower and kicking up little spurts of water all round the U-boat.

This was too much for the Germans. Those who were already on the deck turned and ran back into the conning tower, those who were coming up from below still tried to push outwards. For a few moments there was "an awful shambles" in the conning tower, (as the Hudson pilot afterwards described it.) The U-boat crew were all mixed up together, some struggling to get in, others to get out. All the figures seemed to be capless, and they were distinctly visible from above, for they were all wearing bright yellow life-saving jackets.

Four times the Hudson roared over the U-boat,

guns streaming, banking steeply each time to swing round into the attack again while the rear guns and belly-gun kept up the fire. The rear-turret was firing practically all the time. All the pilot remembers hearing, besides the din of the firing, was the navigator muttering:

"I've lived all my life to see those baskets scrambling out of a conning tower."

U-boat Surrenders

As the Hudson was coming round for the fifth attack, the U-boat ~~surrendered~~. One of its crew held a white shirt up from the conning tower, waving it violently. The airmen ceased fire but continued to circle with guns trained, watching suspiciously. The Germans followed them anxiously round with the shirt, and then to make their intentions quite clear, held up what appeared to be some sort of white board.

"They've shoved a white flag up," called the wireless operator triumphantly.

The Hudson then flew right over the U-boat at about 50 feet, to see what it was all about. By then the entire U-boat crew had crowded into the conning tower, some thirty to forty of them. They were packed so tightly they could scarcely move.

"And a very glum lot they looked," the pilot said afterwards. "We were quite close enough to see their faces, and not a smile anywhere!"

The U-boat now lay stopped in the water, slightly down by the bows, with the waves breaking over her decks, and sometimes right over the conning tower, drenching the crew.

Holding Them A Problem

Then, for the first time, the Hudson crew realized with jubilation that the U-boat really had surrendered to them. The problem remained, how to hold ~~them~~ prisoner, and get them taken into custody.

The navigator prepared a message for base and the wireless operator's hand rattled up and down on the key.

All this time the pilot was circling the U-boat, keeping his eyes glued to it. He did that for three and a half hours. Had he lost sight of it for one second he might easily have lost it altogether. When at last he stepped on to his home aerodrome, his neck was so stiff he could not turn his head.

All this while too, as the navigator and wireless operator were working away at their signals, the rear-gunner kept his guns trained ceaselessly on the U-boat crew huddled into the

conning tower of the submarine.

The message reached base, and it was determined to bring that U-boat and its crew to shore if it were humanly possible. Never before in history had an underwater craft surrendered to a land aircraft. It was determined not to let the U-boat get away. A Catalina was at once sent off to relieve the Hudson, and all the other aircraft in the vicinity were diverted over the U-boat from time to time, to demonstrate to the crew that there was a big striking force ready if they tried to escape. Hudsons, Catalinas, on patrol—they all flew over the U-boat from time to time.

Catalina Arrives

The relief Catalina arrived in the early afternoon.

When the Hudson crew saw the Catalina approaching they were afraid it might bomb and sink the U-boat. So they signalled anxiously to it.

"Look after our, repeat O U R, submarine which has shown the white flag."

"O.K." signalled back the Catalina.

Then the Hudson crew, satisfied, dived twice more over "their" U-boat to have a last look at it. One or two of the Germans, who had got down on the deck, waved mournfully to them. The pilot waved cheerfully back, and set course for home.

Then it was the Catalina's turn to circle endlessly, the blister guns trained on the U-boat crew. They kept it up for eight hours, without having to fire a single shot. Surface craft were steaming towards the spot as quickly as possible, but they were a long way off yet. The question was, could they get there before night-fall?

The hours dragged by, in those interminable circles. Some of the U-boat crew, now and then, walked out on to the deck from the conning tower, in spite of the waves—they were all drenched as it was, so what did the waves matter? The Catalina took the precaution of frequent dives over the U-boat to ensure that the hatch was still closed. Other aircraft came periodically to add to the threat—but still no surface craft.

Ship Arrives In Time

The weather was growing worse, daylight was fading. There was every chance of losing the U-boat during the night, and the Catalina crew were growing desperate. (Continued on Page 39)

Lost on West Coast Flight

Gen. Dargue Missing Since December 18

By Maj. Falk Harmel

MAJ. Gen. Herbert A. Dargue, commanding the First Air Force, Mitchel Field, N.Y., has been missing since December 12, 1941, when he departed on a transcontinental flight in an Army transport plane, accompanied by Col. Charles W. Bundy and Lieut. Col. George W. Ricker, of the War Department General Staff; Major Hugh F. McCaffery, Capt. J.G. Leavitt, 1st Lieut. Homer C. Burns, Staff Sgt. Stephen Hoffman and Pvt. 1st Cl. Samuel J. Van Hamm, Jr., Air Corps.

General Dargue belonged to the small group of officers who were affiliated with Army aviation practically from its inception. His contribution to the development of this branch of the service during a period exceeding a quarter of a century has been of an exceptional character, and his untimely end has left a void in the ranks of the Army Air Forces which will prove exceedingly difficult to fill.

Taught By Lahm

General Dargue learned to fly in an old hydroplane at Fort McKinley, P.I., in 1913, his instructor being no less a personage than Maj. Gen. Frank P. Lahm, Retired, who was then a lieutenant of the 7th Cavalry serving a detail with the Aviation Section, Signal Corps.

While a member of the First Aero Squadron, General Dargue saw service with the Punitive Expedition into Mexico in 1916, where he did a considerable amount of flying in the early Wright biplane and where, amidst natives extremely hostile to Americans, he encountered many thrilling experiences and extreme privation.

Forced landings in his fragile plane necessitated long and hazardous treks on foot, without food or water, through alkali deserts and mountains, and often he reached a condition bordering on thorough exhaustion before he finally arrived at localities occupied by friendly troops.

During World War I, General Dargue was on duty for several months with the A.E.F. in France and England, making a study of the training of pilots, observers and mechanics. He then returned to the United States for duty as Assistant Chief of Training in the Office of the Director of Military Aeronautics.

After graduating in 1920 from the one-year



General Herbert A. Dargue

course at the Air Service Engineering School at McCook Field, Dayton, Ohio, General Dargue served on staff duty in the Office of the Chief of the Air Service, Washington, D.C., until August, 1928, occupying responsible positions in the Operations Division, the War Plans Division and the Training and Operations Division. These staff duties were interrupted in 1924-1925, when he attended the Command and General Staff School at Fort Leavenworth, Kans., and from which he graduated with distinction.

From December 21, 1926, to May 2, 1927, he commanded the flight of four Army planes on a good will tour around South America, during the course of which he narrowly escaped death following a mid-air collision with one of the other Army planes in the flight. After he released his safety belt and jumped from his violently spinning plane, his parachute became entangled in the wreckage. Fortunately, his parachute broke away from the wreckage and he escaped injury, although he struck the ground violently. In recognition of his organizing ability and leadership of this flight, General Dargue was awarded the Distinguished Flying Cross.

(Continued on Page 39)

A. N. C. Aircraft Types Coordinated NEW COMMITTEE DEVELOPS DESIGN CRITERIA



AN Army-Navy-Civil Committee to coordinate the development of aircraft design criteria has been established by the Secretaries of War and Navy, and the Administrator of Civil Aeronautics. The new committee works under the supervision of the Aeronautical Board.

Membership of the committee includes the senior Army and Navy members of the Aeronautical Board's working committee; three members designated by the Assistant Chief of the Air Corps Materiel Division; three members designated by the Chief of the Navy Bureau of Aeronautics, and four members designated by the Administrator of Civil Aeronautics.

Air Corps members of the committee are Lt. Col. D.G. Lingle, Army member of the Aeronautical Board's working committee, who is chairman; and Lt. Col. H.Z. Bogert, Lt. Col. Orval R. Cook, and Major C.K. Moore, of the Materiel Division, Wright Field.

Committee Functions

The functions of the committee, as outlined in the precept, are as follows:

(a) To develop aircraft design criteria governing: imposed loads, structural design, allowable stresses, methods of analysis, methods of testing, performance calculations, etc., and recommend the adoption of these criteria by the three member branches of the government.

(b) To arrange for such studies, tests, investigations, and conferences as may be necessary for the development of these criteria.

(c) To arrange means for exchange of technical information related to these criteria between responsible personnel in the member branches of the government and for maintenance of effective liaison.

(d) To arrange for promulgation, including publication, of criteria adopted by the member branches of the government, in the form of ANC Bulletins.

12 Sub-Committees

The ANC Committee holds meetings when deemed desirable in order to arrange for 12 technical sub-committees, operating as part of the ANC design criteria program, to carry out assign-

ments, and in order to report progress and the results of investigations to the member branches of the government.

Structural design problems of the Committee, in general, fall into three classifications: external loads, internal stresses, and allowable loads. These general classifications are further broken down into projects, each handled by a technical sub-committee. Projects of the ANC Committee are sponsored by either the Army Air Force, the Navy Bureau of Aeronautics, or the Civil Aeronautics Administration.

First publication issued by the ANC Committee is a Ground Loads Handbook, issued on ANC Project Number Two. The handbook is divided into three sections covering the strength requirements for tail wheel type landing gear, tricycle type landing gear and emergency landing and handling structures. The booklet will be distributed among the services and the industry in order to standardize and coordinate the design of aircraft.

A new civil contract glider-training school has been opened at Twenty-Nine Palms, a small desert community 60 miles from Palm Springs, California. Successful completion of the glider-pilot training courses given last summer at Lockport, Illinois, and Elmira, New York, has led to the establishment of the new school.

Students will be volunteers selected from the ranks of Air Forces officers serving as instructors at airplane pilot-training centers. Instruction will be provided by the contractor, the Twenty-Nine Palms Air Academy.

The first class, of 12 students, began training early in January, with subsequent classes entering at two-week intervals. The second class began training about January 14. Later classes will each include approximately 24 students. Pre-war plans called for the training of 126 glider pilots at the school.

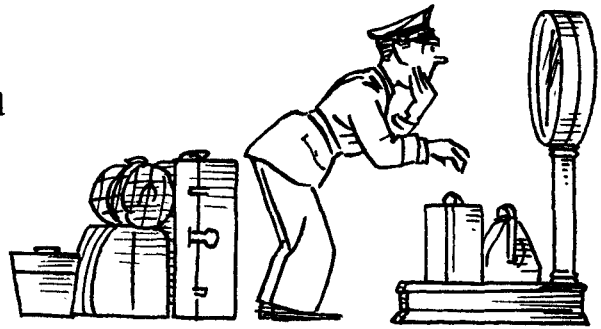
Students, all trained power-plane pilots, will be given an average of 30 hours instruction in gliders of the two-place TG-1 and TG-2 types. These gliders were both used successfully in earlier glider-pilot training programs.

For Duty Abroad

How to Bundle for Britain

By Lieut. Bruce Buttles

American Embassy, London



WHETHER assigned for permanent or temporary duty, Air Force personnel traveling to the United Kingdom this winter should plan their clothing and equipment with utmost care. Every article must be studied, and the advantages of each garment carefully weighed, to determine the best possible selection within prescribed baggage limitations.

These are 40 pounds for the Air Corps Ferrying Command and 20 kilos (44 pounds) for British Overseas Airways Corporation—the two most likely gateways for passengers in a hurry. It is true that Pan American Airways permits some 20 pounds more on the route from New York to Lisbon, but this generosity is of no advantage when BOAC restrictions apply beyond. Neither minimum includes an overcoat on the arm or articles tucked into pockets, and this loophole is often a helpful escape for bulky travelers.

What The Traveler Can Take

The actual situation is, however, that one can travel light and still have plenty of essentials if he exercises a reasonable choice. Naturally, the exact selection will depend upon type and place of service, but by using the Air Corps issue flight bag, the 40 to 44 pounds should provide, roughly, for the following or equivalent articles:

One civilian suit (two suits for service in London) a complete field uniform with an extra pair of slacks (dark shades are best), two O.D. cotton and one O.D. woolen shirts, six civilian shirts, two suits of heavy underwear, some changes of light underwear, and extra pair of good heavy shoes, warm slippers and a bathrobe, ties, handkerchiefs and the usual toilet articles, plus a modest reserve of razor blades, matches, lighter flints and fluid, chocolate bars and flashlight batteries. Extra insignia and jewelry are essential.

In addition the wise traveler probably will include a few gifts for British friends if he can spare the weight and space. The ideal selection will vary from time to time, but currently cigarette lighters, safety matches, silk hosiery, cosmetics and miniature flashlights are

highly prized. Such articles are valuable in repaying inevitable social obligations to British subjects and their wives.

What To Wear

Personnel of the Air Force customarily wear mufti in London and the uniform elsewhere. That makes two overcoats essential in winter unless a combination garment is adopted. This may be a heavy trench coat with removable lining and shoulder straps. In selecting both civilian and military apparel, it is important to note that even in London cleaning requires much longer than in the United States and sometimes cannot be done at all. Usually garments will not be returned within a week and some articles (such as leather gloves) currently require three months. Laundry facilities are also slow. As a result, dark materials are popular. Neither the blue uniform nor civilian dinner dress is worn. Flying clothing is issued on this side.

Persons permanently assigned should send a small trunk by water freight. But in view of the uncertainty of shipping, it is unwise to expect delivery in less than two months, and the possibility of complete loss should be considered from the start.

Although clothing is severely rationed in the United Kingdom, arrangements were completed recently with the Foreign Office to obtain extra clothing coupons for Americans where necessary. Whenever possible, however, it is best to bring as much clothing as is required from home. It is actually out of the question for an officer to supplement his wardrobe and buy replacements during the year on the ordinary civilian ration.

Adequate Food

Insofar as food is concerned, Americans in London usually find that the quantity is adequate. There is a noticeable shortage of butter, eggs, fresh fruits, bacon, milk and similar dishes common at home. One cannot expect orange juice with his breakfast porridge. However, the diet in some instances has added weight to visitors who found less physical activity than they were accustomed to enjoy across the sea. Most

American officers bring concentrated vitamins as standard practice to supplement the food supply, although similar products are available in London.

American cigarettes, tobacco, toilet articles and non-perishable foods of various kinds can be had through a commissary primarily set up for the benefit of permanent officers and employees at the Embassy. Prices are not much above—and in some instances are substantially below—those charged in retail stores in the United States. Since the goods desired may not be in stock on your arrival, it is good procedure to have a personal supply in the flight bag, or kit, of tobacco products.

On the other hand, travelers passing through Lisbon may find much grief in carrying more than three or four cartons of cigarettes and a reasonable quantity of matches. Portuguese customs officers are likely to place a quite elastic interpretation on regulations and charge approximately \$6.50 "in transit" fees to pass any "unreasonable" quantities of tobacco, matches, silk stockings or concentrated vitamins through the country. One Air Force officer who paid \$1.05 a carton for cigarettes in Washington found it necessary to pay \$6.50 in Lisbon and \$7 more in the United Kingdom on seven cartons, only to find the same cigarettes through diplomatic stores at 75 cents a carton in London. It was possible recently to purchase standard brands of American cigarettes in Portugal for about \$2 a carton.

Bring Portuguese Money

When entering Lisbon it is valuable to have not less than 150 Portuguese escudos in small bills and coins to avoid exchanging American currency at unfavorable rates. For the most part, travelers' checks or a letter of credit are the best means of carrying funds, but these must be cashed at a bank under present regulations. They command a substantially better figure than dollar bills, which should be avoided completely. As a matter of fact, American currency can be bought in Lisbon banks at various discounts—recently 12 per cent—by tender of drafts on New York.

No distinction is made between the different denominations of currency, which need only be kept to 10 pounds. Thus it would be possible to bring in two five-pound notes or one 10-pound note just as well as 10 one-pound notes, with the added advantage that the larger denominations are much cheaper. Some loose British silver is also helpful. Prices of five and ten

pound pieces in Lisbon have been about \$1.90 to the pound recently, and about 90 cents more in New York in small quantities. Five pound notes are more convenient. Purchasers should beware of counterfeits. The Portuguese escudo is worth about four cents in American exchange. The American Express Company, which has offices in many cities, and Perera & Co., 10 Broadway, New York, are large dealers in foreign exchange.

Where To Stay

Hotel reservations are usually made automatically at Lisbon but not in London, where the traveler is more or less on his own. For that reason, it is advisable for new arrivals to telegraph ahead on landing for space. London is very crowded and the Quartermaster, 20 Grosvenor Square, W. 1., is frequently of help in obtaining accommodations. American officers usually stop either at the Cumberland Hotel (about \$2.75 a day), the Dorchester (around \$4.25 a day) or Grosvenor House (also about \$4.25). All these establishments are convenient to the Embassy in Grosvenor Square.

Despite a 17 per cent depreciation in sterling exchange, British prices will be definitely high to American visitors. Lunch or dinner in a good restaurant will be about 10 shillings, or \$2, and desirable places are so crowded that tables must be booked in advance. Drinks are roughly twice as expensive as at home and the prices of some unrationed foods are fantastic. Fresh pears, for example, are currently on sale at 3/6 (about 70¢) and white grapes were priced recently at 20/ (\$4) a pound. But expenses in the field are negligible and the Air Force officer will find that by using care his extra expenses in London are usually balanced by savings at RAF stations. In any event, he will return home with his life enriched by an experience in living not available to the average person.

(This article was written by Lieut. Buttles in London before this country entered the war. Uniform requirements have since been revised so that uniforms are worn at all times while on duty.)

In a class of 756 aviation cadets undergoing processing at the Air Corps Replacement Center at Montgomery, Ala., before flight training, 63 had not attended college but secured their cadet appointment by passing the difficult entrance examination, thus indicating that lack of a college education is not necessarily a bar to young men seeking appointment as aviation cadets.

OBSERVERS... (Continued From Page 16)

as tails. Tails are very important.

Every observer should have access to a complete and up-to-date reference book of silhouettes, and they should all be provided with folders, which can be carried in the pocket, depicting by categories the aircraft listed for the three classes of tests.

SUPPORT... (Continued From Page 34)

But at the last moment they sighted one of H. M. ships, which steamed up, and started to signal orders to the U-boat crew.

Then came darkness, the Catalina lost touch, and had to go home.

Long before daylight next day, however, another Coastal Command Catalina was in the area, continuing the vigil. By now a gale was blowing. The night was jet black, and rain storms were lashing everywhere.

Once, in the darkness, they picked up a glow of light from the submarine, but so fierce was the gale that, as they circled, they were blown off their course and lost her again.

But soon they saw her reflected in the dim light through the storm with the white foam of the waves breaking across her bows.

Throughout the remaining hours of darkness the Catalina continued to circle, sometimes losing the U-boat's light for as much as fifteen minutes at a time, but always finding her again.

At last light began to break, and the crew could just see the thin outline of the submarine. As the light strengthened they could make out one ship lying near by, and soon they saw other ships approaching. The Catalina crew watched the beginning of the long task of getting the U-boat and her crew to harbour.

From the time the first ship arrived, the U-boat was covered from the air by Coastal Command aircraft for practically the whole of the next forty hours.

THE ROYAL AIR FORCE QUARTERLY
September, 1941.

Staff Sgt. Angelus J. Haverstock and Pvt. Ralph C. Krebs, Jr., Air Corps, received the Soldier's Medal for heroism in rescuing a fellow soldier from the burning wreckage of an airplane which crashed at Lovell, Texas, on June 12, 1941. The imperiled soldier was trapped in the gunner's cockpit from which he was taken to a place of safety by his rescuers, who were undeterred by the intense heat, smoke and flames or by the thought of the quantity of gas in the tanks of the airplane.

DARGUE... (Continued From Page 35)

Shortly after returning from this flight, he made a good will air tour of 70 cities in the United States. This flight, which embraced 35 states and included a visit to Ottawa, Canada, involved a total distance of approximately 10,000 miles.

General Dargue graduated from the Army War College in 1928 and from the Naval War College the following year. He was stationed at Langley Field, Va., for nearly five years thereafter, commanding the Second Bombardment Group until August, 1933, and the Second Bombardment Wing until October, 1934. For the next four years he was on duty as Assistant Commandant of the Air Corps Tactical School at Maxwell Field, Ala. He was then appointed a Brigadier General and assigned to the command of the 19th Wing at Albrook Field, Panama Canal Zone. During his two years of distinguished service in Panama, he made numerous flights to neighboring South and Central American countries and proved to be an outstanding ambassador of good will.

Shortly following his return to the United States, General Dargue was appointed Brigadier General and Assistant to the Chief of the Air Corps, and assigned to duty as Chief of the Inspection Division, Office of the Chief of the Air Corps. More recently he was elevated to the rank of Major General and placed in command of the First Air Force at Mitchel Field, N.Y.

An active flier throughout his military career, General Dargue, over a span of a quarter of a century, has piloted the various types of military planes with which the Air Corps has been equipped, from the 40 h.p. Wright biplane of the pioneer days of flying to the modern "Flying Fortress." A scholarly officer who mastered the courses at the various service schools, he exhibited superior ability in both military and naval air tactics. Under his guidance as head of the faculty of the recently discontinued Air Corps Tactical School, it rose to an unusual height among service schools, being considered by many as the first school of its kind in its teachings and its broad conception of air tactics, particularly air strategy; of cooperation in both tactical and strategical operations with ground and naval forces, and the role of the long range bomber in modern warfare.

Air Corps noncoms enjoyed a field day recently when 400 technical sergeants were temporarily promoted to master sergeant and 1,000 staff sergeants to technical sergeant. These promotions were widely distributed.

CRUISES... (Continued From Page 24)

however are limited at stations outside of Cairo.

Radio facilities are excellent in the Middle East. Stations are equipped with homing devices and can provide weather and navigational information.

We left Cairo at 05.13 GMT on the twenty-eighth, and spent the night at El Fasher. The next day we encountered an unidentified pursuit plane, which eventually turned away. We landed at Takoradi at 13.15 GMT the evening of the twenty-ninth. Torrential rains delayed us two days at Takoradi, and another two were lost on account of the illness of Mr. Parker, our British radio operator. During the stopover some time was spent in inspecting the neighboring native markets. Camel meat, water buffalo and python were much in evidence. So far as I know, however, none of our party sampled these local delicacies.

Averaged 250 MPH

Leaving Takoradi at 6.04 the morning of October 3 we reached Belem that afternoon at 19.42, approximately one and a half hours before sundown, covering a distance of 3405.15 statute miles in 13 hours and 38 minutes. Average speed was approximately 250 miles per hour.

We took off in a slight overcast. The weather was poor for about five hours out. Speed was aided by a slight tail wind. The automatic pilot did not function and the plane had to be flown manually most of the way. The navigator was interested to find that on taking the noon reading the sun was directly overhead, so there was no angle at all on the octant. But, thanks to Major LeMay's skilled navigation, we hit Belem on the nose as ETA predicted.

A severe oil leak developed in No. 3 engine, out of Belem. As we were too heavily loaded to go back, we continued on to Borinquen ready to feather No. 3 at any time. The oil leak was caused by a loose hydraulic pump housing. We remained in Puerto Rico a day and a half for maintenance. The home stretch was completed when we reached Bolling Field at 3.02 P.M. on October 7, having completed approximately 26,000 miles.

Few Replacements

It is interesting to note that the only replacements needed were a hydraulic pump shaft, nose wheel inner tube and relay switch, all of which were carried on board. Routine inspection replacements were, of course, made. And, as

previously noted, combat crew performed most of the ground maintenance work.

The Southern route to Middle East and to Europe is more feasible during the winter months than the northern route via Newfoundland, Scotland, etc. due to the absence of icy conditions along the tropical South Atlantic route.

**LUKE...** (Continued From Page 26)

It was 5.30 P.M. Clouds that I sailed toward faded out, just as steam disappears in the open air.

After Trenton there were no more thermals and I did a straight glide, depending entirely on my gliding angle for distance. I passed Quakertown, Doylestown, and Langhorne. The flight was about to end. I picked out a farmer's field, circled once, and landed, to the astonishment and fright of some cows that made way reluctantly. Now it was six o'clock. Some farming people came out and invited me to dinner. Hunger had fed my ignorance, perhaps, for I did not know how to say 'no.' I still had the chocolate bar. But roast chicken . . . After dinner we dismantled the ship and stored it in one of the farmer's barns.

From the farmhouse I phoned the ground crew at Elmira and called Fort Dix. They sent a car and two men to assist me. The next morning we picked up the Wolfe on a trailer and took it back to Elmira.

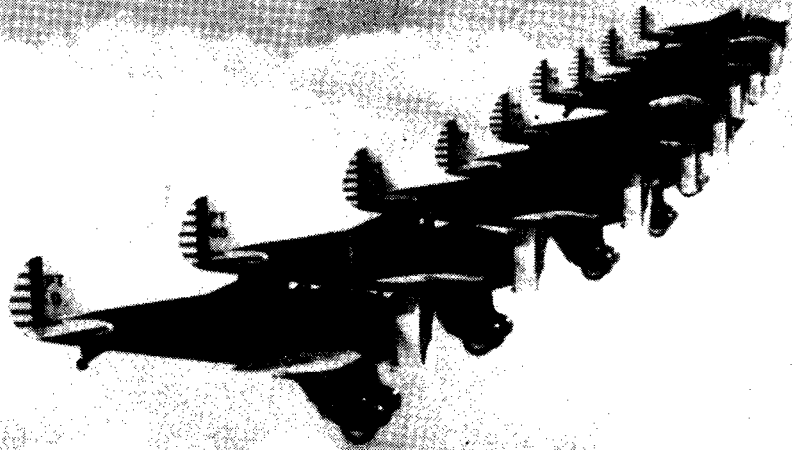
A glider landing near Fort Dix caused strange and lively interest. I was regarded with a curiosity appreciable only to those real pioneers who flew early in the century. Aerodynamically a glider may be classed as a plane, but my Wolfe was a hawk with frozen wings and I also set a record for hunger!

**PATRICK** (Continued From Page 4)

action was taken for three years.

Congress finally passed the Air Corps Act of 1926 authorizing a five-year expansion program which contemplated at the end of the period 1,650 officers and 15,000 enlisted men, including 500 flying cadets, and the production of 1,800 serviceable airplanes.

The Air Corps Act of 1926 was a victory for General Patrick, however meager it may appear in comparison with the present 125,000 warplane program. And it was General Patrick who opened the wedge for the mighty Army Air Forces of today. The man who learned to fly at the age of 60 "kept 'em flying" in a crisis.



Skyways Calling

*Come to the skyways, Brother. Come with me
And know the life that's free from fear and dread,
Where courage rides in constant rivalry
And weakling never yet has dared to tread.*

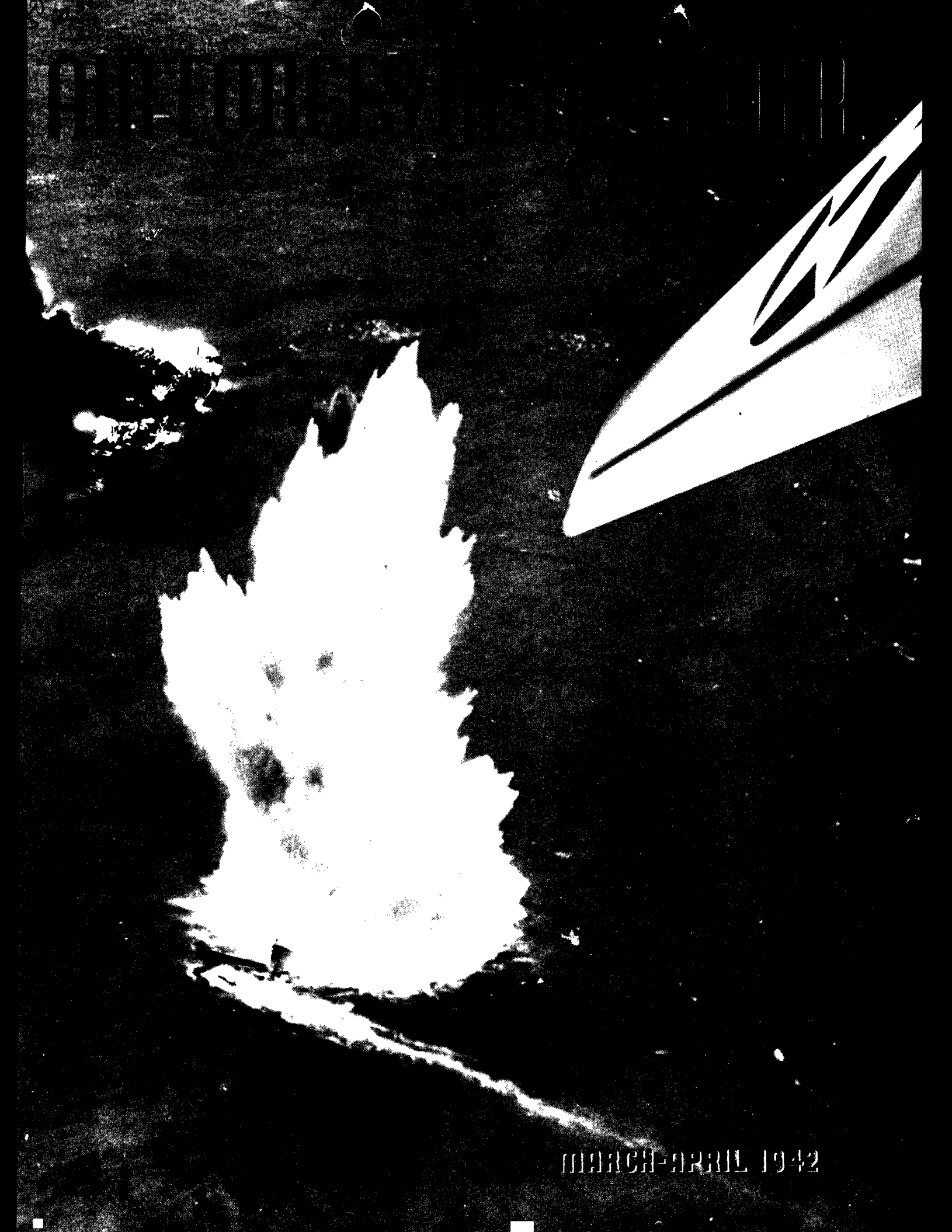
*Come to the skyways, Brother. Come this hour;
Nor heed the dirge of him who has no spine.
Come feel the thrill and joy of speed and power
And know the glory of this life of mine.*

*Come where the air is free of sordid stains,
Where the pace is set by skill alone.
Come feel the surge of red blood in your veins
And quaff the cup that coward ne'er has known.*

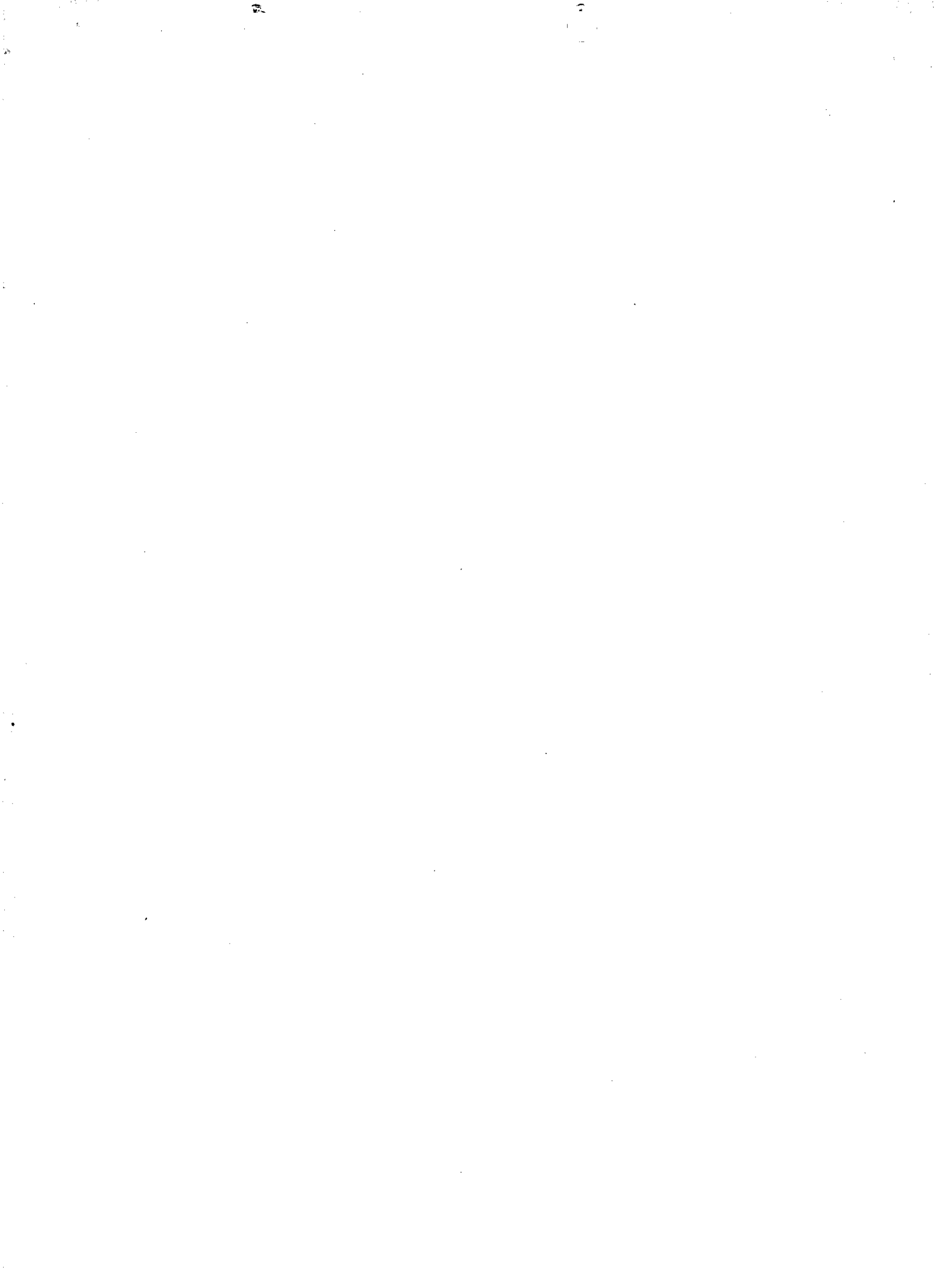
*Fear not. Though danger seems to ride apace,
'Tis but the snarling of a conquered wind.
This life of ours is but one glorious race;
Yet he, who'd win, must leave all fear behind.*

*So to the skyways, Brother. Come today
And venture up beyond where eagles fly.
Come! Seek real adventure while you may
And drive the foes of freedom from the sky.*

Major N.R. Cooper



MARCH-APRIL 1942



AIR FORCES NEWS LETTER

PUBLIC RELATIONS DIVISION, PUBLICATIONS SECTION
ARMY AIR FORCES, WASHINGTON, D. C.

VOL. 25

MARCH-APRIL, 1942

NO. 2



SAFARI ON WINGS	
Ferry Command fights jungle and desert -- <i>By Major Geoffrey Bonnell</i> . . .	1
HUNTING FOR TIN FISH	
An Army bomber on submarine patrol -- <i>By Capt. Lynn Farnol</i>	3
HONOR ROLL	5
PHYSICAL TRAINING IN THE ARMY AIR FORCES	
Keeping them fit for flying -- <i>By Maj. Gen. W.R. Weaver</i>	7
TORPEDOES SPROUT WINGS	
Aviation's undersea weapon -- <i>By Lt. F.J. Novitski, USN</i>	11
AIR SERVICE COMMAND SUPPLIES THE WORLD	
Action behind the combat scenes -- <i>By Maj. Gen. Henry J.F. Miller</i>	13
THEY CATCH 'EM WITH THEIR FLAPS DOWN	
"Intruder tactics" bag Nazi bombers	17
MAKING AMERICA'S SKY WARRIORS	
The Flying Training Command -- <i>By Maj. Gen. Barton K. Yount</i>	19
THE AUSTRALIAN FRONT	
Panorama view of a new battlefield -- <i>By Oliver Townsend</i>	21
ENGINEERS WITH THE ARMY AIR FORCES	
Builders of airdromes -- <i>By Brig. Gen. Stuart C. Godfrey</i>	23
POLISH PILOTS STILL SCRAPPING	
Daredevils of the Royal Air Force -- <i>By Lt. Robert B. Hotz</i>	27
REFLECTIONS OF A BOMBER PILOT	
Night bombing over western Europe -- <i>By Flight Lt. G.L. Chesire, RAF</i> . .	31
FIGHTING FILIPINOS OF THE AIR	
Island pilots win their "spurs" -- <i>By Major Falk Harmel</i>	33
GLIDERS PLAY IMPORTANT ROLE IN AAF WAR PLANS	
Motorless attack and transport -- <i>By Lewin B. Barringer</i>	35
BARKSDALE-NEVER A DULL MOMENT	
Typifies Air Forces Expansion -- <i>By Lt. John H. Cheatwood</i> . . .	39
HIGH ALTITUDE FLYING	
MAN IN THE STRATOSPHERE	
The human angle at 40,000 feet -- <i>By Col. David N.W. Grant</i>	43
WAR IS CLIMBING	
What's going on "upstairs" -- <i>By Capt. Nathaniel F. Silsbee</i>	47
PERFORMANCE AT NEW HEIGHTS	
Cold Chamber Testing at Wright Field.	49

Art Work By James T. Rawls

PHOTO SOURCES: Rudy Arnold Photos, pp 3,41; Flight Magazine, p 11; Douglas Aircraft Co., p 17; Life Magazine, pp 26,33; and official U.S. Army Air Forces photos.

S E C U R I T Y

SURPRISE IS A WEAPON AND MUST BE PROTECTED AS A WEAPON. IT IS DEPENDENT UPON CONCEALED PLANNING AND CONCEALED ACTION, FOR WITHOUT SECRECY SURPRISE IS NOT POSSIBLE. BETRAYED SECRECY CAN DESTROY MEN AND PLANES JUST AS SURELY AS A BOMB CAN DESTROY THEM.

EVERY MAN IN THE AIR FORCES HAS SOME INFORMATION THAT IS DESIRED BY THE ENEMY. CASUAL BITS OF INFORMATION MAY IN THEMSELVES APPEAR HARMLESS, BUT WHEN PUT TOGETHER THEY CAN FORM AN EXTREMELY IMPORTANT PATTERN. THERE IS NO REASON FOR NARROWING DOWN THE SPY'S MARGIN OF GUESSWORK.

THE PUBLIC IS AND SHOULD BE INTERESTED IN LEARNING ALL IT CAN ABOUT THE AIR FORCES. A SPECIAL UNIT OF THE AIR FORCES EXISTS FOR TELLING THE PUBLIC ALL THAT IS DESIRABLE AND SAFE FOR IT TO KNOW. IT IS NOT THE DUTY OF OFFICERS AND MEN UNAFFILIATED WITH THAT UNIT TO ACT IN A PUBLIC RELATIONS CAPACITY, EXCEPT WHEN SPECIFICALLY ORDERED TO DO SO.

MILITARY INFORMATION WHICH IN ANY WAY MAY BE OF VALUE TO THE ENEMY SHOULD BE DISCUSSED WITH ANOTHER MEMBER OF THE AIR FORCES ONLY WHEN HE IS ENTITLED TO RECEIVE IT AND REQUIRES IT FOR THE PERFORMANCE OF DUTY.

THE WEAPON OF SURPRISE MUST BE GUARDED AS JEALOUSLY AS WE GUARD THE BOMBSIGHT. WE CANNOT AFFORD TO LEAVE WORDS ON THE GROUND THAT MAY TAKE OUR PLANES OUT OF THE AIR.



R. L. WALSH,
Colonel, Air Corps,
Assistant Chief of the Air Staff, A-2.



Safari on Wings

By Major Geoffrey Bonnell

Air Force Ferry Command



FOUR months with the Ferry Command in Africa and the Middle East shows you how much of this war has to be won on the ground before it can be won in the air.

Service and supply are the heart of the Command.

Ferry pilots and flight crews are doing a great job, but every flyer knows that the backbone of the show is on the ground, in the hands of the maintenance men and mechanics who service the planes in a mess of sand and heat all the way along the line.

And before warplanes are ferried in quantity to the Far East, African natives carry tons of foundation rock for runways, and hundreds of camels carry fuel for engines. Camels and natives are in the thick of it over there.

The ground is being won. Airdromes are building up, supplies are coming in, and communications are much improved since we set up the first Ferry Command base in the Middle East last winter. At the moment I am some 9,000 flying miles away but only a few days out from my base, and I know that the ships are being pushed through as fast as possible. But it is one thing to talk about fighting an air war thousands of miles from home and another thing to do it. A lot of angles enter in when you start close to scratch.

There were service stations across Africa when we started, but they were British stations used only for ferrying single engine ships. The British shuttled the fighters on short hops in squadrons. The bulk of their bombers had to be based on the Isles to carry the war to Germany, so the British weren't ferrying big planes, and had no need for large airdromes.

We could use the British stations for forced landings, but to push across the four-motored jobs you need airdromes with plenty of length to the runways. You need room to get heavily loaded ships off the ground, and with all that weight they will run a long distance after alighting. We use the brakes as little as

possible to save the linings.

Existing runways had to be made longer and their foundations strengthened. New runways and foundations had to be built. For this work natives are used. I have seen hundreds of half-naked African natives carrying crushed foundation stone in buckets balanced on their heads.

Desert sand has a habit of seeping into your engines while your ship is being warmed up, so concrete platforms had to be built. We use the engines as little as possible on the ground. When the sand is blowing you have to watch your fuel. Sand doesn't add octane to gasoline. Neither does the tropical sun.

Planning ahead for fuel is one of our biggest tasks, and the oil companies engaged in the work have done a splendid job in filling our needs. Fueling was done entirely from tin cans when we started. We travel light on fuel, carrying just enough for each trip, and we plan it carefully. Save on fuel and you gain on cargo space. And cargo space is gold when it holds tools and spare parts.

At one desert airdrome they had to employ a thousand camels in addition to desert trucks to keep up with the increasing demand for fuel. Each of the big lumbering animals brought in 35 gallons of fuel in cans. Supplying fuel by camel, you have to figure on something like a 25 per cent loss; camels are high off the ground and many cans break when the natives unload. But the camels kept the ships flying on.

Servicing is important enough for us to build our flight schedules around it. Long hops, for

instance, are made principally at night. We time them for dawn arrivals, allowing ground crews as many daylight hours as possible for repair work.

You use a minimum of signals to keep the enemy from getting in on the party. This means that your radio is used sparingly, and that navigation is usually celestial. We started out with French maps on the desert, but they offered few landmarks, many of those misplaced. We have our own maps now.



Major Bonnell was one of the first Ferry Command staff officers in the Middle East, from which he has just returned. A veteran in aviation, he flew with the first English scout squadron to leave for France in the last war, and later joined the American Army and flew with the famous First Pursuit Group. After the war Major Bonnell organized the Florida-West Indies Airway, called the first airline to carry U.S. mail to a foreign port. He spent 20 years on Wall Street before rejoining the Air Forces in July, 1941.

Adequate communications develop only after an organization has passed through its early stages, particularly in the type of country we are working. The communications network is getting smoothed out, but I've seen the day when the message carrying your departure time reached your objective after you got there. Signal changes are a necessity; keeping up with the changes is a job in itself. It pays to be ready with the right answers. Mistakes in signalling may mean anti-aircraft fire.

The African landscape doesn't have a reputation for carpets, so it isn't ideal country for forced landings. Flying miles of jungle 50 feet up, I've seen a natural zoo, with lions, elephants, antelopes and all the main attractions. We actually had a lion greet us after one landing, but it was at an airdrome and the lion was a cub, a pet of one of the boys. The lion ran around the airdrome like a dog. I really felt sorry for him, because everyone wanted their pictures taken holding him in their arms.

Operating a ferrying service over desert and jungle has a thousand side shows, and a thousand problems. Sabotage, for instance, is always a threat. It forces you to double check every detail before a take-off, even though everything has functioned perfectly on the last leg of the trip. No matter how strange or difficult the problem, each man pitches in to solve it. The personnel is top rate.

Having served with the RAF in the last war and knowing how they had built up an air force to function in all parts of the world without established bases or the proper equipment, I got a great kick out of our first formation of heavy bombers to come in at a British airdrome. They arrived in perfect formation and after landing the crews carried on like veterans.

Our officers and men get along famously with RAF personnel, with whom we are housed and messed. Mess halls are like trading posts, where cigarettes, pith helmets, shorts and the like are continually being swapped. Captured Italian and German revolvers and field glasses bring large trades.

The British fix up comfortable living quarters and mess halls, and there is a good table all along the way. But the coffee is bad; if you're coming, bring your own. We are very careful about food and water, and either you lay off food which doctors advise against or you get Gippy Tummy (a form of dysentery). Each plane carries enough water for the trip; at the hotels we drink bottle water. And it pays to personally see to it that your table utensils are clean.

Actually, the little things count most over there. Food, rest and a change of clothes are the necessities, especially on long ferrying flights. There is a lot of psychology tied up in it. Day in and day out a man can do a better job when he is shaved and clean and smart looking. It is up to the captain of each plane to see that his crew is neat appearing.

We wear summer uniforms, topped by pith helmets in which the boys all want their pictures taken, and we are fast adopting shorts. Not that it is hot—a mere 120 degrees when I left. But you get a dry heat over there and it does cool off at night. The heat doesn't seem to affect the engines, but it can affect the men, and keeping fit is important. High boots are issued on reaching the coast as a protection against mosquitoes; we sleep under nets. Some of those bugs seem as big as the planes we flew in the last war.

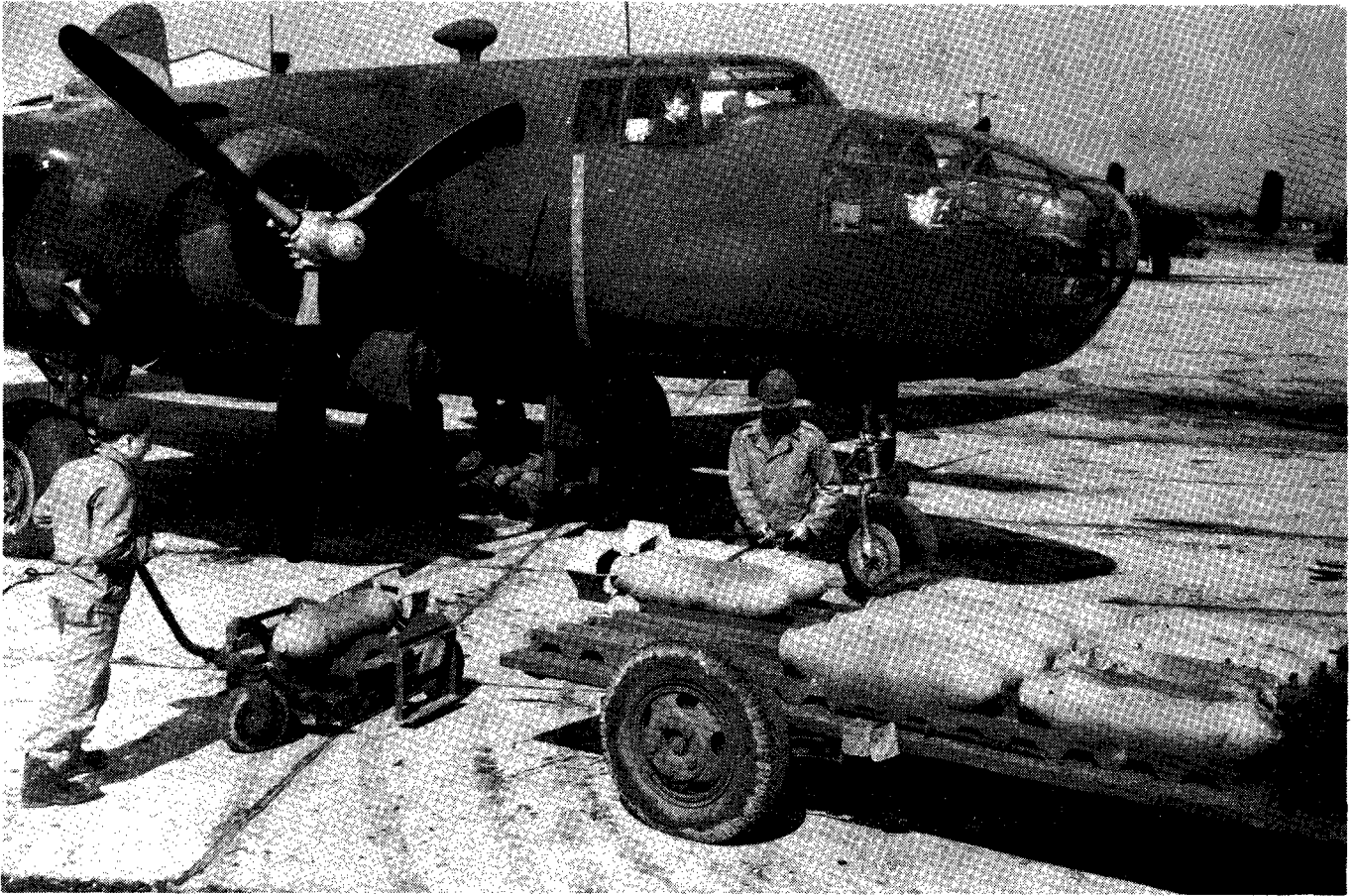
Much of the pioneering has been done, but it is as great a show as ever and we are all proud to take part in it. When you're a thousand miles from nowhere it means something to have your crews thinking and working as teams. That is half the battle. The esprit de corps is doing a lot to push the planes up front.

NEW OFFICERS' SCHOOL

AIR Forces enlisted men are now eligible to become commissioned officers for administrative posts, and an Officers Candidate School has been established for this training at Miami Beach, Fla. Also eligible for the school are Air Forces Warrant Officers and Aviation Cadets recommended by their school commandants.

The men accepted will be trained for administrative duties such as squadron adjutants, and mess, supply and transportation officers. Upon satisfactory completion of the 12 weeks course, graduates will be commissioned Second Lieutenants in the Army of the United States and assigned to units of the Army Air Forces.

Applicants must have passed their 18th birthdays and not have reached their 36th birthday on the day of completion of the course for which they are selected. Other requirements include United States citizenship, a score of 110 or higher in the Army General Classification test, and three months of military service immediately preceding the date of enrollment, or a minimum of six months cumulative service within the 12 month period immediately preceding the date of enrollment. Men interested in enrolling in the school are instructed to apply to their Commanding Officer.



Hunting For Tin Fish

By Capt. Lynn Farnol

First Air Force

AS far back as the early 1930's the Army included off-shore patrolling in maneuvers, using Martin B-10s to sweep the Pacific for imaginary invaders; similar exercises were carried on by the Second Bombardment Wing at Langley Field.

Army flyers hunt real prey now. They seek "tin fish" off the coastlines of two oceans and the Gulf of Mexico. Hunting enemy submarines is exacting work. Day in and day out it is routine, but a routine flight can suddenly become alive, as happened recently on an off-shore patrol operating from an Air Force base on the Atlantic coast. Let's follow that flight.

The story really begins at various points in the country from seven months to a year before, at Kelly Field where the pilot was trained, at Barksdale with the bombardier, in Florida with the navigator, and with the training of the co-pilot, radio-man and gunner. On patrol duty the crew does not include an engineer. Each member can handle a machine gun. On this flight the gunner also mans the camera.

At a "brief" held shortly before take-off the squadron commander sketches the route of the

patrol on a green hydrographic chart while the crewmen stuff themselves into heavy sheepskin flying clothes. An Army "jeep" takes them to their B-25 in battle paint. A gasoline trailer and several ammunition trucks are moving away from the plane as they arrive. The crewmen stand in front of the ship while the engineer gives the Twin Wrights a final check. He makes the pre-flight—checking the gas tanks, manifold pressure, oil temperature, vertical and horizontal controls, and tachometer. The others wait while the pilot-commander holds a hurried conference with the radio-man to check over the call letters for the day—special daily signals to the base in case of emergency.

Radio-man and gunner climb into the tail. Pilot, co-pilot, navigator and bombardier go up front. The pilot takes the controls. There is a powerful roar, and the plane taxis across the field.

Up over the treetops, and over the surf, and each man is at his post, from the bombardier in the nose to the gunner in the tail. The intercom links them together. Eyes strain in every

(Continued on Page 29)



COL. EUGENE L. EUBANK



LT. COL. CALEB V. HAYNES



CAPT. DONALD KEISER



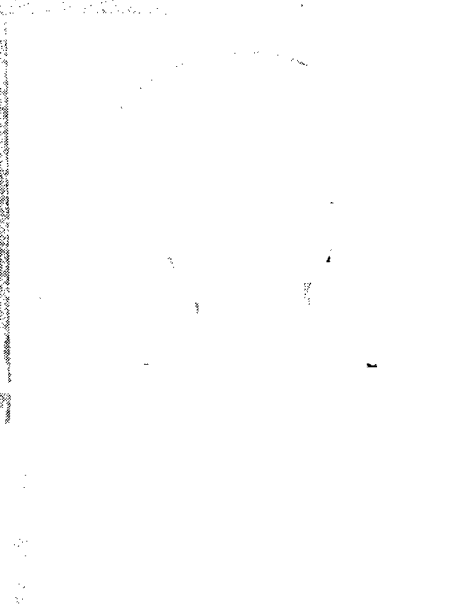
CAPT. CARLOS COCHRANE



MAJOR CURTIS LE MAY



CAPT. JAMES CONNALLY



CAPT. HEWITT T. WHEELLESS



SGT. ADOLPH CATTARIUS

HONOR ROLL



DISTINGUISHED SERVICE CROSS



LIEUT. COL. STANLEY K. ROBINSON-for leading a group of 17 bombers against enemy transports in the Philippines sinking one, hitting another and damaging an enemy cruiser. The award was made posthumously after he failed to return from recent bombing operations.

MAJOR LUTHER C. HEIDGER-for administering first aid to wounded and consequently saving many lives during an attack by 150 Japanese planes on a Philippines air field. Major Heidger is a medical officer attached to the Air Corps.

CAPT. ALVIN J. MUELLER-for participating in a bombing attack on a Japanese airdrome in the Philippines. His plane was twice hit by anti-aircraft fire and attacked by 10 Jap fighters. He maintained his place in formation and protected the formation leader's plane fighting off attacks for 20 minutes. Captain Mueller landed his plane despite damaged controls. It had been hit in more than 100 places.

CAPT. JAMES CONNALLY-for successfully completing a hazardous mission during which he destroyed a 15,500 ton Japanese transport and then evacuated 25 badly needed AAF pilots. The mission was completed under adverse weather conditions.

CAPT. DONALD KEISER-for extraordinary achievement during an attack on enemy shipping resulting in a direct hit on a Japanese cruiser. He returned to his base through an equatorial storm.

CAPT. WALTER R. FORD-for commanding a B-17 that attacked enemy warships. He insisted on going with his ship although he had malaria. He flew 1,500 miles, directed operations and returned safely although near collapse.

CAPT. FRED T. CUMMINGS-for attempting to salvage his plane from a burning hanger during an air raid on a Philippines air field on December 8. He succeeded in taxiing the machine outside the hangar but Japanese dive bombers spotted him and machine gunned him blasting the plane to bits and wounding Captain Cummings in the head and arms.

CAPT. HEWITT T. WHELESS-for fighting off 18 enemy pursuit planes for 25 minutes and safely returning to his base with a damaged motor.

STAFF SGT. JOSEPH L. LOCKHARD-for voluntarily remaining on duty in charge of an anti-aircraft detector unit on the Island of Oahu, December 7 and detecting the approach of unidentified aircraft which proved to be the Japanese planes which raided Pearl Harbor. Sergeant Lockhard detected the planes at 7:02 a.m. approximately 132 miles off Oahu. After re-checking the distance and azimuth Sergeant Lockhard reported to the duty officer and furnished him with complete particulars of his findings. Subsequent investigations have proved conclusively that the planes reported by Sergeant Lockhard were the large Japanese air force that attacked the Island of Oahu at approximately 7:55 a.m. The service of Sergeant Lockhard was also noted in the report of the Roberts board investigating the Pearl Harbor attack. Sergeant Lockhard was promoted from a private in recognition of his services and is now attending an officers training school in the United States.

MASTER SGT. LOUIS SILVA-for manning a side gun on the leading plane of a bomber squadron attacking Japanese shipping. Silva destroyed at least three of an attacking Jap pursuit squadron.

PURPLE HEART AND SILVER STAR



COL. EUGENE L. EUBANK-for successfully dispersing and protecting his squadron's planes during a Japanese raid on a Philippines air base. Col. Eubank was previously awarded the Distinguished Flying Cross for leading a flight of B-17s from San Francisco to the Philippines shortly before the outbreak of war.

A GROUP OF GUNNERS on one B-17 were awarded Silver Stars for "gallantry in action" during which they manned their guns in a badly hit and burning B-17. All the gunners were wounded but the mission was successfully completed and the damaged plane landed. Another B-17 gunner was awarded the Silver Star for sticking to his post after receiving a shattering wound above his left knee. He fought off three attacks after being wounded and remained at his post firing until he collapsed from lack of blood. Unfortunately due to disrupted cable facilities the names of these gunners are not yet available.

DISTINGUISHED FLYING CROSS



LIEUT. COL. CALEB V. HAYNES, pilot; Major Curtis Le May, co-pilot; Capt. Carlos Cochrane, navigator; Master Sgt. Adolph Cattarius, flight engineer; Tech. Sgt. Richard E. Martin, engineer; and Master Sgt. James E. Sands, radio operator--for "heroism and extraordinary achievement in successfully pioneering ocean airplanes and amassing extensive information on trans-oceanic flying by landplanes". These officers and men comprised the crew of a B-24 which flew a 26,000 mile survey flight to Asia and return. Lieut. Colonel Haynes was awarded an Oak Leaf Cluster to the Cross having won the award previously for piloting the B-15 to Santiago, Chile and return carrying Red Cross Supplies to earthquake victims.

Physical Training in the Army Air Forces

By Maj. Gen. Walter R. Weaver

Chief, Air Force Technical Training Command

IF it is true that an army travels on its stomach, it is just as true that an air force flies and fights on the stamina, coordination and competitive spirit of the men who man its planes. This is the fundamental principle upon which the United States Army Air Corps physical training program is founded.

It is obvious that it takes more than good physical condition to make a combat crewman. Intelligence, skill and natural aptitude are all demanded. But it is equally obvious that no one who is not in first-rate physical condition can expect to have the endurance, the lightning coordination and the will-to-win necessary in modern warfare.

The latest fighter plane is little better than useless in the hands of a flyer who fails in the pinch because he doesn't measure up physically. The heroes of our Air Forces in the Pacific war zone are the men who are hanging on and on-doggedly—in the face of numerically superior opposition, and who remain clear-headed and alert against the enemy.

This is the kind of man the Air Forces need, and this is the kind of man Air Corps physical directors are striving to produce.

System Is Scientific

Our directors are going about it in a progressive, scientific way. Soon after first reporting for flight training, each aviation cadet is analyzed physically from the standpoint of the job he will be called upon to do after his training is over. After he is "sized up", exercises are provided which will correct his deficiencies and develop his strong points until he has achieved maximum physical efficiency for his type. These he must perform in a daily class period of at least one hour in length.

The job of the physical training director is not easy. He must take young men familiar with an unregulated life and prepare them for a strictly-regulated military existence. He must take "soft" bodies and harden them for the strain of modern combat flying. He must take awkward muscles and develop control and coordi-



Major General Walter R. Weaver

nation. From all kinds of backgrounds, from all types of environments, men come to Air Corps Reception Centers. These men must all be developed to meet uniformly high physical standards before they are permitted to fly for the Army. The Air Forces need and are building a modern, progressive physical training program.

No effort is made to standardize the physical development or aptitudes of all Air Forces personnel. The fact that there are many different types of physiques is recognized. The objective of the program is not to try to change these, but merely to classify each individual according to his body characteristics, and then condition and develop him to the point where his natural abilities are permitted to "bloom".

Tumbling Is Effective

It is the aim of the program not only to build up each individual to his maximum physical efficiency, but also to keep him that way. In order to take care of the building-up process, exercises designed to condition and harden the cadet are emphasized during the early part of his training. At this point special emphasis is

placed on tumbling, which not only builds muscles and develops coordination, but also teaches the student how to roll on the ground during a rough parachute landing.

Another form of exercise designed to develop balance and coordination is a kind of precision hop-scotch which must be executed with great accuracy and timing on a mat laid out in black and white squares. Still another is the "wand drill", in which cadets are taught timing and coordination by manipulating wooden staffs in unison. Music is often added to increase the sense of smoothness and relaxation of muscles necessary at the controls of an airplane.

Among the muscles brought into play most in piloting a plane are those of the abdomen, neck and back. These all receive special attention during the earlier phases of the Air Corps training program.

Later, as the cadet becomes conditioned, the time devoted to calisthenics and gymnastics is gradually reduced, and individual and group athletics substituted. These include games which can be used all through life for keeping in good physical condition. Some of the most common of these are tennis, handball, squash, wrestling, swimming, badminton, bowling, fencing and volleyball.

Before being used each sport is analyzed thoroughly to determine its demands on nerve control, its influence on blood pressure and respiration, the physical characteristics it cultivates and the muscles it develops before it is incorporated in the Air Corps program.

Sports which might seriously injure the cadet and incapacitate him as far as flight training is concerned, such as boxing, football and baseball, are not given. Other games, including softball and golf, are not used to any great extent because of their "inefficient" periods of inactivity.

The physical training program is continuous all through the Air Corps flying course. It is not limited to any one phase, such as primary or basic, and it does not have to stop and start over again every time a student changes schools.

When a new cadet reports to a Reception Center a physical record is begun which continues as long as he is a flying officer of the Air Forces. This record follows him from school to school, and even out into combat units. Continuous tab is kept on the physical condition of all Air Forces flying personnel by means of a standard physical efficiency and achievement test. This test, given periodically, measures

each man's physical condition and shows him exactly where he stands in relation to his own highest state of physical fitness, and his relative status among the men of his organization.

Rating System Being Developed

The form of the achievement test has not yet been crystallized. At present there are a number of exercises which are being used with some degree of success. These include a standing broad jump, a high jump, a "chinning" exercise and a running test where the individual's time in covering distances of 50 and 150 feet is measured. Constant experimentation is going on in an effort to weld these many tests into a standard physical rating system. When this is accomplished it will be possible to keep a check on the fitness of all Air Forces flying personnel.

So that the beneficial effects of the scientific training given to aviation cadets is not wasted, a staff of physical instructors has been employed for the Air Force Combat Command. It is the job of these men to administer the periodic physical fitness test, and to see that flyers exercise often enough and wisely enough to keep in condition.

Under this program a physical director has been provided for Air Force Combat Command Headquarters, one for each Air Force, and one for each of the larger combat units. These men will be not so much physical instructors as advisers.

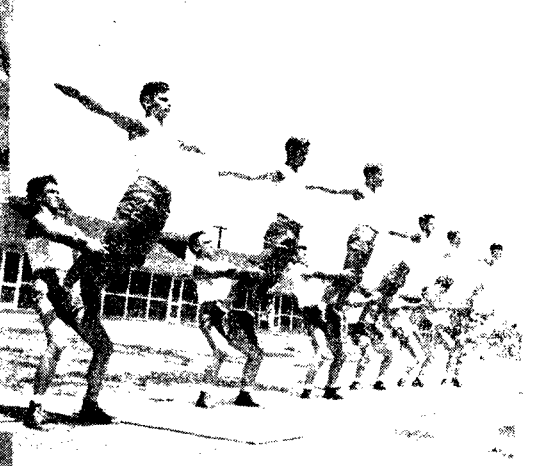
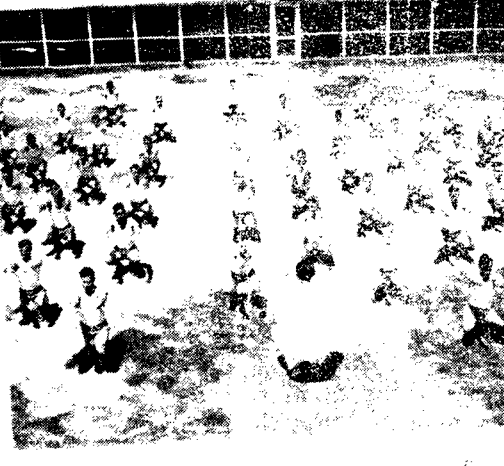
There is a negative value to the new development program as well as a positive one. This is the ability to predict through physical tests who will succeed and who will not succeed in pilot training. Experimentation is still going on along these lines, and no definite plan has so far been adopted.

One method, however, has shown a high degree of accuracy, in preliminary tests. The plan, which was discovered by James L. Livingston, one of the Air Corps physical training Assistant Directors, is built upon the natural and cross coordination necessary in piloting an airplane.

Cross Coordination Difficult

Walking with the right arm swinging in conjunction with the left leg is a sample of natural coordination. Cross coordination involves moving the right arm in unison with the right leg and the left arm in coordination with the left leg. Such movements do not come natural to the human body and require concentration or an artificially developed skill in order to perform.

(Continued on Page 10)



Basing his research upon the many natural and cross coordinating movements pilots are called upon to execute, Mr. Livingston developed three groups of exercises to measure physical aptitude for flying. These have been given to a cross-section of cadets during a preliminary test period—mixed in secretly with the other calisthenics flying students are now required to take at Replacement Centers.

All cadets who could execute these exercises correctly by the end of the first class period were graded "A". Those who could execute them at the end of the second class period were graded "B", and those who needed three periods were graded "C". All who took more than three periods to master the exercises were given a grade of "D". Cadets falling in the "D" classification, it was predicted, would not prove to be satisfactory pilot material. In the tests so far conducted the system has proved to be 88 percent accurate.

Another exercise test for pre-determining pilot failures is the modified Burpee test. In this exercise the subject throws himself from a standing to a horizontal "leaning rest" position and then leaps back to his feet again. Normal pilot candidates can accomplish this feat from 15 to 20 times in 30 seconds. Trainers figure that candidates who can perform this stunt only seven times or less in the prescribed time stand a good chance of being eliminated from flying school. Tests so far have shown them to be right 83 percent of the time.

If these and other physical aptitude tests stand up in subsequent trials throughout pilot training centers as convincingly as they have so far, they may prove invaluable in helping to determine the type of training aviation cadets should receive.

Predictions Made Early

If this could be done it would save the Air Corps a large amount of time and money. One of the most attractive features of the physical aptitude test is the fact that all predictions are made within the first week after the cadet reports for training.

Recognition by the Air Corps of the need for a progressive system of physical training for aviation cadets culminated in instructions being issued for the present program as far back as January, 1941. These instructions, issued from Air Corps headquarters, made a one-hour per day physical program compulsory for all aviation cadets, and provided for at least one physical instructor for each school and training center.

The selection of personnel to run this vast program was begun in February, 1941. Directors of physical training for the Army Air Forces and Units of the Command were appointed and placed in key coordinating positions in Washington. These included James E. Pixlee, former Director of Physical Education and Assistant to the President, George Washington University, appointed Physical Training Director for the Army Air Forces; and Birch Bayh, former physical and athletic education director of the Washington, D.C. City School System, appointed Physical Training Director for the Air Force Combat Command. In addition, each Air Corps flying training center and the Air Corps Technical Training Command selected directors to administer programs locally.

Chose Qualified Personnel

While the Director of Physical Training for the Air Forces was busy preparing a general guide for use in all Air Corps flying schools, the physical training directors of each flying training center were selecting the personnel who would serve as instructors. No one was even considered who did not have a college degree with a major in physical education, and at least one year's graduate study or three years of practical experience.

Always kept in mind in considering applicants was the difference between a purely athletic and a physical education background. The Air Corps decided at an early stage that no candidate was wanted who did not understand that it takes more than just muscular development and skill in a certain game to make an expert combat crewman.

After he was hired, but before any work was begun, each new instructor was given a six-weeks' training course in which he learned how to drill like a cadet, give orders like an officer, and generally become orientated to a military environment.

Then came conferences—days of them—in which each man was invited to contribute his ideas to the creation of the most advanced plan possible. Conferences were necessary, for these men were working in a field virtually without precedent.

Before they met there was no specialized physical training program for Air Corps personnel. Those instructions that did exist were included in the Army Field Manual on physical education, prepared with an eye primarily to the conditioning of soldiers for hand-to-hand fighting. As a result of this lack of a specific program, some

(Continued on Page 51)

Torpedoes Sprout Wings

By Lieut. F. J. Novitski, U. S. N.

COUPLING of the airplane and the torpedo has produced one of modern warfare's most deadly instruments of destruction.

The torpedo plane's victory record in the present conflict is impressive—three Italian battleships at Taranto; the Bismarck brought to bay so an English cruiser could finally torpedo her after battleships had fruitlessly poured heavy caliber shells into her drifting hulk; the Repulse and Prince of Wales sunk in a few hours by torpedo planes, and a score of Italian and British cruisers and transports sunk or damaged in the Mediterranean. And let us not forget Pearl Harbor.

The British aircraft Carrier *Illustrious* took a three hour pasting from a swarm of Junkers dive bombers one afternoon in the Mediterranean. Seven 2,000 pound bombs hit her flight and hangar decks but she steamed into Malta, stayed long enough to sustain another bombing attack and then steamed across the Atlantic for overhaul. The aircraft carrier *Ark Royal*, practically a sister ship, took one torpedo in her belly and went to the bottom.

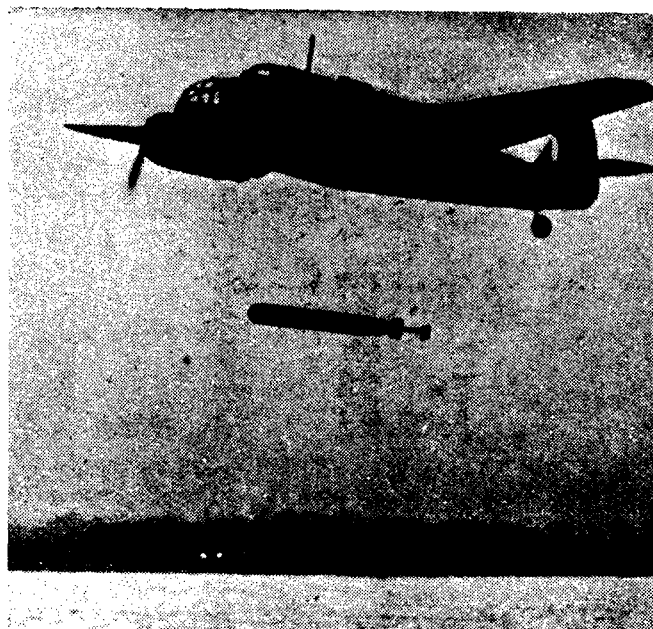
Clearly, the torpedo is this war's prime offensive weapon of the sea. An unofficial compilation of naval communiques indicates that a majority of warships of all nations sunk in the war have been destroyed by torpedoes.

What is a torpedo? Why is it so effective? How is it used by planes?

The modern torpedo is a self-propelled, self-controlled underwater missile carrying a heavy explosive charge. In size, shape and weight it is much the same as the heavier aerial bombs. It consists of four main sections, the warhead, airflask, afterbody and tail. Once launched, it will travel long distances at high speed. It will find and hold a pre-set depth. It will maintain within a fraction of a degree the course upon which it was launched or it will start on that course and then turn through a pre-determined angle to add deceptiveness to its attack.

Hits Weakest Spots

The torpedo's victims usually suffer a fatal blow because the torpedo hits them where they are softest and where the force of the explosion is confined—below the waterline. No naval architect has yet been able to protect a warship's underbody as well as her decks and sides. The



RAF Beaufort Torpedo Plane

Bismarck and Prince of Wales were the last word in British and German naval design. But when torpedoes hit them they went down.

The warhead is the business end of the torpedo and its simplest major part. It consists of a thin reinforced steel or bronze shell loaded with as many hundreds of pounds of explosive as the power plant will propel. It also contains a detonator and a mechanism which renders the charge harmless until after the torpedo has run a few seconds on its course.

Behind the warhead is the airflask which carries a sufficient supply of air to support combustion. It is made of high alloy steel only thick enough to withstand a pressure of 200 atmospheres and the shocks of launching. The ends of the airflask are closed with steel bulkheads. In the rear end of the bulkhead a small section of reduced wall thickness is set aside to carry water and a few pints of fuel, usually alcohol.

The afterbody carries in it the organs, brains and the nervous system of the torpedo. In outward appearance the afterbody is a tapered steel shell decorated with a variety of apertures and attachments which are streamlined to its shape. Inside an array of pipes twist and turn to find their way around shafts, gears, valves and sundry odd shapes of brass, bronze, steel and monel. Each has its own important function.

When a torpedo is launched air is released from the airflask to the combustion pot. Some of the air is diverted to force fuel into the same combustion pot while still another stream of air strikes a cap on the igniter, which pro-

trudes into the combustion pot, causing the igniter to burn. The combustion pot thus has flame, air and a spray of fuel and a merry blaze ensues. The resultant gases are led through nozzles to two counter-rotating turbines mounted on concentric shafts. After imparting their energy to the turbine wheels, the gases pass out through the tail into the sea, making the characteristic wake of the torpedo. The turbine wheels drive two counter-rotating propellers which drive the torpedo through the water.

Simultaneously with this action, a shot of high pressure air has spun a small gyroscope which thereafter constantly indicates to the torpedo its correct course. Any off course wanderings actuate a small air engine which operates the vertical rudders of the torpedo. For control in the vertical plane there is a hydrostatic diaphragm which indicates the correct depth at which the torpedo should run and a pendulum which prevents too radical changes in depth which would result in diving and broaching. These control another tiny air engine connected to horizontal rudders. The tail mounts the vertical and horizontal stabilizing surfaces in addition to the rudders and propellers.

Such is the torpedo, certainly one of the most ingenious devices of destruction ever made and now vastly more effective through its employment by fast, far ranging planes.

Originated Here

The torpedo plane is already 31 years old although the public became aware of it only in 1940. Like so many other mediums of attack it was conceived and given early development in the United States, only to be first used effectively by another nation. Rear Admiral Bradley A. Fiske, U.S.N., is generally credited with being the inventor of the torpedo plane. In 1911 he succeeded in launching a torpedo from a seaplane flying over the Potomac River at the dizzy height of 15 feet. Subsequent developments both here and abroad have progressed to the point where torpedoes can now be launched from high speed planes at an altitude considerably in excess of 15 feet.

The torpedo plane can be used wherever the bomber can be used against floating targets, and, as already indicated, is vastly more effective against such targets than the bomber. However, it should be obvious from the description of the torpedo that it is a delicate instrument. This fact naturally limits the speed and height of drop, which in turn imposes limitations on the tactics of the torpedo plane. Torpedoes can

be loaded on wings, in the bomb bay or slung below the fuselage. The cockpit of a torpedo plane is equipped with a director for correctly aiming the torpedo.

The torpedo attack must be delivered from moderately low altitudes at extremely close range without using all the speed available in modern aircraft. The altitude must not be too low, or the splash from the dropped tin fish may fill the bomb bay and wreck the plane. On the other hand, if the altitude is too great the delicate mechanisms of the torpedo may be deranged by the drop. Speed must be limited for the same reason.

Approach Technique

The range must be close to insure accuracy and negate evasion tactics by the ships attacked. At the dropping point the torpedo plane must be in nearly normal flight position. If the plane were in a steep glide or dive the torpedo might nose over when it hits the water and run on a reverse course. Furthermore, the approach for the attack must cover several miles so that accurate observations can be taken. The approach must be flown under the same conditions as the main attack. There can be no long, fast swoop from high altitudes, no quick drop or speedy getaway.

It will not take pilots long to realize the risk involved in the combination of level flight at low altitude and comparatively slow speed over many miles of sea in view of the enemy. Torpedo plane pilots must have cold accuracy and a determination to close the range, must be impervious to danger. The torpedo plane presents a difficult target for enemy fighter planes because its low altitude makes diving attacks virtually impossible. If torpedo planes have their flanks covered by their own fighter screen they are virtually immune from other plane attacks. In breaking away the torpedo plane pilot's chief concern is flak fire from the ship he is attacking. Italian and Japanese pilots seem to prefer "hopping the quarterdeck"—opening their throttles in a speedy dash just over the decks of their ship victim. Other pilots prefer a sharp breakway turn and a speedy scoot just above the wave crests or between other ships if a formation is being attacked.

There need be no prescribed form for a torpedo plane attack on ships in port. Success depends mainly on surprise. For an attack on ships underway the customary formation is a wide ech-

(Continued on Page 46)

Air Service Command Supplies the World

By Maj. Gen. Henry J. F. Miller

Chief of the Air Service Command



STRETCHING across the length and breadth of the continental United States and reaching into the overseas possessions of this nation a huge organization is working constantly, day and night, to keep Army airplanes ready for action wherever they are needed. Membership of the organization is made up of thousands of civilians, men and women from all walks of life, all knuckling down to a vitally important task under the direction of military personnel. Their job is to repair and maintain all Army aircraft, and to do all the mechanical and clerical work incidental to the main task. Their organization is the Air Service Command of the United States Army Air Forces; their slogan, "We Keep 'Em Flying."

Many of these workers and their officers are engaged in the vital, specialized tasks of repairing damaged airplanes, overhauling and rebuilding aircraft engines, maintaining gauges, navigation instruments and radio equipment, all of which are important units in the modern Army airplanes.

The large volume of paper work required by the extensive operation of the Air Service Command is handled by thousands of civilian office workers, office managers, stenographers, typists, auditors, clerks and trained specialists in many different classifications—all under the direction of military personnel. Much of this work is carried on in offices at Wright Field, Dayton, Ohio, and much of it at the various Air Depots. The whole organization of the Air Service Command is directed from headquarters in Washington.

Duties of the Air Service Command were originally discharged by the former Maintenance Command, which was a branch of the Materiel Division of the Army Air Corps. Under Air Force regulations issued from Washington on October 17, 1941, (A.A.F. Regulations No.20-4) the Maintenance Command was inactivated and the Air Service Command was established immediately to take over the work of repairing and maintaining Army aircraft. Under the latest Army re-organization effective on March 9, 1942, the Air Service Command was placed on equal footing with seven other Commands.

The same regulations which announced the organization of the Air Service Command to supersede the Maintenance Command also announced the establishment of the First, Second, Third and Fourth Air Service Area Commands and the inclusion of the already-established 50th Transport Wing as component parts of the Air Service Command. Each one of the Air Service Area Commands corresponds to one of the Air Force Areas. Each one covers approximately one-fourth of the United States. Every continental Air Depot and sub-depot is included in one or another of these areas. Overseas depots are under the technical control of the Air Service Command.

There are now seven continental air depots, located in various sections of the United States. The addition of new depots from time to time will greatly increase the strength of the Air Service Command. Four new depots are already planned.

Seven Big Depots

Of the seven continental depots now existing, all but three control numerous sub-depots, and these three will be given the control of sub-depots to be activated in the future. Forty-seven sub-depots now come under the jurisdiction of the existing four continental control depots.

These four are: the Fairfield Air Depot at Patterson Field, Fairfield, Ohio, near Dayton; the Middletown Air Depot at Olmsted Field, Middletown, Pennsylvania; the San Antonio Air Depot at Duncan Field, San Antonio, Texas; the Sacramento Air Depot at McClellan Field, Sacramento, California.

The San Antonio Air Depot now controls 19 sub-depots in Texas, Louisiana, Colorado, Oklahoma, and Arizona. Fairfield controls 18 sub-depots in Alabama, Georgia, Florida, Illinois, Mississippi, and South Carolina. Nine sub-depots, in California, and Nevada are controlled by Sacramento. The Middletown Air Depot controls one sub-depot at Bolling Field, Anacostia, D.C.

The three continental depots which will be given the control of proposed sub-depots are Mobile at Brookley Field, Mobile, Alabama; Ogden at Hill Field, Ogden, Utah; and the Wellston Air Depot at Wellston, Georgia.

It is obvious that a staggering volume of work is required at headquarters and in the far-flung air depots and sub-depots in order that the life blood of the Air Forces may be kept flowing. In an operation so vitally connected with the efficient action of war planes and other Army aircraft, there are multitudes of details, involving myriad problems in engineering and mechanics, supply and transportation, personnel work, office management, and routine activity in mechanical and clerical jobs of almost every description. All this detail must be handled expertly. And in order that it may be so handled, the work must be divided and subdivided and assigned to well qualified specialists. The principal assignments thus made under the General Staff of the Air Service Command are those handled by the following offices: Engineering, Supply, Training and Operations, Personnel, and the 50th Transport Wing.

Actual maintenance of aircraft, equipment and supplies which are delivered to the Air Corps for use in peace or war is a part of the responsibility resting upon Staff Engineering for the Air Service Command. The Staff Engineering Officer is charged also with the formulation of plans and policies pertaining to the design and operation of engineering staffs of Air Corps Depots.

Specifically, the Staff Engineering Officer must supervise—in coordination with the Field Service Section and the Assistant Chief of the Air Service Command—the issuance of necessary instructions for the correction of major maintenance difficulties encountered in the field. Whenever the need arises for the change or improvement of existing policies applying to engineering and maintenance procedures, the Staff Engineering Officer must supervise the making of such changes and improvements, in coordination with the Inspection Section, Office of the Chief of the Air Corps. He must coordinate all special engineering projects and make recommendations on personnel matters concerning military and civilian personnel in the engineering activities of the Air Service Command. In making any recommendation on such personnel matters, he works in close coordination with the Assistant Chief of Staff—Personnel.

Depot Engineering Staffs perform maintenance work on United States Army and National Guard aircraft, aircraft engines, accessories, unit assemblies and auxiliary equipment.

These duties are carried out by an extensive organization of officers and civilian workers. The depot Engineering Superintendent is under the

direct command of a Chief Engineering Officer appointed by the Commanding Officer of the depot. Several Assistant Engineering Officers make up the military staff of the Chief Engineering Officer. One of these assistants is in charge of the Administrative Section; another, in charge of the Inspection Section; still another, in charge of the Flight Test Section; and one, in charge of the Radio Repair Section.

The civilian staff of the Engineering Officer consists of a general superintendent of aircraft shops, a superintendent of aircraft shops, a general foreman of Air Corps shops, principal clerk, principal draftsman, and senior stock tracer.

All sections of the Engineering Staff are divided into branches, and the branches are subdivided into units, each charged with its own specific duties and all welded together into one intricate organization.

One job essential for the smooth, efficient operation of the Air Service Command is the distribution of necessary supplies to depots. Equipment and materials ranging from office supplies to complete airplanes must be furnished whenever they are needed. The responsibility of planning the distribution of supplies and the administration of policies and procedure are functions of the staff officer in charge of Supply. The actual distribution and the storage of supplies are handled by the Supply Branch of the Field Service Section.

Among six main branches of the Field Service Section is the Supply Branch, in charge of the actual distribution, storage and issue of such supplies as spare parts and accessories for airplanes and aircraft engines, combat equipment and armament, miscellaneous aircraft equipment, fuel, lubricants, chemicals and paint, machinery, tools and metals, and many other supplies on the procurement list of the Air Corps.

All instructions, regulations and correspondence necessary for the proper execution of Supply activities are coordinated under the supervision of the Chief of the Supply Branch. He is in charge of the investigation of any serious difficulties encountered in the discharge of supply duties, and he recommends the remedial action that may be required. He supervises the supply activities of the depots, studies established practices and existing methods of issue and storage, with a view toward obtaining the maximum efficiency of the depot.

Many other details come under the supervision of the Chief of the Supply Branch and his assistants—such work as the maintenance of consolidated property records of all items and commod-

ities on the storage and issue list of the Air Corps, the disposition of any surplus or excess property in accordance with law and regulations, and the accomplishment of other work which is demanded by the necessity for close cooperation between Supply and the rest of the General Staff.

Field Service Important

Other branches of the Field Service Section are charged with the maintenance of Air Corps equipment and supplies; assignment of nomenclature to Air Corps articles; classification of supplies and equipment for storage and issue; initiation of engineering studies for the investigation of failures and defects in material or equipment, and the preparation of reports, required by higher authority, regarding remedial action necessary.

The Field Service Section also prepares tables of basic allowances, tables of allowances, weight and bulk tables, and similar data; prepares other data pertaining to war plans and special projects; prepares, stores and issues Technical Orders, instruction books and manuals; prepares annual budgets and administers funds made available to the Field Service Section; designs Air Corps technical buildings and reviews projects for repairs and alterations; maintains records of all aircraft, engines and equipment, showing the location and condition of the equipment and the flying time of every airplane and engine.

An extensive organization of main branches and units—some 30 branches and units in all—is needed to carry out the complete program of the Field Service Section. The main branches, in addition to Supply, are those in charge of maintenance, publications, communications, and armament.

Another important staff duty of the Air Service Command is discharged by its training and operations division, the organization which trains military and civilian personnel, prepares tables of organization for ASC service units, supervises the movement of service troops and the attachment of units for tactical operations.

Every facility is being used for the training of military and civilian personnel for service in overseas depots, continental air depots and sub-depots. With large numbers of Air Depot Groups being activated for the handling of second echelon maintenance wherever needed, civilian aviation schools are training military personnel in mechanical branches, under contract, and civilian specialists are working with Train-

ing and Operations in compiling instructional material and guides for the personnel of these groups.

Training is given in both classroom work and practical on-the-job experience, under the supervision of competent instructors. The Air Service Command maintains a system of promoting all workers who go through the training courses successfully.

Air shipment of supplies and assemblies needed by outlying stations are made by the 50th Transport Wing Headquarters, located at Wright Field. Activated in January, 1941, the Wing is responsible for the scheduling and operation of all inter-depot air freight movements. The Wing also furnishes transport airplanes and transport pilots to function with the training and activity of parachute troops and air-borne infantry.

Most of the inter-depot shipments are made up of new engines, propellers, and government-furnished equipment. In other shipments there are overhauled engines and supplies and reparable assemblies, transported from outlying stations to the repair depots.

There are nine squadrons in the 50th Transport Wing, all assigned to various depots. On the basis of miles flown and traffic moved, the 50th Transport Wing would rank fifth on the list of commercial airlines in this country.

All this effort—the efficient work of Engineering, Supply, Field Service, Training and Operations, Personnel, the 50th Transport Wing, and all the offices and units of the Air Service Command—adds up to the achievement of that one fundamental objective expressed in the slogan, "We Keep 'Em Flying."

The importance of this objective can not be over-emphasized in the present struggle. In the detailed work and routine of the various subdivisions of the Air Service Command the main objective must never be forgotten. Every unit, every individual is working together toward the achievement of one goal; and all, working together, will make a major contribution to winning the final victory.

Erik H. Nelson, pioneer Army Air Corps long-distance flyer and aircraft engine expert, who resigned from the Army in 1928 after a decade of service, during which he participated in a series of trail-blazing long-distance flights, climaxed by the Round the World Flight in 1924, returned to active duty with the Army Air Forces. He was commissioned a lieutenant-colonel and assigned to the Inspection Division.

Mae West is a Life-Saver TO THE RAF

WHEN screen actress Mae West heard recently that the Royal Air Force had named its life-saving jackets after her, she immediately wrote "the boys" a letter of gratitude for being chosen for such a "swell honour".

The "Mae Wests" are life-saving jackets used by the Coastal Patrol and other RAF crews in hops over water. They are similar to the U.S. Air Forces' life preserver, which is strapped on the flyer so it fits like a vest—with two inflatable compartments covering the chest. The jackets, which fill with carbon dioxide gas when a lever is pulled, have saved many lives by keeping aircrews afloat after forced landings in the sea.

Mae found out about the nick-name given the jackets when she read a newspaper item suggesting the name "Mae West" might soon get in the dictionary. In reply Mae whipped off a letter to the boys of the RAF. According to *See Emm*, a service publication of the British Air Ministry, her letter reads as follows:

DEAR BOYS OF THE RAF:

I have just seen that the RAF flyers have a life-saving jacket they call a "Mae West," because it bulges in all the "right places." Well, I consider it a swell honour to have such great guys wrapped up in you. know what I mean?

Yes, it's kind of a nice thought to be flying all over with brave men...even if I'm only there by proxy in the form of a life-saving jacket, or a life-saving jacket in my form.

I always thought that the best way to hold a man was in your arms--but I guess when you're up in the air a plane is safer. You've got to keep everything under control.

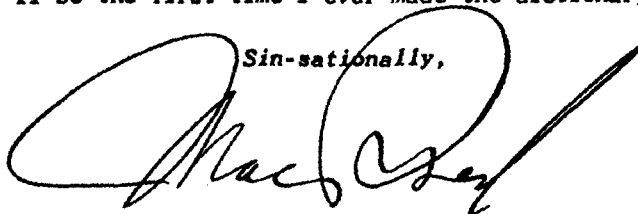
Yeah, the jacket idea is all right, and I can't imagine anything better than to bring you boys of the RAF soft and happy landings. But what I'd like to know about that life-saving jacket is--has it got dangerous curves and soft shapely shoulders?

You've heard of Helen of Troy, the dame with the face that launched a thousand ships...why not a shape that will stop thousands of tanks?

If I do get in the dictionary--where you say you want to put me--how will they describe me? As a warm and clinging life-saving garment worn by aviators? Or an aviator's jacket that supplies the woman's touch while the boys are flying around nights? How would you describe me, boys?

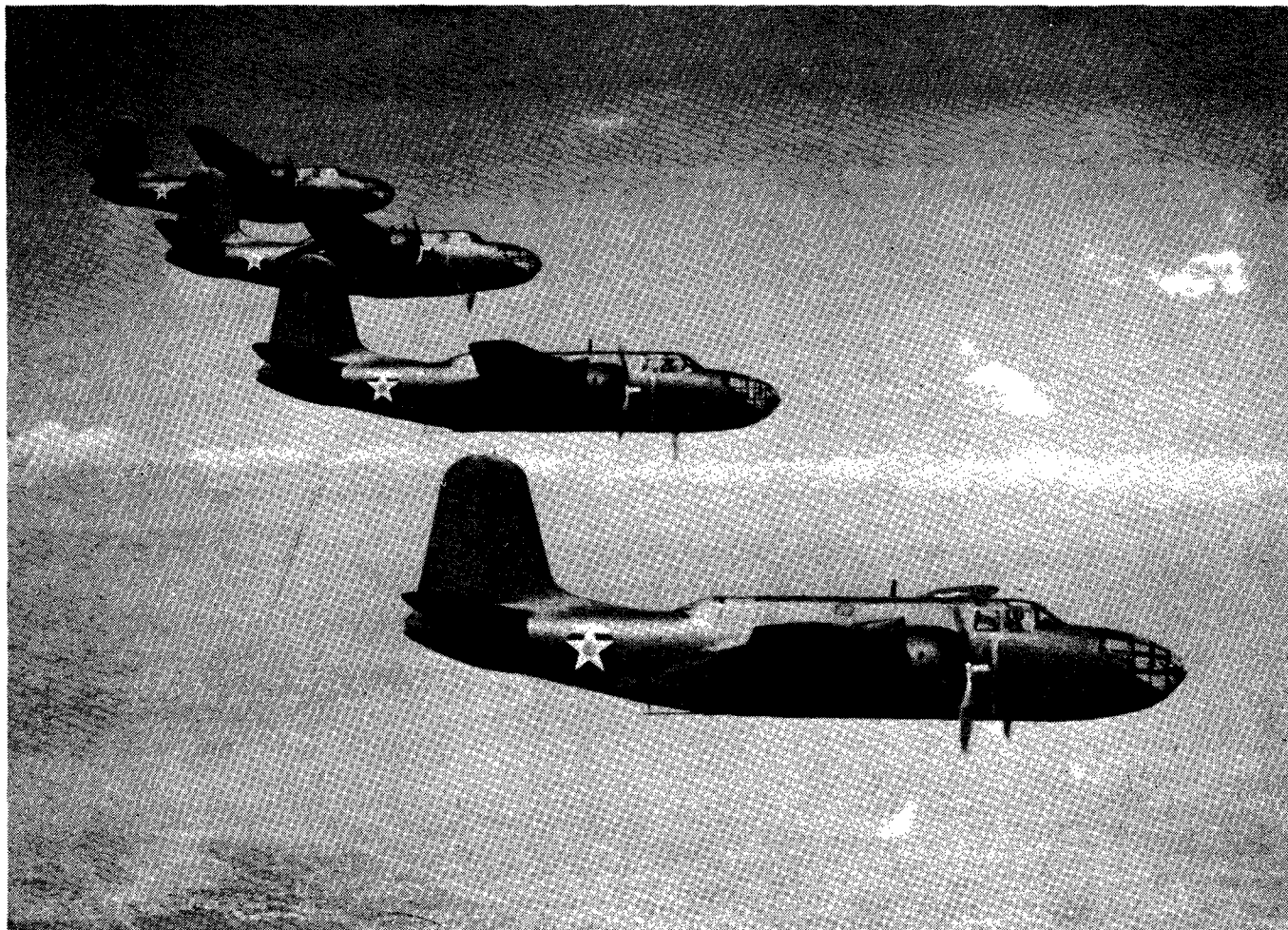
I've been in *Who's Who*, and I know what's what, but it'll be the first time I ever made the dictionary.

Sin-sationally,



Unwelcome Guests

They Catch 'Em With Their Flaps Down



ONE of the most successful fighter tactics of the air war to date has been the pursuit ship patrol over enemy bomber bases. The Germans and British have developed this tactic of "intrusion" to a high degree as a night fighter operation to attack long range night bombers returning to their bases after a foray over enemy territory and the Japanese have used it as a daylight maneuver to catch Allied heavy, high altitude bombers under unfavorable conditions during the "let down" to their fields.

When the fighter patrol attacks returning bombers in the vicinity of their bases the aggressor has several advantages. The bombers usually have an extremely limited amount of fuel left after completing their mission and their defensive maneuvering is limited accordingly. Crews of returning bombers are usually fatigued and not as alert as they approach their base and the all important element of surprise is usually found aiding the pursuits.

At night the element of surprise is even

greater and the hunting consequently better. In addition to the bombers shot down by the fighters' guns, there are often crashes caused by destruction of field lights, failure of bomber pilots to lower landing gear during the confusion of the surprise attack and bombers running out of gas during prolonged defensive maneuvers.

Both the English and the Germans favor a single, twin-engined night fighter for the attack on any given bomber base. The Germans use the Messerschmitt 110 and the English the American-built Havoc or DB-7 (American model A-20 series.) Both planes carry light bomb loads in addition to heavy armament.

The Havoc is an all metal monoplane powered by twin Wright Cyclone engines. It was originally built for the American Army Air Forces as the A-20 light attack bomber. The British ordered them in quantity during the early days of the war for the same use and dubbed them Bostons. When the heavy German day bombing attacks were shifted to a nocturnal schedule after the Battle

Over Britain, the Boston's were equipped as night fighters and called Havocs.

They carry a crew of three or four and are equipped with heavy armament, light bomb load and exhaust screens. For night operations the plane is painted dull black. In addition to their use as "intruders" the Havocs have been successful in knocking down night bombers over England. As the A-20 series they are still used by the AAF.

Patrol German Bases

Here is how the Havocs make life miserable for German night bomber crews. A lone Havoc patrols over each German bomber base from which night attacks are launched against England. They cruise around and above the flak range of air base defenses with motors throttled to conserve fuel. When German bombers return to land the Havocs open throttles and dive to the attack. Fatigue from the flak-filled trip over England and surprise frequently cause German pilots to land in a hurry with their wheels up or over or undershoot, piling up the bomber even if the Havoc's guns fail to damage the ship.

If the German guns his engines and tries to run, the Havoc closes the range and engages him until he lights out for another field. The Havoc then lets him go knowing that another Havoc waits over every field the bomber can make with the limited fuel left after a round trip to England. After several unsuccessful stabs at Havoc-infested fields, German bombers sometimes run out of fuel and crash in darkness.

"Just a piece of cake," is the way one Havoc pilot describes the operations. "We shoot at everything we can see, frequently getting two or three. The Jerries sometimes get so jumpy they start firing at each other."

Another pilot reported:

"When we approached an enemy airdrome in France we spotted eight aircraft circling around. We joined the circle and opened fire on one from about 30 yards. We hit his fuselage and saw sparks streaking from an engine. We gave him four more bursts in the port engine and he blew up. We recognized him as a Heinkel 111. In the brilliant orange flash just before he disintegrated. The other aircraft dispersed so we climbed into a cloud, bombed the airport and came home."

When the possibilities of machine gunning enemy planes are exhausted the Havocs drop their bombs on the airport aiming particularly at lighting installations. The object is to keep the field dark as long as possible and thereby

prevent the bombers from landing while they exhaust their fuel.

A sergeant pilot reported on this type of action:

"We had just about given up sighting the Hun. There seemed to be no aircraft in the sky. So we made a careful run in over the airdrome and dropped our bombs from 4,000 feet.

"Great fires sprang to life below. Our gunner was studying them through the lower hatch when, looking up, he saw a Nazi bomber smack on our tail its outline etched distinctly in the glow from the fires below. It was only 50 yards away and he let it have a burst full in the nose. The Hun returned our fire but his tracers passed below our tail. Then he dived and the gunner fired straight into his cabin. He crashed directly below, exploded and burst into flames. We could see the fires for 50 miles on the way home."

Smash 'Em On Ground

How the German bombers are smashed on the ground was described by a member of another Havoc crew.

"Our objective was an airdrome in Holland, well back from the coast. We reached it at 7,000 feet. The ground lights flashed on and two enemy aircraft landed. We were too high to attack. The lights went off and we waited. Five minutes later the lights came on again and an aircraft took off. Another was well along the runway when we came over him. We dropped our bombs in his path. His lights slewed up perpendicularly into the sky and he burst into flames."

A good night's work over enemy territory illustrating the versatility of the Havoc as an "intruder" is described in the following Pilot's report.

"We were assigned to patrol a Nazi airdrome in Holland. We broke out of scattered clouds over the airdrome to find the beacon flashing steadily. At 5,000 feet we saw a red cartridge coming up and the ground lights and flare path immediately lit up. When we got a little lower we could see the enemy aircraft getting ready to land and others circling to follow him in with their navigation lights on.

"One aircraft landed and taxied to a dispersal point before we could reach him. We got onto the next one at 500 feet. We could see our tracer go into him from 50 yards. His lights went out and he plunged straight down. While we were dealing with him with our forward guns, the

(Continued on Page 20)

Making America's Sky Warriors

By Maj. Gen. Barton K. Yount

Commanding General, Flying Training Command



THE course of events in Europe and more recently in the Pacific area has demonstrated conclusively that air power is apt to be the deciding factor in modern warfare. This year and next will bring on the great crisis. America must gain air supremacy now. The urgency of the need is a tremendous challenge to our rapidly expanding aircraft industry to strain every effort to produce the 60,000 military aircraft required by our Army and Navy during 1942. It is no less a challenge to our Air Forces to provide a huge pool of highly trained airmen to man these planes, as well as a vast army of technically trained maintenance and service crews.

To meet this challenge the Army Air Forces have recently set up a Flying Training Command to centralize the tremendous task of providing the flying personnel required for the expanded air program—a program superimposed on plans already expanded several times at a breath taking pace. To take our new warplanes into the air, a constant stream of bombardiers, navigators, pilots, and aerial gunners must also flow from our training centers.

Bottlenecks Are Eliminated

The Flying Training Command was created to bring all of the training centers under one unified control, eliminate bottlenecks, speed up the program, and add new facilities so that an ever enlarging supply of competent personnel may be sent to our combat commands. This must be done with all possible speed in order to make up American Air Forces wherever needed in the rapidly expanding world conflict.

At the present time the Flying Training Command is housed on the fifth floor of the Maritime Building, Washington, and the place is humming with activity. New sets of figures are being worked out to step into line with the total flying personnel required to meet the present goal of an Air Forces of a million men and with the possibility that this number may eventually reach two million. Figures are being coordinated with aircraft procurement schedules to ensure the proper proportions of combat pilots for fighter planes, two-engine and four-

engine bombers, bombardiers, navigators and gunners—all to synchronize with the delivery of the planes. Plans are being set up for operational training in which pilots will receive additional training and members of combat crews will learn to work together as a highly efficient teams.

Training courses are being revised to include the latest tactical lessons learned the hard way in the actual crucible of war in the air, including an increased emphasis on dive bombing, the use of aerial torpedoes and the employment of gliders. In cooperation with other divisions of the Air Forces, new sites, schools and necessary facilities are being arranged which eventually will more than double the present program.

Emphasis On Quality

Despite the unprecedented increase in our pilot training program—from about 500 per year in 1938 to 30,000 per year in 1942, plus substantial numbers from England for the RAF and smaller groups from Latin American countries and from China—we have kept our emphasis on quality. The acid test is combat against enemy air forces, and even in the short period since the active entrance of the United States into the conflict, American airmen have come through with flying colors, often against overwhelming odds. In many cases they have shot down hostile planes and reached objectives with their bombs on the very first trip aloft in enemy skies.

To enlarge the pool of available pilots the War Department has asked the Civil Aeronautics Administration to concentrate all CAA Pilot training in an all-out total war program. First priority in the training facilities of the CAA is to be given to the pilot training of students who can meet the revised requirements for appointment as Aviation Cadets in the Army Air Forces, and who are members of the Air Section of the enlisted Reserve Corps. After that the flight training is to be limited to students who, while unable to meet the requirements for appointment as Aviation Cadets, are otherwise qualified to pursue a course of flight training looking to the issuance of flying instructors'

licenses under regulations of the CAA, and who undertake in writing to contribute future effort in a field of aeronautics adapted to serve the national interest, directly or indirectly.

This means that a total of more than 500 CAA Pilot Training units in all parts of the country are now being definitely harnessed to our war effort. It is expected the CAA elementary flying training will be given to some 45,000 students this year, and that a large proportion of these will be carried on through the secondary stage, with considerable numbers taking cross-country, instrument and instructor flight training. To aid the constantly enlarging activities of the Air Force Ferrying Command, a special course will be given to approximately 1,000 pilots for this important field.

Even more striking than the zooming figures and activity in the pilot training is the strong emphasis we are placing on the other key members of the modern aircrew—the bombardier and the navigator. As recently as 1940 our facilities for this type of training were extremely limited, but now we are prepared to turn out these specialized flying officers in great numbers.

Need More Crews

In the same way, we are giving considerably more attention to the training of pilots for four-engine bombers. Within the past year or two the Air Forces' championing of the long-range multi-engine heavy bomber has been amply vindicated as a strategic weapon of the utmost value. The newest versions of our Boeing B-17 and Consolidated C-24, backbone of America's "heavy bomber program," already doubled twice and recently, doubled again, will require an increasing flow of pilots and combat crews working together as a team, and the Flying Training Command is giving this a high priority rating in its present schedule.

American air power is already beginning to influence the fighting on several fronts in the world-wide battle for freedom, and there have been many thrilling examples of how effective our flying training has been and how good our planes are in comparison with the best the enemy has to offer. Straining every effort, and all pulling together, we can look forward to the time, not so far off, when the air-fighting strength of our nation will be such in both quality and quantity, that the starred red, white and blue wing insignia of America's air might will be a sign of supremacy—a symbol of terror to our enemies and of victory to ourselves and our allies.

Their Flaps Are Down

(Continued from Page 18)

rear gunner hit another with the top gun. Climbing we saw a third plane coming toward us and got in several good bursts as he passed below.

"We got some altitude by then and saw another below and off to the port. We dived on him and gave it to him with our front guns. Another was just beyond so we continued our dive and sent him down from 500 feet. We had only begun to shoot at a sixth when the rear gunner called and asked us to lift the nose a bit. We did and he fired astern directly into the nose of Number 7. Number 7 went into a vertical dive at 600 feet and by the time he crashed we were a good four miles past the landing field.

"During this engagement only three enemy aircraft were seen to land intact and taxi off. We still had our bombs so we climbed a bit and dropped them at the point where the aircraft were seen to taxi off. The bombs burst on huts and buildings and started quite a fire. We went home without incident except for a few seconds in an enemy searchlight."

Another Havoc pilot reported an engagement with a Junker 88 over France:

"Our target was a French airdrome from which the Hun had been sending over bombers. We crossed the Somme and found the field without difficulty. As we circled down the ground lights flashed on and we saw a JU 88 gathering speed for a takeoff. His navigation lights went off as soon as he left the ground but we had him well spotted. We closed in behind him to a hundred yards and let him have three good bursts.

"His port engine and fuselage immediately caught fire and he made a steep diving turn to the starboard. Our rear gunner then caught the starboard engine and he crashed in flames 200 yards behind the airdrome boundary fence. Climbing to 3,000 feet we could see the German explode. Then we dropped our bombs and came home to breakfast."



The President has signed a bill granting a \$150 uniform allowance to officers commissioned below the rank of major on or subsequent to September 26, 1941 and all members of the Officers Reserve Corps commissioned prior to September 26, 1941 who have been called to active duty and have served three months. All reserve officers who have previously received a uniform allowance will have the amount of that allowance deducted from the new \$150 allowance.

The Australian Front

By Oliver H. Townsend

FLYERS and ground crews of the Army Air Forces assigned to Australia should feel more at home on this "down under" continent than in any other foreign country in the world—with the possible exception of Canada.

Big (almost as large as the United States), occidental (95 per cent of its people are of British extraction), progressive (electricity, automobiles, large modern cities), Australia combines most of the best characteristics of the United States and Great Britain.

The seven million people of Australia are friendly and have a free and easy spirit which makes them well-liked by Americans, and vice versa. Most of them are city-dwellers—over half crowd into the six big state capitals of Sydney, Melbourne, Adelaide, Brisbane, Perth and Hobart.

The standard of living is almost as high as that in the United States, and the cost slightly lower. The monetary system is British, and is based on the pound sterling. A recent ruling permits the free use of American money in Australia on a basis of about \$4 to the pound.

Large amounts of American cigarettes are consumed annually, and millions of feet of American motion picture film are exhibited. U.S. cigarettes in peacetime ordinarily sell for about 25 to 28 cents per pack. Recently all stocks of cigarettes—along with stocks of tea—were impounded for the exclusive use of the armed forces.

Food in Australia is much like it is in this country—except for being a bit more on the "meaty" side. Vegetables don't play the prominent role on menus that Americans have become accustomed to. One of the favorite dishes is mutton.

Australians are very sports conscious. Many of their tennis stars and rugby, soccer and cricket teams have won international fame. Sports heroes have a national reputation which exceeds that of movie stars and statesmen. There is plenty of room for swimming at the hundreds of miles of fine beaches which ring the continent.

Being below the equator, the seasons in Australia are exactly reversed from those in the United States. Right now summer is ending and fall is coming on. Winter begins in June, spring in September and summer in December.

MARCH-APRIL 1942



The best way to get an idea of the climate of this antipodes continent is to turn it figuratively up-side-down and place it in the northern part of the western hemisphere in the vicinity of the United States.

When this is done it is found that the southeastern part of the continent, containing the big cities and most of the people, falls in the neighborhood of Virginia. Perth, biggest city on the west coast, is situated on about the same latitude as San Diego, California. Port Darwin, gateway to the Orient and only settlement of any size on the north coast, falls as far south as Nicaragua—and is just as tropical.

Most Australians cluster in the southeastern part of their country, and for a very good reason. This is "white man's country". Here the temperature dips down to top-coat level in the winter and, doesn't blow the top out of the thermometer in the summertime. This is rare, for Australia is much closer to the equator than the United States, and snowfall is unknown except on the highest mountain peaks.

Interior Is Deserted

"Out west", around Perth, there is another section of territory with a white man's climate. Here, 1,500 miles across deserted wastelands from Adelaide, closest southeastern city, is Australia's California, where about a million people live.

The populated regions of Australia are all within several hundred miles of the coastline.

The interior is little more than one vast desert where the traveler can go for hundreds of miles without seeing a human settlement.

Isolated in the tropical heat of the north coast, on a peninsula jutting northward into the Netherlands East Indies, is Port Darwin, military center and one of the chief targets of the Japanese.

In normal times Port Darwin is a sleepy seaport with a population of little more than 2,000, composed chiefly of Chinese, Malays, Japanese and native blacks. At the beginning of the war, however, this population had been increased by British and Australian defense workers to about 7,000.

The accent is on the Orient in Darwin. Chinese merchants peddle their wares in native costume, and incense and Oriental music mix with American jazz in the waterfront taverns. The best communications in peacetime were with Singapore, Java, Hong Kong and India—not with other parts of Australia.

Darwin Is Tropical

In appearance Darwin is like an early American mining town. The sidewalks are roofed, there are few trees, and the ramshackle houses are rarely more than one story high. The city itself sits on a 60-foot bluff overlooking one of the best harbors in the Pacific. In the bamboo forests behind Darwin crocodiles slide through muddy rivers, and native aborigines hack out a primitive existence. Most of the better homes, erected on the outskirts, are built on high ironwood stilts to keep out the white ants and termites.

Only 12 degrees below the equator, Darwin is hot. Just before the summer rains come the temperature averages 100 degrees and the humidity runs between 80 and 90. Tropical white clothing is worn almost exclusively, and the houses are little more than large verandas with enclosed dressing rooms.

Darwin is the capital of Australia's Northern Territory, a vast expanse of wasteland twice as big as Texas—and with a population of but slightly more than 10,000. Communications in this sparsely-settled region have been poor. Darwin has not been connected with other northern coastal towns by roads or railroads. The only link with the rest of the continent has been a railroad broken by a 620-mile stretch of highway, running to Adelaide, on the south coast. Isolated by land, Darwin has developed into an important air terminal between Australia and Asia.

Isolated as it is, an invasion force taking Darwin still has well over a thousand miles to go by boat or across the trackless wastes of the interior before it can reach the southeastern region—the real prize.

Center of this southeastern region, and economic and industrial capital of Australia, is Sydney. Its population of over a million and a quarter people makes it the third city of the British Empire—after London and Calcutta. Somewhat resembling San Francisco in appearance, Sydney has probably the finest harbor in the world—large enough to shelter every ship in all the world's fleets. Known as Australia's Paris, Sydney is the entertainment capital of the South Pacific, and the political capital of the State of New South Wales.

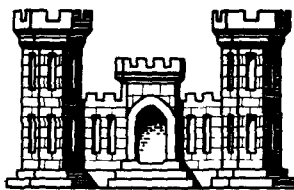
Second city of Australia is Melbourne, capital of the State of Victoria, 500 miles southwest of Sydney on the southern coast. Melbourne, with over a million people, is the seventh largest city in the British Empire. Other big cities are Brisbane, half-way up the eastern coast; and capital of Queensland, with 326,000 people; Adelaide, capital of South Australia, with 322,000 population; and Perth, capital of Western Australia, with 224,800 people.

Aviation-Minded

The great distances of the Australian continent have been a natural invitation for the development of commercial aviation. Civil aviation was first started there by Army pilots returning from the air fronts of the World War. Two of the most famous of these flyers were Keith and Ross Smith who flew all the way home from Europe in November, 1919, spending 124 hours in the air.

Planes have played an important part in the development of Australia. Not only do they provide quick service between the big cities, but they are also the only connection isolated villages of the interior have with the world.

Aside from being bumpy, the air over Australia is some of the best in the world for flying, because of the absence of fog and scarcity of heavy cloud formations. With more than 20,000 miles of airlines, and with more than nine million miles flown annually, Australians are among the most air-minded people in the world. They realize the dangers of attack by air, and the values of an aerial defense. "Keeping 'em flying" over Australia is one of the most satisfying assignments to which American air and ground crews can be assigned.



Engineers With the Army Air Forces

By Brig. Gen. Stuart C. Godfrey

Chief of Engineers, Army Air Forces

IN each campaign of this war the importance of airdromes has been freshly demonstrated. In the Japanese penetrations of the Philippines, Malaya and the Dutch East Indies, airfields have been the first objects of attack and later the stepping stones by which Japanese aviation was able to give effective support to the advance of land and sea forces.

The German Luftwaffe failed in its attempt to destroy the RAF largely because engineers had provided England with a wealth of camouflaged, easily repaired and widely dispersed landing fields which offered a hopelessly decentralized target and enabled the RAF to keep its fighters in the air almost continuously. On the other hand, observe what happened to the RAF when it lacked airdromes in Greece and Crete.

Even before these lessons were made clear to all the world our Army Air Forces had allotted an important place to aviation engineers—a new type of unit consisting of engineer troops specially trained and equipped to build and hold advanced combat airdromes in all types of theaters of operations.

Our Engineers Active

As General Arnold recently pointed out, our training of "theater of operations" engineer troops for combat duty with the Air Forces was greatly accelerated during the pre-war period by employment of the aviation engineers in the construction of huge air bases in Iceland, Greenland, Alaska and the Caribbean. These aviation engineers "set the teeth in our hemisphere defense that will force an enemy to run into our fist instead of our chin," according to General Arnold. Meanwhile, the domestic program of airport construction proceeded apace under the direction of the Corps of Engineers.

The building of many new permanent airdromes in the United States and its overseas possessions and bases is an important activity of the Corps of Engineers, acting through its Division and District Engineers. In war, however, a different type of airfield construction must be visualized. This may involve the emergency expansion of existing air bases by the provision of auxiliary airfields, smaller and better con-

cealed. Again, it may be pioneer work in some new and distant theater.

In any event, there will be a vital need for engineer troop units with the Army Air Forces. The need has become far more extensive and more specialized than in the days of World War I. The former small grass plot has been replaced by an extensive tract of land, cleared of obstacles and with all-weather use facilitated in many cases by paved runways. For this work, troops with special equipment and special training are needed. Moreover, an air force, like a field army or an armored force, needs its own engineers—troops who have trained with it intimately, who speak its language and understand its needs.

These engineers with an air force must be trained and equipped to construct rapidly advanced military airdromes, or to improve existing ones. They must be skilled in the camouflage of airfields and the construction of defensive works. They must be organized and prepared to repair instantly fields damaged by enemy bombing. Finally, with their trained riflemen and machine gunners, they must be prepared to take an active part in the defense of airdromes.

The first troop unit formed for special work with the Army Air Forces was the 21st Engineer Aviation Regiment, organized at Langley Field, Va., in June, 1940.

This unit has been the parent organization of the bulk of existing aviation engineer units. The manifold activities of this regiment have included work of construction on their own barracks and grounds, experimental work on runways including steel landing mats, and the development of techniques for camouflaging airdromes. The regiment has furnished the personnel and equipment for two sizable detachments to carry out important task force missions.

Since then a score or more of separate aviation battalions have been or are being activated. Many more are planned.

First Unit Formed

To visualize a military airdrome in war, we need to differentiate it sharply from the usual commercial airport or permanent peacetime Air

Corps station. The latter offers a conspicuous and vulnerable target to enemy bombers. By great effort it can be rendered less conspicuous. But preferably an air force will operate from smaller auxiliary fields. Such fields lend themselves better to camouflage. Planes on the field, instead of being huddled on a parking apron, are dispersed in pens around the periphery of the field or in adjacent fields, made accessible by a taxi-track. Servicing installations are simpler and are also dispersed and concealed.

In connection with such airfields, the tasks for aviation engineers may be described as follows:

Improvement or provision of advanced airdromes, together with all appurtenances such as runways, landing strips, shelters, airplane parking areas, internal routes of communication, water supply, lighting, and other utilities.

Improvement or provision of routes of communication to such airdromes.

Provisions for gas-proofing and bomb-proofing essential parts of such installations.

Camouflage of advanced airdromes and other Air Forces installations.

Assistance in the anti-mechanized defense of advanced airdromes by construction and defense of road blocks, and by combat against raids delivered by ground forces.

Assistance in the defense of advanced airdromes against air attack.

Maintenance and repair of airdromes, especially after damage by enemy bombers.

Engineers Must Fight

It is seen that these tasks require that aviation engineers be both technical specialists and combat soldiers. Airports are usually located well behind the front line, and the combat function will be the exception rather than the rule. But in the future, no airport in a theater of operations will be entirely secure against either a raid by armored forces, or the increasing threat of vertical envelopment. Engineers, with trained riflemen and machine gunners, thus constitute an important element of defense. Events overseas have proved that good riflemen are particularly valuable in dealing with parachute troops, so vulnerable during their initial landing. Aviation engineer units also have some armored scout cars, both 50 and 30 cal. machine guns, and 37 mm. anti-tank guns.

The aviation engineer regiment consists of a regimental headquarters, headquarters and service company, and three battalions. Since there

will often be occasion when an entire regiment will not be needed in one locality, the bulk of units organized to date have been engineer aviation battalions (separate). Experience in Europe indicates that to build one airfield in reasonable time, perhaps in six weeks under favorable conditions, a unit of the size of a battalion is needed. The organization and equipment of the battalion have been carefully designed to provide a balanced force capable of independent work.

Equipment Complete

No pains have been spared to make the equipment for aviation engineer units as complete and adequate as possible, without at the same time over-burdening the troops. Thus, general-purpose construction equipment was preferred to more efficient, but specialized machines. Even so, the separate aviation battalion has no less than 220 pieces of heavy equipment, and 146 vehicles. This heavy equipment includes such items as diesel tractors with bulldozers, carry-all scrapers, auto-graders, gasoline shovels, rollers of several types, concrete mixers, air compressors, trencher, well drill, and the like, with numerous trucks and trailers. Moreover, sets of additional special equipment—additional asphaltting and concreting equipment, rock crushers, draglines, pumps, floodlights, and the like—are provided in storage for use if and when needed, as in case of overseas task forces.

A special unit, known as a headquarters company, is provided for assignment to an air force to assist in providing for the special engineering and camouflage functions of several engineer aviation battalions. Supply functions for the Air Forces are provided for by including an engineer supply platoon with each Air Base Squadron; this platoon also has a small utility section.

A new type unit is the engineer aviation topographic company, which is designed to work with the Air Corps photographic and mapping squadrons in the field preparation and reproduction of special aeronautical charts and target maps.

No Peacetime Construction

It should be borne in mind that aviation engineer units are not intended for peacetime construction, and have no role in the maintenance of airports in time of peace. This does not mean that for training these units can not and should not be used on definite construction tasks, but it is not intended that they supplant

the existing agencies, either for construction or maintenance in the zone of the interior. Even in a theater of operations, it is not contemplated that all airport construction shall necessarily be performed by aviation engineers. The latter are intended primarily for "pioneer" work on the more advanced airdromes, where speed is essential and the utilization of existing facilities or improvisation of new ones is indicated. The more permanent base airdromes in rear areas, built more deliberately and with great refinement, are likely to be the work of engineer general service regiments. These latter units, given some special equipment and training, should be able to include airport construction among their many tasks.

Many Engineers Needed

No definite rule can be given as to the number of engineer troops that may be needed with an Air Force, though it is noteworthy that the British Expeditionary Force contained no less than 60,000 engineers, one-fifth its total strength. The large program of airfield construction in France was doubtless largely responsible for this high percentage. As indicated above, an aviation battalion can construct expeditiously one advanced airdrome. It can maintain and repair, under favorable conditions, perhaps as many as nine. A rough rule for an air task force, therefore, would indicate one battalion or equivalent for every new airfield desired for immediate construction, with additional battalions for the maintenance and extension of existing fields.

In their important role of assistance in airdrome defense, aviation engineers at an air base naturally come under the command of the officer charged with the defense of the base, and operate similarly as in other defensive combat missions. Engineer troops stationed at an airdrome with the primary mission of maintaining the field in flying condition will have ample opportunity to strengthen the defensive works—pill-boxes, emplacements, road blocks, mine fields, and the like.

The training of aviation engineer units is planned to prepare them for the tasks outlined above. The basic training of recruits is given at the Engineer Replacement Training Centers, and is the same well-rounded training that all engineer soldiers receive.

Troop units are not, in general employed in the air base construction program being executed by District Engineers. But in many cases they

have undertaken some definite tasks in this program, such as the construction of soil cement and asphalt parking aprons and roads. During the past few months they have performed emergency construction work in connection with the dispersal and protection of airplanes, by means of taxi-tracks, hard standings, and revetment pens. They have assisted in the development of steel landing mats, and of the best techniques for airdrome camouflage. They have constructed experimental runways, using various types of construction.

A major activity of Air Force Engineers and their regional assistants has been an engineering survey of existing airports and potential airport sites, with a view to providing facilities for the possible concentration of the Air Force Combat Command in any desired theater of operations in the United States.

In training for airdrome construction, the objective of speed is constantly sought for. The construction of an airport in China, with runway designed to take Flying Fortresses, required 100,000 Chinese with hand tools to complete the task in 12 weeks. A battalion of aviation engineers, with modern equipment, would undertake to cut this time in half.

AN IDEA FROM A BEER CAN

INSPIRED by the simple act of opening a can of beer, a compact lightweight lightening hole flanging machine has been perfected to replace the previously unwieldy metal dies which weighed from 50 to 80 pounds.

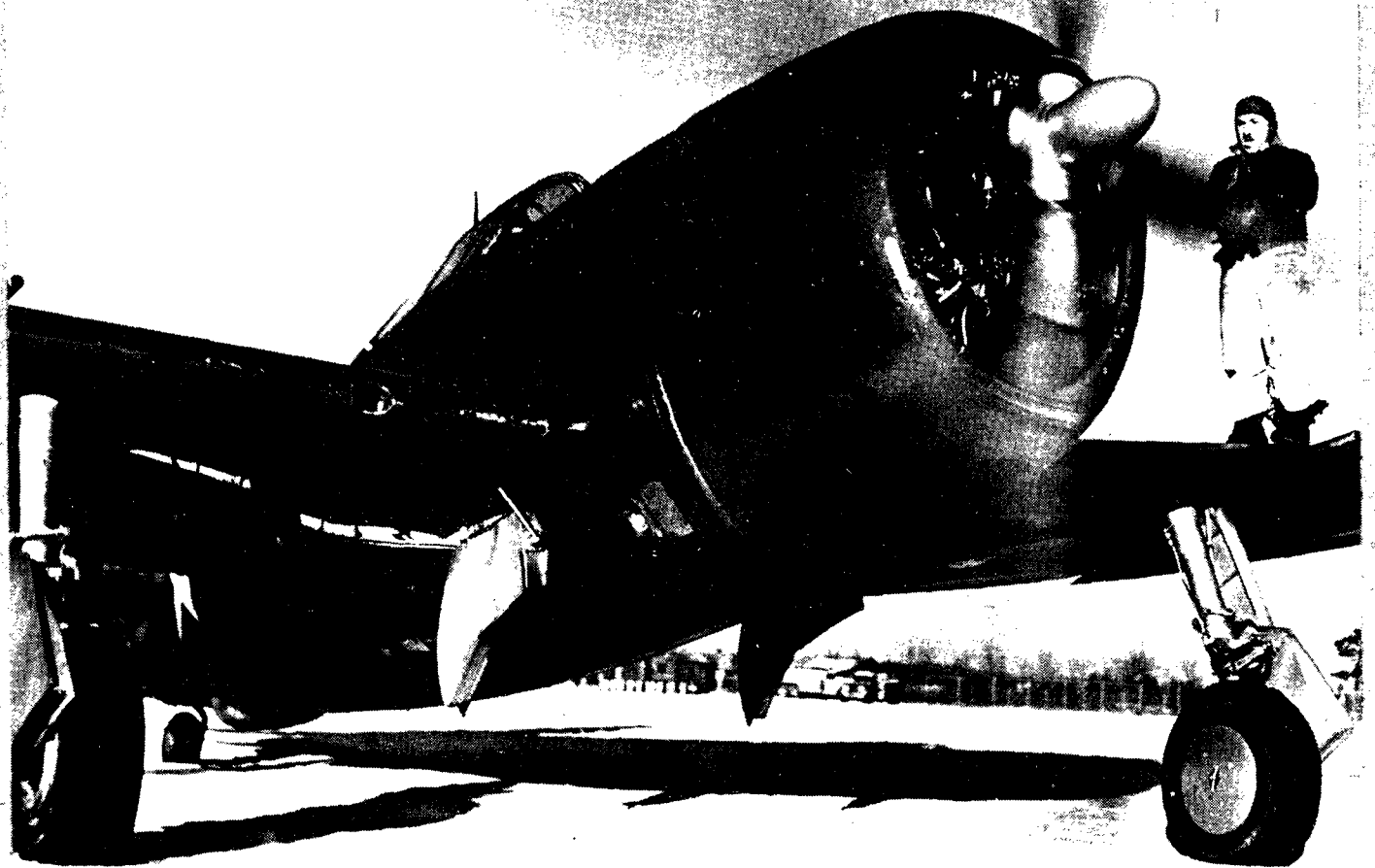
With this discovery, the transporting of heavy metal dies into the field is said to be unnecessary and the use of machine work for dies no longer needed.

Weighing only two pounds, with an over-all length of 12 inches, the machine is especially valuable for field operations. It works very effectively on lightening holes ranging in size from two and one half to six inches.

The idea originated with Captain William H. Barrett, engineering officer of the 2nd Air Depot Group, Sacramento Air Depot, McClellan Field, Calif. It was perfected by Sergeant Julius F. Merkel, who in civilian life was a designer with the Sperry Gyroscope Company.

*The CAPABILITIES of our BOMBARDIERS
MUST be commensurate with the inherent
capabilities of their instruments.*

THE REPUBLIC P-47B "THUNDERBOLT"



**"ECLIPSING THEM ALL"
- GENERAL ARNOLD**



Polish Pilots Still Scrapping

By Lieut. Robert B. Hotz



POLISH pilots are still in the air over Europe. More than two and a half years after their country was conquered and their air force destroyed by the German Luftwaffe, Polish airmen are still knocking Nazi planes out of Continental skies.

