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THE RISE AND FALL OF THE TWO NINE FIVE

BY A. R. GINSBURGH, CAPTAIN, F.A. (DOL)

"ALL active pack artillery units have now been equipped with the new 75mm howitzer, M1."

In this single sentence in the annual report of the Chief of Field Artillery for 1931-32, the United States Army sounded taps for the old 2.95 mountain gun. It was a good gun in its day. Some of the old pack artillerymen will still stand by it. But the demand for more power and greater range sealed its doom.

For more than thirty years, it had served the field artillery honorably and faithfully. From the treacherous rapids of the Pagsanjan to the placid waters of the Rio Grande, from the steep slopes of Bud Dajo to the rolling hills of the Wichitas, from the peak of Pinatubo, more than a mile above the sea, to the morass and the jungle along the lowly banks of the Chagres, in the trails among the buttes of Nebraska, along the high and dry road to Pole Mountain, in the alkali clay and prickly cactus paths of old Mexico—the memory of the familiar sight of the old 2.95, broken up into its four loads and strapped to the backs of the old faithful army mules, will recall the struggles, the trails and the glories of the American mountain artillery.

Obviously, mountain artillery did not begin with the advent of the Vickers-Maxim 2.95 gun. Almost from the time of the first introduction of gunpowder and the search that followed for proper weapons for its development, we find among the guns used in various countries specimens of mountain artillery. A constant effort to perfect this particular arm is shown through all the centuries that have elapsed since its first inception.

The origin of mountain artillery is traced to the fifteenth century when at Perpignan, there were cast "some pieces of ordnance," composed of two parts and intended "to be transported through the narrow defiles of the mountains". According to early historians, these guns were carried "by pack animals." Chances are they were mules, although the history of mountain

artillery affords examples of horses, camels and even elephants providing the means of transport. Human beings, too, have been used. In the first Bhootan expedition of 1772, British mountain artillery employed coolies. Improvised two-men litters carried each gun. In our own campaigns in the Philippine Islands, our soldiers frequently, for miles, dragged mountain guns in and out of positions by ropes.

From the earliest times in our own history, we employed guns in mountains but a distinctive mountain artillery received its first attention shortly before the Mexican War. The 12-pounder mountain howitzer, Model 1841, was the first officially recognized and distinctive mountain gun. However, infantry and cavalry continued to pack and serve the new weapon. No artillery organization was provided to man it and study its possibilities.

In both the Mexican and Civil Wars mountain artillery was employed but its record was neither brilliant nor startling. In the campaigns against the Indians in the winning of the west, mountain guns are frequently mentioned. Usually, they were handled by the infantry and cavalry. Most of the artillery was assigned to coast defense.

Not until the campaigns in the Philippine Islands did the mountain artillery of the United States Army come into its own. Its rise to power and influence came simultaneously with the adoption of the 2.95 mountain gun of Vickers-Maxim design. For mountain use, the army had brought some 3.2-inch and some 3-inch Hotchkiss mountain guns. It soon became evident that neither could cope with the difficulties of the mountains, trails and jungles of the Philippine Islands and the War Department turned to the British gun.

In recalling the early record of the 2.95 in the Philippine Islands, one is impressed with the courage of the gunners and the gun commanders, the resourcefulness of the untrained packers the patience and perseverance of the old army mule and the ingenuity of Captain George W. Van Deusen, whom we may well call, the first "Chief of Mountain Artillery."

This chapter of mountain artillery may well be illustrated by the war-time story of the cavalry recruit who protested that he had never sat in a saddle. The troop commander assigned him a

fresh remount and suggested that since the horse had never before been saddled, man and animal could start their training simultaneously. All of the elements of the new mountain artillery had to begin from scratch. The gunners had never seen the gun. The mules had never borne a pack. Most of the packers had never thrown a diamond hitch. Captain Van Deusen's experience with the 2.95 was confined to a few hours' drill in an English factory. Within seven months, however, the new gun had established itself as an indispensable weapon. Its praises were sung by doughboys and cavalrymen as well as by artillerymen and no campaign got under way without some provision for accompaniment by mountain guns.

On September 27, 1899, Captain Van Deusen left for London under War Department orders to superintend the shipment of the mountain guns and their equipment which the government had purchased from Vickers Sons and Maxim Company for use in the Philippine Islands. His orders also directed that he acquaint himself thoroughly with their use and construction "from actual observation at the factory." From London, Captain Van Deusen was to proceed to Manila and report to the Department Commander for duty with the new mountain artillery.

When Captain Van Deusen reached London, he called on the British firm only to learn that all the guns, a part of their packs and ammunition already had left for Hong Kong. In the next five days, he crowded visits to the gun and ammunition factories, learned to take apart and put the piece back together, armed himself with a few handbooks and started after the guns. By train, he rushed to Genoa to overtake a German steamer on the way to the Orient. There he boarded the *Koenig Albert,* of the North German Lloyd, and got to Hong Kong, November 15. Here he learned that the guns had arrived a few days before and already had been shipped to Manila. He chased the guns into Manila harbor and arrived hot on their trail.

The Department Commander assigned him to command the new guns, but detailed neither men nor animals to the new organization. No immediate prospect of service was in sight, he was advised; and the mountain artillery commander took charge of the handbooks and began to work on tables of organization.

Ten days later four of his guns had taken the field. He was ordered to organize and equip a battery for immediate field service in Zamboanga with the 31st Infantry, United States Volunteers. Major J. E. McMahon, then a 1st Lieutenant, 4th U. S. Artillery, in command of the regiment, detailed a company to take over the guns. Without any delay and within a day after receipt of his orders, the guns sailed with the expedition.

Hardly had the four guns sailed for Zamboanga, when Captain Van Deusen received a requisition for two guns to Vigan. He supervised the shipment, sailed with the steamer and spent two days with the expedition instructing in the service of the piece, packing, assembling and in preservation and maintenance of parts.

When he returned to Manila, orders for the shipment of another gun awaited him. This one went to Aparri. With but five guns left of the original twelve, orders came from General Schwan for two to be sent to Colonel Lockett for service in the expedition against insurgents at Montalban. Van Deusen had visions of his whole artillery frittered away and dispersed among various forces without any experience for himself and immediately volunteered to handle the guns on this expedition. His request was granted.

First, he asked for ten privates and two non-commissioned officers for each gun. Orders were issued but the men did not report until two o'clock of the afternoon that the expedition was to start. An hour and a half after their arrival, they hit the trail. Since there was a road to San Mateo, the expedition commander reduced Captain Van Deusen's requisitions for animals to one mule per gun and two mules for the ammunition and ration wagon. The guns would be hauled, he was told. The mules reported shortly after the men and all started out together.

A tropical rain storm greeted the departure. Across the swollen Mariquina River, the guns were ferried on a small boat. The mules and wagons forded. Upon arrival in San Mateo with orders to rest for the day, Captain Van Deusen gave his gunners their first drill in the service of the piece.

The next day, the guns were in action. Captain Van Deusen reconnoitered a position 1500 yards from the enemy, dragged his guns into place and opened fire with shell. Then followed shrapnel

over the heads of the advancing infantry. As the infantry line was sufficiently advanced, he ceased fire and moved forward to within 1000 yards of the enemy lines. Again, he opened fire. The enemy rushed out of the trenches and ran. Van Deusen pursued the retreat with shrapnel. To 3200 yards, he kept increasing his range and made many direct hits. One thousand yards away, an enemy field piece opened fire. Van Deusen transferred his fire. After two rounds, the enemy gun was out of action. The guns were on their way back when they were recalled to support a battalion of the 46th Infantry. From two sets of trenches, at 500 and 800 yards, from our own lines, a devastating fire had stopped the advance of the infantry. Van Deusen took each target under fire. Five rounds on each sufficed.

Three days later, Van Deusen and his guns were back in Manila. On their return, they found that the ferry over the Mariquina was completely under water and hauled the guns through the river. At times, the guns were completely out of sight.

During this action, Van Deusen reported that "58 rounds were fired, 48 shrapnel and 10 shell. The action of the ammunition was perfect in every way, there being no misfires, and every round being exploded as required by the setting of the fuze or on impact. The recoil, even after continued fire was very small not more than a couple of feet as a maximum with little derangement of the firing position. The bores of the pieces at the end were practically as clean and bright as if they had not been used."