The Poles now wear RAF uniforms and fly ships of British and American manufacture. This is the third uniform they have worn and the third type of ship they have flown against the Germans. Some of the Poles are among the most experienced combat pilots in Europe—veterans of three major air campaigns. Others have only recently learned to fly on foreign soil after fighting in the defeated ground armies of Poland and France. But all of them are among the most efficient, dogged and ruthless pilots arrayed against the Axis.

The Poles' efficiency as combat pilots comes primarily from their grim concentration on a single purpose—the destruction of German men and materiel. These Polish pilots have lost everything but their lives and have tasted bitter defeat twice but they refuse to stop fighting. They live only for revenge and are willing to go to any ends to achieve it. This attitude plus their natural skill makes them deadly in battle.

Pole Wants Dessert

A Polish fighter pilot expressed this attitude well in describing his battle with a pair of Junker 88's.

"I went after the left hand machine, forgetting everything else in the world. I thought only that I would have the left hand machine for dessert".

"They will do anything," said one AAF observer describing the Poles in the RAF. "The Poles have the best squadrons over there. They get excited a lot and sometimes land with their wheels up but when they fight they really get into it. If they run out of ammo, they often ram a German plane and then bail out."

Other American observers and British officers credit the Poles with several innovations in RAF tactics as a result of their daring and disregard for their own safety. The Poles are gen-

erally conceded to be the first to discover that the huge German day bomber formations could be scattered by head-on attacks at the formation leaders. This tactic was instrumental in enabling RAF fighters to break up German daylight attacks during the Battle of Britain and reap a heavy toll of disorganized stragglers.

Solved 109 Problem

The Poles are also credited with solving the problem of the new Messerschmitt 109 armor. For several days after the new model appeared RAF fighters were unable to find a vulnerable spot at conventional range although they were able to squirt it with a variety of ammo. The Poles closed the range to 50 feet and then let fly with all their guns. The 109's simply disintegrated, showering the pursuing Poles with debris. Several Poles had to bail out when their planes were damaged by the 109's debris but the RAF learned how to eliminate the new models.

The Polish air force of 1939 consisted of about 2,000 planes, more than half of them obsolete. In addition to a variety of old foreign models, the Poles had several modern types produced in Polish aircraft factories at Warsaw, Lublin, Biala and Podlaski. These included about 400 twin engined Los bombers and small quantities of the P-7 and P-11 single seater pursuits, the Karas observation plane and light bomber and the speedy Wilk attack bomber.

The infant Polish aircraft industry was booming and new plants were being planned for the Vistula-San River industrial district when war came on Sept. 1, 1939. One of the first targets of the German bombers were the aircraft works and fields at Warsaw. The factories and military airdromes were attacked at 7:30 a.m. on Sept. 1 and within two weeks the Polish aircraft industry was destroyed and the air force strangled by the Luftwaffe's bombs.

Most of the Polish planes were destroyed on the ground. Losses in the air were not excessive despite the heavy odds against attackers of Stuka swarms, and big formations of Messerschmitts, Heinkels and Dorniers. Polish light attack bombers concentrated on smashing the German Panzer fingers stretched far in advance

of the main armies and official German sources credit Ios and Wilk bomber formations with holding up armored divisions for as long as 24 hours. Polish pursuits were also effective while they lasted.

But the Polish air force was unable to exist under the pressure of an estimated 2,000 planes of all types used by the Germans in this campaign. Every Polish air field and supply base was hammered incessantly by the Luftwaffe. In addition to the destruction of planes on the ground, Polish pilots were faced with the destruction of huge fuel and ammunition supplies and the devastation of their bases. The effectiveness of the Polish air force was actually eliminated principally through destruction of its bases and supplies although annihilation in the air would have been inevitable had the battle continued. This was evidenced by the number of Polish pilots who flew their planes to France and Balkan countries because there were no more places for them to set down, refuel and rearm in Poland.

Most of the Polish pilots who escaped to France and the Balkans joined the French Armee de l'Air in France and Syria. On January 4, 1940, General Waldislaw Sikorski, premier of the Polish government in exile, and Guy La Chambre, French air minister, signed a pact recreating the Polish air force and officially attaching its autonomous units to French forces on the Western Front and in the Near East.

Reputation For Audacity

Already the Poles were creating their reputation for audacity. They flew any French equipment they could get off the ground. They flew against German formations of superior numbers and equipment with a fine disregard for fuel, ammunition, territory and most of the other considerations of pilots who intend to return both themselves and their equipment to their base after combat. Polish pilots were among the most frequent casualties from stunting at low altitudes.

After the fall of France most of the remaining Poles in the Armee de l'Air escaped to England where they were incorporated into the RAF. Numbers of Polish ground soldiers who filtered into England were given flight training and attached to the Polish RAF squadrons. Many difficulties were experienced by the English in training Poles. All of the Poles were impatient to get another crack at the Germans and as soon as they were clear of their training airdromes they

would light out for France. Gas for training flights had to be rationed to prevent these sorties.

One Polish pilot was towing a target plane at a training camp in Scotland during the Battle Over Britain when a big German raid was reported several hundred miles away. The Polish pilot was informed by radio of the raid and ordered down. Instead of landing he headed in the direction of the raiders. Three RAF pursuits went up and had to herd the Polish pilot to his base. His plane was an old biplane armed with a single 30 caliber machine gun.

Action In Libya

The Poles in training still regard a run over the invasion coast, bombing ports and machine gunning German troops wherever they can find them as the best sort of exercise and RAF training officials come to expect it whenever they allow Polish trainees to go up with live bombs and loaded guns.

The Polish air squadrons with the French in Syria flew to Palestine after the Fall of France and are now in action with British Imperial forces in Libya.

The Polish RAF squadrons in England are now fairly evenly divided between pursuits and bombers. They continue to play a lively role in the air war over the Continent and provide an excellent addition to RAF morale with their cheerful persistence in contributing to what they regard as the inevitable victory over Germany.

Here are excerpts from Polish fighter and bomber pilots' descriptions of actions in which they were involved. The fighter pilot had just left a hand of bridge at the call of "Flight Scramble" and was at 20,000 feet over the sea feeling that trouble lay ahead because the night before his Polish mechanic had dreamed of his aunt in faraway Poland, always an omen. His squadron sighted and attacked about 20 Junker 88's protected by a screen of Messerschmitt 109's.

Things Went Dark

"I looped the loop until things went a little dark before my eyes, opened throttle and found myself on the tail of a damaged JU. This time he was close. About 60 yards. I was troubled a bit by another JU which fired at me. I saw he was a poor marksman so I got my client in my sight and gave him a long burst into his engine over the fuselage until sparks flew. After a moment I saw he was on fire. He turned slowly

(Continued on Page 40)

AAF Hunting Subs*(Continued from Page 3)*

direction. No one talks, a few smoke. The radio is cautiously silent. They settle down to monotonous cruising.

Finally a tanker is sighted and the plane circles several times in challenge. It dips lower, until the wing tip seems to skim the water, although the ship is a full 200 feet above the crest of the waves. The navigator leans forward and shouts "O.K., she's got it...British, but damn slow about it." They fly on, close enough to the water so parachutes are useless.

A freighter appears, northbound. They challenge, report and continue on. They spot the hulk of a tanker, passing close enough to get a friendly wave from the patrol ship crew on guard. The search goes on. There is little talk, only the drone of the motors.

Then the bombardier's hoarse voice calls on the intercom, "off to the right about a mile." The landing gear is lowered to reduce speed. All eyes are peeled for what might be a periscope and its betraying wake. The bomb bay doors are opened. The bombardier toys with the bomb release. They pass over the spot. Nothing there.

The direction is changed. One by one ships are discovered, routinely challenged and forgotten. Then, action at last. From the shore comes the message: "SOS...Investigate." Direction is changed to comply with the position given. Throttle open, the plane heads for the area. A rescue isn't possible, but they can guide ships to the scene, perhaps find the sub.

They sight something. The pilot changes course, heads for the spot. Down there eight men can be counted huddled on a raft that is bobbing in the choppy sea. The plane circles lower until the faces of the men can almost be seen. One man stands up and points. They head in that direction. In a brief moment they sight two dories, one with 14 and the other with 20 men aboard. Instantly word is flashed to the base: Ship submarined—two boats and a raft with 42 survivors—position. The navigator hands the pilot a slip of paper..."position checked."

The plane circles back and forth, crewmen alert for a conning tower or periscope, but constantly in sight of the survivors. For a half hour they fly around. A ship is sighted in the distance. The radio-man goes into action again as details are exchanged. The rescue ship picks up speed.

They head for home still hoping for a crack at

that sub. Then the pilot and co-pilot stiffen up. The bombardier gets orders to open the bomb bay; the camera-man is warned. There is a speck out there, broadening into a horizontal object in the distance. It looks like a ship. No, a submarine. But it turns out to be only a Navy blimp lying so close to the water that it seems to be swimming along.

The blimp drops a flare, indicating a submarine below. The plane is banked sharply. The bombardier waits while the pilot lines up the plane on the flare and makes the "run." They fly over the flare. The bombs burst. The pilot kicks the plane around in a steep bank as they go back to inspect their handiwork. The flare is blasted to bits. Splotches of oil trail on the surface for about 150 feet.

Another flare, and again they dive at it. The pilot warns "Hold it or we'll bomb the tail right off the blimp." The bombardier grips the stick. He plays with the button...presses. It was a depth charge and they turn just in time to see the full spout. Another bomb is dropped, another and another, until no more are left. The sea is sprinkled with little patches of oil. Then, as they circle the blimp, another Army plane appears out of the North. Two destroyers are spied racing to the scene. The destroyers zig zag in. The water leaps high from their depth charges. The plane turns away. The crew settles back for the trip home.

NEW TECHNIQUES

THREE new labor-saving devices of considerable value to the Air Force have been developed at Albrook Field, Canal Zone, under the supervision of Major W.W. Gross, Air Base Engineering officer.

One of the new developments is a portable balancing stand, enclosed by a screen to cut off drafts. This was developed by Major Gross and Technical Sergeant C.A. Patton.

Another new device, built by Corporal D.W. Henrichs, is a landing gear retracting strut packing nut wrench for use on all series Curtiss P-36 and P-40 airplanes. The purpose of the wrench is to eliminate the removal of the strut from the wing when it is necessary to make adjustments.

The third new development is a combination pump, tank and heating unit which performs the purpose called for in Technical Order Number 03-15-9—that of emersing oil temperature regulators in hot oil for prevention of corrosion and for removal of moisture at periods of inspection and repair. It was designed by Staff Sgt. Miranda.

Air Forces Adopt New Shoulder Patch



NAZI PARATROOPER

PISTOLS, sub-machine guns, knives, spikes, mortars, entrenching tools, field glasses, hand grenades, compasses, maps, Verey lights, hatchets and rations are all carried by the average German paratrooper, according to British observers. Many are also equipped with collapsible bicycles.

A German paratrooper usually carries a .32 Luger Pistol automatic magazine of nine cartridges and one spare magazine in the holster as well as a tiny, but very handy and easily operated sub-machine gun with a web magazine case holding three magazines of 30 rounds apiece and a magazine filler. Machine guns and mortars are dropped separately and are collected immediately, if fire is not too great, or after dark.

The sub-machine guns, deadly from 50 to 70 yards, have practically no stoppages and rattle away at a lively pace. Used as rifles with a skeleton folding butt extended, they are very accurate up to 200 yards.

Most German paratroopers carry field glasses. Many wear knee pads and boots with extra leather heels to break the shock of the fall.

Each has a large, single-bladed, stainless knife with a six inch marline spike attached. The paratrooper has about six blue pear-shaped grenades with screw tops which reportedly have not been very effective. Their compasses are cheap and inaccurate but each man is provided with an excellent map.

A distinctive shoulder patch has been adopted by the Army Air Forces and will be worn by AAF personnel everywhere.

Four colors are featured in the new patch: white star with red center, stylized gold wings, and a field of ultra marine blue.

New Air Forces patches will be available in quantity as soon as the Service of Supply can issue them and will replace unit patches now being worn in the AAF. Various units will be privileged to wear Distinctive Unit Insignias.



PRACTICE BOMBINGS SCORED BY MOVIES

SPECIAL moving picture equipment soon will be automatically scoring aerial bombardment practices at all bombardier training schools. The present observation crews and spotting towers that are tying up personnel and equipment a hundred or more miles away from training school headquarters, will be eliminated.

This new equipment has been developed by the camera unit of Wright Field's Armament Laboratory and already is in use at one bombardier training school. By increasing the accuracy of spotting bomb impacts, the new movie method will assist bombardiers to increase their effectiveness.

The current method of judging a bombardier's accuracy is to utilize radio communication between three scoring towers and the bombing plane; then, the spot of bomb impact is charted by "triangulation" observations from the several towers. Large ground crews and extensive equipment must be used to carry out bombing practices under these conditions.

With the newly developed projection lens, screen, projector and a standardized 35 mm. camera, need for the ground crews is eliminated.

The bombardier simply sights his target and releases his bomb; a camera automatically films the action and the bomb impact in relation to a distinctive ground target and marker (lights at night). Immediately, after the practice, the film is processed and, with a special projector, is shown in a scoring viewer that provides means for accurately locating the impact of the bomb and measuring within two feet the range, deflection and circular areas directly from the scoring grid in the viewer. Results of practice bombings can be recorded at altitudes of from 1,000 to 20,000 feet by using various lenses and screens.

Reflections of a Bomber Pilot

By Flight Lieut. G. L. Chesire, R. A. F.



I closed my eyes and saw a kaleidoscope of visions. Superimposed on these, like the flicker of a film, was a regular beat as the night rolling in from the East chased the sun over the Western horizon and then, to the sound of returning aircraft, gave way to the sun once more. In those few moments I saw the story of night bombing as it has appeared to me in the last eighteen months.

I saw the short nights of Summer, 1940, fade into winter: those fruitless journeys across England to France; take off at dusk and land at dawn, day after day and regular as clockwork—Abbeville, Poix, Aulnoye, Charleville: cross-roads, bridges, troop formations and then cross-roads again—journeys which were meant to hold up the German drive to Paris. I saw also Lofty sitting at the wheel, lean, strong and handsome and heard his voice: "I can't see a sausage." And the rear gunner, who rarely opened his mouth except to eat chocolate: "Are we over Germany?" "No." "Well you wouldn't be likely to see a sausage."

Then France fell and I experienced my first real sight of gunfire. The Happy Valley with its countless targets: sometimes Mannheim or Frankfurt or Emden or Kiel, but mostly the Happy Valley and always the Zuider Zee as a half-way house where we could fly round in peace until we found a pinpoint. They were easy, those trips. The weather was good and we flew low enough to be able to see the ground, for the Flak was nothing to worry about—mostly curtains of explosive tracer going to 8,000, sometimes 12,000 feet; red, green, orange and white; a beautiful sight, especially if you were two miles away and going in the opposite direction.

One night we were attacking an oil refinery in Western Germany. I was bomb aimer at the time and could see the target almost as if we were flying in daylight. As we were running up, an unusual barrage started to burst under the tail, provoking the gunner out of his customary silence: "Ac Ac behind, Captain; you'd better get weaving" —a remark which, from the subsequent aspersions on my character, I gathered the Captain heartily endorsed, for it was an exceptionally long run up.

However, at last the target came in the sights, and rather thankfully I let go. I leaned forward to see what damage the bombs were going to do, but what seemed like ages passed and still nothing happened. Eventually the target went out of sight, which it oughtn't to do, so it was obvious something had gone wrong. And as I was thinking up something to say to the Captain—I had just noticed I had not levelled the sight—I saw the bombs burst five miles away in the middle of a wood, followed by the biggest and longest explosion I have ever seen. Ten weeks later I was reading the Telegraph. There was an article by a neutral correspondent describing the effect of British raids, and it said that on this particular night one of the aircraft had apparently missed the refinery, but had hit a secret ammunition factory concealed in a wood some five miles away.

Then as the nights grew longer, the story behind the images began to take shape. The German defences began to catch up the early lead which the Night Bombers had had, and for the first time we began to realize the true value of method and organization. Flak and searchlights appeared on the Zuider Zee: there were rumours of balloons and night fighters: the proficiency of German ground crews increased as steadily as did the number of their guns, so that evasive action over wider areas became an urgent necessity and radio direction finders suffered in consequence.

At the same time, navigation by wireless was made more difficult because of enemy interference. And there were cases of crews finding themselves over occupied territory when the radio put them over England. As a counter mea-

sure, our attacks became less stereotyped. Different routes were chosen to spread the defences; bombing heights varied also and people began to look on 12,000 feet as not abnormal. Furthermore, crews began to experiment with numerous tricks to confuse the defences. Some of them are still being used with success: others had to be abandoned rapidly.

One day we discovered the current German Air to Ground signals, one of which—a colour cartridge—was addressed to searchlights and said: "I am in trouble. Stop everything." On the Wednesday one crew tried it out rather diffidently, they found that the defences closed down as if by magic. On Friday the squadron set off in high spirits and fully equipped. Unfortunately it became evident from the immediate results that the Germans had in the meantime changed its meaning so that it now read: "I am an enemy aircraft; please fire on me." Crews began also to study the methods and difficulties of anti-aircraft defence and tried to devise means of giving the guns the least possible help. Occasionally letters would come round from Higher Authority with suggestions or orders to the same effect. One of them recommended the detailing of one aircraft to fly round the target at a low altitude so as to draw all the fire while the others bombed in peace—but this expedient was never adopted.

More Damage

None the less, as the weeks went by, more and more aircraft came back damaged. And then suddenly—as if we were not expecting it—winter had set in. First, winds and rain and mud. Mud was everywhere: often ankle deep, and with it came more and more Night Flying Tests and briefings and high teas, but fewer and fewer deliveries of bombs. Night after night we drove out the five odd miles to dispersal, walked out to the aircraft (the mud was too thick for the 'buses to drive into the field) climbed in: ran up the engines, then switched off and waited for the van to come round with the signal to carry on or break it up.

It was these periods, when we operated full time, that kept us going. Otherwise, they were tedious weeks. Searchlights and Ac Ac were getting worse month by month, but it was the weather on return to base and the cold that gave most trouble. One night the gauge showed -40° Centigrade. The perspex cracked, the Second Pilot collapsed in the front turret, looking just like a snow man. In some mysterious fashion, an inch of solid ice appeared on the navigation table. Mannheim was the target. We arrived on our es-

timated time of arrival at 15,000 feet, floundering through the tops of the clouds, and began to come down. At 12,000 feet the port engine cut, and at 10,000 the starboard began to cough and fire intermittently. We came out of cloud at 6,000 and the engines began to pick up. But there was a blinding snowstorm and visibility was nil, so we flew back under the clouds to Boulogne.

Fighters Best Defence

With the New Year came the most serious defence the Germans had yet produced—fighters. Previously, no one had taken the possibility seriously. But now more and more crews came back with stories of encounters and shadowings. Aircraft would be trailed sometimes for upwards of an hour, without a shot being fired. On other occasions, attacks would develop out of the blue and without warning.

A Squadron Leader in a Whitley was suddenly attacked by a Messerschmitt. It was a 110 and came almost head on, its first burst putting one engine out and making the turrets unserviceable. The intercomm. went dead and all the pilot could do was to keep in the air. The Messerschmitt seemed to know this, for he flew round in small circles, shooting as he pleased. But the Whitley was tough: so was the Squadron Leader. After a few minutes the German knocked his main-plane off on the Whitley's tail, and the Whitley managed to limp home.

The fighters, following the lead of the ground defences, resorted to all manner of tricks. They lit themselves up to act as decoys: they trailed lights behind them, and they fixed searchlights on their noses. This latter device was too much for the rear gunner: he broke silence for the third time and said: "Two searchlights taking off away to port, Captain." But in all fairness he was not the only one. Another gunner reported searchlights following him out to sea.

Yes, it is true these fighters came as a menace when they first appeared. But it was not long before the bombers had the upper hand once more. As the weeks went by, the toll of German night fighters rose higher and higher. It was with the vision of this and of countless of these fighters hesitating to attack and, when they did, breaking away at the first sight of return fire, that I woke up, wondering perhaps to what dizzy heights the eternal battle between ground defence and Night Bombers would reach by this time next year.

--From the Royal Air Force Journal

Fighting Filipinos of the Air

By Maj. Falk Harmel



FOR leading his squadron of native airmen in a successful engagement against Japanese invaders and personally shooting down three enemy planes, a little Filipino flyer named Captain Jesus Villamor late in December was awarded the Distinguished Flying Cross.

Again in February this Kelly Field graduate, weighing 116 pounds and standing only five feet four inches, was cited in a communique of General MacArthur, this time as the recipient of the Oak Leaf Cluster for repeated acts of extraordinary heroism.

The communique told how Captain Villamor met a formation of Japanese fighters while on a photographic mission over Cavite province escorted by several P-40s. The ensuing combat was described as one of the most spectacular of the Philippine campaign.

Despite the fact that he was flying a slow biplane trainer, Captain Villamor managed to elude the Japs and land his plane. His escorting comrades began a series of thrilling dogfights. All six Jap planes came to grief. Four were immediately shot down. The fifth was crippled, landed on an air field near Pilar and was riddled by artillery fire from American and Filipino troops. The sixth Jap ship fell out of control and crashed in the mountains of Bataan.

Although still in its infancy when the Japanese onslaught came, the Philippine Air Force has played a vital role in the Far Eastern war.

Only six years ago the Air Forces News Letter reported that one-third of the Filipino air force was rendered inactive when a student pilot cracked up a Stearman Trainer. Fortunately, the student pilot was only slightly injured and the

ship was repairable, allowing the Filipino Air Force to regain its full strength of three planes.

Air Arm Organized

Two years before, in April 1934, the initial steps had been taken to organize the Philippine Army Air Corps. Major General B.J. Valdez, appointed Chief of the Philippine Constabulary, adopted a number of measures aimed at the complete rehabilitation of this organization, chief among them being the creation of an air arm.

General Valdez, Deputy Chief of Staff of the Philippine Army, delivered an address at the graduation exercises of the ninth class of the Philippine Army Flying School. Briefly outlining the history of this school, he said:

"I believed then, as I do now, that a well-organized air force constitutes not only an efficient mode of protection against foreign aggression, but also a valuable adjunct in the maintenance of peace and order."

In the spring of 1937, on the occasion of the visit to Mexico and the United States of the President of the Philippine Commonwealth, Manuel L. Quezon, accompanied by General MacArthur and General Valdez, the latter made an unofficial inspection of Kelly Field, Texas, and evinced great pleasure over again meeting one of his countrymen, Flying Cadet Villamor, then a student at the Advanced Flying School.

Captain Villamor's heroic exploits against the Japs is another testimonial to the efficient instruction methods at the Army Air Corps Training Center. The young Filipino, son of a justice of the Philippine Supreme Court and a graduate of the Philippine Military Academy at Baguio, was

detailed by the Philippine Government to undergo flying instruction at the Air Corps Training Center, and reported there in June, 1936. During his primary and basic phases of instruction at Randolph Field and his advanced instruction at Kelly Field, he made excellent progress. At Randolph Field his average in ground school subjects was 85 per cent and at Kelly Field it was 92.56 per cent. At both schools his flying rating was "B", indicating "Very Satisfactory" progress. He graduated on June 9, 1937, meanwhile being commissioned a third lieutenant in the Philippine Constabulary.

Having specialized in Pursuit Aviation at Kelly Field, he was for several months on temporary duty with the First Pursuit Group at Selfridge Field, Mich. He was then detailed to take the course in Aerial Photography at the Air Corps Technical School at Lowry Field, Denver, Colo. Here the young Filipino airman continued his fine scholastic record, and when he graduated in August, 1938, with the rating of "Excellent", the following notation appeared on his record card: "An above average student. He displayed great interest in all phases of the photographic course. He showed extraordinary manual dexterity in processing negatives, prints, laying of mosaics, etc. He will make an excellent photographic officer." When he left Lowry Field to return to his native country he had accumulated a total flying time of 475 hours.

Difficulties Met

As with a great number of new enterprises, the early career of the aviation arm of the Philippine Army was beset with many difficulties and disappointments. No qualified officer of the Philippine Constabulary being available to direct the organization of this newly authorized unit, the task was delegated to Captain Russell L. Maughan, Air Corps, then Aviation Adviser to the Governor General of the Philippines, and well known in aviation circles as the pilot who barely won out in a race against the sun when he flew an Army pursuit plane from the east to the west coast in the daylight hours of June 23, 1924. Captain (now Colonel) Maughan did not remain long on the Philippine assignment. He was nearing his fifth year in the Philippines—three more than the normal tour of duty, when in February, 1935, Captain Ivan L. Proctor took over the job. The latter had scarcely started on this assignment when he became ill and soon after died, following an operation. Other misfortunes followed.



Captain Jesus A. Villamor

Finally, through the valuable cooperation of General Douglas MacArthur, Military Adviser to the Philippine Commonwealth, the services of Lieut. William L. Lee, Air Corps, were obtained. This husky young officer took over in June, 1935, and brought new life and impetus to the Filipino air unit. Assisted by Lieut. Hugh A. Parker, he drew up flying rules and regulations and carefully selected flying students. Airplanes were purchased, and the most promising young officers of the Philippine Army were detailed to take the course at the Army Air Corps Training Center. Carefully selected enlisted men were sent to the Air Corps Technical School at Chanute Field, Ill., to receive instruction in aircraft mechanics and other trades allied to aviation.

(Continued on Page 38)

Gliders Play Important Role in AAF War Plans

By Lewin B. Barringer

Ast. Director, Air Forces Glider Program



IN July 13th last the Air Corps accepted delivery of its first glider, a two-place, all-metal Schweizer. This historic event took place at the Warren Eaton Soaring Facilities, on Harris Hill near Elmira, N. Y. during the 12th annual National Soaring Contest. Its importance was emphasized by the presence of Major General H. H. Arnold, Chief of the Army Air Force who made a flight in this ship piloted by Major Fred R. Dent, Jr., first Air Force officer qualified as a glider pilot.

In the five months that have elapsed since then much has been done in this new branch of our aerial forces. Before going into it, let us stop a moment and analyze our reasons for including motorless heavier-than-air aircraft in our flying equipment. Military gliders as developed so far have two basic uses. First is the air transport of men, equipment and supplies from one location to another. Second is the surprise attack of enemy positions by air-borne shock troops.

The Germans have given us ample proof of the value of both of these uses. Gliders were first used successfully by them for attack during the invasion of Belgium in 1940. It now seems reasonable to suppose that this was Hitler's so-called "Secret Weapon" as troops landed in gliders were instrumental in capturing

key forts and bridges. It was not until the air invasion of Crete in May, however, that world attention was focused on this new weapon which was here first used in numbers. Since then we have heard of the Germans using gliders against the Russians on the shores of the Black Sea and currently against the British in Lybia. The last mentioned is the first report we have had of the use of gliders for transporting supplies.

In considering the reasons for using gliders for transport we come at once to the fundamental truth that you can tow more than you can lift. This is the basic economic reason for the use of locomotives plus cars, trucks plus trailers and tugs plus barges in surface transportation. To put it simply, in the present stage of advancement of aerial transport we are carrying our passengers and freight in the "locomotive." The first reason, then, for using transport gliders is economic. This immediately becomes obvious when we consider that the two engines of a transport plane towing three large gliders is doing a job now requiring eight engines. Added to this is the fact that the cost of the gliders will be very considerably less than that of the transport planes they will replace. Although it is still too early to know what they will exactly be, it has been estimated that the overall equipment costs for transporting by air a body

of men, such as a battalion, by transport planes and gliders will perhaps be only half that of doing the job with transport planes alone.

When used for surprise attack the glider can be a formidable weapon. Towed in numbers at night these ships can be released at high altitude many miles from their objective. They then glide rapidly down unseen and unheard, and land close to the objective in the first faint light of dawn. Out of each jumps a complete combat team such as a machine gun squad, fully equipped and ready for action.

German Types

The German gliders used in Crete were of 10-12 place capacity. They were high wing, cabin monoplanes with wing span of 80 feet and fuselage length of 50 feet. The semi-cantilever wings, braced by a single strut on each side, were of wood construction; the fuselage, of welded steel tubing. The entire ship was fabric covered. Apparently a two-wheeled landing gear was used for takeoff and then dropped in flight, the landing being made on the wooden skid. Those of us who in recent years have seen German sailplanes competing at our National Soaring Contests at Elmira are familiar with this operation on a smaller scale. It was tricky, to say the least. If the pilot dropped his wheels too low, they were apt to bounce up and damage the bottom of the fuselage. If dropped too high, there was danger of their bouncing into and injuring crew members or being smashed on impact.

Performance of these big German transport gliders is interesting. One to three of them were towed behind a single Junkers JU-52 at a speed between 100 and 120 mph. After release they probably glided, at a most efficient L/D ratio, at about 70 mph. Levelled off at about 50, they were landed at 35-40 mph. on beaches, roads, and in small fields.

Secret of a pilot's ability to land a large, heavily loaded glider in a small field is a combination of flaps and spoilers to give accurate control of glide path and speed. Added to this there is the characteristic of a glider in stopping very quickly, without danger of nosing over, when the stick is pushed full forward after landing. I once brought a single seater sailplane with 62-foot span to a dead stop in 40 feet after a landing made at over 60 mph. in a small field.

Since the Air Force began actively to initiate a glider program five months ago, real progress has been made in the procurement of equip-

ment and the training of pilots. In the former category the Materiel Division created a Glider Unit in its Experimental Engineering Section at Wright Field. This organization has carried on the development of several designs of 8 and 15 place gliders. The Navy is building 12 and 24-place gliders to be used by the Marine Corps. Construction of the Army ships is well under way and the first static test and flight test transport gliders have been delivered.

A program of flight testing with the small two-place training gliders has also been going on at Wright Field for some months. Some of the items tested have been types, sizes and lengths of towlines, various combinations for multiple towing, intercommunication between gliders and towplane and so on.

The most interesting experiment made recently was the picking up of a glider, resting stationary on the ground, by an airplane passing overhead at close to 100 mph. The basic device that made this experiment successful was a winch drum, equipped with a brake, in the airplane. This drum reeled out sufficient line to ease the acceleration of the glider. Once in the air and up to towing speed the glider was reeled in to the proper towing interval by a small electric motor driving the winch. The importance of this development is that it may solve the problem of launching a train of transport gliders. It will conceivably be possible to pick up several gliders out of a field too small for the safe take-off of the airplane alone.

Tests At Wright Field

At Wright Field for these tests are several Schweizer shoulder-wing training gliders, Frankfort high-wing trainers, a German "Minimoa" shoulder-wing, high performance sailplane, and a Polish "Orlik" sailplane of similar design. The two latter ships are used chiefly for analysis of design and construction. An O-49 has been used for towing and has proven to be an ideal towplane for the training gliders.

Training of Air Force pilots who will act as instructors, supervisors, and test pilots in the expanded program, has been carried on by the Elmira Area Soaring Corporation at Elmira, N. Y. and the Frankfort-Lewis School of Soaring at Joliet, Illinois. Only one class of six officers were trained at Joliet as the volume of training necessary was then not yet large enough to justify two schools.

Marine Corps pilots have been trained at Joliet. The Air Corps training was discontinued at Elmira due to winter weather conditions. It

is proceeding at an expanding pace, at the Twenty-Nine Palms Air Academy located at Twenty-Nine Palms in the California desert.

The primary training course lasts four weeks. The 30 hours of flight training given includes auto, auto-pulley, winch and airplane towing. Several hours of double towing (two gliders behind one towplane) give the pilots practice in towed formation flying. Enough soaring flight is done to make the pilots thoroughly proficient in handling the gliders and to instill in them real enthusiasm for this type of flying. This last consideration has already proven valuable. After all, it is logical that a man's interest in and initiative for any activity will be considerably increased if he gets a real kick out of it. A pilot has to be either singularly lacking in imagination or painfully blasé not to get a whale of a kick out of soaring flight.

Planning Advanced School

Tentative future plans call for the establishment of an advanced school for glider training. Here graduates of the primary courses will receive instruction in flying the large, troop-carrying gliders. Their background of flying the training gliders will then stand them in good stead, but these big ships will feel quite different. With their great size, weight, higher wing loadings, etc., these gliders will certainly not be sailplanes in any sense of the word. In fact, as one engineer stated the other day, they really should not be considered as gliders, but as transport airplanes with remote power plants.

Much thought has been given to the piloting background and experience necessary for pilots of the transport gliders. Due to the consideration of the size of these ships and the fact that they will be towed in formation at night, thought that a pilot should have at least the minimum airplane training of the Air Corps primary schools or CPT course before entering a glider school.

Second To None

At the closing banquet of the 12th annual National Soaring Contest at Elmira, N. Y. last July, General Arnold said that we would have a glider force second to none. World events since then have shown his wisdom in adding this new type of aircraft to our Air Force. The progress we have made so far makes us confident that his statement will come true in the not-too-distant future.

GUNTER'S 'ASSEMBLY LINE'

A Detroit "assembly line system" has been installed at Gunter Field, Ala., to speed up aircraft inspections and to train enlisted men to be skilled mechanics.

Hangars are divided into eight equal parts, each part being called a station. Four stations in each half of the hangar constitute a line. A sub-station or wash rack located outside of the hangar forms the beginning of each line.

An airplane sent to the Maintenance Hangar is taken first to the sub-station for a general check-up which includes oil pump drainage, screen cleaning, gas tank inspection, and engine spraying and cleaning. All discrepancies are noted on a blank form by the Hangar Inspector and the plane is moved to Station One.

Wheels, landing gear, brakes, tail wheel, instruments, skin, structure, cockpit, propeller, and thrust bearings are inspected at this station. Station Two checks cables, ignition system, flight controls, hydraulic system, valves, electrical system, and fuel and oil systems. At Station Three the propeller is painted and restenciled, the radio installed, and the plane vacuum cleaned. All discrepancies found by the Technical Inspectors are corrected at Station Four, the plane is recowled and preflighted, and then returned to its Squadron.

At the Maintenance Hangar Office a complete record is kept of the time on each airplane on the field. This record shows such data as airplane field number, serial number, time on the plane, engine model, serial number and time, propeller time, last depot inspection report, time towards a 50 or 100 hour inspection and whether the plane is or is not in commission. By means of this record, the Officer in Charge determines which airplanes are to be called in for either a 50 or 100 hour inspection.

The Post Engineering Officer and his assistants are in charge of the Maintenance Hangar, and the Hangar Chief, the Hangar Inspector, and the Line Chief are non-commissioned officers.



The War Department has instructed civilians not to call Interceptor Command Headquarters for information about reports of pending air raids. This restriction has been instituted because of the necessity for keeping all agencies of the Interceptor Commands free to repel attacks. Under War Department instructions, Interceptor Commanders have the sole responsibility for ordering all air defense measures.

Filipino Air Force
(Continued from Page 34)

At General MacArthur's request, the War Department approved a one-year extension of Lieut. Lee's tour of duty. In the following year another request was made for a one-year extension of duty for the young Chief of the Philippine Army Air Corps because of his "outstanding fitness for the duties he is performing and his intimate experience with the Philippine Army." This was denied on the grounds that additional flying instructors at the U. S. Army Air Corps Training Center was urgently needed.

Lieut. Parker, during his service as flying instructor at the Philippine Army Flying School, flew over 1,000 hours. Before he returned to the States in November, 1937, he was presented the Distinguished Service Star of the Philippines by President Quezon, with the following citation:

"For outstanding service to the Commonwealth of the Philippines in a position of major responsibility, there is hereby presented to First Lieutenant Hugh A. Parker, Air Corps, United States Army, the Distinguished Service Star of the Philippines. As Plans and Training Officer of the Air Corps Training Center, Philippine Army, and individual instructor of flying cadets, his services have been characterized by unusual efficiency and professional skill, unflagging enthusiasm, and outstanding results. His work has required incessant devotion to duty, a readiness and capacity to comprehend the particular requirements of Filipino students, and an ability to adjust technical instruction so as to overcome unusual difficulties. His accomplishment and examples have been an inspiration to every member of the Air Corps of the Philippine Army and a source of satisfaction to the Chief of the Air Corps, the Chief of Staff, the Military Adviser, and the Commonwealth Government."

Work Continued

The work so brilliantly started by Lieuts. Lee and Parker was carried on with no less successful results by Captains Alden R. Crawford, Mark K. Lewis and Lieut. Charles H. Anderson, assisted by an able staff of Philippine Army Officers. Captain Crawford was the Acting Chief of the Bureau of Aeronautics; Captain Lewis, Acting Chief of the Philippine Army Air Corps; and Lieut. Anderson, Operations Officer and Chief Flying Instructor of the Philippine Army.

Limited by the number of airplanes and flying

instructors, only three classes of 25 students each were conducted annually at the Philippine Army Flying School. Usually, about forty per cent of these students completed the course. The first class was graduated on October 30, 1937, and the commencement exercises were an outstanding event. The guest of honor, President Quezon, delivered the principal address. Ranking U. S. Army officers present were Generals MacArthur, Lucius R. Holbrook, John H. Hughes and Evan H. Humphrey. High ranking officers of the Philippine Army were also present. It was at this function that Lieut. Parker received his decoration from the Philippine Commonwealth.

Captain Crawford left the Islands in December, 1939; Captain Lewis in July, 1939, and Lieut. Anderson in the spring of 1940. The latter was decorated with the Distinguished Service Star of the Philippine Commonwealth.

Cited By MacArthur

Approving the request of Captain Lewis to attend the Air Corps Tactical School at Maxwell Field, Ala., General MacArthur stated: "Captain Lewis is on duty with the Commonwealth Government, acting as Chief of the Philippine Air Corps, in which capacity he has shown great ability. He has successfully furthered the development of the Philippine Army Flying School, has perfected plans for and is directing the expansion of the Air Corps and has exhibited marked qualities of initiative, leadership and judgment." A most promising career in the Air Corps for Captain Lewis ended when he crashed at Biggs Field, El Paso, Texas, on December 9, 1941.

From the latest information available, a message from General MacArthur, sent last November, Lieut. Colonel Charles Backes, Air Corps, has been Acting Chief of the Philippine Army Air Corps for more than two years. At that time he had already served four years in the Philippines and his tour had been extended another year, but it was proposed to order him back to the United States for a period of four months for reasons of health and in order to permit him to visit Air Corps installations and familiarize himself with current developments.

The properly EQUIPPED and MANNED bombardment airplane is a PRECISION instrument.

Barksdale - Never A Dull Moment

By Lieut. John H. Cheatwood

Barksdale Field, La.



NO other air field has experienced more completely than Barksdale Field, La., the rapidly changing phases of activity that have been part of the growth and development of the Army Air Forces.

Pursuit base, GHQ Wing Headquarters, Air Force Combat Command base, advanced Pilot School, Bombardier School, Navigation School and Third Air Force base—Barksdale has been all of these.

From an obscure beginning with about 10 instructors and as many airplanes, 12 schools have developed out of Barksdale, each school equipped with experienced instructors. Staff schools within the Southeast, Gulf Coast, and West Coast Air Corps Training Centers have all received personnel from Barksdale.

Barksdale's varied career began in 1932 when it was established as the home of the 20th Pursuit Group. In 1935 the Third Attack Group was added and the field became the headquarters of the Third Wing of the new GHQ Air Force. This lasted until October, 1940, when the Air Corps recognized Barksdale's value to the expanding training program and made it a Specialized Flying School.

On February 6, 1942, when the Barksdale school was moved to another location, the field returned to the Combat Command, where it remained until the Command was abolished by the Air Forces reorganization which went into effect March 9. Barksdale is now one of the most important bases of the Third Air Force.

Much of Barksdale's most interesting history was crowded into the years when it was an advanced Specialized Flying School. This school was incorporated into the Southeast Air Corps Training Center and comprised not one but four schools in its original operational plan. These schools were Advanced Flying School (TE) (Pilots), Advanced Flying School (TE) (Bombardier), Advanced Flying School (TE) (Navigation), and the Advanced Flying School (SE) (Pilots). A brief resume of the functioning of the various schools follows.

Advanced Flying School (TE) (Navigation)

First of the four schools to receive students was the Navigation School. The first class, SE 41-A, was received in November, 1940. In its

eight months course, this school graduated 52 navigators. At the beginning, very few airplanes were available, and those on hand were the obsolescent B-10 and B-12 types and some B-18 types. In the later stages, however, Beechcraft AT-7's were made available in sufficient numbers and training was improved. During all but the last few weeks of training, flying instructors served as pilots for navigation missions in addition to their other duties.

Advanced Flying School (SE) (Pilots)

Two classes of single-engine pilots were received while the school was located at Barksdale Field. They received training on AT-6, AT-12, P-36 and P-35 types. One class of 37 was graduated while the remaining students, instructor personnel and the various line squadrons were transferred with the school to Craig Field, Selma, Ala., when that school was activated.

Advanced Flying School (TE) (Bombardier)

The Bombardier School, second of its kind to be activated, was patterned somewhat after the school then operating at Lowry Field, Denver, Colo. The two major differences were the necessity for operating on bombing ranges located very near the landing area of Barksdale Field and the necessity for utilizing the same equipment and pilots that were employed by the Two-Engine School. The first difficulty was solved by using single traffic pattern and the second by training two-engine pilots and bombardier students together. This last was done by using student pilots for the Two-Engine Pilots School as co-pilots on bombing missions, while students of the Bombardier School were receiving training. Later, however, pilots were specifically assigned to duty with the Bombardier School.

Advanced Flying School (TE) (Pilots)

Last to leave Barksdale Field was the Advanced Flying School. (TE) (Pilots). In one year this school graduated several hundred two-engine pilots. Some of these graduates were sent to temporary duty with the Air Corps Ferrying Command and have since been assigned to duty with the Air Force Combat Command. Some others have been retained as instructors with the various train-

ing centers. The remainder were sent to bombardment units and the Air Force Combat Command. Instruction was begun with B-10, B-12, and a few B-18 type airplanes but later the school furnished AT-7, AT-8 and the Lockheed-Hudson types.

At the time these schools were founded, very little had been done in the field of specialized student training since the four-section plan of operation was discontinued. New operational plans had to be formulated. New ground school curricula had to be written. Men not qualified in specific phases of instruction had to be trained. New squadrons had to be formed and trained to maintain the equipment to be used.

Plans of operation of each school were worked out individually by school staffs. Some degree of flexibility was allowed so that schedules would not conflict with other training. As soon as schools were operating smoothly the training of key personnel or cadres for other schools was undertaken.

The problem of Ground School curricula was a major one, due to the fact that many courses taught were completely new. Instructors were assigned the various subjects for the multiple purpose of making detailed studies of all data available, incorporating these texts, and then conducting classes. Since there were no special Ground School instructors available, these duties were fulfilled by flying instructors, bombardier instructors, and navigator instructors during their time on the ground. In many cases it was necessary to exchange instructors between schools when these instructors were qualified in highly technical subjects given by two or more schools.

Coordination between flying and ground instructions was obtained by a system of half-days. In the Two-Engine Pilots School, for example, the lower class was assigned a period for flying and a period for ground school while the upper half was assigned the reverse. Similar systems were employed by other schools.

In order to insure proper maintenance for 24-hour-a-day flying schedules, several new squadrons were activated. These men were specifically trained for maintaining the type of aircraft used in the schools to which they were assigned. This system proved very efficient. The average percentage of airplanes of all types in commission daily was approximately 70 per cent during this period.

From the beginning at the Specialized Flying School 12 individual schools have sprung into being, and now, some of these have begun to subdivide.

Poles Still Flying

(Continued from Page 28)

as though in oil and went down into the sea.

"Then I saw a machine that had been damaged and was smoking and another tearing away for all he was worth. I went after him and approached him from the rear and above, pressed the button and something began banging into my fuselage from below. It was as if a bucket of hot water had been poured down my neck. I don't remember breaking off to the right. I managed to look and see if my legs were still whole and then four MEs flashed by me. I don't know which of them hit me but I was mad with all four of them. Without warning my machine suddenly caught fire."

The Polish pilot was knocked unconscious trying to bail out and when he came to he was burning in his spinning ship. He finally kicked his way out and bailed out but was severely burned about the face and spent weeks in a hospital. He concludes: "Now I'm flying again."

The Polish bomber pilot flew a Wellington to bomb Essen in the German Ruhr valley. His squadron reached their target, bombed it from low altitude and then headed for home in the light of the fires they set.

Ran Into Flak

"Shortly after leaving the target we ran into a storm of flak. It was so close we could hear the bursts plainly over the engine roar. Our Welling started to bounce violently. We went into violent jinking (weaving and zig zag tactics) and climbed and dived as fast as possible to throw the bummers off. But it was no good. We counted 12 salvos of from 20 to 30 rounds apiece. Things got rapidly worse until we could hardly control at all. Ailerons had no effect, the rudder almost none, except that the airplane responded exactly in reverse. We side slipped from one side to another and things looked bad. Finally we got her on an even keel although we were still weaving.

"When we reached the English coast I suggested that the crew leave the building. The crew said if I was going to stay that was good enough for them so they stayed, getting back into the tail. We found our base, came in to land, but when I put the flaps down they only went part way. Just as we touched the ground there was a terrific cracking noise. The starboard wing went, ripping down all the fuel lines into the engine. We made it though and nobody was hurt."

Up, Up, Up

HIGH ALTITUDE FLYING



"THE SKY IS NO LONGER THE LIMIT"



1. OXIMETER RECORDS EFFECT OF ALTITUDE ON BLOOD CONTENT
2. STRATOSPHERE FLYING SUIT -- WARMER THAN ESKIMO FUR
3. SUB-ZERO TESTING OF AIRCRAFT MATERIALS

Man in the Stratosphere

By Col. David N. W. Grant

Air Surgeon, Army Air Forces



IT is an accepted principle that the most important instrument in an airplane is the pilot. Not only must great care go into his selection and in training him as an engineer but it is equally important that he keep abreast with the most recent advances in aviation physiology and medicine. This must be done if he is to qualify for flying to the great heights and at the high speeds of which the most recent aircraft are capable.

From the human point of view the principal hazards of high altitude flight may be listed as follows:

- (1) Deficiency of oxygen
- (2) Decrease in atmospheric pressure resulting in
 - (a) Expansion of gases in the alimentary canal
 - (b) Escape of gaseous nitrogen in the form of bubbles within the tissues
- (3) Increase in atmospheric pressure requiring admission of air to the sinuses and middle ear
- (4) High acceleration:
 - (a) Intermittent - contributing in some cases to air-sickness
 - (b) Continuous - contributing in some cases to blacking out
- (5) Cold
- (6) Fear
- (7) Fatigue

The deficiency of oxygen, to which anyone is subject who goes to high altitudes without an oxygen supply, was the earliest recognized hazard of high altitudes. In the World War the capacity to endure anoxia was rated as one of the essential features of selection of flight personnel. While it remains an important characteristic it is no longer recognized as the sole limiting factor for personnel in high altitude flight. Present oxygen equipment, if properly used, insures a fully adequate oxygen supply except under the most extreme conditions, and it is now realized that the jobs of the pilot and of his crew present other hazards that are at least as critical as his oxygen supply.

One of the principal purposes of the Air Corps indoctrination program now getting underway is to demonstrate to the young pilot or crew member that his mental functioning falls below par when he goes to 15,000 feet without oxygen, that he is likely to faint if he goes above 20,000 feet without oxygen and that when he goes above 40,000 feet, even with pure oxygen, he is in a precarious state. For an adequate oxygen uptake the lungs require, even with pure oxygen, a density of more than one-fifth that of air at ground level. This critical limit is passed at 39,000 feet and from there on the hazard of anoxia increases rapidly. A man is in as great danger at 42,000 feet breathing pure oxygen as at 18,000 feet breathing atmospheric air. It is difficult to convince young pilots of this truth except by actual demonstration in a chamber. They forget the fallacy of the old tradition that if a man lifts and carries a growing calf each day he will eventually be able to lift and carry the adult bull. It is equally certain that, on the one hand, a day will come when he cannot lift the young bull as it is on the other hand that, even when breathing pure oxygen, he will lose consciousness as the altitude is increased much above 40,000 feet.

Special Mention

Those features of oxygen equipment and its use deserving special mention in this general survey are:

(1) The insidious effects of oxygen lack. The brain is affected first—resulting in loss of judgment, unwarranted self-confidence, loss of alertness, sleepiness and possible loss of consciousness. A man may go through this entire cycle and return to the ground without having realized his precarious state. Those who accomplish successful combats above 20,000 feet without oxygen are apt to boast of their accomplishment and so to encourage such foolhardiness in others. Those who fail in attempting to repeat the performance don't live to tell the tale. The moral is—depend on the altimeter, not on your symptoms, to determine when oxygen is to be used. A reasonable, conservative rule regarding

oxygen usage is that given in T.O. No. 03-50A-1 as follows: "Except in urgent, unforeseen emergencies, all personnel will use oxygen at all times while participating in flight above 15,000 feet. Oxygen will also be used when remaining at an altitude below 15,000 feet but in excess of 12,000 feet for periods of two hours or longer duration and when participating in flights below 12,000 feet but at or in excess of 10,000 feet for periods of six hours or longer duration".

(2) The relation of cold to oxygen use. Oxygen lack aggravates the effects of cold and favors frost-bite. Also, once a man has become cold his oxygen requirement is increased because of shivering. Oxygen should be used as liberally as the supply permits when cold begins to penetrate.

(3) The relation of work to oxygen use. Work is accomplished by oxidation of body fuels and in emergencies a gunner or other crew member may require for short periods four or five times as much oxygen as usual. The present oxygen equipment renders such work hazardous unless the oxygen regulator is opened to capacity. Even then there may be an oxygen deficiency above 30,000 feet. Above 35,000 feet work should not be attempted except in extreme emergencies.

(4) The question is frequently raised, "Does breathing pure oxygen have harmful effects?" The answer for personnel of the Air Forces is, "No". Extensive experimentation and observation have erased all doubts as to the harmful effects of oxygen.

(5) Another common question is, "Does exposure to oxygen lack from service flying have permanent harmful effects?" The answer again is in the negative, provided that accidents due to inefficiency while anoxic do not occur. Oxygen lack sufficiently severe and prolonged to result in brain damage might be encountered by flight personnel only in rare emergency provided T.O. No. 03-50A-1 is followed. As the first evidence on this question we have the records of the historic flight made in 1875 by three French balloonists. They reached 28,800 feet without oxygen equipment. Two died, presumably of oxygen lack, while the third, Tissandier, survived without apparent harm.

Recent direct experimentation on animals and accumulated observations on men substantiate this point.

(6) A quotation from a German manual for flying personnel is to the point—"The efficient use of the oxygen apparatus insures mental superiority over the enemy".

The second hazard listed above is the effect of decreasing pressure. The body contains air partly trapped within it, in the ear, in the sinuses, in the alimentary canal. As the pressure decreases during ascent to high altitudes these gases expand and unless they escape they cause pain. Escape through the Eustachian tubes of the ear and from the sinuses causes no difficulty in the healthy man in ascent.

Expansion of gases in the stomach and intestines is one of the commonest of discomforts. Body movements that favor the passing of this gas are usually effective. Foods known by experience to be gas-forming should be avoided. The discomfort of expanding gas is aggravated by the fact that such gas bubbles will expand much more in the body, where they are surrounded by wet tissues, than dry gas in a balloon. Whereas, dry gas will expand to five times its volume at 39,000 feet, gas in the presence of excess water will expand to about eight times its initial volume.

Decreasing the pressure on the body not only affects gas bubbles already present in the body but it permits the free nitrogen in body fluids to escape from solution and form bubbles. This nitrogen is present because the entire body is in equilibrium with atmospheric nitrogen at ground level. When the pressure decreases as one ascends this nitrogen tends to escape. The bubbles thus formed rarely cause trouble at 25,000 feet. At 30,000 feet some subjects have trouble after two or three hours. At 35,000 feet some have trouble after one hour and at 40,000 feet trouble may come within 15 minutes. However, many young men can "take" four hours at 35,000 feet or one hour at 40,000 feet.

These "troubles" may take the form of joint pain, of throat irritation or of itching skin. Joint pains may be mild and disappear or they may become severe enough to cause a virtual paralysis of the member affected or even fainting. Throat pains and itching skin, once developed, are almost certain to grow worse as judged by chamber tests.

One Cure

There is only one cure and that is descent until the pain is alleviated or disappears. Usually the man recovers entirely before he is half-way down to ground level.

Laboratory experiments indicate that exercise for one-half hour while breathing oxygen gives considerable protection against this hazard. It remains to determine the usefulness of this procedure under practical conditions.

On descent from high altitudes air must re-

enter the middle ear and the bony sinuses. Clearing the ears by swallowing, by blowing the nose, etc. is a technique nearly all can learn with practice. Except in emergencies, flights to high altitudes should not be attempted when one has a cold. Stubborn infections of the ear or sinuses may result.

Clearing the ears does not necessarily grow more difficult with increasing rates of descent. If a man has no difficulty in clearing his ears coming down at 5,000 feet per minute he can probably do as well at 25,000 feet per minute.

High accelerative forces whether of the intermittent type, as in rough air, or of the more sustained type, as in pull-outs, and other maneuvers, constitute one of the acute hazards to which flight personnel is subjected. The first form is of less concern to the pilot than to his crew. While the pilot either overcomes air-sickness or quits, the members of his crew may continue to experience it. This seems to be particularly true of the tail gunner where riding is roughest. Fortunately air-sickness rarely if ever has permanently ill-effects. Unfortunately there is no assured preventative nor can we escape the fact that a gunner in the process of vomiting is for the time being out of action.

The effects of high sustained accelerative forces as in pull-outs, have been described in a recent Technical Order, together with the accepted method for increasing one's tolerance of "G". This need not be repeated here, other than to refer to the figure, showing the crouching posture that has been taught the German pilots for some years. This posture is believed to increase one's tolerance by about 1 "G".

Cold Is A Hazard

The hazard of cold is not merely the pain experienced and the danger of frost-bite. The principal handicap is the reduced level of bodily functions, both mental and physical. Fingers are numbed and operations are clumsily carried out, if they can be carried out at all. The physical misery dulls one's awareness of other dangers. The oxygen system must supply more oxygen and may freeze in the process of doing so. Added clothing greatly interferes with the bodily movements requisite for routine operations, and also renders more difficult parachute escape. Finally goggles and windows become frosted; in order to clear the windows it may be necessary to open them and thus lower the temperature even more.

Protection against the hazard of cold is an

engineering problem that is on the way to solution. Clothing should be loose-fitting and dry. Rapid ascents in the tropics are more difficult than in temperate zones because, if adequate protective clothing is donned before the flight, the wearer may be soaked with perspiration before he leaves the ground. Electrically heated suits seem better adapted to tropical and temperate zones than to the arctic zone. If the wearer of such a suit must bail out, he cannot long survive arctic cold.

As emphasized before, the use of oxygen helps to protect against cold. Hot drinks during flight also help some. Alcohol makes one feel better because it dilates skin capillaries and favors transfer of body heat to the skin. The resulting temporary sensation of warmth may have disastrous results since it is accomplished by lowering body temperature. Alcohol also tends to inhibit shivering and so to increase still further the danger of continued exposure to cold. Alcohol should be looked upon as a restorative for the man who has been rescued from cold. It should not be made available to the man who is expected to undergo a long exposure to cold.

No Escape From Fear

The hazard from which there can be no escape is fear. Fear may arise from any one of the hazards previously mentioned or from a combination of them.

It is the job of the flight surgeon, responsible for selection of aviation cadets, to eliminate those most likely to be eliminated because of chronic fear, but the fear hazard is a mental state from which none of us is wholly protected. Repeated exposure to all the other stresses entailed in flight may be well endured in the absence of any strong element of fear. It is this psychological factor of pronounced fear that seems chiefly responsible for the cumulative fatigue occasionally experienced by war-time pilots.

In summary it may be said that the hazards encountered by flying personnel are now well recognized through recent advances in aviation medicine and relatively efficient means have been discovered and developed for meeting them. This has been possible through the team work of engineers, flight surgeons, physiologists, psychologists, and other scientific groups. The effectiveness of these contributions, however, finally depends on the cooperation of the air crews.

Torpedoes Get Wings

(Continued from Page 12)

elon with ample space between planes to allow for a breakway turn in either direction once the torpedo is dropped. The wide spacing has the added advantage of stringing out the targets and diluting the defenders' fire. The attack is generally delivered from forward of the beam so that ships present their largest target bulk and at the same time add a vector of their own speed to that of the torpedo thus cutting down the time available for the ship to dodge.

Double Attack

Another form of attack that can be extremely effective, provided that it is made in force, is one delivered from a semi-circle of planes spread across the bow and to both beams of the enemy ship. The torpedoes then speed in from all angles so that avoiding them is almost an impossible task. The quintessence of success, however, in a torpedo plane attack is a double attack in which two flights approach from both port and starboard bows spaced ninety degrees or more apart and perfectly synchronized to arrive at the target about a minute apart. The Torpedo has more speed than its targets but can sometimes be avoided by a quick-thinking skipper who will generally swing his ship to a course opposite and parallel to the course of the torpedo. In so doing he presents the least possible target bulk and is in a position to dodge the torpedo by a slight touch of the helm.

But if the ship being attacked swings parallel to the first torpedo attack he is in no position to dodge the second attack delivered from the opposite bow. The second batch of torpedoes approach him at right angles to his course to which he is pinned by the approach of the first batch. Whichever way he turns he finds himself in a sea full of TNT anxious to fulfill its purpose.

A big help to any torpedo plane attack but of particular benefit to the echelon attack from forward of the beam, is a smoke screen laid down close to the ship to be attacked. The attacking planes can then come in behind the screen rising occasionally above it for observation, burst through the screen, drop and hightail for protection. Of course the question arises "Who will bell the cat?" for a smoker is a prime target, although he does have the advantage of speed and a high rate of change of bearing. A smoke screen is also a fine barrage target for flak fire and pilots may count on heavy fire at the screen.

OXIMETER AIDS TESTS

A new device called an Oximeter is being used as a "watch dog" in high altitude chamber tests. Through an illuminated "ear-ring," the Oximeter provides instant readings without delaying the experiments.

Previous to the development of the Oximeter, the amount of oxygen in the bloodstream of a man in the altitude chamber was recorded by securing a sample of the subject's blood by means of a needle and syringe. Operated outside of the altitude chamber, the Oximeter does away with this laborious process and permits the tests to continue without interruptions.

The ear unit of the Oximeter is clamped on the lobe of the subject's ear so that the light from the lamp shines through the lobe into a photocell on the other side. The Oximeter capitalizes on the fact that the blood changes as its oxygen content changes. Normally saturated it is bright red, but as more oxygen is lost it shades off to deep purple. Purple passes less light than red, so any change in the oxygen content of the blood alters the intensity of the light which shines through the ear lobe.

The Oximeter was originated by Dr. Glenn A. Millikan, consultant and lecturer in bio-physics at the University of Pennsylvania.

FREE LEGAL CLINIC

A legal aid clinic—believed to be the first of its kind at any U.S. Army post—was inaugurated at Lowry Field, Denver, Col., to provide enlisted personnel with necessary legal help.

The clinic offers legal advice to Army personnel and secures competent legal aid for them in matters of family relationship, guardianship, homes and personal possessions, wages and other income, installment purchases, taxes and other debts, wills and insurance policies, welfare laws and civil service, accidents, and rights under the Soldiers and Sailors Relief Act.

If the case warrants, a member of the Denver Bar Association is called in for help. Then, if an attorney is needed, the association supplies its services free of charge to enlisted men. The Army is assuming no responsibility for any of the cases handled.

To reduce average bombing errors by ONE-HALF is equivalent to multiplying the effectiveness of a bombardment force by FOUR.

War Is Climbing

By Capt. Nathaniel F. Silsbee



WAR is moving up into the higher levels, and the see-saw between high flying bombing planes, higher flying fighters to knock them out of the sky, then new techniques to get the bombers up even higher, goes on at a furious pace. Put differently, every new offensive weapon brings an almost immediate reaction in the field of defense.

For some years science, recently prodded by Mars in no uncertain terms, has been attempting to prepare both men and machines to fly into the substratosphere, which extends from 5 to 8 miles (or more) above the earth's surface. At the outbreak of this war a high ranking British official stated that the nation which first perfected superbombers for stratosphere operations would win. Later in this article we shall see what is being done along this line by ourselves, as well as by the British and the Germans.

It should be realized, however, that owing to weather conditions, particularly over continental Europe, there will still be plenty of bombing in the 10,000 to 25,000 altitude range, as well as dive bombing and the fast low flying bombing tactics as developed, for example by the British using modified Hurricane IIc fighters and the Russians with new heavily armored bomber-fighters. These activities are not within the scope of this article.

Difficulties Involved

First of all, then, let us look at some of the technical difficulties involved in getting planes and pilots to fly "upstairs."

The first job is to get the bomber and its load up there. This has been made possible by such engineering gadgets as supercharged engines, constant-speed propellers, and high-lift wings. The theory of the supercharger is fairly simple. The gasoline in an airplane engine burns oxygen from the air. The higher the altitude the less oxygen there is in the air, therefore the higher the engine goes the less efficient it is. Engines, at higher altitudes, become short-winded, like the traveler climbing Pike's Peak.

Take, for example, a Pratt & Whitney Twin Wasp, which develops 1,200 h.p. for take-off.

At 20,000 feet, without supercharging, it would be turning up hardly more than 500 h.p. and at 25,000 just over 250 h.p. Not so good if speed is to be maintained. However, with the supercharger, extra air is pumped into the carburetor, and that does the trick.

Turbo-Supercharger Ingenious

The built-in blower type of supercharger is usually operated in two gears, going into "high" as the higher altitudes are reached. A recent development in which this country appears to have a jump on the rest of the world is the turbo-supercharger. With this ingenious device, the engine's exhaust gases are utilized by directing them through a small turbine compressor. This rotates a blower which sends the "thickened" air on to the carburetor.

On the occasion of the Wright Lecture at the Institute of the Aeronautical Sciences, December 17, 1941, the Collier Trophy for the year's outstanding contribution to aeronautical science was jointly awarded to Dr. Sanford A. Moss, of the General Electric Research Laboratories, inventor of the turbo-supercharger, and to the U. S. Army Air Corps for practical application of the device to high altitude flight.

Another problem is to get the propeller to take larger bites of air at the higher altitudes. This means that the blades must be able to turn in the hub to allow change of pitch—low pitch to allow the heavy bombing plane to get off the ground, and high pitch in the substratosphere to secure bigger bites of the rarefied atmosphere.

These are mechanical solutions to the problem. Another angle brings us into aerodynamics. It takes a lot of lifting surface to get a fully loaded B-17 (around 25 tons) up to 35,000 feet. One reason why foreign heavy bombers have been slow, and therefore highly vulnerable to fast well-armed fighting planes, is that to produce sufficient lift the wings have had to be large, and that means plenty of drag. This problem is being tackled by foreign research organizations, and one excellent solution in this country has been found in the Davis wing, with its sensa-

tionally high lift-drag ratio. The use of this airfoil on our B-24 Consolidated heavy bomber (Liberator to the British) has spelled outstanding performance for this ship.

The Human Element

So much for the Machine. How about the pilot and the other members of the combat crew? It is generally agreed that most pilots and flight-crew personnel can function normally up to around 15,000 feet for a short period. Beyond this level oxygen deficiency begins to produce certain dangerous symptoms—such as an unusual buoyancy or possibly irritability, loss of memory, lack of judgment, delay in reaction, etc. Hence oxygen masks are a prime essential, or better still—as they provide the answer to the intense cold as well as the lack of oxygen—pressurized cabins, of which more presently. The latest types of oxygen masks include—besides the oxygen tubes—radio microphones, special cold-resistant lining and double-lens goggles to prevent fogging and frost formation around the pilot's eyes through the air leaks. It may be recalled that this happened to Major Schroeder in 1920 in one of history's most remarkable flights, when a world's altitude record of 33,113 feet was achieved.

Another headache for the high flyer is aeroembolism, an ailment somewhat similar to the "bends" sea-divers experience after rising to the surface of the water too quickly. This is caused, not by oxygen or lack of it, but by nitrogen. At altitudes above 30,000 feet man's blood, organs and tissues give off their nitrogen in the form of bubbles. This trouble is more apt to affect pilots of fighter or interceptor planes because of the very rapid rate of climb of this type of ship.

In consultation with the Mayo Clinic, an interesting experiment was performed last spring. Milo Burcham, Lockheed test pilot, during the altitude tests of the twin-engined P-38 interceptor, "air conditioned" himself before stepping into the plane. Donning an oxygen mask he rapidly pedaled a gymnasium-type bicycle for half an hour. This worked off enough of the nitrogen bubbles, but he had to complete his high altitude test flight in the P-38 breathing pure oxygen, but no air, which contains nitrogen. The proof of the pudding—no aeroembolism.

This, of course, is only a partial solution to the problem, as such procedure would not be possible in the case of high flying defense operations, owing to lack of time. The case for

pressurized cabins was stated by Dr. Carl Schmidt, of the University of Pennsylvania, at a recent meeting of the Institute of the Aeronautical Sciences. He warned that as regards speed, rate of climb and ceiling, the performance of military aircraft already available to the contending air armies is more than their human occupants can fully utilize unless special measures are taken to compensate for some of the physiological strains.

Dr. Schmidt said that "the closest approach now available to a solution of these problems is the closed-cabin airplane in which the air or oxygen is compressed sufficiently to prevent any oxygen-lack, and aviators' "bends", and also heated sufficiently to minimize the deleterious effects of cold. . . . But blackouts, due to centrifugal force, which is brought to play whenever the direction of a rapidly moving plane is suddenly changed, remain an unsolved problem."

D. W. Tomlinson, Vice President in charge of Engineering, of Transcontinental and Western Air, Inc., is more familiar with high altitude flying than any other man in the world. He anticipates that before the end of World War II stratobombers capable of 24 hours' continuous flight may be showering enemy territory with bombs from altitudes seven or eight miles above the earth. He says "Up is as high as we can make it. The sky has no limit."

For a couple of decades after World War I not much was done in the way of substratosphere flight from a military point of view. In November 1931, the Ninety-fourth Pursuit Squadron, Army Air Corps, made aviation history with a cross-country flight at an altitude of 20,000 feet from Selfridge Field, Michigan, to Bolling Field, Washington, D. C. in which all pilots used liquid oxygen. This was a forerunner of the modern high altitude combat flying which today is playing such a vital role in the fate of nations.

XC-35 A Pioneer

The first use of pressurized cabins for experimental flight above 30,000 feet came a few years later with the specially fitted Army Air Corps Lockheed XC-35 transport. It was in this plane that Mr. Tomlinson did much of his pioneer work "upstairs," in preparation for the Boeing Stratoliner—a commercial adaptation of the Air Corps B-17 Flying Fortress—with pressurized cabins for transcontinental passenger flights at 20,000 feet, atmospheric pressure being main-

(Continued on Page 50)

Cold Chamber Testing Performance at New Heights



BEHIND the story of sensational performance at high altitude is a long process of low temperature testing in which materials and working parts of the airplane are scientifically punished in cold chambers before they are used in a warplane designed to operate in the murderous cold and low pressures of the stratosphere.

Present progress in the conquest of the bleak upper regions would be fatally retarded if the Army Air Forces did not have cold chambers with very special types of refrigeration at Wright Field, Dayton, Ohio, but depended solely upon high altitude flight testing.

Air Corps turbo-superchargers, engines, fuel systems, instruments, guns, oxygen masks and regulators, cameras and hydraulic systems function at greater altitude today than is relished by enemy air forces.

The cold chamber, as a contributing factor, was first enlisted in Air Corps research and development at McCook Field in 1922; 20 are in use at Wright Field today.

Temperature Changes Cause Trouble

Airplanes of the Army Air Forces are engineered for the temperature extremes which will be encountered in operations from either tropical or arctic bases. The stratosphere, where temperature stabilizes at a median -67° C., and where the next mission may lead, is not many minutes' flight above any airdrome, wherever located.

Radical changes in temperature can produce malfunctioning. Two of the most common changes caused by cold are lubrication troubles and unequal contractions of dissimilar materials. Gyro instrument oil, for instance, turns to cup grease at -50° C. Tolerances of working parts are often wrecked by the contraction-expansion difference in materials. Some plastics and synthetic rubbers turn brittle. Paints and platings may crack and peel off.

The cold chambers in which these troublesome failures are isolated and remedied vary in design and capacity. For prolonged tests of large equipment, and when test engineers work inside, refrigeration of large chambers is obtained with carbon dioxide gas, ammonia or freon, a non-

toxic gas. Smaller chambers, chilled by a fan blowing over a charge of dry-ice, have proved satisfactory for the quick testing of many small articles.

To secure basic data, the Materials Laboratory at Wright Field has for many years used a cold chamber with a capacity of 800 cubic feet which can maintain a temperature of -40° C. for three or four months without difficulty.

Air Corps engineers and those in industry are supplied with handbook data based on low temperature tests—for hardness, fatigue, impact, tension and torsion strengths—of the metals, alloys, plastics, rubber, lubricants and other materials used in the manufacturing of planes.

When asked how it feels to be exposed to -40° for four or five hours at a stretch, a veteran testing engineer said that no undue discomfort is felt, unless you have poor circulation—if your heavy boots, suit, helmet, gloves and face mask fit with the proper looseness; if you keep busy moving around; and if you don't take the heavy garments off after you come out until all feeling of cold has gone.

Functional cold testing of equipment, prior to the crucial high altitude flight testing, is conducted in cold chambers of the experimental laboratory in which the development project is assigned.

In the Power Plant Laboratory, a big refrigeration bunker supplies the chilled air for aircraft engines being tested under altitude conditions, and services a good-sized cold chamber which has been used through the years in such projects as: checking methods of de-icing carburetion systems; eliminating types of leakproof fuel tanks and hose which grew brittle in cold; comparative tests of oils and warm-up periods; priming techniques; development of engine starters, of remote fuel pump drives, accessory power plants; and other similar projects.

Equipment Lab Uses Chamber

The Equipment Laboratory is a heavy user of cold chambers due to the large number of projects distributed in its several units.

In the instrument and navigation unit alone

several are used to check the changes made to preserve accuracy in higher altitudes of instruments with delicate springs, diaphragms, gaskets and turbines. No less exacting are the low temperature tests of electrical systems and the equipment developed by that unit.

For physiological and chemical studies, the Aero Medical Research Unit has a new low-pressure, low-temperature chamber in which -55° C. can be maintained. Exclusive of the air-lock, it can comfortably accommodate six men. As an aid to the advancement of aviation medicine, this unique chamber is ideal for measuring physical reactions to exposure in cold and low pressure simultaneously, for observing physiological changes in flight personnel while using oxygen, and for studies of fatigue and aero-embolism; and the effect of altitude on the sick, wounded, and on chemicals and medicines during transport by plane have been investigated.

In the vital tests of oxygen supplies, masks and regulators in conjunction with development of new equipment, cold chambers are used to determine service life, freezing characteristics, the maximum allowable moisture content for oxygen, the efficiency of oxygen driers, and the operation of respiratory valves at low temperature.

Clothing Gets "Winterized"

All new types of heavy flying equipment are subjected to cold chamber tests by the Parachute Unit, including gloves, boots, suits, helmets, as well as sleeping bags and electrically heated suits.

(At Ladd Field, Alaska, winterizing programs take advantage in winter of an outside temperature that frequently drops to -55° F. New types of fuel-servicing trucks, tractors, snow plows, crawler-wheel trailers, and various large maintenance and salvaging articles are subjected to every kind of cold test.)

So that guns will function wherever the airplane goes, the Armament Laboratory attacks its low temperature problems of lubrication, of tolerances and prevention of condensation, in a cold chamber. Hydraulically operated units, and gun chargers, valves, breechblocks, bombsights and accessories need to function without freezing, jamming or failure.

To bring aerial photography to its present performance at high altitudes, cold chambers were used by the Photographic Laboratory to weed out some camera motors, shutters, film and lens which functioned well in intermediate altitudes but not in the stratosphere.

War Climbs High

(Continued from Page 48)

tained at about the 8,000 foot level.

After the Luftwaffe's failure to clear the R. A. F. from the skies by mass daylight bombing raids in August and September 1940 they began coming over in small groups at much higher levels. One airplane used in this way was an adaptation of the Messerschmitt Me-110 twin-engine convoy fighter as a light bomber with an effective ceiling of over 30,000 feet. The Spitfire Mark I and Hurricane Mark I fighters, which, with their higher speed and heavier fire-power, did such devastating work in the mid-altitude range of 12,000 to 20,000 feet, lost a great deal of their effectiveness at the 30,000 foot level. Later models increased the ceiling and the race for higher altitudes in the fighter class was in full swing.

The latest Messerschmitt single engine fighter, the Me-109F, is reported to have a ceiling of over 38,000 feet, with the Spitfire Mark V and Hurricane Mark III and the newer Typhoon (by the makers of the Hurricane) in the same general vicinity or higher. The Materiel Division at Wright Field has been attacking the problems of high altitude flying from many angles, and in the fighter plane class has a ship which should hold its own with the best of them—the Republic P-43 with turbo-supercharger, now in production and in operation by our Combat Command. A larger, much more powerful advanced version, the P-47B, is well along, and has been announced as going into large scale production within a few months.

Bombers "Up There" Too

In the bombardment field the Air Corps has pioneered with the long range 4-engine Boeing. This airplane has carried strategic bombing (three to four tons of bombs to objectives over 1,500 miles away) to the substratosphere levels above 35,000 feet. As the Fortress Mark I, the R. A. F. Bomber Command has been enthusiastic about its performance and is looking forward to the newer models, the B-17E's, now coming into production. The newest British heavy duty bombers, the 4-engine Short Stirling and Handley-Page Halifax, while in the same league as our B-17 as to range and bomb load, definitely do not have as high a ceiling, and this is also true of the German 4-engine Focke-Wulf Kurier.

Victory usually goes to the plane "on top" and American research and engineering skill may be counted on to "Keep 'em flying higher."

Physical Training

(Continued from Page 10)

schools had been giving no physical training whatever, and others substituted drill and uncontrolled mass calisthenics for a progressive individual program.

The conferences were extremely productive. The first accomplishment was a determination of objectives. This was done by making a study of the various specialized types of jobs the Army Air Forces are called upon to do. Men who are going to be pilots need a different type of physical training from those who are going to be ground technicians. To date there have been two general programs set up: one for flyers and one for technicians. As time goes on a more complete breakdown will probably be made.

Much of what is the present Air Corps physical training program was developed at the Southeast Training Center under the direction of Ernest B. Smith. Mr. Smith, former Professor of Physical Education at Auburn University, Alabama, was the first physical director to be employed by the Air Forces. He hired a staff, held conferences and formulated many of the ideas which now serve as a basis for the entire system.

Once the first complete program had been devised and put into operation in the Southeast Center, the other flying training centers soon followed suit. Many of the ideas advanced in these other training centers have proved to be improvements over the original program, and in many instances have been incorporated in it. Coordinating efforts between flying training centers have so far been very successful, and the best of what has been developed in each section is being welded into an increasingly more uniform program that is getting superb results.

Coordinated though it is, the program is not run from Washington. Each flying training center—Southeast, Gulf Coast, West Coast—as well as the Technical Training Command, is responsible for its own system. Directives and instructions are issued from training center headquarters, and instructors are hired there.

Heading the program at the Gulf Coast Training Center is H.L. Berridge, former physical education instructor at the University of Texas. The West Coast program is being run by Douglas Dashiell, director of physical education at the University of Nevada, and the Air Corps Technical Training Command chief instructor is J.B. Miller, Director of Physical Education and Athletics at the University of Tulsa.

At the present time the Air Corps has a field staff of approximately 350 physical instructors and directors. This staff is responsible for the physical conditioning of all Air Corps cadets in a daily program lasting at least one hour.

When the Air Forces expand, a much larger staff of physical instructors is envisioned. At this stage we will have accomplished a program that should have been established in the period immediately following the World War. The experiences of the last war plainly indicated the needs for a program such as we are now carrying on.

In concrete results the efforts made by the men who have developed the Air Corps physical training program as it exists today have been very encouraging. Since the program was put into effect the number of cadets eliminated from pilot training in test classes has been reduced nine per cent, the average height has been increased .227 inches, and the average weight has increased 4.8 pounds. It is impossible to determine whether these improvements are due entirely to the establishment of the physical training program, but it is safe to assume that the program is at least partly responsible.

For many years our enemies in this war have recognized the value of physical training in preparation for aerial combat. Set against this in the present conflict is the fact that, primarily, our manpower is at least physically equal if not superior to that of our enemies.

Our task then is to press, in a comparatively short time, a program of air crew and ground crew physical training that will increase the importance of this factor, thus constituting a mighty contribution to our war effort. We have made a good beginning. And, judging from the results obtained so far, the program, in the end, will have more than justified its undertaking.



To meet an increasing demand for meteorologists in the Army Air Forces, training in that subject is being offered to a limited number of young men, not below 20 nor more than 26 years of age, who are in their senior year at a recognized college and who have satisfactorily completed thorough courses in higher mathematics. Universities designated as training centers for accepted students are the Massachusetts Institute of Technology, Cambridge, Mass.; California Institute of Technology, Cambridge, Mass.; New York University; Chicago University and University of California, Los Angeles.

HERE ARE THE GEORGES



Col. Harold Lee George

Brig. Gen. Harold H. George, former commanding general of the Philippines Air Force, and Col. Harold L. George, Chief of the Air War Plans Division, Air Staff, are often confused. Such was the case in the *News Letter* when General George was inadvertently described as a heavy bombardment specialist.

General George is a veteran pursuit pilot, having won the Distinguished Service Cross in World War I for attacking a formation of four German Fokkers, destroying two and driving the others back to their own territory. He was recently promoted to brigadier general for "gallantry in action" with General MacArthur's forces in the Philippines. Colonel George is a veteran of heavy bombardment, having commanded the famous Second Bombardment Group at Langley Field and participated in the B-17 flights to South America. He was awarded the Distinguished Flying Cross for his work in these pioneer long distance flights with four-engined equipment.

The Georges are not related although they were born within a year of each other. General George is a native of Lockport, N.Y. Colonel



Brig. Gen. Harold H. George

George was born in Somerville, Mass. General George took flight training with the Air Corps in 1917 after four years service in the Infantry. Colonel George came to the Air Corps in the same year after brief service in the Cavalry. Both served overseas during the World War, General George with the 185th and 139th Aero squadrons and Colonel George with the 163rd Day Bombardment Group. Both are graduates of the Command and General Staff school and have commanded tactical units of the old GHQ air force. General George commanded the 24th and 33rd Pursuit Squadrons, the 7th Observation Squadron and the 8th and 31st Pursuit Groups.

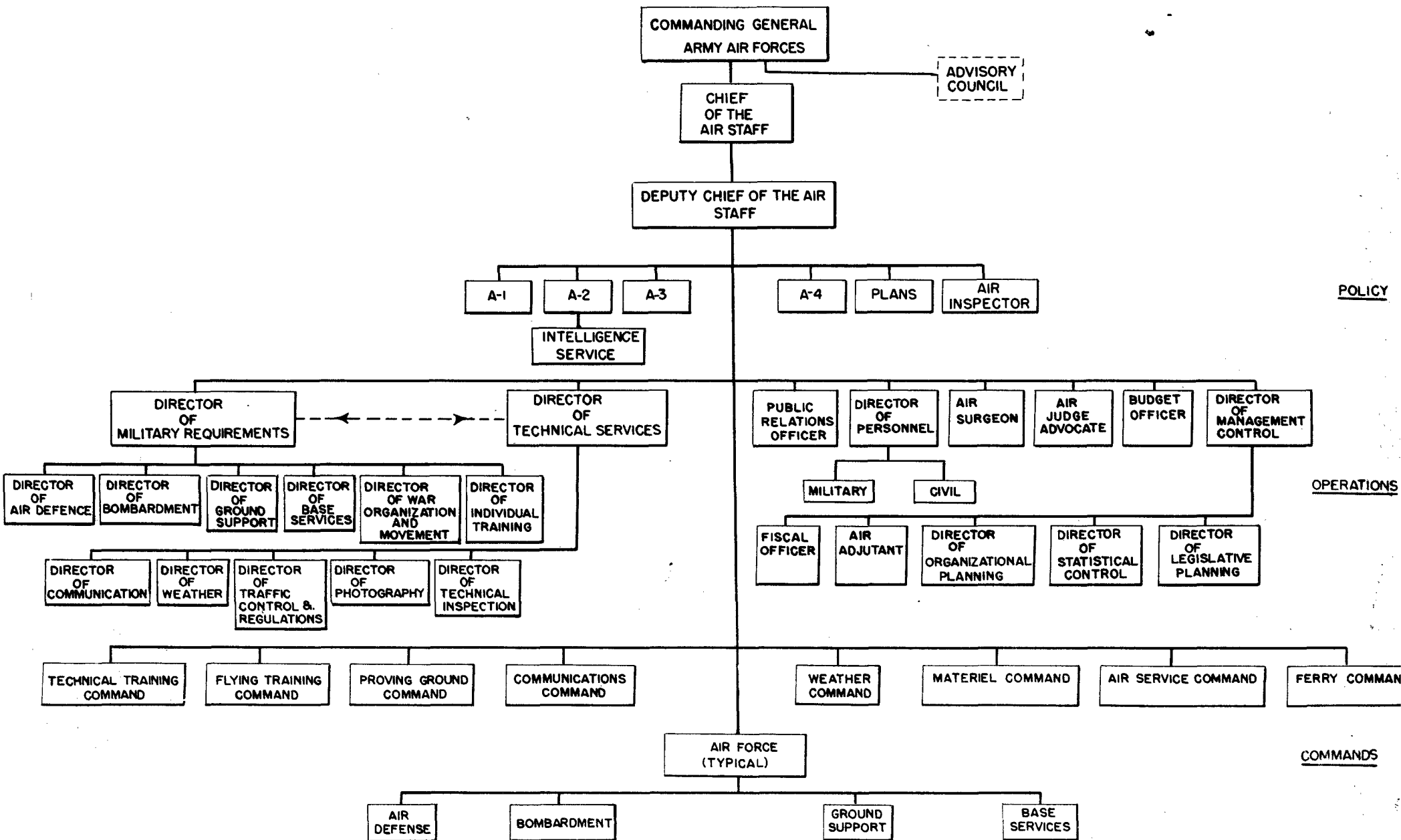
In addition to the Second Bombardment Group, Colonel George has commanded the 72nd and 96th Bombardment Squadrons and served as a bombardment and tactics instructor at the Air Corps Tactical School.

When Gen. Douglas MacArthur left the Philippines early in March, Gen. H.H. George was one of the staff officers who accompanied him to his new post of Allied Commander in Australia.



ORGANIZATION OF THE ARMY AIR FORCES

UNDER THE REORGANIZATION OF THE U.S. ARMY ORDERED BY THE PRESIDENT



AIR FORCES NEWS LETTER



17th Bomb Group
US Army Air Corps

MAY 1942



AIR FORCES NEWS LETTER

PUBLIC RELATIONS DIVISION, PUBLICATIONS SECTION
ARMY AIR FORCES, WASHINGTON, D. C.

VOL. 25

MAY, 1942

NO. 3



THE ODDS BE DAMNED	
A saga of the South Pacific.	1
ACCIDENTS MUST STOP	
The Director of Flying Safety tells why — <i>By Col. S.R. Harris</i>	3
HONOR ROLL	
Last month's Air Forces heroes	9
SWIVEL CHAIR BOMBARDIER	
How the photo interpreter operates — <i>By Thomas O. Milius</i>	11
CROSS COUNTRY	
News from the field in a new department.	15
MORALE BUILDERS	
Recreation for the Air Forces — <i>By Lt. Col. R.C. Jones</i>	17
A DAY AT AN AIR FORCE BASE	
An artist's impressions — <i>By Capt. Raymond Creekmore</i>	18
RUSSIAN RAMMING DOWNS AXIS PLANES	
Soviet crash tactics described	20
TECHNIQUE	
Recent technical developments in the Air Forces.	22
THE DELAYED JUMP	
Record holder explains its value — <i>By Arthur H. Starnes</i>	23
INDIA	
Another front for the AAF — <i>By Oliver H. Townsend</i>	25
WORLD WAR ACES MEET THE CADETS	
Rickenbacker and Hunter tour U.S. bases — <i>By Maj. Falk Harmel</i>	27

Technical and Art Director—James T. Rawls

FRONT COVER

The airplane pictured on the front cover is the North American B-25. Famous for participating in General Royce's Australian based raid on Jap forces in the Philippines, this type of plane was also "blamed" by the Japanese for making the war's first raid on Tokyo.



ACCIDENTS

EIGHTY PER CENT OF AIRCRAFT ACCIDENTS ARE AVOIDABLE! CALM ACCEPTANCE OF ACCIDENTS IS PAST. THE SITUATION IS GRAVE.

PILOTS AND AIRCRAFT NEVER SEEN OVER BURMA, BERLIN, OR BATAAN ARE DAILY BEING LOST; UNFIRED GUNS, UNUSED BOMB RACKS-- THESE ARE BEING LOST--NOT IN ENEMY LANDS BUT IN THE QUIET AMERICAN COUNTRYSIDE.

OUR AIRPLANES AND CREWS LOST IN TRAINING ARE A DEFINITE GAIN TO THE JAP AND THE HUN--WHILE IF OUR LOSS OCCURS IN COMBAT, OUR CREWS HAVE DEMONSTRATED THAT THEIR LOSS WILL BE THE GREATER ONE.

AIRPLANES MUST FLY--ACCIDENTS WILL HAPPEN, BUT THOSE CAUSED BY FOOLISH, CARELESS, DISOBEDIENT, COCKY OR GRAND-STAND PILOTS CAN AND MUST BE STOPPED. SAVE THE COCKINESS FOR COMBAT.

PILOTS, CREWS, AND AIRPLANES MUST BE DELIVERED TO BATTLE-- NOT LEFT SMOKING HEAPS IN CORNFIELDS FROM CALIFORNIA TO MAINE.

TO COMMANDERS: WEED OUT THE INCOMPETENT AND WEAK, ELIMINATE THE DISOBEDIENT, DISCIPLINE THE CARELESS, RETAIN HARD, FEARLESS, DISCIPLINED MEN.

TO PILOTS: SELF DISCIPLINE MAKES MEN--UNAFRAID TO FIGHT, DIE, OR TURN BACK. LET THE ENEMY SEE YOUR BRAVERY. THE AIR FORCES KNOW OF IT!

TO CREWS, MECHANICS AND SENTINELS ON GUARD: ONLY THROUGH YOUR EFFORTS CAN THIS JOB BE DONE.

TO EVERY MAN IN THE AIR FORCES, I PASS THESE WORDS.

THE RESPONSIBILITY IS YOURS, THE JOB IS YOURS. DO IT.



H. H. ARNOLD,
Lieutenant General, U. S. Army,
Commanding General, Army Air Forces.



The Odds Be Damned

A Saga of the South Pacific

By Lieut. Robert B. Hotz

IT was weird and ruthless war over the Indies. Native tom-toms blended with air raid sirens. Idyllic tropical harbors suddenly sprouted mushrooms of flame and steel under the impact of bombs from six miles above. There were long hours of cruising over steaming jungles, jig-saw patterned islands, sandy beaches and watery wastes. There were long hours patching, gassing and arming ships under the pitiless glare of the sun and the flame-spitting snouts of Zero fighters. Long missions wrapped in the softness of tropical moonlight. Brief hours of sleep snatched under wings of grounded ships and meals of bananas, coconuts, chocolate and stale bread.

It was a backyard war. One minute you were over Jap fields giving them hell and then you were back home to find that the Zeros and Mitsubishi's had blasted your hangars and shot up your half-cooked lunch. It was a savage war with an active Fifth Column, faked signals and insignia. Everybody who "hit the silk" was a special target for Jap machine guns.

It was an epic war against heavy odds in which a handful of AAF heavy bombers took on the Jap Air Force, Army and Navy in a battle the Japs will never forget.

Heavy bombers fought the main actions over the Southwest Pacific. Most of them were B17 Ds and Es with a sprinkling of B-24s. All of them flew from the bases in the United States to the Pacific battlefield, some before and some after the outbreak of war.

Levin Blasts Haruna

They blasted Jap landing parties and convoys all the way from Legaspi and Apparri in the

Philippines to Bali and Java in the Indies. One of them piloted by Capt. Colin Kelly gave the American people their first boost in morale when it carried Corporal Meyer Levin over the Haruna 200 miles off northern Luzon and allowed Bombardier Levin to lay his only three eggs obliquely across the battleship from 23,500 feet and sink her. The bombers slowed the pace of the Jap drive southward and when they were pushed from their bases they made long night flights over lost territory to evacuate Air Force personnel from under the noses of the Japs.

Some of those men who fought, flew and serviced that handful of AAF heavy bombers are now back in this country to teach the lessons they learned over the Indies. From them come details of the air saga of Southwest Pacific.

There was that moonlit night off Java when a lone B-17 searched for a Jap convoy. As Capt. H.C. Smelser, pilot, describes it:

"We were cruising over the sea at about 4,000 feet when tracer bullets suddenly danced all around our plane. I ducked into some clouds and climbed to about 15,000. We broke into the clear at about 3 a.m. and there below was the most perfect target I have ever seen—a Jap convoy of 30 ships escorted by four warships all silhouetted in the moonlight.

"They were lined up two abreast and hardly a ship's length apart. They were steaming directly into the moonlight so they couldn't see us coming up behind them. I de-synchronized the engines and Lieut. Marion L. Wheeler, the bombardier, gave me directions for beginning our target run. We came over them and Wheeler

planted eight 600 pound bombs smack in the middle of the column of ships. I counted six ships sinking before we left. With a few more 17s we could have wiped out the whole convoy in two minutes.

"After we got back to Java three Australians flew some ancient crates that looked like the old Keystone bombers over the convoy at 500 feet and sank some more ships. When they landed they looked at all the bullet holes in their ships, laughed like hell, had another drink of whiskey and made another run over the convoy."

Nine For Wheeler

Lieut. Wheeler, Capt. Smelser's bombardier, sank a total of nine Jap ships in the Indies from his perch in the nose of the B-17. In addition to the six in the convoy, he bracketed a heavy cruiser from 15,000 feet off Bali and destroyed two transports in Macassar Straits from 27,000 feet. Capt. Smelser calls him "the best bombardier in the Pacific".

Bombardiers, navigators and gunners were the unsung heroes of the Philippines and Indies battles. After playing second fiddle to pilots in peace-time practice they came into their own in the battles above the Indies as equal partners in the aerial combat team.

Bombardiers played a particularly important role in the destruction of Jap naval power. In addition to Lieut. Wheeler and Corp. Levin, Lieuts. Cecil Gregg and Ralph Stone and Sergt. William Burke compiled exceptionally accurate bombing records under fire. Lieut. Gregg, in the lead plane making a heavy raid on the harbor of Davao, bracketed a Jap heavy cruiser with four 600 pound bombs from 30,000 feet. Sergt. Burke in the nose of a Flying Fortress piloted by Capt. William Bohnaker got another cruiser from about the same altitude. Four other Jap ships were destroyed by bombardiers in that raid. Lieut. Gregg also sank another cruiser during the battle of Macassar Straits and several transports off Bali.

Captain Wheless

The successful fight of a single B-17 against 18 Zero fighters over Luzon is the aerial gunners' epic. The lone survivor of Clark Field, this B-17 was on its way to attack Jap landing parties at Legaspi when Jap Zeros made

(Continued on Page 36)

Captain Eugene Vinson, recently returned from the Far East, demonstrates Jap Zero fighter tactics to a group of Key Field pilots. 2



Accidents Must Stop

By Col. S. R. Harris

Director of Flying Safety



A smashed up Army bomber in a midwestern cow pasture is more of a victory for the Japanese than a Flying Fortress brought down in combat over Burma.

Losses of planes and personnel by accident are always worse than losses in battle. A bad accident means one less plane and one less pilot or combat crew to carry the fight to the enemy. When the nearest Zero fighter is some 4,000 miles away from the accident, it means that this country has lost one of the most valuable cogs in its war machinery without a bullet being fired or a bomb being dropped in return.

Accidents will happen despite all of our precautions. We must accept that. But a crackup resulting from carelessness or cockiness is certainly an inglorious end for the pilot who has received the best flight training the world has to offer, and from whom so much is expected in this war. This type of crackup is anything but fair to members of the crew who have worked so hard to qualify for their jobs. It is rank injustice to the ground men and factory workers and designers who labored to place the plane in the hands of the pilot.

Accident Rate Grows

Yet, Air Forces pilots continue to crack up airplanes at a rate which is causing serious concern. This year the rate of accidents to every 1,000 hours flown by military aircraft has increased substantially.

Such destruction of life and equipment cannot and will not be tolerated. This useless wastage can and must be stopped.

An analysis of airplane accident reports shows that 80 per cent of all accidents involving military aircraft are the result of some human failure. This means they are preventable. This means they can be stopped by constant vigilance, by the exercise of common sense and the observance of the fundamental rules of safe flying.

No airplane is so "hot" it can't be safely flown if handled properly.

The number of accidents attributed to errors of personnel is increasing at a rate out of proportion to the increase in airplanes and pilots.

Accidents attributable to materiel failure

remain at a comparatively constant rate. Every effort is being made through research, design improvements, and constant surveillance of equipment to further reduce these accidents.

Up To Airmen

Reduction of the personnel type of accident is strictly up to the men who fly the planes and the men in command.

Accidents can be reduced, but only with the cooperation of everyone—Commanding Officers as well as the greenest Aviation Cadets.

In recognition of the vital importance of accident prevention, General Arnold has set up a new Directorate of Flying Safety as an independent unit in the Headquarters Army Air Forces. It is the job of this agency to see, through directives, publicity, close supervision and disciplinary action, that accidents are reduced. The Directorate has set as its goal a 25 per cent reduction in aircraft accidents during the next 12 months, and is ready to take drastic action to achieve it.

To carry out the program set up by the Directorate, 20 Regional Safety Officers will go out into the field to inspect and report upon local efforts to cut down the number of accidents.

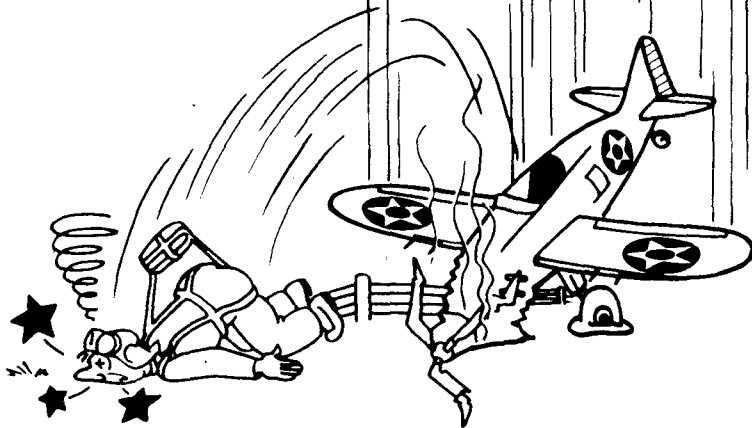
These officers will work directly under the Commanding General of the Air Forces. It will be up to them to maintain close personal contact with each Air Force unit within their region, and to investigate and report to Headquarters on practices, systems, and, in fact, on everything affecting flying safety. They will also make special studies of the causes of accidents and recommend preventative measures. Directives will be prepared and published from Headquarters on the basis of their findings.

Investigations Still Used

The use of the new Regional Safety Officer system will in no way affect the existing method of investigating and reporting accidents. Under this system the Commanding Officers of all Air Forces stations appoint an Aircraft Investigation Committee, composed of three members, whose duty is to investigate accidents, determine their cause, and to make recommendations upon

(Continued on Page 6)

He mistook ...

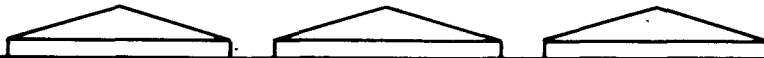


**FOR FERDINAND FUTTS PLEASE LIGHT UP A CANDLE,
HE MISTOOK THE FLAP FOR THE LANDING GEAR HANDLE;
HE OVERSHOT, UPPED WHAT HE THOUGHT WAS THE GEAR,
BUT FOLDED HIS FLAPS AND FELL IN ON HIS EAR.**

A very hot pilot?



**A VERY HOT PILOT WAS HENRY HIGHTOWERS,
WHO BOASTED OF HAVING THREE HUNDRED HOURS.
TO PROVE IT HE DOVE ON HIS GIRL'S HOUSE ONE DAY-
THEY WOULD HAVE BEEN MARRIED THE FIFTEENTH OF MAY.**



**GANDER, MY LADS AT THE STUPID DROOP
WHO KNEW *HE* COULD MANAGE AN OUTSIDE LOOP ;
HALFWAY AROUND IT HE CRUMPLED A WING,
AND MUFFED HIS YANK ON THE RIPCORN RING.**

THE cartoons reproduced on these pages are among a set of 12 which will shortly appear as colored posters on walls and bulletin boards throughout the Air Forces. These posters are "brain child" of Captain Willard Van D. Brown, of Wheeler Field, Hawaii. The original drawings were the work of Mr. Jack Ewing, Wheeler Field Fire Chief. They were redrawn for use as posters by an Air Forces artist.

Before Flight Safety had come to the front as a vital Air Forces program and before the directorate of Flight Safety had been established, Captain Brown was pondering what he calls "an original approach to the problem of pointing out and emphasizing to our flying cadets and junior officer trainees the most consistently re-occurring mistakes which they make in primary, basic and advanced flying schools, and continue to make after reporting for duty as rated pilots."

Captain Brown knew what he was talking about. He had graduated from Randolph Field in 1932 and in 10 years he had been through the mill. He had observed, and according to his own reports, had experienced those mistakes in flight.

Captain Brown had seen a few of the Flight Safety posters published by the Royal Air Force, but was more interested in showing cause and effect in typical American fashion. His pondering resulted in catching the slang and doggerel

of the Air Forces and of using it with illustrated cartoons to tell a vitally serious story with a semi-humorous touch.

The three posters reproduced here are good examples of the entire set. Others tell of "unhappy twerps" who forgot about checking their landing gear, neglected to switch to a full tank of gas, forgot the old axiom:

The truest tale a pilot learns, that's known from pole to pole:

"A ship is never landed 'til its wheels have ceased to roll".

Of his project, Captain Brown is deadly serious, and expresses the hope that if the posters can prevent the loss of a single airplane their purpose will have been achieved.

The Director of Flying Safety, whose own report on the accident prevention campaign appears on other pages of this issue, has expressed the hope that Captain Brown's efforts will stimulate others in the Air Forces along similar lines. One of the needs at present is a similar poster set directed toward accident prevention among ground crews and maintenance men.

The *News Letter* is prepared to devote space each issue to the Flight Safety program and welcomes articles and art work on this subject originating in the field. Full consideration will be given every such contribution.



Accidents Must Stop

(Continued from Page 3)

which to base corrective action. One of these committees goes to the scene of every accident, makes its investigations there, and submits its report to headquarters.

The questions the committee tries to answer are: What caused the accident? How did it occur? How can accidents such as this one be prevented? Statements of witnesses, a close study of the wreckage and the circumstances of the accident, and the pilot's personal, official and medical history form the basis of the report. Sabotage is always considered as a possibility until definitely ruled out by the evidence.

When finished, the report is sent to Washington where it is reviewed and subjected to critical analysis. The information taken from it is broken down under 80 headings and tabulated with other data in the form of charts, graphs and tables. The recommendations of the Investigating Committee are also carefully considered, and corrective action is taken in the form of directives and suggestions to operational units, engineers, training instructors and recruiting officers.

Educational Campaign

In addition to continuing this report system and setting up the Regional Safety organization, the Directorate of Flying Safety will also conduct an intensive educational and publicity campaign. This will be designed to acquaint pilots with some of the more common forms of accidents, to suggest preventative measures and to warn them to keep on guard against the carelessness that inevitably leads to accidents.

Included in the campaign will be articles, posters, radio programs, motion pictures, photographs and every other kind of informational device capable of impressing upon Air Forces personnel the necessity of keeping a constant vigil that preventable aircraft accidents do not occur. The Directorate is deadly serious in its effort to cut down these accidents, and proposes to use every weapon in its power to achieve its goal.

Experience has always been the direct criterion of safety in flying. A pilot through long years of flying builds up a fund of knowledge upon which he draws automatically in an emergency.

Up until two years ago we had, in the main, an experienced Air Force. It was a small, highly

trained, closely knit group. It was an organization which had been built up slowly over a period of years. Its operations were understood by practically all of its personnel, and it was supervised by a small number of officers of long experience.

Problems Of Growth

With the declaration of emergency, overnight there was placed upon the shoulders of this small group of experienced officers the tremendous problem of building an Air Force second to none. This meant procuring more airplanes than had ever before existed, of obtaining pilots to fly them, crews to man them and mechanics to maintain them. On top of this was the problem of organizing this vast mass into efficient combat units capable of carrying the fight to the enemy.

In one year and nine months the number of military airplane pilots increased 315 per cent, the number of students learning to fly increased 1,000 per cent, the number of military airplanes increased over 400 per cent and the number of hours flown 800 per cent.

Under an expansion program such as this it was only natural that a large number of experienced personnel had to be taken from the flying line and placed in planning, training and administrative positions. As a result the ratio of experienced to inexperienced pilots dropped abruptly—from one to three to about one to six. Since then, a continuously increasing dilution has been in progress, until today the ratio of experienced to inexperienced personnel in the flying activities of the Air Forces is about one to 50. This is expected to drop still lower, to one to 150, by the end of the fiscal year 1943.

Under present conditions it is no longer possible to closely supervise the newly-graduated pilot, to build up his experience step by step under ideal conditions, or to substitute close supervision by old-timers for his lack of experience. Today another substitute must be used. It is instruction, and the efficient use by pilots of the accumulated experience of the Air Forces throughout the years, as expressed in directives, posters and other media utilized to disseminate safety information.

Some of the best outlines of what to avoid in flying are contained in the reports of Investigating Committees submitted from the field. A study of these shows that 56 per cent of all accidents occur in landing and 10 more per cent

in taxiing. These above all others can be prevented by the use of common sense, and by the ability of the pilot to stay "on his toes".

These same reports also reveal that a great number of accidents could have been prevented on the ground before take-off—by pilots simply taking the time to get the "feel" of any new or different ship they are going to fly. Ninety-nine per cent of this getting acquainted process can be done on the ground, the rest should be done up about 10,000 feet before any tactical or cross-country flying is done with a new type.

A few of the more obvious lessons to be learned from past accident experiences of Air Forces personnel are the following: (1) Get thoroughly acquainted with your airplane so you will instinctively go for the right controls in case of emergency, (2) Don't be foolish, cocky, or careless, (3) Don't let your mind wander, but concentrate on flying your airplane, and (4) Don't disobey instructions and directives.

Flyers who hedge-hop into high tension wires, come in with the landing gear up, fly into thunderheads and collide with other planes do not belong in an air force faced with the serious job of conducting a life and death struggle with the Luftwaffe and the Japanese.

This is war. Our purpose is to win it. But we can't win it with airplanes that are strewn in pieces over the countryside, and with pilots who crack up before they even see a Jap simply because they are too careless, too cocky or too disobedient to observe the fundamental rules of flying safety.

We need the cooperation of every officer and man in the Army Air Forces to put this program across. Without it we must fail. With it we can reduce our accident rate much more than the 25 per cent set as our goal. The builders, the maintenance men and many others are doing their job to get the planes flying, its the pilot's job to keep 'em there.

Safety is Possible

MORE than a year of accident-free operations under pre-war and war conditions which required flying in all kinds of weather has been completed by pursuit squadrons under the command of Captain Mervin L. McNickle, Army Air Forces, according to War Department records.

Captain McNickle was in command of the 39th Pursuit Squadron of the 35th Pursuit Group from January 15, 1941 to January 25, 1942, and has been in command of the 307th Pursuit Squadron of

the 31st Pursuit Group from February 1, 1942, to date.

During the period in which they were under his command, these two squadrons have completed 2,393,745 miles of flying without a casualty.

The record is regarded as the more remarkable in view of the arduous service performed by the squadrons during these many months. The 39th Squadron made its record of perfect safety under Captain McNickle's command while engaged in the Louisiana maneuvers, the 1st Interceptor Command Exercises, the 3rd Interceptor Command Exercises, the North Carolina maneuvers, several demonstrations including exercises at Fort Belvoir, Va., and war-time service in the Pacific Coast theater of operations.



REVENGE FOR TOM YOU QUON

REVENGE will be sweet for Tom You Quon.

His wife and three sons were killed by fire from Japanese warships while attempting to escape from Hong Kong. His country has been ravaged by Jap troops. And he himself has a few accounts to square as a result of two years' experience battling the Japs as a member of the Chinese Air Force. Now Quon is in the U.S. Army Air Forces, stationed at Jefferson Barracks, Mo., waiting for his opportunity to help his adopted Uncle Sam.

In 1932, Quon, who left China at 14, took a course at the Alford Flying School, LeGrange, Ill. By 1937, when the Chinese war began, he had 200 flying hours to his credit and returned to China for active duty. There he was assigned to pursuit squadrons and flew several makes of American planes.

"At that time," Quon said, "we were fighting the Japs at Kwangsi Province near Canton. I got a good deal of combat experience, even though we often fought against terrific odds, since the Japs had 50 planes to our one. I was never wounded, although two of my planes were destroyed and I had to bail out. We didn't have any flying conveniences, either. We had no radio and we had to determine our course by landmarks".

Quon's qualifications are now being studied for disposition. One possibility is that he may be assigned to the Air Corps Ferrying Command because he ferried Russian planes from Moscow to China during one period of his Chinese Air Force experience.





COL. JOHN HUBERT DAVIES



CAPT. FRANK BOSTROM



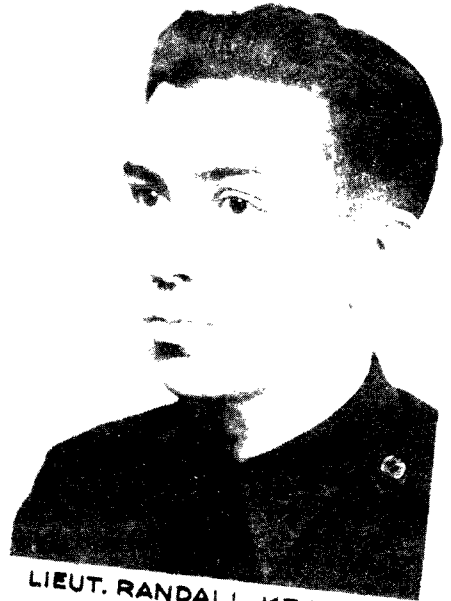
LIEUT. RUSSELL M. CHURCH



CAPT. FRED CRIMMINS



BRIG. GEN. RALPH ROYCE



LIEUT. RANDALL KEATOR



MAJ. DAVID GIBBS



HONOR ROLL



Dispatches from the war fronts bring a steadily growing list of Army Air Forces Heroes, and while the editors of the *News Letter* hope to print each month in this space the names of all those who have been decorated for outstanding achievement in action, the pace of combat activity makes it extremely difficult to present complete reports. The *News Letter's* Honor Roll will always include complete coverage of all Air Forces citations made or confirmed by the Adjutant General's Office in Washington. Last month's Air Forces citations featured these names, although the individual action was not always described in cable dispatches.

BRIG. GEN. HAROLD H. GEORGE, who was killed April 30th in a plane crash, was posthumously awarded the Distinguished Service Medal--"for exceptionally meritorious service to the government in a post of great responsibility. General George served as Chief of Staff, Far Eastern Air Force, as Commanding Officer, Fifth Interceptor Command, and from Dec. 21, 1941, to March 11, 1942, commanded all Air Forces troops in the Philippine Islands. In this capacity, he had full responsibility for all Air Forces operations in the defense of the Bataan Peninsula, Corregidor and the other fortified islands at the entrances of Manila Bay. He had brilliant strategical and tactical concepts, and under continual attacks by hostile aviation in greatly superior numbers, demonstrated outstanding capacity for command, operating weak forces in such manner as to fulfill the urgent needs of the command and to strike the enemy effectively when opportunity offered. His personal courage and unceasing devotion to duty, his ingenuity in improvising when normal means were lacking, and his inspiring leadership in the execution of seemingly impossible tasks kept his force intact and effective in spite of all enemy efforts and contributed immeasurably to the defensive effort of the entire command".

DISTINGUISHED SERVICE CROSS



BRIG. GEN. RALPH ROYCE--chief of staff of the American Army Air Forces in Australia--"for heroism and extraordinary achievement in aerial flight against an armed enemy". Gen. Royce lead a 4,000 mile flight of three B-17 bombers and ten B-25 bombers in a daring raid on shipping, airfields, and other installations at four Japanese-held points in the Philippine Islands on April 13 and 14. As a result of the raid, the bombers sank four enemy ships, probably sank another, hit an additional airfields and troop concentrations. For this same achievement, the Distinguished Service Cross was also awarded to **LT. COL. JOHN HUBERT DAVIS**, squadron leader of the B-25s, and **CAPT. FRANK P. BOSTROM**, pilot of one of the B-17s who saved himself and his crew despite destruction of his plane.

MAJOR DAVID GIBBS—for extraordinary heroism in action in the Philippines and Dutch East Indies. (No details available.)

CAPT. RAY COX and **CAPT. FRED CRIMMINS**—for entering burning hangars on Clark Field during the first Japanese attack on the Philippines, calmly starting the engines of many planes and taxiing them to safety. (Due to an error in the cables, Capt. Crimmins was listed in the March-April NEWS LETTER under the name of Cummings.)

LIEUT. RUSSELL M. CHURCH—(Posthumous)—for conducting an attack on 25 airplanes parked on a hostile airfield in the Philippines in the face of heavy anti-aircraft fire. Although his plane had been set on fire, he dived more than a half mile to release his bombs with marked effect, and died in his crashing airplane.

LIEUT. CARL P. GIES—for extraordinary achievement during an attack on Del Carmen Field, P.I. With complete disregard for the personal risk involved, he engaged 20 hostile craft and brought down one enemy plane, and later upon rejoining a companion airplane, was attacked by three enemy fighters. His furious attack sent one raider crashing and dispersed the two remaining enemy planes.

LIEUT. JOSE P. GOZAR—for heroically fighting off Japanese planes over Zablan Field, P.I. When his guns jammed he continued the attack by attempting to ram an enemy plane. By his display of courage and leadership and after a series of such maneuvers he forced the enemy to flee without further attacks against the airdrome.

LIEUT. RANDALL KEATOR—for outstanding achievement in attacking three enemy planes and bringing down the first hostile plane destroyed in air combat in the Philippines. He was joined by other American aircraft and in the ensuing combat two more enemy planes were shot down. While returning to Clark Field, he pursued an enemy plane and engaged it until it plunged in flames. (Lieut. Keator was erroneously listed as Randall Preator in the February NEWS LETTER.)

LIEUT. JOSEPH LAFLEUR—for extraordinary achievement in action in the Philippines. (Details unknown.)

LIEUT. GRANT MAHONEY—for volunteering for an extremely dangerous aerial reconnaissance mission over Luzon in early December. He secured vital information needed for a subsequent successful bombing attack. Next day, upon returning from a bombing mission near Legaspi, in which he destroyed an enemy flying boat, he displayed exceptional courage in landing his airplane with bombs dangerously hanging from their racks in preference to bailing out.

SERGT. ANTHONY HOLUB—for his display of personal heroism and devotion to duty. When a heavy aerial bombardment began on Clark Field, he ran to his airplane and returned the machine gun fire of attacking planes from the top turret guns of his craft. After his ammunition was exhausted, he ran through heavy strafing fire to a nearby damaged plane, removed as many ammunition cans as he could carry and returned to his guns, defending his aircraft from serious damage.

(Continued on Page 33)



Before - Camouflaged Airdrome - After

Swivel Chair Bombardier

By Thomas O. Milius

Photo Interpretation Unit, A-2

WHETHER you read Shakespeare or the comics, you know about camouflage—the fallen log that gets up and runs away carrying a rifle, the haystack that skips over the brook and up the opposite bank in high gear.

Camouflage was old stuff when Birnam Wood went to Dunsinane in Shakespeare's sneak attack on Macbeth.

The aerial camera has put old-fashioned camouflage on the spot. Sleight-of-hand concealment has been forced into new techniques for deceiving the bombardier up above and the behind-the-lines observer who wasn't there—the photo interpreter.

Whether flying at high altitudes beyond anti-aircraft range or hedge-hopping at 300 miles an hour, the bombardier still has his troubles in spotting any highly camouflaged target in time to bomb it accurately. In fact, flyers often find it difficult to locate their own highly camouflaged bases when returning from a mission; in some cases they have to be "talked in."

"Secret Weapon"

The photo-interpreter has been this war's secret weapon on the anti-camouflage front. Furnish him with clear photographs and he will

analyze the pictured landscape in detail, clearing up at his leisure all the mysteries that escaped the above-the-spot observer.

The photo interpreter is the swivel chair bombardier. Like the armchair general, he never misses. A reconnaissance pilot speeds over his target on the lookout for enemy interceptors, flak, his predetermined course and altitude. A photo interpreter, back at base headquarters, studies the still, flat surface of a pair of aerial reconnaissance photographs under the stereoscope, and sees the colorful landscape in a kaleidoscopic pattern of gray tones before him.

The stereoscope gives the photo-interpreter a third-dimensional view. This compact device of magnifying lenses, adapted from Grandma's parlor stereopticon, in the hands of the photo interpreter becomes as tidy a lethal weapon as the Garand rifle. With it he can locate not only the camouflaged target, but make a reasonable conjecture as to the next enemy move. He can identify the number and types of aircraft, for example, and read all the vital statistics of an enemy area from the picture.

The primary objective for the photo interpreter, as for all other participants in total

air war, is the enemy airfield. Now that the sky is a front line trench, the vulnerability of the airfield to attack—both by bombing and by aerial photographic reconnaissance—has assigned camouflage to extra heavy guard duty around such vital areas.

The value of camouflage for known airfields is to puzzle the bombardier, delaying his recognition of his target for the split second that may determine success or failure of the mission. For new and secret installations or airfields, the aim is to conceal them as long as possible from photographic reconnaissance and interpretation. Thus, delay may be caused in the recognition of new buildings, new runways, unaccustomed activities, preparations for a campaign, or extension of the size and strength of known fields.

The photo interpreter has three camouflage nuts to crack—concealment, disguise and decoys.

The best way to keep an interpreter from drawing the right conclusion about what goes on at an airfield is to keep him from seeing anything. To this end, the enemy will adopt the most rudimentary form of concealment—just plain hiding. The pilot will park his aircraft under trees out of sight, in tents covered with foliage, or under elaborate structures of netting. Supplies are similarly kept under cover, in every sense of the word.

Tricks Of The Trade

Another device for keeping installations out of sight is simply to bury them. This is often a means for protecting fuel stores and personnel shelters. Their presence may be revealed to the photo interpreter, however, by small mounds of earth which are given a startling third dimension of stereo vision, or by truck tracks or footpaths leading to the mounds. This type of concealment may nevertheless be very difficult to spot unless located during construction. By comparative photographs, the photo interpreter may find a clue in the personnel activity or in the aircraft habitually parked near the suspected areas.

Instead of hiding the installations, it is possible for the enemy to copy some of nature's woodcraft tricks and make the whole field blend with the landscape—not enough to conceal it, but enough to delay recognition on the part of the bombardier. This protective coloration technique takes a tip from animals that wear vertical stripes to harmonize with the tall jungle grass they live in, or those dappled with

spots like the patches of light and shade in their forest lairs.

The camouflaged airfield will have an outline to conform with the pattern of the landscape—a straight and decided outline in an area of geometric farm patterns, an irregular and indefinite outline in a region of unbroken, unfenced wooded areas. Installations are sited so as to take advantage of natural cover such as woods and contours of the ground; aircraft may be parked in gaps cut in hedges so that their wings will carry on the line of the hedge. Sites are avoided if they have geographic cues, such as lakes, river forks, monuments, or other landmarks that may help a bombardier quickly identify the location. The installations are toned down by darkening roofs, runways, and taxi ways with paint or cinders or some other medium which will make them photograph the same tone as the surrounding area. Disruptive painting, however, if done inadequately, is worse than useless, both for runways and buildings.

Disguise Is Best

Airfields located in mixed open and wooded areas, with natural avenues of approach, are easier to blend into the existing landscape pattern. The wooded areas are therefore especially subject to the photo interpreter's suspicion as is any unaccountable traffic on highways. In either heavily wooded areas or flat open country, blending would be less successful for concealment than other devices.

The type of camouflage that poses the most difficult problem for the photo interpreter is disguise. The suspicious elements may be plainly seen, but how can he tell whether they are what they seem? The answer is found through judgment rather than through direct recognition.

The photo interpreter may find that furrows, canals, hedges, fences and other apparent obstructions are merely painted on an airfield to make it seem to be unusable. (on one field the German Air Force painted a lake). Roads, avenues of trees, orchards, and regular patterns of subdividing farm fields are painted across the airfield as a usual practice. This artificially projects the pattern of the landscape upon the field. Each installation of the airfield may have its own disguise, appropriate to its size and situation, in keeping with the surrounding countryside. The hangar may look like a barn, with an adjoining orchard painted beside it. Personnel huts may masquerade as cottages with garden patches, arranged along their appropriate village streets, like the layout used at Dekooy.

Another sector of the field may be planned to resemble a churchyard. (The German Air Force does not limit itself to any standard type of structure, but follows the policy of using the obvious but innocent-looking structures characteristic of the area). Every building big enough to be useful should, in such excessively innocent areas, be suspect.

Fooling The Shadow

Another element of disguise is the technique of altering the shadow pattern and the apparent outline of an installation. On German airfields, netting and built-up camouflage structures are extensively used to cast an irregular shadow pattern and disguise a building's outline. The interpreter can circumvent these wiles with the aid of stereo vision's third dimension, looking for the contours of the structure within the pattern rather than the general shape.

A neat Nazi stunt for camouflaging an airfield is to duplicate all installations in a decoy field, to draw enemy fire, and with no other operational use. When night bombing is the threat, a mock airfield is set up some distance from the actual field. The shape of the runway is duplicated and treated so that it gives off a faint glow, or at least is discernible at night. The type of decoy field designed for protection against day bombing is generally set up nearer the real field, complete with runways, taxi tracks, dispersal areas, dummy aircraft, and in some cases even the field markers.

On these dummy fields the photo interpreter's close scrutiny uncovers a conspicuous lack of the usual airfield activity and of minor installations. His responsibility, whenever he observes an apparent duplication of airfields, is to determine which is the decoy, so that the bombardier will be on guard against this deception.

The Stereoscope

To circumvent these devious aims of camouflage, the photo interpreter has only one basic tool—the stereo vision made possible by the stereoscope, which gives him depth perception. The stereoscope projects the flat surface of the pair of aerial photographs into third-dimensional relief. What had appeared to be a flat rectangle on the picture, when viewed by stereo turns out to be the domed roof of a camouflaged hangar. This third-dimensional relief enables him to determine if the pattern that suggests trees is merely paint on a disguised runway or

actually trees standing out in full relief and casting shadows. By stereo he may recognize the true nature of what appears as a dark irregular shadow pattern on the photograph: it becomes the rectangular roof of a camouflaged aircraft shelter in a disguising clump of shrubbery.

As an aid to rapid analysis, the photo interpreter must develop a sense of texture and depth perception. The texture alone may be the tip-off to a camouflaged field—an airfield must of necessity be firm and hard. A pattern of painted fields stretching across it, even though blending in color with surrounding farm areas, will show by their hard surface that they are not bearing a crop. A sensitive perception of depth—that is, relief, or irregularity in contour—will help him penetrate the disguise that depends on outline rather than height.

There are a half-dozen or so touchstones which serve as clues to the penetration of camouflage, such as roads, taxi tracks, runways, earth scarred from excavations, mounds of heaped-up earth. A methodical procedure for the photo interpreter, in inspecting photographs for camouflaged airfields, could be worked out somewhat along the likes of the following steps.

Procedure

First, to spot an airfield on a reconnaissance strip of a suspected area, quickly scan the pictures for stretches of level ground or fields without obstruction, or with the least obstructions—large enough for landing aircraft.

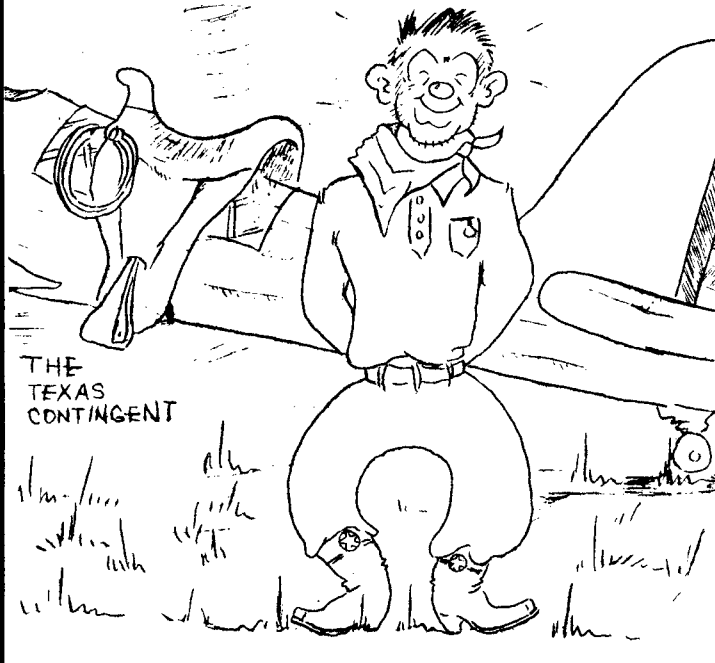
Second, having eliminated all except photographs of relatively clear stretches, (which are level and large enough), inspect these for possible hangars and runways—the largest elements of an airfield, and the most difficult to conceal. Any building big enough to house or hide an installation should be open to suspicion. Pay attention to straight stretches of usable road and long stretches of well drained turf that might serve the purpose of a runway.

Third, watch for an area in which the texture is definitely flat and bald, in contrast to the velvety fields of growing crops. The flatness may indicate the camouflaged landing field, scratched and packed down with use.

Fourth, watch for slight deviations from the pattern of the landscape. Fields with outlines that are too geometrical, too regular, or too big may be merely painted across the airfield. Roads that are too straight, clean, and sharply defined may be painted dummies; roads actually

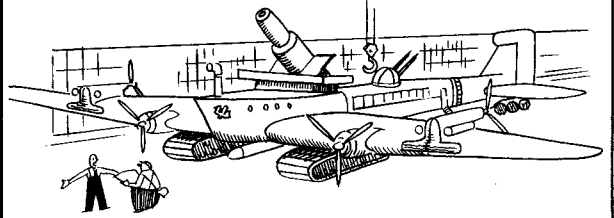
(Continued on Page 31)

DODO-DOPE --- Jones Field



THE TEXAS CONTINGENT

WING TIPS --- Mather Field



"Fer Gawd's sake, Riley. Can't You Keep Your Blue Prints in Better Order?"

WINDSOCK --- Minter Field

SPRING FEVER

By Sgt. Karl H. Houston

TEXACTS --- Sheppard Field



"Don't you think they're carrying this 'Don't Talk' Policy too far?"

RIPCORD --- McCord Field



"...what the' hell!!! Can't even an angel fly over McCord Field?!!"

AERO-GRAM --- Gunter Field



"CHAPLAIN, I WISH TO CONTRIBUTE \$1,000 TO THE BLIND FLYERS AT GUNTER."

AILERON --- Lemoore Base

SPRING



"Junior is trying to imitate one of them gadgets landing at Lemoore base...."

WINGTIPS --- McClellan Field

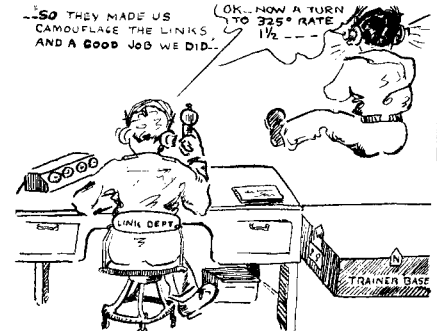


"MY NAME is a military secret, but my initials are A.W.O.L. McClellan Field."

Embry-Riddle, FLY PAPER --- Miami Fla.

The Link School at Clewiston by S. M. Lightholder

"SO THEY MADE US CAMOUFLAGE THE LINKS AND A GOOD JOB WE DID... (OK... NOW A TURN TO 325° RATE 1 1/2"



HERE are some typical examples of the kind of humor that is growing up throughout the Air Forces. They were taken from representative air base newspapers all over the United States.

CROSS COUNTRY



This will introduce Cross Country, a new and informal section of this magazine which each month will feature local news bits. A lot depends on you. We would like to get our local news right from the horse's mouth: so send in your contributions, including snapshots and photographs with a human interest touch. Address your contributions direct to the Editor, AIR FORCES NEWS LETTER, Public Relations Division, AAF, Washington, D.C.

---The Editor

WHAT family is "most represented" in the Service? The Jenkins family of Verbena, Ala., has seven sons on active duty with the armed forces. Two are in the Air Forces: Charles, a master sergeant at Duncan Field, and Robert, a staff sergeant at Eglin Field, Fla. The Army Ground Forces and Navy claim the others.....The Watkins family of Washington, D.C. also can claim seven. Col. Dudley Watkins is on active duty at the Air Force Proving Ground at Eglin Field, Fla. and six sons are in service. Lt. John C.A. Watkins, former editor of the *AIR FORCES NEWS LETTER*, is now a student flying-officer at Tuscaloosa; Jack, also a lieutenant, has been at Hickam Field since before Dec. 7; two others are in the RAF; another is with the Army engineers in Iceland, and the youngest, soon to be commissioned a lieutenant, is in the senior ROTC brigade at the University of Michigan.....Aviation Cadet Van W. Jones of Kelly's Advanced Flying School has a brother Ted in the Marines, Richard in the Army, Robert in the Navy.....Mothers with four or more sons in the armed forces are entitled to receive the Emblem of Honor, a gold medal which bears a star for each son represented. Information concerning mothers who can qualify should be sent to the Emblem of Honor Association, 60 East 42nd Street, New York, N.Y.....One of the first mothers to be honored was Mrs. Dora Cooper of Samson, Ala., who received the Emblem from Maj. Gen. George E. Stratemeyer, Commanding the Southeast Air Force Training Center, in a special ceremony at which four of her five sons in military service were present. The fifth is

in Basra, Iraq, with the U.S. Military Mission.

Godman Field wants pictures for its Squadron history book of any and all officers and men who have served at one time or another in the 15th Observation Squadron. When sending pictures, please give full name, date of service with this organization, and rank at that time. Pictures should be sent to the Public Relations officer, 15th Observation Squadron, Godman Field, Fort Knox, Kentucky.

"Get 'Em There, Get 'Em Back" is the new slogan of the Navigation School at Turner Field, Ga.....Although he has been flying since 1921, Col. Warner B. Gates, Commanding Officer at Lawson Field, made his first flight in a commercial airplane recently when he flew to San Antonio on a Ferrying Command mission.....The Army's first parachutist chaplain is Raymond S. Hall of Ft. Benning, Ga. After a week of talking to the men he applied for permission to take the five-week training course. He found it rough going but now is a qualified chutist and looks forward to each jump. The men's reaction to his jumping? "It increased attendance at chapel", Chaplain Hall reports.

The President has nominated Col. Claire L. Chennault, commander of the American Volunteer Group in China, to be a brigadier general..... Every time Sgt. Thomas Snow picks up the phone on his desk in headquarters at Camp Blanding, Fla., he has to say, "Special Services Section, Sgt. Snow speaking".....Pvt. David Sackson, former conductor of the Charleston Symphony Orchestra, and a member of the New York Philharmonic and NBC Symphony Orchestras and the Coolidge and Gordon string quartets, recently finished washing spuds, cleaned up, rushed over from K.P. duty to the Service Club, and brought down the house at Keesler Field, Miss. with a Bach violin recital.

Two new service medals, the American Defense Service Medal, first to be awarded by

the Army since the World War Victory Medal, and the Good Conduct Medal for enlisted men have been ordered established by the President. The first will be awarded to all U.S. military personnel for honorable service of 12 months or longer between Sept. 1939 and December 7, 1941. The Good Conduct medal is authorized for award to those enlisted men who on or after June 28, 1941, honorably completed three years of active Federal military service and who are recommended for the award by their Commanding Officers for exemplary behavior, efficiency and fidelity.

Harold Gatty, who flew around the world with the late Wiley Post in 1931 is now on duty with the U.S. Army Air Forces in Australia.....Major Warren Eaton, inventor of the radio compass, is now at Wright Field.

His former co-workers in a plant at Aliquippa, Pa., recently sent Pvt. Ray Reed of Geiger Field, Wash., a 10,000 word letter on a strip of paper 6 inches wide, 40 feet long.....Friends in Bethlehem, Pa., sent Pvt. Raymond Kindt of Mather Field, Cal., a letter 14 inches wide and 9 feet long.....More than half the newest class of navigation cadets at Kelly Field's Navigation School, the largest in the AAF, have had no previous flying experience. They entered the school direct from civilian life or other Army branches.....Gunter Field, Ala., tells of the civilian, invited to visit the field, who wrote: "Maybe I could arrange to fly at Gunter Field if you have a landing field".....Herbert C. Klynstra, who has toured the country with a nationally known circus as a clown, is now at Kelly Field. He has also been a carpenter, acrobat, truck driver, salesman, shipping clerk, and farm hand.

The Navy has been given full command over all anti-submarine activities on both coasts, and Army air units have been allocated to the Naval Commanders of Sea Frontiers.....An Airborne Command has been created in the Army Ground Forces, with headquarters at Fort Bragg, N.C. Several glider units from the AAF will be made available for special training under the Airborne Command.....Great Britain has formed an Army Air Corps bringing all air-borne troops under one unit. Previously all planes belonged to the RAF, but now the Army will have a flying force of its own for closer cooperation with ground units.....Pilots on commercial airplanes now broadcast all weather information in special

code.....Lt. Col. Lester J. Maitland, just returned from the fighting fronts in the Philippines and Australia, and the first man ever to fly from the West Coast to Hawaii, has been named Assistant Commandant of Gunter Field.

Soldiers at Logan Field, Colo., have discovered a law making it punishable to shoot buffalo out of the Ft. Logan barracks windows.....The first group of the AAF's Flying Sergeants have been graduated as military pilots from the Gulf Coast Air Force Training Center. Pilot training for enlisted men was begun last fall and upon completion of training the students are appointed Staff Sergeant Pilots with pay of \$108 per month while on flight duty.....A Flying Sergeants' Club has been organized at Maxwell Field, Ala., and plans are being made to expand it into a national organization.....West Point cadets who take special training for the Air Forces will be graduated with their wings instead of devoting several months after graduation to special training.

Filipinos in the U.S. have been made eligible for enrollment as flying cadets in the Army Air Forces, and Secretary Stimson has waived citizenship regulations in their behalf.....Brig. Gen. William O. Butler is the newly appointed Commanding General of the Eleventh Air Force. Gen. Butler came to Alaska from Wright Field.... The Southeast Air Force Training Center estimates that 500 American Army fighter pilots who otherwise would have been eliminated have been "saved for the service" through the new physical training program.....Maj. Gen. Follett Bradley has been appointed Commanding General of the First Air Force, and Brig. Gen. John K. Cannon is the new Commander of the First Interceptor Command.....The Air Force Basic Flying School at Moffett Field, Cal., has been transferred to Chico, Cal.

Applicants are needed for training at the new Glider Pilot Training School at Twenty-nine Palms, Cal. At present only enlisted men with two months' service are eligible. To qualify, an applicant must either be (1) a power plane pilot, graduate of a CAA primary or secondary course; or (2) a glider pilot who can produce certified evidence of at least 30 hours' glider time or have piloted at least 200 glider flights.....



Morale Builders

By Lieut. Col. R. C. Jones

Air Forces Morale Officer



SPECIAL service agencies are being set up in all commands of the Air Forces to enlarge upon recreational, physical fitness and general welfare activities for all units down to and including squadrons.

The efforts of these agencies will be directed toward improving the physical condition of all officers and men, and toward building up the morale and "esprit de corps" of Air Force units.

The agencies will work under the general supervision of the War Department Special Service Branch, headed by Gen. Frederick H. Osborn. This Branch is constantly studying the factors that influence the effectiveness of military units and aids field commanders in their task of building up morale in their organizations. Activities of the Air Force special service agencies will also be coordinated by the Director of Personnel.

Qualifications

As often as practicable, Air Force special service officers will have physical education and recreation training qualifications. All group special services officers will be especially qualified for these activities. One non-commissioned officer "special services assistant" is authorized for each squadron. These men will be selected for their leadership and personal qualifications. They will assist their commanders and the group special services officer in directing squadron physical conditioning exercises, mass games, sport, recreational activities, entertainments, and in bolstering the general welfare.

Enlisted men with coaching, teaching, recreational, athletic or similar experience will be eligible for these non-commissioned assignments. They may also aspire to the physical training course, AAF Officer Candidate School, if they have a college degree in physical education or comparable training, plus experience in the physical fitness field. Upon graduation, they will be commissioned Second Lieutenants and assigned to duty, either as special services officers throughout the AAF, or as physical training instructors for aviation or technical training students.

Special services activities in the AAF are an outgrowth of the former A. and R. or Morale officer's responsibilities. Development and maintenance of satisfactory morale is a natural by-product of the program. Although the word "morale" has been abused and misunderstood in many quarters, it pertains to a highly important feature of military life and efficiency.

"The Old Fight"

General George C. Marshall recently said, "Napoleon evaluated morale over material as three to one. I believe that recent experiences indicate a re-estimate of these values—the odds being nearer to five to one, or possibly even ten to one, in some instances, in favor of the psychological factor."

"The old fight" has been laughed at for being childishly dramatic, but it is nevertheless true that training alone won't win a war if it isn't backed up by a high degree of morale. Call it what you will—esprit de corps, high spirits, or a cheerful, resolute state of mind—it all adds up to the same thing. All work and no play not only makes Jack a dull soldier, but it also may cause the breakdown of the most highly trained Army.

Play will not be the only activity under the AAF special services program. In addition to the rigorous physical fitness and athletics program being developed by a committee of the nation's leading experts, there are educational opportunities offered to ambitious soldiers, and advice upon insurance matters, personal finances, dependents and other similar problems.

Functions

Special services officers assigned to AAF units will have such varied duties as promotion of athletic contests, direction of calisthenics and mass games, procurement of motion picture service, organization of amateur theatricals, development of libraries, production of radio programs, promotion of crafts and hobby groups, activation of musical organizations, and stimulation of recreational opportunities in nearby civilian communities. In short, they

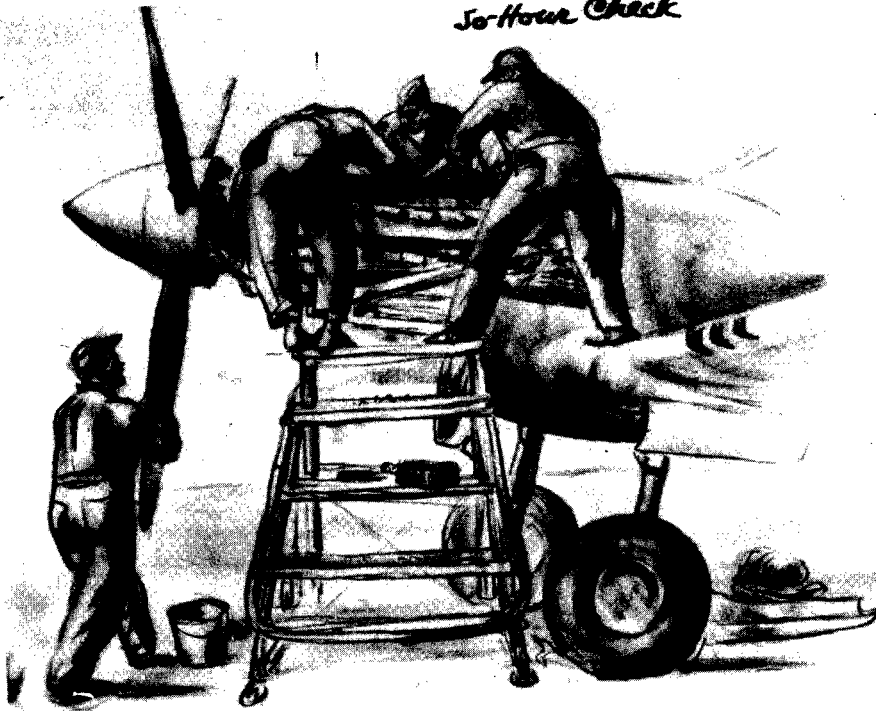
(Continued on Page 34)

A DAY AT AN

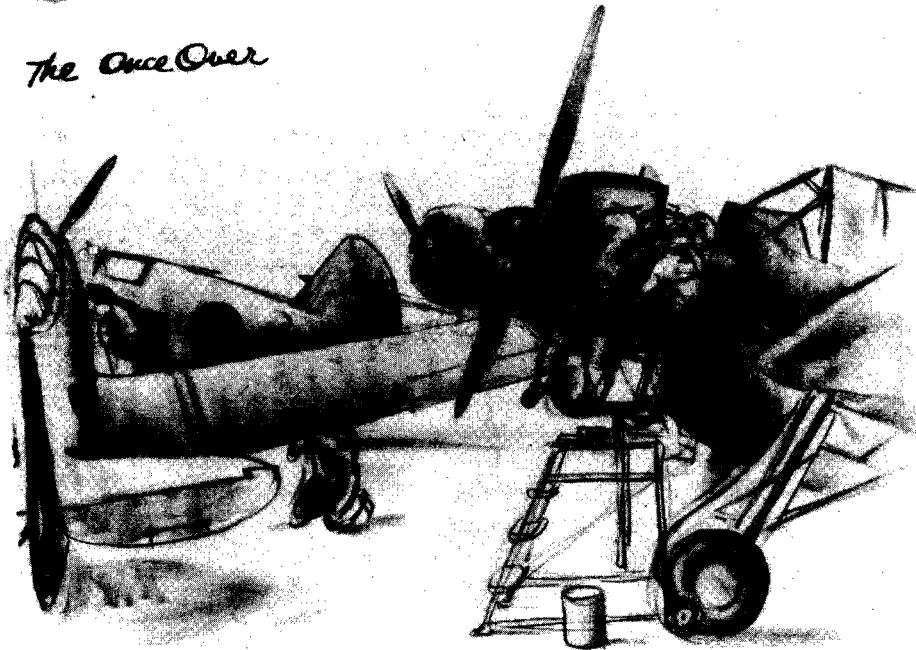
Sketches made

Capt. Raymond C

30-Minute Check



The Once Over



Rolling Your Own

Inside Job

Fueling Up

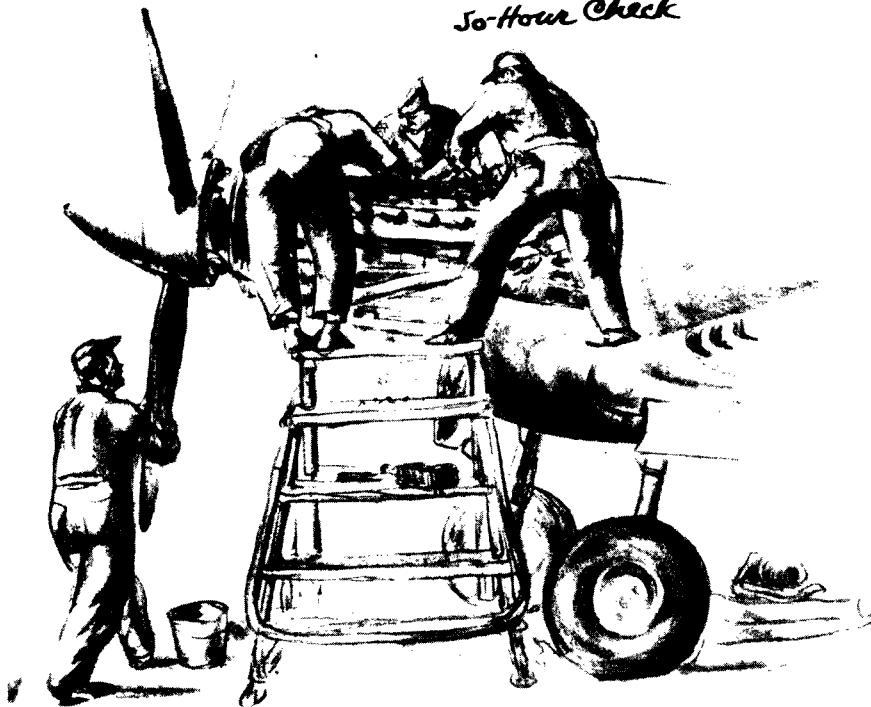


A DAY AT AN

Sketches made

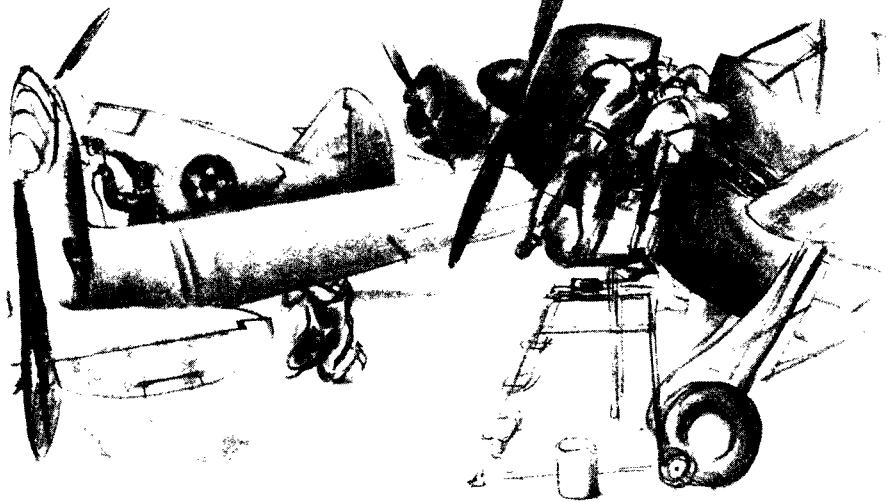
Capt. Raymond C

50-Hour Check



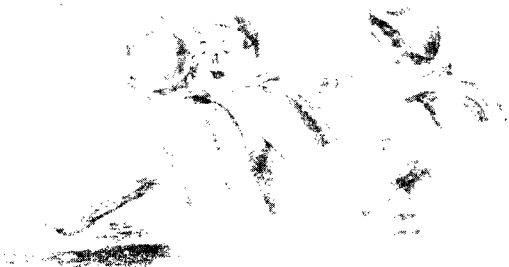
The Once Over

Rolling Your Own



Inside Job

Fueling Up



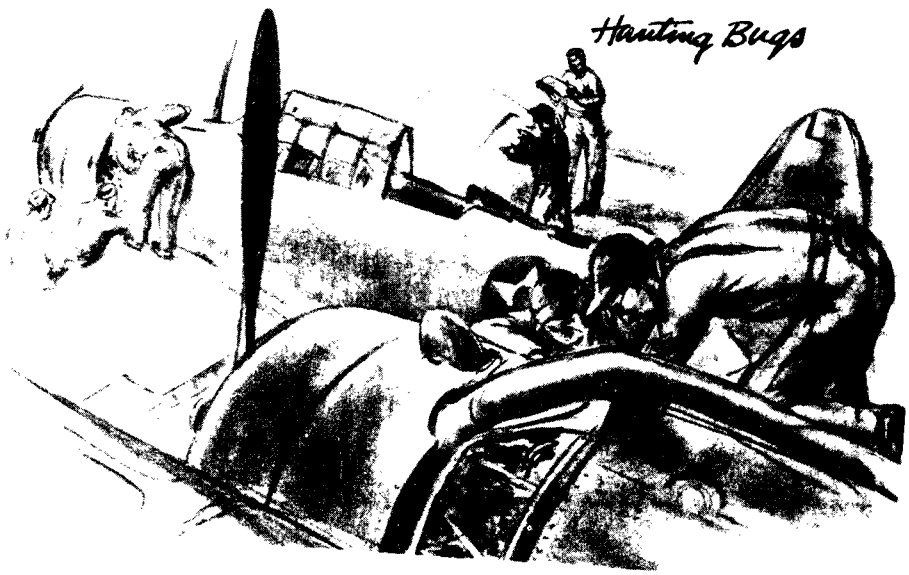
THE AIR FORCE BASE

Washington Field, D. C.

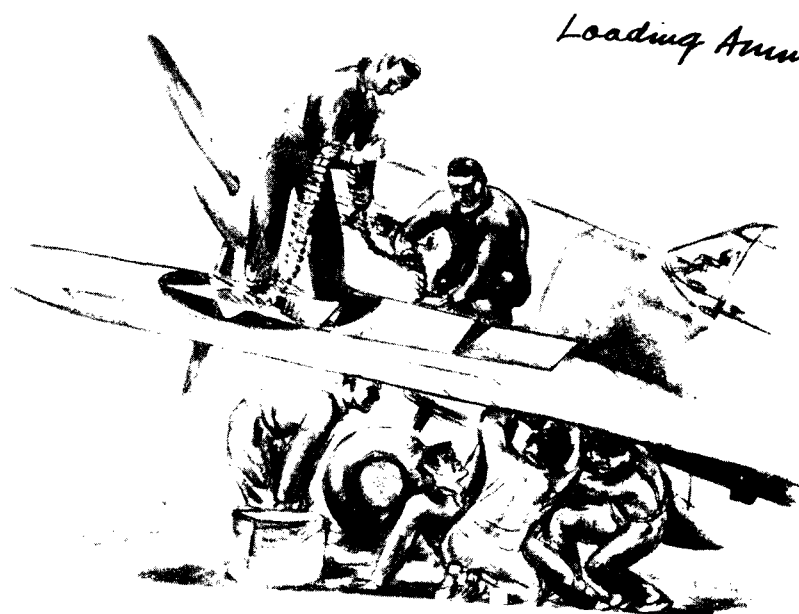
James M. Moore, AAF Artist



House Cleaning



Hunting Bugs



Loading Ammo

Crash Technique

Russian Ramming Downs Axis Planes



ONE of the specialties of Russian airmen in their battle against the German air force is the tactic of ramming enemy planes. The sacrifice of a dying pilot in a damaged plane by a deliberate collision with his foe is a relic of the First World War but the Russians have developed ramming as a definite tactic from which both pilot and plane may escape undamaged.

Ramming was developed by the Russian airmen after they observed that frequently German multi-motored bombers escaped after being hard hit and seriously damaged by Russian pursuits. Often the pursuit pilot scored heavily, killing part of the bomber's crew and disabling one or more motors. However, these attacks usually exhausted the pursuit's limited ammunition supply, permitting the bomber to limp back behind its own lines. Ramming is designed to destroy these crippled planes. It takes a combination of skillful piloting and utilization of the crippled victim's lack of maneuverability to execute a successful ramming operation with a minimum of damage to the attacking pilot and plane. More often the attacking plane is damaged and the pilot bails out.

Three Methods

Soviet flyers employ three types of ramming according to Major N. Denisov in a recent USSR Embassy bulletin. The most dangerous is the direct blow. Hitting the enemy plane with a part of a Russian plane and clipping control surfaces by slight propeller contact are also used. The latter method calls for the greatest skill and offers the best chance of survival.

Major Denisov points out that the propeller clipping method calls for an approach from the rear with the attacking plane's speed adjusted to that of the enemy. As soon as slight contact is felt the attacker must drop away to avoid crashing with the enemy plane as it falls. If the ramming flyer is too slow he may easily become entangled with the stricken plane and dragged down with it.

American Air Forces observers abroad report numerous examples of the Russians' ramming tactics and there are accounts available from Soviet flyers who have rammed German bombers and made successful landings. Here is the account

given by Junior Lieutenant V. Talalikhin who was awarded the order of Hero of the Soviet Union for his exploits:

On the night of August 6, 1941, when fascist bombers made one of their attempts to break through to Moscow, I was ordered to take off in my fighter and patrol the approaches to the city. I soon spotted a Heinkel 111 at an altitude of about 15,000 feet. Swooping down I managed to get on its tail and attacked.

Russian Describes Attack

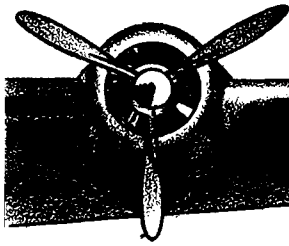
"With one of my first bursts I put the bomber's right engine out of commission. The plane banked sharply and set its course for home, steadily losing altitude. I continued to attack the enemy and gave him about six bursts following him down to about 7,500 feet when my ammunition gave out. What was I to do? I could have followed the bomber farther but that would have been useless. With only one engine it could still fly quite a distance and perhaps escape. There was only one thing to do—ram the enemy.

"I decided to chop off his tail with my propeller and opened my throttle. Only about 30 feet now separated the two planes. I could clearly see the armor plating on the bombers belly as I approached from behind and below.

"At that moment the enemy opened fire with a heavy machine gun. A searing pain tore through my right hand. Immediately I gave my plane the gun and the whole machine, not just the propeller, struck the bomber. There was a terrifying crash. My fighter turned upside down. I unfastened my belt and drew up my feet, crawled to the opening and threw myself overboard. For 2,400 feet I fell like a stone not opening my parachute. Only after I heard the roar of my plane to one side did I pull the ripcord. I landed in a small lake and made my way to shore."

Landed Plane Safely

Pilot Mikhalev of the Soviet Fleet Air Service was credited with ramming a Heinkel 126 in one of the first appearances of this new German air-
(Continued on Page 29)



TECHNIQUE



MORRIS Field, Charlotte, N.C., has supplemented its supply of expensive wrecking trucks, used for lifting and transporting wrecked planes, with an inexpensive substitute. The new device is a portable hoist which can easily handle an 8,000 pound plane when attached to a truck having a winch in front.

The hoist costs less than \$200 to manufacture and is easily constructed. It consists of a tripod of iron pipes which are attached to the truck bumper. A cable runs from a cylinder at the base of the tripod up through a pulley attached to the top.

This type of construction has been tried before, but the strain has always proved too great for the front springs and axle. This problem was solved by adding a small wheel to support the bumper, thus absorbing the strain.

The new hoist was developed by Major James H. Reed, Jr., Commanding Officer of the Morris Field Sub-depot. Major Reed first made a model in the base hangar and tested it in miniature to prove its effectiveness. Several full-scale hoists are now in use at the base.

Major Reed was recently commended for his ingenuity by engineering officers at several other Air Forces Depots, who have begun to construct hoists of their own.

ELECTRIC FLYING SUITS ON ORDER

THE Army Air Forces will soon have several thousand electrically-heated flying suits, designed to keep aviators comfortable at 60 degrees below zero.

Many pounds lighter than the sheepskin suits they will replace, the new suits are not nearly so bulky. Pilots therefore will have more room for manipulating instruments, controls and armament. The temperature of the suits will be automatically controlled to adjust to changes in the temperature of the air.

The suit is the result of experiments conducted at Patterson Field during the past winter, and of a test flight to Alaska. Tests were directed by Frank G. Manson, equipment engineer

at Wright Field. General Electric Co. will manufacture the outfits.

NEW ALLOY USED

NORTH American has developed a new steel alloy that can take the place of aluminum in airplane construction. Use of the new alloy eliminates the necessity of rivets, since spot welding can be used. It is estimated the total weight of planes using the new material will be increased no more than three percent that of aluminum planes. Under the new process approximately 1,250 pounds of aluminum alloy should be saved per plane.

BRITISH DEVISE NEW DE-ICING APPARATUS

A new de-icing apparatus has been developed in Great Britain. It is for use on aircraft having adjustable pitch propellers, and provides improved, controlled delivery of the de-icing fluid at required times.

The new device consists of a prop-nose spinner having double walls that provide a container for the de-icer fluid. The outlet of the container is normally closed by a valve spring, being opened by adjusting the pitch angle of the propeller blade.

Propeller pitch is controlled from the cockpit, the arrangement being such that when ice is forming the pilot can open the outlet valve of the fluid container by adjusting the pitch angle of the prop from "maximum cruising" through an angle of about five degrees. The valve plunger then uncovers the outlet port and the de-icing fluid under pressure is sprayed through holes over the prop blades and other parts of the plane.

HOW TO "SPOT" BY EAR

THE British Royal Observer Corps has been conducting experiments with the sound of airplanes, and has uncovered some useful facts. A few of the more interesting are as follows:

Unless the plane under watch by the observer passes very near, the sound seems to come from some distance behind it.

Wind affects the volume and intensity of the sound of airplane motors, but not the pitch.

A plane sounds louder behind a cloud than in the open sky. Determination of the exact position under such circumstances, however, is difficult because the sound may be reflected from one cloud to another.

On a hot day sound travels faster than on a cold day, and on a damp day it travels faster and farther than on a dry day. Planes may therefore be heard most plainly on a warm, misty evening, or when there is a haze or the barometer is low. With a dry east wind in winter it is often difficult to hear a plane even two miles away.

The sound of a plane can be heard quite clearly in a stone, iron, thin wood or sand-bagged enclosure; but grass, asbestos boards, etc. are bad conductors.

An approaching plane has a higher note than a receding one. The pitch of this note changes according to the distance of the plane from the observer. The pitch of high-flying planes changes slower than low-flying planes, even though they are flying more rapidly.

NEW PILOT TESTING APPARATUS

ANOTHER step toward the more efficient training of AAF pilots took place recently at Duncan Field when Captain A.F. Constable invented an apparatus to measure the coordination and potential flying ability of aviation cadets.

The machine utilizes the rudder and stick of a regular airplane. Confronting the man to be examined is a panel with three series of lights—red and green. Each time a red light flashes on the cadet must use his instruments to line up a green light with the red. The time required to accomplish a prescribed number of matchings, Captain Constable says, will prove an accurate measure of the cadet's muscular coordination and piloting skill.

The machines are now being manufactured and are being sent to a number of cadet reception centers all over the United States. Captain Constable has been given the job of supervising the commercial production.

In the picture below Capt. Constable demonstrates his device for Lt. Col. I.W. Ott and Mr. R.J. Van Horn of the Duncan Field Engineering Department.



The Delayed Jump

By Arthur H. Starnes

A two year investigation of free-fall delayed-opening parachute jumps conducted with the assistance and observation of two eminent medical authorities, has convinced me that airmen who must jump from airplanes—and this applies especially to combat air crews—should not open their parachutes until they have fallen to dense, safe air close to the earth. Close is an indefinite word, but it is my opinion that chutes can be opened safely as low as 1,500 feet above the ground by persons who never have jumped before.

The investigation, which delved into the field of physiology and the experience a long-delayed parachute opening has upon the airman's mind indicate that such a use of parachutes can be made with a high degree of safety. Furthermore, these jumps can be made with what I understand is standard equipment for all army airmen—whether they fly at great heights or at altitudes below 10,000 feet. In particular I was interested in problems involving jumps from heights between 25,000 and 30,000 feet. The same conclusions apply for these jumps—except that the reasons for delaying the canopy opening are more convincing than for jumps from lower levels.

Reasons

Specifically the following reasons for making delayed jumps are found to be valid:

1. Delaying opening of the parachute decreases the likelihood of an airman being struck by a falling plane or its parts.

2. Delaying opening when jumping from a high speed airplane will permit the body to slow down to a safe rate of speed and prevent injury for the airman due to the opening shock; it will also prevent damage to the canopy and harness.

3. Enemy flyers who are known to practice machine gunning of airmen found floating helplessly in parachutes cannot fire on airmen who make free falls. The outline of a falling body merges into the pattern of the earth below making it almost impossible to keep track of a man who makes a delayed opening drop.

4. By delaying the opening one can jump from high altitudes and not become numbingly chilled by low temperatures. A chilled, clumsy body taking a landing shock is more apt to receive injury than an agile one.



Arthur H. Starnes, just before his historic experimental delayed jump from 30,000 feet.

5. The oxygen factor is an important one on the side of delayed jumps from high altitudes. If parachutes were opened at heights above 20,000 feet and bottled oxygen was not available a pilot might die from anoxia. If a delayed jump is made he will fall in a matter of seconds into air that is life-sustaining.

Purely as qualifying information I may say that I have made 51 delayed jumps, and more than 300 total parachute jumps. I have made free falls that range from 2,500 to 9,000 feet when

leaving airplanes up to heights of 10,000 feet. My longest free fall was 29,300 feet made last fall when I jumped from a corrected height of 30,800 feet. For the record the corrected air-speed at that height was 165 miles an hour. Indicated outside air temperature was in the neighborhood of 46 degrees Fahrenheit below zero. Weather bureau reports (radio sonde) that morning indicated 48 degrees below at 31,000 feet. Ground temperature was 64 degrees.

The time of that fall was 116.5 seconds. The average rate of falling speed approximated 170 miles an hour. The peak was 230 miles an hour at 26,000 which decelerated to 130 miles an hour when the chute opened at 1,500 feet above the ground or 2,100 feet sea level. Speeds varied considerably with body position in the fall.

I used an oxygen mask, goggles and a bail-out bottle for jumps above 10,000 feet. These are, I understand, being made standard equipment in the Army Air Forces. In low temperatures goggles are essential to prevent injury to the eyes.

Conclusions

The conclusions which I believe should be emphasized to all airmen in connection with these experiments follow:

A. Preparation.

1. It is not necessary to practice free fall in order to take advantage of it in time of necessity.

2. Standard equipment for airmen is all that is required. (In making my studies I carried 85 pounds of instruments, and my total weight was 285 3/4 pounds. Even so, the long jump was accomplished without injury.)

3. Proper adjustment of parachute harness cannot be too strongly stressed. Improper adjustment may result in injury when the chute opens. The rider strap, or main suspension loop, which forms about the hips should be so adjusted that when one stands erect this strap fits tightly just below the cheeks of the buttocks. The harness should be snugly fitted. One test is that if properly adjusted the harness makes it uncomfortable to stand erect. It is comfortable, however, when seated.

4. Airmen should be instructed that no loss of consciousness occurs during a free fall even of sustained duration.

5. The heart beat rate is not significantly effected, nor is the breathing apparatus. In other words, during a free fall, an airman can breathe, shout and talk.

6. The Eustachian tubes should be opened during the fall. Ear drums can be opened easily by

a lower jaw action as if one were yawning; or by opening the mouth wide and hollowing out, or pushing back the upper part of the throat in a fixed position. All these are adaptable to speeds of descent in free falls.

B. Jumping.

1. Jumps should, when possible, be made head first from an airplane.

2. Airmen should remember that if parachutes are opened at speeds in excess of 150 miles an hour injury is almost certain. If time for deceleration is available the speed of fall will decrease to 120-135 miles an hour.

3. The airman need not be concerned with body position in relation to the earth's surface during fall or at the time of ripping the parachute. Of seven known types of body movement during free fall only one type is likely to cause fouling of a properly packed chute. This is somersaulting with the legs drawn up against the belly. This can happen only when the airman knowingly, and with great effort holds the legs in place. Releasing the legs changes this somersaulting motion.

4. A definite warning is available for airmen to announce the approaching of the earth's surface during free falls. This warning commences to occur at approximately 3,000 feet. It consists of a feeling that the speed of fall has suddenly increased. It is accompanied by the visual indication of a spreading of the earth's surface and a speed of rise in the horizon line. The closer to the earth the fall is continued the more definite the warning.

5. The gravity pull during the fall is low. The twisting and turning effect is for the most part comfortable; much more so than acrobatics even in a light, low-powered airplane. Air pressures are felt but are not uncomfortable.

6. It is not necessary to stiffen the body or prepare for the chute opening shock. Relaxation is desirable but a stiffening of the body muscles does not matter one way or the other.

C. Opening the Parachute.

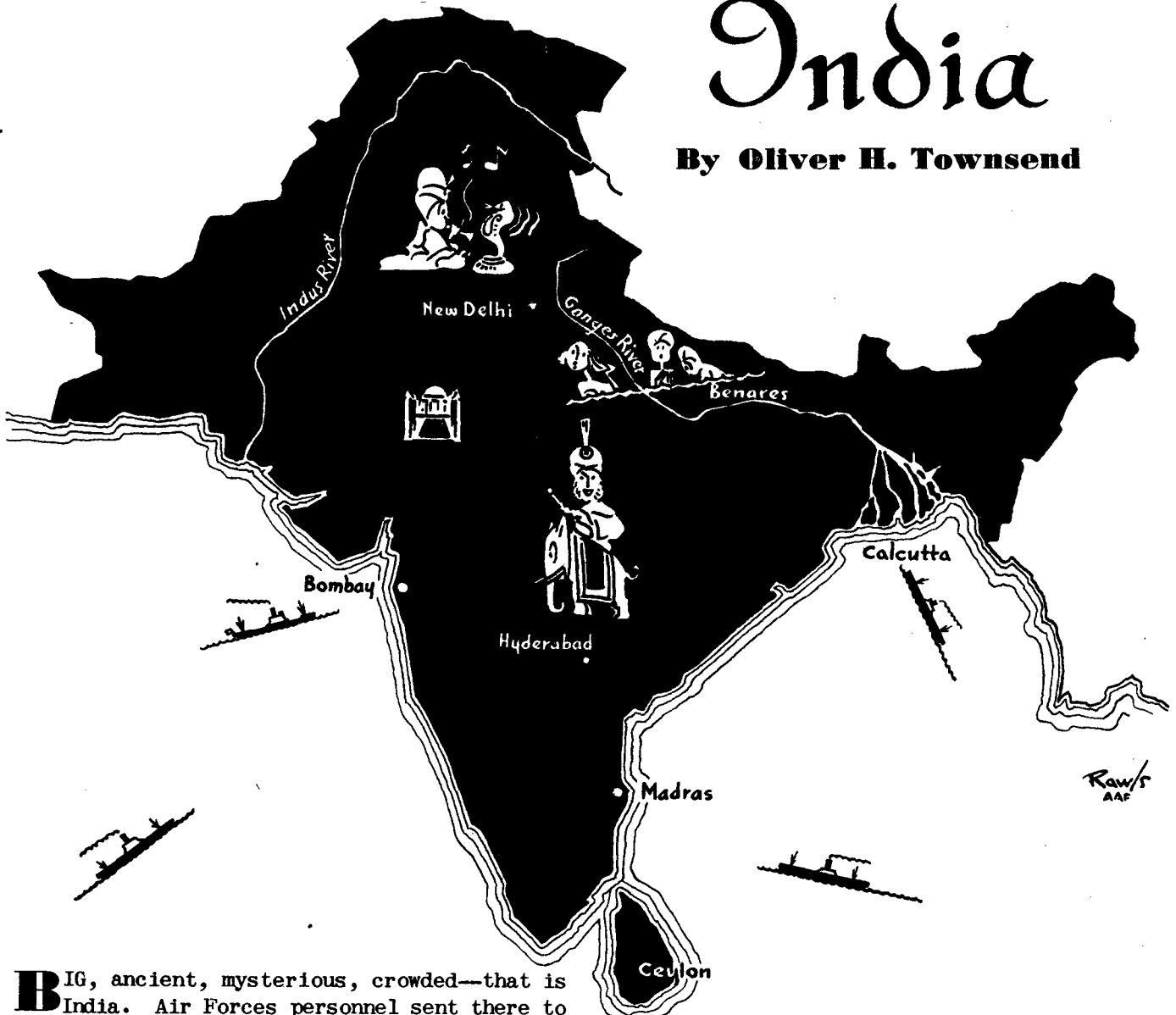
1. If the parachute is released while the body is spinning the shroud lines will become twisted. The chute will open nevertheless, and within a few seconds the body will slowly turn and unwind the twists.

2. At the time of the opening of the parachute after a free fall—after the body has reached terminal velocity—there is a black-out. It comes without warning, pain or reaction. It lasts for from one to three seconds only, and

(Continued on Page 30)

India

By Oliver H. Townsend



BIG, ancient, mysterious, crowded—that is India. Air Forces personnel sent there to fight the Jap will find it one of the most "different" places in the world.

Shaped like a huge pear, India begins high in the mountainous regions of central Asia and stretches 2,000 miles southward, splitting the northern part of the Indian Ocean into the Arabian Sea and the Bay of Bengal. As large as that part of the United States which lies east of the Rocky Mountains, it is vastly different. Sacred bulls wander unmolested throughout the land, colorful bazaars line the crowded city streets, and fakirs, yogis and other religious mystics practice their weird rites in the gardens of great-domed mosques and temples.

Nation Of Contrasts

India is a nation of contrasts. It claims as citizens some of the richest people in the world—and many of the poorest. It has some of the most beautiful palaces in the world—and some of the worst hovels. From the nicely-

turned green of the wealthiest Maharaja's polo field to the squalor of the poorest "Untouchable's" tenement, the contrasts are keenly felt in India's day to day existence.

The climate of this great peninsula, like its other characteristics, also varies from one extreme to the other. Most of the country is low, flat and hot, especially in the southeast. But toward the north as the land rises up to meet the lofty peaks of the Himalayas the temperature sinks in inverse proportion to the altitude. Highest point in the Himalayas—and in the world—is Mount Everest, rising to the Flying Fortress height of almost 30,000 feet.

Most of south and central India is one vast plain with a hot season that chases white residents to the cool heights of the northern mountains during at least part of every year. The heat extends as far north as Delhi, the capital, on the northern plain. During this season, which begins in March, the government packs up

and moves to cool Simla, 7,000 feet high in the southern foothills of the Himalayas. The rainy season, lasting from June through October, brings relief from the heat to most of India. Cool weather usually prevails from November to February.

Americans will not find the average Indian town to be especially enticing. Sewage, drainage and sanitary facilities are something that have yet to be "sold" to most of India. Many of the smaller towns lack transportation facilities, and it is usually necessary to sleep under mosquito netting in order to avoid the insects, which in some sectors are not killed because of the reincarnation beliefs of the natives.

A number of the big cities, however, have been at least partly modernized. In these it is possible to ride in streetcars and taxicabs, see electric signs, buy occidental food and American cigarettes, and generally feel more "at home". Many Indians in the larger cities and on the excellent railroads understand and speak the English language.

Plenty To Do

There are many interesting things to do and see in India during free time. The Taj Mahal at Agras, one of the seven wonders of the world, has been a tourist mecca for decades. So has Bernath, the Hindu holy city, where thousands of people go each year to wash their sins away in the sacred waters of the Ganges—or to die on its banks in order to guarantee their souls a place in heaven.

Among things to buy in India are brassware, ebony miniatures, kashmir shawls and tapestries. These can all be obtained very reasonably provided the visitor isn't averse to the ancient and honorable art of dickering.

The monetary system of India is based on the rupee—worth about 30¢ in American money. Money is uniform throughout the whole country, and is composed of both coins and paper currency. "Small change" consists chiefly of annas—each one worth about one-sixteenth of a rupee.

One of the most progressive features of India is its railway system, which provides good service between most populated areas. On these railroads there are three classes of travel: first, second and third. Second class is almost as good as first and costs much less, and for this reason is very popular with foreign visitors. The trains themselves are unlike the trains in this country in that they are divided into completely separate compartments, each one

opening directly on the outside. There are no aisles running from car to car, or even between compartments, which are completely isolated while the train is in motion.

Roads generally are poor, although there are a number of automobiles in the centers of population. It is virtually impossible, however, to travel from one side of the country to the other by auto. This explains in part why the railroad system has been developed to its present degree of excellence, and why most travel is done by train.

The fact that India has been a British colony for so many years has made the English language fairly common among railroad people, merchants and hotel clerks. In most cities and travel centers it is not possible to go long without coming across someone who can speak or at least understand English.

The native food is very much unlike American food—with strange names and stranger tastes and smells. But most railroad stations, hotels and big cities have restaurants which serve western dishes at varying prices and varying degrees of quality.

Just as "different" as their country are the Indian people.

Crowded into India's ancient provinces are almost three times as many people as there are in the United States. This makes it the second largest populated country in the world, with well over one-half the people of the British Empire.

India has 16 cities of more than 200,000 population, the two largest being Calcutta and Bombay. Calcutta, with over a million and a half people, is the second largest city in the British Empire. Other great cities are Madras, Hyderabad, Delhi and Lahore. On the great plain outside of the ancient city of Delhi is New Delhi, India's modern capital. New Delhi is the home of the government and nothing else. It is a "made-to-order" capital, with miles of great gardens and boulevards. These make it the most beautiful, clean and modern city in all India. Hub of New Delhi's spoked boulevards is the British Viceroy's House, a magnificent palace surrounded by government buildings and gardens, and with a 177-foot copper dome which can be seen for miles.

Enjoying a civilization that was old when Columbus set sail for America, the people of India present a very confusing picture to the average occidental. They are composed of more than 45 races who speak over 200 different lan-

(Continued on Page 31)

World War Aces Meet the Cadets

By Maj. Falk Harmel



General Frank O'D. Hunter, at the controls of a P-40, and Col. E.V. Rickenbacker (in civilian clothes) are greeted by pilots of Harding Field during their recent tour of Army Air Forces Fields. Col. L.L. Koontz, Commanding Officer of the field, is at right.

TWO American aces of World War I—Brig. Gen. Frank O'D. Hunter and Col. "Eddie" Rickenbacker—have just completed a 15,000 mile nation-wide tour of Air Forces stations during which they told Army airmen how they did it in 1918, and how "we can do it again" in 1942.

Upon his return to New York, Colonel Rickenbacker, who won fame as America's outstanding World War aerial hero, was officially commended on the success of the trip by Lieut. Gen. Henry H. Arnold, Commanding General of the Air Forces.

Speaking at Mitchel Field, where the tour ended, Colonel Rickenbacker stated that "man for man and plane for plane, Uncle Sam has the greatest aerial fighting machine in the world today." He predicted a long war, and added that we will need at least 300,000 pilots to achieve victory—100,000 as instructors and 200,000 as combat pilots in all parts of the world.

He asserted that the men of the Air Forces are as "full of fire and spirit today as the Minute Men of Concord were," and told them they will be flying planes "that are the last word in per-

formance and armament. No force in the world can lick you."

Rickenbacker Cautions

Cautioning against over-confidence, he said, "I am not underestimating our enemies and their equipment. Never underestimate your enemies. But, on the other hand, let's not get a frame of mind that he is the top dog."

The heroic exploits of both Colonel Rickenbacker and General Hunter in World War I helped them make a profound impression upon young Air Forces pilots now undergoing training. Both have had extremely narrow escapes, and on more than one occasion have been almost on speaking terms with the Grim Reaper.

In one of Colonel Rickenbacker's numerous combats over the front lines in France, a bullet passed through the fuselage of his plane less than three inches back of his head. Time after time he came back to his home airdrome from patrol with numerous bullet holes through his airplane. Another close call was his remarkable

recovery from the severe injuries he received in the crash of an airliner on February 28, 1941, near Atlanta, Ga., which exacted a toll of seven killed and nine injured.

It is not a matter of general knowledge that Colonel Rickenbacker achieved his 25 victories despite the fact that sickness deprived him of more than three month's service at the front. Shortly after May 30, 1918, when he downed his fifth victim, the one entitling him to the unofficial designation of "Ace", he was ordered to a hospital in Paris to recover from a fever which for a time threatened to put him out of the war altogether.

He had hardly recovered when he heard that the First Pursuit Group was about to be supplied with the new French Spads to replace the old Nieuports. Thereafter he stuck close to the Spad depot in Paris until the first of these new airplanes was ready for the American flyers. Seizing it when the mechanics pronounced it fit, he flew it to its new airdrome early in July. He was made flight leader of his squadron, the 94th, and carried out his customary patrols for a few days only to be bested once more by fever. It was not until September 14 that he was credited with his sixth victory. During two weeks in September, Rickenbacker got six more enemy planes and 13 in October.

Most of his victories were achieved at altitudes of about three miles. He was accustomed to going out on early morning patrols when the cold is very intense. Even so, he put in more flying time over enemy lines than any of the pilots under him. He was a great believer in the efficacy of surprise attacks, and in launching these he took advantage of the protection afforded by the blinding glare of the sun, the shelter of clouds, and moments of inattention on the part of his quarry.

Awarded Croix de Guerre

It was due to these precautionary methods that he achieved more victories than any other American pilot, and remained alive to tell of them. His first victory on April 29, 1918, resulted in his being awarded the Croix de Guerre with palm by the French. During this encounter his machine gun jammed and he had to repair it himself, immediately returning to attack his adversary. The Distinguished Service Cross was awarded him after his fifth victory, and to this decoration were subsequently added nine oak leaves.

General Hunter also received many decorations

for his outstanding exploits of World War I. During his activities over the front lines in France, he was outnumbered by the enemy in every combat in which he was credited with shooting down one or more of his adversaries. In his first victory during a patrol flight he attacked two biplanes, destroyed one and forced the other to seek a healthier climate. In his next encounter, accompanied by one other plane, an attack was made on a patrol of six enemy planes. General Hunter destroyed one of them, and with the aid of his companion forced the others to retire within their own lines.

On another occasion, when he was leading a patrol of three, the American airmen attacked a formation of eight planes. In the dog-fight which ensued, four of the enemy bit the dust, and General Hunter accounted for two of them.

Most Exciting Moment

Perhaps his most exciting moment came when, while separated from his patrol, he observed an allied patrol of seven Breguets hard pressed by an enemy formation of ten Fokkers. He attacked two of the enemy that were harassing a single Breguet and destroyed one. Meanwhile, five of the enemy approached and concentrated their fire upon him. Undaunted by their superiority, he attacked and brought down his second plane of the day. By this time he had been awarded the Distinguished Service Cross with three oak leaves. He received his fourth leaf for his eighth victory. In this action he encountered alone an enemy formation of six monoplace planes. He immediately attacked and destroyed one of the enemy and forced the others to disperse in confusion.

General Hunter, now with the Eighth Air Force at Savannah, Ga., also had his share of "narrow squeaks" in peace as well as war. Once he was wounded in the forehead during aerial combat, but managed to return to his home airdrome. In peacetime he became a third degree member of the mythical Caterpillar Club. His first recourse to the silk occurred on March 20, while flight-testing an experimental pursuit plane at McCook Field, Ohio. During a series of acrobatics the entire adjustable stabilizer broke away from the fuselage and control of the plane was lost entirely.

Injured In Crash

Some eighteen months before this initiation. General Hunter was returning to Selfridge Field, Mich., from Mitchel Field, N.Y., where he had

(Continued on Page 32)

Russian Ramming

(Continued from Page 20)

craft on the Russian front. Mikhalev dived on the bomber after exhausting his ammunition. His propeller ripped the Heinkel's stabilizer and rudder. A flying piece of wreckage struck Mikhalev on the shoulder but he managed to bring his plane down safely. The Heinkel crashed and burned.

Pilot Vinogradov did his ramming in the old-fashioned way. Fighting a single Nazi bomber over a vulnerable Russian target he exhausted his ammunition without getting a decisive hit. Meanwhile a bullet punctured his gas tank and his ship burst into flames. Vinogradov hurtled into the Nazi bomber and both planes were destroyed.

Another Soviet pilot who rammed and lived to tell about it is Alexandrovich Kiselev. He escaped with only a scratch on his cheek after bailing out. His plane was lost.

"It didn't come off very well," said Kiselev describing his ramming. "I am sure it is possible to ram an enemy ship without losing one's own machine. I was a bit excited and I suppose that is why I muffed the job.

"My ammunition ran out. The enemy had hit my oil tank and radiator and my engine was just about giving its last gasp. I didn't want to let him get away so I went at him from below to get at his tail with my propeller. It was possible to calculate the movement so as to clip him with the tips of my propeller. But a stream of oil messed up my windshield and I couldn't see very well.

"Just as I was approaching him the suction of the air whirled caused by the Nazi plane swept my machine upwards. I got mad then and rammed him from above digging into his left side. I knocked my face against my stick. If I had figured it out properly that wouldn't have happened.

"The enemy plane disappeared. My own plane went into a spin. I tried to pull out but it was no use. I took my feet off the controls, stuck my head outside and was knocked back into my seat by the air blast. I pushed off with one foot, counted to eight, ripped and floated down."

Lieutenant Katrich of the Soviet Air Force relates another ramming incident:

At about 10:00 a.m. I was told that an enemy plane had been sighted heading for Moscow. I took off at once and soon spotted a vapor trail at about 18,000 feet. The enemy was above and ahead of me. I put on my oxygen mask and picked

up altitude. I drew up to within 300 feet of the Nazi plane. I sprayed him from stem to stern. It was only then that the Nazi crew noticed me. The cabin gunner returned fire. I gave them another long burst until I saw flames streaking from their port engine. After the third attack my ammunition gave out and their tail gunner was silent. The left engine was burning but the plane continued to fly. The pilot was apparently counting on my fuel supply being exhausted. It was then I decided to ram him.

Thought Of Ramming

"I had thought a lot about ramming. The first reports of ramming by our flyers interested me but in most of them the planes had been lost. I thought it would be possible to ram without sacrificing one's own plane and here was a chance to test my theory.

"I approached the bomber from the left of its stern and aimed my nose at its tail, calculating my attack so as to clip its stabilizer and rudders with the tips of my propellers. My calculations proved correct. There was a slight jolt. I throttled back and banked. When I came out of the turn I saw the enemy gliding sharply downwards. I glided after it. The Nazi pilot made several attempts to level off. By gunning his motor he managed to fly level for a few seconds before dropping off again. He finally lost control and dove into the ground. The ship burned. I landed at my home airdrome. My plane was undamaged except for a dent in my propeller which caused heavy vibrations."

One of the most spectacular instances of ramming which throws an interesting sidelight on the combat psychology of Russian airmen was told by eyewitnesses at the airdrome over which the battle occurred. Sergeant-Major Nikolai Totmin took to the air as his home field was attacked by eight Ju-88 dive bombers escorted by a pair of Me-109 fighters. Totmin set one bomber's port engine afire with his first burst but was attacked by the Me fighters before he could finish the bomber. Totmin banked sharply to battle the fighters. One Me followed the bombers but the other stayed to take on the Russian.

Totmin and his Nazi opponent went into a tight circle trying to turn inside each other. The Nazi went into a quick climb and Totmin followed him. The Nazi then turned to attack and Totmin banked sharply to bring his plane hurtling head-on at the Nazi. Both planes sped toward each other but at the last moment before collision the Nazi heeled his plane over. At that instant

Totmin banked in the opposite direction and drove his plane into the Nazis wing.

Totmin's plane staggered under the shock and both planes spun earthward. Totmin twice tried unsuccessfully to bail out but the air pressure forced him back into the cockpit. The third time he got out but he was only 120 feet from the ground and his chute didn't have time to open. He fell not far from the wreckage of the plane he had rammed.



The Delayed Jump

(Continued from Page 24)

there are no noticeable ill effects.

D. Final descent and alighting.

1. So-called slipping or guiding of the standard round type of parachute should not be attempted. Airmen should chiefly be concerned with damping oscillation as quickly as possible and centering themselves under the silk canopy. Damping swings beneath the chute is accomplished exactly as the damping of swings in a child's rope or chain lawn swing.

2. Every effort should be made to turn the body—by gripping the riser straps and giving the canopy short twists to turn it in the air—so that the airman is facing in the direction of drift upon making contact with the ground. It also is highly desirable to reach upward, grip the riser straps or shroud lines and pull up as much as possible with the arms at the instant of alighting, thus reducing the landing shock.



Color photography is being used to detect installations in camouflaged areas. Enemy air fields, and other important bases which are carefully disguised and remain hidden in black-and-white reconnaissance photographs, stick out like the well-known sore thumb when they are reproduced in good color photographs. It is practically impossible for camofleurs to reproduce the natural colors with such faithfulness that the counterfeit will not be exposed by the color picture.

The Rip Chord, post publication at McChord Field, Wash., is participating in the "Don't Talk" offensive on the home front with a series of articles and cartoons urging the men at the field not to divulge military information.

Every issue of the paper contains warnings that fifth columnists are carrying on subversive activities which should be fought with a policy of strict silence.

WEATHER SERVICE

DUE to the expansion of the Army Air Forces Weather Service, there are opportunities in this organization for properly qualified enlisted personnel.

A high school education, with a background of mathematics and physics, is essential. In exceptional cases, a basic knowledge of mathematics will satisfy these requirements. The Weather Officer at each station is empowered to determine the ability of the candidate with an I.Q. test and an investigation into his mathematical qualifications. If accepted, the candidate is placed in training for duty as a Weather Observer and goes through three months of training, either at the Weather Observers School, Chanute Field, Ill., or at one of the various stations throughout the Air Forces. Upon completion of this training, he is rated as an observer and is eligible for promotion.

A field training of from 1 to 6 months follows, whereupon the candidate is eligible to take entrance examinations for the Weather Forecaster's Course. This course lasts 6 months and the graduate is rated as a Forecaster. He is then sent to a field for duty and, provided his military record is satisfactory, he is rated as a Staff Sergeant and he receives flying pay.

Interested personnel may apply to the Weather Officer at their local stations for assignment with the Weather Service.



The RAF has a one-arm fighter pilot—22 year old Flight Lieut. J.A.F. MacLaughlan. In combat over Malta last March he had his arm shot off. While convalescing in Africa he obtained permission to fly with an artificial arm. By the time he reached Britain a medical board passed him as fit for operational duty.

THE two boys who took the old time Stinson plane "Ole Miss" aloft and kept it there for more than a month in 1935 are now "keeping 'em aloft" over the southwest Pacific for the Army Air Forces.

They are Capt. Al and First Lt. Fred Key, brothers who at one time set a heavier-than-air endurance record by flying for 653 hours and 34 minutes over their home town of Meridian, Mississippi in a low powered Stinson monoplane.

The Key brothers in the Pacific are flying Flying Fortresses over Jap troops, ships and bases, for only 8 to 10 hours at a time—which is a cinch to them. They have dubbed their planes the "Ole Miss II" and the "Ole Miss III".

India

(Continued from Page 26)

guages, practice scores of religions, and divide themselves into 2,400 completely segregated castes and tribes.

Most Indians—240,000,000 in all—are Hindus. This still leaves room for about 80,000,000 Mohammedans (more than in any other country), 12,000,000 Buddhists and several million each of Christians, Sikhs, Jains, Zoroastrians and worshippers of local tribal gods.

During the course of its more than 5,000 years of history the Hindu religion has produced the most clearly-defined caste system. There are four of these: Brahmans (priests, government officials and educators); Kshatri (warriors); Vaish (business), and Shudra or "Untouchables" (laborers and beggars). These are subdivided into innumerable classifications, each with its own set of codes and restrictions.

Much of the internal turmoil of India has not been due to this great intermixture of religions, but also to the fact that the country is divided into two sets of governments: the native states and the British provinces. Although by far the most people are located in the 11 British provinces, there are still enough left outside (63 million) to support a large number of semi-autonomous Maharajas. These, although they have pledged allegiance to the King of England and pay an annual tribute to his authority, retain a large amount of local control.

Rich Prize

The biggest of the native states is Hyderabad, half again as large as England. It is ruled by a Moslem "Nizam" famous as "the richest man in the world". The ruler of Hyderabad, like the rulers of the other native states, maintains a private army, levies taxes, and accepts the feudal oath of fealty from his subjects. The British government exercises authority only in matters of communication, currency and collection of customs, and occasionally in cases of flagrant misrule can demand a ruler's abdication.

The British provinces have provincial governments responsible to the Governor-General at New Delhi. They constitute by far the greatest area of India, and contain most of the people, big cities and vital coastal areas.

India throughout all history has been one of the richest prizes in all the world. Its vast reservoirs of labor, its great untouched natural resources and its productive soil have been the

foundation of many of history's great Empires. Right now the Jap wants them badly as a foundation for his own empire. Lying in his path are the Eastern "gateways" to India: Calcutta, Madras and the tropical island of Ceylon. Air power more than anything else will influence the outcome of the battle for these gateways, and for the rich hinterlands beyond.



Swivel Chair Bombardier

(Continued from Page 13)

in use will have blurred outlines. Paths, truck tracks, and diggings isolated from routine activities; roads or paths without any apparent logical destination—these may indicate camouflaged installations. Earth that has been tampered with, either excavated or scraped, shows some activity disrupting the area; it is usually quite apparent to the photo interpreter as either lighter or darker than the solid earth. Any installation larger than would be normal for local uses may be a hangar in disguise. Any disruption of the local pattern of land use, such as irrigated land apparently allowed to go dry, canals without traffic, or orchard country without trees, may indicate that the land has been turned into an airfield. A metal roof in a thatched-roof district may be the tip-off to a new and alien structure serving as an airfield installation.

In all, the photo interpreter should be suspicious of these variations in the typical landscape pattern: (1) any deviation in tone from the general color of the ground pattern; (2) any unusual shape of field or type of building; (3) any unnatural texture of ground surface or communications line.

Fifth, look around the edges and corners of fields for possible parked aircraft, with special attention to the edges of stands of woods and to hedges in which aircraft-parking bays might be cut.

At the first sign of a clue the photo interpreter must pounce on the suspicious loose end and unravel it. The success or failure of a mission often hangs in the balance during the unraveling.



A new course including fabric work has been started in Vancouver for women interested in aviation. The class is preceded by elementary ground school training. A course is also being given in parachute packing. The classes have been organized by outstanding Canadian women pilots.

ARMY EMERGENCY RELIEF

A soldier unnecessarily worried about his wife or family, the Army has long realized, is not the best soldier. In this war, the newly organized Army Emergency Relief intends to see to it that today's Army can go into battle secure in the knowledge that those left behind will be cared for in emergencies.

The Army Air Forces have established a branch of this organization and sections will be formed in each air base for the local administration of this emergency relief program. Under the provisions of Army Emergency Relief, all members of the Army on active duty have equal rights to necessary assistance throughout the present emergency. Rank or service will not influence the amount of aid granted to Army personnel or to their dependents.

Of primary concern to the relief organization are those cases arising from casualties caused by combat or accidents, hardships caused by sudden change of station of units or individuals, and other emergency financial stress. Financial aid will be given by A.E.R. on the basis of actual need. It may be given as an outright grant, or in proper cases, as a loan. No interest will be charged on loans and repayment by installment is authorized. Food, fuel, medical and dental care, hospitalization, assistance in securing pensions, compensation, insurance and allotments may also be given when the need arises.

Application Procedure

Each officer and enlisted man should acquaint his dependents with the purpose of Army Emergency Relief and with the fact that they can obtain emergency aid through the nearest Red Cross chapter or at the nearest Army post. Application for aid should be made to the nearest A.E.R. branch or direct to Army Emergency Relief, War Department, Washington, D.C. Each local branch will investigate the cases and the final determination of the need for aid will rest with the commanding officer of each base.

This assistance offered to Army personnel will not be a substitute for Red Cross activities, but will supplement in certain special cases the aid given by the Red Cross. Funds will be raised through individual memberships, both civilian and military, proceeds from exhibitions, athletic events, entertainments, Army motion-picture showings at posts, gifts, donations, and other contributions. A large donation from the Red Cross will provide for the

initial operation of the relief organization.

Mr. Robert Lovett, Assistant Secretary of War for Air, is president of the Army Air Forces branch of Army Emergency Relief, with headquarters in Temporary "T" Building, Washington, D.C. Other officers include Mrs. Henry H. Arnold, vice-president; Major Wm. H. Garrison, secretary and executive manager; and Mr. Robert Fleming, treasurer.



World War Aces

(Continued from Page 28)

participated in a flying carnival. He ran into snowstorms and fog while over the Alleghenies. When he ascended above the clouds his motor began to miss and then quit altogether. Endeavoring a 90 degree turn to land in an open space, the airplane went into a spin and in the crash which followed his back was severely injured.

General Hunter's second degree initiation was a real thriller. On March 5, 1926, shortly after joining an early morning formation flight and while at an altitude of about 800 feet, a disintegrated piston caused the breakage of the gasoline line, spraying the volatile fluid over the engine and cowling. The plane was immediately transformed into a mass of flames, and General Hunter bailed out in nothing flat. His parachute did not fail and he landed on the ice of Lake St. Clair, some 500 feet from where the flaming plane had crashed through 18 inches of ice. He made his way back to headquarters minus his mustache almost before anyone except the pilots in the formation knew anything about his exciting adventure.

Perhaps his narrowest escape occurred during his third initiation on "Friday, the 13th" of January, 1933. He was then stationed at March Field, Calif., and had proceeded to Wright Field, Ohio, to serve on a board of officers to pass on a new type of pursuit plane for the Air Corps. Flying as observer on a flight test with the late Captain Hugh M. Elmendorf at the controls, the new plane went into a spin from 11,000 feet and never straightened out. General Hunter jumped from about 150 feet and struck the ground before his parachute was completely open. He spent nine months at Walter Reed Hospital before he returned to duty status.

A squadron of P-40s being operated in Russia by Russian pilots reports it has shot down 19 German aircraft while only losing four planes of its own.

The Honor Role

(Continued from Page 10)

PVT. ROBERT J. ENDRES—for completely disregarding his own safety by running to a nearby abandoned truck on Clark Field, and despite the rain of aerial machine gun fire and bursting bombs, proceeding about the airfield collecting the wounded who were lying in the open. Filling the vehicle with casualties, he proceeded to the station hospital, unloaded the wounded and returned to the field. Seven such hazardous round trips saved many of the wounded from further mutilation and death.

PVT. JOSEPH McELROY—for unusual heroism displayed while on duty at Clark Field. Instead of seeking shelter from an aerial bombardment of his airfield, he ran to his machine gun position in his grounded airplane and shot down one enemy plane and forced two others to withdraw.

PVT. GREELEY B. WILLIAMS—(Posthumous)—for defending his aircraft and opening fire on the enemy during an attack on Clark Field. He successfully and courageously maintained his position behind his gun until killed by a burst of fire from a hostile machine gun.

SILVER STAR



For bravery in action in the Philippines and Dutch East Indies:

LT. COL. LESTER J. TACY (Also Purple Heart award), Capt. John Daugherty, Lieuts. Francis Cappelletti, Lawrence Gardner, Cecil Gregg, Arthur Hoffman, Douglas Kellar, Malcolm A. Moore, Melvin McKenzie, E. J. Nossam, Robert Perry, William Railing, Robert J. Rogers, Austin Stitt, John M. Thacker, and John J. Webster.

Also Sergts. Max Baca, Clyde Anderson, John Fleming, Edward Hargrove, James Hartzel, Russell Huffman, R. P. Legault, Victor Lorber, Donald Miller, Wilbur McClellan, John Norvell, Howard Randall, William Sage, David Semple, John Sowa, Charles Shellito, Bernard Stroheckler, and C. W. Thrasher; Corpl. Frank A. Have, and Pvts. I. E. Barran, Wilbur E. Brown, J. M. Henderson, John Makela, Kenneth Park, John A. Real, Paul A. Reimer, and Edwin Schaffner.

PURPLE HEART



Wounded in action in the Philippines and the Dutch East Indies:

MAJOR HAROLD E. DUNGAN, Lieuts. Francis McGiverin, and Harry Schreiber; Sergts. Michael Biben, R. D. Brown, John Cootee, Walter Kolbus, W. E. Manners, Rex Matson, and W. L. Olford; Corpals. William A. Williams, Elmer Connor, and Frank A. Harvey; Pvts. Robert Chopping, E. Jumia, Arvid Negdahl, Edward Olsen, and Edwin Shipley.

DISTINGUISHED FLYING CROSS



For action in the Philippines and the Dutch East Indies:

LT. COL. EMMETT O'DONNELL, Major Cecil Combs, Capt. Jack Adams, Capt. William J. Bohmaker, Capt. Harry B. Galusha, Capt. Donald Keiser (Also awarded the D.S.C. and the Silver Star), Capt. Colin P. Kelly, Jr., (Posthumous award. Also D.S.C.), Capt. Frank Kurtz, (Three-time winner of the D.F.C., also holds Silver Star), Capt. Clarence McPherson, Capt. Robert Northcutt, Capt. William Patrick McIntyre, Jr., Capt. Elmer L. Parsel, Capt. George Schaetzel, Capt. Edward C. Teats, Lieut. Kenneth Casper, Lieut. Paul Lindsay, Lieut. Philip Mathewson, Lieut. Carey Obryan, Lieut. Harl Pease, Jr., Lieut. Julius B. Summers, Jr., Lieut. Earl R. Tash, and Lieut. Elliott Vandevanter, Jr.

The following officers and enlisted men were awarded the D.F.C. for extraordinary achievement in a flight of bombers from Honolulu to the Philippines in the latter part of 1941. Each of the fliers, the citations read, "displayed skillful airmanship and accurate knowledge of the highly technical details in the successful execution of the flight, which each phase of this flight was accomplished indicated a high quality of navigation. This outstanding achievement reflects the highest credit on the military forces of the United States."

LT. COL. ERNEST MOORE, Major Gordon A. Blake, Major William P. Fisher, Major Alva L. Harvey,

Capt. Donald P. Flickinger, Lieuts. Joe M. Bean, Richard T. Carlisle, Robert S. Clinkscales, Stanley Cottage, Henry Dittman, Carl E. Epperson, James P. Ferrey, Morris N. Friedman, (Also Silver Star), Henry C. Godman, Eddie W. Hayman (Silver Star), Curtis J. Holdridge, Francis K. McAllister (Posthumous. Also Silver Star), Guilford R. Montgomery, Donald D. Robins, Weldon H. Smith, (Silver Star) Paul R. Tarbutton, Frances R. Thompson, Ernest C. Wade, Robert F. Wasson, and John B. Wright.

Also Sergts. George H. Brandes (Silver Star), Glover L. Burke, Jr. (Silver Star), James L. Cannon (Posthumous. Silver Star), John F. Carter, John F. Clark, William J. Delehanty (Posthumous), Edwin J. Dobberpfuhl, William S. Fought, John M. Geckeler (Silver Star), Joseph A. Giardina, Clyal M. Gilbert, William J. Griffin, George A. Heard (Purple Heart), Stanley C. Jackola, Coley L. James, Clevis O. Jones (Silver Star), Thomas E. Keahey, Lester Kramer (Silver Star), Joseph C. Laza, Robert G. McIntyre, Norman P. Michelson, Edward T. Oliver, Walter Partridge, Roland F. Provost (Silver Star and Purple Heart), Armando G. Ramirez, Arthur L. Richardson, Fred D. Secrest (Purple Heart), Vincenzo Spanziano (Silver Star), Roger W. Stephens, John A. Wallach, Herbert E. Wiest, and Perry W. Whitley. Corpals. William F. Johnson, Meyer Levin, Conrad R. Payne (Silver Star), and Pvts. Robert E. Altman, Junior Brooks (Silver Star), Lincoln H. Dapron, John W. Kennedy, William A. Knortz, John J. Labreche, Willard L. Money, John A. Resl, James E. Schoen, and Homer L. Vincent.

For risking their lives in rescuing a marooned Air Corps officer on an ice floe in Alaska, the D.F.C. has been awarded to Lieut. Eugene T. Yarborough and Lieut. Frank L. O'Brien, Jr.



The Chrysler Corporation is building a \$100,000,000 plant at Chicago, Ill., to manufacture 12 cylinder air-cooled Wright engines.

A new device by which aerial torpedoes, bombs and shells can steer themselves to a target under their own power has been patented at Great Britain. Launched by a catapult, the new shell is really a tiny pilotless airplane, complete with engine, propeller and gyrostatic control. When over the target, the device sheds its wings and drops—according to the inventor—right on the objective.

Morale Builders

(Continued from Page 17)

will make available to every man in the AAF the comprehensive program being developed by the War Department Special Service Branch and the Special Services Section of the AAF Director of Personnel.

The Army Motion Picture Service, an agency of the Special Service Section, operates the largest single chain of theatres in the United States. The latest Hollywood pictures are shown at the same time they are released in civilian theatres. It is the function of the special services officer to complete arrangements with the Army Motion Picture Service to provide for exhibition of the motion pictures at each base.

Units on overseas assignments are being supplied with selected current films. Prior to departure, units receive sound and projection equipment for 16 mm films as well as supplies and repair parts. Enough films are issued for either eight or twelve weeks, depending upon the requirements in each case. At certain tropical bases, open air programs will be organized wherever the climate is suitable for outdoor showings.

Capra Directing

In addition to arranging for the showing of "civilian" movies, Special Service will produce their own news and documentary films dealing with the background of the war and pointing out the hazards faced by the United States. This function is under the direction of Major Frank Capra, former Hollywood director, now on duty in Washington. The first series of pictures will be finished soon and will be shown only to military personnel.

Through the cooperation of Camp Show, Incorporated, traveling shows with professional talent are "playing" at certain bases. Twelve such shows are now operating on a major circuit and fourteen shows on a minor circuit of the smaller camps. Under the direction of the Hollywood Screen Victory Committee, a "talent pool" has been organized. Stars who are "between pictures" or who have free time are being assigned by the pool to play convenient dates and supplement the regular camp units as added attractions. In addition, popular bands and concert artists are contributing their services. A similar Broadway talent pool uses "name stars" who are available.

Provisions have been made to take theatrical units outside of the United States to various outposts within safe flying distance. One group

(Continued on Page 37)



War by Moonlight

RAF "Fly-By-Night" Brings Down Jerry

Of the 33 enemy raiders destroyed last night it is now established that four were brought down by A.A. guns. The remaining 29 fell to the guns of the R.A.F. night-fighter pilots. . . . our night-fighting forces took full advantage of the brilliant moonlight. (Air Ministry Bulletin.)

TRY to imagine the moonlight sky, with a white background of snow nearly six miles below. Somewhere near the centre of a toy town a tiny flare is burning. Several enemy bombers have come over, but only one fire has gained a hold. After all the excitement of my two combats, I can still see that amazing picture of London clearly in my mind.

It was indeed the kind of night that we fly-by-nights pray for. I had been up about three-quarters of an hour before I found an enemy aircraft. I had searched all round the sky when I suddenly saw him ahead of me. I pulled the boost control to get the highest possible speed and catch him up. I felt my Hurricane vibrate all over as she responded and gave her maximum power. I manoeuvred into position where I could see the enemy clearly with the least chance of his seeing me. As I caught him up I recognised him—a Dornier "flying pencil". Before I spotted him I had been almost petrified with the cold. I was beginning to wonder if I should ever be able to feel my hands, feet or limbs again. But the excitement warmed me up.

Big Moment Came

He was now nearly within range and was climbing to 30,000 feet. I knew the big moment had come. I daren't take my eyes off him, but just to make sure that everything was all right I took a frantic glance round the "office" and

checked everything. Then I began to close in on the Dornier and found I was travelling much too fast. I throttled back and slowed up just in time. We were frighteningly close. Then I swung up, took aim, and fired my eight guns. Almost at once I saw little flashes of fire dancing along the fuselage and centre section. My bullets had found their mark.

I closed in again, when suddenly the bomber reared up in front of me. It was all I could do to avoid crashing into him. I heaved at the controls to prevent a collision, and in doing so lost sight of him. I wondered if he was playing pussy and intending to jink away, come up on the other side and take a crack at me, or whether he was hard hit. The next moment I saw him going down below me with a smoke trail pouring out.

I felt a bit disappointed, because it looked as if my first shots had not been as effective as they appeared. Again I pulled the boost control and went down after him as fast as I knew how. I dived from 30,000 to 3,000 feet at such a speed that the bottom panel of the aircraft cracked, and as my ears were not used to such sudden changes of pressure I nearly lost the use of one of the drums. But there was no time to think of these things. I had to get that bomber. Then as I came nearer I saw he was on fire. Little flames were flickering around his fuselage and wings. Just as I closed in again he jinked away in a steep climbing turn. When he got to the top of his climb I was almost on him. I took sight very carefully and gave the button a quick squeeze. Once more I saw little dancing lights on his fuselage, but almost instantaneously they were swallowed in a burst of flames. I saw him twist gently earth-

(Continued on Page 38)

The Odds Be Damned

(Continued from Page 2)

an interception. Capt. Hewitt T. Wheless kept his plane on course and made a run over the targets while the gunners fought off the Zeros and the bombardier planted his bombs on six transports. By this time Wheless's plane was the target of 18 Zeros blasting with cannon and machine guns. For 75 miles the B-17 gunners stood off the Zeros, shooting down six while bits of B-17 flew around their ears. Private Killim, the radio operator manning one waist gun, was killed by a burst from a Zero. Sergeant Brown was shot through the wrist while manning the other waist gun. When Killim was killed Brown manned both guns alternately and shot down five Zeros. Other members of Capt. Wheless' crew included 1st Lieuts. Raymond G. Tebored, co-pilot, and William Meenaugh, navigator; Sgt. Schelotte, bombardier, Sgt. Gootee, engineer and Corp. Williams, gunner.

The battle ended when all planes exhausted their ammunition. Then the astonished Japs flew close formation with the Fortress and peered into the cockpit to see what was still keeping it in the air.

After the Japs departed Capt. Wheless flew the plane 400 miles to his base with all but four control cables shot away, two engines dead, the front wheels flattened, the tail wheel demolished and a leaking gas tank. Of the crew, one was killed, three badly wounded and all grazed by Jap cannon shell fragments.

B-17 gunners accounted for more than one third of all attacking Jap pursuits over the Indies and stirred the Tokyo radio to announce: "The American B-17E is a four engined pursuit plane used for all purposes and proved to be very effective".

To meet the changing tactics of Jap fighter pilots B-17 gunners shifted their armament constantly, strapping guns with improvised mounts in new and unorthodox positions to surprise the attackers. Tail gunners in the Es took a heavy toll of Jap pilots who hadn't heard about the "stinger" and attacked from the rear.

Navigators Role

Navigators played an important role in the long and accurate aerial thrusts against the Japs and the nocturnal evacuation of airmen from the captured Philippines. Lieut. Fred Rowan, Jr. navigated the Flying Fortress piloted by Capt. James Connally on a long and difficult mission through tropical storms. Jap ships were bombed and sunk and stranded Air Force personnel

rescued during this mission. Rowan's job was particularly important in the location of secret Philippines bases at which the B-17 refueled. When the navigator brought the ship in the vicinity of the target he acted as fire control officer and directed the work of the gunners in actual combat.

Chief opposition to the heavy bombers came from Zero fighters. Airmen back from the Indies and Australia report that the Zero looks like an AT-6 with a slimmer fuselage. They are reported to be fast and maneuverable with a fast rate of climb. Armament ranges from six machine guns to four machine guns and two cannon firing explosive shells. They are not armored and appear to be much lighter than most pursuits.

Japs Smart

Air Force men who have fought the Japs report that their formation flying and tactics are excellent. The Japs are quick to ferret out weaknesses in their opposition and then attempt to press home their advantage with numerical superiority. Jap fighter pilots are reported to be extremely aggressive, but no fanatical "suicide" attacks have been observed by our airmen. In bailing out combat crews use a delayed parachute opening to plummet out of Jap fighter range since machine gunning of dangling parachutists became a standard Jap tactic.

However, despite the famed Zero fighter and overwhelming numerical superiority, most of the Jap pilot's successes have been scored on the ground. They are expert ground strafers, using incendiary bullets and fragmentation bombs in low diving attacks preceded by bomber attacks from higher altitudes. Early morning hours, during meals and dusk are their favorite times for airdrome strafing. Fighter patrols spotted Army bombers coming in to refuel and re-arm and then strafed them on the ground with too much success. Natives co-operating with the Japs often made camouflaging ineffective.

Capt. Algene Key told of the Fifth Columnists' work in Java:

"One morning in Java I led a formation of three planes into the air and our crew noticed three puffs of smoke nearby. Three more planes took off and three more puffs of smoke went up. We flew over the spot where the smoke was rising and bombed it with good effect."

A flight of pursuits with U.S. markings circled an American base in Borneo. They called the control tower in perfect English and received permission to land. As they came in they sprayed the field with incendiary bullets,

dropped light bombs on the hangars, shot up the field again and departed.

Yankee Ingenuity

Some of the tricks work the other way. The late Brig. Gen. Harold H. George, for instance, immobilized a field full of Jap bombers on Luzon with nothing more than a field radio.

"Just after we lost our last plane on Bataan", the general related, "the Japs established a heavy bomber base 20 miles from our lines. I knew they always listened to our field messages.....so the minute I heard the Japs had come down, I sent my wireless sergeant to one end of our drome with a field radio and told him to send six P-40s immediately to attack Jap bombers at their advance base. He protested that one of the ships had engine trouble. I said 'Okay, then send them five'. Of course we had none.

"Immediately after the Japs intercepted the message, they ordered their heavy bombers to take off without bomb loads. We kept up this variation for four days running before the Japs caught on. On the fourth day we had a couple P-40s sufficiently repaired to fly and we caught their bombers flatfooted in the midst of loading on the ground. They had decided they wouldn't be fooled anymore."



Morale Builders

(Continued from Page 34)

of motion picture stars has already entertained troops in Cuba, Puerto Rico, Antigua, Santa Lucia, Trinidad, British Guiana, St. Croix and St. Thomas. This is being continued whenever existing conditions permit.

Libraries are being established in AAF stations and even in squadron dayrooms. They are stocked with books ranging in interest from light fiction to important technical subjects. Traveling libraries, made up of small collections of new books, are regularly transferred from one small station to another in all corps areas. Every overseas unit takes its own collection of books, provided by the special services section, consisting of one hundred paper bound volumes. Reading material on the various transports is also provided. Arrangements are being made to supply overseas units with current magazines and newspapers.

"A singing army is a fighting army", and music is recognized as an important element in practically every phase of Army life. Swing bands furnish jazz for dances and social func-

tions. Regimental bands provide the musical setting for parades, ceremonial functions and concerts. Pit bands play for amateur theatricals. Morale is never low when there's music in the air, so Special Service provides song books and encourages the organizing of barber shop quartets, choirs, and choruses for both formal and informal singing.

Among the most important functions of Special Service is the organization of sports activities. Complete athletic equipment is being provided for thirty-five different kinds of sporting activity, ranging from indoor games to mass demonstrations. There is a systematic effort to develop intra-mural activities as well as inter-post, inter-camp and inter-station contests. Competition with civilian organizations is also encouraged.

Radio activities have not been overlooked. The Red, White and Blue network has over 300 stations dedicated to spreading good will in the service. Programs consisting entirely of enlisted talent are organized and broadcast over conveniently located stations. A plan similar to Camp Shows, Inc., has been organized to have network radio programs originate at the various bases.

A weekly tabloid size periodical called "Yank", written by and for enlisted men, will be published for certain overseas forces. The first issue is expected shortly.

Special Service is directing the correspondence courses offered by the Army Institute at Madison, Wis. Complete information concerning the details are available at the Special Service office at each AAF unit.

U.S.O.

But no matter what the camp itself may offer, enlisted men inevitably want to get off the post in their leisure hours. In this regard, Special Service cooperates with the U.S.O. and other civilian organizations to provide adequate recreational facilities in communities near the bases.

Special services officers accompany units assigned to duty overseas and continue the performance of the function wherever possible. Detachments leaving for overseas duty are provided with a combination radio-phonograph, complete athletic kits and sports equipment.

Under current war conditions, the Red Cross is the only non-military organization permitted in the combat zone. The functions formerly carried on by the Salvation Army, the Y.M.C.A., the K. of C. and other civilian agencies are assumed by Special Service.

Fly by Night*(Continued from Page 35)*

wards and there was a spurt of fire as he touched the earth. He blew up and set a copse blazing.

I circled down to see if any of the crew had got out, and then I suddenly remembered the London balloon barrage, so I climbed up and set course for home.

I had time now to think about the action. My windscreen was covered with oil, which made flying uncomfortable, and I had a nasty feeling that I might have lost bits of my aircraft. Anyway I soon landed, reported what had happened, had some refreshment and then up in the air once more, southward ho! for London.

Soon after I was at 17,000 feet. It's a bit warmer there than at 30,000. I slowed down and searched the sky. The next thing I knew, a Heinkel was sitting right on my tail. I was certain he had seen me, and wondered how long he had been trailing me. I opened my throttle, got round on *his* tail and crept up. When I was about 400 yards away he opened fire—and missed me. I checked my gadgets, then I closed up and snaked about so as to give him as difficult a target as possible. I got into a firing position, gave a quick burst of my guns and broke away.

I came up again, and it looked as if my shot had had no effect. Before I could fire a second time, I saw his tracer bullets whizzing past me. I fired back and I knew at once that I had struck home. I saw a parachute open up on the port wing. One of the crew was bailing out. He was quickly followed by another. The round white domes of the parachutes looked lovely in the moonlight.

It was obvious now that the pilot would never get his aircraft home, and I, for my part, wanted this second machine to a "certainty" and not a "probable". So I have another quick burst of my guns. Then to fool him I attacked from different angles. There was no doubt now that he was going down. White smoke was coming from one engine, but he was not yet on fire. I delivered seven more attacks, spending all my ammunition. Both his engines smoked as he got lower and lower. I followed him down a long way and as he flew over a dark patch of water I lost sight of him.

But I knew he had come down, and where he had come down—it was all confirmed later—and I returned to my base ready to tackle another one.

But they told me all the Jerries had gone home. "Not all", I said, "two of them are here for keeps".

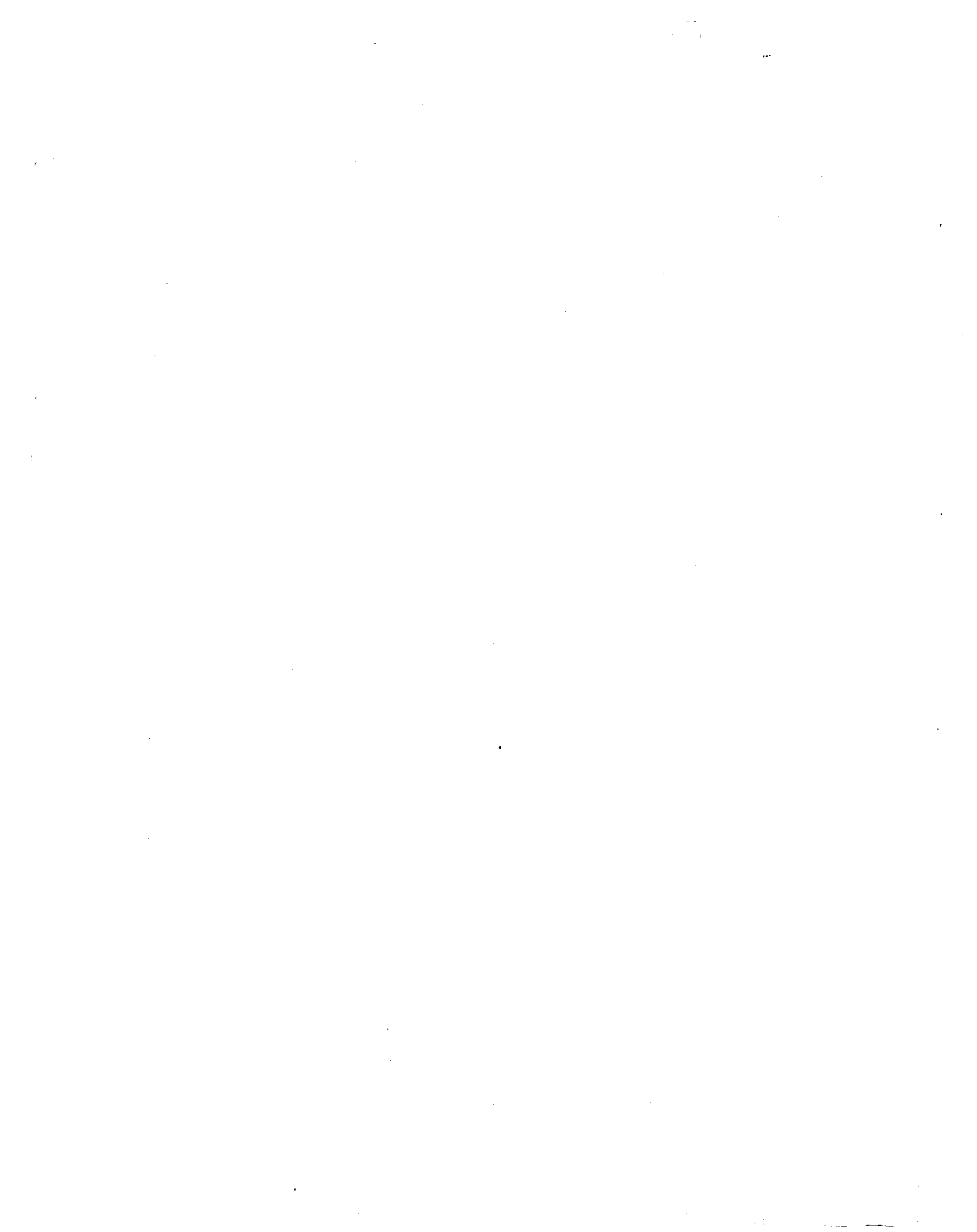
--From RAF broadcast "We Speak From the Air"

**Alaskan "Kashim"**

Here is an inside view of the new "Kashim", built by the men of Air Base Headquarters, Fort Richardson, Alaska. "Kashim" is the Eskimo word for a "Clubhouse for Men" to which women are admitted by invitation only. Taking the recreation problem in their own hands, the 685 men of Fort Richardson, working in their spare time, felled the trees, hewed the logs and built the entire building according to their own design. It contains a huge fireplace for barbecues, a bandstand and one of the most elaborate sandwich bars in Alaska.



A gun camera has been developed to train pilots in the use of machine guns and aerial cannon. In mock "dog fights" the pilots "shoot" their gun cameras and the resultant photographs show where hits would have been made if real ammunition had been used.





Tale of the Gremlins

*This is the tale of the Gremlins
Told by the P. R. U:
The incredible tale of the Gremlins
But believe me, you slobs, it's true.*

*When you're seven miles up in the heavens
(That's a hell of a lonely spot)
And it's a fifty degrees below zero
Which isn't exactly hot.*

*When you're frozen blue like your Spitfire
And you're scared a Hurricane pink
When you're thousands of miles from nowhere
And there's nothing below but drink.*

*It's then that you will see the Gremlins
Green and Gamboge and Gold
Male and female and neuter
Gremlins both young and old.*

*It's no good trying to dodge them
The lessons you learnt on the Link
Won't help you evade a Gremlin
Though you boost and you dive and you jink.*

*White ones will wiggle your wingtips
Male ones will muddle your maps
Green ones will guzzle your Glycol
Females will flutter your flaps.*

*Pink ones will perch on your perspex
And dance pirhouettes on your prop
There's a spherical middle-aged Gremlin
Who'll spin on your stick like a top.*

*They'll freeze up your camera shutters
They'll bite through your aileron wires
They'll bend and they'll break and they'll batter
They'll insert toasting forks in your tyres.*

*That is the tale of the Gremlins
Told by the P. R. U.
(P)retty (R)uddy (U)nlikely to many
But fact, none the less, to the few.*

--RAF Coastal Command

AIR FORCES NEWS LETTER





Army paratroops in maneuvers

We'll Be Back

A LOT CAN'T BE SAID RIGHT NOW ABOUT THE DETAILS OF THE APRIL VISIT TO JAPAN. BUT THERE IS ONE QUESTION I CAN TALK ABOUT-- WHO DROPPED THE FIRST BOMB ON TOKYO. MY ANSWER IS THAT I DON'T KNOW; NOBODY KNOWS. WE STRUCK IN A MASS ATTACK, AS PLANNED.

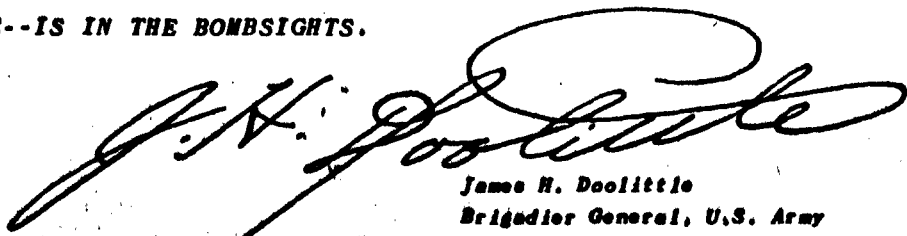
THE FIRST BOMB REALLY ISN'T IMPORTANT. WE WILL DELIVER TONS AND TONS OF BOMBS TO JAPAN. TOKYO WAS ONLY THE BEGINNING. THAT FIRST RAID WAS JUST A TASTE OF WHAT'S TO COME

BY THEMSELVES, BOMBS AND MEN LOSE THEIR IDENTITY IN THE MAJOR TASK. IT TAKES A LOT OF MEN, A LOT OF PLANES, A LOT OF BOMBS. IT TAKES HARD WORK AND CAREFUL PLANNING.

WE PLANNED LONG AND HARD FOR THAT FIRST MISSION. IT WAS NO HIT OR MISS AFFAIR. EACH MAN HAD A SPECIAL TASK; EACH CARRIED HIS TASK OUT TO THE LETTER. EVERYTHING CLICKED. THAT GROUP OF YOUNG MEN WHO PARTICIPATED IN THE EXPEDITION WAS THE FINEST I'VE EVER HAD THE PLEASURE TO SERVE WITH.

SOME OF THE BOYS WHO TRAINED FOR THE PARTY COULDN'T BE TAKEN ALONG, BUT THEY WERE JUST AS IMPORTANT AS THE REST OF US. WE'RE ALL TOGETHER IN THIS WAR--AIR CREWS, GROUND MEN, FACTORY WORKERS. AND DON'T FORGET THE BOYS WITHOUT THE MOTORS--THE GLIDER PILOTS. THEY WILL BE THE SPEARHEAD OF FUTURE AIR-BORNE ATTACKS.

I'M SORRY ALL OF YOU COULDN'T HAVE BEEN WITH US. WE DELIVERED YOUR CALLING CARDS. THE REAL MESSAGE IS YET TO COME. WE'LL BE BACK. WORK AND TRAIN AS IF TOKYO WERE ALWAYS BELOW. YOU'LL WANT TO PRODUCE THE GOODS FOR THE DAY THE TARGET--NO MATTER WHAT IT MAY BE--IS IN THE BOMBSIGHTS.



James H. Doolittle
Brigadier General, U.S. Army

We'll Be Back

A LOT CAN'T BE SAID RIGHT NOW ABOUT THE DETAILS OF THE APRIL VISIT TO JAPAN. BUT THERE IS ONE QUESTION I CAN TALK ABOUT-- WHO DROPPED THE FIRST BOMB ON TOKYO. MY ANSWER IS THAT I DON'T KNOW; NOBODY KNOWS. WE STRUCK IN A MASS ATTACK, AS PLANNED.

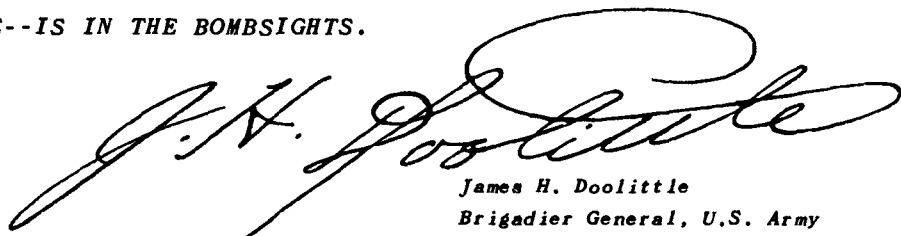
THE FIRST BOMB REALLY ISN'T IMPORTANT. WE WILL DELIVER TONS AND TONS OF BOMBS TO JAPAN. TOKYO WAS ONLY THE BEGINNING. THAT FIRST RAID WAS JUST A TASTE OF WHAT'S TO COME

BY THEMSELVES, BOMBS AND MEN LOSE THEIR IDENTITY IN THE MAJOR TASK. IT TAKES A LOT OF MEN, A LOT OF PLANES, A LOT OF BOMBS. IT TAKES HARD WORK AND CAREFUL PLANNING.

WE PLANNED LONG AND HARD FOR THAT FIRST MISSION. IT WAS NO HIT OR MISS AFFAIR. EACH MAN HAD A SPECIAL TASK; EACH CARRIED HIS TASK OUT TO THE LETTER. EVERYTHING CLICKED. THAT GROUP OF YOUNG MEN WHO PARTICIPATED IN THE EXPEDITION WAS THE FINEST I'VE EVER HAD THE PLEASURE TO SERVE WITH.

SOME OF THE BOYS WHO TRAINED FOR THE PARTY COULDN'T BE TAKEN ALONG, BUT THEY WERE JUST AS IMPORTANT AS THE REST OF US. WE'RE ALL TOGETHER IN THIS WAR--AIR CREWS, GROUND MEN, FACTORY WORKERS. AND DON'T FORGET THE BOYS WITHOUT THE MOTORS--THE GLIDER PILOTS. THEY WILL BE THE SPEARHEAD OF FUTURE AIR-BORNE ATTACKS.

I'M SORRY ALL OF YOU COULDN'T HAVE BEEN WITH US. WE DELIVERED YOUR CALLING CARDS. THE REAL MESSAGE IS YET TO COME. WE'LL BE BACK. WORK AND TRAIN AS IF TOKYO WERE ALWAYS BELOW. YOU'LL WANT TO PRODUCE THE GOODS FOR THE DAY THE TARGET--NO MATTER WHAT IT MAY BE--IS IN THE BOMBSIGHTS.



James H. Doolittle
Brigadier General, U.S. Army

AIR FORCES NEWS LETTER

PUBLIC RELATIONS DIVISION, PUBLICATIONS SECTION
ARMY AIR FORCES, WASHINGTON, D. C.

VOL. 25

JUNE, 1942

NO. 4



CROSS COUNTRY.	1
THE FERRYING COMMAND -- By Brig. Gen. Harold L. George	3
HONOR ROLL	7
FLY TO TOKYO--ALL EXPENSES PAID -- By Oliver H. Townsend	9
AIRDROMES IN WARTIME -- By Lt. Col. Rudolph E. Smyser.	11
PRO PATRIA MORI.	13
YOUR SAFETY JOB -- By Maj. W.R. Weber.	14
AAF PLANES TORPEDO JAPS.	15
THEY LOOK FOR TROUBLE -- By Lieut. Robert B. Hotz.	16
SWEEPS OVER FRANCE -- By Flight Lieut. Brendan Finucane.	21
CONFESSIONS OF A VETERAN PILOT -- By Capt. W.V. Brown.	23
CHANUTE'S FAVORITE SON -- By Maj. M.F. Ranney.	26
MAXIMUM AIRCRAFT SPEED -- By Lieut. Perry J. Ritchie	28
BOEING'S FLYING FORTRESS	29
TECHNIQUE.	32
RANDOLPH SPEEDS MECHANICS TRAINING	35
GERMANY'S MESSERSCHMITT.	37

Technical and Art Director—James T. Rawls

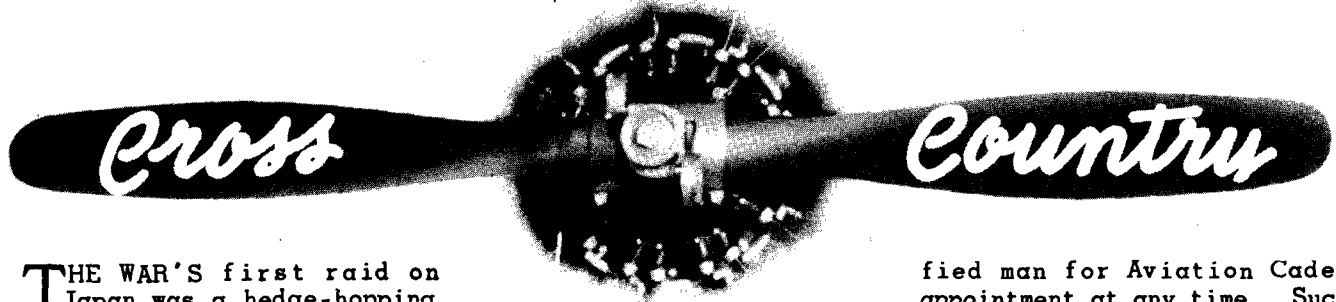
FRONT COVER

Women in uniform are making an unofficial but striking appearance in the Air Forces. Although not ordered by headquarters, commanding officers at several airfields are requiring uniforms for women clerical workers (all civilians) in the interests of increased efficiency and esprit de corps. Typical of these "uniformed girls" is Miss Kathleen Nelson, secretary to the Post Surgeon at the Air Forces Gunnery School at Tyndall Field, Fla. In the cover picture, Miss Nelson is shown wearing a uniform of "Air Force" blue and a cap bearing the insignia of the branch to which she is assigned.

PHOTO SOURCES

Life Magazine, inside front cover, p.11, 22; Glenn L. Martin Aircraft Co., p.15; Lockheed Aircraft Corp., p.16; Boeing Aircraft Co., p.29; and U.S. Army Air Forces photos.





THE WAR'S first raid on Japan was a hedge-hopping raid. Before and after the bombs were released, Air Forces flyers skimmed along as low as 10 feet from the ground to make sure that Jap fighters and anti-aircraft guns didn't interfere with the business at hand. One of the B-25s actually flew under a power line, just missing a pole, and dipped its wings under the branch of a tree. Some of the planes breezed so low over the



water that propeller blasts kicked up waves; wings were raised to avoid the masts of fishing boats. Japanese boys threw stones at bombers zipping low over one of the beaches. As they approached their objectives, crew members were able to detect the facial expressions of the natives and watch the Japanese wave up at them, some waving handkerchiefs, apparently ignorant of what was going on. After the bombs had fallen, the natives again raised their arms to the bombers—but only to shake their fists.

AS A RESULT of the Japanese raid, General Doolittle has received letters from hundreds of grade school youngsters volunteering their services to the Air Forces. "Dear General," scribbled an eight year old from St. Louis, "if you'll drive by and pick me up I'm ready to go right now. I'll fight the little Japs while you fight the big ones." The boy received an autographed picture of the General and his advice to stay in school and get an education "so when we want you you'll be ready."

A PRIVATE at Foster Field, Tex., with a week-end leave coming up wanted nothing more than to visit his home in Chicago. His buddies on the ground line rose to the occasion. We've arranged for you to fly home in a Type C-3 trainer, they told him, and he jubilantly prepared for the trip. Not until he was ready to board the plane did they explain that a Type C-3 is a Link Trainer.

OFFICERS back from combat duty in the Far East warn against underestimating the Jap pilot, whom they describe as a well trained, clever flyer. His pursuit technique is rated as excellent. In bombing attacks he and his companions usually stick together like glue, often remaining in formation even after their ships have caught fire. His aggressiveness is linked closely to numerical superiority; the Jap is cautious when the fight is on even terms. He plans an attack carefully and executes it to the letter, although in some instances his failure to improvise has proved costly. He invariably refuses to close with B-17 gunners—and for good reason.

SIGN OVER the bar in the officers' club at San Juan, Puerto Rico; "No liquor served to lieutenant colonels between the ages of 18 and 21 unless accompanied by parents."

GENERAL ARNOLD has directed that all qualified enlisted men of the Air Forces be given the opportunity to train as Aviation Cadets. "Each unit and activity," he states, "must be prepared to lose any highly quali-

fied man for Aviation Cadet appointment at any time. Such men must not only be recommended, should they apply; they must be encouraged to apply. Where an enlisted applicant for Aviation Cadet appointment is disqualified therefor, he will be informed of the opportunities and advantages of the Army Air Forces Officers Candidate School."

AT A WESTERN field, so the story goes, a Cadet circled his AT-6A for a landing. "O.K.?", he queried. "Not quite," replied Control Tower, "not until you lower your landing gear." But the Cadet was silent. "Lower your gear! Lower your gear!" Control Tower was by now mildly upset. Still no answer. And the Cadet came in, landed on an empty belly, messy, but safe. "How do you explain landing gear up after repeated warnings?," demanded the Operations Officer, "how do you explain your refusal to answer Control Tower?" "Sir," mumbled the Cadet, "it was the fault of that buzzer in my ship. I never heard Control Tower. That buzzer got louder the more I eased back on the throttle. It was so noisy I couldn't pick up a thing on my radio."



ALL WHO are ready to stamp themselves as incurable Dodos might consider the case of Lieut. Travis Hoover. Back in 1939, as he neared the end of his primary flight instruction at Lindbergh Field, Calif., Lieut. Hoover jotted down such serious words as these: "After about 11 hours of dual, it seems as if my progress has reached a

standstill, and I am very concerned. Will I be 'washed out' if I don't snap out of it pretty soon? Why can't I master the one thing I want to do more than anything else—be able to fly and fly well for Uncle Sam." A glance at the Honor Roll list on page seven shows that Lieut. Hoover has just been awarded the Distinguished Service Cross for piloting one of the B-25s that staged the war's first raid on Tokyo.



YOUNG AIR FORCES flyers who bombed and torpedoed the Jap fleet off Midway Island were asked how it felt to plunge into combat for the first time. Some of the answers: "You don't get thrilled, exactly; you have to concentrate too much on what you've got to do..... Scared? I suppose so, at first, but I got mad right away.....I forget how I felt; with the target below and the Zeros alongside there really isn't time to feel..... It just felt good, that's all; we'd been waiting for this."



ONLY FOUR Americans hold international Golden "C" soaring certificates, highest soaring recognition granted, and three of them are with the Air Forces. Major Lewin B. Barringer is on duty at headquarters as a glider specialist; 2nd Lieut. Chester Decker is with the Glider Unit at Wright Field, and John Robinson is a civilian instructor at the Twenty-Nine Palms (Calif.) glider school. The fourth Golden "C" holder, Robert M. Stanley, is chief test pilot at Bell Aircraft Corp.



THE GLIDER PILOT program, by the way, is one of the fastest moving activities in the Air Forces. Some recent developments: Prior flight experience is no longer necessary to qualify for glider pilot training, which has been made



available to all officers, enlisted men and civilians between the ages of 18 and 36 who can meet physical and mental requirements....Selected graduates of the glider schools will be appointed second lieutenants, others will be given staff sergeant ratings with flight pay, and all graduates will be authorized to wear glider pilot wings insignia.



ON A RECENT night training flight Aviation Cadet William Waters found himself over a small Carolina town with his gas supply almost exhausted. He recalled how another Cadet in a similar spot had dipped and circled over a small town until he aroused citizens, who quickly drove their cars to a local airfield and flooded it with their headlights for the forced landing. So Cadet Waters circled and dipped. Finally he saw headlights shining on a nearby field. Waters came in—and ground looped smack in the middle of a freshly plowed cornfield. The natives, it seems, hadn't stopped to light up a landing field. They had merely applied their car brakes out of curiosity to get a better view of what was going on up above.



THE THIRD Air Force is due for most of the action in summer maneuvers; from July 26 to August 16 and from August 31 to September 20 in the Carolinas, from August 31 to September 20 in Louisiana, and from October 5 to 25 in Tennessee. The First Air Force will be at the Carolina maneuvers from October 5 to 25.

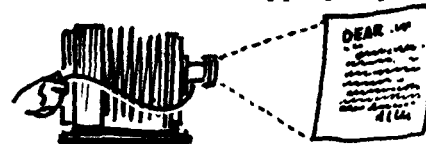


TWO LIEUTENANTS at Fort Belvoir, Va., where the Engineer Board is training officers in the gentle art of camouflage, find themselves in a rather enviable spot. They

are First Lieutenants Herbert Licht, a former landscape architect, and Sam Rittenhouse, a former civil engineer. These two boss a sweating group in clearing fields, cutting down trees, razing stumps, and building and hauling dummy planes—all in a day's work at the camouflage course. Receiving instructions from Licht and Rittenhouse are lieutenant colonels, majors and captains, and the teachers show their superior officers no partiality. What's more, the ranking officers take it and like it, or pretend they like it.



AIR FORCES personnel who participate in submarine sinkings will get the Air Medal. The boys on off-shore patrol know that sub hunting is tough. It is estimated, for instance, that in two out of three cases a submarine will sight a plane and dive before the plane sights the sub. Also, that a submarine on surface during daylight can submerge approximately 25 seconds after spying a plane.



NOTES: "V Mail" — letters photographed on special film, flown to America and reproduced for delivery here—has been made available to all personnel of our armed forces in the British Isles, so we hear. It is reported that a ton of letters can be recorded on negatives weighing only 25 pounds....The average soldier in field uniform, according to the War Department physical training manual, should be able to run 100 yards in 13 seconds, high jump four feet, broad jump 13 feet 6 inches and do 25 push-ups from the ground....Corporal Franklin Leve of Maxwell Field won a national contest to find an American name for the armored divisions. His prize winner: "Armoraiders"... At last count, 78 band units had been formed within the Air Forces.

—The Editor

The Ferrying Command

By Brig. Gen. Harold L. George

Commanding General, Air Forces Ferrying Command



THE present war differs from all previous conflicts in its truly global character and the pre-eminence of air power. Operations of the opposing forces embrace the six continents, four oceans and seven seas in their daily communiques. Despite the magnitude of the forces involved on land and sea, air power has emerged as the key to victory.

In a war of this character, battle lines are stretched around the world. Here at home, we are building up the arsenal of Democracy to supply them. The link between is the vital service of supply. And as operations on the battlefronts have been speeded up by the rising factor of air power, the service of supply must take to the air to keep pace.

The Air Forces Ferrying Command functions to translate factory production into combat air units along the ever shifting theatres of operation. We might describe the Command as an aerial service of supply.

December 7 left the Command with the responsibility of delivering all military aircraft to be produced under the President's program of 60,000 planes in 1942, 125,000 in 1943. Since that date the Command has plunged headlong into other vital aspects of war--aerial delivery of equipment and personnel.

In accomplishing its huge job truly prodigious feats of daring and skill are being performed by the Ferrying Command. New routes have been blazed above the Arctic Circle and below the Equator. With few detailed maps and haphazard weather information, planes have been flown around the world.

A globe circling series of bases have had to be established and a special network of communications set up to provide the daily information without which regular operations could not be maintained. Equipment ranging from blankets and strawberry jam to prefabricated houses had to be brought in by ship and plane. With native labor to which modern construction methods meant nothing, landing fields had to be enlarged and runways extended.

The War Department has announced that our pilots recently evacuated more than 4,000 persons from Burma. The Command also played an important role in the Battle of the Philippines. Even after the fall of Bataan our planes made two hazardous trips to the Philippines. On the first trip 25 persons were evacuated. On the second, just before Corrigedor fell, 30 evacuees were flown out on a plane carrying a total of 37 men, packed in like sardines. The navigator

practically had to stand on three of the passengers to take his fixes.

Not long ago the Command was notified that several thousand pounds of essential military supplies were needed as soon as possible at a base in eastern Australia. Two days and 14 hours after these supplies were made available to us on the coast, we had them delivered in Australia. During this flight the crew spent only seven hours on the ground, all for servicing. Meals and snatches of sleep were caught in flight.

When a badly needed military hospital burned to the ground in a remote section of Alaska, the Command was notified. Thirty-six hours later a 24-bed emergency hospital was set up and in operation with materials and supplies ferried by the Command.

Pilots and crews have experienced difficulties of all kinds and descriptions--ice in the Arctic, storms and St. Elmo's fire that burned holes in wings and fuselage in the South Atlantic, Japanese planes in the Far East.

The exploits of our airmen breathe life into the formalized phrases of official citations made for "extraordinary achievement", and give new meaning to the stereotyped wording: "not only reflects credit upon himself, but upon his organization, all of the Army Air Forces and his country as well."

Landing at a foreign airport surrounded by barrage balloons with the ceiling zero is such an exploit. Flying at 22,000 feet over a cloud bank for hours until the oxygen supply was nearly exhausted is another. Bringing in a plane safely over a northern route after an encounter with a cold bank that within a few minutes deposited more than a ton of ice on the wings is a third.

There is the crew of a plane which took off from Java during the early days of the war to bring out the ground crews of a bomber squadron withdrawn from the Philippines. With enough gasoline for only 2,000 miles, the plane successfully completed an 1,800 mile flight at night through hostile territory, changing course five times with only the stars as a guide, so that the slightest miscalculation would have meant failure, with death or capture by the enemy their probable fate. The thrill that ran through the crew can only be imagined as their signal for a landing was answered by a flare from the utter blackness below. But the ground crews so badly needed in Java were brought out

"according to plan".

At one base in Africa, the crew brought in a four-motored plane without any advance communication with a field because the radio station was closed and the operator was away attending a festival.

Establishment of our foreign routes raised many new problems, all complicated by the factor of distance. Sanitation in many places simply did not exist. Anti-toxins merely helped in the battle of prevention. The whole question of food for such diverse climates as those of Greenland and mid-Africa, India and China had to be examined. Seeds are now being sent out to detachments in far-off places so our men will have the familiar taste of home-grown carrots, lima beans, onions and pumpkins to assuage homesickness as well as hunger. Frostbite and mosquitoes are only two of the myriad enemies it is necessary to guard against in order to keep the officers and men maintaining our bases in the health and spirits vital to continuous operations. Refrigerators, radios, phonographs, baseball, badminton and other athletic equipment have been enlisted in the cause.

Some of these difficulties are on the lighter side. Ferrying one type of pursuit ship means limiting baggage to a toothbrush and razor. With crews constantly on the move, laundry still is a chronic problem. There is the case of the pilot whose fiancee spent almost three weeks waiting at the airport before he could stop long enough to get a marriage license and have the ceremony performed.

Yet, while daily problems were being solved, an eye had to be kept to the future when the full stream of production would be flowing over the airplanes to American squadrons and to our allies' forces everywhere.

Without the aid of existing commercial companies in a score or more fields, this gigantic task could not have been successfully accomplished. Airlines, oil companies, manufacturers and scores of individuals volunteered their services. They are still helping to perform vital functions in a setup that already has exceeded in scope the operations of all the civil airlines in the United States combined, and that in the near future will surpass those of the entire world.

Miraculous as some of the accomplishments of the Ferrying Command have seemed in the past, more miracles must be performed in the future before the war in the air can be won. There can be no resting on laurels, no pausing for breath until we deliver the bomber that levels the last Axis base to the ground.

Fortunately for us, the Ferrying Command had the benefit of a relatively natural growth, although the nature of its work has made pioneering the rule rather than the exception. Created in June, 1941, by direction of President Roosevelt to speed up aircraft deliveries to the British under the Lease-Lend Act, its task was later extended by international developments to include deliveries to such other Lease-Lend ben-

eficiaries as the Union of Socialist Soviet Republics, the Netherlands East Indies, China and other South American countries.

Starting with an original complement of two officers and one civilian secretary, the Ferrying Command has grown within 10 crowded months into an organization of several thousand officers, enlisted men and civilian employees. From the beginning, questions arose for which precedent could furnish no answer because there were no precedents.

The organization which has been evolved to carry out President Roosevelt's program follows traditional lines in many respects, yet allows for infinite variations. It consists in broad outline of a Headquarters, and a Domestic and a Foreign Wing. The Domestic Wing ferries all military aircraft from factories to points within the continental limits of the United States. At the East and West Coasts, planes consigned to foreign nations are turned over to the Foreign Wing, which flies them across to fronts in the Near and Far East, Australia and the U.S.S.R. I well remember the time when our thinking was confined to Hemisphere defense. Today we speak of countries as a few years ago we spoke of states, speak of oceans and seas as once we talked of rivers and bays.

A natural by-product of this vast organization is the training program, only recently instituted, to keep our pilot strength ample for the task of ferrying thousands of airplanes a month, varying in size from the small "grasshopper" craft used for artillery spotting and ground liaison to the huge Consolidated B-24s and Boeing Flying Fortresses.

Before the attack on Pearl Harbor, almost all our pilots were military flyers. The sudden demand for their services with combat units led to employment of civilian pilots on civil service status. Plans call for eventually militarizing the entire service by commissioning these civilians as soon as they can qualify. The Domestic Wing already has set up officer candidate courses at control centers throughout the country to give intensive training designed to fit these civilian ferry pilots for commissions in accordance with their age and experience. These courses are conducted during the 90-day civil service appointment so that ferrying operations are interrupted only for a short period and by small groups at each sector.

The whole Ferrying Command establishment, as a matter of fact, has a training as well as an operational function. Pilots with lesser amounts of flying time start out on smaller types of planes, progress to the faster and heavier types. After undergoing training at our 4-engine school pilots may be transferred to the Foreign Wing, where they fly bigger, faster craft on longer missions. From the Foreign Wing, they are available for transfer to combat units, where their experience and training is invaluable for long range bomber flights. To develop pilots and crews for the announced pro-

gram of 500 heavy bombers a month will challenge our best efforts.

Conduct of operations on the present unprecedented scale has offered a new experience in organization. Since the Ferrying Command takes every military plane from the end of the assembly line, a sensitive finger must be kept on the pulse of production to eliminate any delays there. From our control centers, pilots and crews are sent to the factory to take over each plane accepted by the Materiel Command inspector and fly it to a particular destination. Their progress is plotted almost hourly along the route so that information is available immediately as to the location, route and condition of any plane at any time. When a plane is delivered, the crews are returned by air to their home control point or to another factory to repeat the process and keep the stream of produc-

tion flowing smoothly.

The Ferrying Command looks to the future with confidence. Ahead lies a task that a few years ago would have appeared insurmountable. Yet we are now delivering more planes each month than the Army Air Corps possessed a few years ago. At home the feeling that we are responsible in however small measure for the successful accomplishment of some war task should inspire us to greater efforts. On the battlefield, a sense of representing home and country, the millions of individuals making up this great nation, nerves our crews to fight the overwhelming loneliness of vast ocean or desert wastes, and steels the pilot, navigator, radioman, gunner and bombardier when the enemy is sighted. In this reciprocity of spirit will be forged the attainment of our common goal, "Winning the War".



Ferrying Command pilots inspect their open air dormitory at an African base. Nets are stretched over the beds for protection against insects. The surroundings may be primitive but the beds, springs and mattresses are the finest from the U.S.A.



CAPT. RICHARD T. KIGHT



MAJ. JOHN A. HILGEL



M. SGT. J. H. WALSH

BRIG. GEN. J. H. DOOLITTLE



LT. C. W. VAN EEUWEN



SGT. ERROL W. WYNKOOP



MAJ. GEN. LEWIS BREJETON



T. SGT. C. M. KINCHOLIE



HONOR ROLL



CONGRESSIONAL MEDAL OF HONOR

Brig. General James H. Doolittle---"*For conspicuous leadership above and beyond the call of duty, involving personal valor and intrepidity at an extreme hazard to life. With the apparent certainty of being forced to land in enemy territory or to perish at sea, Gen. Doolittle organized as well as led the air raid on Japan April 18, 1942.*"

DISTINGUISHED SERVICE CROSS

For participation in the Tokyo raid on April 18, 1942:

Majors

John A. Hilger

Captains

Charles R. Greening David M. Jones Edward J. York

Lieutenants

George Barr	Thomas C. Griffin	Robert J. Meder	Howard A. Sessler
Thadd H. Blanton	Dean E. Hallmark	Richard E. Miller	Jack A. Sims
William M. Bower	Nolan A. Herndon	Charles L. McClure	Donald G. Smith
Clayton J. Campbell	Robert L. Hite	Harry C. McCool	J. Royden Stork
Robert S. Clever	Everett W. Holstrom	E. E. McElroy	Denver N. Truelove
Richard E. Cole	Travis Hoover	Eugene McGurl	Harold F. Watson
Horace E. Crouch	Richard O. Joyce	Chase J. Neilson	Lucian N. Youngblood
Dean Davenport	Frank A. Kappeler	Charles J. Ozuk	Thomas R. White
Robert G. Emmens	Richard A. Knobloch	James M. Parker, Jr.	Rodney R. Wilder
William G. Farrow	Ted W. Lawson	Henry A. Potter	Carl N. Wildner
William N. Fitzhugh	J.H. Macia	William R. Pound, Jr.	Griffith P. Williams
Robert M. Gray	Jack E. Manch	Kenneth E. Reddy	

Technical Sergeants

Waldo J. Bither Eldred V. Scott

Staff Sergeants

Edwin B. Bain	Fred A. Braemer	Jacob Eierman	P. J. Leonard
William L. Birch	Omer A. Duquette	Edwin W. Horton, Jr.	Douglas V. Radney

Sergeants

Wayne M. Bissell	Aden E. Jones	Joseph W. Manske	Robert J. Stephens
Robert C. Bourgeois	Theodore H. Laban	Edward J. Saylor	Adam R. Williams
Melvin J. Gardner	George E. Larkin, Jr.	Harold A. Spatz	

Corporals

Jacob DeShazer	Leland D. Faktor	Bert M. Jordan	David J. Thatcher
William J. Dieter	Donald E. Fitzmaurice	David M. Pohl	

DISTINGUISHED FLYING CROSS

Major Jack N. Donohew.....*Heroism while piloting a plane near Kalama, Wash.*

Major Louis T. Reichers (Pilot) Capt. J.V. Chapman, Jr. (Co-pilot) Lt. J.A. Hutchins, Jr. (Posthumous) Master Sergt. C.G. Green Master Sergt. J.G. Moran Tech. Sergt. Francis G. Denery	}	<i>Harriman mission flight to Moscow.</i>
--	---	---

Capt. James J. Connally.....*Lead pilot of a flight of Flying Fortresses on bombing mission to Jolo, P.I., on Jan. 19.*

Capt. Richard T. Kight Lt. Kenneth L. Akins Lt. C.T. Allen (1st Navigator) Lt. John G. Moe (Navigator) Tech. Sergt. J.M. Cooper Tech. Sergt. H. Smith (2nd Engineer) Staff Sergt. Errol W. Wynkoop	}	<i>Hazardous and technically difficult round trip flight from Bolling Field to the Netherlands East Indies on an urgent and vital mission. Crew subjected to bombing raid at Palembang, Java, and later encountered a severe electrical storm during which the ship was struck by lightning and burned in several places.</i>
--	---	---

Major J.H. Rothrock (Co-pilot) Capt. David B. Lancaster, Jr. Capt. J.B. Montgomery Capt. William N. Vickers, Jr. Lt. Theodore J. Boselli Lt. Edson E. Kester Lt. F.B. Rang Lt. Elbert D. Reynolds Master Sergt. J.H. Walsh Tech. Sergt. Charles M. Kincheloe Tech. Sergt. Horace T. Peck Staff Sergt. R.J. Barrett, Jr. Sergt. Edward Schrempf Corp. Clyde W. Nowlin	}	<i>Initial flights to the United Kingdom, opening North Atlantic routes for the Air Force Ferrying Command, Summer, 1941.</i>
---	---	---

Lt. William B. Compton Lt. Cecil L. Faulkner Lt. Walter K. Heitzman Lt. Thomas C. Mustain Master Sergt. S.L. Jennings Sergt. Benjamin Clifton Corp. Jerome G. Parsons Pvt. 1st Class J.A. Capute Pvt. Robert Johns	}	<i>Performed hazardous photographic mission over Japanese territory.</i>
--	---	--

Lt. C.W. Van Eeuwan (Posthumous) (Pilot) Lt. J.J. Orr (Posthumous) (Co-pilot) Pvt. 1st Class J.W. Gallik (Posthumous) (Radio Operator) Pvt. 1st Class E.A. Onufrowicz (Posthumous) (Aerial Engineer) Aviation Cadet Earl W. Ray (Posthumous) (Navigator)	}	<i>Deliberately sacrificed themselves by diving their disabled plane into a gravel pit, exploding its full load of bombs, rather than risk killing civilians in an attempt to land on a street or a vacant lot in a residential area. Took off from Mitchel Field, N.Y., Jan. 1, 1942.</i>
--	---	--

Lt. Col. Caleb V. Haynes.....*2nd Oak Leaf Cluster--Flight to Britain*

Major Donald Keiser.....*Led Flying Fortresses across the Bay of Bengal to convert the docks of Rangoon into flaming wreckage, in spite of violent anti-aircraft and fighter opposition, and returned without a loss.*

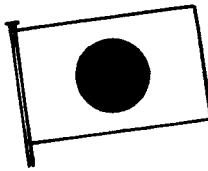
Capt. J.B. Montgomery.....*Co-pilot, round-the-world flight, September, 1941.*

(Continued on Page 20)

Fly to Tokyo--All Expenses Paid

BY Oliver H. Townsend

Headquarters, AAF



(This is the third in a series of articles describing countries officers and men of the Air Forces will visit in large numbers before the end of the war.--The Editor)

"COME to beautiful, hospitable Japan" is an invitation Japanese travel agencies have been bandying thoughtlessly about for years.

Doolittle finally did it.

With a party of 79 officers and men, Brig. General James H. Doolittle last month conducted a quick tour of Japan's chief industrial centers. Members of the party all report they had a wonderful time.

Although the famous Japanese hospitality was somewhat lacking when the Doolittle party arrived, the Tokyo radio has announced repeatedly that the Japs are "so sorry" they couldn't give him a much warmer reception. In all fairness to the hosts, it must be admitted that, once they knew the General had arrived, they tried their best to get him to stop over permanently. Members of the Jap air force are still brooding because they allowed him to "rush off".

After all, General Doolittle and his party did drop in somewhat unexpectedly. Perhaps that is why the Japanese hospitality was lacking. But he was simply following the precedent set by the Japs at Pearl Harbor—and he did leave calling cards.

All in all, the Doolittle junket was so successful that a new invitation, which has stolen the show from the Jap travel agencies, has been issued by the Air Forces.

A Better Offer

"Fly to Tokyo—All Expenses Paid" is the Air Forces offer, and it's a much more attractive one than any the Japs have made.

In response to this cordial invitation, thousands of Air Forces officers and men are thinking about making the trip to Tokyo. This being the case, it seems you all ought to know something about Japan; what preparations to make, how to get along with the natives, a little geography—that sort of thing.

To begin with, much of the success of your trip will depend on the plans you make before departure. General Doolittle and his party planned carefully. We suspect that his exact itinerary was laid out long before he left. This careful planning allowed him to visit every city on his list, and to devote particular attention to many points of special interest.

General Doolittle proved that although the Japanese Islands are somewhat isolated from the United States and its foreign bases, they are

still accessible if you make a stopover in friendly Shangri-La.

Americans who have made the flight to Japan all agree that the trip from Shangri-La to Tokyo shouldn't be missed. On the way you pass directly over the Rising Sun. Note the sun carefully as you fly over—it appears to be setting rather than rising. This phenomenon is puzzling Japanese scientists increasingly as time goes on.

Japan looms off the east coast of Asia like an undernourished barnacle on the hull of the Queen Mary. Although you may not be able to see them all in one trip, the Japanese Islands extend for 2,000 miles up and down the Asiatic coastline. If strung along the eastern coast of the U. S., the Jap Islands and Formosa would stretch from Cuba north to Labrador. Tokyo would fall in the vicinity of Norfolk, Va. Laid end to end, Japan reaches and reaches until honorable knuckles get cracked.

Bombardier's Paradise

Fortunately for the American traveler, most of the important points are concentrated in a 300-mile plain stretching from Tokyo south to Osaka on the Pacific side of the central island of Honshu. Crowded into this area are most of Japan's 70 million people, all of its greatest cities, and most of its agricultural and industrial wealth. You simply must not miss this part of Japan—especially if you are a bombardier.