The army in the Philippines shared Van Deusen's enthusiasm for the 2.95 guns and demands for their use soon multiplied. What many higher ranking officers failed to realize, however, was that these guns which fired so accurately and moved so smoothly required well trained gun crews and experienced packers and that without them, mobility would be lost. When Van Deusen tried to get the men who had been detailed for duty with the guns excused from fatigue to learn how to pack saddles and prepare ammunition, he usually ran into a snag.

Not until the morning of his departure, for instance, with General Schwan's Expeditionary Brigade, did he get the details of Battery E of the Sixth Field Artillery who were to man and pack his guns. The mules, many of them never before under pack, arrived

at seven o'clock the same morning. With 3 guns, 6 noncommissioned officers, 30 privates, 3 civilian packers and 27 pack mules, Captain Van Deusen left Manila on the morning of January 3, 1900, on one of the most strenuous campaigns in the Philippines.

From this point, the history of the 2.95's is the record of guns' delivery of fire when and where asked, of keeping up with the infantry and cavalry wherever man or animal could possibly reach. Here the mountain artillery got the reputation for its strength and courage under all kinds of conditions which has proved its noble heritage to this day. While the doughboys rested their weary feet at each halt, the mountain artillerymen who had been leading their animals six inches from the bit and covering the same ground on foot would unpack and adjust loads. A mere loosening of the cincha and perhaps some mild grooming proved enough for the cavalryman on the halt. The mountain artilleryman had to toss hundreds of pounds around, adjust packs and saddles and devote all his time to the animal and the load.

To cross impassable fords, guns and ammunition had to be removed from the animals, carried over by hand and then the loads repacked on the other side. Trails steep and slippery, often baffling experienced cavalrymen, these mules and muleteers negotiated and clung to the heels of the advancing columns. Pioneer equipment to repair bridges and trails was added to the artillery equipment and made into an appropriate load for a mule. At such times, the commander's own saddle horse had to carry part of the artillery equipment.

Often at night, by candle light, the guns had to be unpacked and carried across ravines and river beds or up steep and slippery trails. But whenever the commander of the column looked back for his artillery he found it ready. In the usual formation, one gun marched with the advanced guard and the rest in rear of the main column.

At times, the mules had to be made to ford streams. On several occasions, mules jumped off bridges, carrying with them both driver and load. Once the gun mule jumped from a bridge twenty feet above the stream, struck full on his back directly on the gun it carried and hit a rock. The packers rushed down, removed

the load, but found no injury to either gun or mule. The army began to believe that the 2.95 was invincible, its mules invulnerable, and its packers, drivers and gunners a hardy race of toughened, straight-shooting, hard-riding red-legs whose equals could not be found in any army.

To trace the history of the 2.95 from 1899 to 1932 would require a great volume. Perhaps a detailed description of one of its historic fights in the Philippines, where it gained its greatest reputation, may be sufficient for an appreciation of its services. The Battle of Bud Dajo offers such an opportunity.

On the outskirts of Jolo, reaching 2100 feet above the sea, stands Bud Dajo, the crater of an extinct volcano. Closely resembling the rock of Gibraltar in appearance, it offered a natural citadel for fortification by the Moros against American occupation. Here in March, 1906, there had gathered a band of about 800 Moros, including their women and children, bent upon ending American control in the Mohammedan province. Leashed to the frenzy and religious fervor of juramentados by bogus Mohammedan priests, these fanatics were promised eternal peace in heaven if they would go out and murder "Christian pig-eating foreigners."

Nor did they confine their depredations to the Americans. Included among the fanatics was a liberal sprinkling of criminals and malcontents who waged incessant guerilla warfare against their native datos.

There was no besieging their impregnable position atop Bud Dajo. They had ample water and enough food to last six months. Along the rim of the crater five hundred yards wide and fifty feet deep, they had built a series of trenches and brought in a reserve of ammunition including butcher knives, javelins and boulders. The top could only be reached by three trails and these were prepared for stubborn resistance and defense. The trails were commanded by a cotta or citadel from which every step of the attacking forces could be watched and measures taken to thwart their success.