The Doolittle party, despite a split-second schedule, covered most of the important points in this area. These included the Navy Yard south of Tokyo, where a new cruiser and a new battleship were given special attention; the Mitsubishi aircraft factory near Nagoya; a "tank farm" near Osaka; dock-yards at Kobe and Yokohama; and a number of steel works, oil refineries, armament plants and ammunition dumps.

Many tourist sights such as the Imperial Palace were ignored completely. Americans hope that the hospitable Japanese will not feel hurt because Doolittle left no presents for the Emperor. If they consider this to be a violation of their highly valued protocol, this oversight can be made up for in subsequent trips.

A good share of the Doolittle visit was conducted just above the tree-tops, offering a delightful view. One of the most interesting phenomena encountered was the terrain, especially over industrial and military areas, which looked much different to rear gunners than to bombardiers. Often ships and factories that were

plainly visible to the bombardiers had changed drastically by the time they came into the rear gunner's view.

Travelers to Japan should keep their radios tuned in--especially if they understand Japanese. Nippon's radio announcers will take a great interest in your arrival and quite probably become very excited about it. This may puzzle you somewhat, in that the Japanese usually pride themselves on their equanimity. But at least it will flatter your ego.

As you leave central Japan, as the snow-capped purple majesty of Mount Fujiyama fades into the distance, let your eye stray to the south. There, over the horizon stretch the islands of Shikoku and Kyushu, two of Japan's five largest islands. Kyushu, home of the ancient port of Nagasaki, is more than just the place where "the men chew tobacco and the women wicky wacky woo". It is also the second most important industrial area of Japan, and the place where most of its coal and iron is mined. It, like Tokyo, shouldn't be missed.

North from the central Jap island of Honshu lie Hokkaido and Sakhalin, and a number of smaller islands. Although you may not notice them all in your first few trips, there are over 500 islands in the Japanese archipelago, some as large as Great Britain, others smaller than Manhattan. Even so, their total area is no larger than the state of Montana--and three-fourths of that is covered by non-arable mountains.

This drives the people down onto the plains and makes big cities there--Tokyo, Osaka, Kyoto, Nagoya, and Kobe. Tokyo at the last count was almost as populous as New York, Osaka practically as big as Chicago. Tokyo's seaport, Yokohama, had almost a million people.

The Japanese people are fanatically proud of their military history. They have never been invaded. (Note to printer: stand by for possible change). Kublia Khan, conqueror of all Asia in the 13th century, tried it twice and failed. The rest of the world has never been given the chance--yet. Commodore Perry, however, did some "negotiating" under American naval guns in Jap waters in 1853 and 1854.

Before the Doolittle visit, the most spectacular debacle in Japanese history was the earthquake of 1923, which hit the Tokyo-Osaka area. Less careful than Doolittle, the earthquake destroyed thousands of homes, temples, and buildings and wiped out a large percentage of Japanese. In spite of this the Jap has retained his sense of humor. Admiral Yamamoto, for instance, recently announced he would dictate peace terms in the White House.

All in all, there is nothing like a trip to Japan to help one's disposition in these troublous times. After your first visit you will long for the day when you can return to these beautiful little jewels of the Pacific, bringing with you thousands of your friends, and showering the hospitable Japanese with tons and tons of special tokens of our esteem.



Pendleton, Oregon, where Doolittle's raiders trained, celebrates the bombing of Tokyo by "their boys"



A "dispersed" P-40, well-hidden from enemy view

Airdromes in Wartime

by Lieut. Col. Rudolph E. Smyser

Aviation Engineers



THE present war has demonstrated the military inadequacy of most peace-time airfields. Modern wars are not begun with the exchange of polite declaration of intentions; instead, without exception, the aggressor nation has commenced hostilities by a staggering attack on the air installations of its victim.

Although this formula has been repeated several times without variation, the results have been uniformly successful. There is no evidence that any of the victims learned except through their own bitter experience that airdromes can

be built for maximum efficiency for either peace or war, but not for both.

There are many different types of airfields but once the landing and take-off area is provided they are differentiated solely by the degree and the amount of servicing, maintenance, supply and administrative facilities provided. For military use, the following definitions apply:

Airdrome: A landing field at which military facilities for shelter, supply and repair of aircraft have been provided. This is the ge-

neric term for all military airfields.

Air Base: A command which comprises the installation and facilities required by and provided for the operation, maintenance, repair and supply of a specific Air Force. In its strict sense, the term Air Base can be applied only to an area. However, most existing military airfields in the United States are now called Air Bases because it is contemplated that, under operational use, they will provide supply and repair facilities for a large number of units concentrated in the vicinity on auxiliary airdromes.

Auxiliary Airdromes: An airfield located within an Air Base operated as an annex. It does not have all servicing, supply and repair facilities sufficient for its operation. This type of airfield is also called a satellite field.

Satellite Field: This term is of foreign derivation, and is applied to an occupied airdrome which is not completely equipped with the servicing, supply and repair facilities sufficient for its unaided operation. This type of airfield is identical in concept with an auxiliary airdrome.

Alternate Airdrome: An airfield available for the use of military units in lieu of the airdrome to which assigned.

Advanced Landing Field: An area of land near the general front available for the take-off and landing of aircraft. Minimum facilities for servicing only are available. Permanent occupancy by aircraft is not contemplated.

Staging Field: A landing and take-off area with minimum servicing, supply and shelter provided for the temporary occupancy of military aircraft during the course of movement from one airdrome to another.

Dispersed Airdromes: An airdrome in which the facilities for supply and repair of aircraft and shelter have been spread out and removed so far as possible from the immediate presence of the landing and take-off area.

Dispersal Parking Area: Areas of land in the vicinity of an airdrome not suited for landing and take-off of aircraft, which are used for the parking of aircraft. Dispersal parking areas may, or may not be contiguous with the normal landing and take-off areas, but are connected thereto by taxi tracks suitable for the use of any aircraft which may be parked in the dispersal parking area.

Field Airdrome: An airdrome, generally in the Theater of Operations, which is built for war-time use only. Construction at field airdromes is temporary, and the minimum consistent with military necessity, thus differentiating field airdromes from airdromes built during peace for permanent occupancy.

Too often, an airdrome is unsuited before it is ever built. Selection of the site in peacetime is frequently based on political expediency combined with economic necessity; the fundamental requirement for war time suitability is put

aside. Proper site selection is of course a compromise and adjustment between military necessity on one hand and flying requirements on the other.

Requirements Flexible

Fortunately, the military requirements are reasonably flexible, as it is more often necessary to locate an airdrome in a given area rather than in an exact location. Not only should sufficient land be available for the requisite landing and take-off area, but additional space must be available for the proper locating of technical installations, and for the parking of aircraft. It should be accepted as axiomatic that except when undergoing repairs, aircraft on the ground will be in dispersed locations. Airdromes are a logical target for the hostile air force, so every possible effort must be made to make the target inconspicuous and unremunerative.

Careful consideration should be given to the requirements of camouflage and dispersion. Sites should not be chosen which are easily found by relation to some prominent object which is clearly visible from the air. For example, placing an airdrome in the bend of a river would render camouflaging inoperative, as the river bend will always be visible from the air. The presence of woods, trees and hedges in the area are a great asset from the camouflage point of view, as these can later be reproduced on the completed airdrome by camouflage methods. In addition, they afford cover for dispersed aircraft, buildings, bomb dumps, gasoline storage and other elements.

The first requirement of an airdrome is an adequate landing and take-off area. This may vary from a level grass strip to an elaborate system of hard surface runways. Where soil and climatic conditions permit the growth and maintenance of firm turf surfaces, it may be possible to prepare a grass surfaced landing area from which light and limited traffic can operate during any season of the year, thus avoiding the necessity of preparing some form of hard surfaced landing area.

Advantages of Turf

The principal advantages of the turf field are that it can provide a runway facing into the wind at all times, and that it is more easily camouflaged since its surface approximates more closely that of the surrounding country. Generally speaking, all-over turf fields are particularly suited for training centers or even operational airdromes used exclusively by pursuit and light observation aircraft. Under the strain of heavy traffic, turf is likely to become rutted, especially if exposed to alternate freezing and thawing. Because of the mud which is inevitable during the wet season, maintenance

(Continued on Page 34)

PRO PATRIA MORI

A partial list of officers and men of the Army Air Forces officially reported to have died in the service of their country since December 7, 1941.

Major Generals

Herbert A. Dargue

Master Sergeants

Dave Jacobson

Colonels

George W. Ricker

First Sergeants

Wallace R. Martin

Majors

Austin A. Straubel Chauncey B. Whitney

Technical Sergeants

Srank St. E. Posey Raymond E. Powell
Joseph Ambrose Howell H. Harris

Captains

Eugene D. Cadontseff John L. Du Frane, Jr.
Colin P. Kelly James Gordon Leavitt

Staff Sergeants

Doyle Kimmey John H. Mann
John A. Price Joseph C. Herbert
Paul B. Free Elwood R. Gummerson
James M. Barksdale Edward J. Burns

Lieutenants

Glen M. Alder Paul Willard Anthony
William A. Anderson Marshall Judson Anderson
Arthur Alfred Amron Isadore Alfred
Thomas Francis Almon N.W. Browne
William T. Biggers Willis W. Burney
Walter C. Boyle Glenn Harold Boes
Jerry Orville Brezina Donald Paul Baker
James C. Barham Hal Browne, Jr.
Homer Charles Burns William Perry Brady
William A. Cocke, Jr. Wilbur Camp
Jack W. Clark Richard W. Cease
Robert E. Crouch Ray Lawrence Cox
Woodrow Wilson Christian Nathaniel Thomas Cornell
Hans C. Christiansen Robert Devere Clark
Leonard William Carter L.W.E. Duvall
William C. Daniel, III Roy L. Drew
Willard Thurman Degolyer Arthur Ferdinand Davies
James R. Davidson, III Carl E. Danner, Jr.
John Joseph Doherty, Jr. George Clark Denter
Frederick J. Dittman Kenneth P. Donahue
John L. Dains James Thomas Drake
John R. Van De Lester Dennis Joseph Dowling
John Pershing Robbins William S. Walker, Jr.
Elias Turner, Jr. John G. Kelso
Maurice M. Miller John A. Hutchins, Jr.
Arthur Edward Gary Charles J. Young
George H. Olson James W. Riddell
Lonnie B. Wimberley Forrest M. Hobrecht
William R. Schick William L. Northern, Jr.
Harry A. Sealey Lycurgus W. Johnson
Foy Roberson, Jr. Claude A. Knight
Samuel H. Marett George R. Matthews
Karl F. Leabo T.M. Richards
William E. Luetzow James E. Snyder
E.D. Hoffman R.A. Saner
John E. Loehrke Robert T. Hanson
Louis A. Johnson Roy Robertson

Sergeants

James H. Derthick Lionel L. Lowe
George F. Loritz Everett A. Pond
Russell V. Cornford Stanley A. Donin

Corporals

Edward F. Heard Kenneth O. Whitaker
Mack Sweeney John Jurcsak
Paul H. Duncan Gerald Dumais
Arthur E. Karlinger Cecil R. Hamman
Donald F. Meagher Antonio S. Tafoya

Privates First Class

Ralph S. Smith Jerome J. Szematowicz
Robert R. Shattuck William T. Rhodes
Willard C. Orr Thomas F. Philippsky
William W. Merithew Horace A. Messam
Harrell K. Mattox William E. McAbee
Robert R. Kelley James A. Horner
William E. Hasenfuss Clarence E. Hoyt
Melvin J. Dodson James E. Gossard, Jr.
Eugene B. Denson William Coyne, Jr.

Privates

Alfred Hays John J. Horan
Robert L. Hull Robert H. Gooding
Leo E.A. Gagne Lyle O. Edwards
Stuart H. Fiander Willard E. Fairchild
Jack H. Feldman Russell C. Defenbaugh
Robert C. Duff, Jr. Malachy Cashen
Dean W. Cebert Robert S. Brown
Arthur F. Boyle William J. Brownlee
Brooks J. Brubaker, Jr. Gordon R. Bennett, Jr.
Robert G. Allen Garland C. Anderson
Leland V. Beasley Otto E. Wellman
Karl Santschi Edward E. VanDyke

Your Safety Job

By Maj. W. R. Weber

Chief, Accident Prevention Division
Directorate of Flying Safety

GENERAL Arnold has called upon each member of the Army Air Forces to do all in his power to aid the accident prevention program of the Directorate of Flying Safety.

What can you do to help?

First of all, you can cooperate with the 10 special field safety officers who will represent the Directorate throughout the United States.

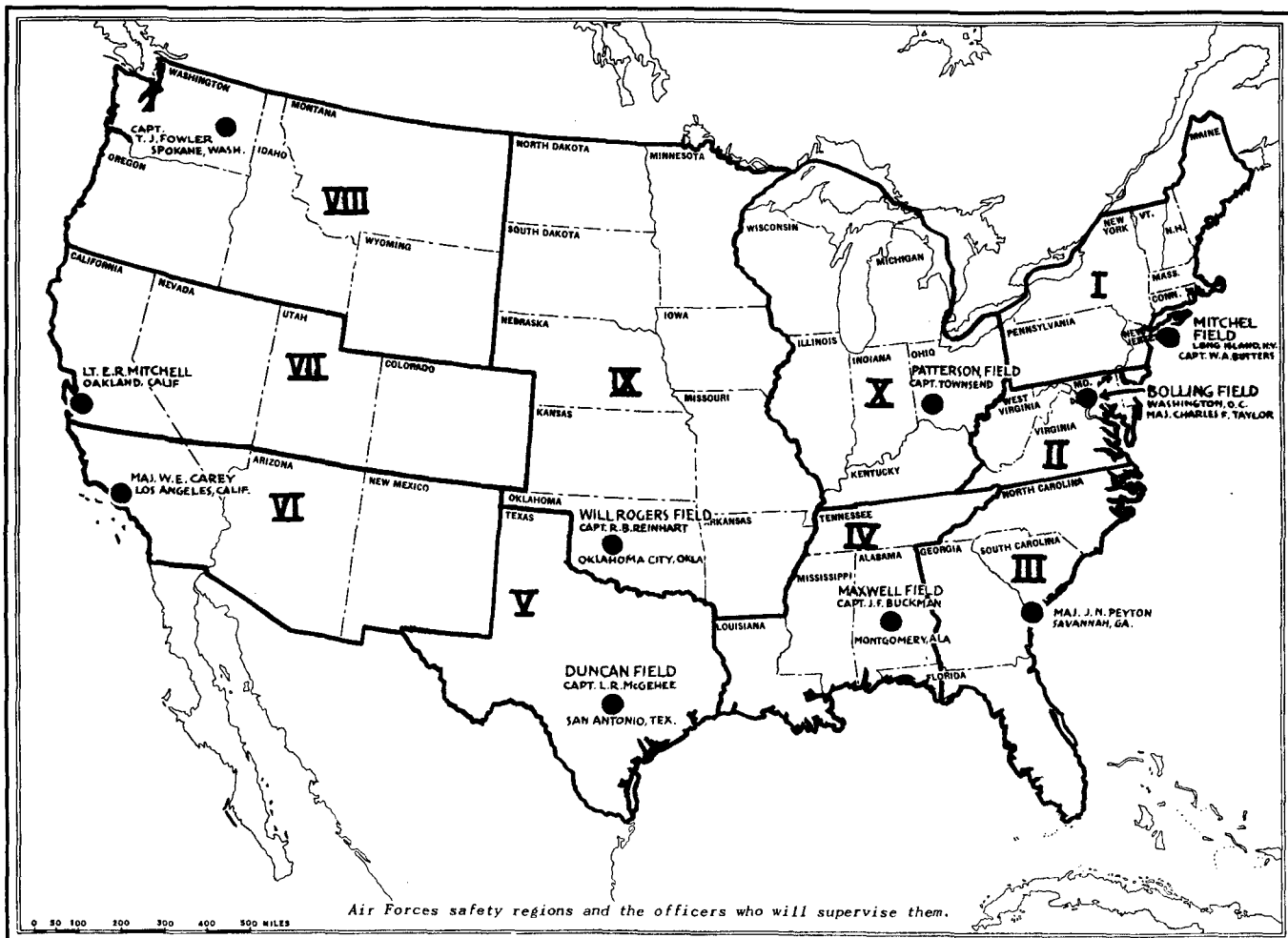
These safety officers—all experts—have been given the job of preventing airplane accidents. They will make special investigations and inspections, and will study the accident prevention devices used at individual fields. Most important of all, they will take every step necessary to see that all officers and men of the Air Forces know the rules of flying safety.

Help your safety officer. Cooperate with him. Learn the safety rules and practice them. Especially learn how to eliminate landing, taxiing and take-off accidents. There is no possible excuse for these.

A booklet soon to be published will describe the narrow escapes Air Forces flyers have had and how to avoid them. Many of you have demon-

strated a fine spirit of cooperation by contributing your own experiences to this booklet. Typical of the episodes described is the following, submitted by Lieut. Clay Tice, Jr., France Field, Canal Zone:

"We were on a shadow-gunnery mission making passes at the shadow of a two-ship element which was flying at an altitude of 500 feet. I started my dive at 1,000 feet and at about 100 yards from the target opened fire. I released the trigger after firing a burst of approximately 5 rounds but one of my guns continued firing. As there was another ship ahead and above me making his cross-over, I realized that following the pattern would endanger him. Glancing down in the cockpit I reached for the hydraulic button that controlled the malfunctioning gun and placed it in the lock-back position. It was but a split second before I had accomplished this but as I looked up again I was almost down in the water. I reacted without thinking and came back on the stick but my propeller hit the water throwing spray up over the cockpit. There was no damage done to the plane, but diving into the water at over 200 mph isn't something to look forward to. If I had kept my head in the cockpit an instant longer I would have crashed; but if I had known definitely where the gun control was located I would never have had such a narrow escape."

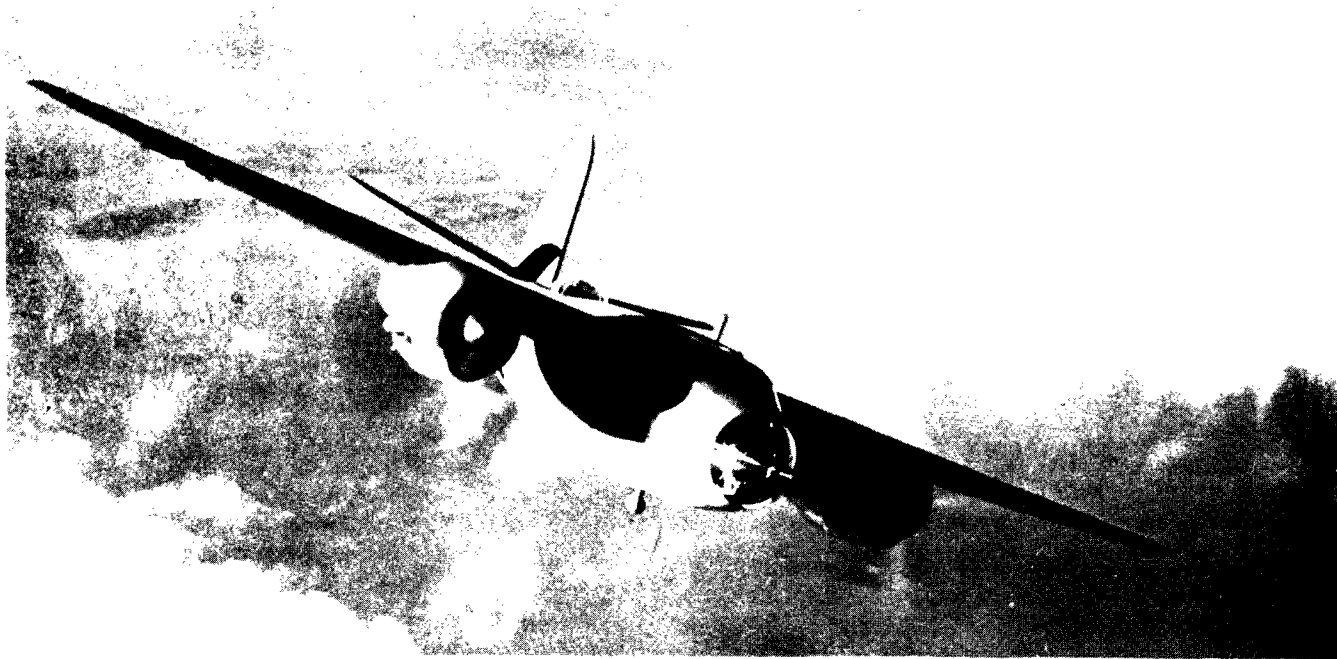


AAF Planes Torpedo Japs

OFF Midway Island the Jap Navy early this month ran smack into a new weapon of Army air power--and came off second best.

The new weapon was the Army's Martin B-26, equipped with a special torpedo carrying and release mechanism. Sweeping deck-high over the Jap fleet at lightning speeds the B-26s used the new device to send their explosive fish crashing into the hulls of carriers and warships. Together with Army B-17s and Navy carrier-based planes they sent the Japs limping home.

Sweeping out of the clouds in the picture at top is a B-26 medium bomber similar to those used to blast the Jap Navy with torpedoes. Below an Air Forces officer inspects the new torpedo release mechanism which made it all possible.



They Look For Trouble

By Lieut. Robert B. Hotz

Headquarters, AAF

THE sun beats down on the runways at the great Lockheed Air Terminal at Burbank, Calif. Scores of war-painted Hudsons, Venturas and P-38s are scattered over the field. A dusty station wagon bounces across the airport dropping a pair of casually dressed civilians before each of a long row of Hudsons and Venturas. The civilians buckle on chutes. Engines sputter, then roar. Twin engined bombers waddle across the grass toward the end of the runway. Lockheed test pilots are going to work.

These Lockheed pilots are an oddly assorted crew with only two things in common--a long and colorful record in the air and a love of the work they do.

There is Jimmy Mattern, who flew solo from New York to Siberia in 1933 and was lost for 14 days in the Arctic after a forced landing; Jim Allison, who fought in Spain and China; Lewis (Swede) Parker, who was a music student at Harvard when he learned to fly and who now mixes bronco-busting with his test piloting; Milo Burcham, famous in the barnstorming days for his one-wheel landings and upside down flying; several "old" KLM and French army pilots; the former legal counsel for Lockheed who learned to fly and left his law practice to become a test pilot; ex-butchers, ranchers and bartenders who learned to fly in the twenties and were forced into other occupations during the depression and returned to flying in the pre-war boom. All of them are veterans of more than 2,000 hours and 60 of the staff of 75 have more than 5,000 hours.

They are typical of the crews of factory test pilots seen lounging around the operations office of every big aircraft plant. The work they do is typical of that done by factory test pilots wherever planes for the Army Air Forces are made.

When an Air Force pilot gets a plane to fly he can be sure that there have been competent hands on the controls before him. In addition to the test flights by factory pilots, every AAF plane is given a final check by an Air Force acceptance pilot. Unless it is perfect in every detail it is not accepted. However, with a good crew of factory test pilots the work of an acceptance pilot is not too tough. The bulk of the job of seeing that AAF planes are fit to fly is done by the factory testers.

Lockheed test pilots like to talk about how simple their jobs are. And if you watched them play rummy in the pilot house awaiting call, flew with them while they checked a few "squawks" on a Hudson or rode along while they ferried a Ventura 40 miles to Long Beach, you might think they were right. But big Swede Parker and dapper Milo Burcham could tell you some scalp tingling tales of their experimental testing



Lockheed Test Pilot Milo Burcham climbs out of a P-38 after checking it in the stratosphere prior to delivery to the Army Air Forces.

Civilian pilots like Burcham work for all Air Forces contractors. It's their job to take airplanes aloft and look for all types of trouble before the planes are delivered to combat pilots.

of the original P-38 and there is a dusty set of maps in the pilot house drawer labelled "Ralph Virden". Virden was killed last year while testing an early P-38 and his name belongs on the airmen's honor roll in type as large as those of the pilots lost over Luzon and Java.

Another unsung hero of this routine battle for control of the blue is Marshal Headle, former chief test pilot of the Lockheed crew. Headle was the first man to fly the P-38 and became extremely interested in the effect on pilots of flying at the P-38's terrific ceiling. He used himself as a guinea pig in high altitude pressure chamber experiments. One day while trying to see how little oxygen a pilot could live on at well over 35,000 feet he became confused from lack of oxygen and cut off his oxygen supply instead of increasing it. The only alternative to certain death from oxygen starvation was for the engineers to increase the pressure in the chamber to that of sea level as fast as possible. It meant that Marshal Headle went through the effect of falling from that height to sea level in eight seconds. He may never fly again.

That is the kind of thing that happens when these test pilots push out along the fringes of the unknown. It is a dangerous and important part of their work but the bulk of their job is a bit more prosaic. It consists of putting planes fresh from the assembly line through routine checks, carefully noting and recording all irregularities in the "squawk book". Then on succeeding flights each squawk is checked until it has been eliminated and the plane is ready for delivery to the Air Forces.

In the days before the Ferrying Command, Lockheed had its own ferrying service and test pilots saw a good bit of the world delivering planes. Elmer McLeod, now chief test pilot, flew around the world delivering two Lockheed 12s to the Rajah of Jodphur. He lived in oriental splendor with the Rajah for two months while teaching him to fly. Other Lockheed pilots delivered Hudsons to South Africa and the Middle East via the South Atlantic and the Burbank-Montreal run functioned with the regularity of a commercial airline. But now a 40 mile hop to the Ferrying Command Base at Long Beach or an occasional trip to Dallas is their only cross country diversion.

Most of their time is spent wheeling the twin-engined Hudsons and Venturas over the ridges and valleys around Burbank and streaking P-38s up to their ceiling. Occasionally they give diners in the glass enclosed airport restaurant an infantryman's view of a P-38 in action by swooping down on the restaurant and pulling up in a terrific climb.

A test pilot making the first check on a Hudson or Ventura has a big green book in which he and the co-pilot record the performance of the ship. Before he takes it over, mechanics and inspectors give the ship a final check and

run-up. Then pilot and co-pilot make their own pre-flight inspection.

Once in the air the test continues in routine fashion. Test pilots don't "wring out" the ship in a test of this kind. All of the wing-pulling-off and slow rolling are confined to the original models. Once the design and construction has been proved in the experimental tests, production models are static tested for maximum strain on the ground so there is no need for test pilots to try to twist them out of shape.

The flight test starts out with a full power take-off and a rated power climb. Cowl flaps, oil scoops, RPM, fuel pressure, oil pressure and temperature, head temperature and manifold pressure are all recorded for both motors. The landing gear is lowered and raised in flight. Flaps are tested. Bomb doors are opened and closed and a short run is made on each gas tank to test the fuel feed system. De-icers are set to work and the plane is flown on the Sperry automatic pilot on four different courses. Trim tabs are checked, props feathered and unfeathered. Heaters and ventilators are checked and the cockpit inspected for air leaks. A pair of 360 degree turns are made in each direction and all instruments are checked. Props are used in low and high pitch and the landing gear warning horn is given a workout.

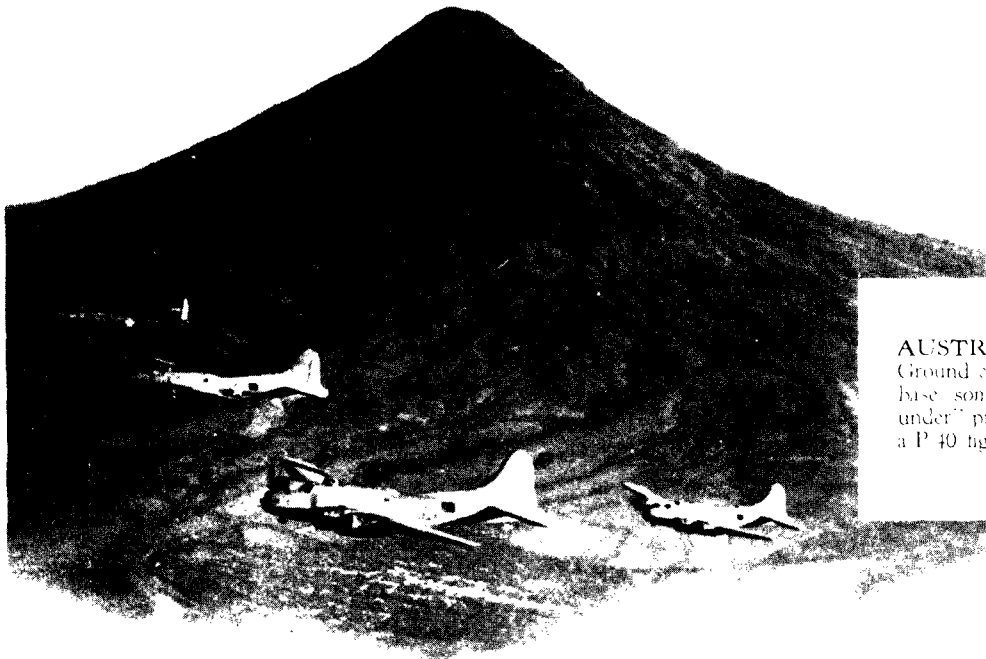
The book full of data is turned in with all irregularities noted. The next pilot who handles the ship after the mechanics have worked on the squawks will check off those remedied. The ship is flown until all squawks have been eliminated. Then it is ready for an AAF acceptance flight.

Most Hudsons average two hours of test flying; P-38s and Venturas usually get about three hours. With a pilot and co-pilot in the "office" of a Hudson or Ventura, keeping up the data book isn't too much trouble. But with a single pilot squeezed into a P-38 trying to fly one of the fastest ships in the world with one hand, while reading instruments, gauges and keeping in touch with the operations office by radio and recording squawks with the other, considerable dexterity is required.

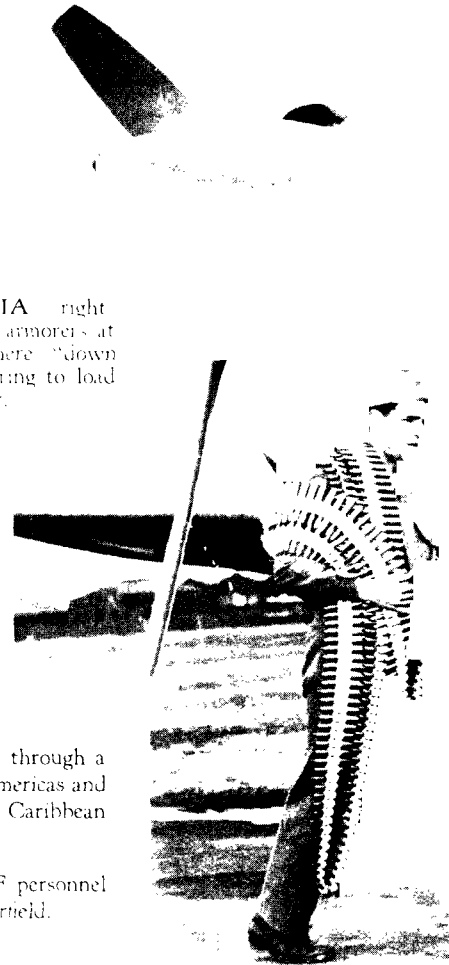
The routine on P-38 testing is slightly different and the initial checking is broken up into two flights. On the first flight the rigging, flying characteristics, props, flaps, landing gear and radio are checked. The cockpit and instrument checks are done during the second flight. P-38s are also put through a special test at high altitude.

From 50 to 60 flights a day are made by the Lockheed test pilot staff of 75 and it takes a veteran to hold down one of these jobs. Yet, all of them still go to instrument and navigations school in the old Spanish ranch house on the edge of the airport. They put in regular hours on the Link and every once in a while they shoot a few instrument approaches to Montreal just for old times sake.

THE AIR FORCES A



AUSTRALIA (right): Ground crew armorers at base somewhere "down under" preparing to load a P-40 fighter.



GUATEMALA (above): A covey of B-17's wing through a mountain pass on patrol duties in protection of the Americas and the vital Panama Canal. The planes are attached to the Caribbean Defense Command.

BURMA (below): AVG "Flying Tigers" and RAF personnel beside one of their shark-toothed P-40's at an advance airfield.



ROUND THE WORLD



HONOLULU (above). AAF fliers exhibit the name-plate of their B-26—all that was worth salvaging after they brought it back from the air-sea battle for Midway.

AUSTRALIA (below). Bomber Pilot R. B. Prouty gives final instructions to his flight companion, a white parrot.



AFRICA (above). A native lends color to the radio station at one of the Ferrying Command's airfields deep in the Dark Continent.

INDIA (left). Ferrying Command pilots are shown filling out their reports after delivering supplies and equipment.



The Honor Roll
(Continued from Page 8)

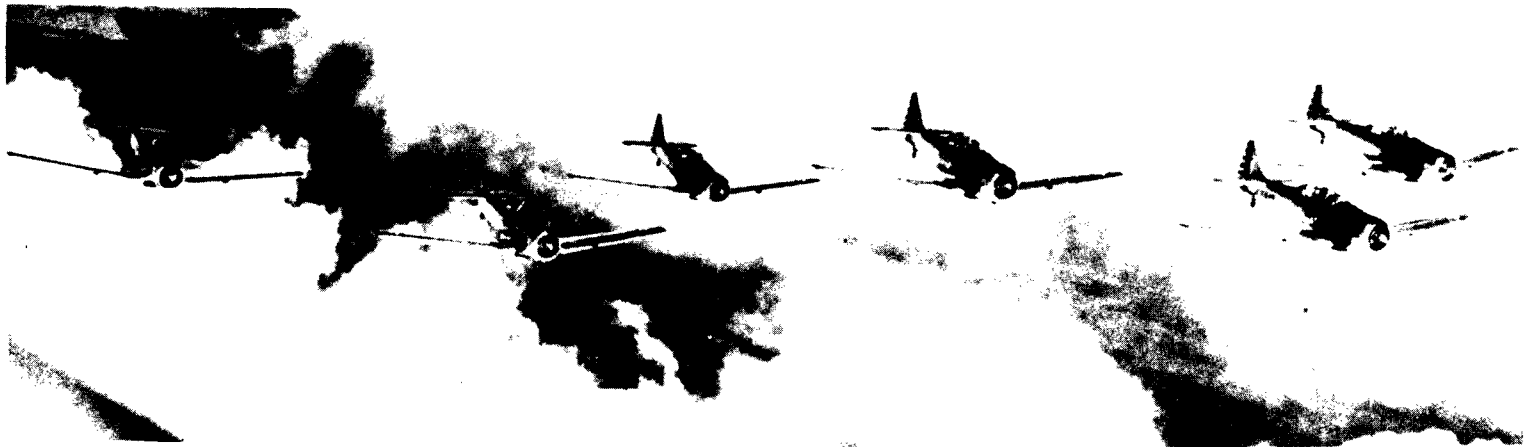
- Lt. Theodore J. Boselli.....*Harriman mission to Russia.*
- Master Sergt. Adolph Cattarius.....*Flight to Britain, summer, 1941.*
- Master Sergt. Joseph H. Walsh.....*Harriman mission to Russia.*
- Tech. Sergt. Charles M. Kincheloe....*Four trans-Atlantic ferrying flights.*
- Staff Sergt. R.J. Barrett, Jr.....*Extraordinary achievement while participating in an aerial flight as 1st Radio Operator on an urgent and vital mission from Bolling Field to Netherlands East Indies.*
- Staff Sergt. Elvin P. Wescott.....*Harriman mission to Russia.*

SILVER STAR

- Maj. General Lewis Brereton
 - Lt. Nelson P. Davis (Co-pilot)
 - Lt. Bruno Deltissier (Bombardier)
 - Lt. Raymond W. Giannini (Navigator) | *Participation in an attack on the Andaman Islands, April 2.*
 - Lt. Paul J. Long (Co-pilot)
 - Lt. Delmar J. Rogers (Pilot)
 - Lt. M.J. Svovode (Navigator)
 - Staff Sergt. E.E. Lindley (Bombardier)
-
- Lt. Gene L. Bound.....*Outstanding action during aerial engagement over Bali, Feb. 7.*
 - Lt. Robert L. Ferry.....*Meritorious achievement in the performance of an aerial flight against the armed enemy.*
 - Lt. G.A. Whiteman (Posthumous).....*Gallantry after his plane had been shot down Dec. 7, in the Japanese attack on Oahu, Hawaii.*
 - Staff Sergt. Charles A. Fay.....*Initiative, presence of mind, coolness under fire and determined action.*

PURPLE HEART

- | | | |
|---|-------------------------------|---------------------------------------|
| Major Norman H. Llewellyn
(Posthumous) | Lt. Duke Paul (Posthumous) | Pvt. O.B. Knox (Posthumous) |
| Capt. Elmer Felix Parsel
(Posthumous) | Lt. R.B. Sprang (Posthumous) | Pvt. J.C. Paounoff (Posthumous) |
| Lt. James V. Cunningham | Sergt. Howard A. Bennett | Pvt. John N. Richards |
| Lt. G. Harkness (Posthumous) | Sergt. R. Gregor (Posthumous) | Pvt. Willie T. Stokes
(Posthumous) |
| | Corp. R.F. Sampson | Pvt. Leonard York |
| | Corp. Clifford C. Ventriss | |



Sweeps Over France

by Flight Lieut. Brendan "Paddy" Finucane

Royal Air Force

The author, leader of a famous Australian fighter squadron, late in May shot down his 32nd German plane over France. A few months earlier he had celebrated his 21st birthday by bagging his 21st enemy aircraft. Flight Lieut. Finucane's 32nd was a new Focke-Wolf 190. It brought his score even with that of the South African pilot, Wing Commander A.G. Malan, now officially listed as missing, who had the highest score in Britain's Fighter Command.



I have been on about 50 sweeps, and most of my victories have been gained over France. I've got my bag because I've been blessed with a pair of good eyes, and have learned to shoot straight. I've not been shot down--touch wood--and I've only once been badly shot up (I hope that doesn't sound Irish). And for all that I've got a lot to thank the pilots in my section. They are Australians and I've never met a more loyal or gamier crowd of chaps. They've saved my bacon many a time when I've been attacked from behind while concentrating on a Messerschmitt in front of me, and they've followed me through thick and thin. On the ground they're the cheeriest friends a fellow could have. I'm sure that Australia must be a grand country if it's anything like it's pilots, and after the war I'm going to see it. No, not flying, or farming. I like a job with figures--accountancy or auditing.

Perhaps that doesn't sound much like a fighter pilot. But pilots are perfectly normal people.

Before going off on a trip I usually have a feeling in my belly, but once I'm in my aircraft everything is fine. The brain is working fast, and if the enemy is met it seems to work like a clockwork motor. Accepting that, rejecting that, sizing up this, and remembering that. You don't have time to feel anything. But your nerves may be on edge--not from fear, but from excitement and the intensity of the mental effort.

I have come back from a sweep to find my shirt and tunic wet through with perspiration.

Our chaps sometimes find that they can't sleep. What happens is this. You come back from a show and find it very hard to remember what happened. Maybe you have a clear impression of three or four incidents, which stand out like illuminated lantern slides in the mind's eye. Perhaps a picture of two Me. 109's belting down on your tail from out of the sun and already within firing range. Perhaps another picture of your cannon shells striking at the belly of an Me. and the aircraft spraying debris around. But for the life of you, you can't remember what you did.

Later, when you have turned in and sleep is stealing over you, some tiny link in the forgotten chain of events comes back. Instantly you are fully awake, and then the whole story of the operation pieces itself together and you lie there, sleep driven away, re-living the combat,

congratulating yourself for this thing, blaming yourself for that.

The reason for this is simply that everything happens so quickly in the air that you crowd a tremendous amount of thinking, action and emotion into a very short space of time, and you suffer afterwards from mental indigestion.

The other week I was feeling a little jaded. Then my seven days' leave came round, and I went back bursting with energy. On my first flight after getting back I shot down three Me.'s in one engagement, and the next day bagged two more. That shows the value of a little rest.

The tactical side of the game is quite fascinating. You get to learn, for instance, how to fly so that all the time you have a view behind you as well as in front. The first necessity in combat is to see the other chap before he sees you, or at least before he gets the tactical advantage of you. The second is to hit him when you fire. You mightn't have a second chance.

After a dog-fight your section gets split, and you must get together again, or tack on to others. The straggler is easy meat for a bunch of Jerries. Luckily, the chaps in my flight keep with me very well, and we owe a lot to it. On one occasion recently I saw an Me. dive on to one of my flight. As I went in after him, another Me. tailed in behind to attack me, but one of my flight went in after him. Soon half a dozen of us were flying at 400 mph in line astern, everybody, except the leader, firing at the chap in front of him.

I got my Hun just as my nearest pal got the Hun on my tail, and we were then three Spitfires in the lead. When we turned to face the other Me.'s we found that several others had joined in, but as we faced them they turned and fled.

The nearest I've been to being shot down was when another pilot and I attacked a Ju. 88. The bomber went down to sea level so that we could only attack from above, in face of the fire of the Ju.'s rear guns. We put that Ju. into the sea all right, but I had to struggle home with my aircraft riddled with bullets and the undercarriage shot away.

I force-landed without the undercarriage, and was none the worse for it. But it wasn't very nice at the time.

Well, as I said just now, one day I'm planning to go to Australia--and audit books.

Gassing up at Barksdale



Confessions of a Veteran Pilot

By Captain W. V. Brown

Wheeler Field, Hawaii



I went to Randolph and Kelly Fields ten years ago, as a Flying Cadet. We had a mighty fine class of boys, 208 started I believe, and 83 were graduated. Almost all of the fellows were out of college a year, had worked at depression jobs, and decided that flying held a vastly more impressive future. Besides, Randolph Field had just recently been constructed as a magnificent new training center, and we were all anxious to take a crack at flying at this beautiful field.

We turned out some good men, too. To mention a few: Capt. Bierne Lay, Jr., whose "I Wanted Wings" and other stories have made their mark among the real yarns of flying lore; Jack Strickler, who is designing speedy ships for pursuit pilots; several officers who must remain anonymous who are working night and day to provide better planes by constant testing at Wright Field; scores of crack airline pilots, who are also now ferrying military airplanes for the Allies to all corners of the globe; and the remainder, without exception I believe, occupied with Service flying.

Our training together provided a bond which is closer than any fraternity could ever hope to attain. We lived, slept, talked, ate, drank, and practiced flying as a closely knit unit for one whole year, with the result that we came as close to being 83 brothers with a common purpose as it is possible for unrelated men to be. That is why I like to hear of the present day feats of men from my class, and why I look back fondly on their exploits of the past.

Classic Boner

I recall a classmate at Randolph Field who pulled the classic boner of many another unsung pilot. He was making a practice landing during his basic training stage into a comparatively small strange field, when he saw that he was rapidly running out of field while still rolling on the ground at a fast clip. The fence ahead became a prominent landmark on the immediate horizon. An experienced pilot would have opened his throttle and gone around again for another attempt, but not this lad. He figured he could "Whoa, Nellie!" and pull up short; so he practically stood on his brakes and promptly flipped over on his back.

He was flying a biplane trainer, comparatively large and sturdy, and when the dust cleared and he had oriented himself, he could see that his ship was resting comfortably on its upper wing with the fuselage well above and parallel to the ground, he himself gazing back down the field upon which he had just

tried to land, with his normal vision somewhat distorted, since he was hanging upside down in his seat, with only his tautly stretched safety belt accomplishing his defiance of gravity.

Thoughtfully considering the safety of his airplane and mindful of the fire hazard, as he hung slothlike in his cockpit, he carefully cut off his ignition and all other electrical switches, closed his fuel selector valve, and after deciding that he was unhurt and ready to leave the ship in good order, he released his safety belt with a flip of the catch and immediately fell on his head to the ground four feet below, knocking himself out and spraining his neck to such an extent that his recovery required a three weeks tour in the hospital.

It Stayed Dedicated

A dedication ceremony I shall never forget was that of a newly completed stagehouse at an auxiliary field near Randolph. By way of explanation, a stagehouse is generally a small wooden building for the comfort and convenience of instructors who are watching the practice landing performances of their solo students, and provides also a meeting place for other students who are awaiting their turns to fly and be judged. The house always has ample plumbing accommodations, though sometimes of a rustic nature, depending on the locality. This particular house was situated nearly in the center of a large practice field, with a commodious and conspicuous adjacent building devoted to the installation of sanitary facilities.

On this particular morning I was watching my instructor's other student making practice landings over a hurdle, trying to pick up a few pointers on how and what not to do when I had my own turn with the ship, when out of the sky from the west came a large formation of Keystone bombers, the big lumbering biplanes flown in the Bombardment section at Kelly Field in those days for the training of bomber pilots. They swept majestically in a wide circle several times around the field, then swung into line and passed in review in close formation directly over our heads, about one hundred feet up.

When just above us, a rain of paper rolls descended upon us from the rear cockpit of each airplane, with quite a few direct hits being scored upon the stagehouse. I later learned that the Kelly instructors had decided that an edifice of this nature had never before been properly christened, so they utilized a real graduation review practice formation

flight for the execution of their ceremony. Doggone practical too, considering the nature of the bombardment missiles.

While we're dealing in indelible experiences, here's another feat which will always stick in my memory. The incident occurred some years ago in the fall, October to be exact. My friend, whom we'll call Homer, then stationed at a field in the northwestern United States, was on an altitude mission in a two-place observation airplane when he happened to glance at the instrument panel clock and saw that it was lunch time. He had completed his mission, so he lazily half-rolled and headed for the ground. A few seconds afterwards, the ailerons started to flutter violently, the ship trembled and shook, and with a snapping jolt, both ailerons suddenly peeled off and let go.

The plane immediately went into a tight spiral almost like a spin, which no amount of counter control with the stick and rudder would remedy. Homer ordered his enlisted passenger to bail out, and watched him as he struggled out of the rear cockpit and dived off its edge. With the change of weight distribution occasioned by this action, the ship began to slow up its spiral a bit, and finally by his working of the throttle and the controls in various combinations, the ship came out of the spiral and righted itself. With a little careful experimenting he found that he could partially control the wings by skidding the ship with the rudder, that is, he could lift a wing by applying a bit of opposite rudder. So with rudder and elevator controls only, he decided to try to land the airplane and possibly save it.

He attempted to call the control tower at the field to notify its personnel of his plight in order to have the crash truck standing by ready for his landing, but found that his radio had been put out of commission by the severe vibration of losing his ailerons. So with plenty of altitude in which to maneuver the controls and maintain a fairly even keel, he wrote a note on a piece of paper from the ship's log, took off his leather jacket, stuffed the note in the pocket, and then flew over the field at a safe altitude and tossed the jacket overboard in front of a hangar. He then climbed back up to await results, but he could see his untouched jacket lying on the ground and not a soul in sight. After a few more moments he decided to try again. This time he took off his shirt, wrote the same note, buttoned it in the pocket, and sent the shirt overboard to join the jacket.

As I have said, the month was October, it was lunch time, the locale was northwestern United States. This particular combination rendered it exactly the right time for baseball fans to listen to a radio broadcast of the World Series ball game being played at that hour back east in New York. Especially during the lunch hour all personnel on the ground had their ears glued to their radio sets. Con-

sequently Homer's shirt, like the jacket, received absolutely no attention whatsoever.

Finally in desperation Homer took off his pants, wrote a third note and placed this one in a pocket, and now shirtless and pantless he flew as low over the hangar line as he dared and tossed over his trousers. This last time someone heard the motor in time to run out of the hangar and see the pants floating down, retrieved them, and in short order had the crash truck and other personnel prepared for the possible crackup. However, Homer was such a good pilot that he brought the plane in for a nearly perfect landing, with rudder and elevators alone, sans ailerons, into a small tree-bordered field, without putting so much as a scratch on either wingtip. But he had to remain in the cockpit until someone remembered to bring him his clothes.

No Dull Moment

Some few years ago the Army was ordered to take over the flying of the air mail, in the dead of winter. I know a pilot who was flying the run between Cheyenne and Omaha, in an open cockpit ship one cold February morning. When about 125 miles from his half-way point, North Platte, Nebraska, he noticed that his fuel pressure gauge had suddenly dropped to zero. Having just changed to a full tank of gas, he thought that the tank selector valve was not set properly, readjusted it, and worked the wobble pump a few times. (Incidentally, the wobble pump is merely a manually operated fuel pump to bring gasoline pressure to the carburetor until the motor driven pump operates.) The fuel pressure remained up only so long as the wobble pump was operated. The truth then dawned on the pilot. His motor driven fuel pump had broken. Rather than land at some emergency field with a full load of mail behind, he decided to try to fly on in to North Platte, so for some fifty minutes he held the stick in one hand and worked the wobble pump with the other, alternating hands when the pumping grew tiresome.

Upon arrival over North Platte he saw the kind of a landing he would have to make. The airport at that time was shaped like a slice of pie, the wedge pointing west, with a highway, fence, and the inevitable high tension power line along the north edge, and the Platte River forming the southern boundary with its embankment. The one hangar was situated at the point of the wedge, and the arc of the slice was rough with sand dunes. A thirty mile wind was blowing from due south, which made for only one choice; that is to land across the narrow slice, over the high tension lines toward the river.

After carefully circling several times in search of the best spot on the field, and having gone over mentally the things he would have to do practically simultaneously while landing, the pilot started his final approach for a landing. Keeping the wobble pump going with one hand and holding the stick between his

knees, he rolled back the stabilizer and rolled down the flaps with the other hand, using his left elbow to jab at the throttle to retard it when necessary, while steering the rudder conventionally with his feet. When just short of the ground, he slapped the throttle shut, grabbed the stick with his right hand from between his knees, and kept pumping the wobble pump with his left. Luckily he timed his actions correctly, for he landed according to intention and rolled to a stop safely, and well short of the river bank.

If anyone ever spent a busier sixty seconds I should like to know about it; for I was that pilot.

Omaha Express

Then there was the example of straight thinking which overcame an emergency with hands down honors. However, I would not recommend the practice for habitual usage, since it is definitely non-habit forming:

On a night flight out of Chicago the weather had gone suddenly sour, a blizzard set in, drowning out all radio beam signals, and the snow cut visibility to a radius of from cockpit to wing-tip lights (and they looked fuzzy); so there was nothing left for the pilot to do except keep flying, or else. He kept his course and maintained a safe altitude for more than an hour, after which it stopped snowing, but he was still flying on instruments in the solid overcast. Estimating his position by elapsed flying time and with his radio still useless because of static, he cautiously eased down to what he thought was a safe minimum altitude to try to get a glimpse of a break-through or hole in the clouds. No luck. Finally, he went as low as he possibly dared and still retain a safety margin, and after a while began to fly through open space and scuds, with the solid ceiling a few feet over his head.

His original destination was Omaha, west and just a bit south of Chicago. He had tried to keep his course as nearly correct as possible, but he had no way of telling what his drift had been, whether he was north or south of his proper track, or exactly how far he was from Omaha. In short, he was lost, which provided the necessity that mothered his inventive genius.

He noted the first lights he came to, a small town, and tried to find the main road running in an east-west direction. With better visibility but still a low ceiling he noticed another town off to one side of his course, a larger one which upon investigation proved to have a highway running in the desired direction. He followed it by the lights of the few cars traveling at that time of night, and came to another town. Feeling that he was at least paralleling his intended course, he was following the road along when he happened to glance down at a car over which he had just passed. It was a passenger bus, with a lighted sign above its front windshield. He cautiously circled and flew low over the bus, getting a

fleeting glimpse of "OMAHA" on the sign as he flashed past.

Taking a figurative hitch in his fuel belt, he lessened his throttle to minimum for safe flying speed, leaned the mixture control as economically as the engine would take without loss of power, and literally circled the bus into Omaha.

I later asked him what he would have done had he run out of gas.

"I had figured my gas consumption closely" he said, "and would have kept the last ten gallons for one of two choices. The first, a trial parachute flare to see if there was sufficient open space to try a landing with wing lights, and if not, to climb to sufficient altitude into the overcast, cut my ignition, set the stabilizer for a glide, and bail out, without fear of total destruction of my mail cargo or injury to myself."

Pretty smart thinking all the way through, don't you agree? If not, try it yourself some bitter cold night, without benefit of armchair, pipe, lounging robe and slippers!



T N T FOR TOKYO

Up! Up! My lads, the moon is fair,

We've work to do in upper air.

Cargo, tonight, as you must know,

Is T. N. T. for Tokyo.

Avenge Pearl Harbor and Bataan?

Hell Yes! We'll do that - every man.

And, time is near when we will sow

Our righteous wrath on Tokyo.

We'll comb the land, the clouds, the seas

Until we find the Japanese.

And when we do we'll fix them so

They'll not return to Tokyo.

So gather, Eagles, in your might,

A battle brood that's fit to fight.

Equipped with men and planes to go,

We'll blast Hell out of Tokyo.

*N. R. Cooper,
Lt. Col., Air Corps.*

Chanute's Favorite Son

by Maj. M. F. Ranney

Chanute Field, Ill.

DOWN through the years America's soldier has provided inspiration for story, poem and song. But no less imposing is his contribution to the pictorial arts, whose vast galleries reveal him in a multitude of artistic styles.

Each of America's wars has produced not only styles and idioms of artistic expression, but often definite characters. These, in time, have become associated definitely with that war.

World War I gave us such well-remembered characterizations as the "Dere Mabel" series, Ahern's "Balmy Benny" and Bruce Bairnsfather's "Ole Bill". The Spanish-American and Civil Wars produced their particular characters. Even the present day cartoon conception of "Uncle Sam" dates back to the Mexican War.

It is not unusual, then, that this war should produce its crop of characters destined to join the parade.

At Chanute Field such a character has taken

rank with the thousands of soldiers undergoing technical training there. His name is "Reggie". He is the brainchild of Sergeant William T. Lent, staff artist assigned to the Chanute Field public relations department.

As to pedigree, "Reggie" has absolutely none. He did not come in a dream, nor creep out of the mists of imagination. He just popped up one day before Artist Lent's drawing board in the public relations office--a real flesh-and-blood soldier, with an elfish cast in his eye and a hair-trigger smile. He had a way that was pleasing and a good personality.

Alert Sergeant Lent recognized in this soldier something that typified all the soldiers at Chanute Field. Lent's pen rapidly traced lines on his drawing board; the sketch took form--and in a minute or two, there was a character!

Sergeant Lent stylized his new character, and without altering him physically from his real-life prototype, developed a personality which had individuality, yet embodied certain



Sergeant Lent, upper left, and some glimpses from the life and aviation career, of his brainchild "Reggie"

collective traits of all the men around him.

Such a depiction is not easy. But Sergeant Lent—Private Lent in those days--was a skilled illustrator who came to the Army with a well-rounded background in the field of art. He had left a position in the art department of one of the country's largest firms and came to Chanute Field where his talents were put to work in the public relations department.

"Reggie" made his debut officially as a cartoon character June 6, 1941, in *Wings*, the Chanute Field post newspaper. He offered something different in soldier art. Unlike most cartoon strips, Lent used no "blurbs" and the pictorial story depended entirely on action for its continuity.

Under Lent's guidance "Reggie" was a personable fellow whose antics were designed to bring a laugh and at the same time carry a moral. Often the moral was secondary to the laugh--but the two were usually there together.

Thus, "Reggie" in a sense became a "propagandist"--at least an instrument to put ideas across in a pleasing way without preaching about it. Truth is, he has been detailed to countless such assignments, putting forth a message in one way or another, and serving up a smile at the same time.

And how do the soldier readers who follow "Reggie's" adventures like him?

Some time ago a poll was taken and "Reggie" proved himself 100 percent popular. When Artist Lent was released from service October 16, 1941, because of his age, "Reggie" dropped from the pages of *Wings* and the pleas were so numerous that Lent threatened to continue the feature after his return to civil life. However, Lent re-enlisted last January 9 and "Reggie" promptly returned to his former place in *Wings*.

Most creatures of the imagination lack realism. Not so with "Reggie". Lent spends hours observing the men around him and the product of these observations asserts itself in the shape of "Reggie's" next strip. The remarkable fact is that "Reggie" was patterned after one typical soldier, but reflects the characteristics of many different ones.

When Lent returned to duty in January interest in Aviation Cadet training was at a high pitch, and "Reggie" was launched on a new career as an Aviation Cadet, which series is currently appearing in *Wings*, keeping the advantages of this field of training constantly before post personnel.

The "Reggie" strip has attracted wide attention and from time to time has been reproduced in numerous newspapers, magazines and other national publications. Presently it is appearing through a courtesy arrangement in *Texacts*, post newspaper at Sheppard Field.

In its broader aspects, the "Reggie" cartoon has had a material effect on morale at Chanute Field; not alone in the particular sense that he has provided amusement through his humorous

antics, but more through the fact that he has been a source of inspiration. It was in a large measure because of interest in "Reggie" that Chanute Field soldiers staged an art exhibition between August 16 and September 9 last year.

Actually there were many soldiers who had artistic ability. Seeing "Reggie" as a product of their own post, made them eager to have a go at drawing, painting and photography.

The Chanute Field exposition, one of, if not the first of its kind in the Army, brought together many men of mutual interest. The event was widely publicized and interest outside Chanute Field was equally ardent. Supported by the post newspaper and civilian newspapers in the area, thousands of soldiers and civilians viewed the exhibit, which was climaxed when a committee of prominent artists judged the winners.

In the ranks of American soldiery today there are doubtless many other budding masters. The barracks room scene--the shadowed hangar--the study of a single face--these and many more rise up from the soldier's canvas to present a story no words can tell. All combine to make a picture-history that will live.

● ●

RESCUEING 56 ship-wrecked sailors is all in the day's work for the crew of a big Sunderland flying boat of the RAF Coastal Command.

One day while making a routine patrol flight the captain of the flying boat spotted three life-boat loads of men floating aimlessly down below. Landing, he piled the whole bunch--56 of them--into his ship and brought them home. He had to taxi for five miles over the sea before he could get his plane in the air.

The rescued men were the survivors of a U-Boat attack on a British merchantman 200 miles off the coast of Britain. They had been adrift for 16 hours.

● ●

SPECIAL instruction in military camouflage for Air Forces officers will be started shortly at the Engineer School, Fort Belvoir, Va. and at the Aviation Engineer School, March Field, Calif.

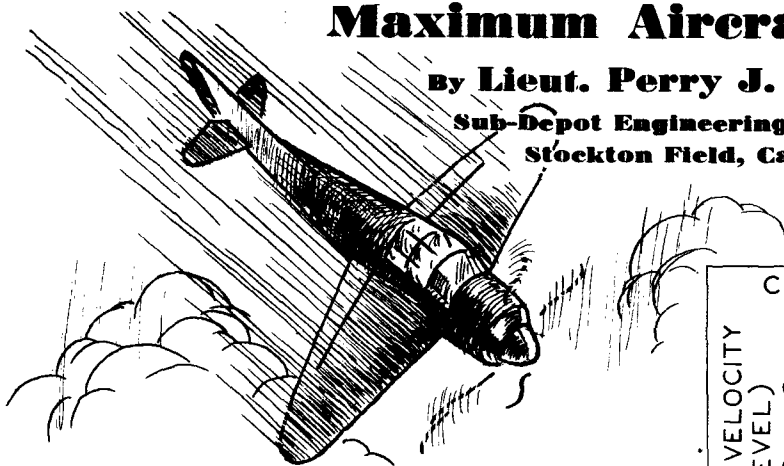
The first class, held at Fort Belvoir, will be for 70 officers--50 from the Air Forces and 20 from the Ground Forces. The course will consist of two weeks' intensive training, including concealment of airdromes, dispersal and concealment of aircraft, and the use of photographs in camouflage interpretation. The course will also include the carrying out of actual camouflage projects in the field.

The purpose of the course will be to extend a knowledge of camouflage throughout the Air Forces and to provide every squadron with officers trained in the use of camouflage in combat operations.

Maximum Aircraft Speed

by Lieut. Perry J. Ritchie

Sub-Depot Engineering Officer,
Stockton Field, Calif.



BACK in 1930 it would have seemed logical to predict that by 1940 the maximum speed for aircraft would be about 575 mph, since from 1920 to 1930 the speed increase was about 19 miles per hour per year. But it is now 1942 and the maximum speed record is approximately 100 mph less than would have been predicted in 1930.

This question immediately arises. Why does the curve flatten out, indicating that higher speeds are getting harder and harder to attain?

There are a good many reasons for this. Among the most important are: the "compressibility effect" on the propeller and airplane; power plant design; want of more maneuverability; increased armament; cost; and last but by no means least, the physiological aspect.

The factors affecting the speed of an airplane are horse power, propeller efficiency, drag, wing characteristics and weight. Also, after attaining a speed of about 350 mph an entirely new factor comes up which has to do with the approach to the speed of sound. After passing this speed (350 mph) the effect of compressibility of the air becomes noticeable, and the compressibility effects become worse as the speed increases.

Whenever the velocity of the air around any part of the airplane equals the speed of sound, a so-called shock wave is formed. This causes an entirely new type of air flow. When this compressibility shock wave forms, a considerable amount of energy is lost as heat and the drag jumps up. At the same time, the lift decreases so that a greater angle of attack is required, thus leading to a further increase in drag. All of these factors are included in a high speed equation, and a very simple high-speed curve may be plotted as shown in the graph. A little explanation of this curve will enable anyone to approximate the high speed of almost any airplane.

Three things must be known about the airplane; weight, wing area, and horse power. These three quantities are easily obtainable because of their basic importance in the airplane design. From these quantities the wing loading and thrust horse power loading can be found by use of the following equation:

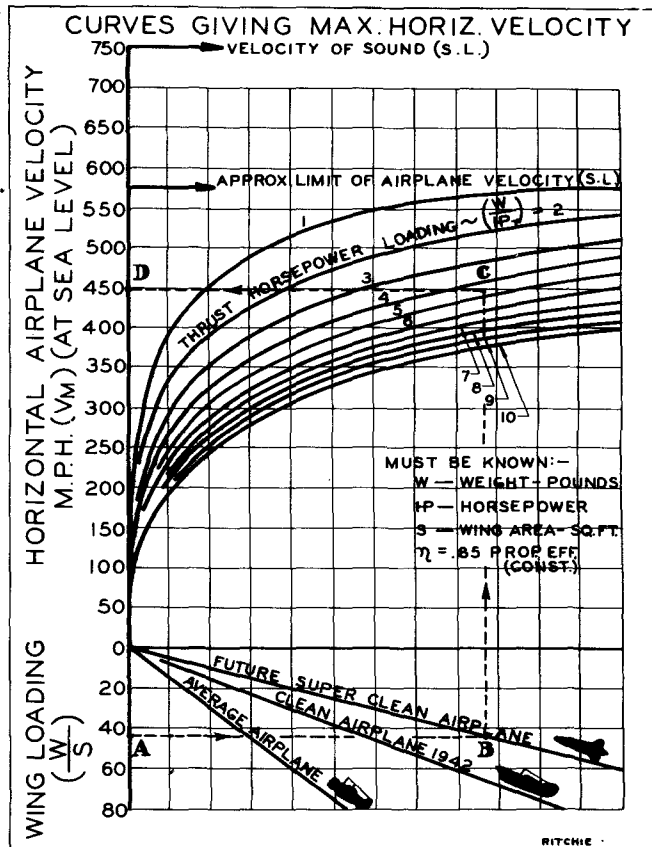


FIG. 2

Wing Loading = $\frac{\text{Weight (Pounds)}}{\text{Wing Area (Square Feet)}}$

Thrust Horse Power Loading = $\frac{\text{Weight (Pounds)}}{\text{Horse Power} \times .85}$

Starting with the wing loading at "A", going horizontally to the line that corresponds to the shape of the airplane being considered, which gives point "B", go vertically from "B" to the curve that corresponds to the thrust horse power loading which gives us point "C" and going horizontally back to the left side of chart to point "D" which is the maximum airplane velocity in mph.

It is noticed from the graph that it is almost impossible to get a speed over 575 mph even with an airplane that is super-clean, having a 60 lb. per sq. ft. wing loading and a thrust horse power loading of one lb. per horse power.

(Maximum speeds referred to in this article apply only to horizontal flight. Aircraft speeds in excess of 600 mph have been made in free falls. As a matter of interest, this theory of maximum speed was advanced by Prof. Baldwin at the University of California as far back as 1926. --Ed.)

Boeing's Flying Fortress . . . Toughest of All

ONE of the most effective weapons in the Army Air Forces' arsenal is the Boeing B-17 Flying Fortress. General Arnold has described it as "the guts and backbone of our aerial offensive". Under the shadow of its wings, death and destruction have descended on Japs, Germans and Italians from Luzon to Libya and from Hamburg to Hanoi.

The Flying Fortresses now ranging the air fronts of this global war are the result of more than eight years effort by the workers and engineers of the Boeing Aircraft Co. and the pilots and engineers of the Army Air Forces. The history of this ship has been as stormy as it has been significant.

Our air force has always sought to extend the range of its striking power. By 1934 the Martin B-10 bomber had pointed the way toward development of high speed, multi-engine monoplane bombers with an internally braced wing. We entered the four engine field with a design contest which was won by Boeing. The Boeing design called for a four engine monoplane with a 150 foot wingspread, heavy defensive armament and a weight of 35 tons. The Air Forces ordered an experimental model, the XB-15, to be built for the Boeing design and announced another competition for flying models of multi-engined bombers.

To enter this contest Boeing hatched a smaller design from its XB-15 plans, added construction features of its highly successful commercial transport—the Model 247—and produced the four-engined Boeing Model 299. Design of the 299 was begun in August, 1934, and 11 months later the plane was successfully test flown at Seattle.

This \$600,000 experiment weighed 16 tons against the projected 35 of the XB-15 and had a wing span of 104 feet. It had a slim, highly tapered fuselage marked by gun emplacement blisters. Its four engines were set in the leading edge of its single wing; bomb load, defensive armament, speed and range surpassed those of all previous bombers.

Just a year after its design was begun, the 299 was flown from Seattle to Wright Field (2,000 miles) by Boeing Test Pilot Lee Towers in nine hours for an average of 226 miles per hour—an unofficial non-stop speed-distance record. At Wright Field the 299 was entered as the XB-17 in competition with twin engined models and flown by both Boeing and Air Corps personnel. Before the tests were completed the big ship crashed after taking off with locked controls.

On the basis of its performance the Air Forces ordered 13 YB-17s for service testing in the field and an extra model to be broken up in static testing at Wright Field. The first YB-17 was delivered in January, 1937, and all were in service by midsummer.

Few planes have been given such arduous service tests as those first Flying Fortresses. It

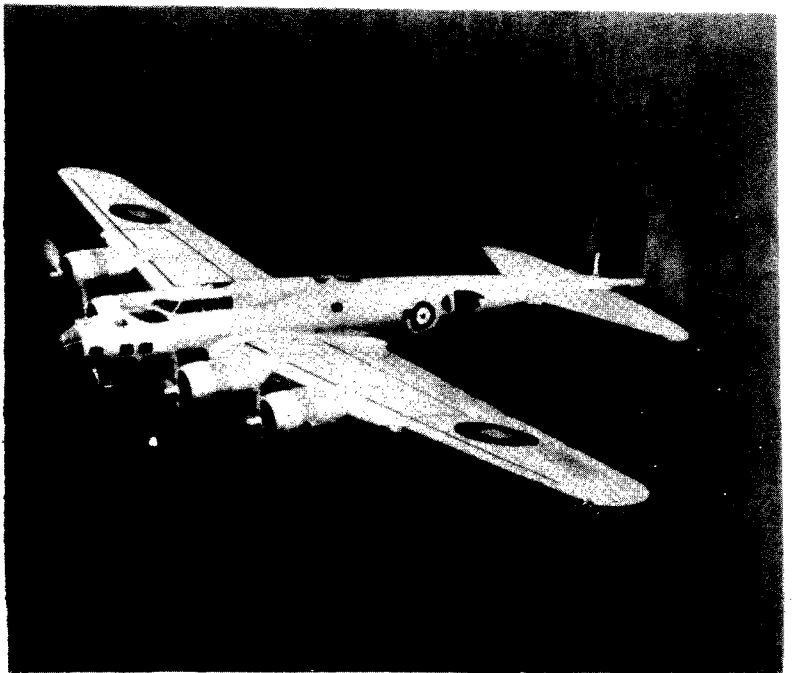
YB-17



YB-17A



B-17B



B-17C



B-17D

was this batch of Fortresses, flown by the men of the Second Bombardment Group at Langley Field, that were to make aviation history and lay the foundations for the development of heavy bombardment. The records of the first ferrying flights to deliver new Fortresses from Seattle to Langley include the names of some of the men who later flew these planes to fame--Maj. Gen. Robert Olds, Brig. Gen. Harold Lee George, Col. C. V. Haynes, Lieut. Col. Alva Harvey, Major W. D. Old and others who now wear decorations won by the exploits in the big B-17s. Among the crewmen were Capt. Adolph Cattarius and Lieut. James Sands who rose to their present ranks from sergeants as a result of their work on four-engined bombers.

With their YB-17s the pilots and crews of the Second Bombardment Group smashed records with great regularity. They flew the Fortresses higher, faster and farther with heavier loads than any other military plane and they pointed out the path of heavy bombardment development in spectacular fashion.

General Olds led a flight of six Fortresses from Langley Field to Buenos Aires in February of 1938 and in November 1939 led another flight of Fortresses to Rio de Janeiro. The Buenos Aires flight won the Mackay trophy for the Group and the Distinguished Flying Cross for General Olds, General George, and Cols. C.V. Haynes and Vincent J. Meloy flew three Fortresses to Bogota, Colombia, in August, 1938. To settle an argument on the plane's range, a B-17 was flown 1,400 miles non-stop from Bolling Field to Bermuda and return.

During the summer of 1938 military economic and political pressure threatened to end future development of the B-17 and might have succeeded but for the performance of a Langley Field pilot. During a long range test a heavily loaded B-17 was inadvertently stalled and spun through a heavy overcast. The plane's wings were bent due to the excessive load developed during the maneuver but the pilot recovered from the spin and landed the plane safely. Recording instruments carried on the flight showed that the plane had held up under more strain than it was designed to stand.

This performance eliminated the necessity of static testing the 14th plane in the YB series. Maj. Gen. Oliver P. Echols, then chief engineer of the Materiel Division, ordered the static test plane converted into a flying model and equipped with turbo-superchargers to experiment with high altitude performance. At that time there were no further funds for B-17 development. If it were not for the unscheduled Langley Field performance, the Fortress might never have climbed into the stratosphere and proved the value of heavy bombardment.

Engineers of the Air Forces and the Boeing Company collaborated on installation of the turbo-superchargers on this plane and it took to the air over Seattle in January 1939 as the YB-17A, the first stratosphere bomber. On the

basis of the YB-17A's performance, the 39 B-17Bs were ordered equipped with turbo-superchargers.

During the summer of 1939 the growing Fortress family smashed a series of national and international records to celebrate the 30th anniversary of the Air Corps. General Olds began the record breaking on July 23, piloting a YB-17 to 24,034 feet with a payload of 5,000 kilograms. This performance set three national records. Two days later Lieut. Col. Alva Harvey, piloting another Langley Field YB-17, carried a 5,000 kg payload for 2,000 kilometers averaging 200 mph to set eight national records.

August 1 of 1939 was a big day for the B-17s. Capt. C. S. Irvine in a 17A carried a 2,000 kg payload for 5,000 kilometers, averaging 166 mph to break the international record set the year before by two Italian airmen. On the same day Capt. Irvine reached 34,025 feet in the B-17A carrying a 5,000 kg payload to smash the international record set by two German pilots in a Junkers model in 1938.

That same day the first B-17B to roll off the Boeing production line arrived in New York just 9 hours, 14 minutes and 30 seconds out of Los Angeles averaging 265 mph to smash the old transcontinental record of 221 mph made by the Douglas DC-1 in 1935. Col. Stanley Umstead and Lieut. Col. Leonard F. Harman, now chief of the Bombardment Branch, Production Division at Wright Field, were the pilots. Their flight was made at an average altitude of over 26,000 feet.

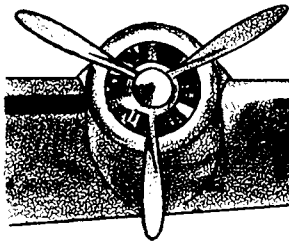
The XB-15 which made its first flight in October 1937, also took part in the record breaking. Piloted by Col. Haynes and Maj. Old the XB-15 carried 31,180 pounds payload to 8,200 feet on July 30 to set an international record for payload at 6,000 feet. On August 1-2 Col. Haynes and Maj. Old set an international speed record of 166 mph over 5,000 kilometers with a 2,000 kg payload. The B-15 flew steadily for 18 hours and 40 minutes over a closed course between Patterson Field and the MacChesney airport near Rockford, Ill.

Col. Haynes also flew the B-15 from Langley Field to Santiago, Chile with a ton of Red Cross supplies to relieve victims of the September 1939 earthquake in Chile. He received the Distinguished Flying Cross for this performance.

The B-17C appeared in 1940 with flat paneled gun position replacing the blisters in the early models and a "bath tub" gun position slung under the fuselage. Armor plate protected all gunners and the engines' horsepower was boosted. Early in 1941 20 B-17C's were diverted to the RAF in England and Egypt.

About the time the B-17D was making its debut with leakproof fuel tanks, engine cowl flaps for better cooling in fast climbs, 1200 hp. engines and speed of more than 300 mph, the B-17C was making its combat debut as the Fortress I of the RAF.

France was basking in the warmth of early summer. Shimmering heat waves rippled over the countryside around Brest. Only around the great



TECHNIQUE



NEW ADVANCED TRAINERS



The New AT-15

TWO new twin-engine advanced trainers for combat crew instruction--the AT-13 and AT-15--are being delivered to the Air Forces.

The AT-13--already accepted by the Air Forces for quantity production--is made by the Fairchild Corp. It is a midwing monoplane of duramold plywood construction, powered by radial, air-cooled engines. It will be used for the training of crews of four to six men, including pilots, bombardiers, navigators and gunners. Equipment includes tricycle landing gear, machine gun turret, internal bomb racks, bomb scoring camera, radio, compass, marker beacon and a complete interplane communication system. Wing span is about 52 feet and weight about 11,000 pounds.

The AT-15--still in the test stage--is being manufactured for the Air Forces by Boeing's new Midwestern plant. Like the AT-13, it is designed for the integrated training of pilots, co-pilots, bombardiers, navigators and gun crews. Equipped with constant speed props, radio compass, automatic pilot, radio, flexible machine gun, gun camera, power turret and bomb bay, the AT-15 looks like a small twin-engine bomber. It is constructed of steel tubing with wood-faired, fabric covered fuselage and plywood covered wings and surfaces. Powered with Pratt and Whitney engines, it has a speed of over 200 miles an hour. Wing span is 59 feet, length, 42 feet.

AIRPLANE MODELS HELP WAR EFFORT

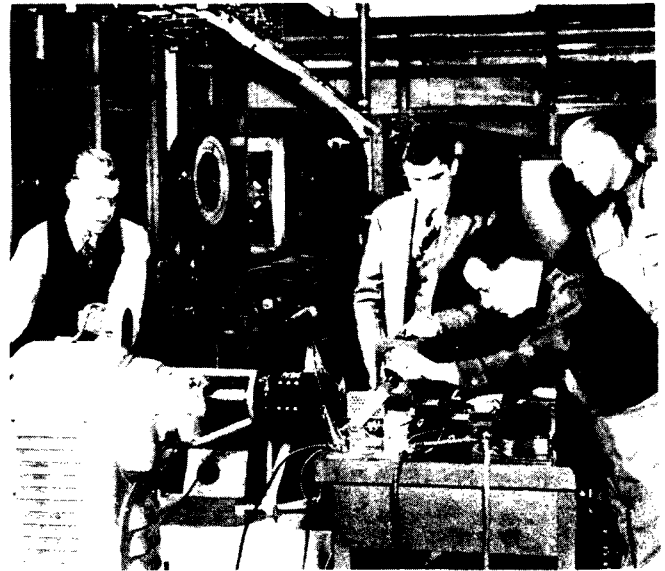
Miniature airplanes of both Axis and Allied powers are being constructed by special contractors to the Army Air Forces. With these models, built to a scale of one inch to six feet, high altitude bomber crews learn how to identify each nation's warplanes. Models now under construction cover the military and naval aircraft of the United States, Great Britain, Australia, France, Italy, Germany and Japan.

STRATOSPHERE COLOR COMING UP

WITHIN the next few months color photographs will be possible from altitudes of from five or six miles. Color film ordinarily used for photos from 12,000 to 15,000 feet will not work at all from five to six miles--too muddy and unbalanced. This problem is being solved with the use of a three-lens camera with matched lenses and special combinations of films and filters which vary from day to day with weather conditions.

Wright Field engineers also report that color photography is now possible at night--with the aid of brilliant flash bombs of colored light. The flashes of these bombs are so bright they can be seen for 200 miles. Photoelectric shutter trippers insure that the picture is taken at the peak intensity of the flash.

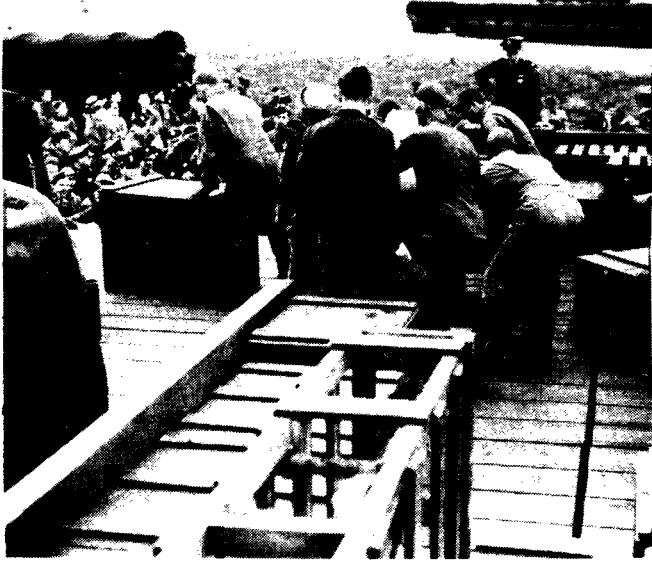
GENERATOR PROGRESS



Generator Lab

In Wright Field's electrical laboratories, Materiel Command engineers have developed aircraft generators which produce 800 percent more power than those of a few years ago. This has been accomplished while the weight of generators was being reduced from 32 to 27 pounds. This great increase in voltage per pound was made possible through perfection of design and increased generator speed. Aeronautical generators now must supply power for from seven to 20 miles of electrical wiring in Air Forces planes.

"FACSIMILE" BOX-CAR AIDS TRAINING



Drew Field's "Ersatz" Box Car

ALTHOUGH the nearest railroad is six miles away, resourceful officers at Drew Field, Florida, have solved the problem of teaching enlisted men how to load and unload freight cars by erecting a "reasonable facsimile" on air base property. Shipping materiel by freight is a necessary part of Air Forces supply.

The simulated box car was built under the supervision of Major Robert E. Slack, Base Supply Officer, and was the idea of Colonel Melvin B. Asp, Commanding Officer of Drew Field. It is complete with ramp and side loading platform, and is portable. It can be converted from a 40-foot box car to a longer 50-foot flat car with very little effort. Sides may be adjusted to both 8½ and 9½ feet widths.

In a recent demonstration a picked crew of men were able to load over 9000 pounds of Air Forces equipment into the car in less than 11 minutes. Another test crew moved two 10-wheel trucks aboard the car and prepared for movement in 20 minutes.

THUNDERBIRD'S "TEE"

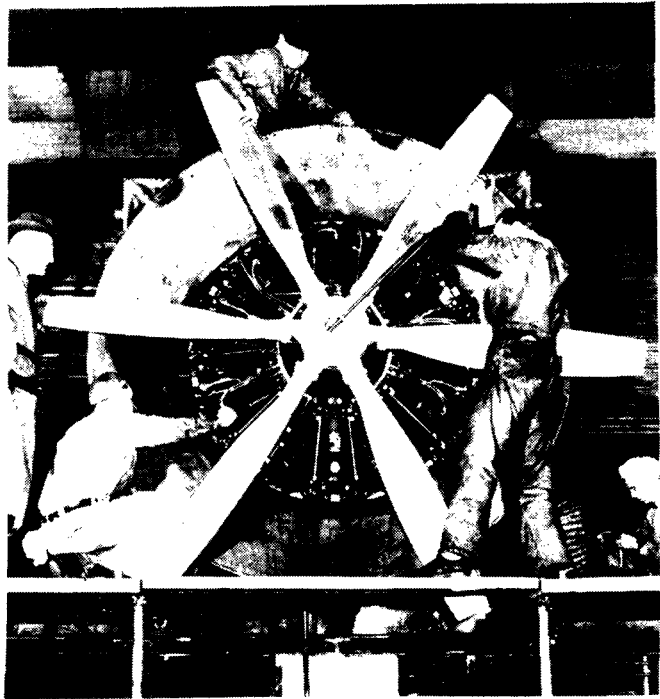
THE largest wind-tee in the world guides pilots at the Air Forces Primary Flying School, Thunderbird Field, Arizona. The huge tee is patterned after the regulation Army tee, but is proportionately larger--with an overall length of more than 71 feet.

The wind finder may be used as a "convertible tee", turned by as little as one mile per hour of wind, or as a pattern tee. If used as a pattern tee, the device will turn only at a certain

adjustable wind pressure--which can be selected within a four to 30 mile per hour range. A 10 mile per hour pressure is usually used. This means that the tee will remain in a pattern setting until a wind of at least 10 mile per hour velocity develops from a new direction.

The tee was designed and constructed by Mr. George Frock, Maintenance Superintendent, and Roy Lindsey, Chief Mechanic at Thunderbird Field.

WRIGHT FIELD "TEST CLUB"



Engine Testing at Wright

The picture above shows the way engines are tested at Wright Field. The six-bladed "object" hooked on the front of this engine is not a propeller. Materiel Command officers call it a "test club". After an engine has whirled this monster around for a couple of days, Wright Field experts have a pretty good idea what it can do for an airplane.

THE new Aircraft Year Book for 1942, published by the Aeronautical Chamber of Commerce, has been printed and is now on sale.

The year book contains a section on the Army Air Forces, one on the Navy Air Forces and another on air transport activities, in addition to a number of special divisions on all phases of aviation. A directory of airplane, engine and aviation equipment manufacturers is also included in the appendix.

Editor of the Year Book was Howard Mingos, of the Aeronautical Chamber of Commerce. The Chamber is located at 30 Rockefeller Plaza, New York City.

Airdromes

(Continued from Page 12)

of the field and operation of airplanes becomes more difficult.

Aircraft land and take-off into the wind decreasing their speed relative to the ground, and hence, the distance required for taking-off or landing. However, it is not always possible to land directly into the wind. With light winds under 5 miles per hour, cross-winds are not serious, but as the velocity increases, it becomes progressively more important to control the direction. Naturally, it will be impossible to meet every condition for the number of runways is limited. Although in peace a larger number can be built, in war, at a maximum, a field airdrome may have 3 runways, and normally 2 runways will suffice. Only in regions of constant winds will a single direction field be constructed.

The arrangement of runways must be such as to utilize the existing ground to maximum advantage. Conventional symmetrical and triangular intersecting layouts should be avoided. Not only are these patterns difficult to camouflage, but the intersections provide vulnerable targets. Instead, a more irregular pattern without crossing intersections should be sought.

Aircraft performance has a definite relationship to the size of the landing and take-off area. In general, as the wing loading of an airplane is increased, the stalling speed of the airplane increases; consequently the speed which must be attained prior to take-off is greater and the minimum safe speed which must be maintained in gliding in for a landing is also greater. It follows that the distance required for an airplane to take-off and land is increased. For each type of military airplane, the wing loading, as well as the ground roll required for taking-off and landing are given in official publications. As these figures are obtained by experienced pilots under favorable conditions, these take-off and landing distances should be increased 20 to 30 per cent to obtain the safe requirement for service conditions. Normally it will not be necessary to know the exact makes of airplanes and their characteristics, as by experience, standard runway requirements have been established for all general classes. The pilot naturally wants the maximum length possible, and the engineer, pushed for time, the minimum permissible. The final length selected will be a compromise, based not only on the type of aircraft which is to use the airfield (and any field may have to take several types) but also on the condition of the approaches, the obstructions and the altitude of the field.

Although greater lengths are desirable for safety, especially for training units, at operational airdromes the following are the minimum runway dimensions which should be equalled or exceeded.

- (1) Light Observation only:
 - Length.2500 feet
 - Width 100 "
 - Shoulder. . . . 100 " (each side)
- (2) Pursuit
 - Length.3500 feet
 - Width 150 "
 - Shoulder. . . . 150 " (each side)
- (3) Bombardment
 - Length.4500 feet
 - Width 150 "
 - Shoulder. . . . 175 " (each side)

The above lengths apply at sea level only. Increased length must be provided at higher altitudes for the take-off run and the landing run, as airplanes land and take-off at higher speeds and climb at flatter angles as the altitude above sea level increases. As a rule of thumb, increase the distance required at sea level 10 per cent for every 1000 feet increase in altitude.

It should be noted that the shoulders are an essential part of the runway, and should be graded to the same grades. At field airdromes, it is not contemplated that the entire landing field will be leveled and seeded. With runways of adequate width, supplemented by this additional cleared strip on each side, there appears to be no military reason demanding the leveling of the remainder of the area. If the ground is unsuited for use without runways, planes unable to land on the runways will gain little benefit by having the whole area graded. The cleared strip on either side of the runway should give ample margin of safety for planes temporarily out of control which run off the pavement.

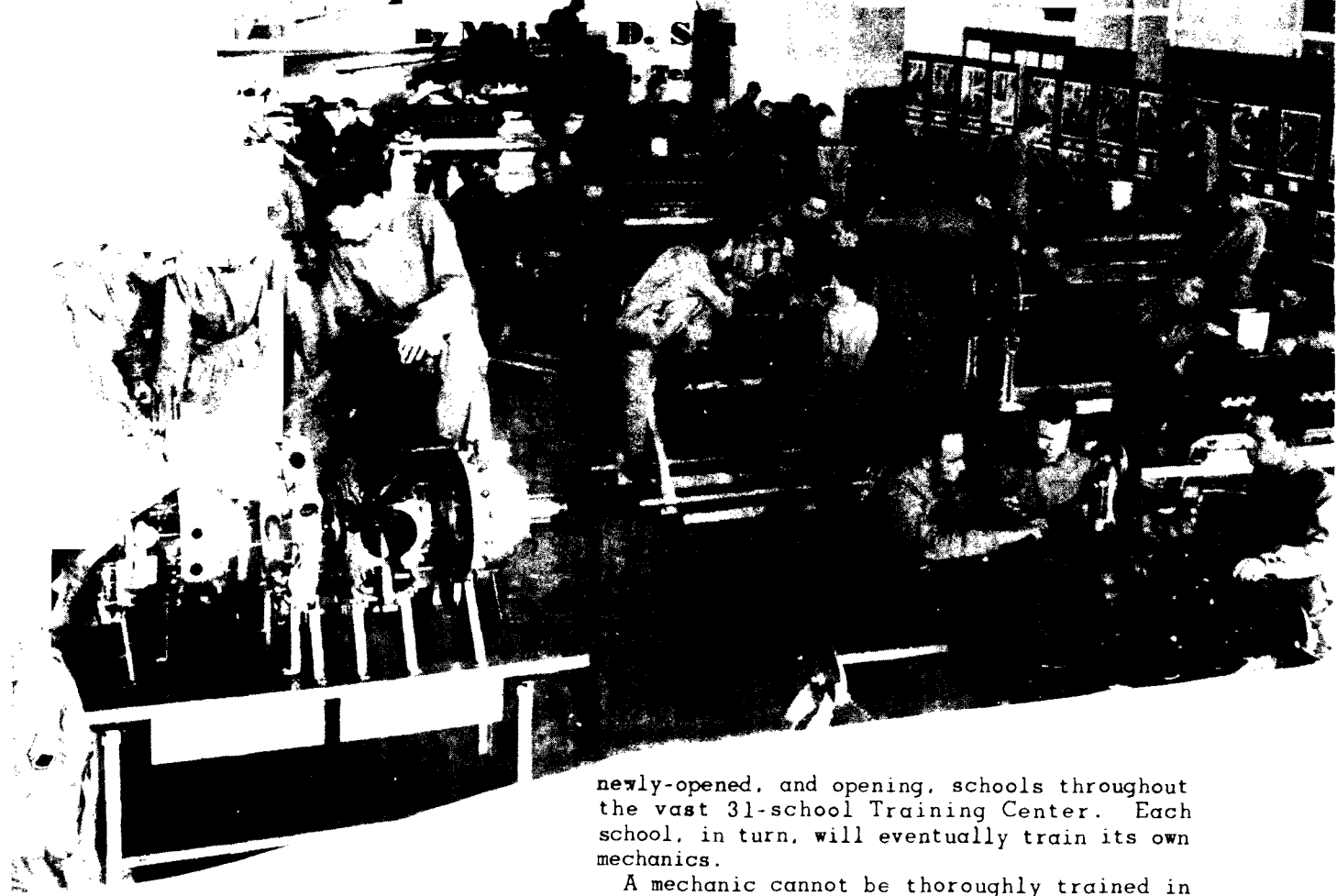
Although desirable to have clearing continued to give a cleared strip 500' wide each side of the center line, at field airdromes vegetation and low trees which are not major hazards may be left within this 1000' strip. Where local terrain conditions require, airplane revetments may be located within 300 feet of the runway center line. No construction should be permitted in prolongation of the runway.

In general, the maximum grade, longitudinally and transversely, should not exceed one per cent (1%). Grade changes should be gradual, not exceeding one-half of the one per cent ($\frac{1}{2}\%$) in any one hundred foot interval. Runway longitudinal intersection grades should be joined by vertical curves at least 500 feet in length. Where practicable, the longitudinal tangent interval between vertical curves on runways should not be less than 1000 feet long.

Runways must be sited to avoid obstacles at their prolongation, as a clear glide path of not less than $\frac{1}{20}$ is needed. When possible, a glide angle of $\frac{1}{40}$ should be provided for the distance of two miles in the approach zone. For instrument runways or where overload take-offs are planned, this glide angle should be $\frac{1}{50}$ for the first 1000 feet. (This is the first of a series of three articles on wartime airdromes by Colonel Smyser. The second article will appear in the July issue.)

Speeds Mechanic

By Miss D. S.



WHEN the Gulf Coast Air Force Training Center dropped airplane and engine operation from the Aviation Cadet basic flying curriculum in February, Randolph Field, the Army Air Forces oldest and largest of the basic flying schools, was left with one vast school-hangar, fully-equipped, but without a student to call its own.

But only for four days. It took just that long to convert that part of fledgling training into the new streamlined mechanics school which has been grinding out enlisted ground-crewmembers with methodical regularity.

They aren't expert mechanics, these newest graduates of the AAF's new "Training Type Mechanics School for Enlisted Men", but they're definitely on the way, if the Training Center's theory of operation proves correct. And it has--up until now, at least.

The purpose of the short, concentrated two-week course is to teach the basic soldier or newly-enlisted man the approved methods of inspection and maintenance of training planes, and such other technical duties normally performed in the school squadrons of the Training Center. No attempt is made to take the place of the Air Force Technical schools such as Chanute Field, Ill., where a more comprehensive course is presented. The short course was designed specifically to meet the needs of

newly-opened, and opening, schools throughout the vast 31-school Training Center. Each school, in turn, will eventually train its own mechanics.

A mechanic cannot be thoroughly trained in such a short time. However, the fundamental or basic technical knowledge can be given without entering into too much detail. For example, the ability of a student to remove and re-install a magneto or carburetor and to understand the principle of operation and routine maintenance is sufficient. It is not necessary for him to know how to completely overhaul such equipment. With this foundation, he can quickly go on with his learning when he has been reassigned back to his squadron--or should he decide to apply for advanced training at one of the technical schools.

From the time the new enlistee reports at Randolph until two weeks (96 hours of actual instruction) later, he is in the hands of First Lieut. W.C. Holton and his specialist-instructor faculty of 25 non-commissioned officers, each of whom is an expert in his own right. Lieutenant Holton himself is a veteran instructor-mechanic with 14 years of experience, including the eleven years which Randolph Field has been in operation. He has trained over 20,000 Aviation Cadets in mechanics. He received his commission only last April.

Students in the mechanics school are all volunteers, and are chosen by set quotas distributed between Randolph Field and the other schools in the Training Center. "These men," says Lieutenant Holton, "represent the 'forgotten men' of the Air Forces--the basic soldier whose ability would never be recognized if it

were not tapped and brought to the Service in this manner.

"Some of them have never even seen the inside of a hangar, but that's nothing new to us. We make mechanics out of them just the same; all we ask is the willingness to learn."

The curriculum of the course consists of 72 hours of classroom lectures, highly effective visual training film instruction, demonstrations and practice jobs—supplemented by 24 hours of calisthenics and drill. A passing average of 70 must be maintained at all times.

As for the actual instruction, this is roughly divided in the following manner:

Six hours to fundamental engine principles and engine construction; 12 hours to carburetion, fuel systems, and technical orders; 12 hours to ignition, generators, generator control panels, starters, spark plugs, etc.; six hours to hydraulic systems, engine operation (starting and stopping, etc.); nine hours to aircraft construction, landing gear, wheels, and brakes and propellers; 18 hours to practice work on test blocks, such as practice installation of magnetos, carburetors, fuel pumps, fuel pressure relief valves or combination fuel units, controllable pitch propellers and trouble-shooting. The test block period also includes the practice work of performing a complete 50-hour inspection on the engine.

The latter is the backbone of the course—where the student is taught the approved method of inspection and maintenance through the use of inspection forms which may mean the difference between life and death of the man up in the air.

"And they take pride in their work, as the good mechanic does," says Lieutenant Holton. "He may not know the man who flies the plane, but if he can put his own personal stamp of approval on the machine he's just as proud as the man who takes it up."

The school is conducted right on the Randolph flying line, and is held in one of the hangars which is complete with classrooms, practice equipment, and actual training-plane wing and fuselage cut-aways. A complete museum exhibit of motors dating back to World War I helps remind the students of what remarkable strides military aviation has made in the last near-40 years. In the course itself, the student will see service on motors ranging from the 450-horsepower BT-9 to 1000- and 1200-horsepower Allison motors used in the fastest pursuit ships.

In the practice labs he will "ground-fly" a complete ground-built, control-operated "mock-up" of a training plane. He can also trace its entire electrical circuit through every tiny wire and switch; he can go back and trace fuel distribution by a system of glass-enclosed threads which show the direction of movement. He will tear down and reassemble starters, generators, magnetos, and carburetors; he will learn how to moor a ship when no regular con-

crete mooring rings are available. He will do all this and much more.

Then, at the end of his two weeks he will receive his certificate, which usually reaches him the following week—after he has already reported to the flying line of his original field to assume his unheralded job as one of the nine men on the ground who keep one flying.

THE GREEKS FLY ON

INSPIRED by the desire to carry on the struggle against Nazi tyranny and to free their country, the Royal Greek Air Force has been working for many months to prepare itself for the day when it could form independent units to join the squadrons of the Royal Air Forces in the Middle East.

That day has now arrived, and Hurricane fighters, ornamented with the colors of the standard of Greece, will soon be in action on the desert front.

Many of the personnel, both air crews and ground staff, escaped from Greece and Crete during the campaign of the spring of 1941. Others followed when they heard of the formation of a Royal Greek Air Force in the Middle East. The stream of volunteers increases daily, and every man is Greek.

The long period of training presented many difficulties, but schools were established, repair centers organized and clerical and operational branches were formed.

All the pilots flew either on the Albanian front against the Italians or during the German invasion. They are looking forward to a renewal of contact with the Royal Air Force, with which they fought in Greece.

These forces do not represent the total effort of the Royal Greek Air Force. Numerous pilots, ground crews, air gunners, observers, engineers and personnel of all categories are being trained for the expansion that is to come.

In addition, bomber pilots of the Royal Greek Air Force have already helped in anti-submarine patrols over the Mediterranean, for many months. This Unit, which has the cooperation of Greek Naval officers, is also to be reinforced.

--RAF Journal

Small models of German planes are used as practice targets at the Air Forces gunnery school at Harlingen, Texas.

Students at Air Forces gunnery schools practice first on stationary ground targets, then moving ground targets, before taking to the air.

Fifty million square feet of blueprints were turned out during 1941 at Wright Field, which has the largest blueprinting plant in the world. The machines of this plant can turn out enough blueprints in one week to span the earth in a foot-wide circle.

Germany's Messerschmitt

Dissecting the 109



The Messerschmitt 109 is one of the German Luftwaffe's standard pursuits. It is a single seater, low wing, skin-stressed monoplane with a cantilever single-spar type wing. Its E model is powered by an 1150 horsepower Daimler Benz liquid-cooled inverted V-12 motor. A similar type 1200 horsepower motor is used in the F. It carries a three-bladed propeller and mounts a 20 mm cannon and two machine guns which fire forward from the fuselage. Its normal flying weight is 6,050 pounds. Armor protects the pilot's head and back.

The following conclusions on the flying characteristics and maintenance of the 109 were reached by engineers of the Royal Air Force after extensive tests of captured models. The flying characteristics apply only to the E model. No flying experience had been obtained on the F at the time of this report.

MAINTENANCE

EXAMINATION of the ME109 models indicates that great care has been taken by German designers to insure ease of maintenance in the field by crews with a minimum of skill and experience. Inspection doors are liberally provided and are locked by a single fastener of the spring-loaded push button type. The doors open easily without tools and provide a good flush fit when closed. Wing guns are particularly accessible through a large hinged door along the leading edge.

Rigging points for plumb bolts, straight edges, etc., are marked by dome-headed rivets which stand out from the skin and are painted red. There is no adjustment for wing incidence. A simple and convenient jacking arrangement is provided by holes in opposite sides of the fuselage. A bar can be passed through these doors and supported on framework on either side.

The universal use of multi-pin plug and socket electrical connections is an important factor in maintenance. These connections consist of shielded plugs held by wire yokes which are easily releasable by hand. Every detachable sub-assembly involving wiring is served through such connections so that no dislocation of wiring is necessary when the sub-assembly is removed. On the 109F the sockets of all plug connections serving the engine are grouped on a single panel.

No fuses are employed. Their places are taken by a small group of switches controlled by temperature. Tripping any one of these switches is revealed by raising a button on the particular switch; resetting is done by pushing down the button. The time spent looking for and replacing ordinary blown fuses is eliminated.

The combined hand and electric inertia type engine starter is very good and makes starting independent of the electrical system. Engine removal and replacement can be performed very quickly by virtue of the simple standardized mounting and the electrical plug connections.

FLYING

THE general conclusion is that the 109 handles well and has excellent response to the controls at low speeds. But all controls become far too heavy at speeds over 300 miles per hour. The ailerons become virtually solid at 400 miles per hour and maneuverability at high speeds is considerably restricted.

The turning circle of the 109 is also poor. At 1200 feet the circle is 885 feet compared with 696 feet for the Spitfire. This is due to the higher wing loading on the German ship, which is 32 pounds per square foot compared to 25 pounds on the Spitfire. The disadvantages resulting from high wing loading and aileron freeze detract considerably from its fighting qualities, the RAF reports.

These disadvantages are to some extent offset by good performance at high altitude, excellent rate of climb, gentle and amply warned stalls. The 109 has an absolute ceiling of 37,500 feet. Its best rate of climb is developed at low air speed and consequently the angle of climb is very good. The 109 has a direct fuel injection engine which does not sputter or cut out under negative "G" such as occurs when diving suddenly to seek cloud shelter.

The stall is very gentle with no tendency to spin. Ample warning of the approach to the stall is given by aileron vibration and buffeting. Owing to the high wing loading the stall occurs at relatively high airspeeds.

The take-off run is remarkably short and the initial rate of climb excellent. Flaps are lowered 20% on take-off. Landing is tricky until the peculiar feel of setting the tail down is mastered. Wheels are well forward of the center of gravity and heavy braking is possible immediately after the wheels touch without producing tail lift. The 109 can be taxied extremely fast.

The ship has an adjustable stabilizer. Lack of an adjustable rudder results in additional pilot fatigue since there is a large change of

direction rudder trim required at high speeds and continuous application of rudder controls to keep a straight course is very tiring.

Slots open at very high air speed and their opening is accompanied by aileron vibration which is transmitted back to the stick and is sufficient to spoil a pilot's aim in combat and make accurate looping impossible. Vibration stops when slots are fully open.

Lowering flaps produces nose heaviness which is compensated by stabilizer adjustment. Controls of flaps and stabilizer are made by a single handle which automatically makes adjustments for flap lowering.

On the 109E the ailerons are connected with the flaps and come down 11 degrees with them. This does not detract from the effectiveness of the ailerons but makes them feel heavier. This inter-connection is not present on the 109F. A very simple and effective flap position indicator is used. Lines painted on the slotted flaps at 10 degree intervals lie under the trailing edge of the wing and emerge into the pilot's view as the flaps are lowered. Take-off and landing positions are indicated by different colored lines. Flap operations are entirely mechanical by screw and nut gear and avoid the vulnerability of hydraulic systems.

The 109 cockpit is too cramped for comfort. It is too narrow and has insufficient head room and a tiring seat position. The cramped position seriously restricts the force the pilot can exert on the controls, particularly side pressures for the ailerons.

Extreme simplicity is featured in the engine controls. The throttle arrangements are made by manipulating a single lever. Mixture control, supercharger speed, oil temperature and propeller pitch are all controlled automatically.

Instruments are well grouped with flying instruments on the left and engine gauges on the right. There is no artificial horizon. View is generally good but due to the cramped cockpit the rudder can be seen only by turning most of the torso. The cockpit hood hinges along the right side and cannot be opened in flight. A spring catapult can fling the hood clear and the radio aerial mast of the plane to make a parachute escape easier. A panel arrangement directly in front of the pilot provides a two inch draught free opening for direct vision. This facilitates maintaining high speeds while flying through rain, sleet and snow. The cockpit glass is not bullet proof.

Personnel of the Army Air Forces base "somewhere in Costa Rica" live in tents with mahogany flooring and sidewalls. Although this may sound ultra-swank, it isn't. Mahogany is the cheapest lumber in the vicinity.

The Costa Rican Air Force base is a section of the Caribbean Defense Command, and the pilots regularly patrol the Pacific and Caribbean in that area. President Rafael A. Calderon of Costa Rica often visits the American flyers.



THE LIEUTENANT'S LAMENT

*A lieutenant is an officer,
Or so some people say.
He wears pink pants and shoulder straps
And draws commissioned pay.
But if you pause and ponder
You will see that they are wrong;
'Tis such a cause for wonder
That I've put it into song.*

*The colonels live in quarters,
The privates live in tents;
By the post commander's orders
The lieutenant merely rents.
The USO gives dances
For the poor enlisted men;
The colonels' wives plan parties
Where each rooster has his hen.
The college girls
Cast their pearls
Before the crude cadets;
But the men of Mars
With single Bars,
'Tis them the world forgets!*

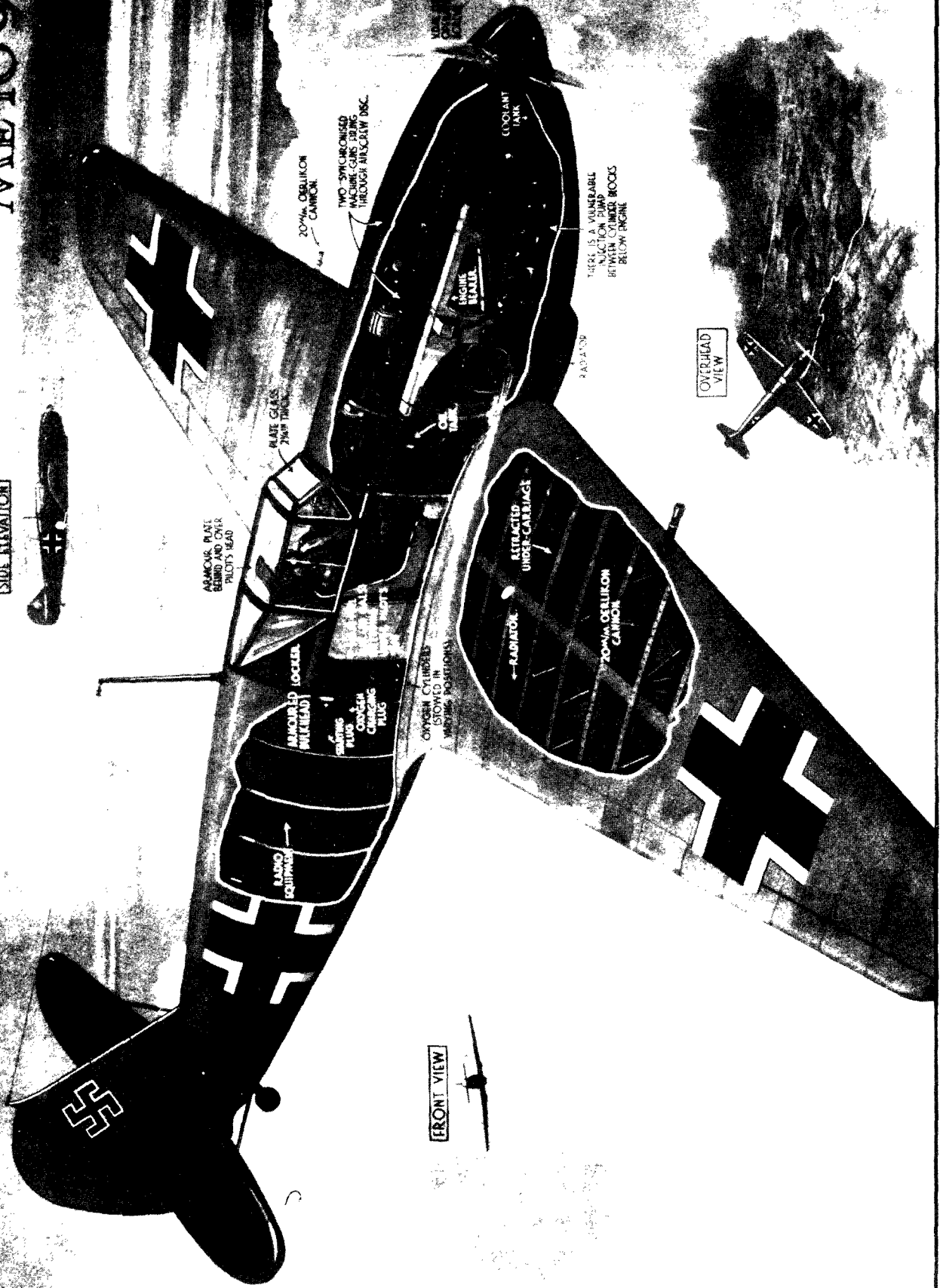
*To buy their meals they are allowed
Just sixty cents per day,
But they must mess in with the crowd
And ten bits for it pay.
And if a post commander
Does, perchance, provide them quarters,
He builds them out of tarpaper
And living there is orders.
What is the rent?
Oh, it is meant
To provide such quarters free--
Lieutenants merely do without
A forty dollar fee!*

*Oh, lieutenants they are officers,
Or so some may have thought,
They wear pink pants and shoulder straps
But really they are nought.
They must respect their betters,
And 'tis numerous they are,
Their bars are really fetters
To an eagle or a star ...
Rank without authority,
Duty without power,
Service without glory,
Officer, for an hour!*

*Lt. Donald E. Super
Maxwell Field, Ala.*

ME 109

SIDE ELEVATION



FRONT VIEW

OVERHEAD VIEW

ARMOR PLATE BEHIND AND OVER PILOT'S HEAD

PLATE GLASS 7/8" THICK

20mm OERLIKON CANNON

TWO SYNCHRONISED MACHINE GUNS FIRING THROUGH AIRCRAFT DISC

ENGINE

COOLANT TANK

THERE IS A VULNERABLE INJECTION PUMP BETWEEN CYLINDER BLOCKS BELOW ENGINE

RADAR

RETRACTED UNDER-CARRIAGE

RADAR

20mm OERLIKON CANNON

MANOULD LOCKER

SAFETY PLUG OVENING CHANGING PLUG

RADIO EQUIPMENT

ENGINE CYLINDER IS SHOWN IN WORKING POSITION



AIR FORCES NEWSLETTER

A 42



JULY 1942



AIR FORCES NEWS LETTER

PUBLIC RELATIONS DIVISION, PUBLICATIONS SECTION
ARMY AIR FORCES, WASHINGTON, D. C.

VOL. 25

JULY, 1942

NO. 5



FEATURES

REVENGE OFF MIDWAY -- By Lt. Col. Walter C. Sweeney, Jr.	3
AIR WAR IN THE ALEUTIANS	4
GLIDERS FOR WAR -- By Capt. Herbert O. Johansen.	5
ROUGHING UP FOR COMBAT -- By Lt. Robert B. Hotz.	8
HIDE AND SEEK WARFARE.	10
"OLE MISS" GOES TO JAVA -- By Capt. Al Key	14
THE NEXT RAID ON JAPAN -- By James R. Young.	20
JOE DOAKES -- FINANCIER.	23
TWELVE POUNDS OF PREVENTION -- By Capt. Harry Barsantee.	27
THE RUSSIAN CAUCASUS -- By Oliver H. Townsend.	30
THE GREAT ZERO MYSTERY -- By Lt. John M. Jenks	32
AIRDROMES IN WARTIME (PART II) -- By Lt. Col. R.E. Smyser.	35

DEPARTMENTS

CROSS COUNTRY	1	CONTROL TOWER	16
ROLL OF HONOR	11	PRO PATRIA MORI	22
TECHNIQUE	24		

Technical and Art Director--James T. Rawls

FRONT COVER

Airborne troops are one of the most potent striking forces in modern warfare. Not neglecting this vital department, the U.S. Army is developing the best airborne force in the world. The cover picture shows what our aerial troops look like while they are being loaded into one of their big transports--Curtiss-Wright's C-46, christened "The Commando". The two powerful Wright engines of this plane are capable of hauling a large number of fully-armed troops, complete with war equipment, deep into the heart of enemy-held territory.

PHOTO SOURCES

Curtiss-Wright Corp., cover; Boeing Aircraft Co., inside cover; U.S. Navy, p. 3, 4; Rudy Arnold, p. 10; Army Signal Corps, p. 18, 19; Fred Hamilton (Three Lions), p. 20; Sovfoto, p. 31, and official U.S. Army Air Forces photos.



Morale

GALLONS OF PRINTERS' INK HAVE SPILLED OVER MILES OF TYPE DISCUSSING THE MORALE OF THE AMERICAN SOLDIER. IT HAS BEEN ADMIRER, PRAISED, FRETTER OVER, CRITICISED AND CHEERED, BUT NEVER HAVE WE SEEN IT DEFINED. A LOT OF US HAVE OFTEN WONDERED ABOUT THIS MORALE OF OURS THAT IS SO FINE, SO POOR AND SO MUCH THE SUBJECT OF EVERYONE'S CONCERN. WE CANNOT DEFINE IT, BUT WE WOULD LIKE TO MAKE AN ATTEMPT AT INDICATING WHAT WE THINK THE WORD REFERS TO.

MORALE IS A SOLDIER STRUTTING DOWN THE AVENUE WITH HIS CHEST OUT, HIS CHIN UP AND THAT "I CAN LICK THE WORLD" GLINT IN HIS EYE.

IT IS HIS ABSOLUTE CONFIDENCE IN THE ABILITY OF THE AMERICAN FORCES TO CLEAN UP THE WHOLE MESS AS SOON AS HE CAN GET THERE.

IT IS HIS READINESS TO FIGHT ANY MARINE OR SAILOR WHO CLAIMS THEIR OUTFITS ARE BETTER THAN HIS, AND HIS EVEN GREATER READINESS TO FIGHT ANYONE WHO CLAIMS THAT ANY OTHER MARINES OR SAILORS ARE BETTER THAN OURS.

IT IS HIS GRUMBLING ABOUT MOPPING THE FLOOR, SHINING HIS SHOES AND STRAIGHTENING THINGS UP, YET HIS INDIGNATION AT EVEN THE SUGGESTION THAT HIS TENT IS NOT THE NEATEST ONE IN THE SQUADRON.

IT IS THE PROUD FEELING OF SMARTNESS HE EXPERIENCES AS HE GIVES A MILITARY SALUTE TO AN OFFICER ON THE STREETS IN TOWN.

IT IS HIS UNCONTROLLABLE RAGE AS HE SEES NEWSREEL SHOTS OR READS NEWSPAPER REPORTS OF AMERICAN DEFEATS OR TRAGEDIES DUE TO "SUPERIOR NUMBERS OF ENEMY FORCES."

FINALLY, IT IS HIS UNSHAKEABLE OPINION THAT HE IS THE BEST SOLDIER IN THE FINEST SQUADRON IN THE HIGHEST BRANCH OF THE SERVICE IN THE GREATEST COUNTRY IN THE WORLD.

Richard Dann,
Private, A.C.,
Brookley Field, Ala.

Cross

Country

FIGHTER COMMAND headquarters in an eastern city recently got a new slant on aircraft identification. A feminine aircraft spotter telephoned in and excitedly reported the presence overhead of "something that looked like a couple of planes with their arms wrapped around one another." It turned out to be a P-38.



FLYING GENERALS form a powerful weapon for the Air Forces. The loss of one of them, like Maj. Gen. Clarence L. Tinker, commander of the Hawaiian Air Force, leaves a deep gash in our fighting machine. So did the earlier deaths of Maj. Gen. Herbert A. Dargue and Brig. Gen. H. H. George.

But when your generals are flying generals you can expect action, and therefore casualties. General Tinker was a good example of what we mean. It's no secret that he was itching for action, that he didn't have to participate personally in the Midway action, and that you couldn't have kept him out of it with a .50 calibre machine gun. They didn't come any tougher than "Tink."

The name "general" has too often been linked with brass hat." In the Air Forces it can only be associated with leather helmets. The record of our general officers is a record of action--of dog-fighting in the last scrap, post-war barnstorming and test piloting, of bailing out, crash landings and pioneer long hops. Our generals are made of the same sort of

grease and dirt every Cadet and mechanic knows about.

All told, there are 83 Air Force generals--five lieutenant generals, 23 major generals, 55 B.G.'s. Every one of them is a pilot. Every one has been through the mill. The names Doolittle, Royce and Brereton stand out as generals who have personally led missions in this war. But you can expect plenty of our other generals to be in the thick of it. They are built that way.



ONE OF THE FEMININE gender, so help us, called her soldier at Fort Bliss, Tex., all the way from good old New York. Company Headquarters informed her he was AWOL. She expressed her thanks for this information and hung up. A minute later the sweet young thing was back on the line. "Is there any way to reach him at AWOL?", she asked.



COMBAT ACTION by Army aircraft is often announced through the newspapers in Navy department communiques. If you're wondering why, here's the reason: the Navy controls all press releases covering combat activities which take place in a zone of action under Navy command.



BACK IN 1937 and '38, when the country still thought of pattern bombing in terms of paper dolls, Sam Stone of Wichita, Kansas, knew there was a war on. He was in one--a machine gunner with Loyalist Spain's volunteer International

Brigade battling Franco's troops. Stone was in the thick of war, was wounded in action, lay in a Spanish hospital for a spell, and went back to the front again.

Today Stone is a 27-year-old private, Air Corps, and a student gunner at the Harlingen (Tex.) gunnery school. He first joined up in the infantry but swung over to the Air Forces and aerial gunnery and for good reason. As he explains it:

"In Spain we were short of tanks, planes and equipment of all kinds; anti-aircraft guns were almost useless. I laid out there a thousand times--just taking it while they bombed and strafed us. I swore that if I ever got the chance that's where I'd be--up there, dumping it down on 'em."



AT CARLSTROM FIELD, Fla.. Lt. Wilson M. McCormick, director of physical training, requires each cadet to pass a 25-yard swimming test before completing primary training. "It is important that every cadet be able to swim," he explains, "as it may mean his life in the event his plane is forced down into water."



CONCENTRATED FIRE from hundreds of troops equipped only with small arms has played a major role in bringing down attacking aircraft along the Russian front. A purportedly secret document seized from the Germans by the Russians states; "It has been found that our loss of planes from small arms ground fire has been exceptionally high.

In one of our air units which supported a ground attack, the loss from enemy small arms ground fire was 50 per cent. The reason for this lies in the well organized Soviet anti-aircraft fire."

The Germans aren't familiar with this tactic themselves, even reporting that a Russian plane has been brought down with an automatic pistol.

But the Russians seem to be the past masters of the art. Every Russian ground unit is said to attack low flying German planes with rifles and other infantry weapons. Russian cavalry dismount and fire from a standing position with rifles placed on saddles. Infantrymen lie on their backs and fire. Even mortar fire is reported in use. Said to be especially effective are well camouflaged four-barreled machine guns.



AT FOSTER FIELD, Tex., the men in advanced flying school are plugging for paper napkins with war zone maps printed on them for the mess hall tables. It seems that the "table generals" like to chart out new ways to surprise the enemy, and the linen is now taking a beating as the strategists gulp down their food. So, war zone napkins might do something to lower the laundry bills.

"IT HAS LONG been customary in this country to refer to the Navy as our First Line of Defense.

"We of the Army Air Forces like to consider ourselves the First Line of Offense."--Maj. Gen. H.R. Harmon at Lubbock Field dedication.



FROM THE BULLETIN BOARDS
McClellan Field, California:
"One sentry shall walk this post continuously in opposite directions."

OUR PRETTY cover girl of last issue, Miss Kathleen Nelson, Tyndall Field secretarial worker, appears to have scored a hit with the boys. Reports from Tyndall say her picture--showing Miss Nelson in the field's snappy new uniform for women employees--has been picked up by the nation's press. The result has been a flood of letters from male admirers, young and old. One of them came from a 14 year old, who wrote "all the girls around here write to the fellows in the service and don't even bother with little me anymore. So, I wish to get back at them (the girls I mean) by writing a soldier lady and that is why I picked your picture. . ."

IT MAY do some good to mention that the swanky Ambassador Hotel in Los Angeles offers a flat 50 per cent discount for the duration on all rooms occupied by commissioned officers. The hotel has also waived cover and admission charges to its Cocomanut Grove, its theatre, and the Turf Field Club.

"TOKYO SHOULD be informed that our supply of Chennaults is practically unlimited," comments Brig. Gen. Laurence S. Kuter, Deputy Chief of the Air Staff.

What he means is this: Brig. Gen. Claire Chennault, famed for his leadership of the AVG "Flying Tigers" in China, has five sons helping to win the war. Captain John of the Air

Forces commands a fighter unit in Alaska; Charles has just joined the Army, hoping to get in the Air Forces; another son is in the Navy; another in the Field Artillery reserve, and still another in the merchant marine.

THESE "FLIGHT STRIPS" you hear and read about (page 34) are not widenings of the highways. They do not always run parallel or close to highways, as commonly believed. "Flight Strips" are near highways, all right, but completely independent of them. The highways make it possible for supplies and troops to be rushed to these auxiliary landing areas.

WE WON'T SWEAR by this one, but the story is told about three Canadians, sleeping in a tent at one of the training centers in England, who were suddenly awakened by a terrific crash not far away. "What was it--thunder or bombs?", asked one, "Bombs," was the sleepy reply. "Thank God," said the third, "I thought we were going to have more rain."



SERGEANT BILL LENT, Chanute Field's creator of the comic strip "Reggie", described in the last issue, scored such a hit with his art work that he has been ordered to temporary duty at headquarters in Washington to produce on a national scale. His series of comic strips, features and cartoons, all on flight safety, have been made available to the field and should show up presently in camp newspapers. The sergeant's deft touch is evident in this issue of the News Letter, which contains quite a bit of his work.

Revenge Was Sweet Off Midway

By Lieut. Colonel Walter C. Sweeney, Jr.

EARLY in June it was my good fortune to be in command of three bombing flights against the Japanese fleet off Midway Island in two days. Every man in my command brought credit to himself and to the Army Air Forces. We acted jointly with naval and marine personnel, and all of us have only the most profound admiration for the coolness, courage and bravery of such competent officers and men.

At Midway the morning of June 3 Navy patrol planes reported that a strong enemy surface force was approaching the island from a bearing of 265 degrees true.

Positive information came in about noon, and our flight of nine B-17Es took off immediately. After flying about three and a half hours we found the Jap ships, some 600 miles out, just where we had expected them.

It looked like an awful lot of ships down below. There were cruisers, transports, cargo vessels and other escort ships. We must have surprised them, and we felt so at the time, because they started maneuvering at once. The maneuvering was orderly, but unquestionably violent.

This attack was made in flights at altitudes of 8,000, 10,000 and 12,000 feet, respectively. My flight picked out a large one and bombed it.

At the bomb release line very heavy anti-aircraft fire was encountered. It continued throughout the attack, and, as in the attacks that followed, was plenty heavy. We didn't claim any hits in my flight on this one; we hit all around it, but we didn't see any evidence of damage.

Our second element, under the command of Captain Clement P. Tokarz, attacked a cruiser or battleship--we weren't worried about identification at the time--and left it burning.

The third element, led by Captain Cecil Faulkner, went after a cruiser and is believed to hit it at the stern. One pilot in the second flight, Captain Paul Payne, couldn't get his bombs away on the first trip in so he returned through the ack ack and got hits on a transport, setting it afire.

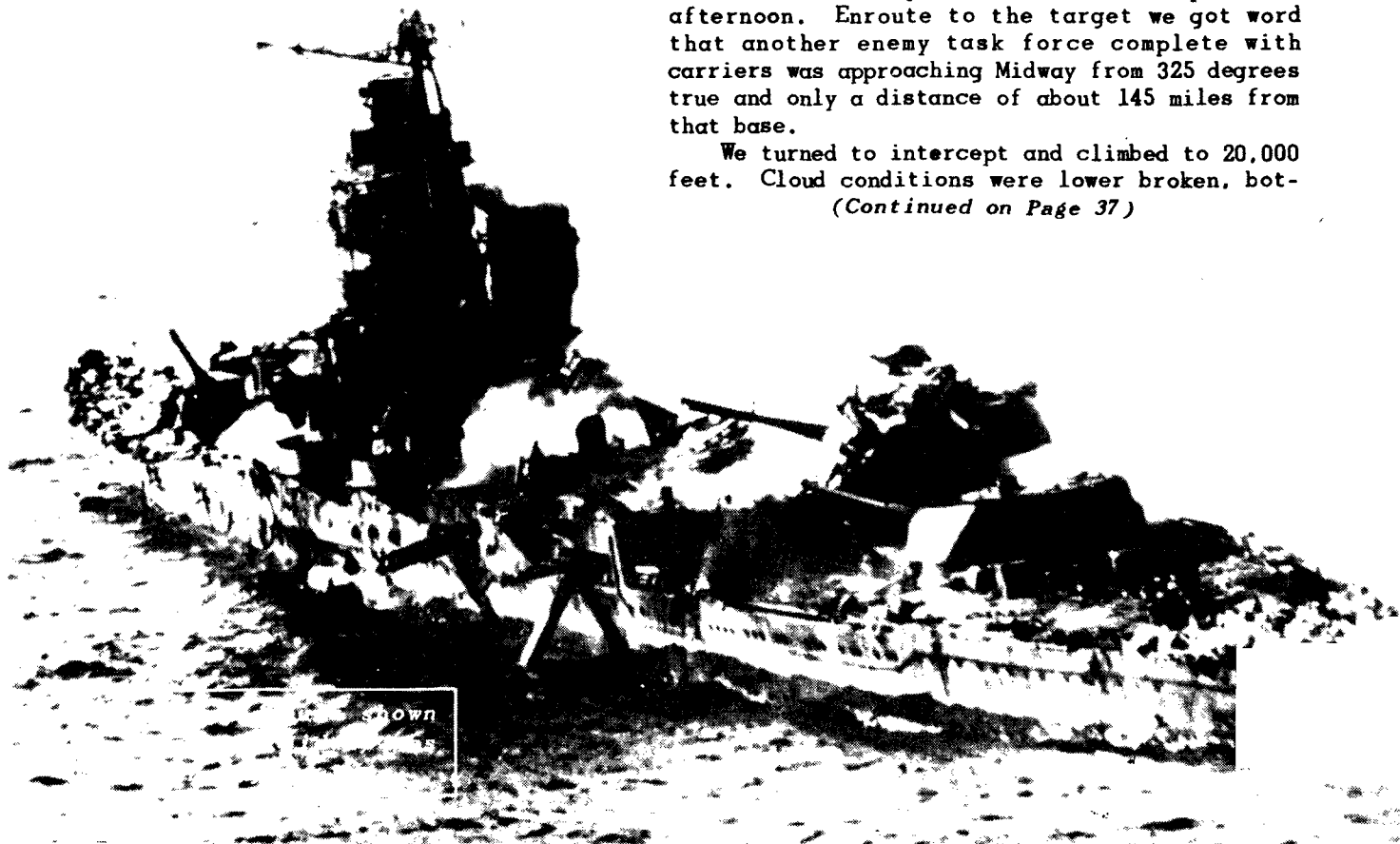
Then we headed for home in high spirits, our only regret that we had no more bombs. On the way back, from about 30 miles away, we could see the heavy ship and the transport burning. They were both out of column and appeared motionless, with huge clouds of dark smoke mushroomed above them.

We returned to Midway in the dark, got a little sleep and were up before daylight the next morning (June 4) to continue the attack.

This time we had more B-17s, seven having come in overnight. We assembled in the vicinity of a small island and proceeded out to attack the same main body we had bombed the previous afternoon. Enroute to the target we got word that another enemy task force complete with carriers was approaching Midway from 325 degrees true and only a distance of about 145 miles from that base.


We turned to intercept and climbed to 20,000 feet. Cloud conditions were lower broken, bot-

(Continued on Page 37)



Air War in the Aleutians

Fighting Fog and Japs



A Jap transport burns and sinks in Kiska Harbor, Aleutians after hits by an Army bomber.

AMERICAN airmen are slugging it out with the Japs in a weird air-sea battle along the Aleutian island chain where the rain drives in sideways off Siberia at a mile a minute clip and volcanic islands jut out of a fog-covered ocean like telegraph poles.

It's the soupiest flying country possible. Daylight runs 20 hours a day, and the nights are never really dark but the fog is always around. You chase the shore line in and out of bays, coves and inlets and you dodge the cliffs. Or you stay under the fog by hugging the water for miles on end, never over 100 feet, sometimes as low as 10. Distances are great and the bad weather eats up your gas. The fog hides your target and blacks out your results. But you dump your load and go back for more. After a while you get used to it.

We've been fighting the enemy and the elements in that sub-Arctic muck since early June, when the Jap squeezed a task force into the Aleutian chain while simultaneously pointing a spearhead toward Midway.

Our Navy states that the Jap invasion force in the Aleutians amounted to approximately two aircraft carriers, several cruisers and destroyers, a couple of seaplane tenders and from four to six transports. The presence of troop transports indicates the attack was aimed at capture and occupation, the Navy reports.

The first attack came on the morning of June 3rd, when the Jap sent 15 Zeros and four Kokekiki carrier-based bombers over the Dutch Harbor naval base and the Army's nearby Fort Mears. Next

day the Jap came again, this time with 18 carrier-based bombers and 16 fighters. In this attack, he included Fort Glenn, an Army post about 70 miles west of Dutch Harbor on the island of Umnak.

He did better the second time, but all told, according to the Navy report, the Jap accomplished only minor damage not impairing the military effectiveness of the American outposts.

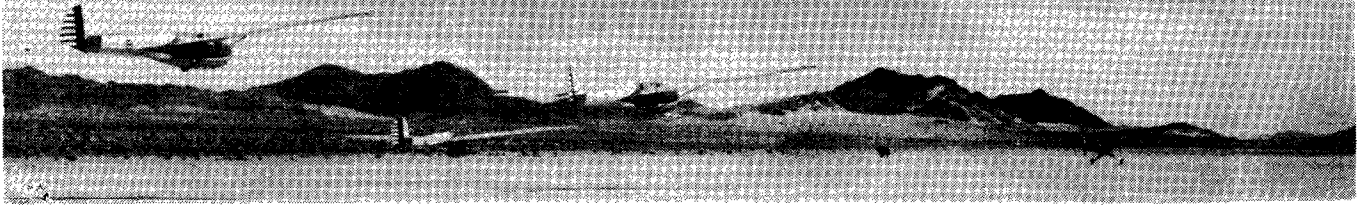
As this is written, no further attacks have been reported on Dutch Harbor and the Army stations. The enemy has occupied the undefended islands of Attu, Kiska and Agattu on the westernmost tip of the Aleutian chain and has constructed temporary living facilities ashore. A Navy-approved report states that here "The Japs are getting set for what may become a major push against continental America."

Whatever the result, from the very first move of the enemy, our Air Forces and our Navy were ready for him. On the day of the initial attack our B-17 heavy bombers and the Navy's PBY flying boats were searching for the Jap before his first plane appeared. Anti-aircraft batteries at Dutch Harbor opened fire five minutes before the first bomb was dropped.

"Our bombers in Alaska are carrying the fight to the enemy," reported Brig. General Laurence S. Kuter, Chief of our Air Staff, upon his return from the combat area. "American airmen are also devising special means to put the Japs within range of fighter planes operating from our Aleutian bases. Never have I seen such

(Continued on Page 38)

by Captain Herbert C. Johnson
Headquarters, AAF



JUST a year ago at Elmira, N. Y., Lieut. General Henry H. Arnold promised the nation that the Army Air Forces would have a glider force second to none.

A recent tour to centers of glider activity throughout the country shows that General Arnold's promise is being kept. The war-going glider is here. War-going glider pilots have been trained and are ready for action.

The "Commandos of the Air" are no longer a promise but a reality.

Everywhere one finds a serious and enthusiastic acceptance of the glider as a military weapon and the glider pilot as a spearhead in mass air assaults on the enemy.

A little more than a year ago no one took gliding seriously in this country, except the few sportsmen who enjoyed the thrills of thermal and ridge soaring. Now the factories that were then turning out a few small and impractical sailplanes are engaged in mass production of huge and business-like troop-carrying gliders.

Today the glider is as much a part of our war plans as the Flying Fortress.

The reason for the glider's coming of age is simple and obvious. Perhaps it was too obvious, for it embodies a principle man has been using since the beginning of transportation: You can pull more than you can lift. The tug with its string of barges, the locomotive and its train of freight and passenger cars, and more recently, the automobile or truck and its trailer are all examples of the economy and increased efficiency of towing. Its adaptation to air transport was a long time coming but now is here in a big way.

It is a startling fact that by towing a single glider, a cargo airplane can double its load with the loss of only about 12 per cent in efficiency. With a tow of two and three gliders, the advantage is naturally that much greater. Colonel David M. Schlatter, Director of Ground-Air Support, of the Army Air Forces, furnishes this excellent example:

"It has been calculated," explains Colonel Schlatter, "that a single DC-3 transport plane flying the route of the Burma road can carry in a month the same amount of equipment that could be handled by 56 trucks. If you double the carrying load of the transport by having it tow a glider, you are doing the work of 112 trucks. Then instead of using one transport and glider team, have many. You can readily see what this

means in the transport picture all over the world."

Going further, Colonel Schlatter predicts the day when single airplanes are an oddity, when planes with trailing baggage and passenger "cars" are common.

Limitless Possibilities

Our whole thinking on the subject of gliders has changed almost overnight. We have suddenly awakened to the fact that in the widespread use of large gliders we have the solution of warfare's complicated transportation problems--not only the transporting of cargo but of troops and equipment for invasion. The possibilities are limitless.

There was a great deal of excited talk about Hitler's "Secret Weapon" when the Germans used gliders in the invasion of Belgium in 1940 and later in the taking of Crete in May 1941. Talk has now given way to action.

At Wright Field there is a Glider Unit working day and night testing and flying and perfecting gliders of all types, from small trainers to large troop-carrying ships.

At factories in St. Louis, Wichita, Elmira and a dozen other places gliders of a size and capacity that will astonish even the glider-conscious Germans are rolling off the production lines.

At preliminary schools in Kansas, Arkansas, Oklahoma, and South Dakota thousands of men are being trained in power-off "dead stick" landings to prepare them for the job of piloting big war gliders.

At advanced schools in Texas and California full fledged glider pilots are being graduated in large numbers, trained in the art of bringing down their gliders on any available patch of ground.

At our Tactical Training Centers huge troop-carrying gliders and their pilots rehearse with the air-borne troops that will be their "cargo".

Yes, the American glider is definitely ready for war.

Now a glider is of no earthly, or rather aerial use unless there are means for getting it aloft. The glider's power plant is the tow airplane. In fact, an aeronautical engineer recently pointed out that a glider is simply an airplane with a remote power plant.

The towing, once the glider is in the air, and

HOW IT WORKS:

1 With pick-up arm lowered, the airplane pilot swoops down toward the ground station at more than 100 miles an hour. An instant after the first picture was taken, the grapple hook at the end of the arm snatched up the glider tow line seen suspended between the two posts.

2 At the moment of contact, the airplane is only about 14 feet off the ground. The pilot quickly gains altitude and a winch inside the plane goes into action, taking up the slack in the tow line which is attached at the other end to the glider seen in the background. A 2-place training glider, the TG-3, was used in this first actual demonstration of a non-stop glider pick-up at Wright Field.

3 And up goes the glider with the greatest of ease as its pilot expertly guides his craft to one side of the ground station posts. The nylon tow rope and an attachment on the cable winch in the airplane act as automatic shock absorbers.



the setting free by the pilot when the enemy objective is reached, presents no real problems, but getting the glider aloft--the pick-up from the ground--does, or did, present its difficulties.

First there was the problem of the take-off for the tow airplane. The added weight of the glider called for a longer runway. With a train of two or three gliders in tow it required a runway longer than is ordinarily practicable, especially for operations from our fighting fronts.

Then there was the all-important corollary to the first problem; getting the glider and its occupants off the ground again once the mission behind the enemy lines was accomplished. Were gliding missions to be one-way tickets with no means of getting out in a hurry? Were costly gliders to be destroyed or abandoned to the enemy in case of reversals? Wasn't there some way in which gliders landing in small fields could be emptied of their equipment and men and brought back to deliver more troops.

Until recently these were both real problems. Now the Army Air Forces is experimenting with a non-stop glider pick-up by means of which our gliders that go to war will be able to come back when their job is done, and load up again.

Pick-Up System

This pick-up system is simplicity itself. It is an adaptation of the mail pick-up by an airplane in flight, widely used for many years.

A few weeks ago the writer witnessed a highly successful demonstration at Wright Field during which a two-place glider was picked up from the ground time and again by a power plane zooming low at more than 100 miles an hour. The demonstration didn't attract much attention, but its significance from a military point of view is

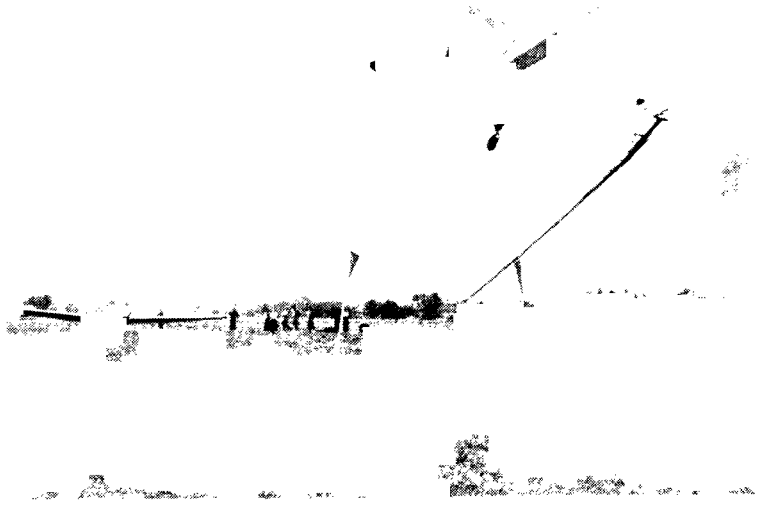
clear-cut. What is accomplished by a small airplane picking up a small glider can be duplicated by a large transport airplane picking up a war-going glider or train of gliders. The principle is the same. All that is needed is larger and stronger equipment.

The essential ground element of the non-stop pick-up device is a set of posts resembling the goal posts on a football field, except that instead of the cross bar a tow line--one end attached to the glider--is suspended between the poles.

The actual pick-up mechanism is in the airplane and consists of two parts, a revolving reel or drum on which 700 feet of light cable is wound and a 12-foot pick-up arm with a grapple hook on the end attached to the bottom part of the fuselage.

The tow plane comes in and as it approaches the pick-up ground station, the pilot levels off much in the same manner as he would in making a landing, except that his speed is greater, anywhere from 95 to 120 miles an hour. He lowers the pick-up arm, and as he swoops down the hook at the end catches the suspended tow-line. At the moment of contact, with the airplane from 12 to 14 feet above the ground, the cable reel inside the plane is permitted to spin freely, paying out additional tow-cable to cushion the initial load imposed by the dead-weight of the glider. Some of the shock is also taken up by the tow-line itself, which is made of nylon to give maximum strength with a high degree of resilience.

Gradually the reel-brake is applied, the glider accelerates smoothly, and by the time the speeding tow-plane has levelled off, the glider is air-borne. Then the brake is locked and the glider is in full tow. If at any time while



the glider is in tow the acceleration becomes greater than 1 G, an automatic shock absorber goes into action.

No Shock or Strain

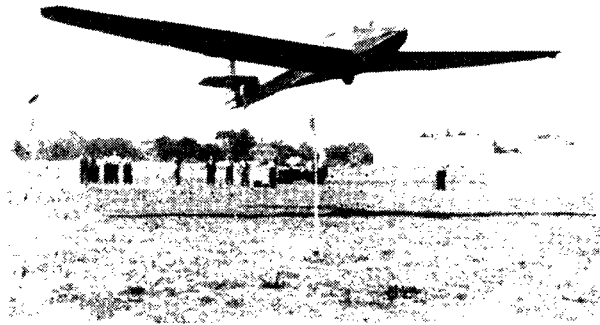
During the demonstrations at Wright Field, even with the airplane making the pick-up at more than 100 miles an hour, there was no noticeable shock or strain on either the airplane or the glider.

Lest this solution to the pick-up problem makes the job of the glider pilot seem simple, don't forget that there is no mechanical device that will bring the glider to a perfect landing within the limits of a small pasture behind the enemy lines. That is up to the skill and judgment of the pilot.

When he once cuts loose from the tow-ship, 5,000 or 10,000 feet up, miles away from the small pasture that is his objective, the glider pilot is on his own. He must know air currents, rate of glide, and the performance of his glider. As he silently glides down, carrying his precious cargo of men and guns and ammunition, responsibility for the success or failure of the mission is his alone. He must make his approach just right.

Top Man

It is true that the Army Air Forces' troop-carrying gliders are equipped with flaps and spillers to cut down the speed and increase the rate of glide, but if the pilot misjudges and undershoots his mark there is no engine to throttle and gain altitude for him. That is why the glider pilot will be the top man in the airborne troop invasion on the books of our high command.

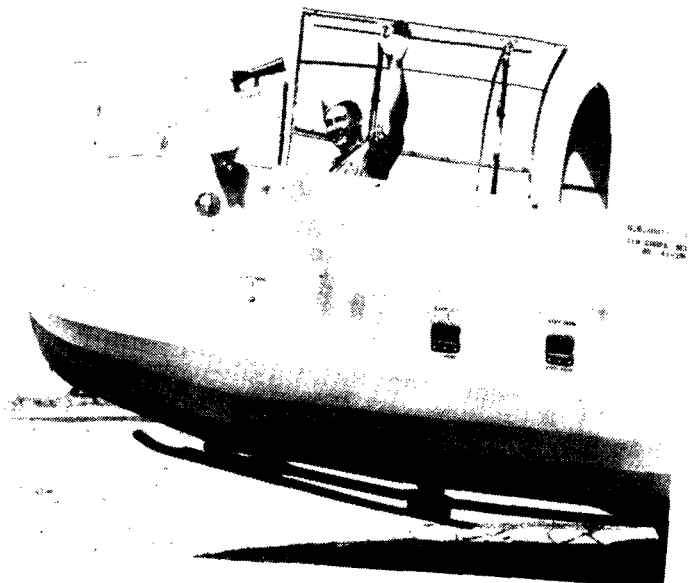


GROWING UP:

A WAR CRY from the sailplane of the sportsman is this 3-place transport glider of the Army Air Forces, shown below. War-going gliders of this type will be the spearhead of our aerial offensive against the enemy. The pilots at their controls will be the key men when our "Commander of the Air" goes into action.

The advantages of transporting air-borne troops by gliders are many. One power airplane can tow several gliders of the type shown below and even larger ones, each glider carrying nine or more fully equipped fighting men. By cutting the gliders loose thousands of feet up and miles away from the enemy objective, they can glide in noiselessly to strike their blows without warning. Also, gliders can be constructed in a fraction of the time it takes to manufacture a power airplane, with the use of practically no strategic materials, and at about one-fifth the cost. The cost of a glider of the type shown here is between \$10,000 and \$12,000, while a transport airplane of the same load capacity costs about \$50,000.

Troop carrying gliders now being built for the Army Air Forces are equipped with flying instruments and 2-way radio. In the larger gliders structural provisions have been made for the loading and carrying of mechanized equipment.





Roughing Up For Combat


By Lieut. Robert B. Hotz
Headquarters, AAF

An improvised field headquarters, using packing crates for furniture. Below, elaborate hangars and runways are dispensed with at the front.

THE gnats dive at you like Stukas and the flies sound like a heavy bomber formation. The swamp turns your GI shoes from brown to black. You eat standing up, sleep under mosquito netting, and shake the snakes out of your shoes. Your workshop is a sweltering tent, and you wish you could find a job to do in the air conditioned trailer where flight instruments are checked. The heat bounces off the runways and hits you in the face. Sweat soaks your shirt and sand whirls up in your eyes.

It might be an advanced airdrome on any one of a half dozen combat zones, but it is just a field somewhere in Florida where heavy bombardment groups of the Third Air Force Operational Training Units are learning how to rough it.

The life is tough, designed to be as tough as anything a combat zone offers. All that is missing is an enemy raid. It's a long way from operating out of a fixed base with long concrete runways, brick and steel hangars, and big permanent repair shops and barracks to running mission from a jungle clearing, filled-in swamp land or leveled hills. Here your control tower is a precarious camouflaged perch in a tree top, your repair shop a row of tents and trailers, your kitchen a hole in the ground with iron grates, and your quarters a bug-filled tent.



A dental clinic, (below) set up against a jungle background at a Third Air Force field, handles toothaches under combat conditions.

Transition Training

It is a transition that AAF outfits are making in increasing numbers as they swing into action on more battlefronts of the global war. It is training designed to teach them how to operate under the worst possible field conditions without softening the blows they strike against the enemy.

A heavy bombardment group always covers a lot of ground, but when it is dispersed to camouflage all its ground installations it really spreads. Everything is on wheels: first, to cover the distances around the base; second, to enable the base to be evacuated in a hurry. By the time an outfit finishes its operational training it is able to evacuate its 200,000 pounds of equipment on wheels in less than six hours.

Improvising and making the best of what is available is the keynote of this type of field training. Furniture is made from old packing cases. Every bit of scrap metal is salvaged and used for something. An old tenant's shack near one field was converted into a beer garden for the PX. Traveling PX's were rigged up in trucks to deliver cigarettes, candy and cokes to the group squadrons scattered under camouflaged groves

The operations office and the weather station are a pair of tents in which lights burn all night. Field trunks have been rigged to unfold as desks to hold weather and operations maps. A Link trainer is set up under a canvas and the pilots put in time on it in underwear, shorts and shoes. Model identification airplanes are strung from the trees. The guardhouse is a log stockade made from native timber.

Open Fire Cooking

The cooks preside over great pots, grates and steam cookers heated by open fires. Mess tables are built for stand-up eating and the only utensils are those from individual mess kits.

Gasoline comes in drums from concealed underground storage depots instead of the conventional hose at a fixed base. Ammunition is also kept in underground storehouses. Barbed wire entanglements and machine gun nests surround vital installations. A brake drum hung from a limb serves as a gas alarm and when its clang sounds on the field every man in the outfit wears his gas mask until the all-clear is given.

Problems that are non-existent in an ordinary base tax the ingenuity of men in the field. A barber sets up shop with a packing case chair and a tree for a shop. His razor strop is hung from the trunk and a board wedged in a crotch holds his tools and soaps. The waiting room is a soft spot in the sand. The field de-lousing equipment is re-rigged to provide open air showers with hot water.

First aid stations are set up in each squadron and a group hospital is fashioned from a pair of tents and mosquito netting. The group dentists operate their drills by hand power. Chaplains hold services in the open air. A blackout proof screen is erected between a pair of trees to show training and entertainment films to the men at night.

Out on the line another row of tents houses each squadron's armament, supply and repair units. There are no hangars for the big four-engined bombers scattered in the far corners of the field. Turrets and other vital parts are protected against the sun and sand on the ground. Sentries guard the planes at night.

Planes operate day and night simulating all

(Continued on Page 21)



Polished desks are out when flight planning time rolls around. Above, in a rude operations building, a bomber crew gets its instructions.



"Tent shops", (above) set up as they would be under combat conditions. Below, there won't be any air-conditioned repair shops at the front.



U-Boat Hunting . . .

Hide and Seek Warfare



THE airplane and the submarine are engaged in one of the war's strangest but most important duels.

It is a game of hide-and-peek that has few equals--played along thousands of miles of rugged American coastline.

The game matches two unnatural enemies, pitted together because of a relatively defenseless third party--the surface vessel. It is the plane's job to defend it, the sub's job to destroy it. But in defending, the plane must seek and get results. Against the plane, the sub has only to hide.

If you stop to think of a duel between an air weapon and an underwater weapon it smacks of Jules Verne at his best. But when a sub is spotted down below, you really don't have time to stop and think.

Sporadic Action

In hunting submarines you swap hours of monotonous, nerve-wracking patrol for infrequent flashes of furious action, and doubtful rewards. You know the odds are against you, but you can't afford to give a damn. Day in and day out you continue to skim low over the water, looking for a needle in an ocean haystack, always hoping to get a shot at the needle and strike oil.

If a U-boat's silhouette is painted on the nose of your plane, feel free to carry a puffed-out chest. And if by any chance you're sprouting the Air Medal, burst your buttons--you've had it coming.

The plan of action in sub hunting is logically shaped around the known facts concerning the submarine's method of operation. Subs usually

hunt in packs--sometimes as many as 10 or 12 U-boats concentrated in one shipping lane. During the daytime they cruise at periscope depth, or with decks awash and the conning tower visible.

On surface passage, a sub proceeds on diesel power at about 10 knots an hour. The noise of its motors makes it virtually impossible for the U-boat to hear an approaching aircraft before seeing it. That's a definite advantage. But at night, when the sub has surfaced and is idling about charging batteries, an aircraft can be heard as far as three miles away before it is seen, even in bright moonlight. And remember that U-boats do a lot of their dirty work at night.

The theory is that if depth charges or bombs are placed reasonably close to a U-boat, the attack is never wasted. But spotting the sub is the first big job. And that, in itself, is fast getting to be an exact science.

The U-boat lookout system is so thorough that two out of three times the sub will sight an aircraft and dive before it can be sighted by a plane. Three members of the U-boat crew usually stand in the conning tower, arranged back-to-back in such manner that each man commands a 120-degree view.

When the sun is bright, you have your troubles. Try looking for U-boats against the glare in a mighty big expanse of water and find out for yourself. You learn to play "hard-to-find" in broken cloud formations on the clear days; and if the underparts of your ship are painted white you become much less visible from the water.

In thick weather you can make the heavy spray
(Continued on Page 29)

ROLL of HONOR



DISTINGUISHED SERVICE MEDAL

LT. GEN. GEORGE H. BRETT--*"As United States Army member of War Councils in England, Egypt, Burma, China, Java and Australia, as Deputy Commander-in Chief of the Southwest Pacific and as Commander-in-Chief of the United States Army Forces in Australia he has shown a keen perception of existing conditions, excellent judgment and a superior quality of leadership, thus rendering exceptionally meritorious service to the Government in a position of great responsibility."*



DISTINGUISHED SERVICE CROSS

LT. COL. CHARLES A. SPRAGUE--*For exceptional valor in action against the Japanese in the battle of the Philippines. Colonel Sprague has been missing since February after engaging Japanese fighters over Bali. (Also awarded the Purple Heart.)*

CAPT. FRANK P. BOSTROM

CAPT. WILLIAM P. COLEMAN

LT. HOYT A. JULLY

For gallantry in action against the Japanese, while stationed somewhere in Australia. No details available. (Captain Bostrom was also awarded the D.F.C.)



DISTINGUISHED FLYING CROSS

For gallantry in action against the Japanese. No details available.

MAJOR WILLIAM LEWIS, JR.

LT. WILLIAM H. CAMPBELL

CAPT. ALBERT J. MOYE

M/SGT. KARL G. JOHANNSON

CAPT. HARRY E. SPIETH, JR.

S/SGT. JOHN C. HADDOW

LT. JACK CARLSON

PFC. CLYDEL HORN



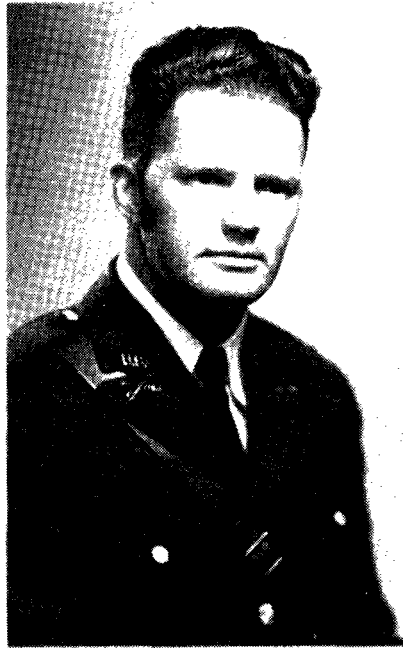
BRIG. GEN. MARTIN F. SCANLON



LT. GEN. GEORGE H. BRETT



CAPT. ALBERT J. MOYE



LT. COL. SPRAGUE



CAPT. HARRY G. SPEITH, JR.



LT. W.H. CAMPBELL



LT. JOHN T. COMPTON



LT. WILSON L. COOK



LT. COL. ELMER P. ROSE

LT. SAMUEL W. B. SHOP

Sgt. DONALD GANDERS



LT. VERNON A. HEIDINGER



SILVER STAR

- For gallantry in action against the Japanese. No details available.*
- BRIG. GEN. MARTIN F. SCANLON
 MAJOR WILLIAM LEWIS, JR.
 LT. WILSON L. COOK
- LT. JOHN T. COMPTON
 LT. HAROLD E. SNIDER
 S/SGT. RALPH E. MOUSER
- LTS. DONALD K. EMERSON (*Posthumous*) and VERNON A. HEIDINGER--
For bravery while participating in a successful bombing raid on an enemy airdrome north of Australia.
- LT. SAMUEL W. BISHOP--*For bravery during the Japanese attack on Pearl Harbor.*
- SGT. LUTHER B. WARD, CORPLS. HENRY R. SHEPPARD and ANDREW J. SWAIN--*For extraordinary heroism and bravery in an aerial fight against an armed enemy. These gunners shot down two Jap Zeros when their plane was attacked over New Guinea on May 1.*
- PVT. FRANCIS J. CARVEY--*For bravery in saving the life of an Australian soldier on Mar. 16, when Japanese planes attacked an airdrome at Port Darwin.*
- PVT. HENRY E. SMITH--*For conspicuous bravery and courage in action. (Posthumous) Private Smith was killed while repairing airplanes at Pearl Harbor during the Japanese attack.*



PURPLE HEART

- LT. COL. ELMER P. ROSE--*For bravery during the Japanese attack on Hawaii. Colonel Rose attempted to take a plane off in the face of enemy fire. Wounded in the first part of the attack, he received first aid treatment and went back to duty as post operations officer to direct for several hours the work of defense and aid to the wounded. Other Air Forces men to win this award for bravery during the attack on Hickam Field are:*
- S/SGT. WILLIAM S. MOCZAN
 SGT. HAROLD J. O'CONNELL
 SGT. HENRY SAUNDERS
- SGT. RUSSELL M. WEISS
 CORP. WILLIAM G. KENNEDY
 PVT. JOSEPH SILVA
- CAPT. DEAN HOEVET--*For outstanding skill and achievement in an aerial fight against an armed enemy. While piloting a B-17 bomber on Feb. 21 against a Jap convoy approaching Bali, the plane developed engine trouble 170 miles out over sea. Captain Hoevet dived from 28,000 to 4,000 feet and on his approach to Java was informed of the expected Jap attack on his base. He managed to keep the plane in the air an hour with the engines almost failing, and when the field was clear, landed safely.*
- CAPT. RAYMOND SWENSON--*For his cool leadership during a 45-minute engagement with the enemy while on a night attack against Jap installations at Rabaul on Feb. 23.*
- LTS. WILSON A. CHAPMAN and CLARENCE T. JOHNSON--*For displaying bravery in aerial combat over Horn Island north of Australia on March 14. Although wounded in an attack by 9 Jap fighters, they continued to fight, knocked down one attacker and got safely back to their base.*

'Ole Miss' Goes to Java

By Captain Al Key



Back in 1935 the Key brothers, Al and Fred, established a heavier-than-air endurance record by flying a low powered Stinson monoplane, "Ole Miss", continuously for 653 hours and 34 minutes over their home town of Meridan, Miss.

On January 1 of this year Captains Al and Fred Key of the Army Air Forces, piloting the most powerful long range bombardment planes in the world, took off a few minutes apart from a Florida airfield. They had dubbed their ships "Ole Miss 11" and "Ole Miss 111." They were bound for Java.

The brothers, flying in the same squadron, bombed and fought the enemy all over the South Pacific until the evacuation to Australia. Fred stayed to carry on the fight from Australian bases. Al was ordered back home for combat instruction duties. At this writing he is stationed at Barksdale Field, La. His story adds another chapter to the story of that heroic handful of American airmen who waged the Battle of Java--The Editor.

THE first stop in our flight to the Far East was to be the West Indies. I told the crew as we passed over Miami to take a good look down because it was going to be the last lighted town they'd see. I was just joking at the time, but it turned out to be true.

The Navigator said we would arrive at our destination in the West Indies at 2:05 P. M. We did, and my opinion of navigators rose 100 per cent right then and there. It was his first long distance trip as a navigator, too.

Sometime later on, over water and headed for Africa, the navigator called me on the phone system and said, "Captain, you've passed the point of return."

That meant that we were out too far to turn back, even if we'd wanted to. Just then a storm struck and we flew on instruments for almost an hour.

Just as the weather cleared I got a call on the radio. It was Fred. "Al, where in the hell are you?" he asked.

That's a fine question to ask a man who is right out in the middle of the ocean. I thought a second and said, "You see that cumulous cloud ahead; well, I'm just going into it." Fred said, "I'll be damned; so am I." I looked out and saw Fred's plane right on my wing. We hadn't moved 100 feet apart.

Delayed

As it turned out, our ship was delayed due to engine trouble, and when we landed in Java Fred was on hand to greet us. He already had been bombing the Japs, who at that time were advancing on the Indies.

I was a little shaken up from the flight across the Indian Ocean, but the commanding officer informed me that I would go on my first bombing mission the next morning. I didn't sleep a wink that night.

Takeoff came next morning before daylight, and we found the Japs at Macassar straits. We dropped our bombs and on the way back were jumped by pursuits. We were flying the first

B-17E's that the Japs had come up against and they didn't know we had those stingers in the tail. We managed to shoot down everything that attacked us. Fred's plane was shot up pretty badly, but he wasn't hurt, nor was his crew."

American flyers kept shuttling back and forth from Java for about 10 days. But no matter how many Japs were killed they kept coming.

Next the Japs started on the Celebes and the Dutch set fire to the oil wells on those islands. One night the Dutch reported that the Japs were attacking and that the light from the burning oil wells would serve as a good beacon.

Three flights of us took off that night, and the Japs were right where the Dutch said they'd be. Fred, Lieutenant Hillhouse and I were in one flight. I told the other two to fly around, and I'd see if I could stir up some trouble. We "sashayed" around and let go some bombs. Then the Japs turned on their flood lights.

Fred hadn't cut off his radio, and I could hear him giving orders to Soupy, his bombardier. The bombardier's name was Campbell, so Fred nicknamed him Soupy.

"Soupy", said Fred, "you see those lights down there? Well, put 'em out." A few seconds later I heard Soupy say, "Captain, they ought to go out soon; there's eight bombs on the way down." The lights went out.

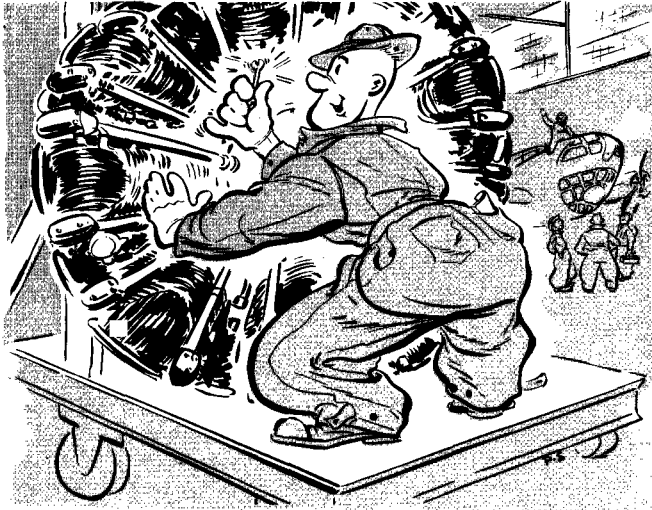
When the Japs started moving in on Sumatra, a squadron of American flyers caught thousands of them in small barges in some of the narrow straits. The Americans dropped bombs from 1,500 feet and blew Japs, barges and water almost as high as the planes.

But the Japs kept coming. And since American and Dutch flyers had to take time to refuel and service their planes, the Japs could get considerable troops through.

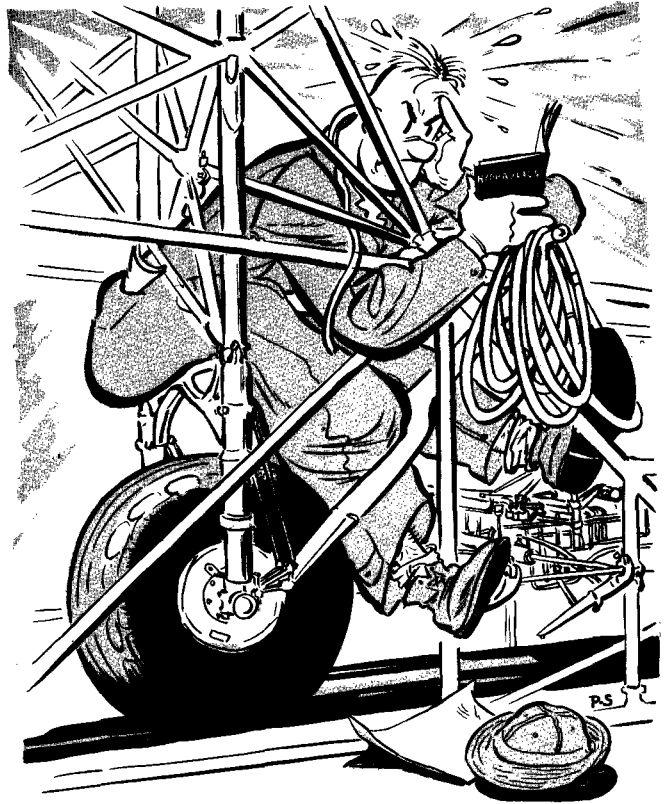
After Sumatra came Bali. Americans sank 16 Jap ships at Bali. In one raid we destroyed an airfield which had fallen to Jap troops, together with a number of Jap planes. Then, when it became certain that the Indies couldn't be held, the evacuation to Australia began.

All in a Day...

A few of the trials and tribulations of a student mechanic have been caught by Private Paul Snyder, of Kessler Field, Miss., in a series of cartoons reproduced here. Inspired by the technical training course at Kessler, they show what the neophyte mechanic has to contend with before he is graduated. Hard work, boners, constant study--all are part of the picture. But they all combine to make good mechanics--and AAF mechanics *have* to be good.



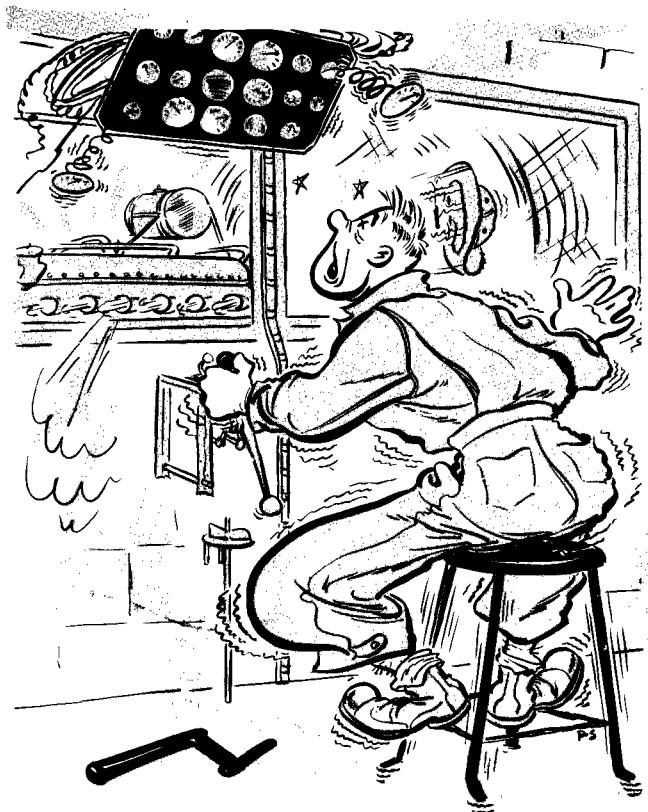
"The Optimist"



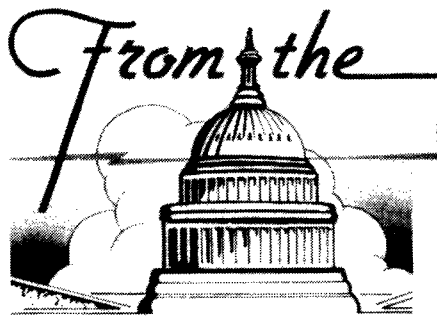
"Hydraulics - one of the most simple studies"



"Cramming"



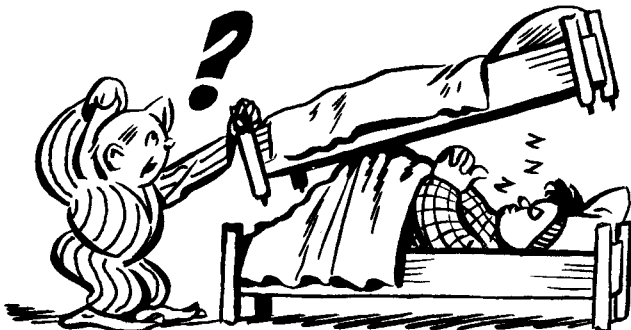
"The testing blocks test more than motors"



CONTROL TOWER

ELIMINATION of the red circle in U. S. military aircraft markings in no way effects the design of the AAF shoulder patch. The red dot was removed because it could be mistaken for the Japanese rising sun emblem. . . but the dot in the shoulder patch is still with us.

RESERVE officers, commissioned before Sept. 26, 1941, are now entitled to the \$150 uniform allowance, PROVIDED they had not completed any three periods of active duty (of three months each or less) when called to extended active duty. The grant does not extend to National Guard officers; to AUS officers commissioned since Sept. 26, 1941 who had prior commissioned service, or to AUS officers above the rank of captain. But it still holds for AUS officers ORIGINALLY commissioned since Sept. 26, 1941.



THE old Army cot is OUT--tossed into limbo for the duration. The infamous steel torture device, cleverly designed to look like a piece of furniture, is to be replaced soon by a wooden contraption arranged to form one-half of a doubledecker. The new bed promises no more mid-night collapses; no more smashed fingers, no more pain-wracked forms. It's wonderful.

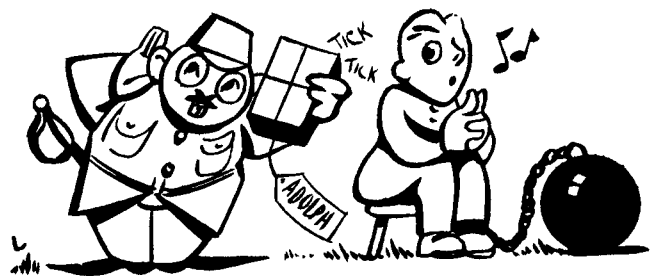
YOU can now perpetuate the name and memory of your lost or missing buddy through the AAF Aid Society. Your cash contribution to the Society's trust fund will be acknowledged in your behalf to the bereaved widow or family. A card will explain that you have donated an undisclosed amount, to be added to the general fund that the Society will use for post-war assistance to AAF personnel and dependents. Send any amount to the AAF Aid Society, Room 703, Maritime Bldg., Washington, D. C.

THE Adams apple emerges from official obscurity under the terms of a ruling which now

permits your C. O. to make the open neck-band without tie legal for the duration--when circumstances warrant. Within proper restrictions governing neatness, the C. O. may now dispense with the tie when personnel are engaged in duties that must be continued at maximum speed regardless of mid-day heat. And on the subject of ties, have you seen the blue and gold striped jobs now available at most Post Exchanges? These are intended for off-duty wear by AAF'ers, under the same restrictions that apply to civilian dress. (Wear only when participating in sports, or in private quarters with less than three persons present).

YOU, too, may be entitled to wear that yellow faille ribbon with red and blue stripes that recently made its appearance over left breast pockets. It's the American Defense Service Ribbon, and as widely publicized, appeared to be restricted to officers and men who completed a year of active service between Sept. 8, 1939 and Dec. 7, 1941. Actually, however, ANY officer or soldier who STARTED active service at any time within the above dates is eligible to wear the ribbon and receive the award of the American Defense Service Medal.

WELL, the word "Air Corps" is back again. That is, for use on signatures. The name Army Air Forces still goes, and the designation of General Arnold remains Commanding General, Army Air Forces. But for the rest of us, the official moniker is now John Doe, Lieutenant, Air Corps. It was that way for years and years, but changed over to John Doe, Army Air Forces, a few months ago. It seems that the name Air Corps is a designation of an arm of the service fixed by an act of Congress and would need an act of Congress to change it. The name Army Air Forces was adopted for administrative purposes by executive order.



HOW TO SAVE MONEY DEPARTMENT: Next time you cash a money order at a post office window, don't be a sucker and pay the fee ordinarily charged for this service. The rule regarding collection of the fee has been suspended for the duration of the war, for properly identified service men. . . .If you were a Federal employee before joining the Army, any accrued leave to which you may have been entitled can be converted into CASH, according to WD Bulletin No. 19 (4-16-42). . . .A free legal service is being maintained for officers and enlisted



men at McChord Field, Washington. The service, which includes the otherwise costly preparation of wills, powers of attorney and other legal documents, will be extended to other fields. . . . All soldiers honorably discharged for injury or disease incurred in line of duty, (or aggravated thereby) and not the result of their own misconduct, are entitled to apply for pension benefits with the Veterans Administration. Organizations commanders will help prepare application papers

. . . .A pamphlet, "Are You a Responsible Person?" is available by mail (10¢) through the Book Dept., Command and General Staff School, Ft. Leavenworth, Kan. It furnishes a valuable check list of things-to-do to put your personal affairs in order, anticipating service overseas.

SAFE arrival of U. S. Army personnel overseas will be heralded in the future by "arrival" cards, which the soldier fills out and addresses to Mom and Pop, the girl friend and relatives before leaving. The cards stay right here, and when the safe arrival of the contingent abroad has been confirmed, the cards are mailed by the Army.

SPEAKING of Officer Candidate Schools, note that a ten-day leave of absence is authorized for all graduates before reporting for duty. If you insist on the official wording, struggle through Par. 21, AR 605-115 and Par. 12 C, WD. Cir. 126, cs, 1942.

If you draw the short straw and get yourself captured, don't forget that an effective procedure exists for communicating with relatives and friends. Within the framework of the Japanazi interpretation of these codes, contact with the luckier ones left behind can be arranged through the Red Cross. Captors are required to permit the prisoner to send his name, rank, serial number and address of prison to the International Red Cross Committee at Geneva, Switzerland, postage free. Letters only are allowed; parcels are banned. Mail to

prisoners of war works the other way. If you want to write to a captured civilian, the full amount of postage must be attached to the envelope. Standard forms are supplied by your Red Cross representative; they limit the message to 25 words.

WHEN a pretty young stranger sends you a sweet-scented letter, describing herself as "Rich, lovely and lonely"--run, don't walk, to the nearest ash can. Deposit the billet-doux firmly therein, to avoid Uncle Sam's frown. Correspondence between Army personnel and unknown civilians (sex not specified) is out for the duration. No approval will be given "Lonely Heart" clubs or other plans intended to encourage such correspondence. However, this policy is not designed to discourage normal letter writing between soldiers and friends, relatives, or--of course--the girl back home.

A soldier who is physically qualified can now be appointed directly to an Officer Candidate School of his choice without having to appear before the usual board of officers for acceptance. Any general officer is now authorized to direct in orders that an enlisted man under his command, who has been especially selected by reason of his demonstrated fitness, will be detailed as an Officer Candidate. Such appointments are limited to ten per cent of the quota currently allotted to the command for the school.



For the DEFENSE of the AMERICAS

VENEZUELA



LT. JOSE GUERRERO of Venezuela (above) is taking a refresher course at Kelly Field. Below, a student from Argentina handles the control tower at Randolph Field.

ARGENTINA



Being a good neighbor to the rest of the Americas is one of the specialties of the Army Air Forces.

In the effort to help build a united American air front against aggression, AAF training centers have opened their facilities to flying students from our neighbor countries south of the Rio Grande.

In cooperation with the CAA and the Coordinator of Inter-American Affairs, the Gulf Coast Training Center is training a large number of Latin American cadets

who have
Most of
or soldi
training

In addi
ram, all
refreshe
flying o
in orde
study A
ques. S
are amc



NICARAGUA



BRAZIL

en sent here to win their wings. se students are either civilians who have had no previous flight

to this fledgling training prog- F training centers are offering courses to a number of junior rs of Latin American countries o give them an opportunity to ican flying and training techni- of these refresher students he best flyers in Latin America.



MEXICO



BRAZIL sends these student fliers (above) to Randolph Field.

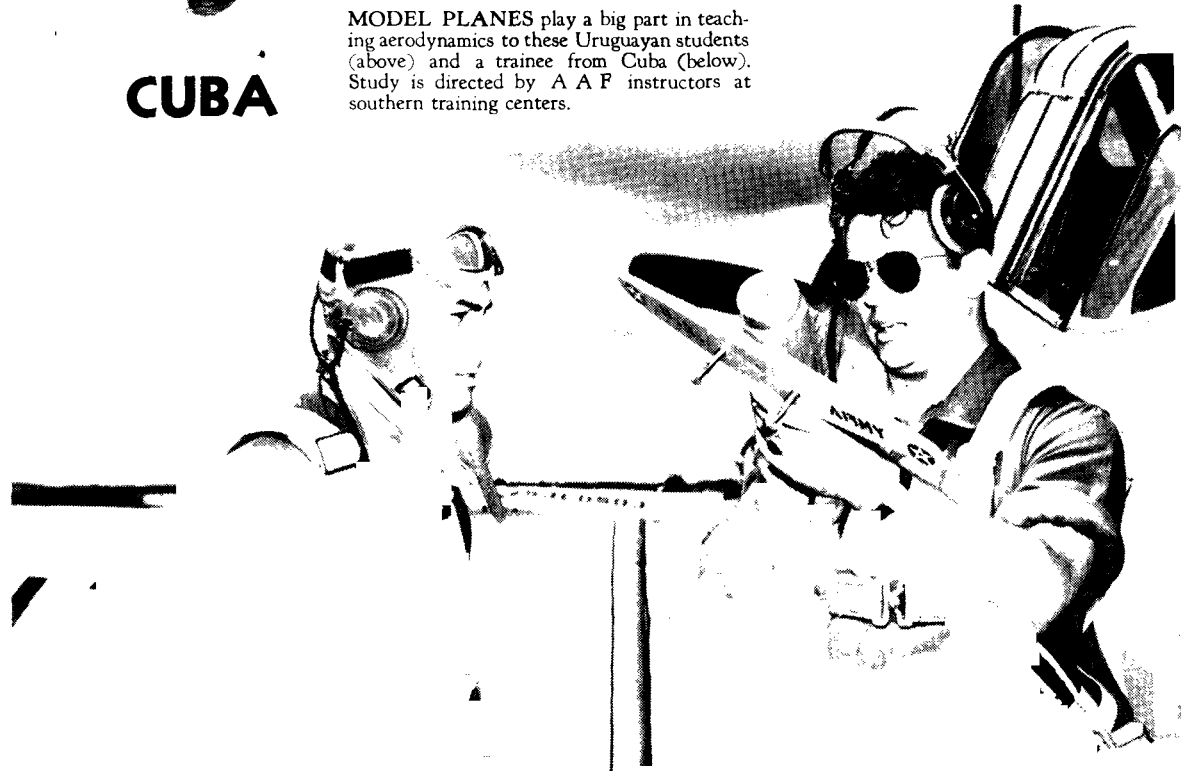
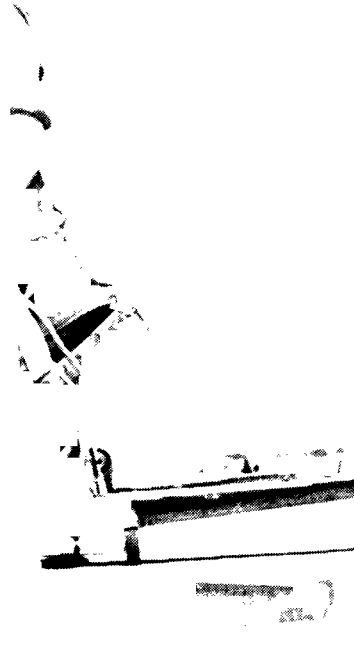


URUGUAY

"DEATH TO THE AXIS" is the edge of AAF fliers and Mexican trainees at Foster Field, above. Lt. Edmundo Argas, of Nicaragua, (left below) and Lt. R. K. Simeral, AAF.

CUBA

MODEL PLANES play a big part in teaching aerodynamics to these Uruguayan students (above) and a trainee from Cuba (below). Study is directed by A A F instructors at southern training centers.



Raid on Japan

James H. Young



The author, for 13 years a noted foreign correspondent stationed in Japan, was held captive by the Japanese government for two months prior to his return to this country a year ago. He is the author of two books on the Orient, Behind the Rising Sun and Our Enemy, and has appeared before lecture groups throughout the nation, including several Air Forces units. The views expressed in this article are the views of Mr. Young and must not be considered the official views of the War Department or of the Air Forces News Letter--The Editor.

IN the next American flight to Japan, two strategic spots must be bombed--the highly fortified Imperial Palace at Tokyo, and the Grand Shrine of Imperial Ancestors, located at Ise, near the Nagoya aircraft plants.

The Palace is located on a 531-acre plot of ground in the center of the world's most vulnerable capital.

The Imperial Palace and environs are as military in nature as a munitions dump.

A small artillery unit is barracked in the grounds. The Imperial Bodyguard, the elite of the Jap army, is stationed therein. The central telephone switchboard is a clearing house and signal station for air raid alarms. Wires run north about four blocks to the notorious Gestapo headquarters. The main dug-out is across the moat, in the basement of the Dai Ichi Life Insurance Building.

Germany's best Zeiss and Bosch anti-aircraft equipment were purchased and installed five

years ago inside the Palace grounds by the Imperial Household, under direction of Baron Tsuneo Matsudaira, father-in-law of Prince Chichibu.

One of the city's modern fire fighting units is stationed in the Palace precincts. The army, standing watch, is under an Imperial Prince. Some cavalry are kept there in the barns, for the Imperial Polo grounds.

The entire Jap war machine, functioning as a joint board under the title of Imperial Headquarters, presided over by the Emperor and two Imperial Prince's of the Blood, meets in the Palace.

All plans formulated for attacks on the United States, China, Australia, Alaska and India, are mapped in the special room which might have been occupied on that April mid-day Doolittle attacked; the Imperial commission always convenes at 11 a.m. and adjourns about 1 p.m.

The supreme Imperial network of tactics,

strategy, communications and planning, all center in the Palace grounds--the most military objective of the Japanese Empire.

The Palace must be pulverized. On the next trip, our airmen must bomb the Palace as viciously as the Sumida river arsenals or the Yokohama chemical rubber, tank and auto plants.

The Grand Shrine at Ise is the burial place for Japanese ancestors of the Imperial Family. If the Palace is bombed, and the Shrine demolished, a wholesale hara-kiri will follow, and the entire government will be overthrown.

Mass Hara-Kiri

Imperial Household authorities would commit suicide. The head of the Metropolitan Police Force would kill himself. Premier Gen. Hideki Tojo and his Nazi trained staff would resign. The Minister of War and the head of the Imperial Western Defense Command would be put in shame. The Board of Shinto would be tossed out. Hysteria would prevail.

The fact that a high placed general resigned after the first American attack, and that the chief of the defense command was out from loss of face, proves the vulnerability of the Imperial system. Others have been thrown into prison.

A close study of the report by Brig. Gen. James H. Doolittle on the epic flight of his 80 men over Japan, the third attack on Japan since 1937, points up the extreme vulnerability of the Axis empire partner, and reveals that the Japs are not the calm, composed residents they have been interpreted.

Often, it is said, the Japanese are a people who can endure floods, earthquakes, typhoons, monsoons, tidal waves, landslides, volcanic eruptions, great conflagrations and epidemics. Such were natural events. Air raids are not in the Japanese book of rules of experiences although air raid drills have operated since 1934.

The first raid, on Formosa, Japan's giant Gibraltar of the Pacific, the spring-board for her Philippines attacks, and earlier the debarkation point for Hainan and Indo China, caused severe damage to a field near Taihoku, the capital, in 1937. Chinese, and it is believed some Soviet pilots, did the trip. Though nearly 2000 miles distant, Tokyo ordered a blackout for two nights following that attack.

Chinese appeared over western Japan in 1938 to drop pamphlets instead of bombs. The psychology of the pamphleteering was poor for it advised the Japanese farmer peasants to "overthrow the Imperial shackles." Workers who fear the Jap police and revere their god-emperor, instead of carrying through the Chinese hint, picked up the handbills and carried them to nearby police stations.

A year ago I began a research job for *Flying*

and *Popular Aviation*, on a pattern of air attack on Tokyo. The result, in 5000 words, was published in *Flying* for December, under the title "Stop Japan Now", the theme being to "give her Hobson's choice otherwise drop our compromise policy and face the dilemma with firmness and force."

Gen. Doolittle remarked in Washington that there was little difficulty in finding the assigned targets. My research job stated "a flight of bombers will find, in one glance, three vehicular bridges and approaches of the mile-wide Shinagawa river south of Tokyo. Tokyo's suburbs have mushroomed thousands of armaments factory smokestacks."

Japan cannot have effective air defenses because it will be practically impossible to organize sufficient anti-aircraft defense on boats to strike at enemy craft before they arrive at their objective.

One month after the Tokyo bombing, a great and famous Japanese ship, the Nagasaki Maru, hit a mine in Nagasaki harbor and was destroyed. The Captain, a veteran in the Japanese marine service, shot himself in the offices of the N.Y.K. line. Three months after Pearl Harbor, a well-known Jap diplomat, Satomatsu Kato, "fell" from a window in his Paris embassy and was killed.

To bomb the Imperial Palace on the next trip will hasten an end of the war and by suicide, many of Tokyo's leaders will save the day of an Axis hanging.



Roughing Up

(Continued from Page 9)

types of combat missions. Nearby towns used as enemy installations day after day are "annihilated" by the squadrons in training. Missions are changed while planes are in the air, and all hands are taught to operate while under fire. Ground crews learn to cut servicing time to a minimum to prevent planes being caught on the ground by enemy attack.

A comprehensive plan for defense of the field against enemy bombers, paratroops or ground attack is worked out; constant drill in defending the field and its installations accompanies the rest of the training routine.

This field practice is designed to make AAF units bound for combat duty able to operate entirely on their own, to build them into self-sustaining units that can provide their own supply and maintenance wherever they may be and can defend themselves against any type of attack. Anyone who has seen the Air Forces in action in the bug-filled blistering sand and swamps of Florida will know that when these men go into action on foreign soil they will be ready for anything.

PRO PATRIA MORI

A partial list of officers and men of the Army Air Forces officially reported to have died in the service of their country since December 7, 1941.

Lieutenant Colonels
Stanley K. Robinson

Technical Sergeants
John A. Potter
Herman C. Reuss

Majors

Clarence R. Davis
Hugh F. McCaffery

Henry J. Humphrey

Andrew A. Walczynski

Captains

Timothy J. Sargeant
Walter W. Sparks, Jr.

Billy O. Brandt

Joseph E. Good

James E. Guthrie

Harold C. Elyard

Paul V. Fellman

Virgil W. Dickey

Lieutenants

Karl F. Harris
Leroy W. Smith

William Hislop

George M. Martin

George C. Rodge
John W. Gentry

Edwin N. Mitchell

Morris Stacey

Cilio S. Guerriere
Addie J. Hogan

George R. Schmersahl

Robert O. Sherman

Dalton R. Hardy
G.O. Peel, Jr.

Wilmer L. Inlow

Joseph J. Chagnon

Walter V. Wilcox
T.J. Majors

Lewis B. Shoemake

Benjamin W. Kerr

Charles W. Page
James J. Orr

Sergeants

Charles W. Van Eeuwen
Randall R. Schamp

Patrick L. Finney

Lumus E. Walker

Foster L. Walker
Harold William Wolfe

Cecil W. Green

John R. Botelho

Clayton Lafayette Head
Darrell Stewart Wing

La Verne J. Needham

William H. Offcutt

Elmer Milton Munn, Jr.
Rush Howard Willard

Emmett E. Morris

John G. Mitchell

Raymond A. Sloan
Francis H. McAllister

Stanley A. McLeod

John J. Kahl

Richard V.W. Nagley, Jr.
William T. Morgan

Corporals

Oscar D. Wyatt, Jr.
Gail Thomas Updegraff

Anderson G. Tennison

Edward F. Vernick

Francis Peter Smith
Harris Allen Stuart

C. J. B. Sparks

Robert L. Avery

Melvin W. Schoephoester
Charles Steens, Jr.

Joseph Hriczko

John R. Gagliardi

Kenneth Wayne Sprankle
Richard Spotswood Smith

William R. Briggs

John R. Fletcher

Stewart L. Swenson
Herbert F. Soest

George J. Smith

Julian C. Stultz

Reul Carter Shows
Leroy Earle Grindie

Roger A. Vaillencourt

Merrill W. Riner

Andrew John Francisco
John Bradley Rush

Boyd E. Halcom

William C. Kilfin

Richard James Sandner
James O. Reed

Howard L. Ellis

John R. Leyerly

Melvin L. Rake
Donn William Piatt

Privates First Class

Frank G.J. Micieili
Samuel Seay Pattillo

Leo Surrells

Joseph M. Vellner

Jesse Peter Ottosen
Charles K. Nelson

Frank B. Cooper

Robert A. Bailey

Boyd Vaughn Mann
Norman Richard Meeks

Paul L. Staton

James L. Bartlett

Rudd Van Mann
James Edward May

Felix S. Wegrzyn

Jackson A. Chitwood

Lewis Howard Miller
Elmer Munn, Jr.

Russell E. Gallagher

Edwin Corsuch

Joseph Benedict Maloney
Frank Andrew Kobal

Frank J. Lango

David C. Lyttle

Harry W. Moseley
Harry Lamar Matthews

Richard L. Coster

Robert L. Palmer

William Thorpe Morgan
Gordon Durfey McKenney

Paul R. Eichelberger

James A. Ross

Francis Kinner McAllister
Lathon E. Henson

Leroy R. Church

Robert H. Westbrook

Jack Thomas Laughlin
Fergus O'Conner Luscombe

George W. Baker

Ernest M. Walker, Jr.

Erwin Roy Kriel
Gordon Otto Kibbee

Frank R. Dallas

Joseph S. Zappala

Ralph R. Johnson
Walter C. Isely

Martin Vanderelli

Russell P. Vidoloff

William Rawls Hogg
Gordon E. Houston

Allan G. Rae

Elmer W. South

John Ernest Linwood Huse
James Valentine Hamilton

Andrew J. Kinder

Harry E. Smith

Conner Garth Hopkins
Henry Thomas Horton

William F. Shields

George A. Moran

Owen R.S. Graham
William Thomas Gardner

Joseph G. Moser

Maurice J. St. Germain

Philip D. Freeman
Robert William Finwell

Merton I. Staples

Victor L. Meyers

Lucius Diebrell Edwards
Louis G. Moslener, Jr.

Robert H. Markley
George A. Whiteman

PRIVATE DOAKES-FINANCIER

from
TO KEEP 'EM FLYING
MIAMI BEACH, FLORIDA



IN January, 1943, the pay raise finally caught up with Pvt. (NMI) Doakes. One Monday morning he couldn't get up for sick call, so his Sergeant, a kindly man, called an ambulance.

The Medical Officer gave Doakes a long, diagnostic look and whistled.

"Spots before your eyes, Private?" he asked.

"Well, not exactly spots, sir," Doakes whispered. "More like dollar signs they are."

"Hm. And you feel tired at Reveille?"

"Yes, sir."

"I see. When, exactly did you start feeling like this?"

Doakes considered. "As near as I can remember, sir, it was back in August, a couple of months after the pay raise went into effect. That was when I started to slip behind."

"Slip behind?"

"Yes, sir. I suddenly noticed it was coming in faster than I could spend. And then, sir, I decided to take steps. I stayed up in my room all one evening tearing up my old budget and making out a new one. It took a lot of figuring, sir, I can tell you."

"I can imagine," said the Medical Officer. "Go on."

"Well, sir, I had this old budget worked out exactly to twenty-one dollars a month--right to the last penny. Fifty cents for photographs, two-fifty for laundry, three dollars insurance, three dollars beer, seventy cents haircuts, eighty-five cents toothpaste, soap, blades and so on, twenty-five cents stationery, twenty cents shoe polish, fifty cents papers and magazines, two dollars movies, three dollars cokes and four bucks fifty cigarettes."

"A good, conservative, sound budget," said the Medical Officer, approvingly.

"Yes, sir. Well, I got to thinking--just a little, of course, sir. I could see there were a lot of items in my old budget I couldn't possibly spend any more on--

"So I saw I'd have to spend lots more on some things. I ran my insurance premiums up to seven dollars and bought only the best engraved, monogrammed stationery. Instead of fifty cents for photos, I got five bucks worth and sent them out, special delivery air mail, to a lot of people whose names I found in the phone book. Along with my haircuts, I got shampoos, facials,

manicures, shins and violet ray treatments. Instead of comic books and newspapers, I bought Fortune and Harper's Bazaar. I only used each razor blade once and took to drinking cokes before breakfast. If a fellow asked me for a cigarette, I gave him the whole pack. But of course the other fellows were getting fifty a month, too, and pretty soon they stopped asking. The best I could step it up to was forty-one seventy-five."

"Surely that didn't make you as sick as you look, Doakes."

"I haven't told you about December yet, sir," Doakes said, painfully.

"What about December?"

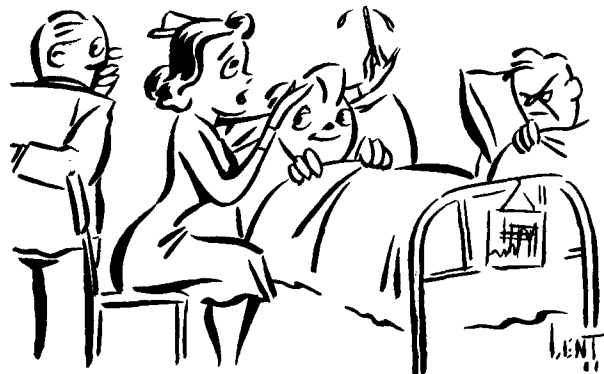
"That was when I ran into real trouble, sir. Almost all through the month I suffered reveries, sir. First there was a long session of KP--I'd had a little trouble with an MP--then I got a series of special duties that kept me busy all the time. First thing I knew pay day was here again, and I hadn't even gotten into my November pay."

"Tsk, tsk," said the Medical Officer.

"Well, sir, last week I really went to town. On my feet all day long I was, sir, trying to catch up with myself. But my heart wasn't really in it. I knew when I was licked, sir. Haircuts every day, pictures until I couldn't stand up to pose any more and had to have them lying down. Cokes for the Squadron. Then came the dawn this morning, sir, and I just couldn't seem to get up."

Doakes closed his eyes and shuddered.

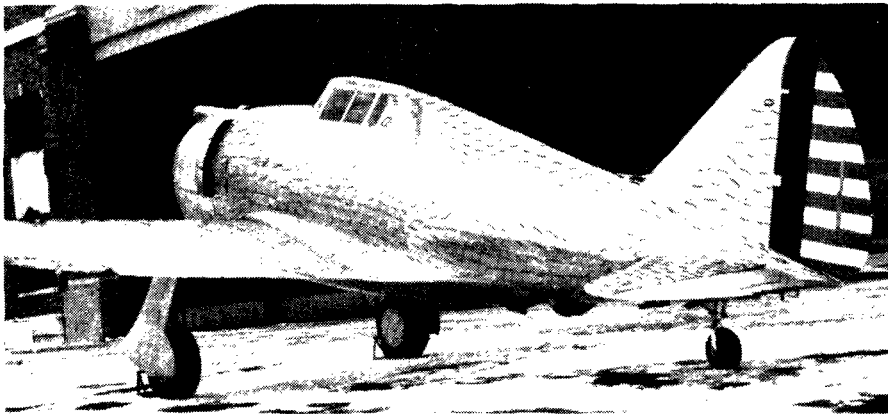
"Nurse!" the Medical Officer shouted, "nurse! Wheel this man into the contagious ward and pull down the blinds. He's to have absolute quiet, and on no account is anyone to rattle any coins near him. And--oh, yes--mark his card 'in line of duty' so he won't have his pay docked."





TECHNIQUE

AIRPLANE "GROWS HAIR" FOR TESTS



Engineers Use Hair Forces

THIS P-43 is covered with hair--but it didn't grow there. The hairy tufts visible in the photograph are really pieces of string which were fixed on the plane by engineers who use them to study air-flow direction during wind-tunnel tests. Pictures taken of the tufts while the plane is undergoing tests show up inefficiencies in aerodynamic design.

PROSPECTING FOR BOMBS

THE men in the picture below get a terrific "bang" out of their work. They are looking for unexploded bombs on the practice range at Kelly Field. The bombs are left over from World War I, and some of them have remained underground for over 25 years.

The man in front is operating a metal locator which signals him when he is over a shell. The men behind are carrying a litter containing a dynamotor and batteries, used to operate the locator. When the searching crew finds a bomb, a demolition squad moves in with TNT and explodes it.



Dud Hunting at Kelly

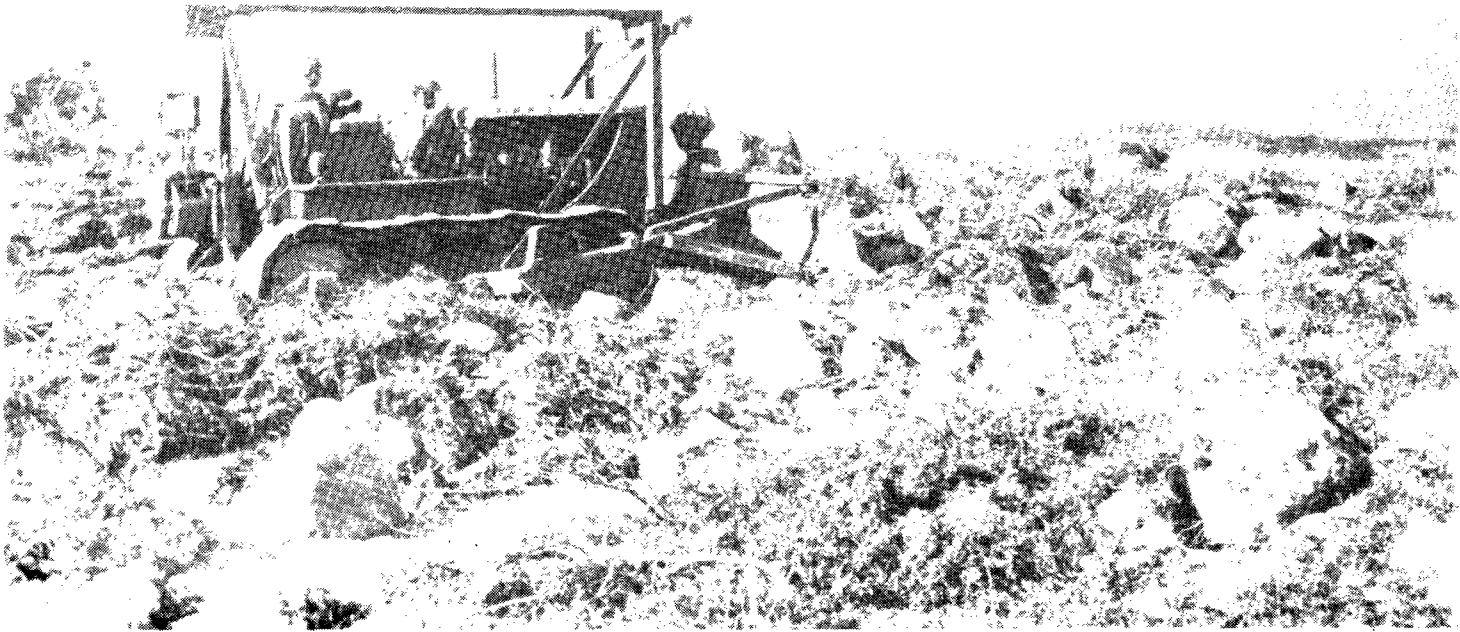
NEW FLYING SUIT



Pilot Toaster

THIS is the Air Forces new electrically-heated flying suit, described in the *May News Letter*. Little heavier than an ordinary uniform, it will keep air-crews warm down to 60 degrees below zero. Several thousand of these suits will be in use by next winter.

The new suits will replace the bulky woolen uniforms now used for high-altitude flying.



FROM RUBBLE HEAP TO AIRPORT

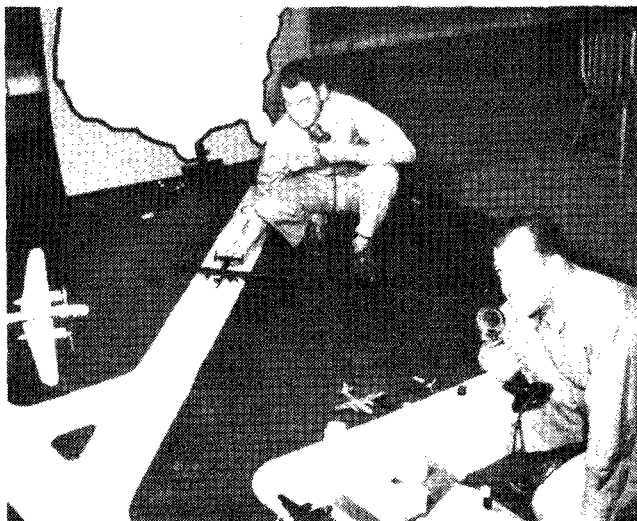
THIS is a before-after series showing how steel landing mats and aviation engineers together can turn a rubble pile into a modern runway, even in such out-of-the-way places as this far northern outpost.

Landing mats such as these are making it possible for Air Forces planes to land and take-off in the farthest corners of the earth--sometimes where planes were never seen before. These mats were laid on roughly leveled subgrade, which was later ballasted with clean cinders, making the surface smooth and hard.

The picture above shows the kind of ground that greeted the aviation engineers. The completed runway in use is shown below.



CONTROL TOWER CLASSROOM



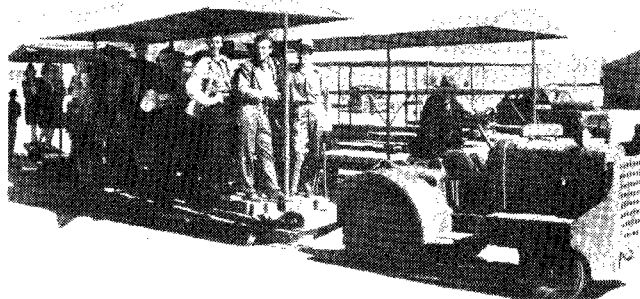
No Crack-ups Here

MAXWELL Field makes sure Air Forces control tower operators know their job before they are permitted to play for keeps. To do this student operators are provided with a miniature airport, complete with runways, buildings and control tower, to practice on.

In the above picture Private Ferdin F. Terry brings in a B-24 while Private Jack V. Nelson operates the control tower. They communicate over a standard two-way radio.

The control-tower course lasts three weeks, and is taught by Staff Sgt. Glen Mackay. It is patterned after the system developed by the Civil Aeronautics Administration for the control of commercial airline operations.

OGDEN "ELEPHANT TRAINS"



Transportation at Ogden

DISPERSED parking lots for employees are no problem at Ogden Air Depot. Colonel R.J. Minty, Engineering Officer at the depot, has put the "elephant trains" shown below into use carrying employees from the parking lots to headquarters and supply buildings. The trains operate on a 24 hour basis, and accommodate all shifts.

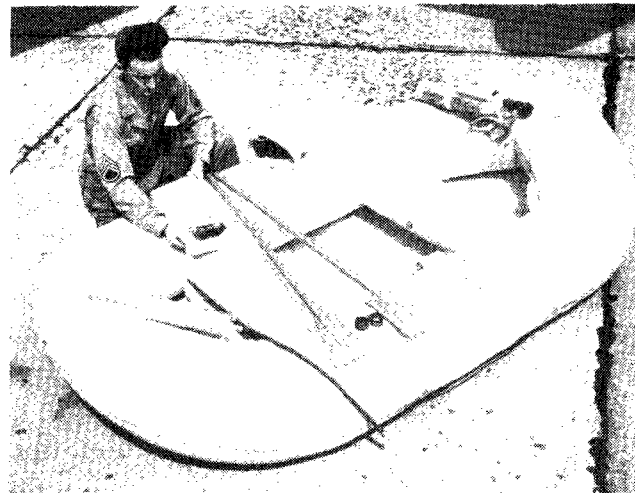
MODELS FOR GUNNERS



Learning to Spot at Tyndall

SO they won't blast the wings off a friendly plane, prospective AAF gunners down at Tyndall Field, Florida, learn what both Allied and Axis planes look like by making a close study of wall charts and models. Here Private Francis Grant is getting tips on aircraft recognition from Corporal Harold Ellis.

NEW AAF LIFE RAFT



Raft and Equipment

CREWS of Army bombers patrolling over water aren't going to drown if Air Forces engineers can help it. One of the latest life-saving devices developed is the collapsible rubber raft shown above. The raft can carry five men comfortably, plus emergency rations, 20 feet of line and a waterproof bag containing a Very signal pistol. The raft is inflated by pulling a lever which releases carbon dioxide into the tubing. The oars are collapsible and may be stored away.

Twelve Pounds of Prevention

By Captain Harry Barsantee

Directorate of Flying Safety



BACK in college we had a course in English Literature and the textbook was an enormous tome entitled "Twelve Centuries of English Prose and Poetry."

After lugging it to class a few days we renamed it "Twelve Pounds of English Prose and Poetry."

I was reminded of this when I arrived in Washington a short time ago and somebody handed me a stack of manuscripts a foot high and weighing a round dozen pounds. (I know: I've toted them back and forth from home to the office a number of times.) This pile of manuscripts was the answer to General Arnold's recent directive asking pilots of the AAF to write and submit to him accounts of their narrowest escapes from fatal airplane accidents.

"Here they are," I was told. "See what you can do with them."

The manuscripts were already somewhat dog-eared through constant study by statisticians, engineers and other experts in the field of accident control who had gleaned much valuable data on accident causes from them. My task was to select the most typical narratives and re-write them for publication in booklet form.

Prevention Wholesale

"Talk about an ounce of prevention," I mused to myself after leafing through the first few, "Here's at least twelve pounds of it!"

Actually, some 500 narratives were submitted, ranging from a couple of paragraphs to 10 pages in length. The narrators included raw cadets who hadn't yet soloed and two-star generals who were flying before World War I. Virtually every type of ship ever used by our Army was mentioned; the locales ranged from Alaska to Puerto Rico to France; just about every conceivable situation in which a pilot would ever find himself was described.

Naturally, it looked like a rich vein of information on accidents and their causes; a technician's bonanza and a writer's dream.

A few days of refining, however, brought the realization that the lode was not as rich as it appeared. There was a sameness about the stories which soon grew almost monotonous. There weren't 500 basic causes of accidents, I soon discovered; as a matter of fact, there weren't 50, or even 25. Lieutenants with a dozen hours made the same mistakes as did Col-

onels with thousands of hours, and these errors caused trouble in heavy bombers and basic trainers alike. Ships changed greatly in design, but accident hazards common in 1917 were still prevalent in 1942.

However disappointing this discovery, it certainly was illuminating. If accident causes are so few, so basic and so simple, surely corrective methods can be equally basic and simple. Of this I am thoroughly convinced after poring hour after hour over these hundreds of narratives.

Cockiness and over-confidence, it seemed, popped up in one out of every two or three manuscripts. Listen to this:

My most hair-raising experience came one fine clear day while I was making sport of sailboats by blowing them off course with prop wash. About the third pass around, I became just a little too much interested in the boat's reactions and before I had time to realize what had happened my prop hit the water. There was a roar, a jerk, a huge spray and one moment of a thousand years. So ended my days of blowing sailboats!

Weather was a factor in a good 20 per cent of the near-accidents, but in almost every single case the pilot admitted that he deliberately invited disaster by digressing from the regulations or the rules of common sense. For instance:

.....My face is red as I write this, but I must admit that the very same weather report that I got after landing had also been available at my point of departure and I hadn't even bothered to check! Only luck and a crazy hunch had prevented what certainly would have been a nasty smear.

Improper preparation on the ground before taking off is a major cause of accidents, as every experienced pilot knows. Stories in support of this fact were legion. This excerpt from one is typical:

In my eagerness to get started on that long-cherished trip I jumped into the newly repaired plane and took off in the general direction of Detroit. No maps, you understand; no drawn course of any kind, no flashlight--and, I realize now, no brains!

The accounts having to do with just plain "boners" made a sizeable pile in themselves. Typical is this fragment:

As I taxied up to the line, burning to crucify the inspector who had passed on a plane in that condition, the clerk ran out. "Lieutenant", he yelled, "you took the wrong plane. I said number so-and-so but you took number this-and-that. This plane hasn't even been finished by the assembly department!" Yes, sir; I had been flying a ship that was literally falling apart, and the horse was 100% on me.

Carelessness

Inattention, carelessness, thoughtlessness-- call it what you will--it is the reigning cause of accidents in our Air Forces. Not more than 15 per cent of all mishaps reported can be attributed to forces over which the pilot himself has no direct control. I rather expected, since it would be only human, that many of the pilots would have a tendency to place the blame on their ships in order to cover their own mistakes or shortcomings, but such was not the case.

Pilot error and faulty supervision is responsible for the vast majority of accidents.

In view of this, it would certainly seem that the remedies are obvious and not too difficult to apply. Education will do the trick among those amenable to it; disciplinary action must be taken among those who will not respond to education.

One of the first steps in the program of education is a booklet which is now being distri-

buted. Entitled "Lessons that Live, as Told by AAF Pilots", it contains eighteen of the most typical among the hundreds of accounts submitted.

There is nothing of an admonitory nature in the book except that each story naturally points a moral by implication.

The theme of the brochure is aptly pointed up in a foreword by Colonel S. R. Harris, who heads the Directorate of Flying Safety.

There is an old axiom to the effect that experience is the best teacher. It's a good axiom and I wouldn't quarrel with it. Where accidents are concerned, however, experience is likely to be bitter and costly. The first lesson can be and often is the last. In flying, it's a whole lot better to learn from the mistakes of others than to make them yourself. Presented here are true stories of accidents or near-accidents, written by Air Force Pilots who lived through them. Each could have resulted in one or more fatalities if Lady Luck had not smiled at precisely the right moment. Read them; yes, study them and resolve right now that you will never make the same mistakes. This booklet should help you to grow old in the business of flying!

The booklet also contains a vital message from General Arnold, as well as charts, tables and other oddments of information of especial interest to pilots. It is profusely illustrated in full color.



I GUESS IT WAS OUR FAULT, MAJOR - WE SHOULDN'T HAVE BEEN READING THIS SAFETY MANUAL WHILE COMING IN FOR A LANDING

Courtesy of Chicago Tribune--New York News syndicate.

Hide-Seek Warfare

(Continued from Page 10)

and whitecaps work for you. Lookouts on U-boats surface cruising on such days have difficulty locating aircraft that patrol near the water because seaspray gets in their binoculars, forcing them to go below now and then to dry out their goggles.

In case this suggests that U-boats lie around on the surface like decoy ducks, consider that a submarine can make a crash dive 25 seconds after it spots you. And within 40 seconds after a U-boat submerges, count on it as being out of range. That gives you a total of 65 seconds actual working time, not very long; so spotting a sub is just the beginning.

It all means that you can't have too much speed. And it also means that you can't relax, because that crowded 65 seconds may come anytime--sometimes after eight hours of patrol duty--and you don't want to miss the fun.

To counteract the speed with which a U-boat can submerge, you usually make for the sighted vessel in a straight line, hoping to drop your eggs before the sub has dived. Once it has dived, the only aiming mark for the bombardier is the swirl left behind on the surface, caused by the conning tower

The after-effects of an attack on a U-boat are usually informative, although often disheartening. But they do give the bomber crew an opportunity to evaluate the success of the hunt. Depth charges themselves give off an oily residue after they explode, so a slight smear of oil and minor debris is not considered significant. Even a considerable quantity of oil may mean only that the relatively flimsy external fuel tanks on the sub have been broached, or that the bellows-action of the depth charge blast has forced some oil through the self-compensating system. Appearance of large quantities of oil, however, are considered evidence of a "near miss"; and the escaping oil leaves a trail by which the sub can sometimes be followed for hours.

Bubbles Can Fool You

Don't get too excited over bubbles rising to the surface in a small stream. They may only mean that the U-boat is adjusting a temporary upset by "blowing" some of its air or water ballast to regain even keel. But bubbles in large and continuous quantity are evidence of damage to the external connections of bottles of high pressure air, often carried in the casing under the upper deck and above the pressure hull. While this is annoying to the sub crew, it is seldom serious.

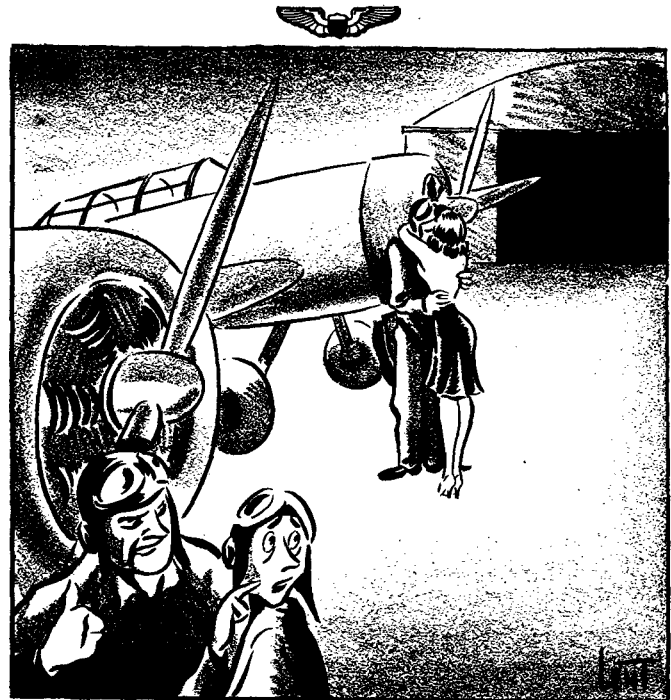
Large bubbles that produce an active boiling of the water's surface over an extended period intimate that Hitler & Co. is having its troubles down below. Such commotion generally means

that serious internal flooding is taking place in the U-boat, and that its commander is blowing out the main ballast in an effort to restore buoyancy. When accompanied by large masses of oil, it may even mean that the fuel tanks are being emptied. It is possible, however, for a sub to fill and sink without any considerable external evidence such as large quantities of debris. Consequently, the bombardier always tosses over an extra egg or two for good measure.

A submarine under attack frequently will break surface momentarily at large angles, either stern up or bow up--but this may only be due to temporary loss of trim or control, and in itself is not conclusive evidence of serious damage.

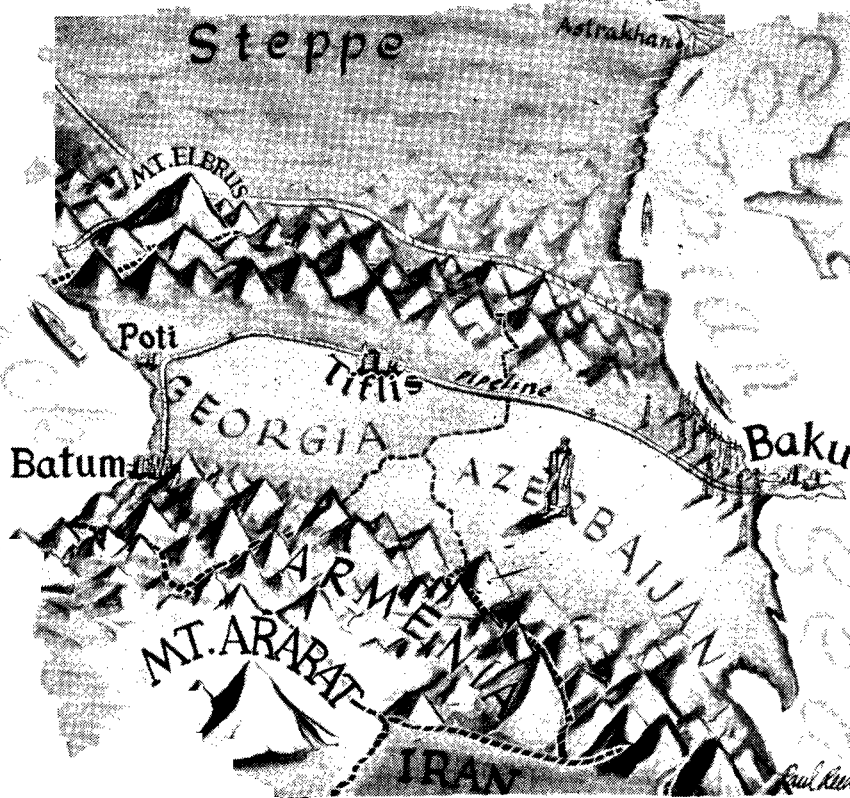
All in all, with speed at a premium, you get to work on the "shoot first and talk about it later" basis. It is not surprising to hear that depth charges have been tossed on unsuspecting whales. And no one should complain at this. It might have been a U-boat, and it's always worth an explosive egg or two to find out.

And you must remember that more U-boats are being bagged than are announced in the papers. It's hard enough getting them without reporting to Hitler each time it happens.



"ALWAYS WARM 'ER UP BEFORE TAKING OFF"

GERMANY'S newest heavy bomber, the Heinkel HE-177, appears to have two radial, but actually has four liquid cooled engines. Two are placed side by side for each nacelle, with a circular nose radiator. Dive-brakes are a notable feature of the new plane.



The Russian Caucasus

By **Oliver H. Townsend**
Headquarters, AAF

JUST north of the Holy Land, in the very shadow of ancient Mount Ararat where Noah ended his nautical "cross-country", lies the rich Transcaucasian valley of the Soviet Union.

Stretching along the border between Russia and Turkey, where Europe ends and the oriental East begins, the Caucasus is the focal point of German drives through Russia and the Middle East.

And for good reason. Here are the great oil fields that feed the mechanized forces of the Russian Army. Here also is the world's largest supply of high-grade manganese--enough to keep the wheels of the steel industry of Europe and America turning for centuries.

Tucked away between the two great mountain ranges that run from the Black to the Caspian Sea, the Transcaucasian valley has remained pretty much of a mystery to the outside world. Even the natives themselves know little about their homeland.

Americans, like everyone else, have never bothered to find out much about the Caucasus. Now they must, however, as they join the rest of the United Nations in the defense of this area from the Axis pincer drives.

Although the Caucasus has a much more tropi-

cal climate, it is actually in about the same latitude as New York City. You could get there by going out to Mitchel Field, taking a plane and heading due east for about 5,000 miles.

The trip would take you out over the Atlantic, then over the northern tip of Portugal, Spain, the Mediterranean, Italy, Greece, Turkey, and finally the Caucasus itself. Once there, you would probably "set her down" at Baku, the oil capital of the Soviet Union.

Baku is a big, bustling, cosmopolitan city. Located on the shores of the great inland Caspian Sea, it is the shipping point for the tons of oil sent every day up the Caspian waterways to the industrial cities to the north, and westward through the great pipelines across the Caucasian isthmus to the Black Sea ports of Batum and Poti.

Baku is a modern, yet an ancient city. The job of getting the oil out of the ground and into the boats and pipelines has brought a western industrial air to the old oriental town. Streetcars, busses and automobiles whirl passed donkey-riding peasants. Modern business cen-

ters have sprung up among the ancient shops and dwellings, and modern homes and parks are making residential suburbs out of the city's outskirts.

The thousands of workers and adventurers that have been attracted to Baku by the oil industry give it a gay, holiday air even in wartime. Most of the 800,000 to a million people speak Russian, mixed in with the scores of native dialects that stamp Baku as a crossroads between the East and West.

Look Like Forests

At night the oil wells that fill the countryside around Baku look like great forests against the moonlit sky. Out beyond the oil wells there's desert--desert that stretches westward for miles toward the foothills of the Caucasian mountains.

Back in this "hill country", west of the desert, outside the big centers of population, many of the ancient customs of the natives are still preserved. Each small community has its own language, few of which were ever reduced to writing until a few years ago. Russian is not even spoken, and is rarely understood, by most

of these people. Up until a few years ago they knew very little of the "outside", and few of them realized there was any country in the world except Russia. Parts of the Caucasus even remained unexplored until recently.

Although the benefits of sanitation and cleanliness are still largely unappreciated in the Caucasus, the natives are very friendly, and, like their country, very picturesque. Their horsemanship, their black lamb-skin caps, their long black coats and knee-high boots are echoes from the day when the Cossacks were the pride and the scourge of southern Russia.

The Soviet government in recent years has brought many of the benefits of western civilization to the Caucasus, including education, the Russian language and rural electrification. Such westernization, however, hasn't changed the native taste for foods. If you want to eat their food, you'll have to be educated to it. One of the favorite dishes is bread made out of corn meal and water, finished off with a swig or two of sour milk.

Life Not Bad

The life for the men, though, isn't bad. They let the women do all the work. Between wars they sit in the village squares smoking and swapping stories while the women raise the children, do the housework and till the fields. Today the village squares are empty--the men are in the Red Army.

In the middle of the Caucasian isthmus, between the Black and Caspian Seas, is the second city of the region--Tiflis. Tiflis is even more of a Babel than Baku, with Armenian, Turkish, Jewish, Greek, Russian, Iranian, German and scores of Caucasian dialects all mingled in the market places and cafes.

Tiflis is the capital of the Soviet Socialist Republic of Georgia. Russia's Georgia, although not as large as our own, has nearly as many people--and Tiflis is almost twice as big as Atlanta. The other two Russian Republics that comprise the southern Caucasus are Azerbaijan, where Baku is located, and Armenia, in the mountains south of Georgia. The money used in these Republics is the same as that used all over Russia--rubles, worth roughly about 20 cents.

The climate of the Caucasus varies greatly. Along the Caspian it's dry and hot. Along the Black Sea it's tropical, and up in the mountains it's cold--especially in the Greater Caucasus range, running just north of the Transcaucasian valley. These mountains are higher and wilder than the Alps (they contain the highest peak in Europe--Mount Elbrus) and form an effective barrier to an invasion force heading southward across the great barren steppe from Rostov, Kerch and the Don River basin.

And the Russians know how to use the mountains as a barrier. For years they've trained special troops to fight their way across the glaciers and crevices of this forbidding range. They know they have to defend the Caucasus not only for itself--but also because it is a stepping stone to Iraq and Iran, and a link in the German attempt to join forces with the Japs in southern Asia.

There are two other gateways to the Caucasus besides the isthmus--the Black Sea to the west and the Holy Land, to the south. The fight to gain these approaches is a tough one. Americans who get in the battle will have some of the best fighters in the world on their side--and some of the United Nations' most prized possessions to defend.

THE GREAT ZERO

By **Lieut. John M. Jenks**

Headquarters, AAF

JAPAN'S "How to Fool the Enemy" Department must have stayed up nights working on its wacky system of aircraft designation. But once you have the key, the great Zero mystery folds up like a parachute.

The so-called Zero is generally described as a fast, highly maneuverable fighter plane. Its chief claim to fame was gained in action against Allied aircraft in the Southwest Pacific. Matter of fact, it is one of the best operational fighters in the world. Actually, there is no single Japanese plane with the exclusive designation of Zero. Every Jap plane of every type placed in service during 1940 is a Zero. To make it more complicated, this includes both Army and Navy ships.

The Japanese designate their military aircraft with two numerals representing the year the plane went into service. To start with, the Jap calendar begins at 660 B. C. As a result, our year 1940 becomes 2600 (according to the Son of Heaven). Only the last two numerals are applied to plane designation. Consequently, 1940 models are designated by "00", or just plain "Zero." The letter T which precedes the numerical designation stands for "type".

"Strange Setup"

This strange setup appears to be a deliberate attempt to baffle unsuspecting foreigners, but even the Japs must stew and fret to understand it. For example, there is a Navy single seater fighter; an Army single seater fighter; an Army heavy bomber; a Navy torpedo bomber; an Army light bomber and a four-engined Navy flying boat--all designated as T-97. This designation merely means that they all went into service during the Jap year 2597 (our 1937).

The Zero fighter generally referred to is a single seater Navy ship made by Mitsubishi. It is sometimes called the Mitsubishi Zero. Its official Japanese name is the "Mitsubishi Navy Fighter T. O."

The Zero looks like a North American AT-6 with a slimmer fuselage and wing guns. It retains its raw metal silver color and is often identified by the sun flashing on its duraluminum stressed skin. It carries one 20 mm cannon

and a 30 caliber machine gun in each wing and a pair of 30 caliber machine guns mounted to fire through the propeller. Early models of the Zero lacked pilot armor and were extremely vulnerable to machine gun fire. Later Zeros carry some pilot armor but offer much less protection for the pilot than standard American pursuits. It carries a jettisonable auxiliary fuel tank slung under the fuselage which adds about 500 miles to its normal cruising range of 1500 miles.

One of the United Nations' leading authorities on the Navy Zero is Lieut. Col. Boyd D. (Buzz) Wagner of the AAF, who has had considerable contact with them both in the air and on the ground. He describes the Zero as follows:

Description

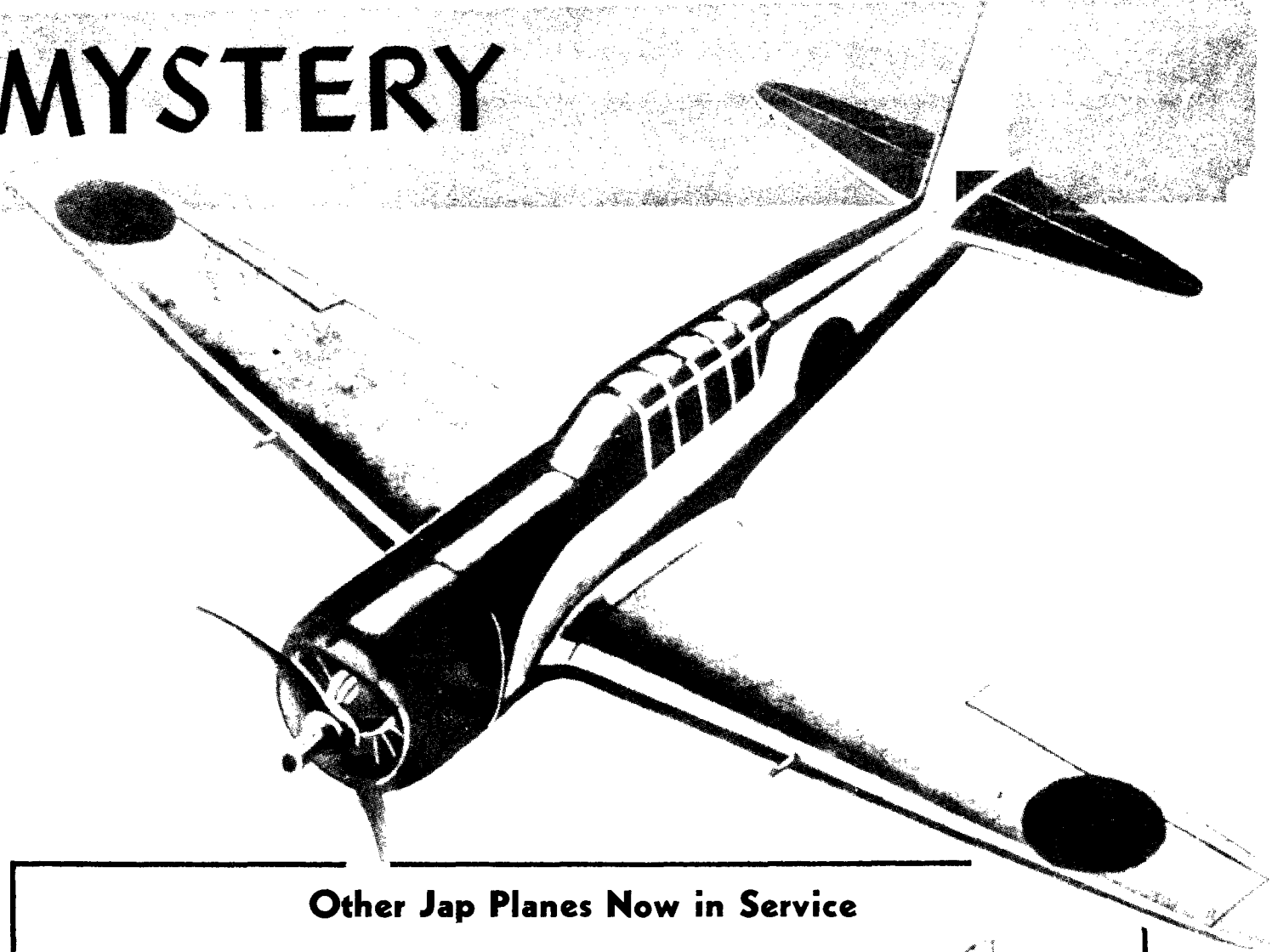
"It's not a wonder plane, but it has the respect of all our pilots. The Zero's wings and fuselage are made in one piece, which means the Japs can't change wings if they are damaged, but must replace the whole job. The system has an advantage in less weight and speed of manufacture if the Japs can make enough for replacements, which I doubt. I doubt if even we could with that system.

"The landing gear folds completely into the fuselage, creating no additional drag, and the plane is entirely flush riveted with only a few drag-creating protuberances. The cockpit is roomy and comfortable. Armament is controlled by a lever on top of the throttle which permits the pilot to fire either cannon or machine guns or both.

The Zero is credited with a top speed of well over 300 mph and does pretty well up to 30,000 feet. It can dive as steeply as AAF fighters but has trouble pulling out as rapidly. It has outclimbed AAF pursuits, however, and a favorite maneuver in the early days of the war was for a Zero to allow an enemy pursuit to get on its tail and then go into a steep climb, flip over in a sharp loop and come out on the tail of its opponent. The Zero's cannon have not proved effective against other fighters but have caused considerable damage to heavy bombers.

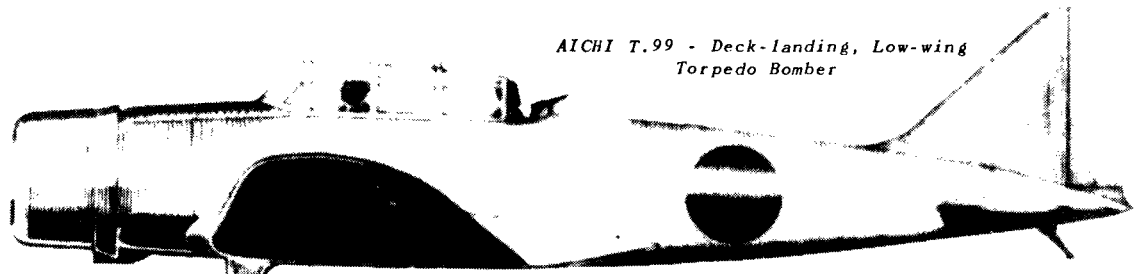
AAF fighters have an advantage over Zeros in their sturdier construction, pilot armor, leak-proof tanks and heavier armament, 50 caliber machine guns and 37 mm cannon.

MYSTERY

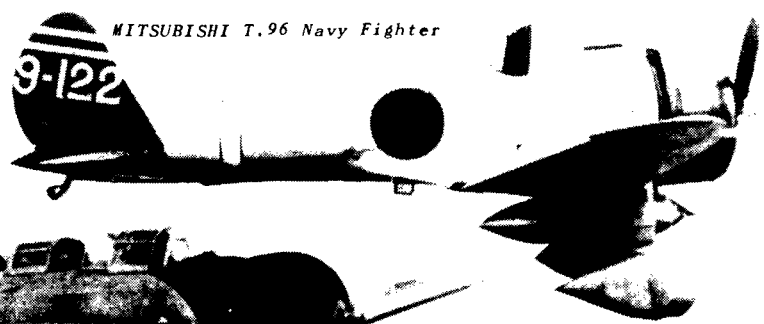


Other Jap Planes Now in Service

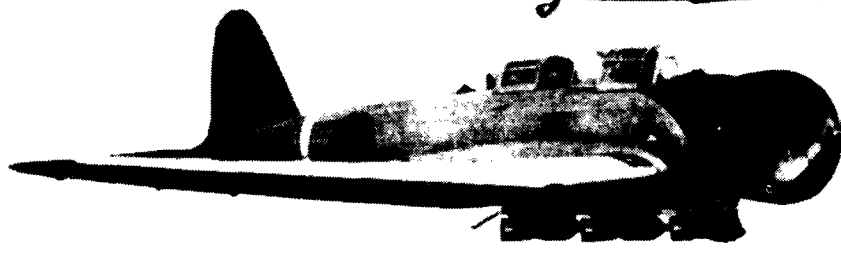
*AICHI T.99 - Deck-landing, Low-wing
Torpedo Bomber*



MITSUBISHI T.96 Navy Fighter



*MITSUBISHI T.97 - Deck-landing
Torpedo Bomber*

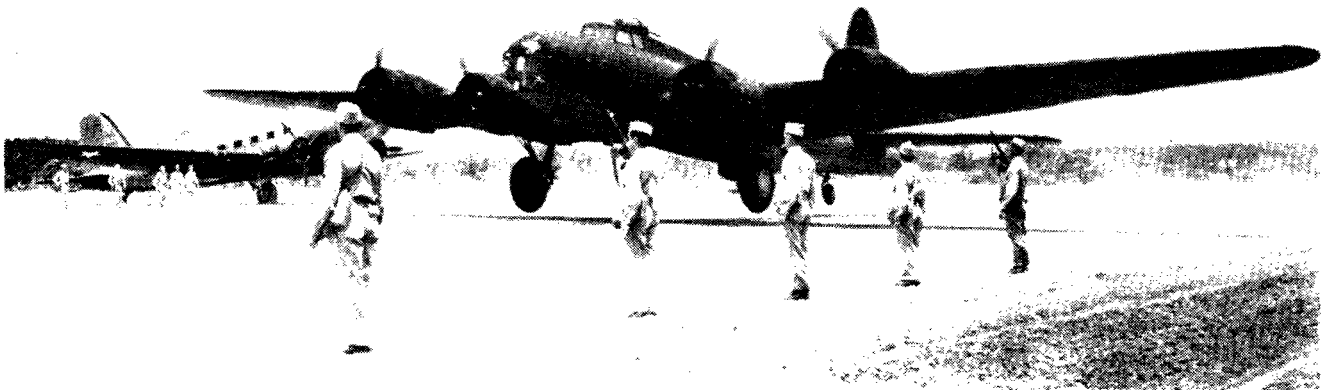




THE AAF has opened its first flight strip, "somewhere on the middle Atlantic seaboard." The strip, shown above, is 8,000 feet by 500 feet, with a runway down the center 7,000 feet long and 150 feet wide, paved with concrete eight inches thick.

Roomy enough to accommodate the flight operations of two full squadrons, the number one strip is also capable of handling the largest of AAF planes, as shown by the Flying Fortress taking off at right, and landing below.

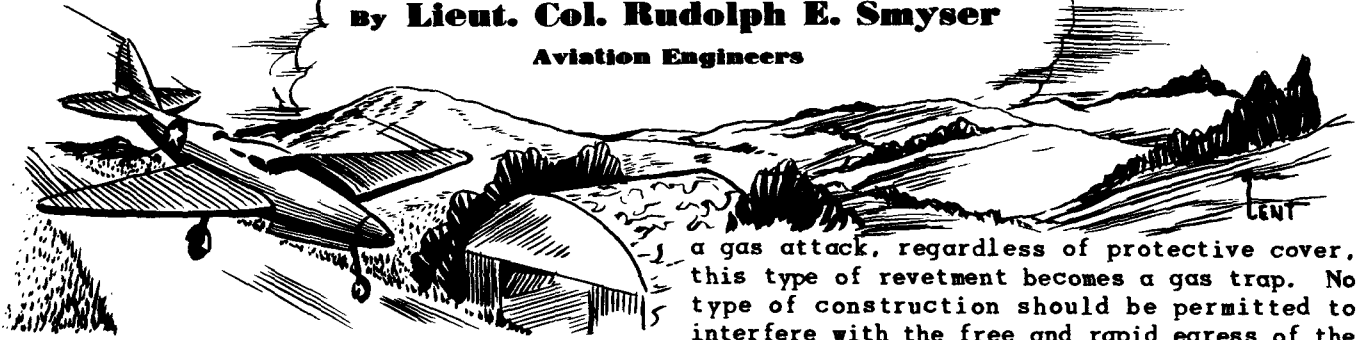
Flight strips such as these are being erected in many defense areas as auxiliary landing fields and dispersal points.



Airdromes in Wartime

by Lieut. Col. Rudolph E. Smyser

Aviation Engineers



PEACE-time practices governing the construction of airdromes have followed a conventional pattern. A large tract of land is obtained and the entire area is graded and leveled. The runways are laid out in rigid geometric patterns, every effort being made to obtain pleasing symmetry. Special efforts are taken to make the runways conspicuous.

All this, of course, is undesirable on an operational airfield.

Regardless of the shape of the landing area or the relationship of the runways to each other, taxiways are necessary to permit maximum utilization. All runways should be connected to each other and to the dispersal parking or revetment area to permit the rapid movement of airplanes from dispersed positions to the runway. Taxiways in general follow the perimeter of the landing area, but like runways should avoid conventional patterns; whenever possible, they should follow the trace of existing roads. The required width is 50 feet, with a clearance of 15 feet from wing tip of plane to nearest tree or obstacle; paving thickness may be slightly less than for the runway. Taxiways should be laid out in a series of tangent, rather than in a sinuous trace. A two per cent grade is acceptable. These taxiways also serve as service roads for supplying airplanes at their dispersed locations.

Except when undergoing major repairs, airplanes at operational airdromes will be dispersed, generally in protective pens or revetments. Hard standings and route of access to these dispersal areas are essential. For safety and control, dispersed airplanes not in revetments should be in groups of three planes, each plane at least 150 yards from the next, and with no group closer than 200 yards at any point to any airplane or another group. Revetments should be 150 feet apart, and must not be laid out on straight lines nor be in prolongation of the runway or other natural bombing runs. The floor of the revetment should provide a hard standing and be above ground surface. Sunken revetments can be built, but are operationally unsuited. Not only does the depression become a sump unless underground drainage is provided, but the difficulty of getting aircraft in and out of the revetment is increased. In event of

a gas attack, regardless of protective cover, this type of revetment becomes a gas trap. No type of construction should be permitted to interfere with the free and rapid egress of the aircraft.

Whether the revetment will be covered depends on local climatic conditions and the supply of materials. A removable, fire and chemical resistant covering will give protection against weather and liquid chemical; it is also valuable in deceiving the enemy as to whether or not the revetment is occupied. Considerations of major maintenance, such as engine changes, must not be permitted to influence the height of the roof. The covers must be as low as possible to permit concealment. The impracticability of concealing a large structure mitigates against such covers for bombing planes. Considering the clear span required, the provision of a cover becomes a definite engineering task of some magnitude. Air raid shelters for the combat and maintenance crew are a necessary part of a revetment.

Pursuit Remains

Pursuit aircraft will remain on the actual airdrome area, near the down wind ends of the runways, as they must be able to take-off with minimum loss of time. Although not desirable, it may be necessary to permit parking these planes within 300 feet of the centerline of the runway.

For bombardment and observation airplanes, the ability to take the air rapidly is less necessary. Accordingly, it is these airplanes that can well be dispersed some distance from the airdrome proper. No exact guide to this distance can be given as it depends not only on local terrain, but also on the requirements for protecting the dispersed aircraft from sabotage by local inhabitants, or from possible hostile airborne action. One mile is not excessive if it facilitates concealment.

So far it has been assumed that the landing area can be seen by the pilot, but in actual practice, a great proportion of landings will be made at night or under adverse weather conditions, for which provision must be made. Peace-time systems of lighting, visible for miles, are manifestly inappropriate. Present practice is to place beacons, visible from certain positions only, some distance from the airdrome. Having located the beacon, by means of a series of hooded lights, designed to be visible at varying

altitudes, the pilot is brought to the proper runway at the desired altitude. Further hooded lights, of minimum intensity, frequently with colored filters, give the pilot his angle of glide, and indicate the edge of the runway. A few floodlights may be available, but are not employed except under unusual conditions, the additional illumination needed being obtained from the landing lights of the plane. Whenever possible, lights will be set flush with the ground, but only under unusual conditions will elaborate underground conduits be used to carry the power. Normally a flexible cable to a portable generator in a trailer unit will suffice.

Servicing and Storage Facilities

Fixed servicing and supply facilities are not built at field airdromes. Not only do these elaborate systems take larger quantities of material and require much time to install, but they are tactically unsound in the presence of an enemy. Gasoline, small arms ammunition, bombs, and other supplies must be delivered to aircraft at their dispersed locations. For this purpose air force tactical and service units are provided with special trucks, trailers, and dollies. The construction of the storage units of the following types is normal:

Storage of gasoline will be preferably in underground tanks not exceeding 25,000 gallon capacity. Tanks should be in pairs with individual tanks separated by 3 feet of earth or equivalent concrete wall with the same amount of overhead cover. Pairs should not be closer than 100 feet with duplicate but separated pipe connections. If underground units cannot be built, above ground tanks should be dispersed, and surrounded by a protective earth traverse on all sides. Tanks of 25,000 gallon maximum capacity, if given this protective traverse, should be spaced at least 150 feet apart; without protection individual tanks or storage piles should be spaced not closer than 200 yards. Regardless of spacing, all above ground tanks must be located in woods or other areas suitable for camouflage. In lieu of large capacity tanks, storage frequently will be in drums. Piles of drums should be treated the same as above ground tanks. Where opportunity presents, gasoline may be delivered in tank cars to a railroad siding near the airdrome. This siding should be at least $\frac{1}{2}$ mile from the airdrome, and on a road suitable for heavy trucks. In lieu of delivering to tank trucks at the siding, it may be necessary to lay a temporary pipeline from the siding to a distributing point on a road nearer the airdrome.

Underground storage of small arms ammunition, bombs, pyrotechnics, and chemicals

will be exceptional. Normally, all storage will be above ground in dispersed and concealed splinterproof magazines or igloos. For bombs and other supplies which are not affected by weather, open storage in revetted traverses is ample. Whenever possible, the standard safety distances given in Ordnance Technical Manuals should be followed, but modification will have to be made to fit the actual terrain.

Spare parts for engines, airplanes, wings and other items of Air Corps Supply require protection primarily from weather. Although valuable, the quantity on hand at field airdromes will not justify attempting to give protection against small arms fire or bombs. Theater of Operations type warehouses only should be built, care being taken to get maximum camouflage by the fullest possible use of any existing structures, or by siting to obtain the maximum inherent concealment. These warehouses need not be on the landing area itself, but should be on roads within 500 yards of any repair hangar that may be erected. (This is the second of a series of articles on wartime airdromes by Colonel Smyser. The third article will appear in the August issue.)



Lieut. General H. H. Arnold, flanked by Brig. General James H. Doolittle, awarding medals to Tokyo raid flyers at Bolling Field, D. C., on June 27.

Midway

(Continued from Page 3)

toms at 1,000 feet, tops at 6,000 feet with high thin-scattered at 18,000 feet. The carriers were circling under the clouds and we had to search for them. There isn't much doubt that they had seen us and were trying to avoid our planes.

All elements of the main body of the fleet could be observed except the carriers; then, after a search, three carriers were seen to break cloud coverage. Again it was Captain Payne who spotted the first carrier. He directed us over his radio, and we went in to attack.

The enemy started firing as soon as we opened our bomb bays. The fire wasn't effective, but a bit disturbing. The fighters came up to attack, maneuvering beautifully, but they failed to follow through. It appeared that their heart was not in their work, and in no case was the attack pressed home.

We divided our ships into three groups. Each group was instructed to take a carrier, and we bombed away. We are fairly certain we hit the first carrier, but we didn't claim it. The second group, under command of Captain Cecil Faulkner, hit its carrier amidships. Lt. Colonel Brooke Allen, commanding the last flight, secured hits on the third carrier. We didn't have time to wait and see them sink, but we left knowing they were badly crippled.

Captain Faulkner's tail gunner sustained the only injury, a cut finger. There was some damage to the ships from machine gun fire and anti-aircraft fire, but we all returned to Midway successfully. We found the island had been attacked in our absence. During this attack we lost a crew chief and an officer who remained on the ground.

Japs Sink Their Own

That afternoon (June 4) we went out again to attack a troop ship convoy reported to be approaching from 265 degrees true and estimated to be about 260 miles from Midway. Enroute we got orders to attack a carrier bearing 334 degrees true and about 180 miles from Midway. We searched that vicinity, but although a burning carrier and a burning capital ship were sighted, no commissioned carrier was located. We learned later that the others we had hit sank or were sunk by the Japanese.

As sunset was approaching we decided to attack a heavy cruiser. All remaining units of the enemy fleet were now deployed and weaving. We attacked at 25,000 feet. Visibility was perfect and the bombing run excellent. At the bomb release line an anti-aircraft shell burst at our altitude off the wing of the number three plane followed by fairly heavy fire. As soon as our bombs were dropped we adopted evasive tactics.

We scored hits on the cruiser and left it

burning, a heavy cloud of smoke issuing amidship. Numbers two and four planes were unable to release their bombs on the first run so they returned and attacked another ship. They did not remain to determine the results of their attack as the Japs had gotten a bracket on them and the fire was extremely intense and all around them. About 25 enemy fighters were sighted below on a northerly heading as we put out for Midway, but none reached our altitude.

This same afternoon Major George Blakey led another flight of B-17s in and attacked the burning carrier. Attacking at very low altitude, they succeeded in scoring many hits.

Fortresses Blast 'Em

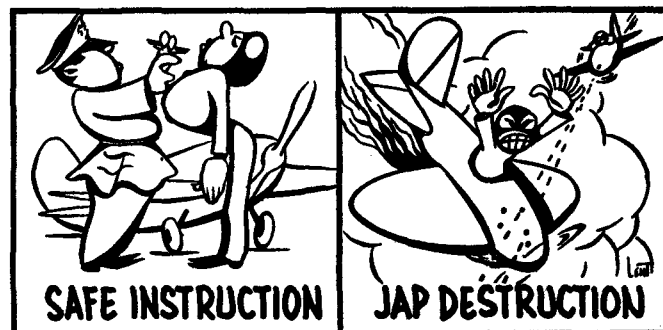
All told, on the afternoon of June 4 our B-17s are credited with scoring three hits on a damaged carrier, (probably the AGAKI); one hit on a large ship; one hit on a cruiser which was left burning, and to have damaged one destroyer, believed to have sunk.

Other B-17s carried on the attack the next day (June 5), contacting an enemy contingent of battleships and cruisers to the westward of Midway despite unfavorable flying weather. Quoting the Navy's official report on that action by our Army bombers:

"They attacked, and scored a direct hit on the damaged cruiser. Another bomb damaged the same cruiser's steering gear. She was last observed listing badly and turning in tight circles. This attack was followed quickly by a second Army Air Force attack which scored a hit on the stern of a heavy cruiser. Meanwhile, at about noon (June 5) U.S. Marine Corps aircraft located the damaged enemy cruiser and delivered one direct hit.

"In the afternoon of June 5, Army 'Flying Fortresses' attacked enemy cruisers again and scored three direct hits upon one heavy cruiser. On the return trip, one of these planes was lost; a second was forced down at sea 15 miles from Midway. All except one of the crew of the second plane were rescued."

Our morale was high throughout, but after it was over we were as tired a bunch of flyers as you ever wish to see.



Aleutians

(Continued from Page 4)

a belligerent, bristling and scrappy outfit as we have up there."

Army fighters and bombers were up after the enemy from the outset of the June raids. That is reported by newsman Keith Wheeler of the Chicago Times, whose series of Navy-approved articles have come straight from the Aleutian theatre, where Wheeler has lived and flown with the airmen.

"A ranging P-39 encountered two Jap cruiser type observation planes in Umnak Pass and shot one down in flames," writes Wheeler.

During the second day's raid, Army fighters shot down two of nine enemy pursuits which strafed Fort Glenn installations; the remaining seven attackers withdrew without inflicting damage.

That same day, Wheeler reports, "Catalinas led Army bombers through the fog to two carriers hanging out 250 miles south of Umnak island. That day a torpedo-carrying B-26 established contact long enough to attack. He bored in at the carrier's looming hulk, one of Japan's largest, and cut loose his tin fish. Instead of going into the water, where it could aim itself, the torpedo dropped on the carrier's flight deck, and worked as much destruction as a 2,000 pound weight can work anywhere it happens to fall. It did not explode."

B-26 Torpedoes

Wheeler describes "our first sizeable lick at the enemy" as action by two B-26 bombers "that suddenly found themselves out of the mist and sitting over a 10-gun heavy cruiser, one of Japan's best. They attacked and hit her bow and stern with two torpedoes. It appeared, they reported laconically, as though 'destruction seemed certain."

Impossible weather made contacts with the enemy few and brief after those first grueling 48 hours, until June 10, when a scouting Catalina located the invaders in Kiska harbor. Then, five B-24s launched the first concentrated attack on Kiska. Describing this action, Wheeler states that the 24s came in low over the harbor, got caught in heavy anti-aircraft fire, climbed back to 18,000 feet to drop their loads, "and left one heavy cruiser flaming in the harbor, hit squarely by heavy bombs." Later that same day, he adds, B-24s made direct hits on two cruisers and a destroyer and left them burning. Two of the 24s were lost.

A battle-scarred B-17 bagged an enemy transport ship and a fighter plane in a single flight to Kiska in mid-June, according to Wheeler, who reports: "The fighter went down in flames after trading blows with the bomber's gunners. The transport was lying in the harbor when a

500-pounder caught it squarely amidships. The next plane to visit the island found the Jap transport belching a mile-high tower of flame and black smoke. The next day only her stern showed above water."

Our aircraft have continually attacked enemy shore installations. On one raid Army bombers dropped 56 eggs on the Japs at Kiska. But, as always, the glue-thick fog made it difficult to determine results.

Based in the Alaskan theatre, according to Wheeler, are our B-17 and B-24 heavy bombers, P-40, P-39 and P-38 fighters, B-26 medium bombers also used as torpedo planes, and airliner DC-3s converted into Army transports.

The same writer describes the "workhorse" Navy PBV Catalinas, whose squadrons are making history by tirelessly flying patrols and searches, shadowing Jap surface ships, fighting Zeros, loosing torpedoes, strafing subs, carrying cargo and troops, and even serving as makeshift dive bombers. Wheeler reports that some Catalina airmen flew 102 hours in two weeks, with the planes beached for repairs only when they would no longer fly. Meanwhile, the Navy's submarines search for underwater targets, and are credited with sinking several destroyers.

Land-based aircraft, fighting under unified Navy command, often operate from bases cut out of areas Wheeler picturesquely describes as "mucky morass that looks like land God plowed experimentally and then wisely decided to throw away."

It is a "blindman's bluff" sort of aerial warfare, waged hour after hour in the pea-thick soup. You fly clad in heavily-lined rubberized parka and pants, high boots and thick wool underwear. You sleep in tents and burrows and pare living down to its lowest essentials. An underground chamber is likely to serve as "HQ" Canned sausage, canned corn beef, canned salmon become the order of the day. You gulp down steaming black coffee between flights. The pilot calls the navigator "the key man up here;" the navigator says a mile visibility "is all we need." When crossing the dateline you argue about whether the bombs will be dropped today, tomorrow or yesterday.

Heading the Air Forces bomber command in the Alaskan theatre is Colonel William O. Eareckson, who not only directs but leads bombing missions, and has served as co-pilot, squadron leader, navigator and even gunner. An Alaskan fighter unit of the Air Forces has all its planes decorated with the sign of the "Flying Tiger", and is commanded by Captain John S. Chennault, son of Brigadier General Claire Chennault, whose Flying Tigers of China have made themselves well known to the enemy.

As General Kuter expresses it: The Japanese are now between two Flying Tigers, "and both of them clawing."



AUGUST-SEPTEMBER 1942



Alva-20 on patrol over Grand Coulee Dam

AIR FORCES NEWS LETTER

HEADQUARTERS ARMY AIR FORCES
WASHINGTON, D. C.

VOL. 25

AUGUST-SEPTEMBER, 1942

NO. 6



FEATURES

AMERICAN FIREWORKS OVER EUROPE -- <i>By T/Sgt. Robert Golay.</i>	3
"WE FOUGHT AT MIDWAY" -- <i>By Capt. Charles E. Shelton.</i>	4
TAILOR MADE FOR COMBAT -- <i>By Capt. Selby Calkins.</i>	8
WE SCOUR THE SEAS -- <i>By Air Vice-Marshal G.B.S. Baker, RAF.</i>	10
HUNTING FOR ONE IN A MILLION -- <i>By Lieut. John M. Jenks</i>	12
MIAMI BEACH GOES TO WAR	13
THE TRICYCLE LANDING GEAR -- <i>By Capt. James A. Johnston</i>	16
THE LUFTWAFFE TODAY	20
RED SENTRIES OF THE SKIES -- <i>By Major N.Denisov, Russian Air Force</i>	23
AIRDROMES IN WARTIME (PART 111) -- <i>By Lt. Col. R.E. Smyser</i>	27
FRIEND OR FOE? -- <i>By Capt. F.W. Warlow.</i>	30
EGYPT -- <i>By Oliver H. Townsend.</i>	33

DEPARTMENTS

CROSS COUNTRY	1	CONTROL TOWER	14
ROLL OF HONOR	11	PRO PATRIA MORI	22
TECHNIQUE	24		

Technical and Art Staff:

James T. Rawls, Director - Capt. Raymond Creekmore
Sergt. William T. Lent - Paul Reed

Photos from official Army Air Forces sources



Our Most Powerful Weapon

A REAL AND POTENT WEAPON IS BEING CARRIED ABOARD OUR BOMBERS. THIS WEAPON IS TEAMWORK--THE PRECISION TEAMWORK FOR OUR FLYING COMBAT CREWS.

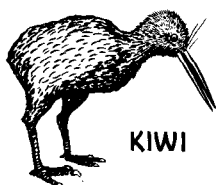
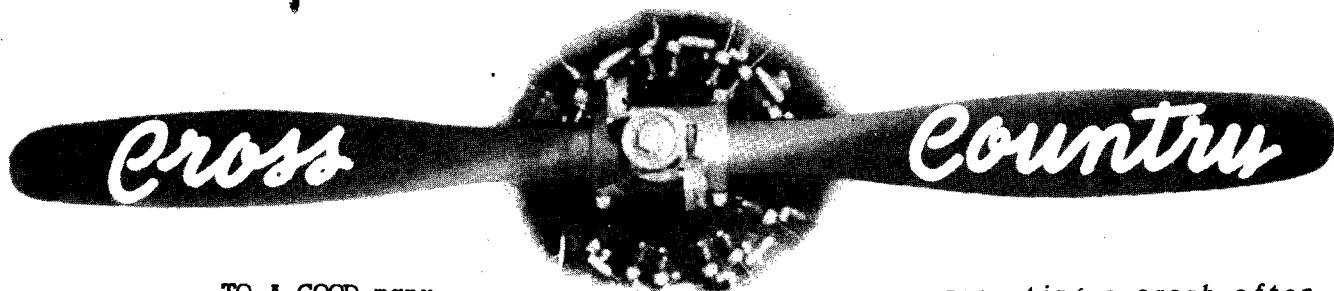
PRECISION TEAMWORK COMES OF MEN KNOWING AND LIKING ONE ANOTHER; OF TRAINING AND PRACTICING LONG ENOUGH TO KNOW EACH OTHERS ABILITIES AND LIMITATIONS; OF FACING DEATH TOGETHER FOR A COMMON CAUSE. ON THE GROUND, IT PRODUCES EASY FELLOWSHIP AND A NEW KIND OF DISCIPLINE. IN THE AIR, IT IS THE MOST POWERFUL FORCE OUR ENEMIES MUST FACE.

ALL MEN IN A BOMBER CREW MUST WORK TOGETHER AS PRECISELY AS THE PARTS OF THE INTERNAL MECHANISM OF A FINE WATCH. ANY ERROR BETWEEN PILOT AND NAVIGATOR ON A 2,000 MILE RUN OR THE SLIGHTEST FLAW IN CO-ORDINATION BETWEEN BOMBARDIER AND PILOT IN THE SHORT RUN ON THE TARGET CAN MEAN THE FAILURE OF A MISSION. IF THE FLIGHT ENGINEER CANNOT KEEP THE COMPLICATED MECHANISM OF A BOMBER IN ORDER DURING FLIGHT OR THE RADIO MAN DOESN'T KNOW HIS JOB, WHY RISK THE SHIP ON A MISSION AT ALL? AND IF YOU WHO MAN THE MACHINE GUNS IN COMBAT CANNOT COVER EVERY FOOT OF THE SURROUNDING SKY WITH LEAD, DEATH STARES AT THE ENTIRE CREW.

PILOTS, BOMBARDIER, NAVIGATOR, FLIGHT ENGINEER, RADIO MAN AND GUNNERS MUST STOP FUNCTIONING AS INDIVIDUALS THE MINUTE THEY STEP ABOARD THEIR BOMBER. THEY MUST BEGIN TO OPERATE AS ONE. THAT IS WHY PRECISION TEAMWORK IS A VITAL PART OF EVERY BOMBING OPERATION AND THE MOST POWERFUL WEAPON ABOARD OUR BOMBERS. SUCH PRECISION TEAMWORK PRODUCES PRECISION BOMBING.



GEORGE E. STRATEMYER,
Major General, U.S. Army,
Chief of the Air Staff.

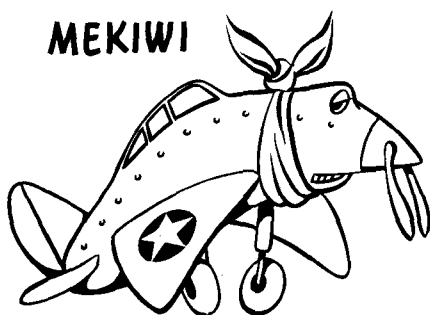


KIWI

TO A GOOD many the term Kiwi (kee-wee) won't mean a thing, and we aren't much concerned about it. The name Kiwi right-

ly belongs to a non-flying, witch-like New Zealand bird about hen size, and although it popped up some 25 years ago as the slang description of non-flying Air Force personnel, we are not sure it means all that it did back then in view of the recognized importance today of earthbound officers and men in the Air Forces.

We are concerned at the moment with the mechanical Kiwi, or what we like to call the Mekiwi, and which we will have no truck with and don't mind saying so. In fact, we are about to suggest an open season on the flocks of Mekiwis now roosting throughout the Air Forces.



MEKIWI

The Mekiwi, if you please, is an airplane mechanically unfit to fly because someone flunked his job or became careless or failed to realize the importance of maintenance in aerial warfare.

If our useless Mekiwis nested primarily in the combat areas, we might be tempted to

dig up some excuses. But when this country has three to four times as many available planes out of commission as have such spots as Alaska, Hawaii and Panama, we haven't much of an argument.

To hunt down the Mekiwis and keep more planes in the air, Headquarters needs ammunition in the form of ideas and suggestions from the field, especially from officers and men directly engaged in maintenance and technical inspection work.

Mekiwi hunting demands, first of all, a general buckling down to work, but we do need to hear more about the specific boners that have come to your attention. Send in suggestions for a series of "do's" and "don'ts". Shoot us ideas for articles, cartoons and posters that might help improve the standard of maintenance.

Reports tell us the Mekiwis are thriving on such earthworms as these:

Bodily removing a generator when a slight adjustment of the voltage regulator would have corrected the trouble.

Warming up a plane where loose rocks or gravel can cause serious injury to nearby planes and crews.

Failing to ground the magneto wire and thus preventing the engine from being stopped.

Using improper cleansing agents that ruin equipment or endanger life and property.

Failing to make proper notation on Form One when removing a plane part, thus

prompting a crash after a pilot has taken up the plane in good faith.

Holding up a 100-hour inspection for lack of such simple "10-cent store" items as washers and gaskets.

That merely scratches the surface of easily correctible boners that daily ground our planes and breed Mekiwis. How about passing on information concerning the maintenance bottlenecks that are gumming up the works? Jot down your ideas and suggestions and send them to Headquarters in care of the *News Letter*. It will help eliminate the Mekiwis.

ONE OF THE WILDEST confirmed war stories to come our way features a British fighter pilot who downed two Nazi planes without firing a shot. His report: "Owing to the position of my Hurricane and that of another machine of my squadron, I crashed into a Do. 215 (German) with my right wing. The wings of both planes broke up. I then crashed into another Do. 215 on my left with my left wing. I then went into a rocket (wingless) dive." While the Nazi planes were crashing to earth, the Hurricane plunged down out of control. The English pilot landed safely by parachute, his only injury a sprained ankle.



DICTIONARY of British slang: "Mickey Mouse," bomb dropping mechanism; "brolly," parachute; "bus driver," bomber pilot; "dust bin," rear gunner's position; "George," automatic pilot; "balbo," large formation of aircraft; "completely cheesed," no hope at all; "collect a gong," get a medal; "crabbing along," flying near the ground or water; and "Kipper Kite," coastal command aircraft used to convoy fishing fleets in the North and Irish seas.



COMBAT NOTES: It's rather important that pilots know the voice of their flight director. The Japs are old hands at radio deception. At Midway the Japs were talking a lot of English on frequencies used by American planes....Anti-aircraft fire directed at one plane has been known to pass right through and hit the following aircraft. In strafing of any kind, it is important not to follow exactly in the path of the ship ahead....Jap Zeros are believed to be landing on carrier decks without the use of hooks....Last minute checks before combat on such items as guns charged, carburetion and proper engine RPM are very essential. A check-off sheet mounted on the instrument board has been recommended....Full or partial deflection shots are accounting for the great percentage of planes downed in fighter combat.



AN informant from the Southwest Pacific Area warns against running for shelter when the bombs begin to fall on an air-drome. Lie flat on your face behind small protection such as sand bags or in shelter trenches says he, and your chances of getting nicked are less likely. Take this advice, we are told, and you will be surprised how close a bomb can hit without doing you wrong.



TWO late arrivals in the enlisted ranks have given us cause for smiles. The one, at a southern camp, nervously asked the Sarge what that AUS meant after his name, and was told it stood for Army of the United States. "Whew," mumbled the recruit, "I thought it meant AUSTRALIA." The other, reportedly at Keesler Field, and nervous for another reason, walked into a post building, hesitantly peered about, and asked a nearby Corporal if there happened to be a men's room around. The Corporal pointed toward the door marked "Enlisted Men." The recruit sorrowfully shook his head and said: "I can't go there; I was drafted."



WE PICKED this one up at least fifth hand, but an Aviation Cadet at some field or other, after being transferred to another field for advanced training, is said to have written his former tactical officer in this fashion:

"At last, after weeks of silent suffering, I am now far from the range of your jurisdiction and as far as I am concerned you and all of your staff can take a jump in the lake."

Not long after, so the story goes, the Cadet got this reply: "All information as to troop movements must be submitted on Form 245B."

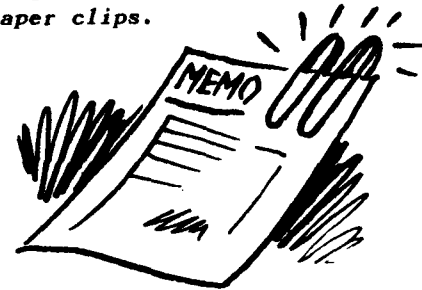


A teletype report passing over our desk was cause for a second glance. It read: TWO LINK TRAINERS DEPARTED THIS STATION DATE ETA 281600Z END. Just when we thought the faithful Link had finally soloed, we learned that the message referred to Link trainer operators.

YOU PROBABLY DON'T know too much about the Swiss Air Force. Neither did we, until we ran across such incidental information as this: The Swiss Air Force was originally a branch of the Army but was made independent in 1936. Since September, 1939, it has been in a state of partial mobilization. Under the Swiss militia system, each young male citizen, unless he pays a special military tax, enters the armed forces. After serving as a private soldier for six months, he may volunteer for flying duty. If so, he enters a flying school, progressing to advanced training. Active duty can come only in the event of mobilization. The Swiss Air Force is organized solely for defense, has no bomber command. Flying personnel are reported extremely proficient. Equipment is either German Me 109s or French Morane 405/6s, both manufactured under license in Switzerland. Swiss pilots are said to prefer the French ships.



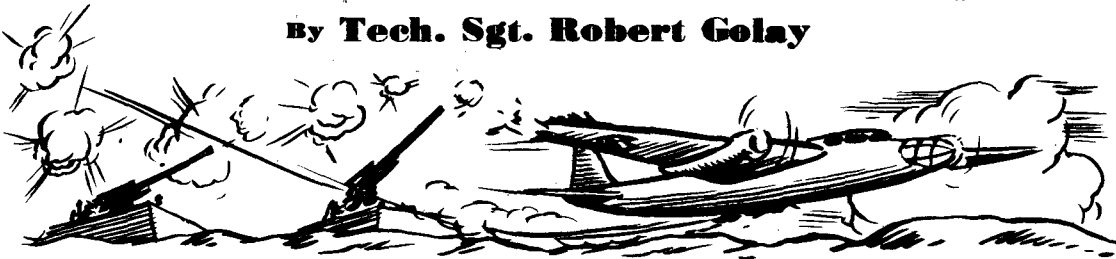
A memorandum calling our attention to Army Regulations on the conservation of valuable material, including a reminder against the use of duplicate paper clips, didn't carry the punch it might have, inasmuch as the memo was weighted down with two shiny paper clips.



WE CAN'T PROVE it, but the report comes from the Midland (Tex.) bombardier school that more practice bombs are dropped every day on Texas prairies than the daily average of real bombs dropped by the Germans in the September, 1940, Battle of London.

American Fireworks Over Europe

By Tech. Sgt. Robert Golay



AND there we were, upside down at ten feet dropping our bomb", and so goes the old line without which any aerial gunner would feel as naked as though he were without his clothes, but back of those lines lies a story that entitles most winged warriors to tell their own stories in their own way.

Through the events of the past four months it has been my good fortune to become an aerial gunner, and through consequent events, to be a member of the first American combat crew to drop bombs on occupied Europe. Because of these events, I have been requested to set down on paper as nearly as possible the trend of events that reached their climax with the Fourth of July raid on Holland.

I entered the Army Air Corps in June of 1940, at Chanute Field, Rantoul, Illinois. I had been a newspaperman on the Fredonia (Kansas) Herald and someday after the war I hope to be a newspaperman again. It wasn't long before I began to move about, leaving Chanute a month later to attend the Aircraft Armorers school at Lowry Field, Colorado.

Training Was Valuable

Later, that training which I received at Lowry was to be one of the most valuable pieces of time which I have ever spent. However, at the time it was a lot of hard work figuring out how so many little gadgets put together in one "shell" could cause twelve hundred rounds a minute to come out the muzzle.

After graduating from Lowry Tech., my journeys really began, and from that time, October 25, 1940, until April 29, 1942, I was stationed at eight different stations for varying periods of time--Brooks Field, Kelly Field, Goodfellow Field, Sherman-Dennison Air Base, all in Texas; Will Rogers Field, Oklahoma City, Oklahoma; Hunter Field, Savannah, Georgia; Lawson Field, Fort Benning Georgia, and Fort Dix, New Jersey.

In all this time, I was on and off combat status rather spasmodically, but even at that time, I had definitely made up my mind, that one way or another, should I ever get into the combat zone, I'd either become a gunner or some other part of a combat team.

After landing in England, which was preceded by a boat ride that was by no means uneventful, things began to move rapidly and things happened fast. Early in June of this year orders came through from the commanding of-

ficer that eighteen men would proceed immediately from our base to one occupied by British personnel for the purpose of a short but intensive period of instructions as aerial gunners.

The training which we received from the R.A.F. instructors at this base, has and will continue to be, one of the guiding factors in my present and future operational flights. Too much cannot be said about the tireless way in which these boys, none of them over 25, unfolded for our observation and discussion stories which theretofore they had never discussed even among themselves. Stories of actual experiences by men from Malta; of sweeps against the Norwegian coast; of low-altitude attacks against shipping in the channel and the North Sea. It was from these men that we learned what to expect from "Jerry". Through mistakes that had cost the R.A.F. lives, we profited.

We were greatly pleased to find that the particular British squadron, with whom we were to coordinate our efforts, was flying "Bostons", the British version of the Douglas A-20. But suddenly we discovered that we were a long way from being ready to go on "Ops", the British term for operational missions. There was the job of each crew getting to know each other, to learn the little peculiarities, which tend to make one individual different from another; the radio men had to learn the English procedure, and in general we all had a lot to learn.

Met Sgt. Cunningham

It was at this point of progress in events that I first got to really know Sgt. Bennie B. Cunningham. Bennie is a quiet-spoken lad from Tupelo, Mississippi, who says very little, but always does his job plus just a little more. Bennie and I were crewed up with Captain Charles C. Kegelman, who was commanding this particular operational group.

It had been my good fortune to know the captain for some time before we came overseas, and having seen several demonstrations of his flying, I knew he was tops when it came to being skipper of a plane, either in the air or on the ground. Believe me, it means a lot to have a C.O. like that.

The observer was Lt. Randall Dorton, Jr., who, in the captain's absence was more or less mother to his little brood, and continually kept after Bennie and myself to keep training, rain

(Continued on Page 35)

STAFF Sgt. John J. Gogoj of Bellrose, N.Y., was the top gunner in one of the Air Forces' B-26 torpedo planes that put their tin fish into a Japanese aircraft carrier during the Battle of Midway. His pilot, Lt. James Muri, of Riverside, Calif., was guiding his plane to the scene of battle several hundred miles from Midway. When the B-26 was about 25 miles from the Jap task force, which included at least four carriers, Sgt. Gogoj's story began.

"We were sailing along, headed right for the Japs' ships out ahead of us. Me and my guns were pointing forward, out over the pilot's cabin, ready for any trouble from in front of us. That's where the Japs were, and that's where I expected trouble from," Gogoj said.

"Then I heard Ashley,--that's Earl Ashley, a pfc, he's from Williamstown, South Carolina,--start shooting his gun in the tail. I swung around, and there about 500 feet away was a Jap pursuit plane right on our tail. It was one of those Zeros.

"He was shooting right into us, I could see the flame coming out of his wing guns and that cannon was lit up plenty, too. All I know is that I swung my guns on him and squeezed the trigger,--then hell started popping.

"He hit my left gun with one of those cannon shells. My turret cover was all busted. Pieces of it hit me. Pieces of it cut my scalp," he said pointing to a half dozen cuts on his scalp. "I put my hand up to my head. Then I felt something kind of sticking to my right temple. It was sticky and wet. I tried to brush it off, but I couldn't get it loose. It was under the skin. I picked at it like this," he indicated, making a tweezer-action with his thumb and finger. "It was a bullet that had gone in under the skin. I got ahold of it and pulled it out.

"We fought at MI

Compiled by Capt. Charles



"Then I went down below into the plane and took some sulfanilimide and started to bandage my head. I had the bandage all ready and just ready to put over the cuts when a bullet hit my hand here,"--and Gogoj pointed to a scarred nick on his left middle finger,--"and bounced off, I guess, and hit me here over the left eye. Boy I tell you that made me mad. I was sure bloody then. You might say that after that I was immune to pain, but I sure looked bad with blood all over my face and coveralls.

"Then I went back up to my guns. The right one was still working. And it was a good thing because another Zero was on us. He wasn't actually shooting at us, but was up above us about a thousand yards. I could see that he was trying to get just a little more altitude so that he could zoom down on us. I figured he was ready to drop on us, so I opened up with the right gun. I pulled the trigger.

"Tracers went up into him right around the pilot's compartment. I think I got him all right because he just plain disappeared,--just left completely. I'd like to go back to Midway to look at our plane. You know we had more than 500

bullet holes in her. She isn't much good now, but it was worth it, putting that torpedo into that carrier. It sure was worth it."

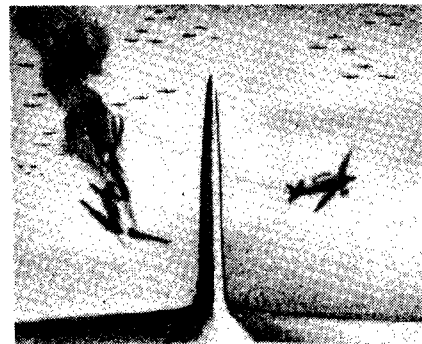
All members of the B-26 crew were awarded the Distinguished Service Cross for their performance.

"We got in 54 hours of flying time in four days," said Capt. Charles E. Gregory, of Houston, Texas, after his return from piloting a B-17 in the Midway battle. "At one time we were as close to Yokohama as we were to Honolulu. But not as close to Yokohama as we'd like to be."

Capt. Gregory and his crew scored definite hits on a Jap battleship and a carrier. During the height of battle Sgt. Bernard Carroll, of Tom's River, New Jersey, upper turret gunner, calmly spoke to Capt. Gregory over the inter-phone. Said Sgt. Carroll: "Some Zero's right behind us, Sir. If you'll slow down a little bit, Lomax and I'll get 'em." Cpl. Melvin Lomax, of Wichita, Kansas, was the rear gunner.

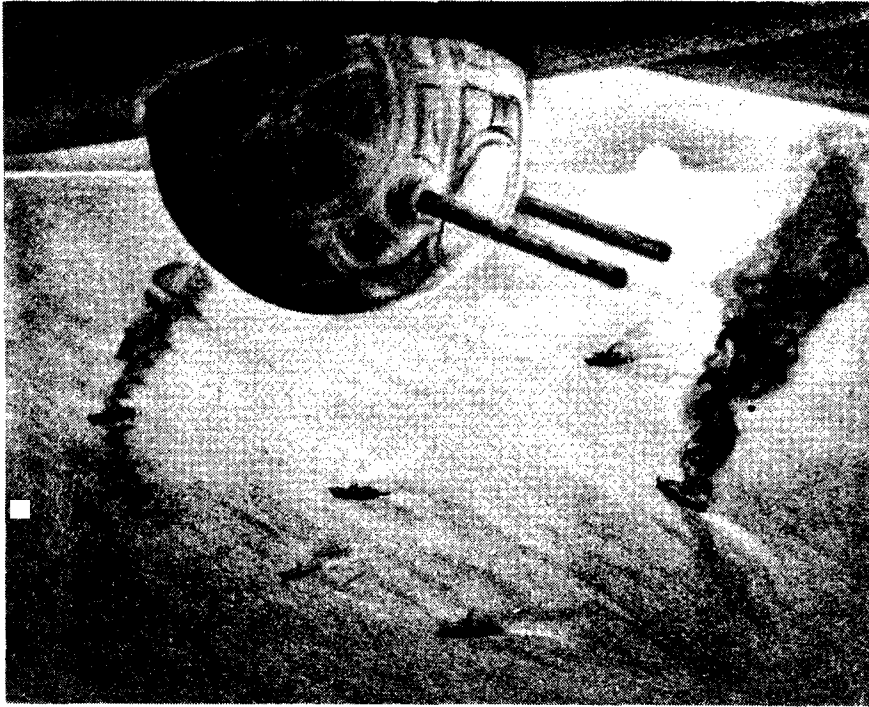
Sergeant George Scherba, a Pittsburgh boy who has three brothers in the service, tells what a belly-gunner in a B-17 went through off Midway.

"After weeks of 'special



"WAY"

elton, Hickam Field



first bursts of anti-aircraft dot the sky.

"I saw the shrapnel spatter all over the ocean," Sgt. Scherba continued. "They kept firing like this while we got the sun behind our backs for our bombing run. As we got closer every boat seemed to be

and it was a funny feeling to be looking down into their gun barrels from my position.

"Then I heard 'Enemy Aircraft' over the inter-phone. Looking out I saw a Zero fighter coming up about a thousand yards away. The tail-gunner let him come up to about 400 yards. I opened up too. From the tall stories about fanatical Japanese pilots, I thought he would close in fighting. Not this Jap. Tracers were flying all around him as he broke away. Just at that point three groups of tracers hit him. He started a zigzagging glide towards the sea with black smoke pouring out of him. I did not see him crash because I started looking for other targets. All in all I saw just three Zeros. When we landed a tail-gunner from another plane told us that he saw our Zero fighter crash in the sea."

A hard luck story was told by 2nd Lt. Bernard E. Anderson of Fayette, Utah, a bombardier on a B-17. Anderson's plane, piloted by 1st Lt. Fred Wesche of New Jersey and 2nd Lt. Arthur L. McMullen of Akron, O., joined a flight of 16 other planes sent out from Midway in chase of the fleeing Japanese navy.

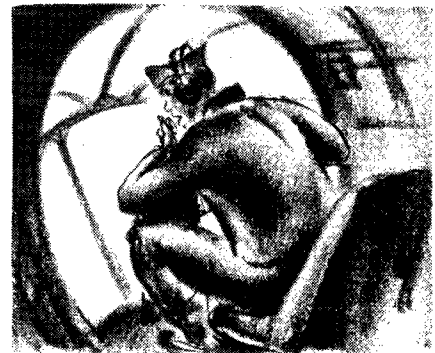
alerts' we were given orders," Scherba said. "Take-off was scheduled. No one seemed to know where we were going--lots of rumors about Australia. Once in the air, we found out where we were going and why. As we were flying along I spent most of my time jumping in and out of my lower ball turret. I practiced tracking diligently because something told me I was going to use it. I thought the world of that turret before we left and before we got back I was 'nuts' about it.

"Just as the sun was on the horizon, I heard someone say over the inter-phone, 'There they are, boys!' I swung my turret to the front and saw clouds of smoke coming up from burning ships down ahead of us. It was a good sight because I knew someone had done a fine job. We were at least 10 to 15 miles away when I saw the

opening up on our planes. We were so low that the Japs couldn't get it through their skulls to shorten their range. It seemed all their shots were bursting above us. A carrier that was burning at the stern was firing heavily from the prow.

"A plane headed for it, but before I could see what happened I noticed a heavy cruiser immediately below us. I opened up on it. The guns started at the stern and went over the whole length of it. I was firing bursts of 6 to 10 rounds at it steadily. The cruiser seemed to suck the tracers right into its deck. All the while the Japs were shooting at us

Sketches by
Capt. Raymond
Creekmore
AAF Artist



"After searching for five hours we finally sighted two Japanese vessels which I think were cruisers," Anderson recounted. "Three planes up in front of our formation went after the first ship below and I don't think a single one of their bombs missed, because the vessel just buckled up in

(Continued on Page 37)

ONE-MAN LIFE RAFT

THE Army Air Forces' newest safety device is a seat cushion for sitting down purposes that becomes a one-man raft for life saving purposes.

The gadget was demonstrated for Wright Field officers recently by Lt. David Allen, of Ft. Benning, who leaped into Indian Lake, Ohio, from 5000 feet and paddled ashore.

At the right is Lt. Allen poised for his jump. On his back is his main parachute; in front is strapped his emergency chute and under the Allen rump is the rubber life raft.

On arriving in the water (picture 2) Lt. Allen disengages himself from his chutes, and turns the valve of a small gas tank attached to the raft, inflating it instantly.

He then pulls himself into the raft (picture 3) and proceeds to bail out the water shipped during the boarding operation.

In the final photo, we see the Lieutenant ready to go places by means of paddles strapped to his hands.



3



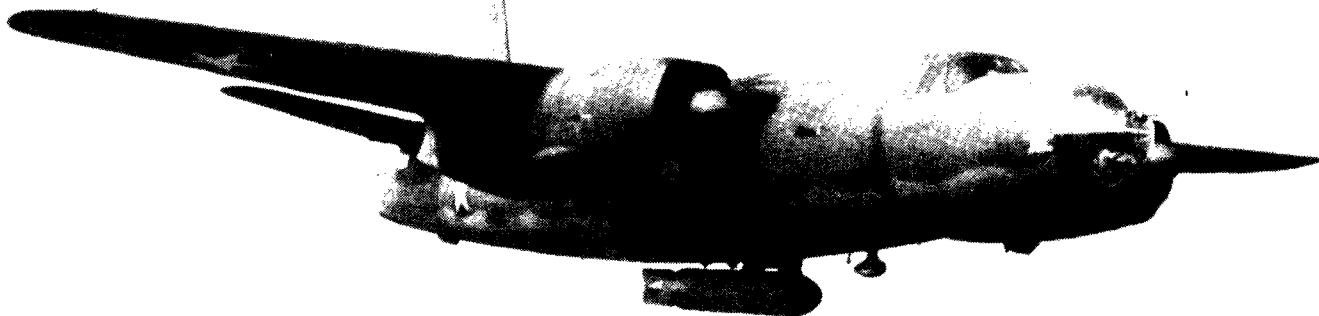
4



Tailor-Made for Combat

By Captain Selby Calkins

Wright Field



A torpedo-carrying B-26 medium bomber

THE scene might be enacted in any one of a dozen or so cities in the United States, from the Mexican to the Canadian border. A group of young workers, lunching within hearing of a steady roar of aircraft engines, have the day's newspaper on the table in front of them and are discussing yesterday's successful attack by American Air Forces over France or Germany or Libya or some far outpost in the Pacific.

The discussion is less one of words than an exchange of knowing smiles. Then:

"C'mon, you guys, lets get back to the shop and do it some more," says one of them.

Maybe the combat "show" they have been reading about was a torpedo attack by an Army plane known heretofore as simply a medium bomber. Or maybe they had been reading of the exceptional success of an already obsolescent--from our standpoint here at home--fighter plane which has proved to be a pretty good ground strafers and light bomber in the North African desert.

These lads are young but skilled. It is likely that their supervisory heads are veterans in aircraft construction and maintenance. Certainly they are every one of them artisans, for they are employes of one of the U.S. Army Air Forces Modification Centers, set up and operated for the Materiel Command's Production Division.

General Wolfe Is Chief

The Materiel Command is the Army Air Forces' agency for supplying our far-flung fighter commands with the airplanes and the equipment needed in this global war. And the Production Division

is its "shirt-sleeves" organization. From Brigadier General K.B. Wolfe, Chief of the Production Division, down to the newest apprentice to skin his knuckles on a cylinder stud in a factory, the one objective is more airplanes, more guns, more bombs--more sudden death for the Axis. It takes rolled up shirt-sleeves, and sweat and daring thinking, to do the job as rapidly as it has to be done. That is the "why" of the Modification Centers.

Does an idea for a telling blow against the Japs form in the alert brain of General Doolittle? He and General Wolfe go into a huddle. Somewhere in the United States a number of airplanes start touching down on an airport and taxiing up to huge shops, one by one. Engineers and project officers armed with rolls of blueprints and technical instructions filter in from Wright Field, and another Modification Center project is under way.

No telling what happens after that....maybe Tokyo will get bombed again. Maybe Jap aircraft carriers will be sinking all over the Pacific because the Nips didn't know that land based bombers carried torpedoes. Or maybe ships that the Luftwaffe "knew" had a range of only a few hundred miles, suddenly strike at key industries a thousand miles from the nearest Allied air base. Let 'em guess!

Colonel Bryant L. Boatner, Chief of Special Projects at Wright Field, passes over the special projects of our Modification Centers with: "We don't say much about past jobs--we might want to do 'em again"! Then he boils down the

broad Modification Center program with a homely comparison:

"Suppose you make kitchen stoves," he says, "Your factory is all tooled up for one model on a mass production basis and you're turning out thousands of them. Then your salesmen tell you that you've got to add another gadget or your competitors are going to put you out of business. Which is easiest--retooling your plant or adding another little shop where the gadget can be installed on the mass production stoves before they meet their competition?"

"That's the basic function of all our Modification Centers--we add, subtract and change to meet and beat our competition--the Axis. We can take production airplanes and fit them for Arctic or desert operation, increase their range or build up their bomb loads.....sometimes fix up little surprises for the yellow Aryans in Asia and the paperhanger's stooges in Europe," he explains.

Broadly, the purpose of the Modification Centers (exclusive of special projects in the "surprise" category) is to permit up-to-the-minute developments to be incorporated in combat aircraft without interrupting the flow of production from factories. Of course when a number of these changes merits inclusion in all production airplanes, steps are taken to provide tools and manufacturing methods for the change. All preparations are made without interrupting the flow of production. Then, when everything is ready, the change in tooling and methods is made literally overnight--and from that point forward the uninterrupted production stream from the factory is a stream of the more advanced type airplanes.

Personnel Are Experts

Such procedures in one airplane does not wipe out the affected Modification Center. On the contrary, it continues to operate--perhaps with the same airplanes coming in for even newer installations--perhaps with another type, from another manufacturer, getting the attention of the experts assembled there.

The word "experts" is used advisedly. Personnel of the Modification Centers are not beginners. In the search for facilities which could be used at the earliest possible moment and used to the greatest advantage, the terminal overhaul shops of the nation's airlines loomed like beacons in the night. The Army Air Forces knew that these airlines had for years been training crews of skilled mechanics in the need for speedy, yet perfect, overhaul and repair and even major modification of their transports. An organization which can take a work-weary passenger transport and turn it out a few hours later in factory-new condition, is an organization which has been trained to perfection.

Thus it was that the airlines were approached

with a proposal that they operate these Modification Centers under contract with the Army Air Forces. They voiced assent with the same eagerness that gave our war effort their airplanes and their pilots and their experience in so many other phases of the war's demands upon their industry.

Today the airlines operate exactly half our Modification Centers. Others are operated by manufacturers themselves, and a few by the Army Air Forces at Air Depots. By and large, the airlines have carried the major load in volume of modification work performed to date.

Geography A Factor

By design, Modification Centers operated by airlines have geographical advantages. For instance bombers manufactured on the Pacific Coast and destined for ferrying to a combat zone via a South Atlantic route, may be flown from the factory to a Center in Texas. They arrive there as plain "production jobs"--but they'll leave ready for combat against the type of competition they'll meet and equipped for the kind of weather or terrain they'll find at their destination. Too, there are Modification Centers geographically close to North Atlantic jump-off points, and in the Pacific Southwest and Northwest.

Do Intelligence reports advise us of conditions in North Africa which our ships are encountering? There's a Modification Center in Arizona, perhaps, where those conditions can be exactly duplicated for test purposes. Would it be wise to plan on operating certain types of ships under Arctic conditions? We can take care of that too, knowing that when we send our ships away to fight they'll do what they are intended to do.

Finally, our Modification Centers serve us in another way. We know that Army engineers here at Wright Field, or engineers in the aircraft industry, can't foresee every condition of combat in a global war, or every trick of a wily enemy. But they can cancel those tricks out and develop new ones.

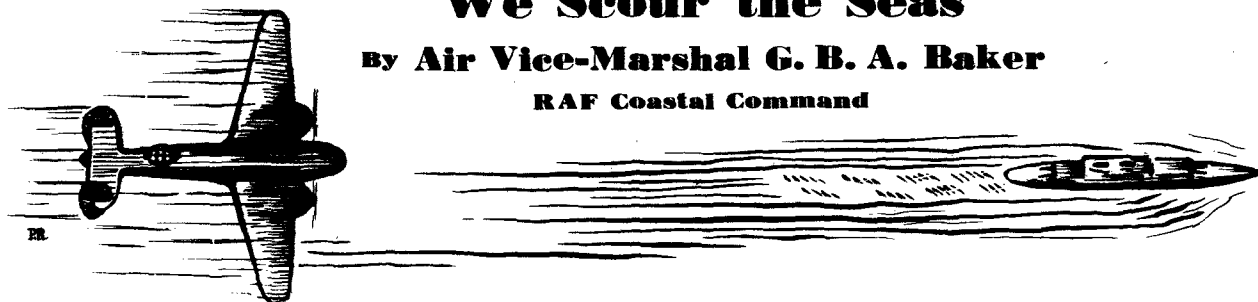
Everyone knows that the Japs found no tail guns in the earliest "Flying Fortress" bombers they met over the Philippines. True, the Jap guns downed but few of the big Boeings in flight. But our pilots out there clamored for tail guns--and got them. They were production jobs, for there were no Modification Centers then. But now such pleas would be answered from Modification Centers in the interim before the production change could be made.

The Modification Center organization is expanding in size and scope. There's no intimating what surprises in the way of speedy alterations "to meet the competition" are in store for the Axis.

We Scour the Seas

By Air Vice-Marshal G. B. A. Baker

RAF Coastal Command



COMPARATIVELY little of the work of Coastal Command receives the limelight of publicity because of necessity what happens at sea is not everybody's business, at least not until long after it has ceased to be spot news. As a result less is known of the duties of the aircraft of the Command than is the case with other Commands of the Royal Air Force. It is not uncommonly thought that their role is defensive and that their main objective is the protection of the Coasts of the British Isles.

In point of fact nothing is further from the truth. The Coastal pilot passes over the British coasts on his outward mission to return, hours later, to his aerodrome or anchorage. In the meanwhile he may have been operating anywhere on the coastline of Germany or German Occupied territory from the North of Norway to Gibraltar: or out deep in the Atlantic, 600 miles or more.

First Duty

The first duty of the Command is reconnaissance, searching for the enemy on the sea, under the sea and in harbor; but the matter does not end there, for, once he has been located, the enemy is attacked with all the means available. The command is equipped not only with long range flying boats and reconnaissance aircraft but also with aircraft capable of bombing or dropping torpedoes, in addition to long range fighters. Many of the types used are of American origin--the Hudson, which has done yeoman service throughout the war on medium range general reconnaissance and U-boat hunting, the Catalina and the four-engined Liberator.

What then are the problems with which Coastal Command have to deal? There is a German Navy, which is powerful enough to cause considerable trouble if it gets out of control and breaks out onto the crowded Atlantic trades routes. The escape of the Gneisenau and Scharnhorst in March 1941, resulting in the sinking of at least 19 merchant vessels, provides an example of the damage which major naval units are capable of inflicting. The Bismarck set out on a similar voyage which ended less happily for her. After sinking H.M.S. Hood, she tried desperately to make a port in the Bay of Biscay in a damaged condition. In the bad weather she had shaken off the following British fleet and her chances of escape were favorable. And then a

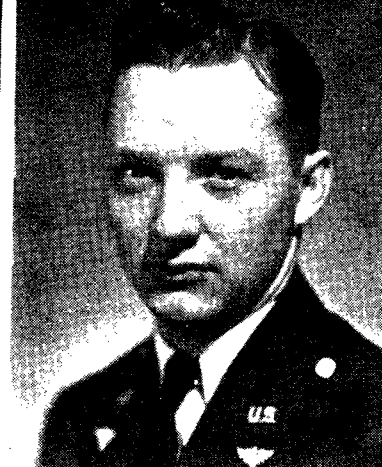
Catalina of the Royal Air Force broke cloud a few hundred feet above her. Those on board the Bismarck had no illusions as to what her presence meant. Every A.A. gun and some of the main armament as well opened up: the aircraft was hit, a shell fragment passing up between the two pilots: but the sighting report was made none the less, and the lost contact was re-established. The Scharnhorst in 1940 and the Lutzow in 1941 both attempted to break out. But their freedom was short lived, and they returned to port for prolonged repair as the results of encounters with Coastal Aircraft.

The fortunes of war ebb and flow, and at times the dice are too heavily loaded. Later the Scharnhorst and Gneisenau broke out of Brest in a dash to the German ports. They made the run at high speed under cover of bad weather and relays of shore-based fighters concentrated over them throughout the passage in overwhelming numbers. They effected their escape, not without damage, in circumstances which clearly favored success.

Such actions are incidents which stand out against a background of weeks and months of intensive reconnaissance of the harbors and dockyards in which the German Navy shelters, and which provides the necessary information on which to anticipate projected movements. In addition patrols must be maintained to search for and locate convoys of merchant ships which pass up and down the North Sea Coastline. Shipping plays a substantial part in the German economy: it eases the overloaded and somewhat groaning German controlled railways: it carries supplies of food and ammunition to German troops abroad and it brings back from the occupied countries spoils in the form of iron ore, farm produce, fish and other necessities for the German people and their war effort. Bitter experience has caused them to arm their ships heavily and to form them into convoys closely escorted by flak ships mounting A.A. guns and covered by shore-based fighters. Nevertheless they are continually harassed and attacked by day and night, at times not without losses, with the result that many a ship carrying a German cargo lies at the bottom of the North Sea.

The convoys make their journey in stages, putting into harbors on their route. But even here, protected by shore defenses they ride uneasily at anchor, alert for the drone of air-

(Continued on Page 29)



1st. Lieut. P.L. Moore

Maj. C.C. Kegelman

Capt. R.L. Morrissey

2nd Lt. R.R. Birnn

ROLL OF HONOR

DISTINGUISHED SERVICE CROSS

MAJORS Conrad Necrason, Hervey H. Whitfield. FIRST LIEUTENANTS Robert Taylor Hanson, Randall Dorton. SERGEANTS Bennie B. Cunningham, Robert Golay.

DISTINGUISHED FLYING CROSS

MAJOR Charles C. Kegelman. CAPTAINS James J. Collins, George E. Kiser, Robert L. Morrissey. FIRST LIEUTENANTS James B. Morehead, Herbert C. Mayes (Post.), Pren L. Moore, James P. Muri. SECOND LIEUTENANTS Richard R. Birnn (Post.), Gerald J. Barnicale (Post.), William D. Harbis, Jr. (Post.), A.T. House, Jr., Russell H. Johnson, William W. Moore, Garrett H. McAllister (Post.), John P. Schuman (Post.), Colin O. Villenes, William S. Watson (Post.), Thomas N. Weems, Jr., Leonard H. Wittington (Post.). SERGEANTS Raymond S. White, Salvatore Battaglia (Post.), Richard C. Decker (Post.), John J. Gogoj, Jack D. Dunn, Ernest M. Mohon, Albert E. Owen (Post.), James Via (Post.). CORPORALS John D. Joyce, Frank L. Melo, Bernard C. Seitz (Post.). PRIVATES Earl D. Ashley, Benjamin F. Huffstickler (Post.), Roy W. Walters (Post.).

SILVER STAR

BRIG. GENERAL A.L. Sneed. COLONELS Caleb V. Haynes, William D. Old, Robert L. Scott, Jr., Birrell Walsh. MAJORS Julian M. Joplin, Robert D. Van Auken. CAPTAINS Dalene E. Bailey, N.H. Blanton, Bert M. Carleton, Walter Coss, Fred Eaton, Felix M. Hardison, W.J. Hennon, J.J. Kruzel, Guilford R. Montgomery, Edward I. Pratt, Jr., Wayne K. Richardson. FIRST LIEUTENANTS Frank E. Adkins, Ben S. Brown, James A. Gibbs, Donald J. Green, John H. Posten, Eugene A. Wahl, Varian K. White. SECOND LIEUTENANTS J.J. Boll, Paul F. Conroy, Robert L. Hartzell, Thomas J.

Lynch, Harold J. Martin, Lawrence R. Mesereau, Andrew J. Reynolds, Jacob P. Sartz, Richard Werner, Merle C. Woods, Claude Lee Dean. SERGEANTS William P. Bonner, William P. Campbell, Durward W. Resmire, Henry J. McElderry, Glen Beard, William E. Bostwick, Earnest E. Creach, Kullervo T. Aaltonen, Ralph B. Baldrige, William D. Bettis, Orville W. Kiger, James O. Mink, Robert A. Mocklin, Michael J. Novello. CORPORAL James L. Shannon. PRIVATES George W. Motley, James W. McCabe, Ralph C. Riddle, Albert A. Wagner, Francis J. Marvey.

PURPLE HEART

COLONEL Hilmer C. Nelson, CAPTAINS Carl M. Sidenblad, John J. Webster. FIRST LIEUTENANTS Charles C. Johnson, Harry J. Schreiber. SECOND LIEUTENANTS Keith B. Brown, Eddie W. Hayman, Wallace F. Pickard, Melville Pound, Kenneth T. Taylor. WARRANT OFFICER Gottlieb J. Kaercher. SERGEANTS William L. Bayham, Robert G. Eidem, Charles A. Fay, Kraig L. Van Noy, Vernon C. Rider, Glover Burke, John M. Diehl, Arthur W. Norgaard, John F. Dorondo, Milton J. Dunn, Ethelbert E. Lovell, John J. Ostrum, Gerald L. Suprise, George J. Van Gieri, Theodore E. Wesala, Lewis Coburn, Ira Pickingpaugh, David Runager. CORPORALS Robert A. French, George C. Ames, Robert Stewart, George Tillett, Bryson C. West, Ford Everett Dodd, Frederic W. Sprague, Merritt Wimsett. PRIVATES Daniel A. Mahoney, Russel C. Thompson.

SOLDIER'S MEDAL

FIRST LIEUTENANT Edward O. Hubbard. SERGEANT Samuel C. Dragone. PRIVATE Woodrow W. Ravenscraft.

Hunting for One in a Million

By Lieut. John M. Jenks

Headquarters, AAF



Col. Leon B. Lent

THE man in Colonel Leon B. Lent's office set a distracted pigeon on the desk and pointed to it triumphantly.

"Suicide pigeon squadrons!" he yelled. "Just think of it! Thousands of birds--each with a little bomb tied to its leg! Then all we have to do is train 'em to fly into the propellers

of enemy airplanes! It'll win the war for us!"

Colonel Lent, who is used to this sort of thing, ran fingers through his snowy hair and explained gently that the idea just wouldn't work. What he didn't explain was that the pigeon man belonged to the lunatic fringe of visitors who almost daily wander into his office at the National Inventors Council in Washington--like the man who proposed that battalions of skunks be posted around airfields to guide night fliers in by sense of smell.

"We get them all the time," says Colonel Lent, "but each one is given a sympathetic hearing and courteous treatment, because we never know when the one idea in a million will come along."

Definitely not in the "big idea" class are such screwball proposals as a bridge around the world for the swift movement of troops and supplies, or "death ray" devices that capture so many addled imaginations.

A Plane That Never Stops

One "inventor" proposed a perpetual motion airplane that would run forever by means of an electrical motor hooked up to the prop which would run generators, which in turn would supply juice for the electrical motor, which in turn would spin the prop, and so forth, ad nauseum.

Not all of Colonel Lent's visitors are crackpots, however. In fact, nearly five thousand inventions submitted to the Council within the past two years have been considered sufficiently meritorious to be referred for development to various branches of the Army, Navy and other government agencies.

This is roughly 5% of the total of 90,000 inventions, suggestions, ideas and what-have-you that the Council has reviewed since its organization in October of 1940. Of the acceptable 5%, about one quarter are in the field of military aeronautics with the remainder divided among Ordnance, Signal Corps, Engineers, Medical Corps and other government departments connected with the war effort.

After Colonel Lent and his staff of seven

highly trained engineering and technical experts refer an invention or idea to the Army or Navy, it is swallowed up in the mists of official secrecy, and the clamp-down is impenetrable. Even the Colonel rarely knows what happens to them. It is possible that many instruments, devices and gadgets now used in our military aircraft had their origin on Colonel Lent's desk.

Among the practicable proposals now going through the appraisal mill are jet propulsion devices of the "rocket" type to add power for aircraft take-offs on short runways, and refueling equipment designed to increase the effective range of fighter planes.

Other ideas and devices which have interested the Army Air Forces include engines, construction methods, de-icing equipment, flying instruments of many types, lubricants for armament and other things that must function properly at both high and low temperatures, and photographic equipment.

"Most of the stuff that is being developed at the present time is good," states Colonel Lent. "So good, in fact, that we don't dare speculate on the extent to which they may someday affect our military proficiency.

"Unlike some other branches of the armed service, most good inventions useful to the Air Forces come from Air Forces personnel--so tell the boys to keep up the good work."

Right after Pearl Harbor, the number of ideas that funneled into the Council's offices in the Dept. of Commerce building in Washington spiraled astronomically.

From a daily average of 200 before December 7, 1941, the volume of suggestions grew to more than 2500 a day, and the flow has only recently begun to ebb. The quality of ideas submitted also improved after the Jap stab in the back, indicating the more serious members of our society, outraged at the sneaking attack, were thinking along inventive lines.

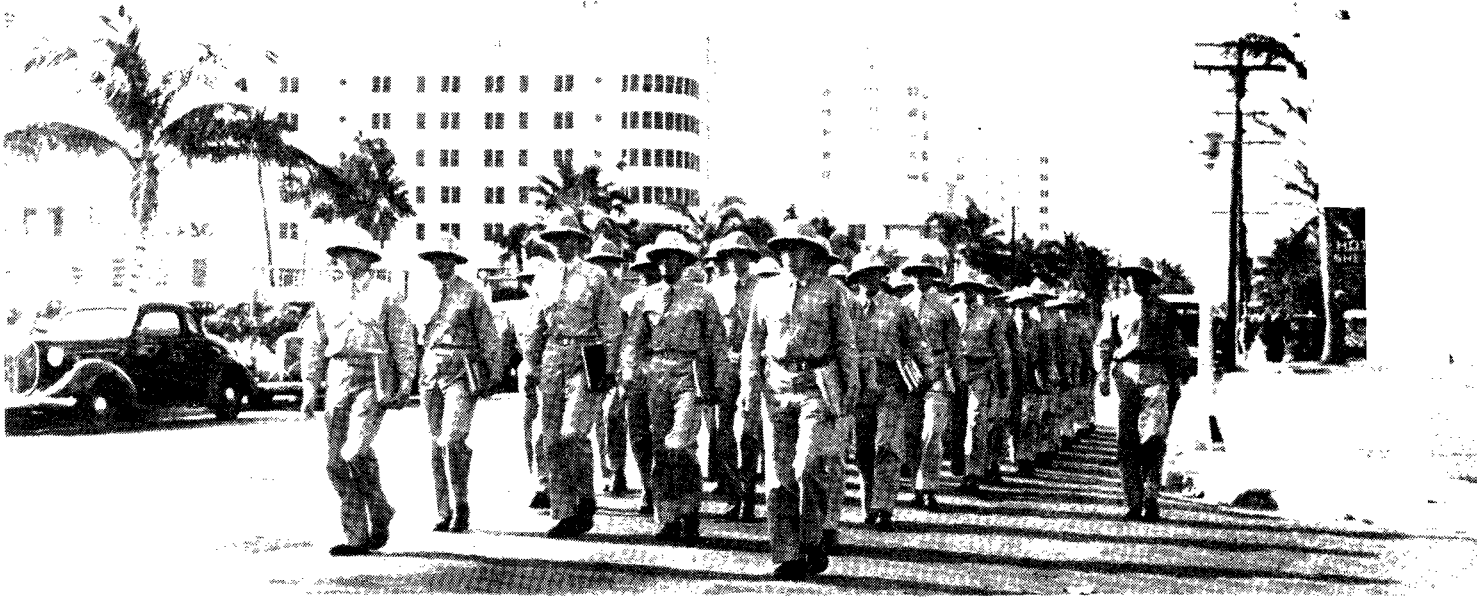
Civilian Thinkers

Unusual though it seems, some of our most important military weapons and devices have been invented by civilians without military experience. The airplane, for example, was invented by the Civilian Wright brothers, the submarine by Civilian Simon Lake, and so on.

Were it not for the National Inventors Council, the flood of inventions and ideas from civilians would have to be reviewed and passed upon by officers of the Army and Navy.....a task which would distract needed talent from its war-time duties. Into this breach steps the Council.

(Continued on Page 29)

Miami Beach Goes to War



M IAMI Beach has gone to war. The Technical Training Command has converted this luxurious playground into a gigantic war factory producing thousands of trained ground officers and men for the Army Air Forces. The conversion of Miami Beach's civilian facilities into a vital part of the Army Air Forces war effort is as spectacular and effective as any that private industry has made.

The streets are still lined with ultra-modern glass and steel hotels and the ghosts of night clubs. The sea still pounds along the long stretch of white sandy beach and the full moon and tropical nights are still better than any of the Tin Pan Alley songs written about them. But the streets now resound to the tramp of G.I. shoes and the cocky stanzas of the Air Corps song roared by hundreds of sunburned marching men. The empty night clubs are classrooms. The hotels stripped of former furnishings are barracks. The beaches and golf courses are full of sweating soldiers getting whipped into shape with drill and calisthenics. Few see the moon except on weekends. Call to quarters sounds at 8 p.m. and taps at 10.

Every available scrap of space has been pressed into use by the Technical Training Command. Much valuable time has been saved by avoiding new construction. A large modernistic department store is now a classification center. Air conditioned theaters are used as lecture halls in the mornings before the matinees begin. Many night clubs are classrooms during the day and blossom at their old trade after dark. The former burlesque theater has been converted into a USO clubhouse. Former brokers offices, stores, ballrooms and hotel courtyards have all been converted into classrooms.

Biggest of the three Technical Training Command installations at Miami Beach is the Replacement Center commanded by Col. Mert Proctor.

Tens of thousands of Air Forces recruits flow through the center for three weeks processing and classification before assignment to permanent posts. The Officers Candidate School organized by Col. James Stowell trains men to be commissioned as administrative officers in the Army Air Forces. It offers a three months course based on a streamlined West Point curriculum adapted to Air Forces needs.

Most interesting of the three installations is the Officers Training School organized by Lieut. Col. W.A. Roberts. Here officers commissioned from civilian life because of special talents which can be utilized by the Air Forces are put through six weeks training to whip them into the physical and mental condition necessary for the assumption of their responsibilities as Air Forces officers.

To learn how to command soldiers, these men commissioned directly from civilian life, are soldiers themselves for six weeks. They are organized into squadrons, stand guard, police their quarters, act as orderlies and are trained so that any man can take over command of his squadron at any time.

Anybody who thinks assignment to Miami Beach means lolling in the lap of luxury is due for a shock.

Sweat and study is the theme of the new Miami Beach. The war is close to the men at Miami Beach. Patrol planes are constantly buzzing overhead. Sentries patrol the beaches and the blackout descends every night at dusk. Men of the early OTS and OCS can remember the days when they saw torpedoed tankers blazing hardly 10 miles from their hotel barracks. From early morning until dark the officers and men of Miami Beach are working hard at their task--to turn out trained officers and men to match the flow of weapons from our great industrial system.



CONTROL TOWER

BEFORE you sink any base pay in the purchase of a new winter service coat, be sure your tailor designs it according to the new approved style. War Dept. specifications now authorize only one type of coat--basically the same as that worn heretofore by other than Air Corps officers. The approved coat is provided with side pleats in the back, has a fully detachable cloth belt supported at the side seams by removable cloth belt loops, and the fourth button will be bone or plastic instead of ornamental. In the enlisted men's department, service coats will be worn without the pleated bi-swing back, to save wool.



IF you sawed a fiddle back home, or drove the neighbors wacky with trumpet toots, they've made it a bit easier for you to turn your talent into tunes for Uncle Sam. Liberalized regulations regarding eligibility of military personnel for attendance at the Army Music School have recently been announced, and they provide that candidates must be at least 25 years of age and not more than 44 years and eight months at time of examination for appointment. In addition, three months service in the armed forces is required. Previously, only non-commissioned applicants with three years service as Army bandsmen, plus other qualifications, were accepted.

LELEGAL DEPT:--If Representative Durham of N.C. has his way, a Pharmacy Corps will be established in the Army for the purpose of eliminating an overlap of authority among other medical branches that reportedly confuses the purchase and handling of drugs and medicines. It's not likely that you pharmacists now on latrine duty will learn much about this opportunity before late Fall, as the proposed bill is now under consideration by the Military Affairs Committee of the House. More proposed legislation, requested of Secretary Stimson, would remove the necessity of obtaining a new oath of office and acceptance of a commission from an officer each time he is promoted. The thought behind the suggestion is not to make it easier for you career boys to leap up the ladder, but to save the War Dept. considerable paper work.

THE time limit on railroad tickets used on furlough has been extended from 60 to 90 days, and now the boys are wondering when furloughs themselves will be extended to 90 days....Officers who have faced the danger of sleeping on park benches in overcrowded Washington will be happy to learn that a Billeting office has been set up in the War Dept. to which they can apply in advance for hotel or residential accommodations at the Nation's Capital....All members of the armed forces will be granted special concessions in computing their income taxes, under the terms of the new war revenue bill now before Congress. The bill provides an additional \$250 personal exemption for single men and \$300 for married men.



MISUSE of military insignia is currently plaguing official circles, and all personnel returning to this country from foreign stations or from combat units preparing to go overseas are warned to avoid displaying squadron, group or other identifying markers for the benefit of press photographers--as well as for any enemy agents who read newspapers. And in connection with insignia, note that "any person wearing military insignia or any colorable imitation thereof without proper authority shall...be punished by a fine not exceeding \$250, or by imprisonment not exceeding six months." Yes--this applies to the girl friend.

IF you were in World War I, be advised that the draft registration cards you and 23,999,999 others signed 25 years ago have been transferred from the War Dept. archives to the Census Bureau, where they are available as a source of evidence on age and place of birth for persons lacking birth certificates. Also, veterans of the last conflict who served overseas are now entitled to wear a service ribbon attesting to that fact. The ribbon has a black center with a wavy red and blue stripe at either end, and may be purchased at most PX's.



STYLE NOTE:--G.I. footwear will undergo structural changes soon, but the appearance of your clodhoppers is not likely to be improved, nor their weight lessened. Instead of the quarter pound of crude rubber that now is used in composition soles and heels, about 10% of uncured tire scrap will be used. Less bouncy, but lots of badly needed rubber will be saved.

The Link Gets Tough

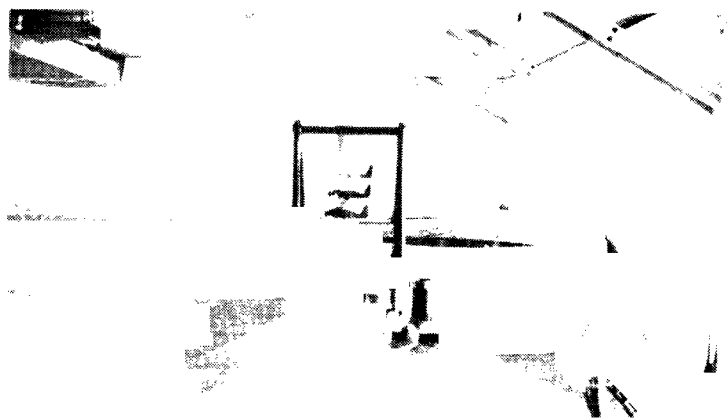
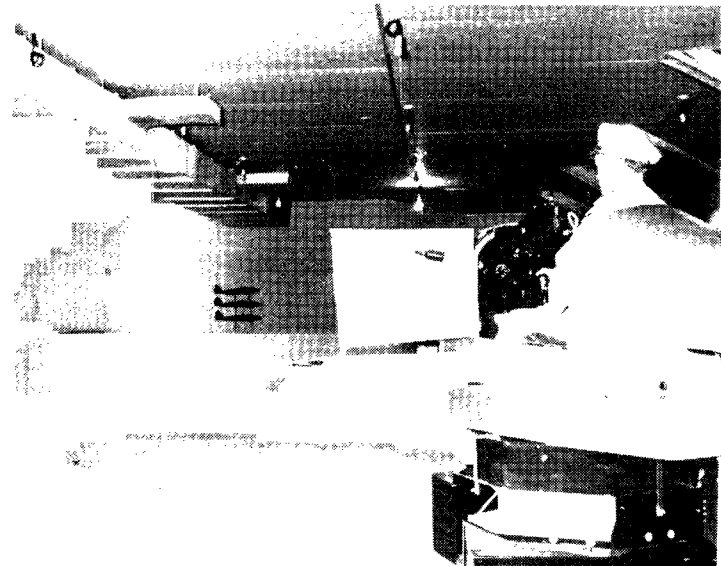
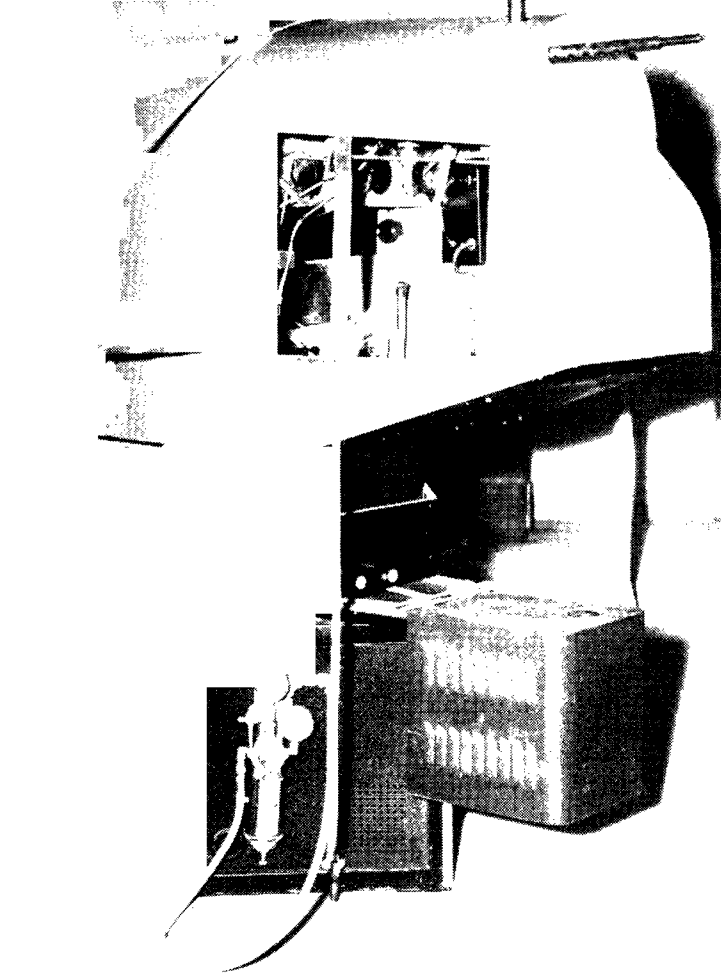
DOWN at the AAF Advanced Flying School at Moore Field, Texas, they have fitted out three Link Trainers with high-velocity B.B. machine guns, and the boys are shooting lead pellets at moving targets that look like Heinkel III's.

It's a brand new idea, developed by Lt. Col. German P. Culver, as part of his plan to improve students' gunnery before they are assigned to outdoor ranges with .30-calibre ammo. The gadget works so well that the Gulf Coast Training Center has given its assistance, and all advanced flying schools in the southwest may be equipped with the indoor gunnery ranges before long.

Thirty-seven feet away from the gun-equipped Trainers is a target range, where a small electric locomotive pulls the targets along a small railway track. Traveling at nine feet per second, the target moves at a speed which, to scale, represents 120 miles per hour. This will soon be stepped up to 140 miles per hour. Eighty pounds of compressed air enable the students to blast away with a muzzle velocity of about 300 feet per second.

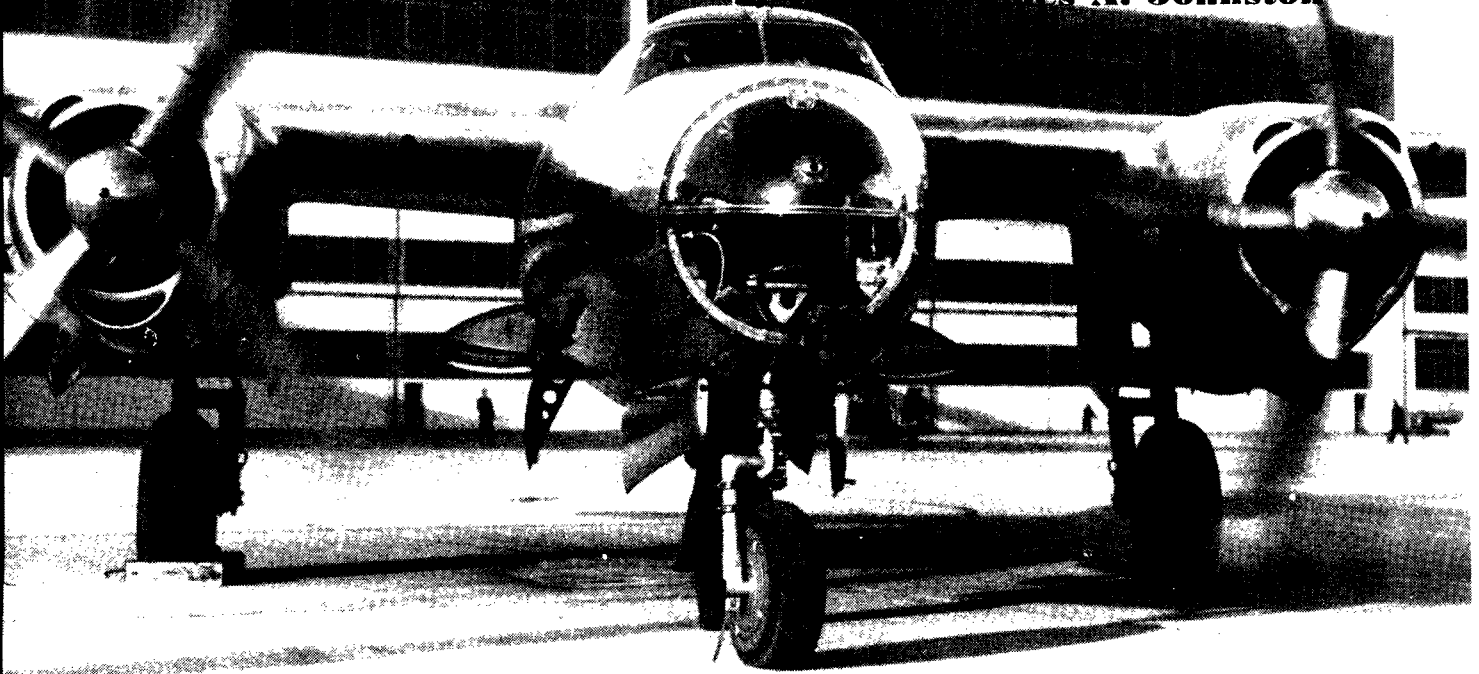
First Photos of New Range

THE novel compressor shown at top furnishes 80 pounds of pressure for the air gun mounted on the Link Trainer, enabling the student to fire B.B.'s with machine-gun rapidity. The tube on top of the hood is where B.B.'s are inserted. At left, Lt. Col. German P. Culver, inventor of the device, is shown demonstrating it. Note that the hood of his trainer has been removed for "contact flying". At left below is a close-up of the target, traveling a circuitous course which the trainee must follow constantly with his sights, as shown in the photo below. The muslin drapes in the background collect pellets that miss, and they are used over again.



The Tricycle Landing Gear

by James A. Johnston



THE tricycle landing gear is almost as old as heavier-than-air flying. On the first man-carrying powered airplane, the undercarriage consisted of a set of sled-runners, wide enough and long enough to prevent the flying machine from tipping over in landing. This contraption made it necessary to launch the plane from a greased track; upon landing it came to a stop as abruptly as a sled fresh out of snow.

Airmen soon found that construction of launching tracks at every open field desired for landings and take-offs was impractical. They added light bicycle wheels. And in the first old pusher type airplanes, it was natural that the two main wheels should be located beneath and behind the airplane motor on the lower wing, with a third wheel up in front to support the nose. Thus the tricycle gear came into existence.

Further experiments in flying, however, led to tractor propellers and front-mounted engines. In such types, the two main wheels usually were located by designers to follow the weight. Pusher airplanes were seen less and less often, until finally the type almost disappeared--and with the pusher went the tricycle gear.

Some Changes Made

This condition existed during World War I, through the boom era of trans-Atlantic hops and on until about 1937. Then, with prospects of an air war on the horizon, there were increasingly loud whispers of 2,000 horsepower engines and of 400-or-more-mile per hour fighters. Drastic changes in airplane design began to receive real attention.

Out at the Douglas aircraft plant in Santa Monica, Calif., an old Dolphin began slapping

the runways with three wheels for an undercarriage. The laughs continued when a steel tricycle-gear frame cooked up by North American Company's engineers, the frame loaded to the limit with sand bags, turned over during a test one bright morning while being towed behind an automobile. But the tricycle landing gear was staging a come-back. It has since gone on the Consolidated B-24 heavy bomber, the North American B-25 and Martin B-26 medium-bombers, and the Douglas A-20 light bomber, the Bell P-39 and Lockheed P-38 pursuits, and the Douglas DC-4 and DC-5 transports.

Among pilots, vague opinions about tricycle landing gears still are prevalent. Praise, fear and criticism vary with each group using such equipment. It is the writer's opinion that few know exactly why the gear is an improvement, or the best way to handle it.

It is particularly important to understand that with the tricycle gear, and its comparatively short nose wheel arm and broad base of support, the center of gravity is *ahead* of the main wheels. In the conventional gear, having a long tail arm and small tail wheel, the center of gravity is *behind* the main wheels.

Let's assume that we are in an airplane with conventional gear and forced to land in a cross wind. If we have not straightened out before touching the runway, or a gust happens to have hit the rudder while we are still taxiing fast, or the pilot has over-corrected with motors or brakes, we are almost certain to find the tail swinging to one side. And since the airplane will tend to exaggerate this tendency, if we don't correct promptly, we are going to have a "ground loop."

Scientifically speaking, the danger is in the

center of gravity going outside the radius of the turn and outside the line-of-inertia movement. When this occurs the airplane must be "flown" everysecond to prevent a "ground loop" or possible accident.

"Crab-Wise" Approach

It's different with a tricycle gear. You can come in "crab-wise" for a landing right down to the approach and even on to the runway until the wheels touch. Your airplane actually will straighten out and assume a runway heading equal to the ground track being made good on the approach.

Provided the runway or landing surface is not so slick that the wheels are unable to get traction, it is impossible to "ground loop" a tricycle landing gear in the accepted sense of the word. Tests have been made, locking one brake, or gunning one motor. Under such abnormal conditions the airplane either continued straight ahead or changed course slightly and held that new course. Continued application of a motor will, of course, slowly swing the airplane around in a long-radius turn, but normally the tricycle gear will safely withstand abuse from amateurish operation which would wreck a conventional-gear airplane.

Blown tires are always a danger in aircraft landings, but a tricycle gear will not ground loop with a blown tire. When a tire blows at the highest possible speed on the ground, the airplane will change course not over 15 degrees and will hold the new course.

Wet asphalt, grass and icy runways constitute a very real danger to modern airplanes, and those equipped with conventional gear often have accidents in landing under such conditions. With the tricycle gear, when one brake is applied as the wheels touch a very slippery runway, the airplane may change heading and sometimes will spin around, but it will not change course off the runway--it will continue on the path it was making good when the skid began.

Many pilots appear apprehensive of the nose wheel of a tricycle gear, usually because they have heard it is subject to failure without warning. This is the worst misconception that exists. Nose wheels will "take it" when treated with normal caution, having respect for design limitations. Most nose wheels have failed when operated on muddy ground, soft sand or deep snow or when a pilot attempts to taxi against a turned wheel or a wheel having improper position of the towing pin lock.

Most nose wheels "caster"--that is, they trail from the pull of the strut in spite of the fact that the nose wheel strut has a forward slant. Muddy fields, sand, snow and high grass all tend to eliminate the caster effect of the nose wheel. When anything of this nature "builds up"

in front of the wheel to a point in line with the strut, the castering effect is destroyed. As a result, the accumulation becomes a pure resistance, tending to twist the nose wheel sideways until it is crosswise to the taxi direction.

Here is a major cause of nose gear failures--pilots attempting to pick up speed in rough going, or, in trying to pull out of the spot, gunning the motors against a turned nose wheel and snapping the strut. It is easy to see how, unless excessively heavy braces are installed, the retraction strut can "snap" under the pull of 1,700 horsepower engines when the nose wheel is turned sideways.

Operation Hints

A few hints on operation with tricycle gear seem to be in order, so here goes:

When entering your airplane look at the nose wheel--be sure it is straight.

Roll straight ahead for several feet before beginning a turn and lay off the brakes and motors as much as possible. Sudden brake applications jerk the nose wheel around.

In approaching intersections for turns, anticipate the turn sooner than with conventional gear. Put on the outside motor well before the turn; hit the inside brake easily.

Always stop with the nose wheel straight. This is best accomplished by rolling straight into the stopping point and applying both brakes equally.

Check the motors before coming to the end of the runway prior to the take-off. After the check, roll on to the end of the runway and begin the turn at slow speed, using the outside motor, with as little brake as possible. Keep rolling and before completing the turn bring the inside motor up to a speed equal to that of the outside motor.

On take-offs, once on the proper heading, ease the motors up to 1500-1700 revolutions and hold them there for three or four seconds, allowing the airplane to pick up speed--this gives the nose wheel a chance to begin "tracking" properly.

Most tricycle-gear planes will not take themselves off, so when elevator control is gained at 60 or 70 miles an hour, ease the controls back, letting the nose wheel lift off the ground, and run on the main wheels until take-off speed is gained. Don't trim the elevator tab to the tail-heavy position for take-off; the gain in speed and the retraction of the landing gear after take-off would make a stall imminent.

In landing, set in with more than stalling speed and land on the main wheels, nose wheel off. After landing, hold the nose where it is until a little speed is lost and then let the

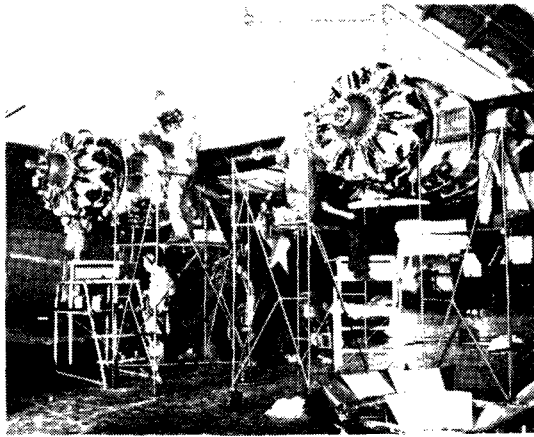
(Continued on Page 38)

MECHS OF THE AIR CORPS

FOR every AAF man in the sky, at least ten must remain on the ground, performing the thousand and one tasks required to "Keep 'Em Flying".

The AAF has confidence in its mechanics. It is betting millions of dollars worth of equipment and thousands of lives that they know what they're doing. In order to make this a safe bet the AAF makes sure its mechanics are the best. Only the cream of the enlisted personnel of the Army can be Air Forces mechanics--and then only after months of intensive training. In return for his services the Air Forces pays the mechanic well--up to \$150 per month plus clothing, food and shelter.

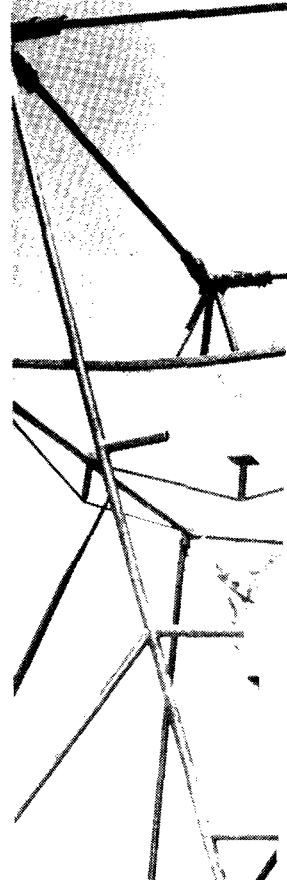
The AAF mechs not only "Keep 'Em Flying" in the United States--they follow their planes right into the toughest combat zones. Their's is no soft life, but they have the satisfaction of knowing that they're good, and that they're doing one of the biggest jobs in the Air Forces.



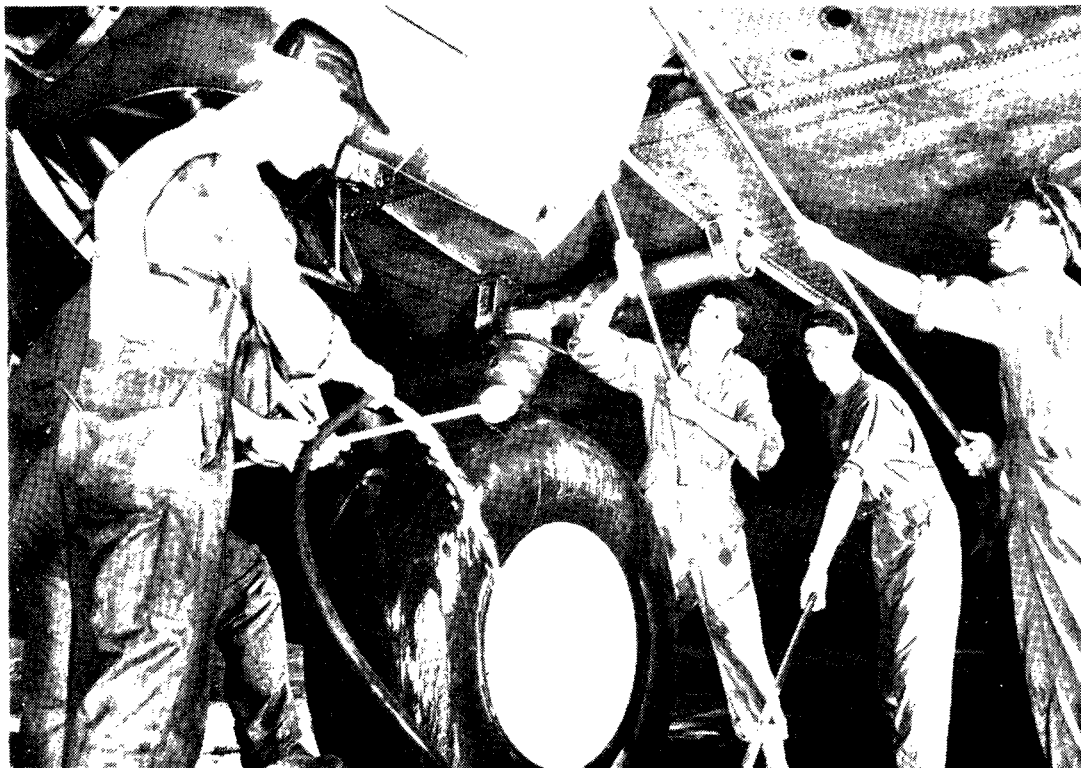
Constant care keeps 'em humming.



One of the 10,000 little hand jobs needed to make a Flying Fortress tick.



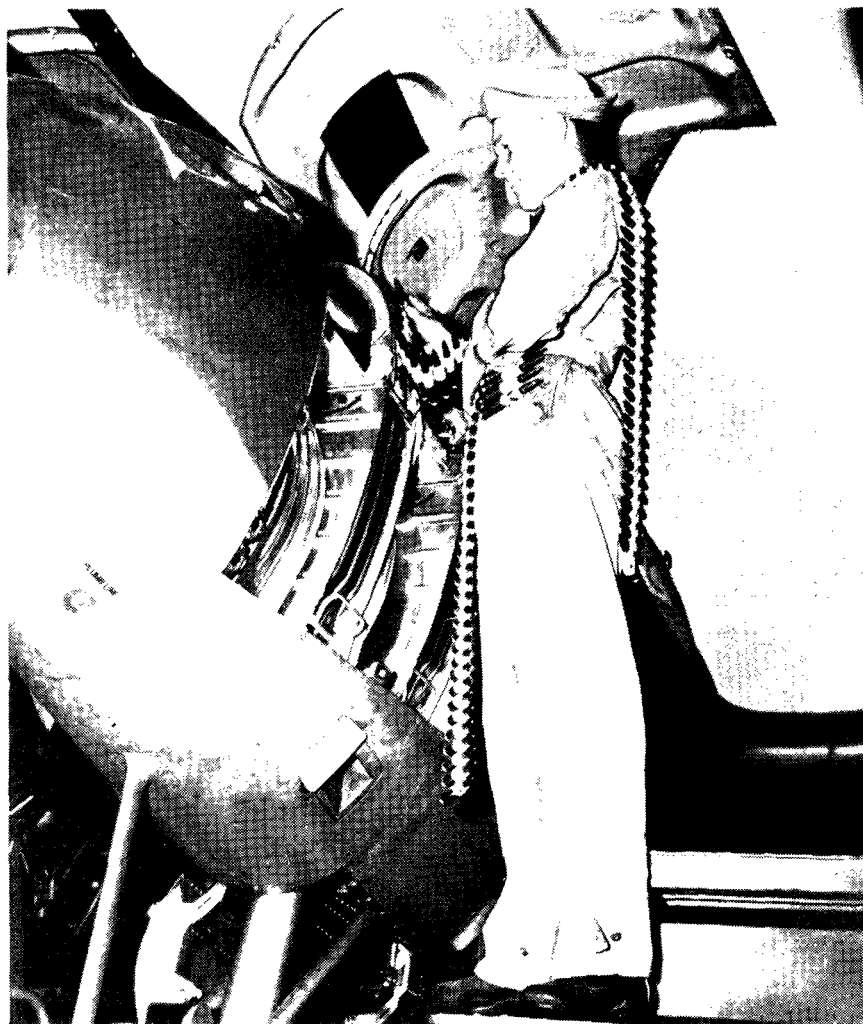
Busy hands



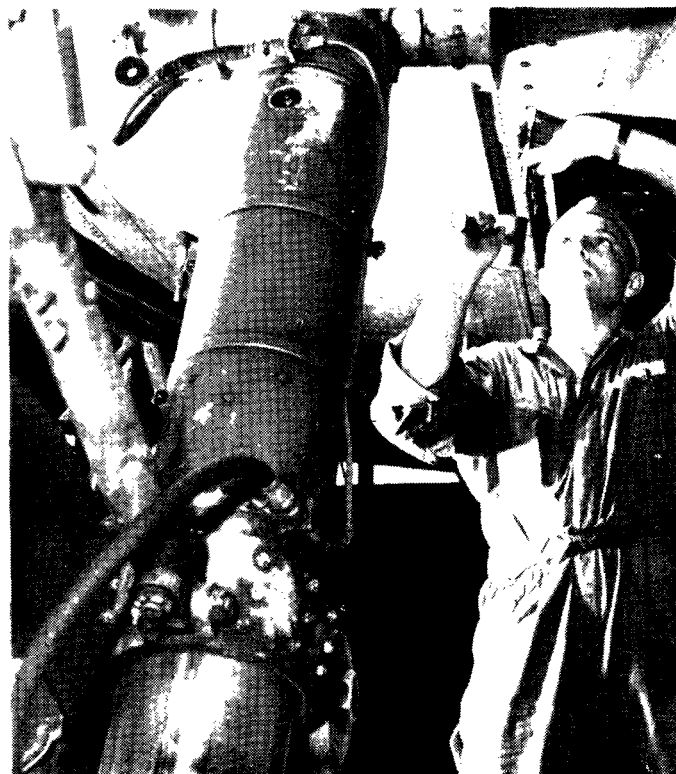
Washing an elephant is play compared with the task of bathing a bomber.

Oh! We are the lads of the
 Air Corps
 Nuts to you! Mud in your eye!
 We're the guys who made
 'em fly,
 The grease balls of the Air
 Corps.
 It takes a crew like me and
 you
 To keep the planes up in the
 blue,
 Grease balls keep rolling
 the Army.
 We're the vital "Ten" and
 something more,
 You're hot on the stick when
 we make 'em tick,
 But you'll come home when
 the weather gets thick,
 To the mechs, the grease
 balls of the Air Corps.

From the song "Mechs of the
 Air Corps," by Robert Crawford



A mechanic-armorer puts the sting into a pursuit.



Thousands of screws must be inspected.

of a B-17 are given last minute pre-flight inspection

Through British Eyes

The Luftwaffe Today

AUGUST-SEPTEMBER, 1942



Front View of "FW 190"

AN examination of Germany's present air strength suggests that the Luftwaffe of 1942 is inferior, both in numbers and in quality, to the Luftwaffe of 1941.

Such a statement may appear to be born of optimism, yet the more the facts are probed the more certain the condition appears. The flying equipment of the Luftwaffe has been improved during the past year, but the introduction of new fighters and bombers cannot make good shortcomings in other fields.

Briefly the reasons for the present shortcomings are: (1) Loss of valuable leaders and experienced pilots, (2) Less thorough training, (3) A wider distribution enforced on the Luftwaffe, (4) Heavy losses in Russia and over Malta, (5) Curtailed production as the result of R.A.F. bombing, and (6) A falling aircraft production relative to Allied production.

The backbone of the Luftwaffe's flying personnel has been the several thousands of ex-members of the Condor Legion who fought in Spain. They were the first European airmen to gain experience of air tactics in modern war. Almost all the well-known Commodores and Wing Commanders of Jagdgeschwader Pursuit Groups and practically all the fighter pilots with more than 70 victories to their credit, belonged to that crack formation. The late Colonel Molders, the late Majors Wick and Balthasar, the present Inspector of Fighters, Colonel Galland, and the Commodores of Pursuit Groups, Lieutenant Colonel Lutzow, Majors Trautloft and Oseau, all belonged to the Condor Legion. Most of the holders of the Knight's Insignia of the Iron Cross flew in the Spanish War.

Like the German Army, the Luftwaffe suffered heavy losses during the Russian Winter offensive. It has paid a heavy price for its raids on Malta, and in meeting the daylight challenge of the R.A.F. over France and the Low Countries. The number of obituary notices in German papers announcing the death of Luftwaffe personnel who fought in Spain rose sharply during the Winter months. There were many fatal accidents, and the Luftwaffe's fighting strength was drained still more by transfers of experienced airmen to training schools or to the staffs of Air Divisions, Air Corps or Air Fleets, and other admin-

istrative posts where their experience was considered of great importance. Moreover, several Luftwaffe officers--their number will remain unknown until the end of this War--were drafted to other services, and there is at least one instance of a former pilot of the Condor Legion becoming a submarine commander.

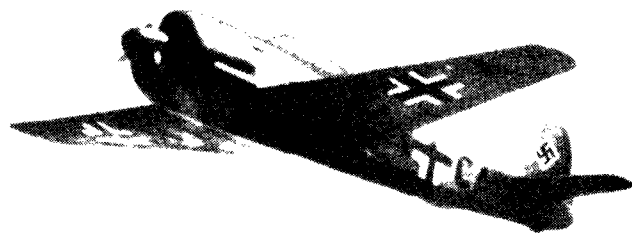
Airmen trained since the outbreak of war have been sent into action by the thousands. Although many of them have shown courage and skill as high as that of their older comrades, they lack the long experience which the "Spaniards" gained. Moreover, they are not as well trained as the regular airmen or those who joined a front-line unit during the first 18 months of the War.

Since the Battle of Britain, when the Luftwaffe suffered its first severe losses, training has had to be accelerated to match the output of the British Commonwealth Joint Air Training Plan.

Before the War, German pupils averaged about 200 flying hours before they received their wings, and underwent special operation instruction before going to a Staffel, an operational squadron. Now, the average pupil obtains his pilot's certificate after 100 hours, and most of the operational training is gained on active service. As the selection of candidates is now less strict than before the War, the average German pilot of today cannot be as efficient as the average airman of a year ago, and still less than at the beginning of the war.

Equipment

Squadrons of the Luftwaffe fighting on the principal fronts--in particular over the Channel area--are equipped with better aeroplanes than they had a year ago. The ME 109F1 and F2, and the Focke-Wulf FW 190H single-seat fighters have



Three-quarter View of "FW 190"

better performances than the earlier ME 109E. The ME 110C is being replaced by the ME 210, and reports from Germany indicate that the Focke-Wulf company is still experimenting with the FW 187 Zerstoror (Destroyer). The Henschel HS 126 is no longer in quantity production and is being replaced by the more efficient FW 189 twin-boom type built for tactical reconnaissance and ground

attack. Of the new bombers, only the Dornier DO 217 multi-purpose bomber is yet in service. Comparatively few of the queer-looking three-seat Blohm and Voss BV 141, the four-motor HE 177 and the new Junkers JU 91 four-motor bombers have been in service so far. These types are only just coming into quantity production and few are likely to be seen for some time--unless there is truth in the report that German aircraft factories in former Polish territory have been building new types in large numbers for some time

Perhaps the most important point of all is the numerical strength of the Luftwaffe. The Luftwaffe of 1942 is certainly inferior in numbers to the Luftwaffe at the outbreak of the Russian campaign. At that time the operational strength of the Luftwaffe was about 6,500 first-line aeroplanes. This fell to about 4,000 machines by the end of 1941 and the first-line operational strength can now hardly exceed 5,000.

This deficiency in numbers is not offset by the higher quality of the equipment. More efficient fighters and bombers can make good a deficiency in numbers only when the opposing air force cannot command aeroplanes of equal quality, or when the force with superior quality can concentrate at a few vital points while the more numerous force is widely scattered. Neither condition applies to the Luftwaffe. Allied Air Forces are using aeroplanes at least equal in quality, and the Luftwaffe is now widely scattered and unable to concentrate as it could in the early days of the War.

Distribution

At the start of the Russian campaign in June, 1941, the bulk of the squadrons of the Luftwaffe were stationed along the Eastern Front, waiting for reinforcements, particularly in fighters, from Marshal Sperrle's Luftflotte (Air Fleet), which had had to guard the Western Front. The units did not arrive before the middle of July in the Southern and Central sectors of the front.

Elsewhere there were only comparatively small Luftwaffe contingents. General Geissler's Air Corps had been recalled from Sicily and had gone East. North Africa held a bare 200 fighters, reconnaissance machines, Stukas and bombers; more were not required as the opposing British forces did not receive reinforcements until some months later. Practically all the Luftwaffe units which had fought in the Balkans and over Crete had been transferred to the Ukraine.

Probably fewer than 50 German first-line aeroplanes were stationed in Greece and Crete, and even the Italian air units which could be spared for newly occupied countries were small because of the heavy losses which Mussolini's "White Eagles", had suffered from the attacks of

the Royal Air Force in Africa.

Inside Germany, fighter--and in particular night fighter--protection was poor. General



Side View of "FW 190"

Kammhuber was busy forming his Night Fighter Division which was to be equipped with more suitable types. Until then, the chief German night fighters were the elderly Arado AR 68 and Heinkel HE 51 single-seat fighter biplanes, although a few HE 113s and ME 110s were used. The new Night Fighter Division was to be equipped with ME 109s for interceptor work, with ME 110s for pursuit, and with JU 88B night fighters for pursuit and intruder work.

The pauses in air operations during the Winters of the first two years of the War were not accidental. The Germans used them to overhaul their war machine, to improve its organization according to the lessons learned, to train and re-equip the troops, and to prepare for coming offensives. Something like a million and a half men were sent to the factories in each of the two first Winters of the War in order to speed up production, but in the third Winter the Russian offensive upset the Nazis' plans and demanded the recall of thousands of German soldiers who had been sent home on industrial leave. In consequence, armament production schedules were not fulfilled, and still sterner measures had to be enforced to raise factory outputs. One of the new rules made absenteeism a crime almost as great as treason.

Shortage of labor is Germany's most serious problem--as it was in the last War. In an attempt to overcome it, the Germans are employing still more women in industry and still more foreigners.

Despite all the measures taken, aircraft production from June, 1941, to the end of the first quarter of 1942 fell far short of German needs. Output increased by a bare 10 per cent, and was attained only by extending existing plants. Though higher than a year ago, production is inadequate to meet the increased commitments of the Luftwaffe and, judged side-by-side with Allied production, shows a comparative decline that may soon become catastrophic.

But it is too early to assume that the symptoms now visible are comparable with those that marked the decline of German air power in the last war.--Reprinted from *Aeroplane*.

PRO PATRIA MORI

A partial list of officers and men of the Army Air Forces officially reported to have died in the service of their country since December 7, 1941.

Colonels

Richard E. Cobb

Master Sergeants

Fred Peoples

Lieutenant Colonels

Edward Flanick

Otto Clyde George

First Sergeants

Herbert B. Martin

Majors

Ross Thomas Hopkins

J.H.C. Houston

Homer E. Ferris

Daniel A. Dyer, Jr.

David P. Laubach

Norman Jett Lewellyn

Edward J. Cashman

Monroe M. Clark

Mark K. Lewis

Floyd J. Pell

Technical Sergeants

Charles L. Robbins, Jr.

Clarence McPherson

John P. Bolan

Staff Sergeants

Jack S. Marks

Jerome John Simandi

Frank J. DePolis

George K. Gannam

Felix Bonnie

Captains

Virgil Calvin Alleman

Louis Anthony Almeida

Jack McClintock

Sergeants

James Albert Cox

John Denis Franciscus

Raymond H. Gearin

William Charles Jones

Harold E. Hammers

Robert D. Hunter

Donald S. MacKay, Jr.

Edmund B. Lepper

Harry Wilson Markey

William Edward Mulvey

James E. Madden

James L. Reed

Gerald McCallum

Patrick William McIntyre

Robert O. Corkery

Edward R. White

Franklin S. Nelson

Albert Burice Norrod, Jr.

Vernon E. Juncker

Corporals

Elmer Leroy Perdue

Morris Pelham

Earl R. Sevens

Robert R. Garrett

James A. Plant

Robert W. Rulkoetter

Harold W. Thomason

James M. Topalian

Lytle William Small

Sherman F. Stacher

John E. Cruthirds

William C. Krueger

Glenwood G. Stephenson

Baron Brodine

George F. Howard

Hubert McDonald

John P. Stewart

Allison Wayne Strauss

Louis Schleifer

Privates First Class

Donald R. Stroth

Jack F. Todd

Richard E. Livingston

Joseph F. Nelles

William P. Underwood

Donald E. Wilburn

Donald V. Chapman

Marion H. Zaczkiwicz

Berle Elvin Sampson

Emmett F. Blakemore, Jr.

Theodore F. Byrd, Jr.

George Price

Harold Clair Smith

Donald Ranson Harris

Andrew V. Stane

James I. Lewis

Burrill Charles Davis

Leland Douglas Bradshaw

Henry Mervis

Eugene L. Chambers

Second Lieutenants

Wm. James Gowan

Donald Lavon Chase

Henry Mervis

Dexter C. Woodman

Turner Earnest Savage

Benjamin Harry Sherman

Henry Mervis

Alan Thibido

Werner C. Von Borckefeldt

H. Dewitt Kelley

Henry Mervis

Charles E. McNary

Roy Murrel Crothers

James Sherrill Carithers

Privates

John Ferguson Stevenson

Charles Allen Kinzie

Anson E. Robbins

William M. Northway

Jack Windham Pounds

Richard Edward Baldsiefen

Russell M. Penny

Donald D. Plant

Newton Henry Simpson

Raymon Dell Clement

Herbert E. McLaughlin

William H. Manley

David Allen Southard

Freman Jackson Barber

George G. Leslie

Lawrence P. Lyons, Jr.

Wm. Walter Bennett, Jr.

Frank Haskell Pulley

Howard N. Lusk

Joseph Jedrysik

James Irven White

Dana Wm. Bradford

James R. Johnson

Theodore K. Joyner

Angus Martin Johnston

Ronald Charles Hocking

Marion E. King

Otto C. Klein

James Wm. Lauck

John Samuel Fennell

Earl A. Hood

Rex Nelson

Robert Gay Kaspar

George Hemingway Bennett

Hugh Rice, Jr.

Leslie V. Long

Mario Lawrence Biava

Frank Samuel Stieritz, Jr.

Emory G. Lasseter

Robert R. McLennan

Duane Tripo Crosthwaite

Glen Roy Metsker, Jr.

Leslie D. Meyers

Robert L. Jennings

Lawler Clyde Neighbors

Albert Luman Spehr

Darrell I. Edwards

Carroll P. Foster

Jay E. Pietzsch

John S. Greene

Greeley B. Williams

Lawton Jay Woodworth

Red Sentries of the Skies

By Major N. Denisov

Russian Air Force



4

AIR patrolling is a very important phase of the combat duties of fighter planes. Patrol fighters can safely cover their own ground troops on the battle-field, on the march and in bivouac. Properly executed patrolling prevents the enemy planes from reaching military objectives. The following is based on the combat experience of our fighters:

During combat it is impossible to have forces everywhere. The main mission of fighters is to support the assault groups or echelons and parties raiding enemy rear. It does not mean, however, that other ground troops are without protection; these latter simply have less air cover.

Combat plans for fighters must include a careful study of meteorological conditions. A cloudless sky simplifies our fighter problem but also permits higher altitudes and greater maneuverability for the enemy. Clouds at average altitudes require close coordination between patrol ships. If it is very cloudy the methods decided will depend on the altitude of the clouds; if our patrols are improperly employed, the enemy planes can approach under cover of the clouds and, breaking through them, make sudden attacks. Conditions of visibility, light and other meteorological factors, studied beforehand by the commander, frequently permit the fighters to gain a tactical advantage over the enemy; and also permits anticipating the attack, nullifying the element of surprise.

Very important is the schedule of flights based on *consumption of fuel*. For clarity, I shall cite an example. A squadron under command of Captain Potanin was covering our ground troops attacking an important objective. The captain organized his command on a two-altitude and two-relief plan. The schedule called for half of the planes to be in the air while the other half was refueling. When the fight started the beautiful schedule became practically a worthless piece of paper. What happened was that most of the unit was over the ground troops at the same time so that when refueling was necessary the ground troops were left undefended.

During the critique of the battle it was learned that all the pilots operated their planes at maximum speed all the time. Naturally the schedule, which was based on average speeds, was worthless. Although the number of take-offs was more than the schedule called for, at times most of the planes were in the air and at other times the ground troops were without protection.

This occurred because the personnel of this squadron was accustomed to fly at maximum speed forgetting about the flight time and the effect on the mission. Maximum speed, which consumes the most fuel, is applied to overtake the enemy, for acrobatics and the air fight itself. Using maximum speed in any other case causes the pilot to remain in the air a shorter time and burns up considerable fuel unnecessarily.

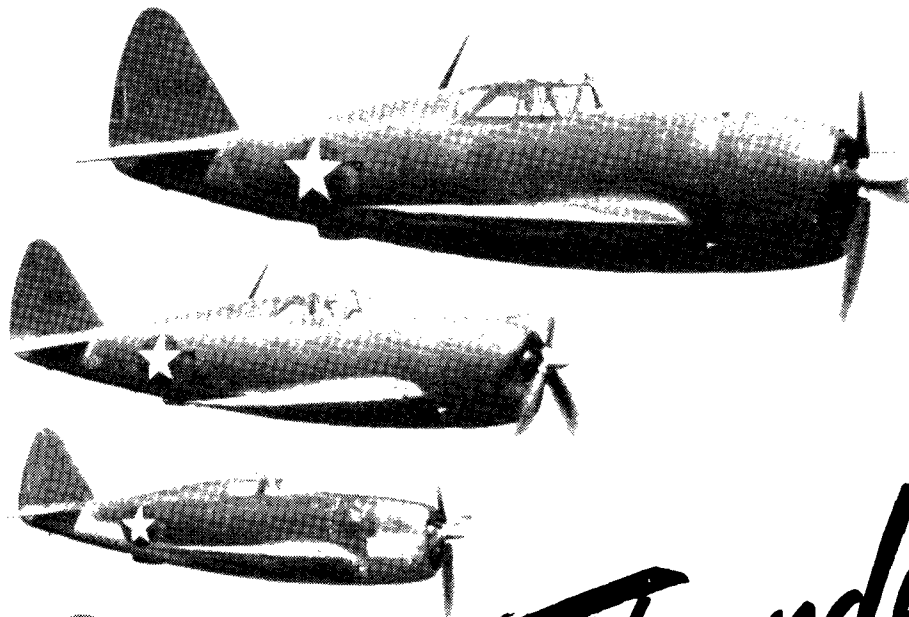
In one case, one or two flights can be in the air at the same time to cover a very limited area at all altitudes; in another case patrols may be disposed in groups echeloned in altitude. A combination of these two methods may be used. One cannot prescribe one method for all cases.

The Germans have tried different methods in attacking our troops. Sometimes they concentrate their attack in one place and, echeloning their flights of four to six planes on a time basis, try to bomb our troops. Sometimes they use the so-called tactics of nuisance bombing--their bombers, mostly singly, periodically fly over our troops dropping bombs promiscuously. It is evident recently that, fearing losses, the Germans have applied the principle of force in their attacks. For example, in several sectors of the Southwestern Front recently it was noticed that the bombers were accompanied by a considerable number of fighters. Such mixed groups of 25 to 30 planes were made up of Junkers and Messerschmitts.

One of our squadrons had six Laggs cruising over the front line. The upper flight was flying in a 5 - 6 point cloud density and the other under the clouds at a 1,200 meter altitude. There appeared four Junkers-87's, flying in pairs, at a distance of 1½ kilometers and just under the clouds.

The first attack was made by our lower flight on the leading pair of Junkers. One of them caught on fire and plunged to the earth; the other, expending his ammunition, disappeared into the clouds. The second pair came on and, not changing their course, went into the clouds. The lower flight commander, knowing that the other flight was above, kept his altitude and continued observation. The succeeding events proved the correctness of his actions.

Emerging from the clouds a Junkers plane from the first pair headed for his own lines but was observed by our upper flight. Our leading plane began pursuit and the remaining two Laggs continued to patrol. (Continued on Page 38)



Thunderbolts

FROM THE BLUE

THE P-47s are girding for action. These big, tough packages of firepower, long looked forward to as "the best fighter planes in the world", are already on the wing, as these pictures show.

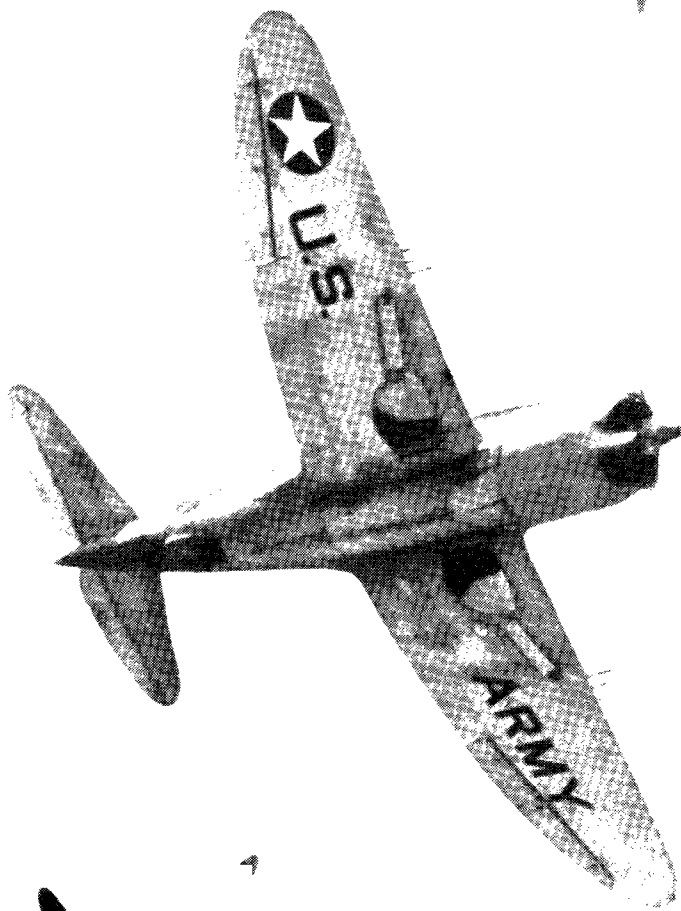
Loaded with eight .50 caliber machine guns and thick sheets of armor plate, the P-47 Thunderbolt weighs six tons--compared to the two and one-half tons of the flimsy Jap Zero. But that doesn't keep it from flying higher and faster than anything else on wings with only one engine.

Turbo-supercharged for high-altitude flying, the P-47's 2000-horsepower, 18-cylinder engine can pull it along at a speed of approximately 400 miles an hour, and can send it zooming up to 40,000 feet without any effort. The engine is made by Pratt and Whitney.

"Eclipsing the best" is what General Henry H. Arnold has said about the P-47. Assistant Secretary of War for Air Robert A. Lovett has called them "the sweetest stuff you ever saw in your life." Engineers and airmen who have flown and tested the Thunderbolt are unanimous in their description of it as the roughest, toughest and best fighter plane so far built by this or any other country.

In the picture at upper left three P-47s hold a tight formation at 10,000 feet. At center a Thunderbolt is silhouetted against the sky.

Below is the "Lucky Seven"--a P-47 presented by the employees of the Republic Aviation Corporation to the Army Air Forces. The men in the picture are, left to right, Lt. Col. Davis D. Graves, who accepted the gift for the Air Forces, Harold Frovo, representing the employees of the Republic Aviation Corporation, and Major Richard Al Ames, another Air Forces representative.



A Monthly Review of Technical Developments in the Air Forces

Aerial Ambulances

SPEEDY transportation of wounded to behind-the-lines hospitals is the objective of the new Medical Air Evacuation Group of the Army Air Forces.

Transport planes converted into aerial ambulances capable of carrying as many as 40 patients will be used by the Group. Each plane will contain facilities for medical treatment including blood transfusions while in flight. The planes will serve a double function, bringing in supplies as well as taking out the wounded. Over difficult terrain, a trip that may take as many as 18 hours by ground travel can be accomplished in less than an hour by air.

The photograph below shows the interior of one of the converted airliners, filled with practice "patients" being transported speedily to a hospital well behind the "front". The men were brought to the plane in field ambulances.



Nail Pickup Magnet

AT Gunter Field the Post Utilities Office has developed an electro-magnetic nail pickup device for retrieving old nails and scrap metal from roads, parking areas and runways. The purpose of the device is to eliminate tire punctures on airplanes, trucks and automobiles, and to obtain metal for salvage purposes.

The magnet shown above consists of one piece of four by six inch wood, 72 inches long, two salvaged tail assembly wheels from a training plane, two pieces of angle iron, 11 electric coils and the necessary bolts. The wood is mounted on the two wheels, the coils are mounted between the two angle irons and connected to each other in series. The irons and coils are then suspended by chain under the wood, clearing the ground by approximately two to three inches.

The generator is of the small portable type, gasoline driven, and capable of producing 110 volts and 22.7 amperes direct current at 2400 rpm. The generator is mounted on the front of the motor tug by use of flat iron straps. The magnet is hitched on the rear. The motor tug can be the standard AAF Clark Truck Tractor, or some similar tractor.

Plexiglas for Face Protection

PLEXIGLAS, the plastic material used in streamlining the Air Forces' fast combat planes, plays a far different role at the Sacramento Air Depot, McClellan Field, California, in protecting the eyes and faces of war workers.

A safety shield, made of the crystal-clear glass-like material, has been developed by the field's safety and fabrication departments. The shields are not only used at the field, they are also made there from salvaged materials. When large squares of plexiglas are cut to manufacture a cowling of a pursuit



Flexiglas Mask In Action

plane or a gun blister for a bomber, the scrap cuts are used for safety shields.

The McClellan Field safety masks cover the whole face. They are held in place by elastic head bands similar to those used on the common sun visor. A simple device makes it possible for the wearer to lift and lower the shield as it is needed.

More comfortable than the old-fashioned goggle it replaces, it is at the same time more sanitary. No part of the device comes in contact with the wearer to pass on skin or eye diseases. Free circulation of air behind the shield prevents fogging. Workers wearing the safety shield have unobstructed vision and those who wear corrective lenses may do so with no difficulty.

Lt. Vahan Eghoian, safety officer at McClellan Field, points out that by actual experiment it has been found that in some cases efficiency has been raised as much as 30 percent, and that less fatigue on the part of the workers has made them less susceptible to industrial accidents.



For Training Combat Crews

NO rivets spoil the smooth exterior surface of this new Air Forces combat crew trainer announced in the June issue of the *News Letter*.

Built almost entirely of Duramold, the AT-13 is one of the largest and fastest of AAF training planes. It was designed to train bombing crews as a unit, and contains places for bombardier, pilot, co-pilot, navigator-radio operator, machine gunner and camera man.

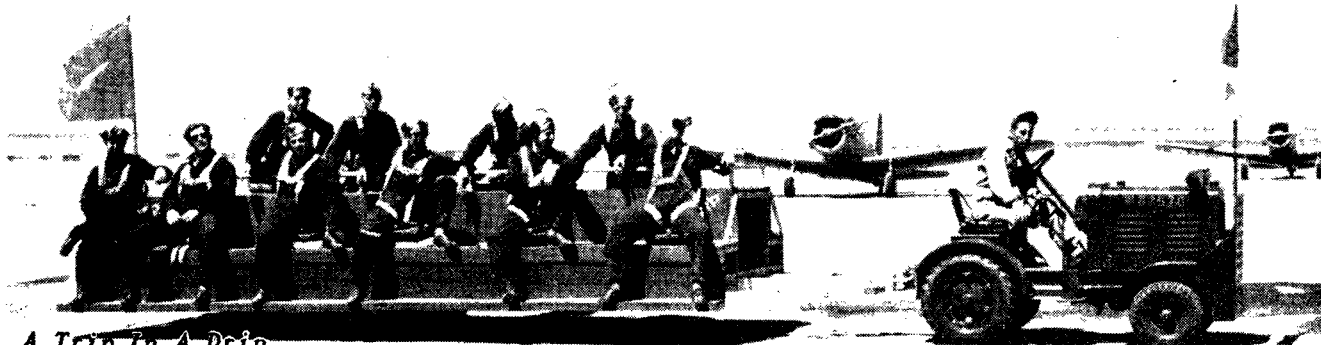
The AT-13 has been successfully test flown, and is going into quantity production.

Transportation Device

THE word "drip" probably means something to you--but the chances are it doesn't mean what it means at the Air Force Basic Flying School, Gardner Field, California. At Gardner a "drip" is a two-wheeled wood-and-metal frame resembling a truck trailer, designed to carry pilots from their planes to the operations office.

With the drip approximately 30 passengers can be saved the half-mile walk to the flying line at one time. The drip is tiered so that pilots may sit down, and has a top platform that can be used for luggage.

The drip was invented by Major William O. Moore, Commanding Officer of the Sub-Depot at Gardner Field, who got his idea from the "elephant cars" that transported visitors around Treasure Island during the San Francisco World's Fair. Nobody seems to know how the device came to be called "drip".

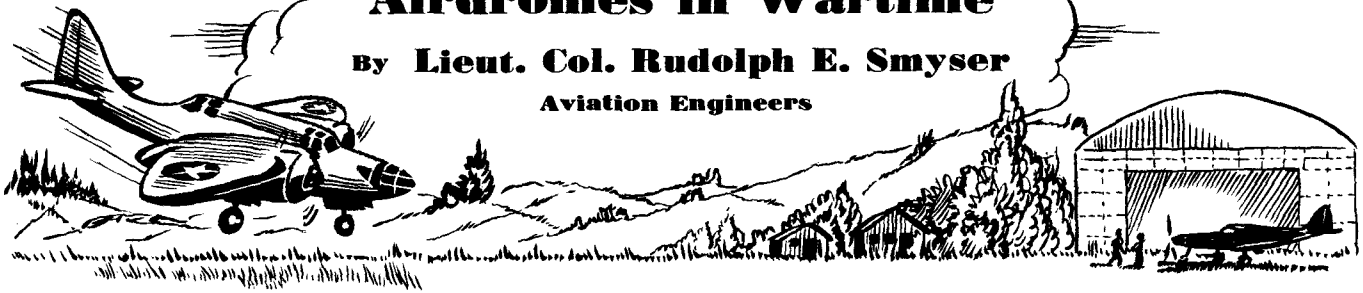


A Trip In A Drip

Airdromes in Wartime

By **Lieut. Col. Rudolph E. Smyser**

Aviation Engineers



HANGARS at field airdromes are designed to protect against climatic conditions only. Generally these structures will be simple wire or steel frame buildings or with metal, wood or canvas sides. They should be fire and storm resistant but the size including the vertical height should be the minimum consistent with proper use. If planning for the future, it appears that a hangar will have to be at least 200 by 165 feet with a clear height of 35 feet and with a door opening approximately 125 by 25 feet. Hangars to accommodate the larger type planes will be rare at field airdromes and in lieu thereof simple nose hangars, either single or double will be substituted. If smaller planes are housed at the field as another expedient, plans may include either a blister type hangar, which is a thin metal with canvas nets, or even a revetment with a light covering, which is also equipped with canvas drop to form a door. Essentially, what is desired is that there be some place in which mechanics can work both with protection from the weather and with facilities permitting operation during blackout.

One Hangar Per Airdrome

Normally, not more than one hangar per airdrome will be constructed. This building must be carefully sited to obtain the maximum concealment. Whenever possible, it should not be on the actual landing and take-off area, but rather in a nearby area to which airplanes can taxi. No aprons will be built as they tend to give the hangar location away.

It has been suggested that these repair hangars be made bomb-resistant, preferably by being underground. Superficially the idea is attractive, but loses merit under close scrutiny. Even were men and materials available, such structures cost roughly two to four times the value of all planes that could be placed in them at one time, yet would never give absolute protection. After all, the important element is not the one or two planes undergoing repair, but the machine tools and essential spare parts. A direct hit on a simple steel hangar as previously described would not destroy the entire structure; in fact relatively slight structural damage would result. Planes within would be seriously damaged or destroyed, but if the machine tools were given a surrounding protective wall of concrete or sandbags, relatively little

damage to them would ensue. At field airdromes these facilities will generally be in trailers which can be parked under trees in the vicinity of the hangar. When a semi-permanent establishment is indicated, these trailers can be given improvised protection of sandbags, or earth traverses.

Under special conditions, it may be necessary to construct Theater of Operations type buildings to house these power tools. In this case, the buildings should not be added as a part of the hangar but should be kept at least 200 yards away. Other technical repair facilities should always be located off the landing area and not within 200 yards of the hangar or other conspicuous targets.

Technical and operational buildings comprise the structures necessary for the operational control and continued technical training of the air units. Although most of these will be located in the immediate vicinity of the landing and take-off area, a formalized arrangement should be avoided. Only the control tower needs to be located in the immediate vicinity of the runways, and even this structure can be made less conspicuous by utilizing an existing structure if available, or by so siting to obtain the maximum amount of screening possible from topography or existing ground cover.

Operation buildings should not be near conspicuous features of the runways or other prominent landmarks. Buildings should be low and inconspicuous, should duplicate local architecture and should have no standard location with respect to other airdrome features, or similar features at other airdromes. This building should be splinter and gas proof. Where existing shelter is inadequate and tentage is unsuited, Theater of Operations type housing will be constructed. Before actual construction is undertaken, thorough reconnaissance of the area near the airdrome to find suitable areas is necessary. Except for the shelter required by airdrome defense personnel and crews on 24-hour duty, all other housing, messing and recreational facilities should be in 200 to 300 man groups off the airdrome area but within 1,000 yards. These groups should be not closer than 300 yards to each other, and centered roughly on a communal site which contains post exchange, mess, and other facilities shared in common. Fullest possible use should be made of any existing building, and to the greatest possible

extent, any new structures should be designed and sited to conform with those indigenous to the country side.

Avoid Pattern Layouts

Preferably the hospital buildings will be in a separate group by themselves, and the extremely characteristic covered walkways between buildings should not be used, nor should a formalized close-knit layout of buildings be used unless such groups are to be found elsewhere in the vicinity.

As an adjunct to all living accommodations, as well as other buildings in which personnel habitually stay, air raid shelters are required. The simplest and one of the most effective is the slit trench, revetted and braced to resist earth shock. Splinterproof overhead cover should be provided both for protection and to assist in hiding the location of the trench. In lieu of trenches, dug-outs or cut-and-cover shelters can be made. Simple ones designed for 25 men are readily constructed of corrugated metal with earth, or earth and concrete covering.

Defensive structures are required on all field airdromes. No airdrome is immune from the threat of hostile attack, so provision must be made to meet and overcome this danger. In peacetime airdromes at least, such installations are conspicuous by their absence, being generally confined to a fence around the airdrome and a siren or whistle suitable for audible signals.

On an operational airdrome, an audible signal system is also necessary, and may be supplemented where possible by a loud-speaker system connected with the various dispersed elements of the command. Through this system the command can not only be placed on the alert, but can get specific information about the type of attack expected.

Use Barbed Wire

Instead of industrial fencing, which is primarily an anti-sabotage measure, barbed wire is used to inclose vital elements of the station, thus forming defended points of resistance. As with any obstacle, it must be covered by the fire of defensive weapons.

For weapons, a variety of emplacements are needed, most being of the typical field type of earth and sandbags. However, concrete pillboxes may be constructed where opportunity permits. These should be sited to be mutually supporting, and to cover the landing area and routes of approach to the airdrome. Too much reliance can not be placed on these fixed emplacements, for even with a liberal use of dummies and camouflage an attacking enemy will succeed in destroying a good percentage by bombing.

No description of an operational airdrome is complete without a discussion of camouflage, yet

no element of passive protection is so frequently misunderstood, misused, or neglected. For some reason an air of unreality is connoted by the very first word, even though it is only a general term for a number of common sense ways of preventing an enemy from seeing what is being done, or has been done at a particular place.

For an airdrome subject to enemy attack, it is vital not only to hinder the enemy bomber in locating the general area of the flying field, but to make the identification of a particular target confused, if not impossible. Concealment from the camera is the final goal, but from practical standpoints, ability to deceive the eye is sufficient. Like any other remedy for an ailment, it works best the sooner used. In fact, best results can only be obtained when camouflage is considered simultaneously with the first plans. Camouflage must be a forethought, not an afterthought.

Without going into the technique of camouflage, we may state that there are four general steps or procedures which may be employed.

The first is to make the airdrome less conspicuous, primarily by merely reducing contrasts. Thus sharp white concrete runways are darkened, and large hangars and administrative buildings are given neutral dull colors.

Landing Area Disguised

Next we attempt to lessen its resemblance to a conventional airfield, by making it appear like something else. This may be accomplished by disruptive patterns and screens, with the idea of breaking up form lines and shadows of buildings.

The third step carries the deception to the point of actual disguise. The landing area is given false hedge lines and roads, while buildings are made to resemble farm houses or other structures of the neighborhood.

The last step is to draw the enemy away from the actual location through the judicious use of a dummy or decoy. At some convenient point, preferably from 1½ to 3 miles from the installation to be protected, a replica is built. This dummy faithfully follows the general pattern of the original, but is allowed to remain not too well concealed. Camouflage is placed poorly, and obvious marks of activity are simulated. Properly done--and not overdone--the decoy will give the real installations good protection for a long period. At night, excellent results can be obtained with a few lights, placed to simulate the markings of the real field. When operated under direct control of the real field, the decoy can be darkened while friendly planes land at the real airdrome, then turned on again as soon as the need for the lighting is past.

We Scour the Seas

(Continued from Page 10)

craft engines growing louder on the night air. The attack at Aalesund is perhaps typical. In November, 1941, nine Hudsons attacked at mast height shipping in this small harbor deep in the Norwegian fjords. Four enemy ships were sunk or left sinking. A fifth was left in flames and an escort vessel was severely damaged. A fish oil factory was set ablaze and a power station and German barracks were bombed. And to complete the night's work a lorry was hunted along a road and forced to crash into a ditch!

Behind all these activities lies the Battle of the Atlantic--that grim war which goes on unceasingly and relentlessly against the U-boat, waged to keep open the supply lines essential to the Allied war effort. The U-boats leaving or returning to their harbors in Germany or the Bay of Biscay are forced to travel submerged while within the range of aircraft or to take the consequences of being caught on the surface. This means a prolonged passage and less time on actual operations; and so the U-boat tends to take a chance even when actual necessity does not force him on top of the water. But he is a small target and a wary one. Many hours of flying in all weather conditions are necessary to sight him. Again there are convoys to be protected when threatened by the U-boat pack. Experience has taught that no more effective antidote to sinkings exists than the maintenance of air escort through the threatened zones. In this, as in all its operations, Coastal Command works in the closest co-operation with the Admiralty; and that so many convoys arrive unscathed is a tribute to the effectiveness of this teamwork.

Just a Few

These are but a few of the activities of the pilots and aircrews of Coastal Command--space prevents little more than their mention, and others, such as the work of the Long Range Fighter Squadrons, Meteorological Flights, and Air Sea Rescue, must be passed over.

The coats-of-arms of the Coastal Squadrons hang on the walls of the Mess at Headquarters. Their devices are numerous, their mottoes are many--but the latter are summed up in that of the Command, "We search and strike". Day and night, in fair weather and foul, the pilots and aircrews of the Command have been flying on operations since the first day of the war. It has been computed that already more than 50 million miles have been flown, or approximately 2,000 times round the world. This has not been carried out without cost; nor has it been without successes, as well perhaps as disappointments. The Command will so continue with increased numbers and increased effort until the day of final victory comes.

One in a Million

(Continued from Page 12)

taking the full load of preliminary examination and study of ideas submitted.

In addition, the Council serves to coordinate ideas throughout the military establishment. It will send reports of devices to all branches of the War and Navy departments which might remotely be interested, thus making sure that no possible use for the suggestion is overlooked.

When an idea or proposal is submitted to the National Inventors Council, it is classified in one of three categories: (A) "Hot stuff"; (B) "Has possibilities", and (C) "Not good". This classification is directed by Colonel Lent's engineering staff, and meritorious suggestions are referred immediately to the appropriate office or agency of the Army or Navy. In the case of the Army Air Forces, ideas considered useful in the AAF are coordinated through Colonel Benjamin W. Chidlaw, who acts as liaison officer between the AAF and the Council.

Board Acts On Ideas

Three officers, respectively representing the Air Forces, the Ground Forces and the Services of Supply, review all worthwhile ideas connected with the war effort, and a monthly lineup of those proposals considered to have value by the armed forces are submitted to Colonel Lent, so he can keep his scoreboard up to date.

Colonel Lent's interest in inventions connected with the airplane is understandable; he is one of the founders of America's present-day air strength. He joined the Aviation Section of the Signal Corps back in June, 1917, after several years experience in designing, building and operating gasoline engines, and one month later was commissioned a Captain. After considerable service as engineer officer, he won his wings in May, 1918, serving variously as Commanding Officer of Brindley and Roosevelt Fields. His rise through the ranks was continuous until 1919, when he was honorably discharged with the rank of Major--but eleven years later he was soon back in harness again as a reserve air officer and in 1931 advanced to the rank of Lt. Colonel in the Air Corps Reserve.... a rank he holds today.



The U.S. Treasury has created a "War Contributions Fund" into which all private donations for the furtherance of the war program will be deposited....Next time you fellows in the Hawaiian area write home, ask the folks to reply by regular mail rather than air mail except in emergencies, to help cut down the overload of billet-doux that tie up needed aircraft space.

Friend or Foe?

By Captain F. W. Warlow

Wright Field



If you won't look up, you'd better look out. Most of the world learned that the hard way. We still have time to learn it the easy way.

When the bombs began to fall from the skies over Europe and China the people looked up--but too late. When they tried to retaliate, ignorance frustrated their efforts--many times they didn't know their enemies from their friends.

Sometimes they were slow in firing and got bombed; sometimes they were hasty and shot down a friendly plane. Even the British, who staved off invasion, made mistakes. Through bitter experience they learned the importance of a tested spotting technique.

With the stern lesson of Europe fresh in our minds, Americans are beginning to realize the importance of being able to identify the planes that in ever-increasing thousands are spreading their wings over continents and oceans. But it is doubtful if the average American knows with certainty the silhouettes of five AAF military planes. Too few men in the AAF can make positive identification of an equal number of foreign types.

In a nation committed to total war, this is a serious deficiency that can only be corrected by a definite overall program of instruction. For the establishment of such a program a number of different identification systems have been under consideration.

The "Common Sense" Method

The most basic of these is the "common sense" method. This study, which was used until recently by the majority of service schools, begins with general characteristics and leads into specific. First, the airplane's structure is divided into units and terminology is established for each unit. Then, types of airplanes and, later, individual models are identified from the top, side and bottom by beginning at the nose and working backwards; and from the front by beginning at the wingtip and working in toward the fuselage. Realistic perspective views are also included.

When Pearl Harbor loosed a cry for identification material, the Signal Corps Training Film Production Laboratory at Wright Field under Col. F. W. Hoorn, began production of 30 Air Forces' films based on this method, photographing models, silhouettes, and actual planes. The completed motion pictures of this series have been used extensively to complement other aids to

identification instruction now used in the services.

Another popular identification method is the Block System. In this system, which originated in England, the parts of an airplane's structure as seen from the side, top, bottom and front are represented by standardized blocks. Each one of these represents a structural unit, such as fuselage, engine, tail.

After a student learns to associate particular blocks with the structural units of an airplane, he learns to identify types of airplanes and then individual models by variations in the arrangement of the blocks. For instance, the block representing the vertical fin and rudder will be farther from the end of the fuselage on one airplane than on another, and the blocks representing the engines will be in the wing on one multi-engined airplane and slung below the wing on another.

On the surface, the block system seems too general. Those of us who have had experience in identification usually stress details like the belly line of the fuselage or the location of a radiator for quick identification. We forget that the block system is designed to get green students quickly under way. It accomplishes this by developing an eye for form rather than for the details that confuse beginners. Finally, the door is left open for limited advanced training through the representation of details, such as turrets, with additional symbols.

The WEFT System

A third method of identification is the WEFT system, another British development. This is the system now used generally throughout the Army and Navy in conformity with the Allied Nation's program of standardizing equipment and training. The WEFT system gets its name from the structural units which the student is drilled to take up in order: W--wings; E--engines; F--fuselage; and T--tail. By constant drill, the observer is taught to study airplanes systematically, his eyes moving to the four salient features. In time, he learns speedily to synthesize these features.

In some respects, the WEFT system is the same as that first described, the "common sense method". This similarity exists because the wings and engines of distant airplanes are not

spot JAP AIRCRAFT

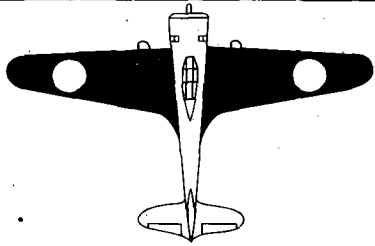
WING

ENGINE

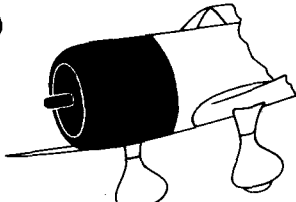
FUSELAGE

TAIL

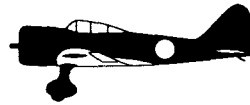
MITSUBISHI-97-FIGHTER



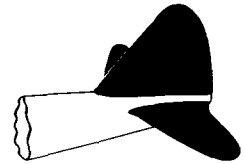
ROUND TIPS



RADIAL

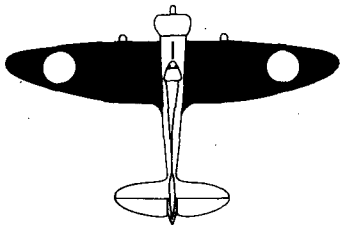


FIXED GEAR

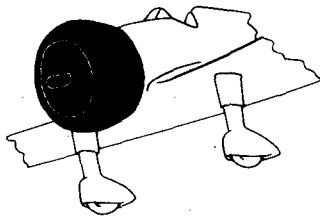


ROUNDED RUDDER

NAKAJIMA-96-FIGHTER



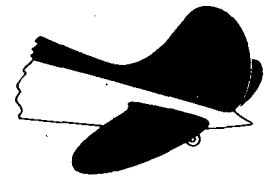
ELLIPTICAL



RADIAL

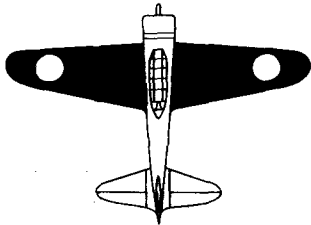


FIXED GEAR,
OPEN COCKPIT

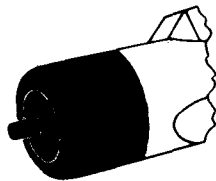


DORSAL FIN

MITSUBISHI-00-FIGHTER



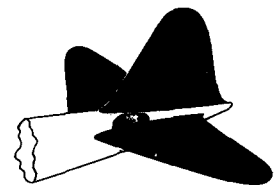
ROUND TIPS



RADIAL

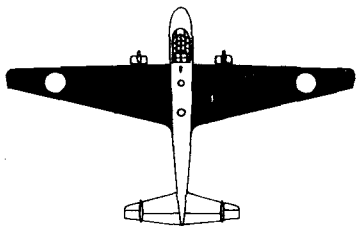


RETRACTABLE GEAR

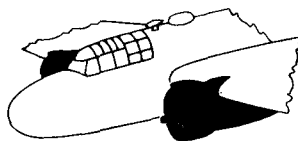


ROUND TOP

MITSUBISHI-96-BOMBER



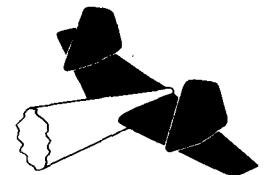
SQUARE TIPS



TWIN RADIAL

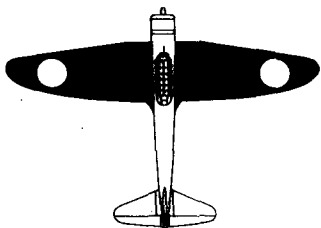


ROUND NOSE

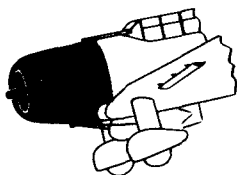


TWIN TAPERED FIN
AND RUDDER

AICHI-99-DIVE BOMBER



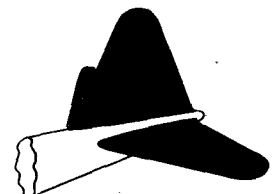
CURVED TRAILING EDGE,
ROUND TIPS



RADIAL



FIXED LANDING GEAR



TAPERED FIN
AND RUDDER

a twin-motor airplane at three or four miles will reveal a silhouette of fuselage and tail alone. By necessity, the WEFT system sometimes becomes an FT system. Just as in the common sense method, the fuselage is studied, beginning with the nose, and then the tail.

However, the WEFT system is better for our purposes than the "common sense" or the Block system. It does not involve too radical a change from the methods of instruction employed until recently by our armed forces. It has a catchy name, which is important in securing popular support. It is emphatic, stressing as it does only four points. It lists in order of importance to the beginner's eye the basic elements of an airplane's outline as seen in classroom illustrations and in flight nearby. It has been adopted officially by Great Britain after several years of experimentation with various systems; and finally, our adoption of it has made it the standard of the English-speaking world.

Other Methods Needed

The WEFT system alone, however, will not make Americans reliable airplane spotters. Like all present systems it emphasizes almost exclusively the elementary stage of instruction. Other devices must be employed to prepare our soldiers, sailors and civilians for split-second identification. This can be achieved by drill in details. Advanced students should be taught to identify airplanes by peculiarities in one structural unit. Cards or slide films bearing no more than a tail, nose, or section of wing should be enough clue for the keen spotter. Gradually, the time allowed for study of these details can be shortened until speed and accuracy in recognition are developed.

More realistic methods of teaching speedy recognition are through *motion* pictures. The Signal Corps Training Film Production Laboratory at Wright Field has experimented with "Quiz Reels." Two-engine fighters, for instance, are reviewed and then shown in short flashes while the commentary challenges the audience to test its skill in identification. The media employed are animation, model photography, and stock shots, some of which are actual battle scenes.

Major R. C. Locke, working under the Air Forces' Director of Individual Training, is preparing training films which dramatize identification. Through these screen stories, identification instruction is subtly woven. The hero is the man in the cockpit of a P-39 or the tail of a B-17E who knows which fast flying silhouettes deserve a squeeze of the trigger. This project is in a preliminary stage at the Signal Corps Training Film Production Laboratory at Wright Field. When the WEFT system is augmented more fully by advanced forms of instruction, the me-

thod for a thorough, nation-wide identification training program will be at hand.

The systems and facilities we already have and those to be developed, however, must be centrally controlled. We have an indoctrination program of national scope to administer, and we have to make up for a late start. Some beginnings in centralization have been made. Lt. Col. J. M. Hayward of the Foreign Developments Laboratory at Wright Field has fostered the collection and organization of identification material for military uses. Files are kept of aircraft by nationalities and individual models. Periodically, this information is condensed into pamphlets dealing visually with all the leading military aircraft of one nation or with an outstanding individual model.

In addition, a chart presenting the principal Japanese aircraft according to the WEFT system has been prepared. The Signal Corps Training Film Production Laboratory found this information invaluable for identification films. The Foreign Developments Laboratory, however, is primarily interested in technical changes in aircraft rather than in changes in appearance. Colonel Hayward has tried to keep abreast of identification only because he thought it a neglected area in our military preparations.

Standardized Program

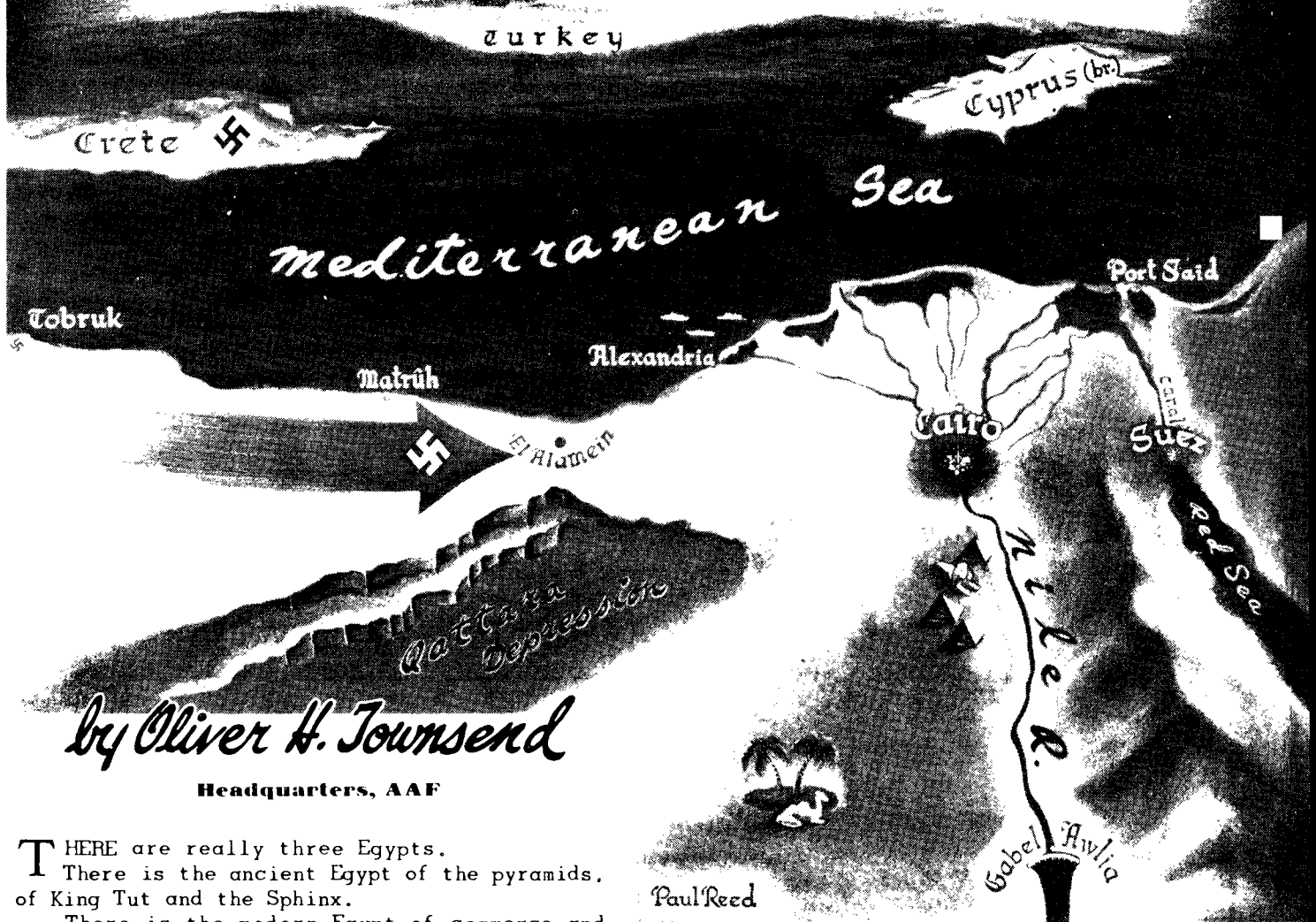
A standardized identification program should include a centralized agency to administer national identification. It would be desirable if this agency could be composed of representatives of the Army, the Navy, the Federal Office of Education and the press. This agency could not only develop methods of teaching aircraft recognition but could also prepare teaching aids and distribute them to service schools, public schools, Boy Scout organizations, the press, motion picture syndicates and other responsible organizations. In addition to Army and Navy sources, this agency could utilize the photographic files of newspapers and newsreels in obtaining material for educational purposes. It would be the duty of the Army and Navy to determine the correctness of the silhouettes, photographs and models that were utilized.

Many other advantages and means of identification instruction through a centralized agency could be enumerated. It is of the utmost importance that both military and civilian Americans be indoctrinated with this important subject. The time required would not be great; but the need is tremendous. Our lives and those of our pilots must not be lost through ignorance and our airplanes needlessly demolished through mistaken gunfire.

Let's learn to spot the enemy in order to pot him!



EGYPT



by Oliver H. Townsend

Headquarters, AAF

THERE are really three Egypts. There is the ancient Egypt of the pyramids, of King Tut and the Sphinx.

There is the modern Egypt of commerce and agriculture, of boat traffic on the Nile, of busy wharves at Alexandria, and of rich, irrigated farm land stretching along the Nile Valley all the way from the Mediterranean southward into Sudan--the Egypt of modern peasant and modern laborer, toiling in the fields and shops, virtually oblivious to the war and the part it must play in his own destiny.

And there is the foreigner's Egypt that sits astride the lifeline of the British Empire, the Egypt of the Suez Canal, of the great naval base at Alexandria, of the airdromes that have sprung up in the desert--the cosmopolitan Egypt the foreigner sees in Cairo, the Egypt of dancing girls, dress uniforms, martinis mixed by bartenders from London and New York, Sheppard's Hotel, and of cheap honkytonks that have grown up in the native quarters to give the foreigners a good show.

The war has brought a business boom to the

Egyptian's Egypt, and it has made the foreigner's Egypt one of the two or three most important spots on earth. But ancient Egypt it has not affected at all.

Sphinx Still Watches

The Sphinx still watches the armies swarm across the desert just as it has watched armies swarm across the desert for 45 centuries. It has seen the great empires of Assyria, Macedonia, Rome and France crumble there. Most recently it has seen the German Field Marshal Erwin Rommel reach out for Cairo, Alexandria and Port Said, only to have them slip through his army's long mechanized fingers like the hot sand of the desert.

Rommel seeks the foreigner's Egypt. He is after the naval base at Alexandria, the airdromes, the Suez Canal and all the land beyond.

He wants Egypt because then he could move against the Holy Land and Syria, Iraq and Iran. And perhaps he could join forces with the other Nazi armies coming down through the Caucasus--maybe even with the Japanese in India.

As this is written, Rommel, after a see-saw battle climaxed by an 800-mile dash across the desert, is stalled at El Alamein in the narrow "isthmus" between the Mediterranean and the great, cliff-bordered marshy lowland known as the Qattara Depression. This narrow stretch of sand between the sea and Qattara is like the mouth of a funnel that lets the desert into Egypt from Libya.

Rommel, as soon as he can, will try to break through the funnel into Egypt. The British will try to stop him. Also trying to stop him will be the U.S. Army Air Forces.

If you are one of the officers or men that are being sent to fight the Nazi in Egypt you ought to know something about the land you are going to defend.

Egypt is like a huge mass of protoplasm living from one great single artery--the Nile River. The Nile begins back in the mountains of central Africa and flows for 4,000 miles to the sea. Only the last 960 miles of its course are through Egypt.

Nile Valley Narrow

The Nile Valley, though long, is very narrow--not more than 10 to 12 miles wide--until it reaches its delta just north of Cairo. There the river fans out into a myriad of small streams, creating one of the most fertile regions on earth. The Nile delta and the lower valley support a population of over 1,100 people to the square mile. Even Belgium, the most crowded country in crowded Europe, has only 600 people to the square mile.

But the rest of Egypt's 386,000 square miles are little more than barren wasteland. Although the Nile bisects the desert, it has no tributaries in Egypt proper, and the single stream has made only about 14,000 square miles arable, even with the aid of the most modern irrigation methods. It is in this area that most of Egypt's sixteen million people eke out their existence.

In ancient times the Nile used to dry up to almost nothing during part of each year, and overflow into cities and farms the rest of the time. Now the river is harnessed by a series of control dams, with the system built around the great Gabel Awlia dam that spans the Nile several hundred miles above Cairo. Its 16,400 feet of concrete make it five times as long as Boulder Dam, but only one-fifth as high. Probably the most important bastion in all Egypt, Gabel Awlia controls the flow of the Nile, preventing floods and keeping the valley fertile.

About 100 miles from the Mediterranean,

gleaming in the hot sun like a jewel in the handle of the fan-shaped Nile delta, is the great city of Cairo--capital of Egypt and the largest city in all Africa. A large, cosmopolitan metropolis in ordinary times, Cairo's normal population of over a million and a quarter is today swelled by thousands of soldiers from all the United Nations.

Cairo's crowds have made living quarters almost impossible to locate. They jam the cafes and restaurants, they raise the price of food and they make entertainment hard to find. Social life is practically nil. Most of the cafes outside of the two or three ultra-swank spots are honkytonks with an artificial "atmosphere", often operated, not by natives, but by former "pub" owners from all over the British Empire.

There are a few movies in Cairo. All but one are outdoors under the cloudless Egyptian sky. Most of the films are made in Hollywood, but the Egyptian subtitles, the jabbering of the natives, the eat-and-drink vendors and the long intermissions make them at least "different" to attend. The one modern enclosed, air-conditioned cinema in Cairo is operated by an American firm.

Pound is Used

The money used in Cairo, as in the rest of the country, is the Egyptian pound. It can be purchased for \$4.10, but if you don't watch out it won't go very far. Prices are high and you have to know how to deal with the natives to keep from going broke, especially if you feel like patronizing the many street vendors.

Although Cairo is an ancient city, it has many modern sections, and the large foreign population gives it some of the aspects of an occidental town. Automobiles and streetcars are everywhere, and modern office buildings are mixed in with the domes and minarets. Perhaps because of the large foreign population, you can easily find western food that is fairly good, though expensive. Too much experimentation with the native foods should be avoided--it might lead to that common African affliction known as "gyppy tummy"

The Egyptian people are generally apathetic toward the war. But they are friendly toward the soldiers who have come to keep the Nazis out, and a tolerant and friendly attitude toward the native will usually find a warm response. Mostly the people are interested in the business the war has brought them. Many of them will want to sell you souvenirs or take you sight-seeing.

The sight-seeing around Cairo is good. Just across the Nile and upstream a little is Giza, where the famous pyramids and the Sphinx are located. Sight-seeing parties leave often for Giza, or you can go over by yourself. In Cairo,

(Continued on Page 38)

Fireworks Over Europe

(Continued from Page 3)

or shine. Actually, both Bennie and I learned some navigation from Dorton.

Tempo Picks Up

Finally July came and things began to move with plenty of speed. Just three days later the entire thirty-six men, composing the first American combat group on an operational basis in England, found themselves assembled in the crew room, listening to our Commanding General tell us that we were to have the honor of celebrating the coming Fourth of July in a way which we had never celebrated it before. The general's predictions were quite concise and true.

The evening of the Third of July, a "Battle Order" for the succeeding day appeared on the bulletin board in the crew room, and on that battle order were six American crews, or a total of 24 men.

We had all seen R.A.F. crews come out of the briefing room, each man wearing a different expression, but in the eyes of all of them a strange determined look, which defied any questions which might be asked.

We were wondering if we too would be that way! Without exception we were.

Our first look inside the briefing room was rather terrifying. Maps, with colored pins all over them, covered the walls. Aerial photographs of previous raids were posted on bulletin boards around the room. Occupying the most prominent spot in the room was a large display board, which was divided into four parts. In each one of the sections were photographs and scale drawings of one of the four targets for this particular mission.

The particular target in which our crew was interested was an ME 110 aerodrome at DeKooy, which is located at the northern-most tip of Holland. In our particular formation of three planes, besides ourselves, was another American crew and one British crew, captained by Squadron Leader Kennedy, who was a veteran of unnumbered operations.

The room was in a roar, with everyone speaking at once, but suddenly silence fell as the Wing Commander and Group Captain walked into the briefing room from the Operations Office. At once everyone focused their attention on the Wing Commander and listened attentively to every word he uttered.

First he explained to everyone that the operation was to be a joint effort by American and British crews. From that point on he carefully outlined each target, where they were located, what kind of planes we could expect to find based there, and most important, what kind

of anti-aircraft defense we could expect to find there.

From that point on, the leader of each vic of three planes took over, and laid out the plans for his particular job.

We were to go in low level, line abreast, with each of the three planes concentrating on a definite part of the aerodrome. It was to be our particular job to get the hangar, while the other two got dispersed airplanes and the barracks. Of course any enemies which might be caught on the aerodrome were to be open to attack from the man nearest them.

Captain Kegelman, S/Ldr. Kennedy, and Lt. Leehrel, the pilot of the third plane, were busy discussing the way in which we would approach the target, the manner in which we'd leave it, and what evasive action would be taken. Lt. Dorton was busy checking his course with the other two navigators, and Bennie and myself were questioning every R.A.F. gunner on the mission as to the correct radio procedure, colors of the day, and what sort of calls we would use if enemy aircraft were sighted.

Silence Again

Then silence fell again, and I think for just a second every fellow in the room held his breath for just a second. Anyway, I know that I did, and then the Wing Commander said something like, "Gentlemen, your time of take-off will be 07:15 a.m., tomorrow morning; be in your ships by 07:00 a.m. Are there any questions? Good luck, gentlemen".

After that we started filing from the briefing room, each crew instinctively getting together, but not one of them saying a word about "tomorrow." That night it is doubtful that anyone slept very much; everyone, I think, kept turning over in his mind what we had been told, what we were expected to do.

Early next morning, at 5:00 a.m., we were roused out of bed by the orderly and after dressing proceeded to the mess hall for breakfast. It is surprising when I look back on it, how very much was said, and yet not one word was mentioned about the coming operation, which I am quite sure was uppermost in every man's mind.

That hour, between six and seven o'clock on the morning of July 4, 1942, is probably the hardest I've ever spent, waiting for the zero hour. Finally we were in the airplane, and with the starting of the engines, all nervousness and impatience vanished. We were about to begin our first operation.

Taking off and circling into formation actually took minutes; to me it seemed to take hours, but eventually we were down low, in close "vic" formation out over the English Channel. We could see the other three "vics" off to our

right, all four vics holding a loose formation.

At that time Bennie and I were checking our equipment for about the ninety-ninth time, and forever looking out for anything that might come out of the blue above and down at us. It wasn't too long before the other three "Vics" started to leave us, as we changed our course in a northerly direction and they went south, and from then on we knew it was we three crews against the Germans, and we could hardly wait.

"Terribly Long Time"

It seemed to take a terribly long time before we were across the Channel. But before we were within range of his 30 millimeter anti-aircraft guns "Jerry" started sending out a barrage of tracer that looked impenetrable to the leader of our "vic". Immediately we knew that our approach had been noted and sent ahead of us, and that the Germans were ready and waiting for us.

The only recourse left open was to attempt to circle the field and come home, and this was the course that S/Ldr. Kennedy followed. Immediately after crossing the Dutch Coast, the No. 3 plane of our vic was hit, and crashed, the speed of the impact causing the plane to disintegrate entirely. Shortly following this incident, the right or starboard engine of our ship was hit, and the prop was shot away, came sailing past my hatch in the bottom of the plane.

It is easy to imagine what a startling effect this had on me, and as if that wasn't enough, that was followed by a loud "whrump", and suddenly both my legs were thrown to the top of the fuselage.

My first impression or thought was that Bennie had knocked down a Messerschmitt, but when the right wing went down and we hit the ground with a terrific crash, I didn't have to be told that it was our propeller; I was very much aware of it.

Lying on my stomach in the bottom of the plane, I received a terrible shaking when the plane struck. A hole of about two-square feet was knocked through the bottom of the fuselage just aft of the bomb-bay doors. The force of striking the ground numbed both my legs, and for a few seconds I thought they had been shot up. It wasn't until we were actually away from the target and I could examine them was I at all sure.

With our right engine gone, a big hole in the belly, and the right wingtip crumpled for about a foot back from the end, the right wing and engine nacelle caught fire.

This had all happened while we were flying at about 300 m.p.h., and consequently lasted but a few seconds, although in those few seconds, I made a few hasty resolutions. In the meantime, the leader had drawn away from us and was quite

some distance ahead, and firing at him directly on his right was a flak tower. In order for us, on one engine, to effect a safe passage back to the coast, it would be necessary for us to pass this tower. As slow as we were on one engine, it seemed impossible. Therefore the captain flew directly at the tower, knocking it out with his forward guns.

In the meantime, both Bennie and myself had been busy with our flexibles, and both feel confident that we accounted for one gun emplacement each. After getting back over the channel again, nothing was said by anyone for a couple of minutes, and with the cessation of gunfire, the silence was deathly.

Then all of a sudden Capt. Kegelmann called back and asked if we were all right. We answered yes, and checked on him and the bombardier.... they were both O.K., and then we really talked the thing over. Every few minutes we'd check each other to be sure that all possible angles of attack were covered, and to eliminate that awful nervousness that follows a terrible nervous tension such as we'd just been under.

It seemed that it took us hours to get back to the English coast. We were overdue at the base, and everyone was getting anxious about whether or not we'd return.

Shaken But Safe

It's hard to find words to describe the feeling you get when you come so close, and then once more get back and can crawl out of the old "kite" onto good old mother earth again, but believe me it is one of the most sensational feelings I've ever experienced.

Immediately following our return, we were interrogated by the intelligence officer. At the interrogation a complete story is told, as accurately as can be observed and remembered by all members of the crew, of any thing which pertains to a military nature. This might mean the type of flak encountered, enemy ships which attacked you, troop movement observed, or anything else which might catch the eye and appear out of place on the landscape.

In our case there wasn't much to tell except that the Germans had a devil of a lot of guns over there and sure knew how to use them. Of course the loss of number three ship had to be reported and all possible details concerning it given. After the interrogation we had lunch and at lunch we could and did freely discuss all points of the trip.

In closing this story I'd like to say to anyone who reads it, especially aerial gunners about to pull their first operation, that the job of the aerial gunner is comparable to any other job in the Army, and to do that job successfully and completely, there must never be an end to your training, for training can begin, but it must never end.

Midway

(Continued from Page 5)

the middle and broke into what looked like half a dozen big pieces."

Anderson complained he didn't get a chance at the second vessel either, said it met a similar fate almost simultaneously.

"There our ship was in the air 17 hours, and I didn't get to drop a single bomb," Anderson said.

Lieutenant L.W. Felling, navigator of a B-17 told of his first battle impressions.

"In the distance we saw hundreds of fighter planes hovering above the fleet of burning ships. Someone said on the inter-phone, 'Everybody at battle-stations, here come the Zeros'. In spite of what appeared to be long odds against us every crew member took his battle-station and got ready for action. The flight then continued to fly on course to bomb the Jap ships.

"Finally we had another, but a more pleasant, surprise. We found that those clouds of Zeros were nothing but bursts from the Jap anti-aircraft guns. In the future our crew plans to study identification until we can at least tell the difference between Zeros and A.A. fire".

"Zeros Dove On Bombers"

Lieutenant Balfour Gibson told of one way of getting injured in the Battle of Midway:

"We started our run across the Japs with the sun directly in back of us. Their battleships and cruisers were giving us broadsides as well as heavy anti-aircraft fire. The Zeros had been diving on us and suddenly I heard Major George Blakey, our pilot, holler. Looking up I saw a Jap plane slow-rolling over us,--bullets from four '50s' hit him, that's all there was to that. Upon landing at Midway and leaving the plane I walked into the wing, cutting my eye".

Lieutenant Otto Haney, Springfield, Missouri, pilot of a B-17, tells this story:

"After our first engagement with the Jap Fleet and we had landed and serviced the planes, some of the crew members were sitting around talking about the battle and I overheard one of them say, 'Did you see that big ship of ours out there flashing us signals'? When we determined what he was talking about, we all knew we had seen the big ship. We had seen the flashing all right, but it wasn't our ship--it was a Japanese battleship and the flashes were nothing less than broadsides. You might call them signals, at that".

Lieutenant W.A. Smith, who works with his brother, Bob, as co-pilot in a Flying Fortress reported this incident:

"This was the real thing and we were in the middle of it. Jap A.A. fire all around us and Zeros beginning to dot the sky. Sergeant Yeomans was at his gun must of the time and, naturally, was pretty excited, which was proved when he

ducked his head into the cockpit and yelled, 'Look at that Zero down there. Why, that damn fool will kill himself if he doesn't pull out of that dive'."

Technical Sergeant A.D. Johnson enjoys telling the following story about Lieutenant Sid Ingram, bombardier in Major Ernest Manierre's Flying Fortress.

"We were going in our bombing run", Sergeant Johnson said, "Anti-aircraft guns, machine guns, and pom-pom were bobbing us around like a cork. We were all kind of tense and excited. About that time Lieutenant Ingram's voice came over the inter-phone in a calm southern drawl: 'Bombs away. Let's get the hell out of here, Ernie'."

One of the pilots reported a crash landing at sea. "Our gas supply was getting low. At about two o'clock in the morning we started down to make a crash landing in the water. All the crew were in the radio compartment except for me and the co-pilot. They had taken all our winter flying suits and padded the compartment the best they could. Well, we mushed into the water and skipped twice, like a rock skipping across a lake, and then we hit. If you can imagine a large truck weighing about 15 tons going about 90 miles an hour, crashing into a brick wall about 10 feet thick, you can imagine the noise when we crashed. Water flew everywhere. Then there was complete silence for a moment, then the crew started coming out of the rapidly sinking airplane. We piled into two life rafts and then took a rapid count of who was present. One man was absent. We watched the ship go under. Then everyone settled himself as best as he could to get some sleep and wait for the coming dawn".

Like Swarm Of Bugs

Lieutenant Dave Everitt of Milwaukee sums up the accounts with this typical experience:

"My first impression of the Jap fleet was that of a great swarm of water bugs tearing around all suffering from hot feet. As we approached they took on a more real shape, as they shot wave after wave of anti-aircraft fire at us. When we were just starting the bombing run the Zeros hit us. I'll always remember Corporal Blair, bombardier, hollering, 'Somebody shoot that first clown'. About then all three ships in our formation opened up on him. The Jap fighter pulled up over the formation in preparation for a diving attack, and when we hit him, he just seemed to wilt and fall out of the sky. The tail-gunner, Corporal Dickson, reported that he hit the water burning.

"We dropped our bombs on a big cruiser that was putting up a terrific blast of A.A. trying to protect a Jap carrier that had burned almost to the water line. We got one hit on the stern.



Landing Gear

(Continued from Page 17)

nose wheel down on the runway. Under icy-runway conditions, the best technique is to come in low and slow, under power, and land tail low using flaps and attitude to slow the airplane as much as possible. Apply the brakes in quick, light actions, never putting on or holding much force.

An airplane usually has provisions for a tow bar to be attached (by means of a locking pin) to the nose wheel fork. If this pin is not locked, the nose wheel is free to turn exclusive of the shimmy damper making a 180 degree turn of the wheel probable, with possible strut breakage. It is the pilot's pre-flight duty to see that the locking pin is in its proper position.



Red Sentries

(Continued from Page 23)

The second pair of Junkers-87's, after spending several minutes in the clouds, tried to dive-bomb our troops but was intercepted by our lower flight. One plane began to smoke and tried to land--the crew was killed. The other plane tried to slip through the clouds but ran into the upper flight again--it too caught on fire. Out of the four Junkers, three were destroyed and none accomplished its mission.

The schedule of patrol reliefs in the air must be worked out very carefully. There have been times when our planes have had to return for fuel ahead of time, leaving the air free to the enemy for five to seven minutes. The Germans would observe from the air and ground, and when our planes returned for fuel they would signal their own planes by radio to attack at that time.

Efficiency of air patrols depends considerably on control. It is inadvisable to have patrol landing fields too far from the front line. This not only lessens the fighting time but also hinders the control by the commander. Airdromes and command posts must be as close as possible to the front line troops. By being close, coordination between the air commander and ground commander is facilitated. If airdromes cannot be located forward, advance landing fields must be provided for refueling. Control of planes in the air can be accomplished from the ground with radio and signals. These methods of communication are employed to designate targets. All ground commanders must be able to give signals understood by air patrols. Whenever air support is given, the air commander must establish the signals to be used.



All Officer Candidate School graduates who are discharged to accept commissions may retain all their clothing that is serviceable.

Egypt

(Continued from Page 34)

Alexandria and Port Said there are other famous sights to see. Most of Egypt is filled with historical landmarks, mosques and ancient tombs and palaces.

Enemy Is Dust

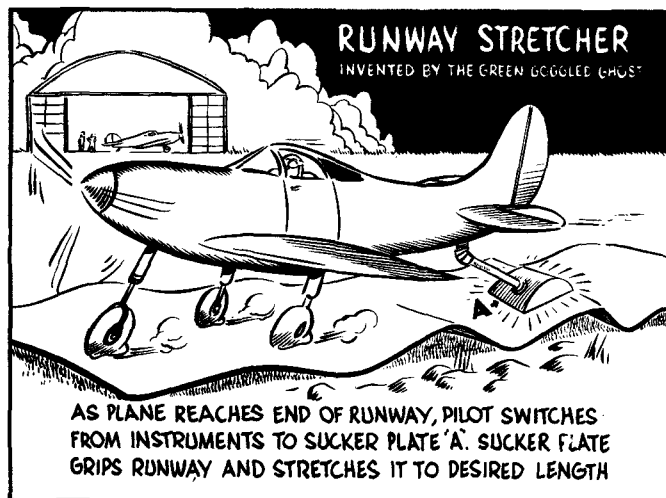
Outside of Cairo is the desert. It rolls right up to the very gateways of the city. Out on the desert life is hard. The soldier's great enemy is the dust. It gets in his eyes (it's a good idea to take goggles if you're going to Egypt), in his ears and in his clothes. It gets in his food. It gets in the motors that drive his trucks, his tanks and his planes.

The other great enemies of man in the desert are the heat and the lack of water. Getting water to drink is hard enough--to find water for bathing and washing is sometimes impossible.

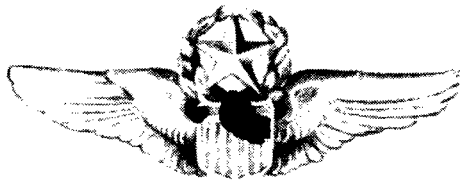
But in spite of the hardships many soldiers have developed a kind of fondness for the desert. The crisp cold nights, the dry air and the cloudless skies are all to the desert's advantage. Sometimes it gets so cold at night that you need to sleep under four or five blankets. The desert moon is big and bright, and good for romance--but good for bombing, too.

Desolate or not, forbidding or not, the German covets the desert--and he's tried hard to get it. He has tried it from Libya, and he will try it again. He can also try by air from his bases in Crete, Greece and Italy.

The fight to keep the German out of Egypt and to drive him back where he belongs is a big one--one of the biggest of the war. If you're going to Egypt to fight the Nazi you'll probably know you've been in a fight before you get back. But you'll also know you've had a part in writing one of the most important chapters in the history of the desert, of the United States--and of the world.



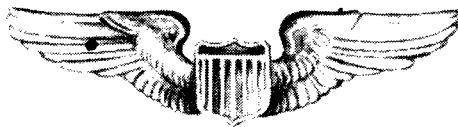




COMMAND PILOT



SENIOR PILOT



PILOT



SERVICE PILOT



GLIDER PILOT



LIAISON PILOT



NAVIGATOR



BOMBARDIER



AIR CREW MEMBER



COMBAT OBSERVER



FLIGHT SURGEON

Pornier 17z

SPRUE WOOD GLASS
TOP AND SIDE ARMOUR

MAIN ENGINE & MOTOR
TWO LIGHT MOTORS ARE
ALSO FITTED

LOOP ASSEMBLY

FOR FUEL GAS
CAN BE USED AS
A FUEL GUN
(AIMED BY PILOT)
OR FUEL GAS
(AIMED BY OBSERVER)

THIS IS DESIGNED
FOR BOMBING AIRCRAFT
IN EVENT OF EMERGENCY
LAUNCHING IN BOMBING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

ARMOUR
WITH
MOUNTING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

FOR FUEL GAS
CAN BE USED AS
A FUEL GUN
(AIMED BY PILOT)
OR FUEL GAS
(AIMED BY OBSERVER)

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

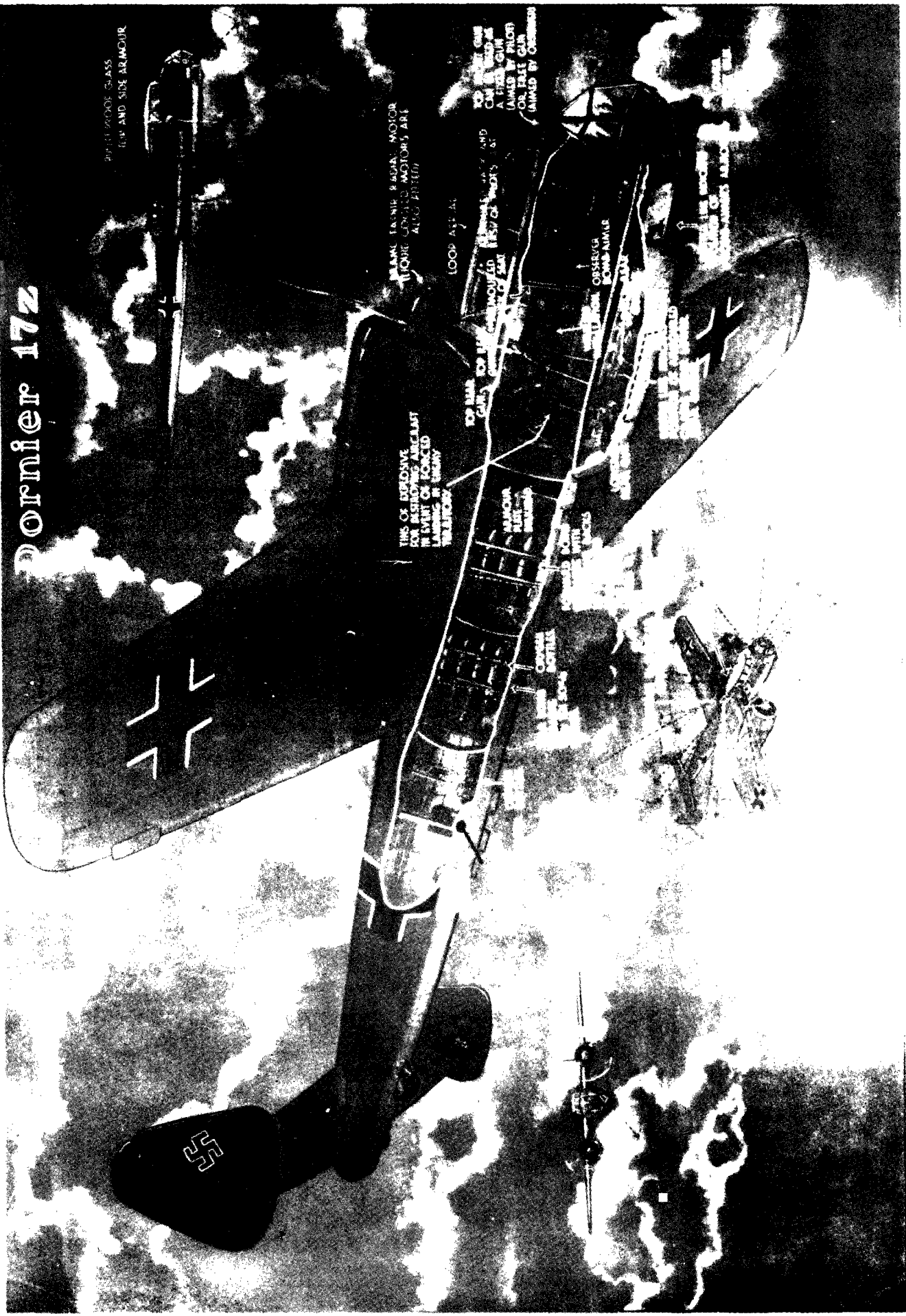
TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING

TO BE USED TO
CARRY TO THE
CANNON AND
MOUNTING



COMPARATIVE

NSIGNIA

of the

ALLIED AIR FORCES

UNITED STATES

	MARSHAL OF THE ROYAL AIR FORCE
	AIR CHIEF MARSHAL
	AIR MARSHAL
	AIR VICE-MARSHAL
	AIR COMMODORE
	GROUP CAPTAIN
	WING COMMANDER
	SQUADRON LEADER
	FLIGHT LIEUTENANT
	FLYING OFFICER
	PILOT OFFICER
	JUNIOR LIEUTENANT
	SENIOR LIEUTENANT
	CAPTAIN
	MAJOR
	LIEUTENANT COLONEL
	COLONEL
	BRIGADIER GENERAL
	MAJOR GENERAL
	LIEUTENANT GENERAL
	GENERAL
	FLIGHT OFFICER (Proposed)

BRITISH

	MARSHAL OF THE ROYAL AIR FORCE
	AIR CHIEF MARSHAL
	AIR MARSHAL
	AIR VICE-MARSHAL
	AIR COMMODORE
	GROUP CAPTAIN
	WING COMMANDER
	SQUADRON LEADER
	FLIGHT LIEUTENANT
	FLYING OFFICER
	PILOT OFFICER
	JUNIOR LIEUTENANT
	SENIOR LIEUTENANT
	CAPTAIN
	MAJOR
	LIEUTENANT COLONEL
	COLONEL
	BRIGADIER GENERAL
	MAJOR GENERAL
	LIEUTENANT GENERAL
	GENERAL

RUSSIAN

	MARSHAL
	GENERAL OF AN ARMY
	COLONEL GENERAL
	LIEUTENANT GENERAL
	MAJOR GENERAL
	COLONEL
	LIEUTENANT COLONEL
	MAJOR
	CAPTAIN
	SENIOR LIEUTENANT
	LIEUTENANT
	JUNIOR LIEUTENANT

Library

AIR FORCE

OFFICIAL SERVICE JOURNAL

OF THE U. S. ARMY AIR FORCES



Formerly
**AIR FORCES
NEWS LETTER**

AFTAS DEC 4 1942

DECEMBER 1942

PUBLICATIONS AND REPRODUCTION

AIR FORCE - Official Service Journal of the Army Air Forces

(This Regulation supersedes A.A.F. Regulation No. 5-6, November 1, 1941)

1. Establishment

The official service journal of the Army Air Forces is hereby established to be published monthly by the "AIR FORCE" Editorial Office located in New York City, with the following general purposes:

- a. To disseminate unclassified information of technical and professional interest to personnel of the Army Air Forces and allied activities.
- b. To advise Army Air Forces personnel of organization changes, revisions of policy, and items of general current interest.
- c. To stimulate high professional standards and "esprit de corps" within the Army Air Forces.

2. Name

The official name of the journal is AIR FORCE. This name supersedes the former designation of AIR FORCES NEWS LETTER.

3. Field Relations

In the necessary relationships with the field:

- a. Direct communication is authorized between the AIR FORCE Editorial Office and other Army Air Forces personnel, and vice versa, on matters of editorial content, circulation and distribution of AIR FORCE.
- b. Station commanders will designate a suitably qualified representative as AIR FORCE correspondent, who will be charged with preparing and forwarding material for publication in AIR FORCE.
- c. All Army Air Forces personnel will be encouraged to submit directly, or through their station correspondent, articles on any phase of military aviation or other allied subjects believed to be of general interest to readers of AIR FORCE.
- d. All material published in AIR FORCE will be approved for inclusion and dissemination by the War Department, Bureau of Public Relations.

4. Circulation

It shall be the responsibility of the AIR FORCE Editorial Office to control and direct the circulation of AIR FORCE, and to prepare necessary instructions to station commanders and others responsible for bulk and individual circulation as may be required from time to time in order to make copies accessible throughout the Army Air Forces and allied activities.

5. Certification

Each issue of AIR FORCE shall bear the notation that it is printed with the approval of the Bureau of the Budget, Executive Office of the President, as required by Rule 42 of the Joint Committee on Printing.

By command of Lieutenant General ARNOLD:

OFFICIAL:

WILLIAM W. DICK,
Colonel, A.G.D.,
Air Adjutant General.

DISTRIBUTION:
"A"



GEORGE E. STRATEMEYER,
Major General, U.S. Army,
Chief of the Air Staff.

AIR FORCE

OFFICIAL SERVICE JOURNAL

OF THE U. S. ARMY AIR FORCES



A Smart Man's War



FAUL SEED

THIS is a smart man's war, being fought against a cunning and intelligent enemy. It is a fast moving war that forces all of us to keep abreast of day by day developments.

We must learn all we can, not only about our own job but about the other fellow's job. We are called upon to be specialists and at the same time achieve versatility. To accomplish this dual objec-

tive we must study new methods, new techniques, new roads to victory. Never before has the individual soldier been called upon to demonstrate such intelligence and resourcefulness, not only in the combat zone but also in the rear areas.

The best way to keep pace with new techniques of war is through the free exchange of ideas and information. When our air force was small—so small that we knew each other by name—this was a comparatively easy task. But now that we are building the largest military aviation machine the world has ever known, the job becomes increasingly difficult.

It is gratifying that out of a little service bulletin, which originated almost a quarter of a century ago, has come this modern service journal to foster the exchange of ideas within our expanding Air Forces. I encourage each one of you to read it regularly, and use it as a medium of expression.

At the close of the first year of war, I welcome this opportunity to congratulate you on a job well done, and at the same time impress upon you the need for even greater efforts for the task that confronts us. We have already conquered what seemed to be insurmountable odds. The future challenges us to rise to even greater achievement.

H. H. ARNOLD,
LIEUTENANT GENERAL, U. S. ARMY,
COMMANDING GENERAL, ARMY AIR FORCES

FORMERLY THE AIR FORCES NEWS LETTER

AIR FORCE is printed each month by authority of Army Air Forces Regulation No. 5-6, Sept. 6, 1942, and with the approval of the Bureau of the Budget, Executive Office of the President. AIR FORCE is published by the U. S. Army Air Forces at the AIR FORCE Editorial Office, 101 Park Avenue, New York City; Tel., MUrray Hill 5-1951; Teletype No. NY 1-2530; Director, Major James H. Straubel, A.C. Direct communication with this office has been authorized on matters of editorial content, circulation and distribution of AIR FORCE. Army field publications may consist from AIR FORCE.

5

DECEMBER

Our Air Offensive in the Aleutians	5
Biography of a Globe-Trotting B-24	6
Psychologists Classify Our Air Cadets	8
How Dutch Indies Airmen Fought the Japs	10
Major Principles of Precision Bombing	11
Health Hints for the Libyan Theater	12
Uncovering the Impostors in Uniform	13
Tips on How to Fly with One Engine Dead	
Flight Training Progress at West Point	
Jungle Rescue, Told by a Surgeon	
Americans in Britain—by a Britisher	
A Study of Wright Field in Wartime	
Elements of Desert	

3

of Honor 29

Air Force
by Ina
sarity

HERE'S HOW WE GOT THIS WAY

By Major Falk Harmel

HEADQUARTERS, ARMY AIR FORCES

YOUR service journal, AIR FORCE, looks brand new. Actually, it is an old standby which made its solo hop 24 years ago. And each year since, with but one exception, it has remained on "flying status."

The first issue, back on September 21, 1918, was a typewritten, mimeographed, four-page "Weekly News Letter." The name later was changed to Air Corps News Letter, then Air Forces News Letter. Now it is AIR FORCE. The format, likewise, changed. It remained a typewritten, mimeographed publication until July, 1941, when the varitype-multi-lith reproduction process was adopted. Flat color was added for the first time last February but the same printing method was used up to this issue.

As in aircraft, the designs and type names have changed, and range and size have increased. But a service journal becomes no more obsolete than plane types become obsolete. Thus, the complete and colorful history of the Air Forces for the past 24 years is to be found in the yellowed and worn copies of old News Letters, just as new issues will record the events that are to become Air Force history.

That first issue back in September, 23 years ago, the first page of which is reproduced below, began with this call for airmen:

"Irrespective of status in the draft, the Air Service (predecessor to the Air Forces—Ed.) has been reopened for induction of mechanics and of candidates for commissions as pilots, bombers, observers and balloonists, after having been closed except for a few isolated classes for the past six months."

The issue dated October, 1918, carries the story of the high flight made by Captain Rudolph W. Schroeder, who climbed to a record-breaking 28,900 feet over Dayton, Ohio. In the News Letter he wrote of his sensations before and after he resorted to his oxygen supply. Many important flights are recorded in later issues.

In 1921, a column in the News Letter was inaugurated under the title: "And I Learned To Fly From That." It was conducted on the principle of the old-fashioned Methodist experience meetings in which individuals bared their souls for their own benefit and for the benefit of others. Following the first

emergency parachute jump by Lieutenant Harold R. Harris in 1922, the News Letter regularly devoted considerable space to report the experiences of pilots who were forced to bail out. The News Letter became a sponsor of the now famous Caterpillar Club; whenever someone qualified for membership in this mythical organization by completing a forced jump, the News Letter kept a record of the event and published the new member's experiences for the edification of prospective members.

During 1922, 34 issues of the News Letter were published, but in succeeding years, due to the reduction in personnel, the annual output gradually dwindled until it was possible to publish only 21 issues in 1925, and from 15 to 17 issues in the years up to 1938. Ten issues were published in 1938, when, in October of that year, the News Letter was discontinued. It was resumed in 1935 as a semi-monthly and 24 issues were published annually thereafter until July, 1941.

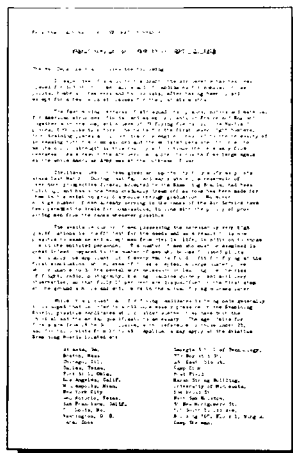
Father of the Air Forces official service journal was the late Lieutenant Colonel Horace M. Hickam, in whose memory Hickam Field, Hawaii, was named. Colonel Hickam was in charge of the old Information Division of the Air Forces, which fostered the News Letter for many years, until 1922, when the Division and the News Letter passed over into the hands of Colonel (then Major) Ira A. Rader, one of the Army's pioneer airmen.

The names of officers who have had direct supervision over the News Letter include Lieutenant General H. H. Arnold, our Commanding General; Major General H. R. Harmon, Brigadier General LeG. Walsh, Colonel Henry W. Harms, Captain Burdette S. Wright, Lieutenant Colonel Ira Longanecker, Major General Walter R. Weaver, Colonel John D. Reardan, Colonel Harrison H. C. Richards, Brigadier General Robert C. Candee, and Colonel Arthur I. Ennis.

Other officers who have been closely associated with the News Letter include Major General Ira C. Eaker, chief of the U. S. Bomber Command in the European theater; Brigadier General Lester T. Miller, Colonels William H. Crom, David S. Seaton, Roland Birnn, Thomas M. Lowe and Ross G. Hoyt, and Captain Corley P. McDarment (Ret.).

THE FIRST NEWS LETTER

Sept. 21, 1918



DECEMBER

Brief

THE COVER scene for this issue was selected as typifying what might be called the most dominating action of the Army Air Forces during the first year of war—high-level bombing with aerial gunners aboard our heavy bombers shooting down enemy interceptors. The cover is a reproduction of a painting by Walter Herrington, a New York artist who received his art training in Chicago and applied his brush in Texas before coming East.

MAJOR FALK HARMEL, whose history of the Air Forces News Letter appears in the adjoining columns, modestly omitted his own name from the list of men responsible for the development of the publication. Actually, Major Harmel has been more closely associated with the News Letter than anyone else during his 20 years and more at Headquarters. He now is attached to the Historical Section of Air Intelligence.

OLD BAG OF BOLTS came off the same production line as other B-24s but it becomes a definite personality in the article. Page 6, by Major Ben H. Pearse, a former Washington newspaperman on duty with the Air Transport Command. Major Pearse recently was assigned to the Command's Alaskan Wing.

AVIACTION CADET ROBERT GIBSON, whose combat experiences as a radioman in the Southwest Pacific appear on Page 35, received his original radio schooling at Chanute Field, Illinois, in 1939. He now is training at Scott Field, Illinois, to become a Communications Officer. Cadet Gibson's story and the "Bag of Bolts" article were found to coincide at one point: the "other" plane referred to in the paragraph on Page 7 which describes how "Bag of Bolts" amazed the Dutch at Bandoeng, Java, is the same B-24 Gibson was in when Dutch anti-aircraft fire forced his pilot to return to Singapore (Page 35).

THE soldier at Scott Field who reported the loss of 16 teeth (his false uppers) following a hitch-hiked ride en route to camp, should find a double meaning in the security message on the back cover: "When You Open the Door . . . Shut Your Mouth."

WHEN four Colonels, three Majors and two Captains were given a preview of the AIR FORCE quiz which makes its first appearance in this issue (inside back cover), the top score was 90, the lowest 55 and the average 75.



CROSS COUNTRY

THIS spot up front will be used to piece together odds and ends of the month, whether they be of the combat and training variety or of a more general nature.

For this issue it seems fitting that a few words be devoted to how the Air Forces News Letter became AIR FORCE and what AIR FORCE is all about.

In recent months the demand for News Letters far exceeded the supply. To meet this demand it became necessary to change our method of reproduction; redesigning of the journal fell right in line with the change. Hence this new format. The words "News Letter" were dropped from the title because they were outdated. That's the background.

AIR FORCE is published by the Army Air Forces for officers and men of the Army Air Forces. It will be made available to all Air Forces personnel within the continental limits of the United States - and by "all" we mean officers, enlisted men, cadets and students.

Sufficient copies will be furnished each Air Forces activity for all to read. However, bulk station shipments, not individual mailings, are our *only* method of distribution to the field. If you fail to see a copy check with responsible authority at your own field or installation.

At the outset, it isn't possible to distribute as many copies as we would like to overseas units without burdening our transport facilities. As much as we want everyone in the Air Forces to receive the service journal, it is far more important that you who are overseas get the maximum of guns and ammunition and plane parts and letters from home.

AIR FORCE is your medium for exchanging ideas and information pertinent to the operations of the Army Air Forces and pertinent to your own military interests. It is your medium for linking Headquarters with the field, one field unit with another, individual with individual.

We believe AIR FORCE should be fundamentally helpful, not merely informative and entertaining. But we think all three can be achieved by presenting material that is accurate, readable and adequately illustrated.

In our opinion, a good aviation story, factually sound, can always stand on its own feet; and we will try to give you good aviation stories. If, in addition, that story contains information that will be helpful to you as a member of the Air Forces, in some way help you fight the war - then we have accomplished something worthwhile. In AIR FORCE that is the objective we will keep shooting at.

We depend on you for the bulk of the material that appears in AIR FORCE, and for suggestions and criticisms. Your contributions do not have to be written in some "inimitable style"; write the article just as it comes easiest to you, or merely give us facts and points to be put across and let us do the rest. Remember that we prefer to run articles that appear under the by-lines of the authors and that we give credit to privates in the same size type we use for generals.

And now for some odds and ends.

DURING the raid on Dutch Harbor last June, Jap fighters stumbled onto an advanced Army airfield out in the Aleutians. Our land based aircraft, up on patrol at the time, immediately tore into the enemy.

Meanwhile, according to one of the sources for our Alaskan article in this issue, a big C-47 transport landed at the base with a load of cargo, the pilot not realizing what kind of a show was going on up above. As he cut the motors, the pilot turned to the co-pilot and pointed to the small winged objects hurtling across the sky.

"The boys sure do play hard, don't they?" he commented.

"Yeh," the co-pilot grinned, "if they don't look out somebody's going to get hurt practicing that way."

A moment later they froze in their seats. One of the "boys" had started down, quite obviously hurt. Their jaws dropped in unison when it got low enough for them to make out the rising sun insignia on the fuselage, and the familiar white star on the ship hot in pursuit.

"Well I'll be damned!" was all either of the C-47 men could find to say.

HEADQUARTERS is encouraging and intends making the fullest use of original thinking among Air Force personnel on tactical, technical and administrative subjects. C.O.s have been directed to encourage their personnel to develop and submit constructive plans, ideas and criticisms along these lines. They are to be submitted through command channels to the Assistant Chief of the Air Staff, Management Control, who will forward them for consideration to the proper Headquarters agency. The procedure does not apply to unpatented inventions, which are to be submitted as provided in AR 850-50, Dec. 31, 1943, as amended by Sect. 1, Circ. 248, WD, 1942.

(AIR FORCE will pay particular attention to original ideas from the field which improve the over-all effectiveness of the Air Forces; we intend, whenever possible, to publicize these ideas after proper clearance has been obtained at Headquarters.)

THIS technique was reportedly used by a German squadron in a recent attack on a convoy off the northern coast of Norway: Sixteen aircraft approached the convoy head-on at low altitude and in column until a point was reached two miles from the head of the convoy. From this point each attacking plane attempted to filter through the convoy columns singly at very low altitude. One captain in the convoy said each aircraft carried two torpedoes which were released singly from as low as 10 feet, and that the planes, after launching their torpedoes at the outer column of ships, proceeded through to the inner columns so low that his fore-castle machine guns were firing downward at the attacking planes.

LUKE FIELD'S location in the Arizona desert makes it difficult to keep up with the daily newspapers, but the men at Luke miss little of the important news of the day. Twice daily a Public Relations Office representative jumps on a motorcycle, dashes around to field detachments and delivers news flashes taken from radio reports.

EXAMPLES of ingenuity are springing up throughout the Air Forces. We want to hear about more of them. At any rate, belated congratulations:

To Private Arthur W. Rodrick, Air Trans-



port Command radio operator, for rigging up a makeshift radio homing device by stringing wire from his grounded plane to a motor vehicle and thus guiding two storm-lost B-25s, unable to make radio contact, to a safe landing in a mountainous area in China during the monsoon season.

To the boys on a Pacific island who salvaged lumber from a wrecked ship, washed up on the beach years ago, to make an airplane hoist capable of raising a fighter plane almost as easy as if it were in a model hangar.

To First Lieutenant Lew Jordan, who needed an antenna base insulator in Aruba, couldn't wait for the regular supply ship, and used a soda pop bottle which worked to perfection.

To Harry T. McCormick, machine shop superintendent at the Minter Field sub-depot, who has designed 25 separate jigs to speed up production and repair of aircraft.



JUST another reminder to check your rights and benefits if you carry accident or health insurance policies! Practically all accident and health policies contain provisions which exclude any coverage where the injured person is engaged in military service in time of war. You may be paying premiums on such policies (which you held prior to entering the service) and are receiving restricted or no coverage for these premium payments. Your insurance agent should be glad to give you all the information on your policies. If you haven't already done so, check with him for your own protection.

INFORMAL reports from Russia state that Soviet airmen have repeatedly used inland lakes as landing areas to make contact with their troops behind enemy lines. In summer months flying boats, not only light amphibians but heavier planes, have been used on these missions. With winter at hand, the Russians expect to continue this aerial supply line by using aircraft equipped with ski runners to enable them to land on frozen lakes.

WHEN flying in the Greenland area it will pay to have these points in mind:

In investigating strange fjords it is better to start from the ice cap side and fly seaward; in some fjords you can't turn around at the inboard end.

An ice cap is smooth near the crown and extremely rugged near the mountains. If forced down on an ice cap, stay with your plane to enable searchers to locate you more easily.

Radio ranges which run over the ice cap contain many multiples below 10,000 feet.

Skis and ski poles for each member of the crew should be carried on missions in this area. A Primus stove also should be taken along in the plane.

A .22 caliber pistol or rifle is much better to have along than a .45 in case you are forced down. Rabbits and ptarmigan (Arctic grouse) are the only game available in southwest Greenland.

Remember to carry the most protective dark glasses you can get. And don't forget the heavy, long underwear.

WHEN the Japanese were evacuated from the Seattle area a Jap printer walked out leaving a printing press in the basement of a building.

Lieutenant Lawrence A. Rogers, Special Services officer at McChord Field, heard about it and began dickering on prices. He finally bought the press for \$1, with the proviso that he would move it out of the basement. The press, representing something like \$500 in equipment, was loaded on a truck and taken to McChord.

Now, much of "Rip Cord," the camp newspaper, is printed on the former Jap press, and the cost of the weekly publication has been greatly reduced.

AN investigation of a recent crash showed that the pilot had deviated, contrary to specific instructions, from the authorized route of his mission. Since the death of this pilot was "not in line of duty and was a result of his own misconduct," all gratuities to which his beneficiaries were entitled under provisions of A.R. 35-1560 were withheld.

THE Russians report unofficially that German bombers under attack have been known to release small time bombs attached to miniature parachutes. These 'chutes, when swept up by air current behind the bomber's tail, endanger fighters which are pursuing the bomber.

MORE R.A.F. SLANG . . . "A black," something badly done; "bombphleeters," airmen engaged on the early pamphlet raids; "to be browned off," fed up; "in the drink," to come down in the sea; "fan," propeller; "get cracking," get going; "office or pulpit," cockpit of aircraft; "play pussy," hide in clouds; "quick squirt or quickie," short, sharp burst of machine gun fire; "sausage machine," pom-pom gun; "shot down in flames," severe reprimand; "stationmaster," C.O. of station; "tee up," to get ready; "touch bottom," to crash.

THE item in the Control Tower section of the August-September Air Forces News Letter concerning the Army of Occupation of Germany Medal should have pointed out that this award is authorized not for *all* veterans of the World War I, but for Officers, Army Nurses, Warrant Officers and Enlisted Men of the armed services who served in Germany or Austria-Hungary during the period from November 12, 1918 to July 11, 1923, inclusive.

Applications will not be submitted until the Medals become available. (Because of the metal used, they will not be struck until after the present conflict.) Until then, those who are entitled to it, may purchase and wear the authorized ribbon. For complete details, see W. D. Circular No. 176, June 6, 1942. THE EDITOR.



ALASKAN OFFENSIVE

THE husky Air Force Sergeant counted out 12 lumps of coal from the gunny sack beside the G.I. stove and dropped the lumps strategically one by one on the little bed of coals. Then he peered through the flap of the tent, spat disgustedly at the whirling snow and stretched out again on the cot. The Sergeant seemed very much at home in this Aleutian outpost.

"It's as plain as the prop on a peashooter," he said. "I've got it all figured out. I say the Japs had big ideas when they tried to drop in on Dutch Harbor last June. Midway was a big idea, too, but I figure the Japs to attack Siberia before they try to invade the States. Even before Stalingrad their mind was on Siberia first of all.

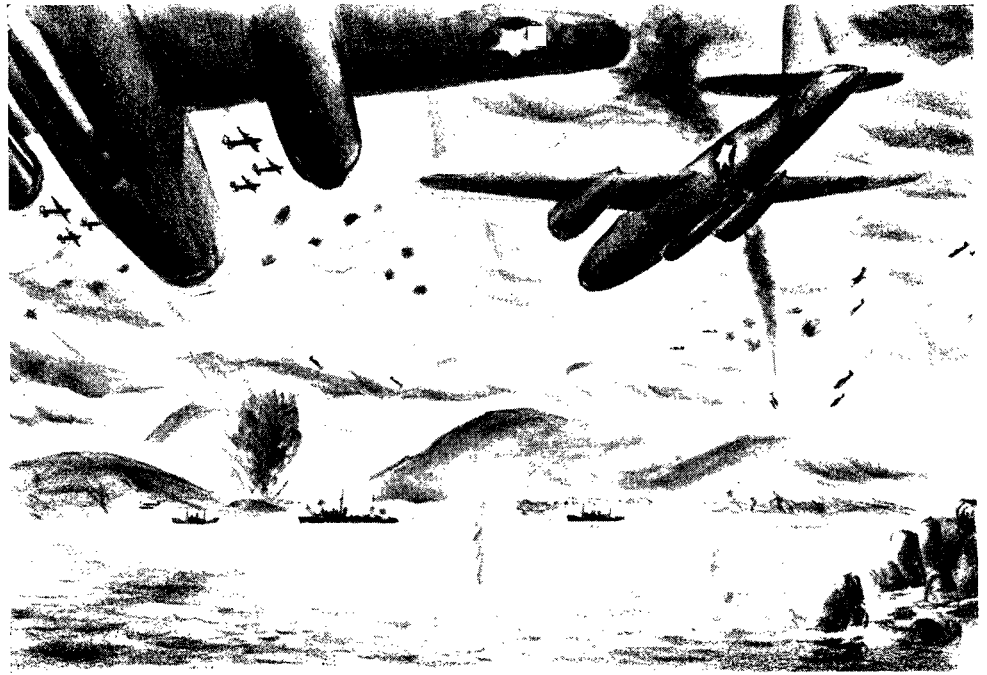
"But before they try to take on the Russians they've got to protect their right flank. They've got to cut off the road for reinforcements from the States. The only way to do that is to cut off Western Alaska.

"Now, except for airplanes bringing in high priority stuff, the only way to supply Western Alaska is by boat, and the Japs have been fishing around here long enough to know that the shortest and best way to Bethel, to Nome and to all the other places on the western coast is by Unimak Pass, between Unimak and Unalaska Islands. So they figured by taking Dutch Harbor, on Unalaska, they could close the pass and bottle up all Western Alaska."

The Sergeant fished a cigarette out of his pocket and lit it. Hearing no comment from the other cots, he looked around to be sure his companions had not gone to sleep.

"Dammed if I don't believe they could have done it, too, if they had knocked off Dutch Harbor," he went on. "There would have been a wedge a thousand miles wide between us and the Russians in this neck of the globe. And that wouldn't have helped any, believe me. The Japs could have gone ahead with any plans they had in Siberia.

"Only they didn't get Dutch Harbor. The Japs are smart and know a lot, but they didn't expect to run into any land-based planes as far out in the islands as they did last summer. There are lots of unsung heroes in this man's war, but for my money I'll take the guys in the B-26 that dropped the tin fish on the Jap carrier that day. When



Fighting weather and Japs with our Air Force in the fog bound Aleutian Islands.

the Martin dropped that torpedo on the carrier deck, it was the last straw.

"A friend of mine was at the radio listening in at the time and heard the Jap pilots calling their flat top. 'Whereabouts, please, gas reeve low, onry 10 minutes gas,' them Japs were saying over the radio. 'Whereabouts, please, onry five minutes gas.' Then it was 'onry' three minutes gas and my friend could almost hear them Japs plumping into the water one by one as they looked around for the landing deck they had taken off from to give the works to Dutch Harbor. Plop! Plop! Plop! Fifteen, twenty, maybe thirty of 'em. Maybe more: who knows?"

"The pilot of that B-26 came back for another torpedo, cussing like hell because he didn't get the carrier the first time. Then he went back out there. The pilot was never heard of after that, but neither was the Jap carrier. I think he got the carrier like he said he would. Even if he didn't, I'm betting he scared it so far away it hasn't been around these parts since.

"Of course, it's no cinch to get the Japs out of Kiska. But they're on the defense at Kiska, while we'd be the ones on the defense if they were in Dutch Harbor."

The Sergeant rose to peer out through the tent flap again. A curtain of fog obscured the anti-aircraft emplacement on a knoll less than 50 yards away. He spat his disgust once more and went back to his cot.

This article was compiled from material submitted in informal reports by Colonel H. W. Shel mire, Headquarters, Army Air Forces; Major Ben H. Pearse, Air Transport Command, and Lieutenant George Bradshaw of this staff. Illustrated by Captain Raymond Creekmore.—THE EDITOR.

FIREWORKS opened up the third day of June along the sub-Arctic string of volcanic rocks that form the Aleutian Island chain.

The drone of Jap planes through the early morning mist silenced radios from Puget Sound to San Diego, even sounded an alert at the Panama Canal, but there was plenty of noise on the northeast corner of Unalaska Island.

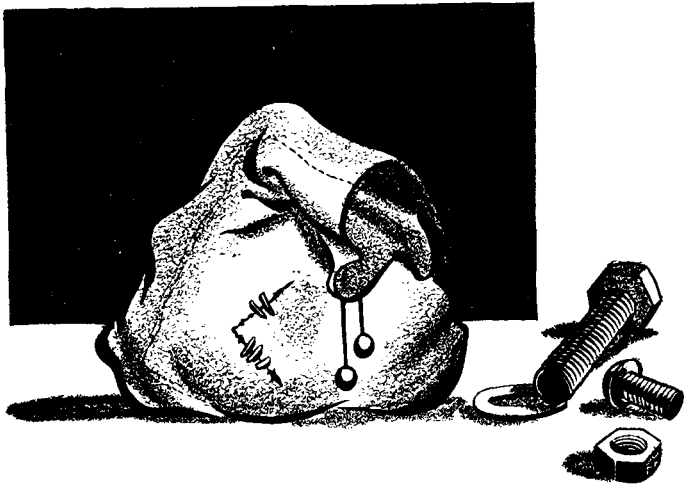
The Japs came from different directions, five flights of three planes each. They swept down over Dutch Harbor and Fort Mears, strafing the streets at 500 feet, attacking anti-aircraft batteries which opened up with a volcano of fire. Anti-aircraft guns on the destroyers, a mine sweeper, a Coast Guard cutter and an Army transport joined in as they got under way in the harbor. A Jap plane drew a black smudge across the sky and disappeared behind Priestly Rock. A PBY taking off from the bay was shot out of control by a Zero and crashed on the beach. A Jap fighter hit by ack-ack burst into flames and dove screaming into the harbor.

Five minutes later four Jap bombers appeared flying high and dropped high explosive and incendiary bombs. One raised an oil tank more than 100 feet in the air and another started a fire near a warehouse. A gunner on one of the ships in the harbor brought down a bomber which trailed black smoke until it disappeared behind the hills. It was all over in 20 minutes.

Jap reconnaissance planes returned at noon but if their cameras were any good they showed all the fires were out and the same number of surface ships in action as before the attack. The enemy came back the next afternoon with 18 carrier-based bombers escorted by 16 fighters, but it was his final appearance in the vicinity of Dutch Harbor.

Only a poet could do justice to the story of the aerial slugging match that has been going on ever since.

(Continued on Page 27)



Old Bag of Bolts

By Major Ben H. Pearse

AIR TRANSPORT COMMAND

SHE was blessed with an assortment of names. To many she was "Old '76." Some called her "Red Cap" and others "The Gravy Train" because she carried so many important personages to the four corners of the earth. But the name "Old Bag of Bolts" seemed to fit her best.

Officially she was just A.C. Serial Number 40-2376, a B-24 airplane with a history all her own, as can be vouched for by the scores of men, women and children whose lives she saved ferry pilots in the North Atlantic, combat crews and refugees in the South Pacific.

It is anybody's guess what the enemy might have called her. Old Bolts seemed to have a charmed life while she was trucking precious cargo all over the Pacific combat zone in a dangerous game of hide and seek with Jap aircraft during those first hectic days of war.

Squat and lumbering on the ground, she would waddle up to the head of a runway like a duck out of water. But once her ponderous landing gear was tucked away, she was a creature transformed maneuvering her big hulk with the lightness of a toe dancer.

When Bolts was turned over to the Ferrying (now Air Transport) Command one day last year, months before Pearl Harbor, she had already cut her eye teeth on dozens of missions. She had reached middle age for a plane of her type, but it was just another case of life beginning at 40.

As a Ferrying Command ship, Bolts had no regular run. Home was any place she plumped her wheels down. And it was here, there and everywhere on short notice. Her crews had uncalled-for laundry all over the globe. Their baggage included

fleece-lined clothing and boots for the Arctic, shorts and mosquito boots for the tropics.

Bolts knew what it means to labor along through the heavy fog and mist of the North Atlantic burdened down with tons of ice. On the South Atlantic run her paint blistered under the equatorial sun; her motors choked through dust storms and wallowed through thunder squalls where St. Elmo's fire played about the leading edges of her wings and zigzagged eerily across the windshield.

Her crews ate quinine instead of candy as she shuttled back and forth from Washington to Cairo over steaming African jungles and shimmering desert sands. Now and then they would zoom her low and let her chase herds of giraffes to break the monotony. With little more than a wrench and screwdriver to work with, mechanics would jump out almost as her wheels touched the ground, then sweat in the torrid shade of her wings to change a cracked exhaust brace or broken stack, replace an oil valve, change spark plugs, service the oleos and clean the strainers.

So thoroughly did the factory workers who put old Bolts together do their job and so thoroughly did her own mechanics sweat that her pilots were able to report at the end of each leg of each flight, under the heading of "Mechanical Difficulties," the sweet monosyllable "None."

Not that Bolts didn't have her moments. Back before her South Atlantic and South Pacific adventures, for instance, on that trans-Atlantic round trip to the United Kingdom. She held ferry pilots as passengers and the trip was routine until two hours out of Montreal on the return hop.

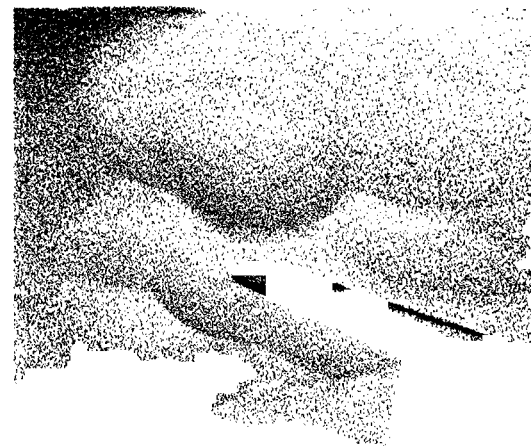
From landfall on the coast of Labrador there had been intermittent, moderate icing of the rime type. Then things began to happen. Without warning, the rime crystals changed to hard clear ice, formed from large, supercooled rain drops. Bolts was laboring. Second Lieutenant C. W. Dean, co-pilot, turned on the de-icer fluid for her props and the boots on the leading edges of her wings and tail, but the altimeter needle kept sinking. First Lieutenant James W. Anderson, pilot, pushed forward the throttles as the needle continued to turn slowly downward. At last, when the throttles were wide open, the needle stopped. Dean and Anderson breathed a sigh of relief.

THE coating of ice, visible with a flashlight out the side windows, wasn't getting any thinner. Anderson decided to turn around and try to get out. Bolts reacted sluggishly to the controls. It was like traveling down stream in a heavily loaded canoe, but she made it without losing any of her skimpy altitude. Then, for four hours, Bolts was lost.

Second Lieutenant A. H. Anders, navigator, kept looking for a break in the white mist that would give him a chance to get a fix. Staff Sergeant James A. McVicar, radio operator, listened in vain through the sputtering static for a signal that would give an inkling of their course. The Northern Lights had been acting up; sometimes they interfered with reception, sometimes they didn't. Now, of all times, they made his earphones sputter like a hamburger stand on circus day. He couldn't raise a soul.

The passengers in the bomb bay knew well what was going on. If that first long, gradual turn wasn't enough of a tip off, the crashing of hunks of ice thrown off the propellers against the fuselage behind them left no doubt in their minds. Then the utter blackness of their frigid cell was broken by a shaft of light and a cheerful voice from the pilot compartment forward: "Everybody put on your parachutes."

Staff Sergeant D. D. Greenwalt, engi-



neer, watched the dials on the panel before him for the flicker of a needle that would tell him that Bolts was giving up. The ice built up on the engine cowls until it reached the arc of the props and was knocked back inside, but the carburetor stayed out of the danger zone. The de-icing system worked to perfection. As the ice built up on the tail surfaces, Old Bolts would shake herself all over, but her de-icer would break it loose and all would be smooth for two or three minutes. Meanwhile, her four motors roared on in unison with never a conk or sputter.

Finally, 15 hours after a takeoff that seemed a year away, Lieutenant Anders spied a patch of dark sky and three beautiful stars. He fingered the thumbscrews of his octant, herded the errant bubble between the hairlines of the artificial horizon, and quickly figured on a scratch pad before him until he had a line to draw on his chart. He couldn't tell where he was along that line without a second fix that would give him another line to intersect the first: then X, the intersection, would mark the spot, their position. But the break in the clouds was gone now. He waited, eyes glued to that little glass hatch overhead.

The door to the bomb bay opened and Sergeant McVicar appeared, climbing over ferry pilots packed in like sardines. There had been a break in the radio fog, too, and he had a bearing. Would it help?

"Will it help? Hell yes, it will help."

With this protractor, Lieutenant Anders marked off 194 degrees true from — and drew a line that intersected his first line. He measured carefully—420 miles NNW of LR in Newfoundland—then leaned over and tapped Lieutenant Anderson on the shoulder.

"Sir, you are now over Labrador flying straight for the Atlantic Ocean. A course of 169 degrees should get you to LR in about two hours."

Lieutenant Anderson nodded without turning around and bore down heavily on the wheel. The ailerons, elevators and rudder on old Bolts were frozen again, as they had been intermittently for the past four

hours, but after some tugging at the controls Bolts slogged around like an obedient dray horse and turned her pug nose toward LR. Pulling back on the controls would not raise her nose an inch, but her four motors chugged on through the darkness until she settled herself gently on the mile-long runway at LR.

No sooner had Bolts rolled to a stop than goggle-eyed ground crews began arguing whether her coating of ice—two to three inches broken off by the de-icer boots—weighed one, two or three tons.

But Bolts had tougher flights than that before her. Her instructions, to be exact, came in a recorrected copy of Operations Order No. 163. That was December 5,

The Saga of a faithful old B-24 that asked no quarter while making history during the early days of the war

1941. She subsequently covered nearly 150,000 miles on the grind—it was really one continuous flight—and her engines hardly ever cooled until the very end. Time for her 25, 50 and 100-hour checks flew past unnoticed, all because of the scribbled note that fluttered in the radio operator's hand as he dashed out to Bolts at Trinidad.

"Pearl Harbor attacked by Japanese at 0728," the note read.

The name of Ambassador William C. Bullitt headed the list of passengers as old Bolts roared out over the Caribbean. But famous names were soon to become commonplace with Bolts. At Cairo, on that hop going over, a party of high-ranking officers boarded her for an emergency mission to Australia. Then she was loaded down until her sides were about to pop with ammunition and scores of other items badly needed in a hundred spots in the East Indies.

Maps were scarce, good ones, anyway. First Lieutenant Ben Funk, the pilot, picked

up some information from a Dutch pilot at Karachi, but he still wasn't prepared for that short runway at Calcutta. It was marked "1,000 yards" on his map—barely enough for a B-24 loaded until her tires bulged—but actually it was only 760 yards. Somehow, with plenty of brakes, Lieutenant Funk and old Bolts managed it—with 100 feet to spare. To get off that runway, Bolts had to leave some gas behind.

On to Rangoon, which the Japs were bombing daily, then to Bandoeng in Java, where the Dutch made quite a fuss over Bolts. They had never seen anything like her 28-ton body close up before. In fact, she was such an unfamiliar sight that an Allied plane looking very much like her had been fired on by Dutch anti-aircraft less than a half hour before. But Bolts came in without difficulty. (The other ship went on to Singapore.)

At Soerabaya, the next day, Major General Lewis H. Brereton and Major General George H. Brett were taken aboard old Bolts for a 10,000-mile inspection trip, 3,600 miles of it in a one-day flight from the west coast of Australia to Sumatra.

There was great need in the Indies for maintenance personnel to service the B-17s that had come in. Bolts was ordered to go from Australia up into the Philippines and bring out as many key maintenance personnel as possible. That was late January. The ground crews in the Philippines had been removed from Luzon to a secret airport on Mindanao. Japanese-controlled Davao was only 100 miles away. It was a ticklish job, flying in at night, picking up the crews, and getting out unscen. Bolts had no armor, no self-sealing tanks, and only a few machine guns for protection.

STAFF Sergeants Leo Zulkowski and Frank Sayko worked all day on Bolts, checking and rechecking for the afternoon takeoff. The motors had long since passed the 400-hour mark. From Australia to Mindanao and back was 3,600 miles, almost all of it over open water. Things had to be right.

Old Bolts made the trip without incident, although Lieutenant Boselli had to change course five times to avoid Jap-controlled areas. During the last lap of the flight, Captain Hewitt T. Wheless, who had flown every mile of the coast in his B-17, stood between Lieutenant Funk and First Lieutenant Charles Bowman, co-pilot, to guide them to the secret airfield. Bolts brought out 25 crack mechanics in her bomb bay.

About a week later Bolts was off for Rangoon with General Sir Archibald Wavell aboard. The Japs had raided a field nine miles from Rangoon a half hour before her

(Continued on Page 18)

"... she sat down in the water a few hundred feet off shore. After more than 600 hours, her motors had sputtered for the first—and last—time."

SQUARE PEGS IN SQUARE HOLES

By Lieut. Allen C. Rankin, Jr.

SOUTHEAST AIR FORCES TRAINING CENTER

Here's how psychologists use scientific heckling to select the bombardiers, navigators and pilots of the Army Air Forces

YOU ARE SITTING in a room with a half dozen other cadets, each of you facing a small steel plate with a tiny hole in the center. In your hand is a stylus. You must place the point of the stylus in the hole, remembering that each time the stylus touches the edges of the opening an electric charge scores one point against you.

The examiner speaks in a quiet voice:

"Are you ready now? Insert the stylus."

Electricity spits through the room. You are certain you touched the edges a dozen times. You wonder how the other fellows are doing. The examiner is about to speak. This time he shouts.

"All right. Try it again!"

More electricity.

"You!" the examiner yells—and you are certain he means *you*. "How do you think you will ever be a flier if you can't do a simple thing like this without getting nervous? You'll never make a flier. You couldn't be a buck private!"

His words bite a little and the stylus shakes even more. The examiner pulls a lever. A horn honks. Another lever. A buzzer rasps. Above this added confusion, the examiner screams:

"Look at you! How steady do you think you'd be under machine gun fire? What would you do in real combat? Live bullets!"

Then he hits the racket "jackpot." A hunk of metal which he has released from the ceiling comes thundering down on a loose piece of sheet iron. It sounds as if all hell has broken loose. You almost lift the steel plate with the stylus.

"What are you jumping for?" bawls the examiner. "Does a little thing like that make you nervous? Now, remember this number: two, four (honk, honk . . . toot, toot . . . crash!), five, nine, eight (buzz, buzz . . . honk!) seven, four (CRASH! . . . toot, toot, honk) eight!"

The room becomes suddenly quiet and the examiner purrs: "Now write down that number, please."

You ponder for a moment. What number? But you put something down on paper and the test is over.

This whole procedure appears to be more than a trifle on the crazy side. Actually, it is a sample of the mental obstacle course which noted psychologists have devised to help provide a short cut in earmarking aviation cadets at Army Air Force Classification Centers. Not all of the course is as wacky as this noisy test designed to judge nervous stability, but part of it is.

Scientific heckling, an outgrowth of long and arduous experimentation, has become an important feature of the classification process now used daily in the centers at Nashville, Tennessee; Kelly Field, Texas, and Santa Ana, California. Cadets are exposed to devices ranging from "nightmare" games of Chinese checkers to revolving pirate's gang-planks; from wingless, tailless airplanes to ingenious noisemakers set off at just the proper moment to have a maximum nerve-shattering effect. And the entire procedure is designed to help predict:

1. For research purposes—whether a cadet is likely to succeed or fail as an Army flying officer.

2. For practical purposes—whether a cadet should be trained as a pilot, bombardier or navigator.

The old question was: "Can you pre-determine whether a man can fly?" The new question: "Can you pre-determine which one of three intricate jobs this cadet should have?"

In two days the psychologists accomplish what formerly required months to learn about applicants for flying jobs.

The ideal test of whether a cadet should sit at the controls, plot a course with a compass or drop bombs on a target would be to put him through the entire courses for each job and select his best effort. But in addition to a cost of more than \$100,000 per man, such a procedure might outlast the war with the first class of students.

In steadiness test, Cadet Lionel Humpbries holds a pin-sized stylus in a nail-sized hole as the instructor attempts to rattle him. If the stylus touches the hole, it records a demerit.

Science does the job with tests and gadgets based on simple logic. As one expert in the field expressed it: "If a man can flip a button into a water glass with a paper clip, it is a fair indication that he can also play a nice game of tiddle-de-winks."

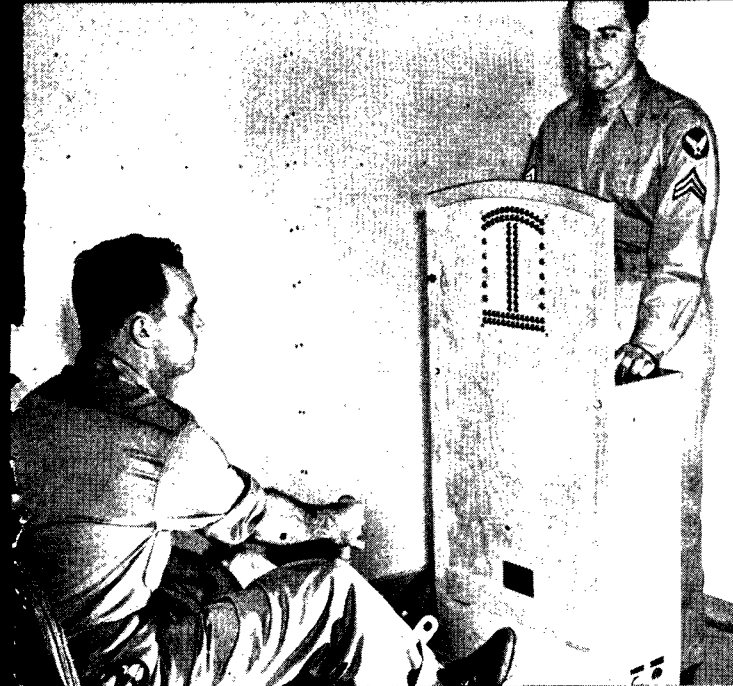
The tests devised by the psychologists have "face validity"—actually resemble parts of the job to be done—no matter how much the average cadet thinks otherwise as he struggles through the classification procedure. Tests now in use were first tried on almost 1,000 cadets, and each test proved itself. The cadets were scored on a given test and then watched closely as they went through their training. If an overwhelming number who had done well on the test did proportionately well in assigned courses, and, similarly, if the number who failed the test, did poorly in the courses, the test was pronounced sound for this phase of classification.

IN ADDITION to the stylus-in-the-hole test for nervous stability, here are some typical hurdles a cadet must take as he goes through the classification center:

On the first day, the cadet is given a written examination, meted out parcel by parcel. He finds himself in the same room with about 100 others, each sweating over papers in individual stalls designed for the purpose. The written tests range in subject matter from mathematics, to vocabulary, to map reading. The papers invariably are turned in with misgivings.

Jittery, the cadet shows up the next day and pushes into a small room with six or eight others. He sits at a long table and is baffled by two boards confronting him, side by side. In one board is inserted a maze of small wooden pegs; in the other are holes.

"When I give the word," explains the



Lights flick on this complicated testing board in different combinations in the reaction time test, and Cadet Milan Law is trying to bring the red and green lights into straight lines by coordinating the movements of his hands and feet on the dummy joystick and rudder bar.



Another reaction time test requires students to manipulate four buttons according to a combination of flashing red and green lights, so as to extinguish a white signal light at top of the panel. A clock records total seconds needed to put out the white light 50 times.

examiner. "you will transfer the pegs in one board to the holes in the other in the shortest possible time. Stop immediately when I say stop. The number of pegs you have removed from the board will determine your score."

This simple but effective test measures hand and arm dexterity. As in all similar tests, a few trial runs are made so that examiners may be sure the cadets understand just what is to be done.

There is another peg board test. In this one the pegs are square, with round tops, half yellow, half black. The objective is to pick up the peg, turn it completely around and replace it in the same hole. The cadet is told to turn as many pegs around as he can in a specified time. This test measures the finger dexterity needed in performing many flying duties.

The name of the next one places a cadet on guard. It is called the "Discrimination Reaction Time" test. A group of square boards stand perpendicular to the table. Five lights stare from each board. Four of the lights, when flashed on, will be either red or green; one, white. Four small levers, resembling the turn-on-turn-off switch of a radio, stick up from the table at the foot of the board. The cadet is told which switch to pull when certain combinations of red and green lights flash on. When he pulls the right switch the white light, which also shines on the board with every combination, will go out. The cadet is scored on the time it takes to put out the white light in 50 trials. An operator at the end of the table flashes on different light combinations to confuse him. A clock at the end of the table records the total time. (Average time for some 50 trials is about 49.3 seconds.)

The contraption in the next test is a "panic" for the average cadet. The machine, called the Serial Reaction Time Apparatus,

consists of a low seat for the subject, an airplane rudder and a joy-stick. A pattern of red and green lights pops out on a board. By coordinating the movement of the stick in his hand with the movement of his feet on the rudder bar, the cadet brings the lights together in the quickest possible time. Not until all the lights line up will they click off, then a new pattern of lights appears. The idea is to make the lights click off as often as possible in a given length of time.

AFTER the cadet has done what he considers his worst—which probably isn't too bad in reality—he is his own greatest problem. A self-cultivated crop of jitters makes him a fit subject for the heckling test which features the stylus-in-the-hole nightmare.

The psychologists are not dogmatic. They are the last to argue that their decisions be considered final in all cases. A cadet who feels he did not get a square deal in being classified is entitled to an interview with the commanding officer. If, in this interview, sufficient reasons are brought out as to why the decision should be reversed, it may be done at the officer's discretion.

Psychologists are quick to admit that their prediction average will come closer and closer to the bulls-eye of perfection in direct ratio to the betterment of their equipment.

Psychological research is so far ahead of the equipment with which it has to work that many psychologists also must be inventors, draftsmen, carpenters, metal workers and machinists to make practical application of their own brain children.

This war jumped the gun on psychology as on everything else. A research program, following a comparatively leisurely pace, was underway at the old classification center at the Southeast Training Center Headquarters,

(Continued on Page 33)



Latest type of bi-manual coordination testing device is demonstrated above by Cadet William A. Denniston. The students below are taking the "turn peg" test, which measures the nimbleness and control of their fingers.



"We'll Go Back Some Day..."

By Captain Robert B. Hotz

AIR TRANSPORT COMMAND

UNDER sunny Mississippi skies the Royal Netherlands East Indies Air Force is training for a comeback against the Japanese. It is a long way from the Jackson Air Base to the Southwest Pacific, but to these intrepid Dutchmen who survived the battle of the Indies last winter, it's the first step toward home.

With new American equipment and hundreds of recruits who escaped from the Indies, the Dutch colonials are rebuilding their shattered squadrons. Officers and men of the former army and navy air forces are now merged into a single separate air force commanded by Lieutenant General L. H. Van Oyen. Under his leadership they are preparing to carry on their battle to regain the lost colonial empire of Holland.

Backbone of this new Dutch air force are veterans of the Indies campaign who now serve as instructors in the Jackson training program. They will lead the new squadrons back into the battle of the Pacific.

Typical of these veterans and the battle they waged are three young flight lieutenants who fought the Japs last winter with inadequate equipment against desperate odds. Lieutenant Fritz Den Ouden engaged Zero and Messerschmitt fighters of the Japanese navy in an antiquated Martin B-10 bomber. Lieutenant Henry Simon, a fighter pilot, took on Zeros and Nakajima bombers in a Brewster Buffalo. Lieutenant Herman Arens met similar opponents in the same Lockheed Lodestar commercial plane he had flown for the Royal Dutch Air Lines in peacetime. The Martin B-10 was once the very latest in bombardment aircraft, but that was back in 1934 when Lieutenant General H. H. Arnold won the Mackay Trophy for leading a squadron of them on a survey flight from Bolling Field to Alaska and return. Seven years later, for leading a flight of B-10's against the Japs, Lieutenant Den Ouden won the King William's Order, highest Dutch military honor, and the Dutch Distinguished Flying Cross, personally awarded him by Queen Wilhelmina.

The B-10's flown by Lieutenant Den Ouden's squadron were souped up to do 210 miles per hour. They carried a .30 caliber machine gun fore and aft and two 1,100-pound bombs, but were without armor plate and leak-proof gas tanks. With this old equipment Lieutenant Den Ouden's squadron sank 13 Japanese vessels, including two heavy cruisers. Arrayed against these Dutch bombers were 300-mile-an-hour Zeros and ME-109's armed with two 20 mm. cannon and four machine guns.

"Against the armament of enemy fighters

Airmen of the Dutch East Indies, with one campaign behind them, rebuild an air force in the U. S. for a comeback at the Japs.

even a formation of B-10's had little chance," Lieutenant Den Ouden said recently, recalling his encounters over the Indies. "When we were attacked our flight scattered and ran for it. We tried to get down just above the water and zig-zag to throw off the Jap fire. When we were that low it was hard for Zeros and ME-109's to dive on us without crashing. If they caught us higher they usually made a rear attack. We tried to wait until the instant before they came within range. If you pulled the B-10 into a sharp stall at exactly that moment the Zero would go sailing by overhead and you could get a shot at him from underneath with your nose gun. We got several Zeros that way."

LIEUTENANT DEN OUDEN'S squadron was mobilized at Bandoeng, Java, on December 2, 1941, after Dutch naval patrol planes had reported large concentrations of Japanese naval vessels in the South China Sea. Six days later these fleets attacked the Philippines and Malaya. By December 4, Lieutenant Den Ouden's squadron was established in a secret air base in Borneo ready for business.

Lieutenant Den Ouden went into action on Christmas Day over Kuching, capital of Sarawak, where Japanese troops were landing. His flight straddled a big ammunition ship with three 1,100-pound bombs from 12,000 feet.

"The sea seemed to explode under our bombs," Lieutenant Den Ouden recalled. "Many barges clustered around the big ship vanished in the explosion. Our plane was rocked by the blast. We knew it must have been an ammunition ship we hit. After the smoke cleared away there was only wreckage on the water. When we got back to our base my bombardier discovered a Japanese sailor's cap jammed in the bomb bay doors. It must have been blown up into our plane just as the bomb bay doors closed.

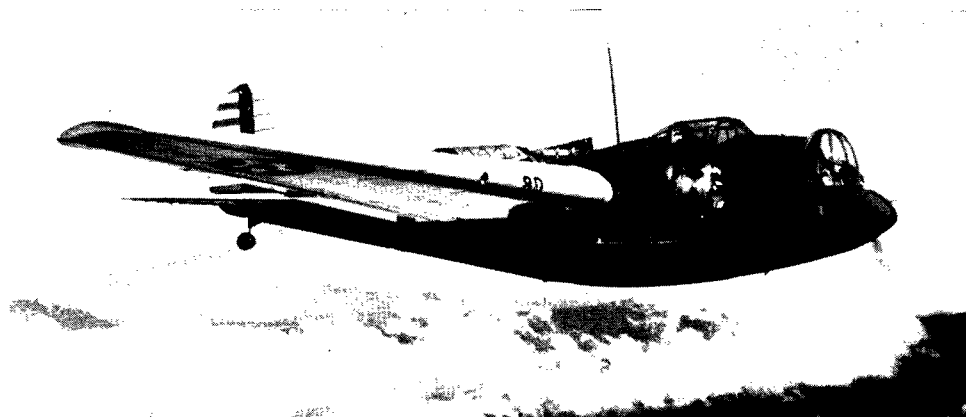
"Three days later over Miri in Sarawak we sank a large transport with two 1,100 pounders. I was watching the ship burn and roll over when the rear gunner shouted 'enemy fighters taking off from Miri.' There was no regular airfield there, but we learned later that Japanese fifth columnists had prepared a secret base on a large coconut plantation owned by Japanese nationals.

"Five Zeros hit us. My left wing man went down in flames. I saw two men bail out as the bomber plunged out of control. Then I heard the rattle of bullets against the metal skin of my plane and the staccato of my own guns in action. My rear gunner shouted, 'I got one,' but immediately I heard louder explosions and smelled the odor of bursting 20 mm. shell from the Zero's cannon. I finally got into the clouds and lost the Zeros."

Lieutenant Den Ouden's wife, Tillie, was a Dutch Red Cross Nurse at the base where his squadron was stationed. On December 28, after waiting hours for Lieutenant Den Ouden's flight to return, she finally saw one of the three planes limping in.

"The tail was almost shot away," she said. "Pieces of the skin were shot from the fuselage. Only one motor was working well. There were bullet holes all over. I didn't see how anybody could be alive in-

(Continued on Page 38)



In obsolete B-10s like this, Dutch fliers made combat history.

THE SCOPE OF PRECISION BOMBING

By Colonel Edgar P. Sorensen

ASSISTANT CHIEF OF AIR STAFF, A-2

THE bombing airplane is an offensive weapon with which we can reach the enemy at vital points where no other weapon can reach him. It hurdles mountains and defies bad weather. It by-passes concentrations of enemy defensive ground weapons. It beats off enemy fighters by expert use of its own defensive armament. It goes over the top and envelops the enemy in a vertical plant.

The bomber's offensive fire has taken the form of missiles of many varieties—principally high explosive and incendiary bombs. It gets its maximum return—its greatest effectiveness—by scoring direct hits. Near misses may cause some damage; far misses may not even annoy the enemy.

Our goal is the destruction of those things which make it possible for the enemy to carry on the war against us. Such objectives, be they aircraft factories, steel mills, aluminum plants, oil refineries, transportation equipment or shipyards, must be made useless to the enemy. This requires destruction and destruction demands hits by properly selected munitions.

Thus we see the necessity for precision bombing—bombing that will get hits, and hits that will cause destruction. Some targets can be destroyed best by large demolition bombs. In others, more extensive destruction will result from a larger number of smaller bombs spread over a greater area.

Fusing is very important. Penetration is sometimes necessary, either into strongly constructed buildings or into the ground to damage water and gas mains, power conduits and subway facilities. In other cases, an instantaneous explosion at the surface will do great damage by blast and fragmentation effects. Still other targets may best be attacked by incendiaries causing destruction by fire.

Many targets cover rather extensive areas. This is true of many steel mills, of tank farms for fuel and oil, and sometimes aircraft factories. Yet, in most targets there is a vital spot, which, when destroyed, renders the major portion of the remainder inoperative or useless. It is true that many bombs which miss the vital spot will do great damage in the vicinity. Nevertheless, we must hit the vital spot and destroy the usefulness of the complete establishment to the enemy.

Thus, again, we must bomb by precision methods. We cannot annoy the enemy to death. We must make it *impossible* for him to carry on the war against us.

Asking for absolute precision bombing is asking a great deal. Release of bombs must be made from a correct point in space so that after many thousands of feet of vertical travel and many hundreds of feet of horizontal travel they will find their mark. To assist us in determining this release point in space, quite precise bombsights have been developed.

Like all precision instruments, the bombsight must be handled by specially and highly trained individuals. The bombsight is necessary as an aid to determine the cor-

rect point of release but it must be handled with skill. It is improper and uneconomical to place precision instruments in the hands of operators who are unable to get the full value out of them.

A well planned bombing mission includes many elements. The targets selected must be such that their destruction will cause a maximum of disability to the enemy. To make its success relatively certain, much consideration should be given the size of the force sent on the mission and the tactics of its employment.

Economy of force is always a vital consideration.

Repetition of a mission should not be necessary, at least not until the enemy has spent much time and effort in rebuilding the destroyed facility. We must expect losses of aircraft and crews in practically all important missions. Too small a force or improper tactics, necessitating immediate repetition, only add to our losses. Enemy opposition can be applied effectively against our missions only to a certain numerical extent. If repetition of our missions is necessary, much of that same enemy opposition can be applied against us on each such repetition.

The success of a bombing mission requires not only precision bombing at the target but thoroughly coordinated teamwork by all members of the bombing crew and unit. Every man has his function to perform. The loss or failure of any crew member jeopardizes the success of the mission. The plane must be properly handled. Its engines and other equipment must function properly. Communications must be ready for instant use. Defensive gunners must be prepared to protect the entire mission. The navigator must find the target and the bombardier must see that his bombs hit it.

The number of sorties accomplished or

the tons of bombs dropped do not provide the criterion upon which successful bombing can be judged. Hits and the destruction of the enemy's facilities are what count.

The value of bombing accuracy can hardly be overstated. Every reduction of average bombing errors by one-half multiplies the bombing effectiveness by four.

Errors may be reduced by two major means. The first is by providing the most highly trained bombardiers and bombing teams. This factor is of extreme value under all circumstances. The necessity for it cannot be over-emphasized, nor can too much effort be expended to accomplish it.

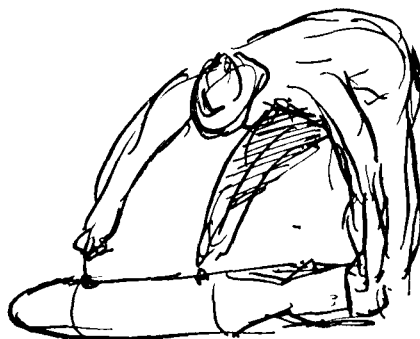
The second means of reducing errors is in the selection of the best bombing altitude. It is inevitable that bombing errors increase with altitude. Bombing errors at 20,000 feet are about twice what they are at 12,000; therefore, the effectiveness is reduced to one-fourth. The advantage to be gained by lower altitude bombing, however, must be balanced against the possibility of aircraft and crew losses due to anti-aircraft opposition both from the ground and in the air. Again, however, proper tactics will provide coordinated attacks which will neutralize such opposition.

In addition to the proper selection of targets, the designation of a proper force and the prescription of proper tactics and technique, there is the matter of proper bomb selection, the proper fusing of such bombs, the best use of existing weather conditions, the employment of fighter escort where practicable, and the planning of other coordinated missions which will cause a maximum dispersion of available enemy fighter opposition.

These precision bombardment principles are being translated today into widespread daylight raids by the Army Air Forces. Smashed railroad centers, shipping yards, war factories and other military objectives in Axis territory bear witness to the potency of precision bombing, which the Army Air Forces has come much closer to mastering than any of our enemies.

The excellent results of the Air Forces' bombing raids on Nazi-held Europe are a tribute both to the men and the unsurpassed planes they fly. But the best crews and the best planes in the world are a mere luxury if they cannot hit the target.

One plane that hits its target may be worth a hundred planes that fail.



How to Keep Well in the LIBYAN THEATER

Brigadier General David N. W. Grant

THE AIR SURGEON



With the successful prosecution of the war effort depending so heavily on the health of every officer and enlisted man, AIR FORCE has requested the Office of the Air Surgeon to prepare a series of articles on health conditions in the various theaters of operation, with emphasis on precautions vital to maintaining physical fitness. The following article is the first of the series.—THE EDITOR.

DISEASE is no respecter of individuals. Neither gunner, pilot nor commanding officer is immune. Illness can strike just as squarely at the heart of combat operations as the most devastating man-made weapon of war.

The medical service of the Army Air Forces has established certain standards of field sanitation and set forth immunization programs applicable to different parts of the world. Yet, these measures will suffice only if the individual takes every possible personal precaution.

An example of the many ways in which the individual may safeguard his health in theaters of operation can be drawn from a study of health hazards encountered in the Libyan Theater and of suggested methods to combat these hazards.

The health of troops living and operating in the Libyan Theater is generally better than can be expected in more normal terrain. Except in actual combat, however, the bulk of the troops do not remain in the desert proper but visit inhabited areas nearby, where native populations predominate, sanitation is poor and communicable diseases are prevalent.

Principal health problems in north Africa are related to the procurement and use of water. Excessive heat and lack of moisture in the atmosphere increase water consumption in an area where water is almost non-existent.

Except for water treated under the supervision of Army personnel, the water in this area must always be considered potentially contaminated with various organisms ca-

pable of causing such diseases as typhoid fever, dysentery, schistosomiasis and guinea-worm infestation.

Personnel ordered to this area should know one or two emergency methods of treating drinking water. If the facilities are at hand, water boiled from three to five minutes, or water treated with either halazone or the more satisfactory calcium hypochlorite, the same material used in Lister bags (F.M. 21-10), should be used. Remember, when using a chlorine method of water purification, much more chlorine will be necessary if the water is turbid or contains large quantities of organic material.

Of great importance is a thorough knowledge of the practical uses of water. The amount available is restricted and in forward areas each man may be allowed as little as one or two gallons a day. Moreover, with the exception of the larger coastal and river towns, only limited amounts are obtainable in the rear.

One or two gallons of water is a very small amount when it has to be used for all purposes: drinking, cooking, bathing, shaving, and brushing the teeth. Then, too, if forced down on the desert, you may have to get along on a quart a day. This can be done for four or five days without serious consequences.

THE necessary conservation of water under such circumstances can be accomplished by protecting the supply before consumption, and by conserving water after ingestion by limiting, as much as possible, fluid loss by perspiration. It will pay to form the habit of drinking small amounts of water slowly. Nearly all water that is consumed rapidly is thrown off in excessive perspiration and thus wasted. Small sips from the canteen moisten the mouth and throat and alleviate the first cravings for water. Chew gum if available but cut down on the smoking for it accentuates the desire for water. Moreover, become accustomed to salty water, for

you may have to add salt to your supply, usually three or four tablets to a quart, to make up for body losses due to perspiration. You will find that desert well water is usually very salty. Incidentally, strong unsweetened tea is an excellent liquid to carry in the canteen. Boiling the water in preparing tea guarantees the purity of this refreshing and thirst quenching drink.

Personnel should learn to differentiate between sunstroke and heat exhaustion. Either is easily prevented if the early symptoms are recognized by the individual or his companions.

Early signs and symptoms of sunstroke are headache, dizziness, irritability, dry hot skin, and seeing objects such as red or purple spots before the eyes. Sunstroke victims have a high temperature, and immediate steps should be taken to reduce this temperature to prevent death. Disrobe the victim in the shade. If no other shade is available, rig some clothing for a tent. Sponge the body with water and provide a cool drink of water. Sunstroke victims should be taken to a medical officer or ambulance as rapidly as possible.

Heat exhaustion and heat cramps are signalled by muscular cramps, pale, moist, cool skin, dizziness frequently accompanied by vomiting, weak pulse, dilated pupils, and shallow respiration. Place the victims in the shade, and lower their heads. They are in need of salt, so give them small amounts of fluids continuously such as hot tea or coffee to which large amounts of salt have been added.

Even though water is restricted in this hot, dry area, it is still necessary to bathe as frequently as possible. The skin-folds between the toes and in the crotch and armpits must be kept clean in order to prevent fungus infections such as dhobie itch. After bathing, dry the parts well, and apply powder—army issue foot powder is excellent for such use.

(Continued on Page 37)

Impostors in Uniform

By *Lieut. George F. Bradshaw*

CONSIDER now the case of Major X. First information on him comes from a private who was having dinner one night with friends in a New York restaurant. The Major was at the bar.

The Major had been at the bar too long. Otherwise he might not have come over and stood before the private's table.

"Soldier," he blurted, "what are you doing here?"

The private stood up. "Just having a bite to eat with some friends, sir," he replied.

The Major stared. "What outfit do you belong to?"

The private told him.

The Major shook his head. "I don't believe you," he said.

Where the scene might have gone from there is anybody's guess, but just then a couple of the Major's friends hauled him away.

Now the private had good connections. The next day he told his Colonel what had happened. The Colonel, being a moderate man, hit the ceiling. "You find out who that guy is," he said.

So back to the restaurant went the private the next night. The Major was again at the bar. The private knew the owner. "Jack," he asked, "who is the Major?"

Jack was full of information. The Major was a famous flyer. "And look," Jack exclaimed, "he has just been given the Distinguished Flying Cross."

Sure enough. There was the D.F.C. ribbon.

So the private figured he'd forget the whole thing. After all, why make an issue of a situation in which the principal is something of a hero. Besides, maybe the Colonel would consent to forget, too. The Colonel did.

Another scene took place in New York's most famous night club. Our Major X was again at the bar. The discussion centered on phonies who wear uniforms.

The Major reached into his pocket and pulled out his identification cards. "Here's one way you can always tell," he said authoritatively. "Just ask to see a man's papers. A real officer has these with him, and he's got them with him *all the time.*" For emphasis, he pounded the bar.

The Major lived high, wide and handsome. Last Fourth of July, for instance, he was a special guest in a test run up the Hudson to West Point in a Navy PT boat.

And, he had become, quietly enough, a

Lieutenant Colonel, letting himself in for the usual congratulations and a quantity of free drinks.

But silver leaves weren't enough. Two weeks later he appeared with the eagles of a Colonel. At that, even his night club companions became curious.

"How come?" they asked.

The new Colonel was almost bashful in telling about it. "I was down in Washington and George (Major General Harold L. George, Commander of the Air Transport Command) said I was doing such a heluva swell job that he took a pair of eagles out of his pocket and told me to wear them."

Some of his companions gagged at that one. This was just too much. It wasn't long before the Provost Marshal's office was notified. The Colonel was turned over to the proper authorities.

After the Colonel's "record" had been given a thorough going over, it was obvious that he had no connection with the Air Forces whatever. The Colonel was just a guy who liked a pretty uniform. He had been a commercial photographer, which explained his ability to forge identification papers.

IT'S HAPPENING all the time. The Provost Marshal's office and the F.B.I. are picking up fake officers by the dozens. And a good proportion of them wear Air Forces insignia. The wings, it appears, are romantic.

Every phony has his reason. A few of them are crooks, but a good proportion get dressed up just out of vanity. When you

Catching up with the phonies who masquerade in military dress to ring the bell socially and financially.

are a bona fide member of the armed service and know how tough it is to keep your official papers straight, you wonder how anybody would dare to pull a fake. But plenty of them do.

Not all of them aspire to be officers. Last summer, out in Hollywood, an enlisted man stepped into high life for a few weeks.

"Stepped" isn't quite the right word. He came in on crutches.

One night at a radio broadcast, he asked if he could be introduced to Cecil B. DeMille. Mr. DeMille was delighted, asked him to come around to Paramount Studios next day and watch shooting.

So he arrived, crutches and all. He watched Mr. DeMille for awhile and then was taken to the set of Miss Claudette Colbert's new picture.

He made an instantaneous hit. He was a nice-looking boy, modest, and wounded, of course. His story was that he had been struck in the head by a piece of shrapnel seven months before, and had been paralyzed by the blow. He was then waiting to be sent to Johns Hopkins Hospital for an operation which, by a slim chance, might relieve the pressure and permit him to walk again.

He wouldn't talk of his troubles. He just smiled and said, "Well, it's a war. Somebody has to get hurt." The whole cast and crew fell for him. He became their personal hero.

He had his picture taken with Miss Colbert, with Fred MacMurray, and other stars. He made a recording of his voice and Miss Colbert's. He was wined and dined. He came back day after day and sat quietly on the set.

Our hero let more than a week elapse before he got to work. Then one day, after

(Continued on Page 14)

Important

The unauthorized wearing of the uniform of the United States Army or any distinctive part of it is punishable by fine, imprisonment, or both, under Section 125 of the National Defense Act.

A soldier who has reasonable cause to believe that a person wearing the uniform of the Army is an impostor should not attempt to arrest such suspected impostor, but should report the facts to his company commander, the Military Police, or, if neither of these is available, the local police.

Weyman C. Cramer

MAJOR GENERAL,
THE JUDGE ADVOCATE GENERAL.

IMPOSTORS

(Continued from Page 13)

he had left, the director of the picture approached the cast. "Look," he said. "we've got to do something about this. While our young friend was hitch-hiking into the studio this morning, he lost his wallet, either dropped it or had it stolen. There was \$170 in it, everything the boy had in the world."

There was proper audience reaction.

"Now," said the director, "let's take up a purse. We can all put in a little bit and never notice it." It was agreed.

But Miss Colbert wondered. Why was the Army permitting a wounded hero to hitch-hike all over town? And why, if he got hit in the head with a piece of shrapnel, didn't he have some sign of a scar?

When she thought aloud she got some scornful looks from the rest of the cast. That Colbert, they said, here's a guy who's been risking his life to defend us and now she . . .

So Miss Colbert made out a check for a sizeable amount and put it in the hat. "All right," she said. "Only do one thing. Before you give him the money, call up and find out about him."

Her suggestion was carried out. The fellow had given an address to which the photographs and recording were to be sent.

A landlady answered the telephone.

"Him?" she said, "why he left here two weeks ago to go down to Long Beach to get a job. Wounded? What are you talking about -- He's never even been in the Army."

INNUMERABLE cases could be cited. A "Major" in Chattanooga. A "Ferry Pilot" in Newark. A "Flying Tiger" in Los Angeles.

And two Air Corps "Second Lieutenants" in New York. These last two were pretty ambitious fellows. They had been draftees, both stationed at Fort Bragg; one had gone over the hill in December, 1941, and the other in May of this year. They met in a bar one fine evening. Each was terrified that the other would learn the truth about him. Each was then wearing an officer's uniform.

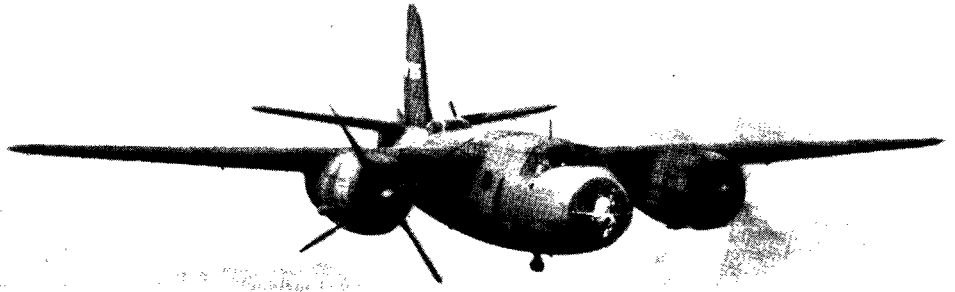
But they managed to arrive at an understanding, and from that time on they teamed up. They had a merry six weeks before the F.B.I. caught up with them.

They left a trail of \$1,100 worth of bad checks and unpaid bills in hotels and night clubs in New York and New Jersey. They just missed buying a car with an \$1,800 bad check, because they could not obtain a priority. They had stolen identification cards from a Lieutenant and a Captain.

One of them met a dancer in Albany, and from Newark sent her a \$154 diamond ring he had purchased with a rubber check. On the side, he stole war savings stamps from his mother.

The F.B.I. caught up with them in Atlantic City.

So it goes. War and expanding armies bring out the uniforms. And a few of the boys get them the easy way. Too easy.



A B-26 flies safely with one motor stalled and the blades feathered.

Single Engine Operation

By Lt. Col. J. B. Duckworth

COLUMBUS ARMY FLYING SCHOOL

WHEN a pilot is flying a twin-engine plane and one engine fails, he must remember above all else:

NEVER SACRIFICE SPEED FOR ALTITUDE!

You can lose control of heavy, high horsepower, twin-engine airplanes from nothing but loss of airspeed. If a rate of 30 or 40 miles per hour over the minimum single engine operating speed is maintained, no loss of control can result. The ship can be banked steeply into the dead engine and be as solidly controlled as though both were in use.

The amount of airspeed necessary over the minimum single engine operating speed depends upon the altitude in which the aircraft is placed (such as a steep bank), which engine is down (thereby controlling torque), the amount of aileron being used, and other factors. For instance, if the airplane is stalled with one engine operating only, the torque of the other engine tends to "throw the airplane over on its back" and more and more rudder control is necessary to prevent this tendency. As the airplane approaches the complete stalling speed, full rudder is finally being used and when the rudder control becomes inadequate, the torque of the operating engine will tend to throw the airplane over. The use of aileron in such a situation involving low airspeed does not help but rather increases the tendency of the airplane to go over.

Therefore, when you experience the loss of one engine, the first thought should be adequate airspeed. If near stalling speed when the one engine fails, it may be necessary to *cut* the operating engine rather than allow it to pull the airplane over on its back.

If any altitude whatever is available, your first move, rather than open the good engine, should be to shove the stick forward to gain adequate airspeed. Once that is achieved, you can satisfactorily go through proper single engine flying procedure.

If just off the ground, you must have minimum single engine operating speed. With such, you can by quick action climb the plane on one engine. But in such action your primary thought must still be airspeed.

Thus, a cardinal rule, in the event of an engine failure, is to put forward the

wheel until sufficient velocity is obtained.

Once adequate speed is achieved, the pilot's next problem is directional control. To obtain this with safety *use only the rudder*. Use of the ailerons at low speeds tends to put an increased drag on the inside wing, which only adds to the difficulties caused by engine torque.

Consequently, the second cardinal rule is to *forcefully use the rudder to obtain directional control, leaving the aileron alone*. If adequate airspeed under the conditions obtained already has given full control to both aileron and rudder, this rule ceases to be important, but inasmuch as the danger spot occurs at lower airspeeds the rule should invariably be adhered to.

Only after adequate airspeed and directional control are secured should a pilot go into the normal single engine operating procedure namely, opening of the pitch control, opening of the good engine, trimming of the airplane, and so forth.

Admittedly, a pilot experienced in single engine operating procedure will react automatically and will obtain airspeed and directional control practically at the same instant that normal procedure is adopted. However, a great deal of practice is necessary for accomplishment of all operations at once. And the slightest failure to gain sufficient speed and directional control first may be the difference between success and a fatal crash.

(In practicing single engine flying always allow for a substantial loss of altitude in order to maintain airspeed in restarting a dead engine and for unfeathering. The safe altitude for acrobatic flying should be considered the minimum altitude for single engine practice flying.)

Disregard of these principles may result in the airplane being thrown over on its back, with a resultant spin. It is then difficult to get the stick all the way forward and cut both engines. If these things are not done the spin may easily continue. With the modern airplane, high wing loading and high horse power result in a great deal of torque and heavy weight; and as these factors all add up to high kinetic energy in a spin or spiral, many thousands of feet may be required for a complete recovery.

STEWART FIELD has no stately trees, no ivy-covered buildings, and very little tradition.

There's no time for tradition. Not now. West Point is "souped-up" for the duration. And, though only a few months old, Stewart Field, the Air Forces Basic-Advanced Flying School at the U. S. Military Academy, is as much a part of West Point as the East and West Buildings, the assault course, and the mule mascot of the football team.

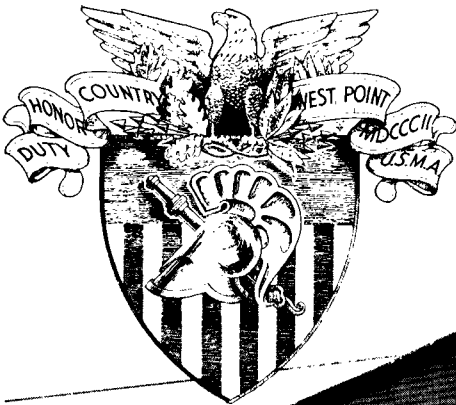
The first group of cadets to be trained at Stewart began work on August 25 of this year. Wheeling BT-13A's out onto the runway, they took off from a field which was then, and still is, an air field in the raw.

Stewart Field was once the city airport of peaceful, historic Newburgh, New York.

Today, like many other Air Force fields, it is a boom town—a scene of cement and gravel, planks and blueprints, and the litter of fresh construction.

Bulldozers are everywhere—uprooting tree stumps, jogging out rocks and boulders, leveling great hunks of ground. Laborers in overalls and enlisted men in fatigues bustle in all directions. Army trucks swarm over neighboring roads.

On the south side of the field, half a hill has been cut away. There are scores of new red-brick buildings and the wooden frameworks of more to come. Flanking this col-



WINGS of WEST POINT

By Capt. Charles D. Frazer

Cadets take to the air as the Military Academy inaugurates flight training program at Stewart Field.

ony is a 700-acre plateau, a broad L-shaped table-top, which soon will hold 6,000-foot runways. There is much to be done at Stewart. Construction will not be complete until September, 1943.

But already, from the welter of dust and dirt, there has taken form in the granite-filled mountains above the Hudson River a school which may well play a starring role in the future of the Army Air Forces.

The origin of the school dates back really to 1927, when an Air Corps Detachment at the Academy was first authorized. The detachment consisted of a few officers and enlisted men, a few amphibian planes, and a couple of hangars along the river bank.

But this was not enough for those Army fliers. "Ducks" were all right, but they wanted land planes, too. Unluckily, the country around West Point was too hilly for a suitable field.

They began to talk about Newburgh 12 miles to the north. In 1930, Samuel Stewart had deeded some land to the city and a

cocktail napkin of an airport had been built. It was small but it would do.

For several years the Air Corps Detachment used Stewart Field as a base, and eventually, in 1937, plans for its expansion were developed.

Last fall, General George C. Marshall and Lieut. General Henry H. Arnold decided to introduce flight training as an elective in West Point's course of instruction. Flight training thus became the only major elective at the Point.

Obviously, Stewart had to become a field second to none in equipment and facilities. No one can foretell the number of cadets who may have to be schooled there during the war. In peacetime it should be able to provide full aerial training, primary, basic and advanced pilot work, plus both single and multiple engine experience.

The directors at West Point took a good hard look at their old blueprints, threw them away, and ordered new ones. They decided to move the hill. Instead of two hangars, they planned 10. They visualized mile-long runways that would accommodate any type of plane, up to the heaviest bomber. They projected all the manifold housing and recreational needs of the officers, instructors and enlisted men stationed there.

(Continued on Page 22)



AIR RESCUE in Jungle Country

By Captain Oscar Schneller

SENIOR FLIGHT SURGEON

A PATROL BOMBER was down — somewhere in the Dutch Guiana jungles. The plane, with eight officers and men, had taken off at midnight from its base in Guiana, on a secret patrol mission along the coast. Nearly two hours had passed. No word had come in. Trouble was certain.

To the flight surgeon at an outlying Air Forces base, the phrase "plane missing" is an ominous challenge. It is like hearing "wanted in emergency" over a hospital loud-speaker. If there has been a crash, men's lives will depend on swift, decisive action.

Fears for the crew of the bomber were confirmed when the plane which should have been relieved of patrol duty returned to the base. No relief had appeared, no message had been received. Through the night, our field made ready for a search.

At dawn several search ships took off from the base. Less than an hour later, the missing plane was sighted about 28 miles to the east, apparently badly cracked-up. We did not know whether anyone survived the accident.

Captain Ernest Ljunggren, operations officer, and I left immediately in a C-61 to survey more closely the scene of the crash and to determine, if possible, the best way of getting help through to the crew mem-

bers, should they be alive. Meanwhile, Captain Richard Gunckle, commanding officer, had organized a rescue squad which was sent out on foot with native guides.

Flying at tree-top level, we soon located the patrol plane. It had cut a jagged gash in the jungle and bits of wreckage were scattered all about. Two of the crew were alive, at least — for we could see them sitting on what was left of the tail.

We cruised low over the surrounding country. The nearest clearing of any size was six miles away. But this was too small.

Finally, about 10 miles from the crashed plane, we came upon a savannah that was spacious enough to offer some hope. By a pre-arranged signal, Captain Ljunggren notified the other planes that we were going to attempt a landing.

Then, gently and skillfully, Captain Ljunggren set the plane down into the clearing and brought it to a stop after a short, hard-bumping run. We rolled our ship to the edge of the savannah and prepared to enter the jungle, following a compass reading we had taken in the plane indicating the direction of the crash from the savannah.

Captain Ljunggren took with him a .45-calibre pistol, 50 rounds of ammunition, a compass, a head net, and two cans of rations.

I carried 50 rounds of ammunition, two tins of rations, and a first aid kit. We both had machetes, and ration cans to be used for water.

Starting into the jungle at 7:30 in the morning, we encountered heavy going. The trees and undergrowth were almost impenetrable, much of the ground underfoot was swampy; here and there were little streams we had to ford. Most of the streams were infested with alligators and man-eating fish. It was ticklish business.

Literally hacking our way along, we kept going, slowly, mile after mile, until dark. We then made a bed of palm fronds and slept, alternating two-hour watches.

At dawn we started off again and began firing shots at intervals. Around nine o'clock we heard answering shots from a machine gun and, cutting in toward the sound, discovered we had nearly passed the scene of the crash while a few hundred yards away.

Frankly, we did not expect to find many of the crew alive. But we were due for a surprise.

Captain Charles H. Ross, pilot and Lieutenant Roy A. Webb, co-pilot, were the only members of the crew able to walk, and all the others were lying by the side of the fuselage in a tiny clearing, several of them badly hurt. But all, fortunately, were alive. The group included Lieutenant Charles L. Jones, observer; Technical Sergeant Louis Castro, bombardier; Sergeant Gerald Forman, crew chief; Sergeant Herman Goldstein, radio operator; and Privates Albert K. Will and Andrew W. Budinsky, gunners.

Examination of the injured men disclosed several serious fractures of jaws and ribs, brain concussions, lacerations, contusions, and bruises. I gave the whole crew first aid and treatment for shock, then chlorinated some water from a nearby stream so our supply would be ample.

CAPTAIN ROSS told us what had happened. The plane, apparently in good shape, had taken off on a direct course to the point of patrol and risen to 1,500 feet. About 15 minutes later both motors had failed without warning.

After trying vainly to discover the trouble, Captain Ross told the crew to prepare for a crash landing and maneuvered his plane into a shallow glide, giving Sergeant Castro a chance to get out of the nose.

Suddenly, the big plane knifed into the jungle with a terrific impact. All the men were knocked out. That they were not all killed outright was due only to the skill of Captain Ross in bringing the plane through that welter of trees, vines and underbrush.

Lieutenant Webb was the first to recover consciousness. Sergeant Castro's feet were in his face. They both had been thrown clear of the ship, into the jungle, a short distance from the fuselage.

Inspection of the plane revealed complete wreckage. The entire nose had been ripped away, both wings had been shorn off, and the two motors had been hurled into the undergrowth. Part of the fuselage was in-

tact, although badly bent at the tail. Gasoline drenched the ground. The plane had been carrying a sizable load of bombs but none had exploded.

Captain Ross recovered consciousness a few minutes after Lieutenant Webb. Although injured themselves, they carried the other men to a place that had been cleared away by the crashing bomber, where Captain Ross gave them what first aid treatment he could with the plane's kit. Some of the crew were only semi-conscious when Captain Ljunggren and I reached the scene, a day and a half later.

Clearly, there was no time to be lost in evacuating these men. Captain Ljunggren said he thought he could take off from the savannah in which he had landed the C-61 and would take along Lieutenant Webb, who was in the best condition of the injured crew. I gave them a list of the medical supplies and the food and litters I would need.

Even though the trail had been cut through, it took Captain Ljunggren and Lieutenant Webb several hours to retrace

A flight surgeon gets a look at the rough side of Dutch Guiana and helps bring a bomber crew back alive.

the 10 miles to the plane. But, just before dark we heard the drone of motors and saw them circling overhead, the signal that all was well and they were en route to the base.

Meanwhile, I was busy doing what I could for the men. I gave them stimulants from a special kit and stopped the severe bleeding from which many suffered, cleansed and bandaged the deeper wounds, avoiding suturing as much as possible because of septic conditions.

Despite this treatment, however, it was clear that our plight was serious. All the men were suffering badly from shock. Quick hospitalization was imperative.

At dawn the following day another plane flew over, signaling that it would drop supplies. Soon a huge bundle of litters, blankets, food and the like floated down to us by parachute, making a perfect bull's-eye through the hole in the trees.

Not long after the rescue party from the base arrived. There were 20 infantrymen under Lieutenants Arthur, Lemon and Calhoun and 15 native guides. It had taken them two days to cut their way through 28 miles of dense jungle and they had been able to do it only because planes had flown over them from time to time, indicating the direction to follow. So heavy was the foliage that they had been unable to see the planes much of the time but took bearings from the sound of the motors.

It was quickly decided that evacuation by foot through the jungle would be too arduous and take too much time. Our best bet was evacuation by air from the savannah in which Captain Ljunggren and I had landed.

After the rescue group had rested, we bundled the injured men onto litters and began our trek, with some of the infantrymen and guides leading the way, cutting the trail wider for passage of the main party.

It was late afternoon when we reached the clearing. I set up a first aid station and made the men comfortable. More planes appeared to drop food to us. We spent a miserable night, for the place was infested with sand flies against which even head nets were no protection. Nobody slept.

NEXT morning Captain Ljunggren flew over in a medium bomber and dropped a note requesting that the clearing be surveyed to determine if he could land. Captain Ross examined and measured the ground. He decided, that with some more clearance work, the plane could safely come in.

This job of slashing down underbrush and vines and laying out and marking a runway with stakes took about three hours.

Then, as Captain Ljunggren flew over once more, the men waved a signal that the field was ready. The plane swept low toward the clearing but couldn't make it. Captain Ljunggren circled, tried again. But again he changed his mind and pulled up. At last, on the third try, he brought the ship in for a perfect landing and came to a stop just short of the danger area.

The bomber would hold three men at a time in addition to Captain Ljunggren, Lieutenant Wilhite, and Technical Sergeant Holmes. So a fast ferry service was begun, with the plane taking off and landing in an incredibly small space on each trip. After the injured men had been transported, the infantrymen and I returned in the same manner. The native guides came back over the jungle trail.

At the field hospital the men's wounds were dressed and sterilized, and shock treatment was administered. The patients rested for 24 hours and were transferred by plane to the Trinidad Base Hospital.

There was nothing spectacular about the medical side of this evacuation. The work was commonplace, everyday flight surgeon's work. But the evacuation itself was a significant example of the kind of rescue being duplicated again and again by the Army Air Forces, on a wide variety of fronts.

Because Captain Ljunggren and I were able to fly into jungle never before visited by white men, a severely injured air crew received first aid that was urgently needed. Because planes could fly out quickly from the base, we had a constant supply of food, medicines, blankets, litters, and other necessities. Because planes served as guides, a rescue squad reached the accident on foot in much less time than it would ordinarily have taken. And, finally, because a bomber transported the men to a hospital in a matter of hours rather than days or possibly weeks, many valuable lives were saved and the total illness time substantially reduced.

Yes, every man recovered and is back at his flying duties. That to a Flight Surgeon means a battle won.

OLD BAG OF BOLTS

(Continued from Page 7)

arrival. Pilot Funk decided to go to a satellite field in Burma to escape a possible follow-up attack. Luck was with Bolts. That night the Japs raided Rangoon three times. The return to Java with General Wavell was easy.

Singapore fell and the Japs began their first raids on Java. The raids kept Bolts on the alert staying away from her field while the Japs strafed it. When the air raid alarms came, Bolts would lumber out to the runway, take off and fly south over the water and wait for the all clear to be given.

Then Bolts was ordered back to Darwin, departing February 19, the day of the big Jap raid. About two hours out of Darwin, she got radio information warning her not to come in, so she landed a few hundred miles to the south, waited, and then came into Darwin shortly after the attack.

When the Japs went to work in earnest on the invasion of Java, Bolts was called upon for evacuation work. Twice she went back into Java from Darwin, bringing out

20 evacuees each time. Luck continued to ride with Bolts. The day after she left Broome, Australia, with the last lot of passengers she had taken out of Java, Broome suffered a heavy raid. After it was over, she went back to Broome under cover of night to bring out personnel.

Bolts made a second trip to the Philippines. This time she took in sorely needed supplies for the wounded who had escaped fallen Bataan and Corregidor. In addition to her crew of seven, she brought out 30 officers and men from that secret airfield on Mindanao, including Lieutenant John Bulkeley of Navy PT boat fame.

That was her last trip for the Ferrying Command. Within a few days her crew was called back to the States and Bolts was turned over to the Commander of the Southwest Pacific. When Lieutenant Funk and Bolts parted company they had been together nearly 400 hours.

Bolts made one more daring trip after that, back to the Philippines in another rescue attempt. It was her last.

The gas load gave Bolts only a few minutes to locate the Mindanao airfield. She

circled overhead, trying to get a signal through. The Japs were everywhere; perhaps they had taken the field. Bolts didn't make contact in the darkness. She headed back toward Australia.

But Bolts couldn't make it back with the remaining fuel. She headed toward an island for an emergency landing. Her position was radioed to aid in the rescue of her crew.

Then Bolts gave out of gas. She sat down in the water a few hundred feet off shore. After more than 600 hours her motors sputtered for the first and last time. And then only because she lacked fuel.

Members of her crew swam to safety and later were rescued by a submarine. Beyond saving was A. C. Serial Number 40-2576.

They don't hand out awards for airplanes, and we don't mean to get sloppy sentimental over a big hulk of steel, but in our books Old Bag of Bolts went down with a Congressional Medal of Honor pinned to her fat chest.

The ranks of the officers and the grades of the enlisted men mentioned in this story were those held at the time the action took place.

AIR MINISTRY publications have dealt at some length with conditions to be expected by personnel going to the United States. Now the flow is in reverse. American forces are coming to this country. We are the hosts, not the guests.

The arrival of large contingents of American forces, and their impact on us, will make adjustment of attitude and outlook necessary.

There will be occasions of irritation on both sides, not because one is British and the other American; but because they are people.

There is as much likelihood of such friction between two Englishmen, or two Americans, as there is between an Englishman and an American. We are not yet, thank the stars, regimented out of our personalities.

When we are, the Nazis will have won a major victory for their philosophy.

At the same time, looking at the broad issue, we may be required to discipline our personalities because fifth columnists, spies, Nazi propagandists and all subversive groups will fasten with delight on any indication of impaired collaboration.

In this country, the British have the larger share of responsibility. There will naturally be an element of personal selection in our likes and dislikes, just as there is between Briton and Briton. There will be different stresses and a different outlook. Some are personal, some are economic. Americans will not be Anglicised overnight. For one thing they don't want to be; for another,

there would be no gain if they were.

Americans have a different vocabulary, a different tradition, a different accent. There is as much difference, however, in these matters between Yorkshire and Sussex or California and Maine. Notwithstanding such differences, the United States builds up into a unity, as Britain builds up into a unity, and local variations are accepted as being in the family. Nations are much more than the sum total of acreage and population.

Quarrels still occur between individuals; there is a fair amount of scraping in York, and in New York. Some of us go on a "binge," so do some of them. Neither has a monopoly of bad language, nor of good manners. We're just human, showing to better advantage, possibly, individually, than in bulk. Whether individually or in bulk, the point of departure is the realization that we are two strong peoples, with the virtues and faults of our strength, pulling together, anyway because we must, and learning to pull together because we like to.

There are some other points of potential misunderstanding. One is — cash. American rates of pay are higher

than ours. That should certainly not be a personal grievance between individuals. It may be the American's good fortune and allow a greater latitude than we can always rise to. The Americans are, incidentally, usually good spenders and do not like to be thought "fumbler." Mostly, when they are lavish it is without any desire to flaunt their higher pay. More often than not it is a liking to share out.

Another human interest enters. There is an understandable tendency among some of our young women to find a stranger who speaks our language entertaining. The girls in the United States and Canada are showing a similar interest in our lads. That is an individual matter, and not one on which generalization can be made. Some of our American visitors will certainly make friends among the girls. We cannot reasonably expect them to become recluses, or be unresponsive.

We tend rather to understatement. The Americans like emphasis that not infrequently sounds like exaggeration. Emphasis is not always line-shooting, any more than understatement is always efficiency gone modest. They may be equally powerful expressions, according to temperament and custom, of the same pride and purpose; but each form takes an understanding by the other fellow.

As individuals, we are concerned with the details of collaboration. It is for the Governments to deal with the broader issues, but if individuals fail in their job the Governments cannot succeed. *Condensed from the Royal Air Force Journal.*

THE AMERICAN CONTINGENTS

A Briton's Message to British Airmen

by Fletcher Allen



Wright Field

THE words "Wright Field, Ohio" are renowned among airplane designers, builders and fliers the world over.

They are all but magic words because they stand for 15 years of successful pioneering on the technical frontier of aviation, because they mean high quality design and performance, and because they stand for airplanes like the Flying Fortress that executed a successful mission and still flew home with 1500 bullet holes in its wings and fuselage.

If you're going to deal with Air Force materiel—and that's everything from bombers to bolts—you're going to have to deal with Wright Field. There all the equipment the Air Forces use was either conceived, developed or tested—tested and retested—at the Materiel Center near Dayton.

In many ways Wright Field is the spawning ground of American air power. On its designing boards and in its fluorescent-lighted labs are spun the cocoons that hatch weapons for aerial warfare on all the fronts.

The tail of the B-19 dominates this view of a flight line at Wright Field. In the background are laboratory buildings and planes of many types and sizes.

Wright is a Battlefield

AT FIRST GLANCE Wright Field looks more like a Hollywood movie lot than an air base. Great cranes swing engines, parts and whole planes overhead; big bombers waddle behind small motor tugs up the paved, city-like streets that run between the lab buildings; grotesque shapes of testing devices cast futuristic shadows over the landscape.

Out on the flight line Messerschmitts and Spitfires are lined up beside the P-40s and B 26s. Labs contain the latest German and Jap equipment taken from planes shot down over Allied territory. At Wright they've taken everybody's plane apart to see what makes it tick.

In the great labs of Wright Field there is a battle going on—just as much a battle as those fought over Kiska and Cologne. Here military and civilian technicians match their wits and energy in a deadly contest with the aero-engineers of the Axis. Upon their success or failure may hinge the outcome of this war.

You can tell how hard they are trying to win from the lights that gleam from lab windows all night long, and from the roar of prop and engine testing that

fills the air around Wright 24 hours a day.

Boss of Wright Field is Brigadier General A. W. Vanaman, who works directly under Major General O. P. Echols, Commanding General of the Materiel Command. Helping General Vanaman with the engineering phase of his job are Brigadier General K. B. Wolfe, Chief of the Production Division, who supervises the mass production of all Army warplanes, and Colonel F. O. Carroll, Chief of the Experimental Division, who runs the research and development program of the Materiel Command.

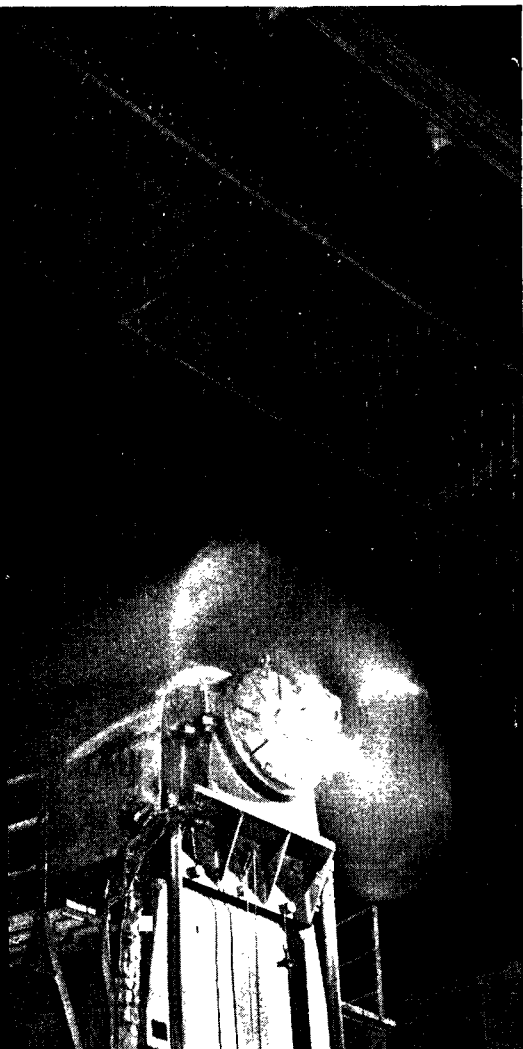
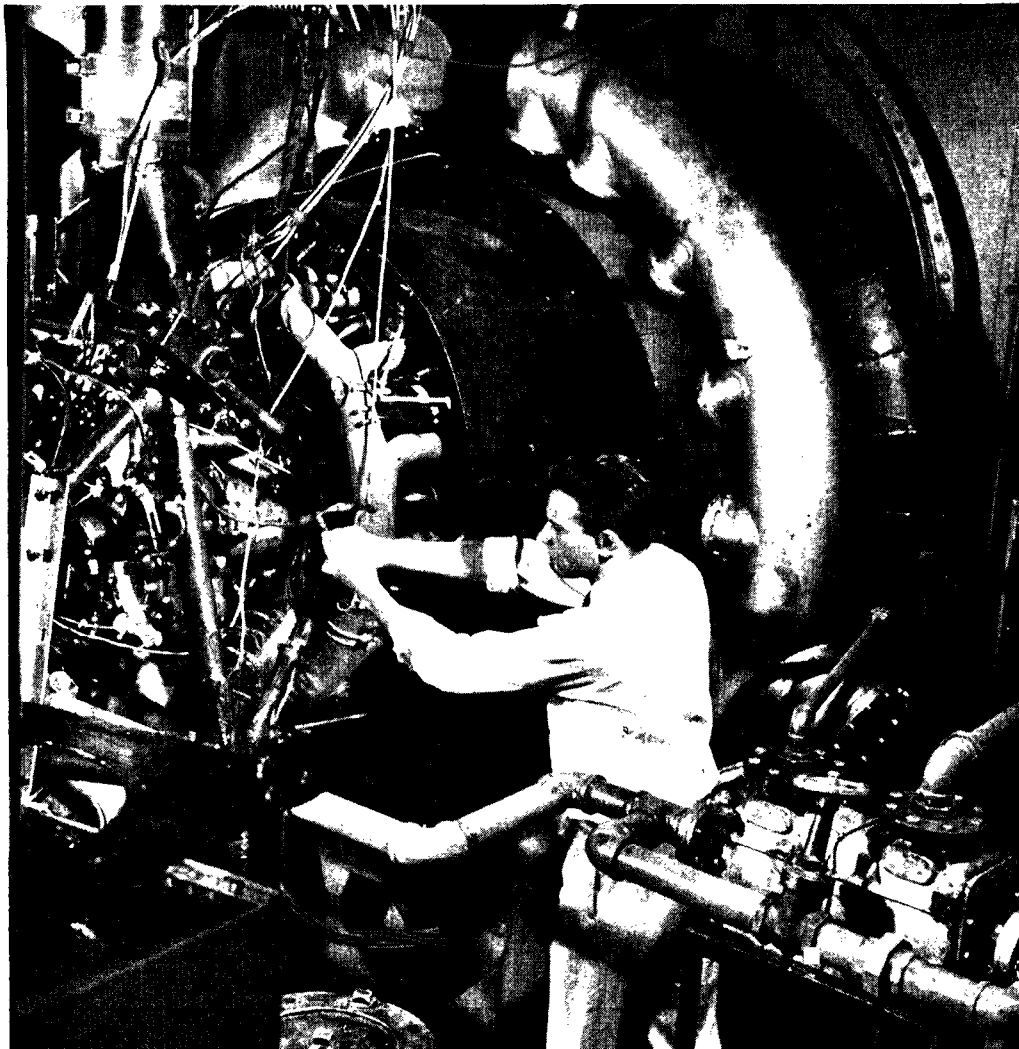
To aid General Wolfe and his Wright Field staff control the manufacture of Army planes, the Materiel Command has divided the U. S. into four Procurement Districts (Eastern, Central, Midwestern and Western) each with a District Supervisor and a staff of factory representatives that handle Air Force interests on the spot. These districts, together with Wright Field headquarters, are responsible for meeting production schedules, supplying parts and tools in sufficient quantities, and issuing change orders on contracts to keep factories abreast of latest aeronautical developments.

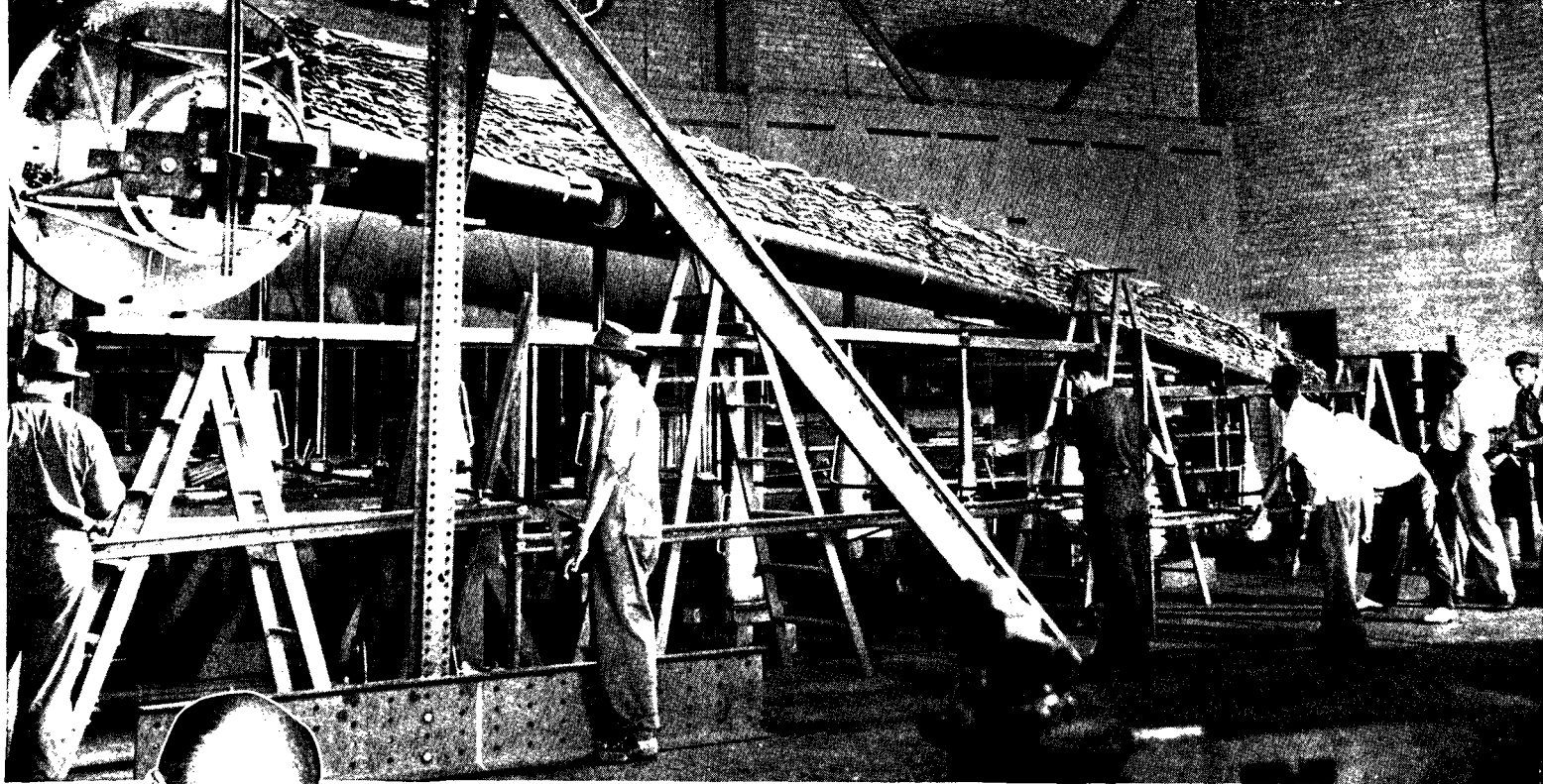
Meet "Horatio"—the mechanical man who works 24 hours a day testing flying suits.

Made-to-order rain is used to test this prop's ability to hold up in rough weather.

The radial engine below is being placed on a test stand for a trial run to determine its operating characteristics. In this test,

the engine pulls, not against a propeller, but against a specially-constructed dynamometer equipped with water brakes.





The 10-pound bags on this C-47's wing show how many "Gs" it will take before cracking.



ENGINEERING isn't the whole story. In addition to the laboratory and production work, all Army Air Forces materiel contracts are written and awarded at Wright Field. This is a big job, and it involves a lot of money.

The man who handles it is Colonel A. E. Jones, Materiel Command Contracting Officer, shown at left affixing his signature to a typical Air Force contract. As one of the country's two or three top spenders, Colonel Jones has signed or supervised the signing of all AAF materiel contracts since 1939. During this period of time he has controlled

the expenditure of many billions of dollars.

Colonel Jones, who has contracted for as much as 100 million dollars worth of aviation equipment with but one swish of his pen, once signed all Air Force contracts himself—now he needs 51 assistants.

In his efforts to buy exactly what the Air Forces want, Colonel Jones works in close cooperation with the engineers of Wright Field, who draw up detailed specifications of all proposed purchases. These "specs" are part of the contract, and no variations are permitted unless a change order is issued by the Contracting Officer.

This shelter hood keeps the weather and prying eyes away from a secret project.



WINGS OF WEST POINT

(Continued from Page 15)

Then the dirt began to fly. Ten months later, on August 25, Stewart Field, "Wings of West Point," was dedicated.

The field was rough and full of debris, but it was ready. When Major General Francis B. Wilby, superintendent of West Point, summed up the significance of the occasion, he called the decision of Generals Marshall and Arnold "one of the most momentous in the history of the Military Academy, if not in the life of the nation."

Since that hot August afternoon, day after day a steady stream of BT-13A's has kept the air about West Point churning with activity.

There are 245 cadets in this first group of students. They are in the class of 1944. Ordinarily, they would have two years of training ahead of them.

But West Point's course has been shortened from four years to three, so these men will graduate next June, a year ahead of time. Somehow, they must get in their flying time, must absorb the rudiments of aerial navigation, bombardment, and kindred subjects, and at the same time must keep up with all the other studies at West Point.

These courses include chemistry, modern languages, mathematics, physics, history, military art, military engineering, military history, mechanics (including thermodynamics and fluid-dynamics), ordnance, economics, government, military topography and graphics, military law, military hygiene, military administration, theory of flight, weather, and the tactical employment of Air Forces. That, understand, is in addition to the instruction they receive for flight training which takes in navigation, meteorology, aerial mapping and photography, code and communications and, of course, actual flying.

Each cadet in this first class at Stewart took primary flight training at a civilian school. Chances are, he gave up his summer furlough to get it. No primary instruction will be scheduled at Stewart for awhile.

TODAY, the flying cadet lives at the Point and pursues the routine of his class. First call is at 5:50 a.m. At that time, the cadet arises, gets dressed, polices his room, and stands reveille at 6 o'clock. Breakfast is at 6:30 and by 7 o'clock he's on his way to Stewart Field for flight instruction. He leaves the field in time to stand noon formation at the Point, eats lunch, and gets to class at one o'clock. After three hours of class, he may either get practical field exercise or continue an additional two hours of directed study. At five, he leaves the classroom, dresses, stands afternoon formation, and eats the evening meal. Then comes a precious 25 minutes that are unscheduled—the cadet's own. At 7:30, call to quarters, and two inspections before 10 o'clock taps.

The second class men, who are doing

their basic flight training at Stewart Field, must also recite each day in mechanics, three mornings a week in chemistry, and two or three afternoons a week in languages. If it rains, the cadet gets an additional two hours in military topography and graphics—one hour to study and one hour to recite, for the West Point system is based on a recitation and grade for every man every day, not a quiz now and then.

The average day, outlined above, is Monday through Friday. Saturday is usually half-day, but in many cases the flying cadet uses the week-ends—including both Saturday afternoon and Sunday—to make up some of the flying hours he might have missed because of bad weather. The command at Stewart Field is exceptionally careful never to send cadets into the air when the weather is threatening.

An advanced flight training course will be activated at Stewart Field in December.

The cadet now taking his basic will begin advanced training on New Year's Day, 1943. He will continue his ground school work, taking such subjects as photo interpretation, identification, armament, gunnery and bombardment.

Next June 1, he will get his wings as a pilot and, at the same time, graduate from the Military Academy with a complete background of military education.

By then, younger classmen of the Point will be coming along and Stewart Field will be in full swing.

This speed-up of instruction at the Academy has been accomplished by close scheduling of study periods and by wartime elimination of certain activities, such as the famous and impressive dress parades.

Today, Colonel John M. Weikert, commandant of the flight school, is worried about one thing—weather.

"Winter is hurrying us," he explains. "After a certain time up in this country, you simply can't pour concrete. But if we can't pour concrete for the new apron, let

us say, we'll just finish up with gravel and keep going." That seems to be the whole spirit at Stewart Field—keep going. Nothing else could have brought about the results already visible.

More than a hundred buildings have been erected. This fall has been one "Grand Opening" after another. One day it would be the opening of the PX. Another, the first service chapel on the hill. Another, the first night of the camp movie theatre.

ENLISTED men, assigned to Stewart for duty in school and service squadrons, had to be housed for months in a "tent city" in woods bordering the field. But just before cold weather set in, the camp was struck and the men all moved happily into brick barracks. Bachelor quarters and a club for officers have since been completed.

The principal concern of the officers directing Stewart Field, of course, has been the actual airplane and training facilities. Almost all these are completed or nearing completion—runways, hangars, operations headquarters, storage rooms, a control tower, Link Trainer buildings, ground school classrooms, libraries, and the rest. Three auxiliary fields are in the making.

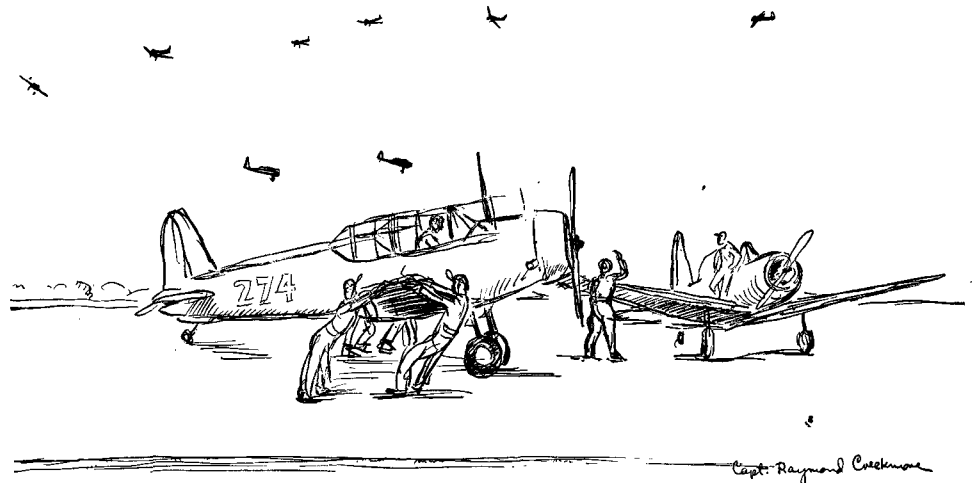
When construction of Stewart Field is finished next September, 200 officers and 1,800 or more enlisted men are expected to be on duty there. From 250 to 300 cadets should be in training by that time.

Right now, Stewart is strictly on a wartime basis. Every man on the field, civilian or officer, "G.I." or cadet, is in a big hurry. A sign at the road entrance reminds them that "Hitler Won't Wait."

The men training in this first class are in a special hurry. They are going places, preferably to the points marked by arrows on the front of a hangar, where signs read "To Berlin—3,121 Mi." and "To Tokyo—8,117 Mi."

This atmosphere, come to think of it, is a tradition in itself—a logical heritage for the new, raw "Wings of West Point." As one officer at the field puts it:

"Some day Stewart will have some ivy, too."



Attack bombers strafing an armored column on desert maneuvers.

PRELUDE TO DESERT COMBAT

By Major John McL. Redding

THE desert floor is sparsely clothed with stunted growth: cactus, mesquite, Joshua trees, sage brush and Palo Verde. The soil consists of sand and rubble from the mountains. Like an abandoned brickyard, the loose rock and shale make traveling by foot virtually impossible.

Tanks and half-tracks have supplanted the Gila Monsters and jack rabbits as denizens of the desert. When these armored monsters move they mark their progress by towering walls of dust. But when they remain still the tanks and half tracks blend into the desert floor. With rudimentary camouflage, tanks melt from sight in an unbelievably short distance.

From the air, at 3,000 feet, it is impossible to pick out a stationary tank. An entire armored regiment, if properly dispersed, cannot be spotted. From the air the desert floor seems bare.

"The explanation," explained Colonel R. H. Lee, who led the Second Air Support Sub-command in recent desert maneuvers with the Armored Force, "lies in the distortion caused by the heat."

"When I first flew over this area last May I couldn't see a hiding place anywhere. But the truth is that the whole desert is one

America's air and ground forces are learning to adapt the fickle ways of the sand country to the requirements of modern warfare.

huge hiding place for vehicles that remain stationary. Ground commanders should always remember that. If they let the dust settle and remain stationary the planes above cannot pick up their dispositions."

This is one of the lessons learned in the desert by the Air Forces Air Support units. They have learned too that it is impossible to tell the difference between tanks and trucks from normal heights when the vehicles are in motion. The heat waves emanating from the superheated sand destroy all form for the eye.

"But," Colonel Lee pointed out, "There's one thing to remember. When you see a dust cloud, and you can't safely come down to look the column over, there is much to be learned by just watching the dust.

"If it billows along in a solid wall, that's a truck column. If the dust wall is marked by curling spires of dust, it indi-

cates track-laying vehicles—tanks or half-tracks. But you can't always be sure. There's a little trick they pull out here. They have the peeps dressed up with paper maché coverings that make them look like light tanks. They drag empty gas cans and logs behind them to help stir up dust. When you run into anything like that from the air you must be very careful. Otherwise you'll have your people out chasing the paper tanks while the real ones smack you somewhere else."

Air support is the big problem of the desert maneuvers. The United States Army in the western desert of California is trying to develop a combination ground-air striking force that can move with speed and power. The highly mobile tank units can strike and be gone within a margin of minutes. To be effective, combined tank and air operations must be co-ordinated to the split second.

The low-flying elements of the air support unit must strike immediately in front of the advancing tanks. They must be devastatingly swift. The attack lasts only a few seconds; then the tanks and the armored infantry take over. From there on in, with

(Continued on page 34)

Technique

SUBSTITUTES

A Short-Cut to Victory

CRITICAL shortages of raw materials are more of a challenge than an obstacle to engineers of the Army Air Forces and the aviation industry.

The biggest challenge so far—the aluminum shortage—is being conquered by the successful introduction in large quantities of plastics, plywood, fiber, steel and wood into airplane manufacture. The use of these materials saved over 30,000 tons of aluminum up to September 1, 1942. The substitution of wood for aluminum in training plane propellers alone has saved over 250 tons of this vital aviation material.

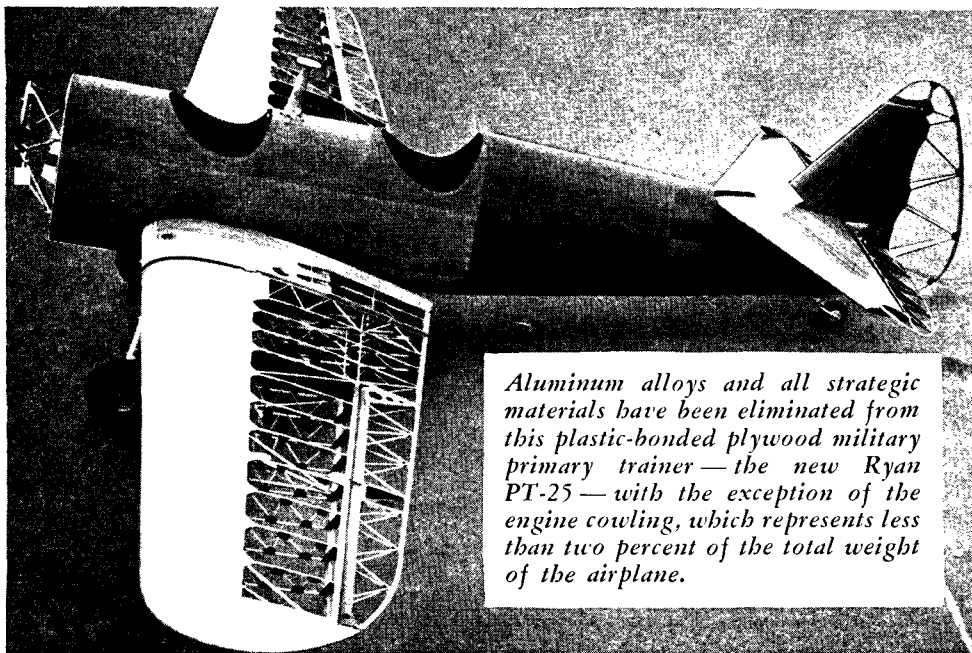
The next biggest challenge—rubber—is being taken care of just as successfully. The discovery and utilization of non-critical materials have so far reduced crude rubber consumption on over 600 different items of equipment, and completely eliminated its use from over 250 more. The largest single saving of rubber—10,000 tons—was accomplished through the development of a new self-sealant for fuel tanks that requires 25 percent less crude rubber than formerly.

This big saving has been augmented by

such other "tricks" as substituting plastics and leather for rubber-coated fabrics in cushions and linings, by using felt on seat pads, by eliminating rubber grips from control sticks on certain airplane models, and by utilizing linoleum in the manufacture of bombardier's window mats.

Such discoveries do not come accidentally. Thousands of tests are involved: flight tests, wind tunnel tests and laboratory tests. In the battle to save aluminum, AAF technicians went over every airplane in the Air Forces with a fine tooth comb and microscope. They changed name plates to plastic, compass parts to bakelite, conduit clips to hard fiber, trim tabs and cockpit flooring to fabric-based plastics, and camera parts, instrument cases and hose connections of oxygen masks to steel and plastic.

But aluminum and rubber are not the only materials for which substitutes have been adopted. In two plane types, 33,700 pounds of copper have been eliminated through substitution. Over 420,000 pounds of nickel was saved when the exhaust system of the B-17 was changed to stainless steel.



Aluminum alloys and all strategic materials have been eliminated from this plastic-bonded plywood military primary trainer—the new Ryan PT-25—with the exception of the engine cowling, which represents less than two percent of the total weight of the airplane.

High-grade chrome and nickel is being conserved through the use of lower grade steels that need little or none of the critical materials normally required in ferro-alloys. Bolts, for instance, have been changed from a nickel alloy steel to a less critical molybdenum steel without interfering with the performance characteristics of the airplane.

Other materials, critical because of supply, processing or shipping reasons, are being conserved on an ever-increasing scale. In July the Air Forces cut down its requirements for high octane gasoline by 5,175,000 gallons, its mica requirements by 565,000 pounds, and its silk needs by 98,208,000 square yards.

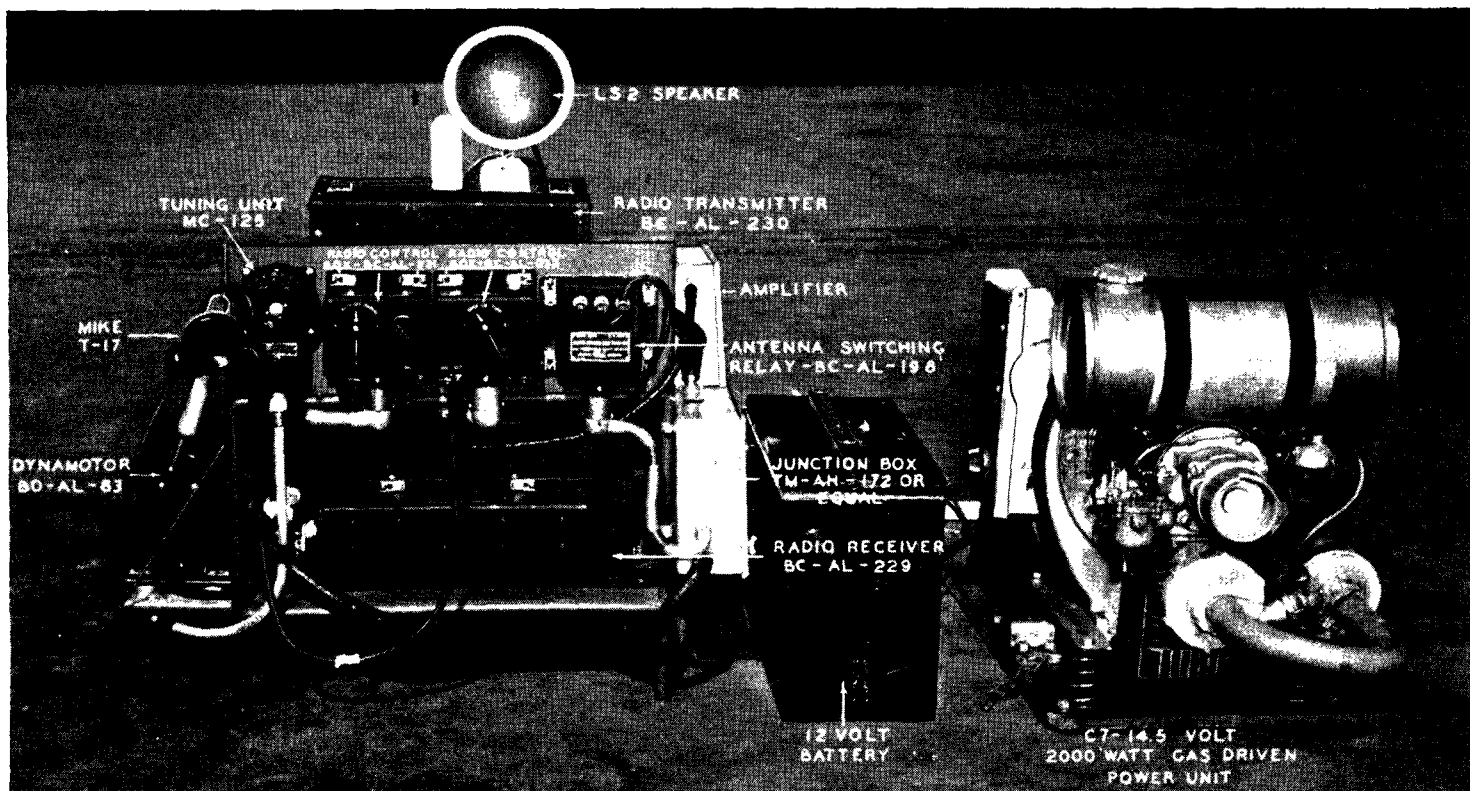
Throughout the search for substitutes, engineers have conducted hundreds of tests to assure the maintenance of adequate safety margins. Some substitute materials have resulted in increased weight, some even in greater strengths than the materials they replaced. Generally, engineers of the AAF Materiel Center at Wright Field believe that all substitute materials now being used on production lines are at least as good as the materials they replaced.

One-Man Laboratory

MASTER SERGEANT DAVID (above) of Wright Field is a one research and invention laboratory. Coming to the Field in 1928 he has out patents on 14 inventions which standard use by the Air Forces, and has 21 more applications now on file.

One of Sergeant Samiran's most important inventions is the segregator device used to separate water from gasoline used in Air Forces planes. began work on this system as far 1921, and has gradually developed until today his segregator pumps (in gas trucks) can deliver 210 gasoline per minute into one tanks. Standard Air Forces gas now have two segregator pumps, mitting one truck to fill planes at the rate of 420 gallons a minute.

Sergeant Samiran's segregator is based on the principle that water is heavier than gasoline. Each segregating unit has a separator which floats on water but sinks in gasoline. The water, therefore, sinks through this separator and drains out the bottom of the container while the line remains above on the



Gunter Field's new radio communications unit.

Flexible Radio Unit

COMMUNICATIONS flexibility has been achieved at Gunter Field, Alabama, through a transmitter-receiver radio unit designed by the staff of the Post Communications Department.

Originally designed as an emergency control tower unit, the transmitter-receiver, with its compactness, light-weight and mobile features, has proved invaluable in many other phases of operations in and around air fields. Its simple design permits inexperienced personnel to set up the outfit and quickly put it into operation.

At Gunter Field the device has proved very efficient in locating the scenes of airplane crashes. This is especially true in mountainous or forest-covered terrain where the spotting plane, after locating the wreckage, conducts a radio-equipped command car to the crash via the shortest route.

The unit has also proved extremely successful in controlling air traffic for night flying. When auxiliary fields are used, a reconnaissance car equipped with the unit may be dispatched to the field and used as a base for ground-to-air communications from radio set SCR-AL-183. Another use has been discovered by the Gunter Field Provost Marshal, who utilizes it on his military police cruising cars. These cars, making their patrols on the post and in nearby Montgomery, keep in constant touch with the city police radio, the post military police headquarters and the control tower.

The original device was built under the direction of Lieutenant W. R. Sturges, and has since been improved by Lieutenant R. J. DiMartino, Post Communications Officer, and the personnel of his department.



Sergeant Wiplinger operates the new "mechanized" pre-oiler

No More "Burn-Outs"

ENGINE "burn-outs"—long a curse of aviation technicians—have been almost eliminated at the Albuquerque Air Base, New Mexico, by means of a mechanical "pre-oiler" developed by Captain William Hamrick, Chief of Albuquerque's Engineering Division, and Staff Sergeant Bernard Wiplinger.

Every time a burn-out occurs it means a new engine must be installed while the damaged one is removed, crated, and sent to an air depot for rebuilding, with a consequent wastage of valuable time, mechanical skills, and equipment. Often planes with burned-out engines are out of service for a week

or more. This, to Captain Hamrick and Sergeant Wiplinger, was a situation that could stand correcting, and they set out to do something about it.

First they studied the cause of burn-outs and found that most were attributable to the haphazard and varied methods by which most AAF engines were oiled before flight. Since this was done manually, it was impossible to achieve any kind of uniformity and guesswork was often resorted to. Periodic burn-outs were the result, sometimes within 15 minutes after engines had been tuned up.

In his search for an answer to the problem Captain Hamrick went first to the commercial airlines. Although their system proved impractical for AAF adaptation, it did provide him with an idea.

After experimenting with the idea on an assortment of pumps, solenoids, power units and other miscellaneous equipment, he was finally ready to begin construction. This was Sergeant Wiplinger's job. From a selection of used airplane parts he made the first machine, consisting of a pump energized by a battery unit, an oil reservoir with a capacity of two and one-half gallons, a hose attachment and a set of regulating instruments, all controlled by a central switch.

After a number of preliminary tests and final adjustments the machine was given a final test in actual maintenance of "line" planes. It was a success. Over a period of two months 15 planes were pre-oiled with the machine and not a single burn-out resulted. In addition, the time required for pre-oiling was reduced from two hours to approximately 15 minutes.

Plans for the standardized use of Captain Hamrick's pre-oiler throughout the Air Forces are being formulated.

Park Trainer Aids Aerial Photography

ONE of the most valuable pieces of aerial photo equipment to come out of AAF laboratories is the Park Trainer—a photographic training device invented by Lieutenant Colonel W. Sidney Park, formerly of Lowry Field's photographic school.

The Park Trainer is to the aerial photographer what the Link Trainer is to the aviator. Simulating actual flying conditions, it



Colonel Park Inspects His "Trainer"

gives prospective aerial photographers a thorough realistic training on the ground before they take the air.

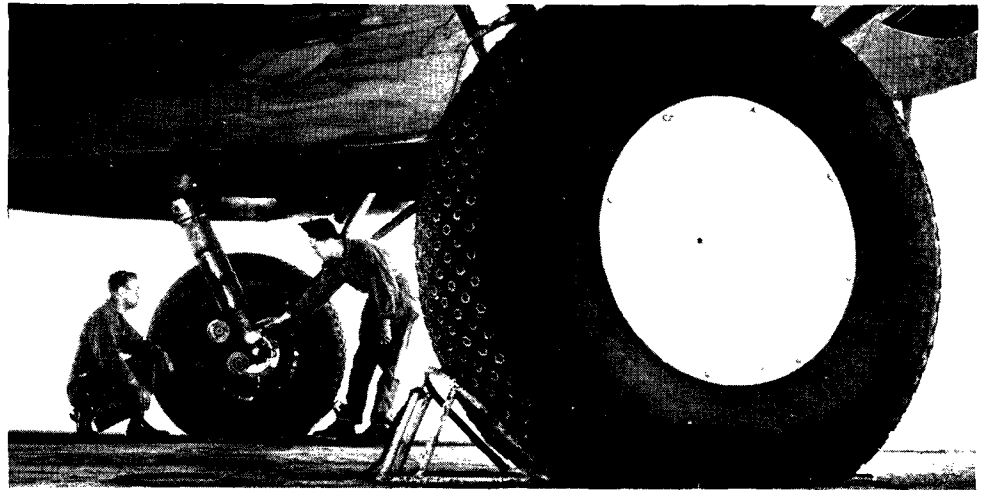
Operation of the trainer is intricately clever. A cabin is equipped with a standard camera and view finder. An image of mosaic, or aerial map, moves across the ground glass in the view finder in the same manner as the landscape moves across the view finder in a real airplane. The cabin can be tilted, and "crab" (turning of the plane into the wind to offset drift) can be introduced to require corrections by the photographer.

Pictures are not actually taken by the device, but it does record how accurate actual photos would have been. In these calculations it automatically records the crab and tilt the student had to overcome.

"An average student," says Colonel Park, "will have obtained sufficient practice after about 10 lessons of 15 minutes each to take vertical mapping pictures as well as the man who has a great many hours of actual experience in the air." This shortens considerably the long hours of flight training usually necessary for aerial photographers.

This is not the first venture into photo experimentation for Colonel Park. He has also built the Park aerial precision camera and is a veteran of over a quarter-million square miles of flying shutter work. He is now on duty at Bolling Field, Washington, D. C.

The colonel began work on his trainer before he came into the Air Forces two years ago.—Sgt. Jack Angell, Lowry Field.



Because conventional airplane tires having all-rubber treads usually skid on slick ice and snow, a new type tire with sharp cylindrical inserts that look like beer-bottle caps are being manufactured for the AAF to guarantee safe winter landings on northern airfields. A pair of the new tires, with their "ice-grip tread" visible, are shown above.

New Photo Fluid

OUT of the dark room of the Photographic Section, Shaw Field, S. C., has come an improved photographic developing formula which not only removes defects in over-age film but increases sharpness of detail.

The formula was discovered after a month of patient experimenting by Corporal Steve Gouzeas and Pfc. Clarence Leino. It is a developer formula that provides for normal film speed, good tone range, normal contrast and fine grain. Even when photographs are enlarged up to a hundred times their original size, they still retain their detail and contain a minimum amount of grain.

In the new mixture, which is called "Lego," there is a preponderance of sodium sulfocyanate. According to its discoverers a new formula can be mixed at a cost of 75 cents a gallon and it has excellent keeping qualities.



B-17s Get New Filter

A NEW air filter, developed by Colonel Leslie G. Mulzer, commanding officer of the MacDill Field Sub-Depot, Florida, has simplified maintenance of the Flying Fortress and increased engine efficiency by 300 to 400 percent.

The filter, perfected and first put into experimental use at MacDill Field, is now standard equipment on all B-17s.

By covering the air intake opening and preventing particles thrown up by the propellers from accumulating in the engine, the new device has kept sand and grit out of the carburetor induction system and greatly lengthened the operational period of Fortresses between overhauling.

Before adoption of the filter the average period of operation for B-17 engine was 40 hours. Colonel Mulzer's invention has boosted this time to as high as 700 hours, by minimizing the wear on the piston rings.

"Our chief trouble before," the colonel explains, "was feathering of piston rings, but the filter has counteracted this."



Captain L. B. Whitfield, MacDill Field, shows a prospective gunner of the Third Bomber Command the finer points of aerial gunnery on his turret-mounted shot gun.

ALASKAN OFFENSIVE

(Continued from Page 5)

He'd have to be a weather-hardened poet, to be sure. The Aleutians are up where the weather begins. Strictly impartial, the weather protects friend and foe alike. But too often the unpredictable mists that sweep over Kiska Harbor provide the Hirohito clan with the afternoon, and sometimes the next day or two, to repair the damage that bombers and fighters have spent all morning inflicting.

Crewmen of the Air Force up there don't bother to pray for impartiality, or decent weather. All they ask is half-decent, even tenth-decent weather—any kind of weather that will give them two or three shots at Kiska the same day; if possible, for two or three days in a row.

BUT after a summer and fall of it, the Air Force has grown used to the weather and used to life in the Aleutians, despite the fact that life goes on pretty much the same day after day. After Dutch Harbor, headquarters became the advanced base from which land-based planes operated during the raid. On that gray, treeless island, home became a tent dug in against strafing, and friendly rivalry developed over whose tent would be best prepared for the hard winter. Revetments were dug around each tent; lumber was carefully "salvaged" to make doors and sketchy flooring. The grass that tried to grow during the summer turned out to be a pale green in color; a patch of radishes planted for a "victory garden" sent up sprouts only one inch high in three months.

Wells were dug almost anywhere to furnish cooking water. The water was close to the surface and digging was easy. The men even found a way to take a hot shower. They dug up a 55-gallon water tank, fitted it with intake and outlet spigots and attached it to a pipe of icy water. When the water reached the right level they poured fuel oil on top and tossed in a match. After a decent interval of pyrotechnics, they could risk a warm, if somewhat smoky, shower bath.

Life on the base has always been dominated by the constant raids on Jap installations. And the long list of decorations awarded since Dutch Harbor proves that the Air Force takes its chances on fog and ice and tricky crosswinds, on long hops over water cold enough to freeze a man in 20 minutes, and on all the Zeros and ack-ack the Japs can get into the air.

"For repeated day and night over-water instrument flights during icing conditions in the Aleutians to attack an armed enemy," is the phrase most often used in official citations. "Going the full range of the ship without regard to the safety margin of fuel," is another phrase that appears regularly. Citations describe "flights in bad weather under a ceiling of from 50 to 300 feet in an attack on an enemy naval concentration." Still others cite transport missions carrying personnel and vital supplies, flying unarmed and unescorted over hostile areas

patrolled by enemy craft. The list of citations is long. Many of the awards have been posthumous.

Weather be damned, the battle is being won. The occupation of Attu, Agattu and Kiska islands has been hard to crack.

But Jap installations did not long remain a lengthy over-water jump from the Dutch Harbor area. Something new developed in the Aleutians.

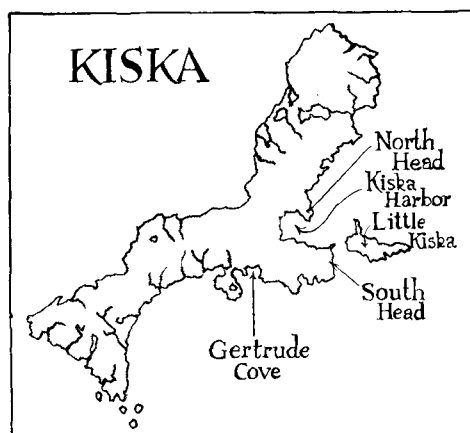
It started one morning as August drew to a close, when a strange collection of American surface craft was herded within the protecting area of its convoy. The collection ranged from huge transports to the little tug towing a four-masted schooner loaded to the gunwales with gasoline and a thousand and one miscellaneous items. Curtained by fog, the surface vessels headed westward.

Not a Jap plane marred the murky sky or a Jap warship the gently rolling sea as the convoy crept at a snail's pace past the rocky shores of the Andreanof Islands. The armada reached the shelter of the island harbor without a shot being fired.

THE rattle of the anchor chains in the hawse pipes had scarcely died away before the troops under full field equipment clambered down the rope nets into the landing barges. Driving rain and high seas soaked most of them to the skin but also assured the absence of enemy air attack. Soon anti-aircraft and coast batteries were set up along the low hills to support the guns on the ships covering the landing operations. Jeeps, command cars, trucks and caterpillar tractors began splashing toward the beach.

There were not enough trucks to go around, but that didn't stop them. From pilot to tail gunner, crews pitched in and carried, mostly on their backs, all of their equipment from the beach to the airfield that was fast taking shape under the noisy pushing of the Engineers' bulldozers and cats. Then for 10 days the men of the Air Force ate out of tin cans and got by with only snatches of sleep.

The expedition landed on a Sunday morning, August 30. The fighter planes peashooters they call them dropped out of the sky September 11 onto as smooth a run-



way as could be found anywhere—that is, anywhere in the Aleutians. Two days later came the B-2's. Although the Japs on Kiska did not know it, the mission that paid them that blasting visit on historic September 14 took off from an island airfield that had been nothing but an uninhabited waste of tundra-covered volcanic rock just 15 days before.

That was the occupation of the Andreanofs, which based the Army Air Forces some 200 miles from Kiska Island.

It didn't change the weather. Nothing could change that. But the occupation of the Andreanofs placed the Air Force within fighter striking distance of the Japs in the Aleutians. It permitted scenes like this:

In his headquarters hut on one of the Andreanof islands, Major Wilbur Miller, fighter squadron commander, sat at the end of his cot and leaned against his "desk," improvised from an empty ammunition packing box, while he called the roll from a pocket notebook on his knee. Squadron pilots, many of them with Jap planes to their credit, answered quickly as their names were read off. Stuffing his notebook back in his pocket, Major Miller tore off a piece of wrapping paper from a package under the cot and sketched a rough semi-circle representing Kiska Harbor.

"You all know that harbor well enough by this time," he began in a tone as conversational as though he were outlining a training flight instead of the plan for the next day's mission, "so I won't need a map. Here's the dope for tomorrow.

"We'll follow the photographic ship over and rendezvous five miles southeast of Little Kiska." He outlined a circle route east of the harbor and drew a line. "We'll come in on the south side of Little Kiska," he said.

Now, our objectives are anti-aircraft guns alone this time. The bombers have been getting it pretty heavy and we've got to knock off every gun we can before they come over. We'll have two minutes to get in and out before the bombers are due so we'll have to get out of the way fast."

He looked up to impress his audience and pushed back his fedora hat, with its major's leaf pinned on the front of the round, uncreased crown; it was the only relic of civilian life on the island.

"I don't want anyone wandering around chasing Japs tomorrow," he warned, "so leave the camp areas alone." He joined in the grin that spread around the circle of faces. He referred to an incident which had given the Air Forces its biggest laugh to date. The incident occurred during a strafing raid not unlike the one they were now preparing for. One of the fighter pilots had caught a Jap with his pants down—literally. Winging in low over the camp area on Kiska, he found himself bearing down directly in the path of a Jap dashing half-dressed from a tent and running for more solid cover. The pilot got to laughing so hard at the little figure with the huge strides that he almost forgot to pull the trigger.

"Now for those who weren't over this morning," the Major continued, "the anti-aircraft guns haven't been firing when we come at them. The Japs have been keeping their heads below the revetments until we get past 'em and then popping up to shoot as we're going away. The wing men have got to watch that. When they pop up to fire at the lead plane, the wing man has got to knock 'em down again.

"Joe, you follow me in. We'll go in over the south side of the harbor, circle around and duck out over that ridge just before we get to the head on the north side. We'll circle off shore until the bombers have dropped everything, but don't get away.

"Chuck, your flight will go in over the north head and swing around to come out toward the southwest. Tom and Bill, I want you to be top cover and stick pretty close to the photographic plane. One of those Zeros might get too close. Red, your flight goes straight in for those ships in the harbor. The bombers say the most accurate anti-aircraft fire is coming from that destroyer and that other ship you'll find near it. Come in low, deck level or lower if you can. The Japs can't get those guns of theirs down very well.

"Mac, you're to spend all your time looking for submarine nets. I don't care if you don't fire a shot. Don't, unless someone shoots at you. You fellows with the P-40s will go with a bomber that's to look over Gertrude Cove on the south side of Kiska. Somebody thought they saw a couple of subs in there this morning. If you don't find anything, you can come over and join us. There's a little valley that runs from Gertrude Cove almost over to the harbor, but be careful you don't get tangled up with us. You'd better wait until the bombers have finished and you'll only have Joe and me to watch out for in case we have to come back for another shot at those float planes just north of the dummies. Any questions now?"

"What time do we take off?"

"Who's going?"

The Major pulled out his notebook again and read off a list of names.

"The rest of you will get to go in the afternoon if the weather holds out," he said. "Takeoff will be at 7:15. Be there at a quarter of seven. You can get chow starting at a quarter of six. Any of you that haven't got alarm clocks be sure to tell the sergeant so he can wake you in plenty of time. Now get a good night's sleep."

Next morning, back in the headquarters hut of Brigadier General William O. Butler, commanding general of the Air Force, a little group of officers and enlisted men sat huddled around the radio. On schedule to the minute, they could hear the rasping voices of their fighter pilots, punctured with static, as the pea-shooters dove down over their targets at Kiska.

"Look out, Bill, there's one above you."

"Take that one, Ed, I'll cover."

They drew closer to the radio to try to make out the voices. It didn't take much

imagination to picture the hurricane of fire being loosed by the .30s, the .50s and the 37 mm. cannon from the pea-shooters. Then came sharp commands over the radio as the bombers swung into action. A few minutes of breathless, unseen action and then out of a welter of calls, answers and hurried warnings a strange voice was heard clearly.

"Where you going now, Eddie?"

The Jap radio operator on Kiska even had the name right as he tried to draw out the raiders' next move.

There was a fraction of a second of relative silence; then came the answer in an unmistakable Texas clenched-teeth drawl that not even a throat mike could hide.

"None of your goddam business, you Jap ——— ! I'll blow your radio shack off that damned island."

A torrent of profanity drowned out the static and fairly made the little table radio at headquarters writhe. The General pushed back his chair and threw up his hands. "I thought I knew some cuss words," he muttered.

Then came the Jap voice again, a little less well disguised this time in the heat of the excitement.

"Come back here, you American ——— . You die."

"We'll come back, don't you worry. With more bombs, you ——— ."

Then a sharp call for the PBY rescue ship. The call brought the little group to the edge of their chairs.

"P-39 down just west of Little Kiska," it said.

The group around the radio exchanged glances. That would be almost in the mouth of the harbor.

"Drop a life raft, somebody," they heard next. Then:

"Where is it? Where is it? Can't see it from here."

THE group around the radio at headquarters discussed the chances of the fallen fighter pilot as the planes returned from the raid.

All the B-24s returned; all the pea-shooters but one came back. In little knots along the runway the crews talked excitedly.

"I saw him get out of his ship," said a pilot. "He was floating on his back waving me on but I don't know whether the PBY found him or not. It was pretty close to those guns of Little Kiska."

"Maybe the Japs picked him up," added another. "He came down just outside the harbor."

Lieutenant A. T. Rice, who got two of the five Jap float planes bagged that day, swore softly to himself. "I'd trade the two I got in a minute for the one that knocked him down," he said.

The ground crews were swarming over the pea-shooters, removing empty ammunition belts, checking motors and surveying the bullet holes in wings and fuselage.

"Hey, Sarge, I need a new aileron." A tall, rangy pilot who looked as though he never would be able to fold himself into

the cockpit of a P-39, wiggled the left aileron, half shot away by an enemy anti-aircraft shell. "Here's something for the scrap metal collection, Sarge, but the controls worked OK all the way home."

Another pursuit pilot turned over in his fingers a bullet he had fished out of the ammunition compartment in front of the cockpit and whistled softly to himself, "I wonder where that one came from." A slap on the back jarred him.

"Well, Jack, I'll tell you. It came from the late Tom Tojo, or maybe he was Sam Saki, pilot of one Zero float plane just fresh deceased. He's now fish food in Kiska harbor, thanks to your very fine work as a decoy."

"Decoy, hell. I never even saw him. All I saw was tracer bullets whizzing by both sides of the cockpit and I sure pulled in my elbows. Where did he come from?"

His companion shrugged his shoulders. "Search me. All of a sudden he just appeared out of the nowhere into the here, as my Dad used to say to me. He flew right into my sights, practically. One burst did it."

Jack gulped ever so slightly. "Thanks, Pal, I owe you three beers. Those Zeros sure can climb like hell and turn on a dime, but I wouldn't trade this old battlewagon for one of them." He counted an even dozen bullet holes in the wings and fuselage. "Those Zeros can't take it."

On the other side of the landing strip the bomber crews were stretching their legs and sticking their fingers curiously into bullet holes. In one B-24, just above the side gunners' port, there was a hole about the size of a porterhouse steak, the jagged edges curving outward. An ambulance rolled to a stop beside the plane and a leather clad figure slid slowly to the ground from the rear floor hatch. He was holding a bloody rag to his mouth. Two stretcher bearers quickly grabbed him by the arms and placed him on the stretcher.

The tail gunner stuck his head out of the side port. "Skippy's all right, fellows, all the Japs got was his moustache. He can grow another one in six months."

As the stretcher was being lifted into the ambulance, the top turret gunner rushed up.

"Say, Skip, I got that guy. He came up from below shooting into the bomb bay as soon as the doors were opened and was too low for me to get at, but when he climbed around to get on our tail I gave him hell. Have you ever pulled both barrels on a partridge? All you can see is feathers. That Zero got everything I had left, almost 300 rounds, and all you could see was feathers."

So it goes with the Air Force in the Aleutians, day in, day out, in fair weather sometimes, but mostly foul, with no one able to tell from one hour to the next what the weather will be. During the winter months the gale comes in at 100 miles an hour or more, and sometimes it lasts for days.

Not long ago the boys were suggesting that a 500-pound bomb be rigged as a wind sock.



ROLL of HONOR

DISTINGUISHED SERVICE CROSS

MAJORS: G. E. Globber, Floyd J. Pell*. **CAPTAINS:** James J. Bevelock, Jack E. Caldwell, William J. Cummings, Walter Putnam, John P. Randolph, Charles R. Sneed, Henry G. Thorne, George W. Thronbrough*, Donald R. Strother*. **LIEUTENANTS:** John Brownell, Perry L. Franks, Raymond M. Gehrig, John G. Glover, Charles W. Hughes*, R. H. Johnson, Samuel Marett*, Robert F. McMahon, Jack R. Pares*, Elton S. Perry*, Burt H. Rice, Edward T. Sconiers, H. W. Smith, Richard F. Starks (Also Purple Heart), C. B. Walker, William R. Walker. **MASTER SERGEANTS:** Alva S. Hascall, Charles Reeves. **STAFF SERGEANTS:** E. M. Caton, H. R. Inman. **TECHNICAL SERGEANT:** C. B. Phillips. **SERGEANT:** J. T. Sanford. **CORPORALS:** R. A. Fries, R. L. Holliday, J. D. Lillis.

DISTINGUISHED SERVICE MEDAL

LIEUTENANT GENERAL: Henry H. Arnold.

SILVER STAR

MAJOR GENERAL: Ira C. Eaker. **COLONELS:** Frank Armstrong, Harry A. Halverson. **MAJORS:** Alfred Kalberer, Frank Sharp. **LIEUTENANTS:** William R. Auman*, Robert C. Brown*, Dean Davenport, P. Dimmit, James Egan, Oliver R. Franklin, Chester J. Kacmarik*, Donald Mitchel, Cecil E. Paterson, Elzac Shahan, Warren Williams, Herbert F. Wunderlich. **FIRST SERGEANTS:** Elwood F. Miller, Carl N. Mosher. **STAFF SERGEANTS:** Jim L. Bragg, Freebourn E. Durrett*, Leonard A. Gallant, Melvin C. Staerk*, James B. Wincy. **SERGEANTS:** Worth A. Epling, Joseph Gagnon, Perry Gusic, Robert Kessler, Howard L. Krantz, Robert E. Pledger*, Cecil A. Rogers, Walter J. Sidler. **CORPORALS:** Philip D. Barton*, Clifton C. Heath*, Floyd J. McCormick*, James E. Wood*. **PRIVATES FIRST CLASS:** Robert D. Chapman, Martin T. Grady, Francis J. Teehan*. **PRIVATES:** Kenneth W. Berry, Sanford L. Caviness.

PURPLE HEART

COLONEL: Newton Longfellow. **MAJOR:** Paul W. Tibbets, Jr. **CAPTAIN:** Kermit Messerschmitt. **LIEUTENANTS:** Irving Berman*, Charles Chuteridge, Edwin Cihak, Francis Cornwell*, James P. Ferry, Roy Gallaway, Charles B. Guthridge, Maurice Horgan, Arnold Johnson, Eugene M. Lockhart, Frederick A. Lochrl*, Joseph P. Moore, Winfield E. McIntyre, Jr., Russell O. McKray, Joseph D. Nave*. **MASTER SERGEANT:** Fred Peoples*. **STAFF SERGEANTS:** William A. Adams, Eugene Davis, John M. Hughes, William W. Schimke, William J. Watson*. **TECHNICAL SERGEANT:** Harry M. Hayes. **SERGEANTS:** Jack E. Falatic, Kenneth R. Gundling, Herman S. Hagg, Harry O. Hill, Farris M. Humphries, Julius L. Kleiman*, Raymond Mayo, Ralph E. Mouser, Orval V. Paul*, Robert F. Price, Frederick J. Rich.

*Posthumous

DISTINGUISHED FLYING CROSS

COLONELS: Truman H. Landon, Arthur W. Meehan, Roger M. Ramey. **LIEUTENANT COLONELS:** Richard H. Carmichael (Also Silver Star), Loren B. Hill-singer (Also Purple Heart), Russell Waldron. **MAJORS:** Jack W. Berry, Paul C. Davis, Marion N. Pharr. **CAPTAINS:** Harry N. Brandon, John Daugherty, Thomas F. Mansfield*, David C. Rawls (Also Silver Star), Harold G. Slingsby, Jack F. Todd*, Warren Wilkinson. **LIEUTENANTS:** Milton C. Barnard, Frank R. Beadle, Roy R. Bright, Barrie Charles Burnside, Carroll J. Cain, John Jarvis Cape, Jr.*, Lester M. Chester, James Alexander Dale, Myron J. Grimes, Harold P. Hensley, Samuel Junkin, Jr. (Also Purple Heart), Paul M. Lindsey, Clarence W. Lipsky, Morris E. Mansell, Jr., Kenneth W. Northamer, Benjamin Pashall, 3d, Levon L. Ray, Hubert P. Sage, 2d, Robert O. Scheible. **STAFF SERGEANTS:** Roy T. Halley, James C. Simmons (Also Purple Heart). **TECHNICAL SERGEANT:** Kirby W. Neal. **SERGEANTS:** Christy A. Faith, Gilbert C. Goar (Also Purple Heart), Zackie T. Gowan, Adam R. Jenkins, Jr., William E. McIntosh, Roy T. Nalley, Felix A. Trice, Rudolph Turansky. **PRIVATE:** Joseph M. Walsh.

SOLDIERS MEDAL

LIEUTENANT COLONELS: Bernt Balchen, Morris J. Lee. **CAPTAINS:** Philip G. Cochran, Charles R. Fairlamb, J. E. Walther. **LIEUTENANTS:** William N. Boaz, Wesley F. Cummins, Everatt Davis, James A. Hilton, John H. Rose, Ralph G. Taylor, Jr. **FIRST SERGEANT:** Ben W. Quarles. **STAFF SERGEANTS:** Ralph F. Asbury, Joseph F. Augustyn, Joseph E. Denning. **TECHNICAL SERGEANT:** Billy Gribble. **SERGEANTS:** Morris E. Hicks, Russell J. Liller, Howard C. Muse, Russell E. Robbins, Charles C. Rupert. **CORPORALS:** Merrill R. Hyde, Fred D. Parler, Marvin H. Potts. **PRIVATES FIRST CLASS:** John W. Hamilton, Edwin McC. Fultz, Monroe D. Johnson, Franklin H. Neumann. **PRIVATES:** John Bilinski, Dean W. Bredenkamp, Joseph D. Healy, F. Q. Palombi, John Polychron, Jr., C. F. Santo.

AIR MEDAL

BRIGADIER GENERAL: St. Clair Streett. **COLONELS:** C. P. Cabell, William L. Ritchie. **MAJORS:** C. A. Peterson, Robert Alva Ping, Charles F. Stanall. **CAPTAINS:** Robert F. Arnoldus, Marshall A. Elkins. **LIEUTENANTS:** John T. Beals, Edward P. Clark, Carl A. Hansman, Guy C. Kinter, Robert S. Porter*, E. A. McCabe. **STAFF SERGEANTS:** James W. Hemenway, Robert A. Rhodes, William T. Sexton. **SERGEANTS:** Curtiss G. Burgdorf, Robert Fulton, Ritchey H. Thompson, John H. Works. **CORPORALS:** Irving J. Eagle, Robert Kanepi, Bernard F. Hovelmen, Samuel J. Taylor. **PRIVATE FIRST CLASS:** Walter D. Conerly.

From top to bottom:
Captain Charles R. Fairlamb, Lieut. Kenneth W. Northamer, Major Robert A. Ping, Major G. E. Globber, Major Frank Sharp, Captain Jack E. Caldwell, Major General Ira C. Eaker and Captain Marshall A.

The distaff side is fighting too—shoulder to shoulder with men workers in air depots and offices throughout the nation.

ALMOST everyone knows about the WAFS—the first women fliers in the history of the Army Air Forces. The announcement that 50 civilian pilots would form the Women's Auxiliary Ferrying Squadron to deliver training and liaison craft from factory to field has aroused nation-wide interest. And justifiably so.

But not so well known is the fact that for every woman flying an Army plane, more than 1,000 women are serving the Air Forces on the ground. That means a civilian army of some 55,000 women behind the men behind the planes.

Personnel officers tell us it is only the beginning. The Technical Training Command, for instance, is planning for the day when 40 percent of all its civilian employees will be women. The Air Service Command estimates that in the future 75-80 percent of the civilian employees in its supply departments, 50 percent in its engineering departments and 80 percent at its Headquarters eventually will be women.

At our huge air depots and busy sub-depots former waitresses, now slack-clad and goggled, puncture sheets of metal with powerful electric drills; beauty operators have traded hair-curling gadgets for flaming acetylene torches; co-eds drive "elephant" trains; mothers who not long ago were darning Junior's socks now stitch fabric wing surfaces and pack parachutes; salesgirls and housewives in fume-filled rooms spray paint on fuselages; school teachers operate bandsaws on precision woodwork tasks; high school graduates in their first jobs hammer sheets of tin into ribs, and clean and repair generator cables.

Women dispatchers direct planes in and out of McClellan Field, California. Women teach parachute rigging and teletype operation to the men of Chanute Field, Illinois. Women train as grease-monkeys at Maxwell Field, Alabama. Women study to become radio instructors at Scott Field, Illinois. Women operate printing machines at Duncan Field, Texas. Women repair aircraft radios at Hill Field, Utah. Women serve as dental hygienists at the Santa Ana Air Base. Women train at Bowman Field, Kentucky, and Randolph Field, Texas, as doctors' assistants for actual flight duty in aerial ambulances. Women have taken over the parachute department at Langley Field, Virginia. Women dash about Keesler Field, Mississippi, as messengers on motor scooters and bicycles. Women drive trucks, staff cars, and jeeps at dozens of airfields.

As Air Force procurement inspectors at several aircraft plants, women check the work of other women employees to see that



WOMEN in the Air Forces

By Charlotte Knight

it meets rigid government requirements. Women cartographers and geological survey draftswomen do highly detailed map work. Others serve as meteorologists and weather clerks. At Wright Field's enormous Materiel Center, women work as metallurgists, physicists, aeronautical engineers, chemists, statisticians and economists. As laboratory technicians, they develop pictures in photographic darkrooms, test and analyze materials, conduct experiments with glass and plastics.

Thousands more sit behind typewriters, business machines, telephone switchboards and teletype machines at nearly every Air Force field and station in the country. Camp

librarians, service club hostesses, auditors, clerks, bookkeepers. Day-laborers, gardeners, janitors, laundresses, cooks. "Jills of all trades" keeping 'em flying—quietly, efficiently and without fanfare.

A few months ago fliers were astonished to be met by women driving tugs, and grease-smeared ladies in slacks clambering on their planes and taking over. But they are getting more and more accustomed to shouting: "Hey, lady, how's about gassing up and checking the tail wheel?"

The first all-woman aircraft maintenance crew took over a damaged multi-motored plane recently at Ellington Field, Texas. Other fields are following suit. Girl gradu-



Mrs. Pauline Brooks brings patience and skill to her radio repair work.



Miss Virginia Cabell is one of many thousands who work in war offices.



A neat spot welding job is handled professionally by Miss Jeanne Brady. Below, Miss Jackie Hoschall speeds important war messages on their way.



ates of a Texas aircraft school proved to be such capable mechanics that their flying school bosses at Lubbock Field are looking for more like them. Maxwell Field opened the Air Forces' first aircraft school for women last spring. The school now turns out experienced workers who can take a smudge on the chin and like it.

At the Ogden Air Depot at Hill Field, Utah, which serves as supply, repair and maintenance station for the mountain states, you will find more than 2,000 women at work and another thousand in training. You'll see middle-aged women, their faces visible behind plexiglas masks, operating lathes and milling machines, repairing and making parts for the planes their sons are flying. Many of the younger ones get someone to look after the children while they take their places in the aircraft electricity shop, the cloth-cutting rooms and the engineering section. Scores of school teachers from the Rocky Mountain States used their summer vacations to work as classified laborers; some are staying on. You'll see them nailing cases shut, sorting and packing warehouse supplies and keeping hundreds of thousands of machine parts in order as supply clerks and stock tracers.

With few variations, it's the same story at any big Air Force supply station. At McClellan Field women water the acres of green lawns that surround the depot buildings, operate electric mowing machines, and trim the tall evergreen shrubs which give the place a country-estate appearance that belies the activity inside. Between the warehouses, you see girls—"stock chasers," they call them—collecting and delivering supplies from one part of the field to another with small tractors. Out on the runways, other women sit atop tugs, with flag markers in their hands, guiding a plane to its parking space. When the pilot leaves his ship and enters the operations office he is checked in by one of four girls who have the distinction of being the first full crew of

women airplane dispatchers in the Nation.

"We're using women dispatchers as guinea pigs," their supervisor explains. "We couldn't get trained men of non-draft status so we decided to try out the girls on a very tough assignment to see if they could take it. They can. We selected these girls from dozens who came in when we sent out the call. We required that they have a good educational background and know how to study, be 25 or under, have emotional stability, better than average tact and an excellent memory. After all, it's up to them to get these planes in and get 'em out again. That's a pretty tall order but these girls have certainly measured up to it, and the results of our experiments should prove to others that women can do the job." Three of the girls are college graduates. One was a school teacher. The fourth is the wife of an Air Forces flier who is on combat duty overseas.

THE foreman in the woodwork section at McClellan points out a diminutive brunette as a typical woman worker under his supervision. "For weeks she spent an extra three hours a night in classes, in addition to working her regular eight hours," he comments. "She is painstaking, capable and ambitious. She's had three raises in the few months she's been working here and now is making about \$1,800 a year."

The girl in question is absorbed in an intricate wood pattern, but stops her machine to answer a question. "Dull? Heavens no. This is the most fascinating job I ever had." She points to the blueprint before her. "You see, we are given one of these, and then we just go ahead and make up whatever it says. I really don't know what part of the plane I'm making. But it can't become boring, because as soon as I finish this they give me another blueprint and I start all over from scratch. The toughest part of it was getting used to reading blueprints,

but once you get on to it, it's fun." Here's how a goggled, red-haired, 32-year-old welder at the same field sums up her job: "Whoever said this was a routine job didn't know what he was talking about. I've been a saleswoman, worked in stores and offices and done all sorts of white-collar jobs, but I'll take this any day. I'd like this type of work after the war. The men in this section treat me just like one of the gang and that's what I want."

The blonde working with an electric drill nearby happens to be the national women's pistol champion. In her off-duty hours she organized an auxiliary police squad made up of several women at the field and has taught them the finer points of target shooting.

In a large, sun-lit room upstairs several women sit on high stools bending over flight instruments. With a patience which some women are credited with possessing to a greater degree than men, these girls make repairs and adjustments on delicate pressure and balance instruments requiring 100 percent precision operation. Ticklish work, this. Very little talking goes on in this room; wholesale concentrating doesn't permit it.

In one corner, with a half dozen tiny tools spread before her, a serious young woman is adjusting a bank and turn indicator. She is not to be disturbed. At another bench a woman in her mid-thirties reveals that she sold orthopedic supplies before joining the Air Forces. At the moment she is assembling parts that make up flight goggles and packing them in small containers.

"We have thousands of pairs of goggles to pack and we try to do as many as we can between repair jobs," she comments. "Every once in a while, just for fun, I slip a little note into the box before I close it. Somehow it makes me feel closer to the boys who'll be wearing those goggles... What do I write? Oh, I just wish them luck, that's all."

In the optical section, women work on cameras and camera guns. Several of them in the darkroom have taken men's places as laboratory technicians. They develop and enlarge sections of mosaic negatives from an aerial observer's camera and later piece them together to form a large-scale view which sometimes covers an entire wall. This is not as simple as it sounds and getting these various pieces of an unknown aerial view to fit into a glorified jig-saw puzzle requires considerable skill. The girls have been doing the work for several months now and are as expert at it as the men. "I have a boy-friend in the Air Forces," one of them explains, "and I wanted a job that had to do with flying. This fills the bill."

At Duncan Field, at Sheppard, Patterson, Langley, Will Rogers, the Spokane Air Depot and at several other large stations you find women comprising from 30 to 50 percent of the mechanic-learner classes, and the figure will probably rise sharply in the next few months to meet the increased demands imposed upon the aircraft maintenance division of an air force stepped up

to 2,000,000 men. By the end of the year, it is estimated that 50 to 75 percent of the civilians in technical and mechanical positions at these depots will be women. This calls for an extensive training program, now under way in every part of the country. Women who left peacetime jobs, usually in fields widely divorced from the mechanical, are given aptitude tests to determine their skills in metal and fabric work and instrument repairing. Occasionally, classes are conducted right in the shops of the field itself, but

Our Women Pilots

THERE'S no time for glamour in the Women's Auxiliary Ferrying Squadron. The first contingent recently completed a tough, four-weeks' Army-conducted refresher course at the New Castle Army Air Base near Wilmington, Delaware, and are now ready to ferry light planes from plants to Air Force fields.

Women who want to fly with the WAFS must meet the same rigid requirements as regular civilian ferry pilots. They must have 500 hours flying time, cross-country experience, a commercial license of 200 hp. rating, high school education, American citizenship and must be between 21 and 35 years of age. They'll keep their civilian status and will be paid \$3,000 a year.

Heading the organization is Mrs. Nancy Harkness Love, 28 year-old pilot who has been flying for 12 years and has 1,200 hours to her credit. Miss Jacqueline Cochran, as director of women's flying training for the Army Air Forces, will train women in cross-country flying as part of a program to create a pool of trained women pilots from which the WAFS can draw to meet future needs.

more often in nearby cities. The average class lasts about three months. During this time, the students are paid \$75 a month, the same as aviation cadets. With the exception of Maxwell Field's school exclusively for women mechanics, most of these classes are co-educational.

The women spend 40 hours a week in classes and in the shops. During two weeks of initial basic training, they are taught the background work they'll need in repairing and taxiing planes. Then they are divided up for specialized training in airplane engine mechanics and sheet-metal work. Instructors have found women apt pupils and willing workers. They are put to work on virtually all jobs except final engine installation and landing gear assembly. Hundreds of depot graduates, who agree to go anywhere in the country, are sent to other fields and sub-depots. Currently, the National

Youth Administration also is conducting preliminary courses in aviation mechanics for girls between 17 and 25 at many State centers near large depots. They are paid \$10.80 a month plus room and board for four months. After that, most of them are sent to the nearest Air Service Command installation for further training.

An urgent need of the moment is for women radio instructors. They are needed to teach radio operation, radio repair and radio code to enlisted men of the Air Forces Technical Training Command. Many are in training; hundreds more can be used. If they have had previous radio training, or possess a commercial or amateur radio operator's license, they can qualify for a student-instructor's rating. They are sent to Scott Field, the parent radio school of the Army Air Forces, for a three months' intensive course under experienced civilian and Army instructors. They receive \$135 a month while training and on graduation are appointed junior instructors at \$2,000 a year. Women with more extensive radio experience can qualify for other instructorships at \$2,600 and \$3,200. It's not an easy life. These women instructors put in seven hours a day, six days a week, on an early shift that begins at the crack of dawn or a late one that doesn't end until 10:30 at night.

In the field of meteorology several girls already are working for the Directorate of Weather as "junior scientific aides," compiling weather maps, doing cryptanalytic work, engaging in research on oceanography or making climatological studies.

Hundreds of these women workers left comfortable homes to live in over-crowded rooms, vacant school buildings, dormitories or any place they can find, frequently in towns and cities from 5 to 75 miles away from installations where they are employed. Many fields have set up government trailer camps adjacent to the reservation pending completion of housing projects. Hill Field has 300 units in its "trailer town," all of them limited to married depot workers and their families. At Wendover Field, Utah, the housing problem for girls employed at the field was so acute the Army gave single girls permission to rent trailers. Two girls live in each trailer and pay \$6 a week rent. They are clean and adequately furnished with a double studio couch, table, chairs, cupboards and kitchenette with running water. Bathing facilities are located in community buildings; water is anything but plentiful and its use is often limited.

Girls less fortunate than those living in trailers at Wendover have had to rent small, crowded frame motor-court type "houses" for rents of \$60 to \$80 a month. At present there is practically no recreation for these women when the day's work is over, and the nearest town of any size is 140 miles away. But you'll hear no word of protest. They like to watch the huge four-motored bombers fly overhead and know that they have had something to do with the bombers' being there.

SQUARE PEGS

(Continued from Page 9)

Maxwell Field, when the Pearl Harbor episode took place. Since then, the motto in psychology, as in many other fields, has been "go as fast as you can with what you have."

"What you have" leaves a lot to be desired. Many testing instruments, for instance, require specially-built, delicate timing clocks. At present, it is hard to buy a stop watch. But rapid progress has been made and by now several of the early devices have been replaced by shiny new models carefully designed and engineered to meet the exacting requirements of the research specialists.

Only the ingenuity of the department has enabled it to keep up with the wartime pace. Priorities were hard to get. Commercial orders, when they did arrive, were often inaccurate and useless. A commercial peg board of the type used in factory aptitude tests, for instance, arrived impossibly warped. The psychologists turned carpenters, built their own peg board set to the desired 1,000th of an inch accuracy.

A "sway test" to measure balance and fear of height was rigged up from scrap metal parts taken from the wrecked airplane "graveyard" at Maxwell. Styluses used in the steadiness test were made from ordinary pencils with straightened paper clips substituted for lead.

The use of practical psychology to pre-determine the probable success or failure of fliers is not new. Edward L. Thorndike, Professor of Psychology at Columbia University, did extensive work along this line in the first World War. Some tests were developed as the result of his research, but in the post-war clamor for disarmament, the program was dropped.

Now many of the best known psychologists in the country are back on the job. In charge of the Nashville Classification Center, for example, is Major Laurance F. Shaffer, former professor of psychology at Carnegie Tech. Assisting him are men like Captain Frederick Wickert, who received his Ph. D. Degree from the University of Chicago and worked in aptitude testing with Western Electric Company; Captain Lewis B. Ward, Ph. D. from Yale and former clinical worker in this field; Captain Neal E. Miller, former associate professor of psychology at Yale and author of several volumes on the subject, and Lieutenant Frank H. Boring, son of Professor Edwin Boring, director of the psychological laboratory at Harvard University. Most of the enlisted men in the section have M.A. degrees; some have Ph.D's.

The profession which was called upon in the last war to handle the vital, though negative, task of eliminating mental incompetents, now finds its niche in a positive job dealing with the brightest, quickest minds and ablest bodies in the country.

Practical psychology is thus saving the nation millions of training dollars and, more important, saving a maximum number of men for aerial combat by placing them in the right jobs.

BEWARE



Booby Traps!

A GERMAN plane brought down over Malta was equipped with a new type of radio. When the British attempted to remove the radio, an explosion killed five men.

A Nazi officer in captured Sevastopol turned on a water faucet in his new headquarters. An explosion ripped out the entire floor.

A British Commando on a raid across the channel kicked open the door of what seemed to be a peasant's home. The entire house blew up.

In each case "booby traps" were responsible. A "booby trap", so named for obvious reasons, is any form of concealed mechanism designed to be set off inadvertently by the enemy or worked automatically by means of a time device. "Booby traps" rely on surprise for their success. Hence, the operating mechanism is either covered or made to resemble some harmless object.

A German whistle was found lying on the floor of an officer's quarters. When the whistle was blown, the vibrating pea hit a striker which caused an explosion. When the British captured Agedabia in Africa, the entire town was mined with both anti-tank and armor-piercing explosives.

In the midst of these contrivances, "booby traps" were found under many

guises. Innocent looking tar barrels had been left along the road. In them were found three large shells rigged to explode by electricity. Behind the doors of most of the houses in Cyrenaica, the British discovered wires which were attached to hand grenades. They exploded when the doors were opened.

A favorite "booby trap" of the Germans is the stick grenade. These grenades are left lying around, seemingly a part of captured booty. When an attempt is made to use them against their former owners, the grenades explode immediately without the usual delay of a few seconds.

Traps usually are set in groups in order to reduce the chances of complete discovery. A detected trap is a tip-off that more will be found in the vicinity. Very often an obvious trap is used to mask a well-concealed one nearby. Suspicious signs denoting the existence of "booby traps" include the presence of pegs, nails and pieces of wire or cord for which there is no apparent use, traces of camouflage and withered vegetation indicating some attempt at concealment, indications that an area has been carefully avoided and irregular footprints or wheeled traffic marks for which there is no apparent reason.

What can be done to avoid these death traps? If at all possible personnel of the Engineer Corps should inspect all materiel in newly occupied territory. Engineers are fully trained to locate "booby traps" and well equipped to spring them harmlessly. If engineer personnel is not available, the use of extreme caution and good common sense will go a long way in protecting you from injury. Before entering a house formerly occupied by the enemy, get behind some protection and use a long pole to push open the door. Carefully inspect every object in the house to determine if hidden wires are attached. Don't move any furniture unless necessary. Act on the assumption that every object left by the enemy is a potential "booby trap" and treat it accordingly. If you find anything that looks suspicious, mark it well so that other personnel will recognize the danger zone.

PRELUDE TO DESERT COMBAT

(Continued from page 23)

the enemy demoralized by the fury of the air assault, the ground forces can strike home their own blow. Like the hard swinging right that follows the sharp left, the tanks deliver the knockout.

Air support of ground forces consists generally of four phases:

(1) The planned attack where the planes deliver their blow according to the schedules laid out in the combined operations tent of the advancing army.

(2) The attack delivered by the air forces when a ground commander finds himself in trouble and appeals for aid through the air support party travels with a division or a smaller task force.

(3) The "lead-in" attack where high flying, speedy pursuit-type observation planes spot a target and guide bombers summoned by radio to the mark.

(4) The supply support delivered by all types of planes in co-ordinated action.

Of all the phases of air support, probably the most spectacular, from an aerial standpoint, is the "lead-in attack." During one of the later problems of the recent desert maneuvers, this aerial blow was carried out with perfect timing.

A high flying P-43 dodging in and out among the clouds spots a column of dust marking the movement of enemy vehicles. The keen-eyed pilot is baffled by the dust and by the heat distortions. But he feels that the column moving below might be a target. He estimates the length of the column and flies far out of sight and hearing, drops from his high level and returns.

But now he is flying low. Following the contours of the ground, he approaches at an altitude of from 10 to 30 feet. Finally he bursts on the convoy from behind the screen of a low dune. Making a single pass under the protection of his own guns, he verifies the composition of the column.

Is it a target? Is there enough strength present to make it profitable for air attack?

There are tanks, half-tracks, personnel carriers, trucks and guns. Thousands of men on the move.

The pilot of the observation plane pulls away abruptly. He leaves the impression that his is merely a strafing enemy plane. But actually he has a far more deadly mission.

Away from the column he climbs once more, carefully avoiding any contact with enemy planes. Safely free of the area, he radios Air Support Headquarters. He outlines the target, reports its approximate strength, its route and apparent destination. But in the desert rapidly moving armored columns can be lost easily. He is instructed:

"Watch them. At 0945 meet bombers at . . ."

Back at the airdrome everything is in readiness for a mission. Pilots are briefed

and, after an incredibly few moments, the planes take off. Meanwhile, high in the air, keeping out of the way of the enemy aircraft, the observation pilot continues to watch the enemy column, marked by dust. He waits until the last possible moment before leaving to keep his rendezvous.

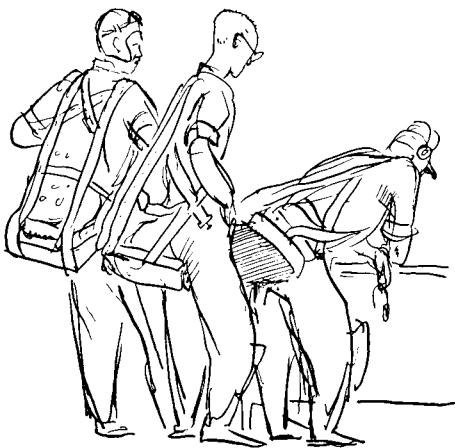
Finally he departs, meets the attack planes and guides them back. This time when he roars in at 30 feet he leads attack planes loaded with destruction. The blow is struck home hard and—the umpires decide, "bloody."

In this way the enemy can always be kept from moving by day. If he has to move at night he doesn't have the freedom of movement necessary for victory in the desert. And what makes this type of attack especially damaging is the fact that the bombers are always within radio call of Air Support Headquarters. If necessary they can be diverted to other more important targets. It keeps the planes in use, making them an always effective weapon.

ANOTHER important operation is the resupplying of an armored battalion by air. According to one problem set up at the maneuvers, an armored battalion was locked in battle, unable to disengage. Ammunition was running low. Gasoline supplies were fast vanishing. Water and rations were needed.

Over his radio net the ground commander asks for supplies. An air support party with a combat command of an armored division picks up the request, passes it on back to support command headquarters. There, after conferences with Ground Forces, G-3, the decision is made. The battalion will not be sacrificed. It will be supplied by air!

At the airdrome where the big transports are based, a ground supply officer makes up the stores needed to keep the battalion going: one fire unit of ammunition, a day's ration of food and water and gasoline and oil for the tanks and half tracks. The supplies are attached to different colored parachutes designed to aid the ground commander in picking up the most necessary items.



Ammunition goes on chutes of one color, water and rations on another, gasoline and oil on a third. While ground men load the big planes, support command headquarters co-ordinates the operation. Pursuit ships must meet the transports and escort them safely to the scene. Low level bombers are on hand to blast out enemy ack-ack and, then, after the chutes are lowered, to sweep across and keep enemy heads down while the supplies are picked up.

BY NOW the planes are in the air and the ground commander knows that help is coming. He has drawn up his vehicles in a huge oval. The guns of the battalion are all trained outward. He has his panels out indicating the direction of the wind and the path along which he wishes the transports to drop his supplies.

The bombers come over, then the transports, swinging in at 400 feet. From the opened doors come the chutes. They fall in clusters, mostly within the bivouac. The chutes that fall outside are retrieved by tanks which move forward, guns blazing. Men slide from the hatches and double quick their way to the ammunition chutes, dragging them back to the covering tank. Later they will pick up the water, food and gasoline. But first they want the wherewithal to fight.

The attack bombers have kept the enemy down while the ammunition chutes are retrieved. The ammunition is issued and the enemy is driven back sufficiently to permit gassing and distribution of the food and water.

Also, during the maneuver, an "air-head" is established. Transport planes land 100 tons of supplies at an improvised airdrome in the desert flats in an hour and a half. Operations such as this explain the Nazi success in Libya. Our own Army ground-air team is mastering the task.

Excessive temperatures and the constant gritty sand flying about have created a maintenance problem comparable to that experienced in Libya. And competent authorities say that the American desert, on the average, is ten degrees hotter than Egypt.

"Simplest and most important of all the maintenance dodges," Colonel Lee explained, "was one that entailed a little education. We had to teach the pilots to stay out of each other's prop wash. When they get in the wash the intakes fill up with sand. Simple enough, but very important."

There are many other important technical phases of maintenance. But most of them are secret, pertaining to our own equipment. But Colonel Lee remarked:

"Our planes—the ships we've been using out here have stood up very well. We couldn't ask much more than what we're getting in the way of performance."

A mechanic working under lights at night was philosophical. Said he:

"Gotta keep 'em flying. We frequently work all night. But it's worth it to see these babies take off in the dawn ready for anything."

The author, in his flying radio studio.

You Can't Ride the Beam IN COMBAT

Air war in the South Pacific through the eyes of a fighting radioman who was there from the start.



By Aviation Cadet Robert D. Gibson

WE FLEW against the Japs over Bali and Java. They chased us out of Singapore. We ran into them again flying ammunition from Northern Australia to Port Moresby. We were always outnumbered in those early days of the war and, all in all, we took quite a licking. But even when we were sure the Jap Air Force would get a good drubbing before it was over.

My job was radio operator. And I know first hand that a radio operator is a mighty important man on every combat mission. If that sounds like bragging it isn't meant to be. I don't mean just me: I mean every radio operator. And I can show you what I mean.

But that's getting ahead of my story—about seven months ahead to be exact. Back on November, 1941, we left the United States on what was to have been a three-week survey trip of the Ferry Command's southern route to Africa. Seven months and 696 hours of flying time later we arrived back in the United States by boat from Australia. Meanwhile, we had been in Egypt, India, Singapore, New Guinea, Australia, Burma, Java and Bali.

We were in Egypt when we first heard of the outbreak of war. Instructions came through to pick up Lieutenant General Brett in Cairo and take him where he wanted to go. And the only places he wanted to go were where the fighting was the hottest. Before I got into the Army I used to think that Generals stayed a comfortable distance away from the actual fighting. But after being with General Brett, I changed my mind. He is the "goingsongest" man I've ever met.

We took the General to India and then to Australia where he left us and we went to Java. That's where the going really got tough. It's always tough taking a beat-

ing. But for the number of planes we had down there, we did a lot of agitating.

As radio operator (I was a Technical Sergeant at the time), it was my complete responsibility to guide our plane in and out of the combat zones. The Dutch and British who were operating the anti-aircraft guns had very itchy fingers. If the radio man didn't send in the right recognition signals at the right time, he and his crew would probably be cited for valor, but posthumously. Some of the time, particularly when flying ammunition from Australia to Port Moresby, we flew without a navigator so we could get the maximum amount of cargo into the plane. It isn't cheerful flying without a navigator, but sometimes you just have to do it. And with air raids occurring very often, it was up to the radio man to determine whether we would be coming in under a bombardment.

THERE were three signals we paid special attention to. One was QQW which meant that the sending station was having an air raid alert. The second was a QQQ which indicated that an air raid was in progress. And the most looked for was the QQZ, or "all clear." If the radio man wasn't on the beam all the time, he would be bringing his plane into his station with anti-aircraft firing at him from beneath and Jap bombers greeting him from above.

Even with all our preparation and the constant watching of our assigned frequency, we got into a lot of trouble. I remember when we were trying to get from Rangoon, Burma, to Bandoeng, Java. We told Batavia that we were on our way to Bandoeng. But when we got over Bandoeng

we were met with some of the most terrific ack-ack fire we had ever experienced. Bandoeng didn't have a radio, no one had told them we were coming, they had never seen a B-24, and they just weren't taking any chances. They let us have it. The only thing we could do was turn around and go back to Singapore. But that meant danger and it would probably have meant the end of us if I hadn't been lucky enough to have picked up Singapore's radio frequency before we left Rangoon. Actually, there was no official reason why I should have known Singapore's frequency but I had found out long before that you can't know too much when you're in the combat zone. Without those signals, Singapore would have brought us down so fast it wouldn't have been funny. Any unidentified plane, no matter what its insignia, was fair bait.

But to get back to the Japs and the reasons why we think we can take them. First of all, about the much talked about Jap Zero planes. I'd be a fool to say that they aren't any good—they gave us too much trouble for that. They climb at a terrific rate of speed and maneuver with precision. But a couple of bursts and they fall apart. . . . The Jap plane makers apparently don't have too much regard for their pilots. They were giving them practically no protection and very little fire power. The boys in the later model B-17s don't bother much about the Zeros. What's more, the Zeros don't mess around the 17s. Those Japs look mighty good when they have you outnumbered, but when you are strong enough to fight they often run like hell.

Once over Java we were flying a heavily armored LB-30. Fifteen Japs came down on

us and our gunners opened up. All but three of them left in a hurry, and those didn't hang around very long. The Japs seem to like being heroes but they don't like getting bullets tossed at them.

The Zeros I saw were not particularly fast. One time in an unarmed B-24 on the way to Rangoon, we saw three Zeros about five miles away. Major Paul F. Davis, for my money the hottest pilot in the Far East, pushed the plane down to tree-top level and we started running. They chased us for 50 miles and were still five miles away.

Up in the high altitudes, around 30,000, the Zeros don't have enough soup to make more than two passes at you. They don't like to dive because it's tough pulling their flimsy planes out.

Over Bali one bright morning, a lot of Japs jumped one of our ships out of the sun. Just as one of them came in on their rear gunner, his gun jammed. So he fired his flare gun right in the Jap's face. They never saw one guy get out of a place in such a hurry as that Jap did. On another occasion, the blankets they had piled in back of the ship accidentally caught on fire right in the middle of a fight. They tossed the burning blankets out of the ship and the Japs high-tailed it for home. They must have thought we had a new kind of secret weapon.

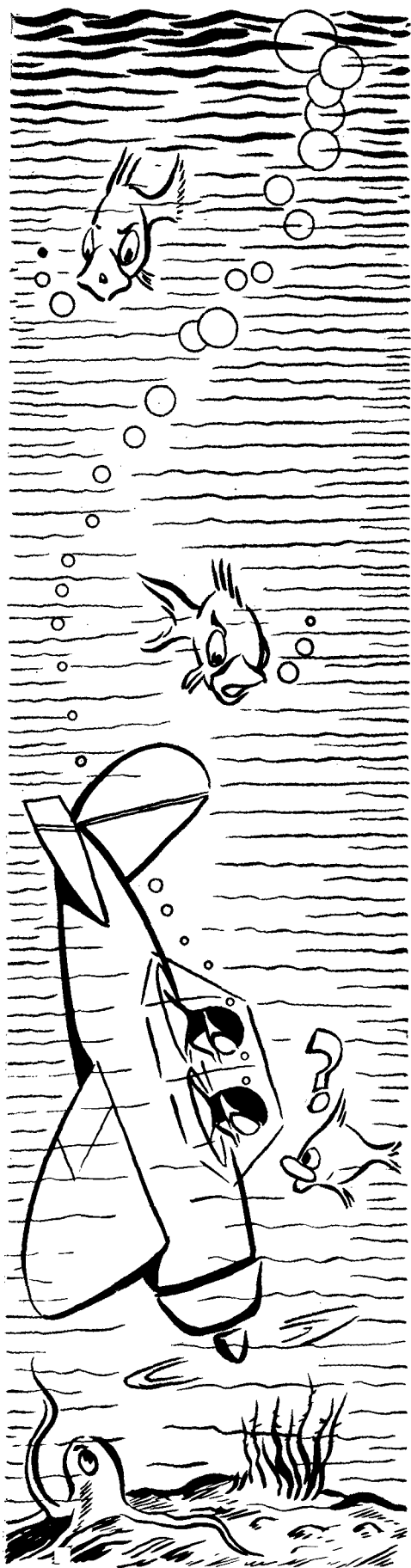
One thing the Japs could do well was strafe our planes on the ground. In the early days, communications were pretty bad and we got a lot of surprise air attacks. It was especially bad around Port Moresby. That New Guinea town is located in a sort of valley with mountains around it. The Japs would come tearing over the mountains before we had an inkling that they were around and they'd give us hell on the ground.

THE Japs did very little night bombing and their bombers seemed slow compared to our models. They invariably flew with a lot of pursuit protection. Their pursuit planes looked mighty potent from a distance—lined up and flying in smart style. But when you went in with our heavy bombers and started blasting away, it was "you take the high road and I'll get to Tokyo before you."

I don't want it to sound as if we can wipe the Japs out of the skies with two 17s and a 24. Many of the Japs are hard, fearless fighters. But when we get anything near numerical equality down there, I'll bet a ten-day furlough that they'll be easy pickings.

Does a radio operator need gunnery training? The answer is that in combat you are a gunner first and a radio operator afterwards. You can't fight this war with dots and dashes. On a tactical mission, you can't have a weak link because the Japs will find it soon enough. Gunnery means self-preservation.

Next to being able to man a gun, the most important job the radio man has to do is to pay strict and constant attention to his assigned radio frequency. This can't be



"I don't care what your altimeter says. I say it's time to pull out."

—BROOKS FIELD OBSERVER

over-emphasized. You have to glue yourself to that frequency even if there is a complete silence. And you have to take it fast. When the sending stations shoot out the information, they don't take a long time to do it. In many cases, they don't have a chance to repeat their instructions, especially when they're telling you there's an air raid in progress.

ONE day we were peacefully flying from Soerabaja to Bandoeng. The radio had been dead for a long time. Suddenly, and for no more than a second, the flash came in that they were having an air raid. We had to turn out to sea and wait for the all clear. If any radio man had let his attention wander from that frequency for just a split second, the plane would have come into Bandoeng under a Jap bombing.

Here in the States it's quite different. You can ride the beam and somebody gives you the weather reports. But in combat you're on your own. And the more able you are to adapt yourself to all sorts of new conditions, the longer you are going to live. Every time you get in a new country, you get a new code to work with. And you have to know it cold. You can have the best damned fighting crew in the Air Forces but if you don't know your code and recognition signals, brother, you're through.

And that business about adapting yourself to new conditions is mighty important. We left early one morning to go from the Gold Coast to El Fasher, Egypt, and we didn't realize we were losing time going east. Before we got to El Fasher it was dark. I took three first-class bearings and El Fasher was completely blacked out only two miles away. They were taking bearings on us but our radio compass wasn't designed to pick up C.W. If he was shooting bearings on us, I figured, why couldn't that situation be reversed? So we turned the plane to the right and our indicator moved to the right. That showed we were going away from the station. We made a 180-degree swing back on course and came right in.

Another time, going from Australia to Port Moresby, we were given just enough gas to make the 800-mile jump in a heavily loaded B-17. It was the radio man's job to bring the plane in. If we varied from the course to any extent, our gas would run out over the ocean. In cases like that the radio man has just got to be on his toes.

Generally speaking, it's a smart idea to have your plane identification down pat. In the South Pacific, some of our planes were scaring hell out of our own boys because they looked like Zeros.

But it wasn't all work. You get your share of laughs. That day off in Darwi for instance, when we decided to go to the movies. They showed us a James FitzPatrick travelogue about Bali. Film in peacetime, it ended with the usual "and now with fond reluctance we take leave of the sunny isle of Bali." Fond reluctance, hell, we took leave of sunny Bali 10 minutes before an air raid.

FORCED LANDING *in the Desert*

WHEN forced down in the desert, stop and think . . . then act . . . do not become panicky.

Stay near your plane until nightfall or longer if you expect a search to be made for you. If you have been forced to resort to your parachute, make your way to the wrecked plane if it is not too far distant. Prepare some sort of signalling device such as a piece of fuselage from which the paint has been scraped or a smoke smudge from oil and waste. Whenever possible, hold rockets in readiness.

When absolutely sure that you will not be picked up, decide on a definite plan of action and follow it. Although you may have passed a camp shortly before landing, remember that you were traveling more than a hundred times as fast as you are able to walk. Remember that desert distances are deceptive, don't be fooled by mirages. Make your way toward a known route of travel, a source of water, a point from which you can signal, or an inhabited area. Do not travel during the heat of the day but only at night or in the early morning and late afternoon. Follow the easiest route possible. Avoid soft sand and rough terrain unless it is absolutely necessary to traverse it in order to follow your course. If caught in a sandstorm, put on your sun glasses, cover your nose and mouth with a piece of cloth, and get in the lee of a rock, hill, cliff or some other object.

Do not trust to instinct. Proceed only by instruments of navigation—sextant, stars and compass. Travel light, take only the bare necessities from the plane—all of the water and food, your compass and gun, first aid kit, sun glasses, a knife, matches or a flint and steel, an improvised sun helmet, and a 10-foot square piece of silk cut from your parachute. The sun glasses will protect your eyes from the sun and blowing sand; the piece of parachute silk can be used as a tent to protect you from the heat of the sun and as a shawl at night. Probably the only water that you will have is that in your canteen, so guard it carefully and use it sparingly. If your supply of water is limited, use it only to moisten the mouth and throat at infrequent intervals. — *The Air Surgeon's Office.*

HOW TO KEEP WELL

(Continued from Page 12)

Bathe whenever you can, but remember that the streams, irrigation ditches, and ponds along the coast and in the Nile delta are contaminated with the flukes that cause schistosomiasis. It is not safe to swim or even bathe in this water. However, sea bathing close to shore, where there are no sharks, and away from outlets of rivers, is safe.

You will probably want to shave, but do it in the evening to avoid sun and wind burn. The brushless, rub-in variety of shaving creams require little or no water, and serve their purpose adequately.

Troops in this area should beware of native foods and drinks, even in Cairo. The Arabs are not familiar with our habits or standards of sanitation, and take few precautions to keep themselves or their kitchens clean. Nor do they protect their food from flies, which are a particular menace. Flies live and breed in filth and transmit disease germs by contaminating food.

Fruits and vegetables almost invariably are dangerous because they are irrigated and fertilized with sewage. The safest method of preparation is to dip them in boiling water for a few minutes before peeling them. A strong solution of potassium permanganate can be used if the fruits and vegetables are allowed to soak for a minimum of four or five hours.

The best safeguard is to eat only at Army posts, even when on leave, or in European restaurants that have been inspected and approved by an American medical officer.

Milk should always be boiled, for pasteurization is not commonly employed and many of the dairy animals have tuberculosis and undulant fever.

Food spoils rapidly in this area so be sure that your lunch is made up of staple foods before going out on an operational flight. Thus, tinned foods such as fruit juices and army concentrated rations, crackers and thick-skinned fruits are preferable.

ALTHOUGH the greater part of the territory is a desert area, malaria is prevalent among the natives and should be guarded against by troops. Mosquitoes are found along the coast, river valleys, and not infrequently about oases. In an area where mosquitoes are known to abound, stay indoors as much as possible after dark. Sleep under mosquito netting at night or in a well screened building. Stay away from native towns where the infected inhabitants act as reservoirs of disease, and where many mosquitoes are usually found.

Insect repellents may be helpful but it is best to rely on such safety measures as mosquito boots, head nets and gloves if you are on night duty. Do not wear shorts or short-sleeved shirts at night when living in malaria country.

There are several other mosquito-borne diseases in the Libyan Theater including dengue fever and filariasis, for which the same precautions are applicable. Sand fly

fever is also common, and although neither it nor dengue are fatal diseases, they are capable of prostrating a large part of a command for a week or ten days.

With the exception of the upper class Egyptians, the native people have little interest in personal cleanliness. Many of them have scabies and are infested with lice. It is well to stay out of their homes, for they are frequently filthy. There is a great danger of contracting typhus fever during the winter months from associating with the individuals infested with disease carrying lice.

PROMISCUOUS women are frequently encountered, especially in Cairo and Alexandria, both as clandestine pick-ups and as professional prostitutes. The majority of these individuals have venereal diseases. Ninety percent of one group of prostitutes were found to have venereal disease, the majority having all three of the common diseases: syphilis, gonorrhoea and chancroid.

The temperature varies greatly in north central Africa. Even during the hot season nights can be so cold that blankets are necessary. The discrepancies between ground and air temperatures add an additional problem to flying personnel. Even though it is 130 degrees in the plane on the ground, temperatures in the forties and fifties or lower will be encountered at relatively low altitudes. When an over-heated and perspiring pilot passes through this degree to temperature change in a few minutes on ascending, he will become chilled and be apt to develop a cold or even pneumonia unless he is careful to arrange his flying equipment so that varying degrees of warmth can gradually be added. Excess perspiration should be wiped off prior to donning a flying suit.

Minor cuts and abrasions become infected easily and frequently develop into seriously disabling injuries, so that immediate first aid treatment of all cuts, burns, abrasions, and mosquito bites—no matter how small—should be applied. More serious injuries should receive attention as soon as possible.

The extremely hot sun during the summer months makes it difficult for one who is accustomed to the climatic conditions of the United States to evaluate the intensity of the sun's rays. Consequently, serious burns may be acquired after relatively short exposure, and the glare of the reflected light from the desert often results in serious eye irritation. This, coupled with the mechanical irritation produced by wind and blowing sand, makes it necessary for all personnel to wear protective goggles at all times, even when on land.

A thorough knowledge of the dangers you face and a determination to take all personal precautions to guard against those dangers will go a long way toward keeping you physically fit to do the job assigned you—and do it well.

Information on Desert Operations may be found in FM 31-25.—The Editor.

"WE'LL GO BACK SOME DAY..."

(Continued from Page 10)

side. I felt terrible. Then it landed and Fritz climbed out grinning. I have never been so happy in all my life."

"Landing was purely a matter of luck," her husband commented. "I had almost no control on the elevator and rudder. The only reason the tail settled after the wheels were down was that my mechanic had made a mistake that morning and trimmed the plane very tail heavy. Later we counted 300 bullet holes in the plane plus some big cannon shell holes."

On the last day of 1941 the first American B-17's from the Philippines arrived at Lieutenant Den Ouden's base in Borneo.

IN January, after the big attack on the Indies proper was launched by the Japs, Lieutenant Den Ouden's flight was officially credited with sinking four transports and a light cruiser during the landings on Tarakan. Later in the month the remnants of the Dutch East Indies Air Force—15 bombers and 16 fighters—went into action with the U. S. Army Air Forces over the Straits of Macassar.

"It was the first time we ever had fighter protection, so we felt very good," said Lieutenant Den Ouden. "On that first mission our objective looked like a fleet review—three rows of cruisers and transports—26 in all—steaming toward Balikpapan, an important oil center on the Borneo coast.

"We made our runs through the thickest anti-aircraft fire I have ever seen. Aided by our fine German-made bombsights, we hit a heavy cruiser with two 1,100-pound bombs. A heavy explosion followed. The ship was enveloped in black smoke and it toppled over in less than two minutes. Meanwhile, fighters dive bombed and strafed the transports. That was our best day. Our bombers made 12 direct hits on eight ships. We sank one heavy cruiser, one light cruiser and two transports, set afire one destroyer and damaged two large transports, one of which was beached and the other abandoned.

"We had no armor so we used sections of steel from oil drums and even the heavy base plate of electro-motors to protect our pilots and gunners. We had to play hide and seek with the Japanese planes that tried to bomb our camouflaged airdromes. Only by outguessing them did we survive.

"Japanese pilots are tricky. Often they faked attacks to draw fire from our gunners. When the gunners bent down to feed a fresh pan of cartridges into the gun, the Jap pilots would flash in to attack. We fooled them by bending down before the guns needed reloading and then catching the Zeros with a burst as they closed in.

"One Zero pilot we shot down was found in his cockpit wearing a large Japanese flag under his flying suit, wrapped around him like a sarong. An ME-109 pilot we brought down had big feet and blonde hair. He must have been a German."

By March 3 all Dutch bombers were expended and three days later Lieutenant Den Ouden left the Indies for Australia.

Lieutenant Simon reported for duty with a fighter squadron on January 26 without ever having flown a modern high-speed pursuit plane. He finished his advanced training with loaded guns over Soerabaja within range of the Japanese carrier-based Zeros. Later, his squadron of 12 Brewster Buffaloes was shifted to Bandoeng, where it formed the sole aerial defense of General Wavell's headquarters.

"In our first battle we met a sky full of Zeros right over the General's headquarters," Lieutenant Simon related. "We were caught by the top cover of Zeros as we dove to attack a group below. I remember shooting many times and being shot at. Then all of a sudden the sky was empty and I was all alone except for a few planes in the distance. I was disappointed because I didn't think we had shot down any Zeros, but the next day our ground patrols found the wrecks of five Jap planes.

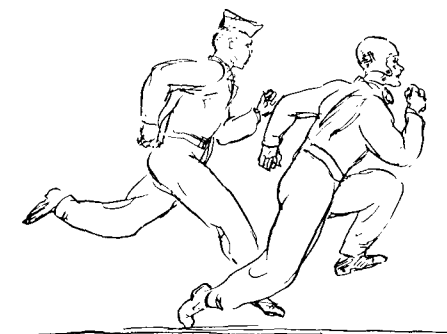
"In the battle of the Java sea we flew escort for an American dive bomber squadron—three dive bombers and 20 fighters—to attack the big Jap transport fleet. We had eight American P-40's, seven Hurricanes flown by Dutchmen and five Brewsters.

"That day we saw a sight none of us will ever forget. Below, the Japanese warships were racing around the edges of the convoy spouting flame and smoke and leaving long white plumes of spray in their wake. In the haze of the setting sun we could see the long rows of transports steaming along in perfect battle order. It was a terrible and a beautiful sight.

THE dive bombers sank one transport. When we landed we all looked at each other, everybody thinking what would have happened with 300 dive bombers instead of three. But thinking didn't help us any. We took a drink and went home.

"The next morning, with the dawn at our backs, we skimmed the water raking the landing barges along the beaches. We could see the soldiers dive over the sides as our bullets hit the barges and silenced the anti-aircraft guns in the stern of each barge.

"Within two hours after we landed from that mission, the Americans were ordered



to leave Java. Two days later we had only one fighter in shape to fly. The battle of the Indies was over for us.

"We had too few planes and what we had lacked performance. But they were sturdy and never fell apart in the air under the heaviest fire. I have seen planes land with 20-inch holes in wings and rudders, with windshield screens shot away, tires punctured and holes all through the fuselage. It was amazing. All those planes needed to be perfect was a few hundred more horsepower and additional guns."

Lieutenant Arens was a veteran KLM pilot in the Indies before he went into action against the Japs. (He is now the personal pilot of General Van Oyen.)

To keep Jap fighters away from his unarmed plane, Lieutenant Arens painted the rear of the fuselage to resemble a Plexiglas gun position. He then inserted two five-foot lengths of lead pipe so they stuck out behind the tail like a pair of machine guns.

WHEN the Jap fighters steered clear of the "tail stinger" and made beam attacks, the crew of Lieutenant Arens' Lodestar poked machine guns through the cabin windows and blasted away. Three Japanese Zeros fell victim to this tactic while avoiding the lead-pipe "tail guns."

Lieutenant Arens delivered his cargoes of food, cigarettes, gasoline, ammunition and parts to bases scattered through a chain of islands that stretched one and one-half times the distance from New York to Los Angeles. When there was ammunition or gasoline aboard, Lieutenant Arens' gunners gave the tail "stinger" a fresh coat of paint.

The Lieutenant's final flight out of Java the last from the island, was a classic. Passengers aboard his Lodestar included wife and families of high Dutch colonial officials and officers. Lieutenant Arens took off at night. As he passed over the Japanese-held airport at Palembang, he saw row on row of Japanese planes parked on what former was his KLM home base. In the bright moonlight the planes made a perfect target. It was three o'clock in the morning and there was no indication the Japs had even heard his plane. He couldn't resist.

Lieutenant Arens signalled his crew. Passengers were strapped in their seats with safety belts. Gunners manned the cabin windows. Lieutenant Arens poked the Lodestar's nose down toward the moon field. Down he went sashaying across the field to give gunners on both sides a shout at the parked planes. Inside the transport passengers were screaming and airsick. Outside, Japanese planes burst into flames. The garrison awakened to a tardy alert.

With throttles wide open and the wheels pulled back against his chest, Lieutenant Arens lifted his Lodestar up and away Australia bound.

"It was one time we caught the Japs asleep," Lieutenant Arens recalled. "Palembang was my home for years. I would like to go back there again some time. It was lovely place."

A Report On A-20 Action in Russia

By Major Vladimir Zemlayanov

RUSSIAN AIR FORCE

Special to AIR FORCE by Cable

IN THE southern sector of the Soviet-
erman front, American bombers of the
oston III type have proved effective as
tack planes in low altitude missions
ainst German columns and troop concen-
ations and on enemy aircraft at airdromes.
Russian pilots find the Bostons greatly
hanced as fighting weapons when bomb-
ig is combined with strafing of enemy
round forces. Also, by suitably maneuver-
ig, our Boston pilots can attack and bring
own enemy fighters.

Using combined bombing and strafing
ctics, Pilots Sirokin, Glusnov and Bloch in
re flight alone recently set 15 German
rcraft afire. In repeated action over several
ays, Captain Ossipov's squadron, flying
ostons, have destroyed 82 tanks, 247
ucks, 3,000 German soldiers and 7 bridges
such low altitude tactics.

This low flying has many advantages,
nd it preserves the element of surprise.
ying at low altitude makes it possible for
ir pilots to attack in bad weather under
ver of low-hanging clouds. Thus, besides
ombing, our pilots are able to fire point
ank at the enemy with machine guns.

In view of these considerations, the arma-
ent of these planes has been somewhat
odified in order to increase their firepower.
re small caliber machine guns installed on
oston III's have been replaced by large
iber guns. Other details have been altered
increase bomb load and the number of
ombs that can be dropped in series. The
ter is highly important in bombing
ound troops, especially columns on the
arch. New large caliber machine guns
o give the Bostons better protection
ainst enemy aircraft. It is only with such
nament that our gunners can maintain
e against German Messerschmitts. Cap-
in Ossipov's Boston squadron has shot
wn eight enemy aircraft.

Russian pilots flying American planes are
stantly seeking new forms of combat
tics in an effort to achieve maximum
ectiveness in every battle flight.

*(The Boston III described above is the British
' Russian designation for the Douglas A-20
st bomber.—The Editor)*

PICTURE CREDITS

Cover: Courtesy Brown & Bigelow,
St. Paul, Minn. 8-9: Air Forces Classifi-
ication Center, AAF. 19-20-21: Erris
photos. 24: Ryan Aeronautical Corpo-
ration and Office of Emergency Man-
agement. 30-31: Air Service Command,
AAF.

All other photos secured through Of-
icial Army Air Forces sources.

On Shining Shoes

By Pvt. Dennis Wiegand

OKLAHOMA CITY AIR DEPOT

ALTHOUGH I could probably make a
lot of money by patenting my specially
developed method of shining shoes, I
am happy—in the interests of comrade-
ship and a mutual dislike for K.P. duty
—to pass my secrets on to you.

You probably received your first hints
on the gentle art of shoe shining from
that delightful character, "Old Sarge."
There's at least one in every outfit and
he knows all the questions before you
get a chance to ask for the answers.

Old Sarge will tell you, in that impos-
ing way of his, to get a bucket of
water, a cake of sandsoap and a G.I.
scrub-brush. Then you are supposed to
scrub your shoes down to the bare
leather. Naturally, this "G.I." pro-
cess injures the delicate tissues—or some-
thing. At any rate, you hear a lot about
it, not to mention the added touch of
sprinkling a few drops of water on the
shoes before giving them the final brisk
rub-down. Probably Old Sarge will
mutter something about toning up the
job by rubbing a few drops of glycerine
over the fresh polish.

But the Army knows some of the
answers, too, and new shoes are not
finished as they are just to get you used
to the feel of a G.I. brush. And now,
after a four-month period of research,
I seem to have proved that only the
hard original surface of your G.I. shoes
will take a deep polish. Leather soft-
ened by scrubbing and the use of saddle-
soap will take a gloss or even a good
sheen, but never that glassy glitter.

Some of the fellows have these fancy
so-called shoe-shine kits with enough
tins of paste and polish and enough
brushes and daubers of all kinds and
sizes to keep a cavalry regiment glisten-
ing. Of course this "remote control"
method of polishing is good enough for
a mass-production job. It'll pass inspec-
tion every time—but give me an old
woolen sock for that fine hand-polish.
Grapple that shoe with nothing but an
old woolen sock between you and it and
the can of polish. That's the secret of
success.

For one thing, no one ever invented
a dauber that would spread polish as
easily as the fingertips employing a
gentle, rotating motion. And in the
second place, a shoe-brush will always
leave tiny grooves and scratches in the



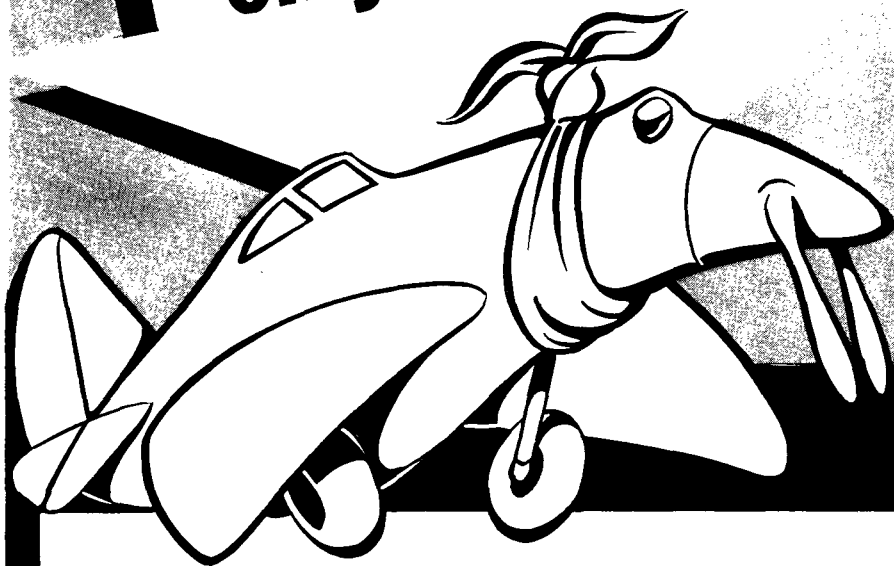
basic polish. You can't lay down that
mirror-like finishing coat on a dull,
scratched base. Moreover, these dark
brown glosses you see around aren't
strictly G.I. The G.I. brown has a
slightly reddish tone preserved under
a transparent glassy surface approxi-
mately $\frac{3}{16}$ inch of an inch thick.

Of course, I don't wear the shoes I've
been talking about. I used to when I
was taking my basic training but I gold-
brick in an office now and most of us
here find it more convenient to buy
oxfords. My two pairs of G.I. shoes
are reserved for inspection only. The
soles and heels of one pair are pretty
far gone, but they put up as good a
front today as they did back at Fort
Snelling the day they stopped the
Major. They outshone over 1,000 pairs
of shoes that day. They may be a little
over-polished now—that can happen,
too. But you can't detect a case of over-
polish unless you get down on your
hands and knees and inspect the edges
of the stitching.

There's always the hope that some
day we'll have a General making a tour
of inspection. And maybe the sun will
catch my shoes just right. He may
even order new shoes issued to me; and
order my old ones displayed in a glass
case with a placard reading, "All Mili-
tary Personnel Will Note: These Shoes
Are Strictly G.I. And For Your Future
Guidance."

Well I can dream, can't I!

Is there a
MEKIWI*
on your field?



***MEKIWI (Mechanical Kiwi) is our name for a plane that has been grounded—mechanically unfit to fly because someone pulled a maintenance boner, failed to clear up a maintenance bottleneck, fell down on the all-important job of inspection, or failed to read and follow Tech Orders.**

Airplanes are made to FLY! However, some do . . . and some DON'T! Most planes that WON'T fly are man-made MEKIWIS!

Good planes can—and do—become MEKIWIS because of a thousand and one careless maintenance and administrative mistakes. YOU know what these boners are and YOU know how to correct them.

Send us your ideas on improving maintenance. Your tips will help others!

**Pronounced "MEK-KEE-WEE".*

GET THE MEKIWIS OFF THE GROUND!

ANSWERS TO QUIZ

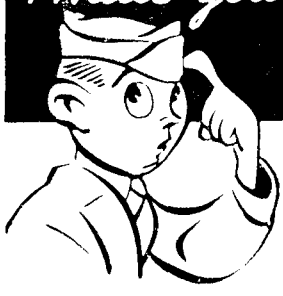
on opposite page

- (b) Congressional Medal of Honor. Others in order of rank are: Distinguished Service Cross, Silver Star, Distinguished Flying Cross.
 (d) Russian attack bomber.
 (a) Scott Field is nearest to Belle Plaine, Illinois.
 (c) Major.
 (b) Draws maps or charts.
 (b) To compensate for a plane's change in balance.
 (c) A single plane; single engine pursuit plane.
 3. Reading left to right: Airacobra, Messerschmitt, and P-10. (If the middle plane fooled you, it's a Messerschmitt that was captured and repainted with British markings.)
 9. (b) Human correctible failures.
 10. (b) Project the flat surface of aerial photographs into third dimensional relief.
 11. (c) A squadron. A squadron is the basic administrative and tactical unit; a flight is the basic tactical unit consisting of three or more planes; a group is both tactical and administrative containing two or more flights; and a command is both tactical and administrative with two or more wings or groups of the same class of aviation. 12. (d) A painted circle marked on the concrete apron at airports indicating the points of the compass.
 13. (b) See that the chocks are under the wheels or that the brakes are locked.
 14. (b) Below the stratosphere.
 15. (c) A mountain range in New Guinea.
 16. (c) Turn right.
 17. (False.) U.S.S.R. is the abbreviation for the Union of Soviet Socialist Republics.
 18. (False.) Don't take hold of the rip cord until you are out or you might open your parachute while still in the plane.
 19. (False.) The bombardier sometimes gives orders to the pilot, usually when lining up a target.
 20. B-25.

On Giving Orders

From the equivalent of a regimental command down, the Germans prefer verbal rather than written orders, given in the presence of all unit commanders, to facilitate coordination and save time. The local terrain should be well known, independent of maps, and orders should be given in accordance with the terrain and not with the map. As an aid to clarity, the commander should place himself in the position of the receiver of the order.

What's your AIR FORCE I.Q.



TEST your knowledge with this AIR FORCE quiz. Score five points for each question answered correctly. 50 is terrible; 60 means back-to-the-books; 70 is passing; 80 is damned good; 90 and you're excellent. If you make a 100—we'd like to see your idea of a quiz. Answers are printed on Page 40! No peeping. Ready! Contact!

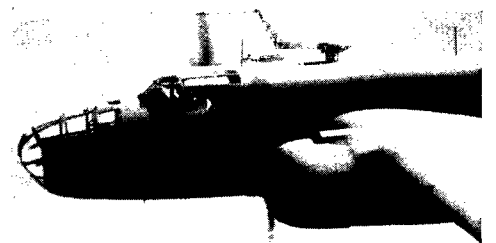
1. **The highest award which can be won by a member of the Army Air Forces is**
 - a. Distinguished Flying Cross
 - b. Congressional Medal of Honor
 - c. Distinguished Service Cross
 - d. Silver Star
2. **A Stormovik is**
 - a. A German paratrooper
 - b. A Russian drink
 - c. A wind tee to measure storm velocity
 - d. A Russian attack bomber
3. **Scott Field is located nearest to**
 - a. Belleville, Illinois
 - b. Shangri-la
 - c. Rantoul, Illinois
 - d. San Antonio, Texas
4. **In the R.A.F., a Squadron Leader is equivalent to our**
 - a. Lieutenant
 - b. Captain
 - c. Major
 - d. Lieutenant Colonel
5. **A Cartographer**
 - a. Manufactures automobiles
 - b. Draws maps or charts
 - c. Draws cartoons
 - d. Carts graphs to overseas units
6. **Trim tabs are used**
 - a. To give the plane its forward pitching movement
 - b. To compensate for a plane's change in balance
 - c. To help gain altitude quickly in a plane
 - d. To keep tab of the trimmings you take in poker
7. **The German Focke-Wulf 190 is**
 - a. A two place, single engine pursuit plane
 - b. A medium bomber
 - c. A single place, single engine pursuit plane
 - d. A heavy bomber
8. **Identify at least two of the planes pictured below:**

9. **Eighty percent of Army aircraft accidents in the United States are the result of**
 - a. Poorly equipped planes
 - b. Human correctible failures
 - c. Lack of instruction
 - d. Bad flying weather
10. **The stereoscope is used to**
 - a. Determine heart beats
 - b. Project the flat surface of aerial photographs into third dimensional relief
 - c. Adjust pitch propellers and control delivery of de-icing fluid
 - d. Determine the amount of oxygen in the bloodstream
11. **The basic tactical and administrative unit in the Army Air Force is a**
 - a. Flight
 - b. Group
 - c. Squadron
 - d. Command
12. **A compass rose is**
 - a. A pink rose of the American beauty family
 - b. The method of determining compass variation and deviation
 - c. A compass container
 - d. A painted circle marked on the concrete apron at airports indicating the points of the compass
13. **In making a pre-flight inspection check of a plane the first thing to do is**
 - a. Locate the fire extinguisher and first aid kit
 - b. See that the chocks are under the wheels or that brakes are locked
 - c. Check the ignition system and see that it is off
 - d. Warm up and check the proper functioning of the engine and check the control services and the instruments

14. **The troposphere is**
 - a. Above the stratosphere
 - b. Below the stratosphere
 - c. Some place in Russia
 - d. Six miles due west of New Zealand
15. **Owen Stanley is the name of**
 - a. The donor of the ice hockey cup
 - b. The man who found Livingston
 - c. A mountain range in New Guinea
 - d. Assistant Secretary of War for Air
16. **In routine flight when approaching a plane head-on you should**
 - a. Go over him
 - b. Go under him
 - c. Turn right
 - d. Turn left

TRUE OR FALSE?

17. **U.S.S.R. is the abbreviation for United States of Socialist Republics**
 - a. True
 - b. False
18. **Before making a parachute jump you should grasp the rip cord while still in the plane.**
 - a. True
 - b. False
19. **The bombardier never gives orders to the pilot**
 - a. True
 - b. False
20. **The plane below is a**
 - a. Martin B 26
 - b. North American B 25
 - c. Lockheed Hudson
 - d. Curtiss Commando



*Don't pay for your ride
with*



REMEMBER . . .

**WHEN YOU OPEN THE DOOR
— SHUT YOUR MOUTH!**