When General Wood learned of the menace, he organized an expedition commanded by Colonel J. W. Duncan, Sixth Infantry, to capture or destroy the guerilla band. When word of the impending

attack reached Jolo, several friendly Moros, at the risk of their lives, climbed to the cotta and urged the leaders to send down the women and children, but the leaders were adamant. Agil, Imam Sanudim, Panglima Imlam and Adam, the notorious chieftains, refused all good offices and proceeded to arm the women for battle. In the hand to hand struggle that followed, the women fought as bravely and as ferociously as the men. The children, they used as shields before them and charged headlong into the Americans, who finally ascended the difficult trails.

The expedition included companies of the Sixth Infantry, troops of the Fourth Cavalry, several companies of the Philippine Constabulary, a detachment and gun from the U. S. S. *Pampanga* and the 28th Battery* of United States Artillery.

The battery already was stationed at Jolo while most of the rest of the troops had come from other camps to take part in the battle. Even before the mobilization order was issued, Captain E. F. McGlachlin, the Battery Commander, began a study of Bud Dajo and reconnoitered possible positions in case of orders for an attack.

At 6:45 on the morning of March 5, 1906, the 28th Battery, consisting of 3 officers and 67 enlisted men joined Colonel Duncan's column. To prepare for a simultaneous attack upon the cotta, Colonel Duncan, organized three columns, commanded by Major Omar Bundy, Captain T. R. Rivers and Captain E. P. Lawton, respectively, to correspond to the three trails of approach. Early in action, Captain Rivers was wounded and Captain L. M. Koehler took his place. The 28th Battery remained in the "flying column" under the command of Colonel Duncan.

The battery marched to the foot of the east trail and was immediately ordered into action. Major Bundy described the trail as a "narrow 'hog-back,' between two ravines and so steep in places that it was necessary to catch at the roots of trees in order to pull one's self up. There is no place where it is wide enough for more than one man, except where the obstructions and fortifications were placed by its defenders. There it had been widened somewhat to admit of better defense. To this add that in many places a false step on either side might send one rolling down the

*Now Battery "E," 4th Field Artillery.

steep ravine and one will have a partial idea of the difficulty and physical exertion involved in reaching the summit."

Up this trail the 28th Battery dragged its guns.

In its first action of the day, the battery took position at the foot of the east trail and at a range of 780 yards opened fire. Immediately a shower of boulders, bullets and javelins greeted the cannoneers and mules, but the rate of fire continued undiminished and from all observations its accuracy unimpaired.

After an hour's fighting in this position, the guns were taken up, loads packed and march resumed. The climb continued. The sun beat down unmercifully. The trail was thick with growth, dry, hot and almost suffocating. Now climbing, now crawling, the mountain battery kept its place in column. Twice the direction of the column had to be changed because the guides led the cavalry into by-paths which horses could not negotiate. In broad daylight at 12:30 the trail was lost and the column had to countermarch to get its bearings.

When the column reached Lawton's position, he asked for a gun to stay with his command. Captain McGlachlin detached Lieutenant Mack and 18 enlisted men with 96 rounds of ammunition. The rest of the battery started back for Jolo.

By 3:30 the battery had returned to Jolo for the day, after covering eighteen miles of the most strenuous kind of marching. At eleven o'clock that night, the battery again hit the trail. At three in the morning it was in position ready to fire.

At the foot of the west trail, the battery had stopped long enough to detach another gun under command of First Sergeant F. L. Taylor to support Captain Koehler. Fourteen enlisted men remained with Taylor. The rest of the battery continued to the south trail, where Major Bundy was in command.

On the south trail the battery covered two miles along circuitous routes to take up its position from which the west of the lip of the crater and the fortifications at the top of the west and south trails could be enfiladed and shelled. At 7:15 McGlachlin opened fire and continued until noon firing at ranges from 2600 to 3100 yards.

Captain McGlachlin and Lieutenant P. H. Worcester, also of the 28th Battery, spent the afternoon in reconnoitering new positions.

They crawled up the trail to within 200 feet of the top and decided to bring up one of the guns to this commanding position. For once, the mules could not make the grade. The trail at this point was so precipitous that a first rate climber could not cover 1800 yards an hour. Worcester resorted to block and tackle and with the aid of the soldiers from all arms in the column, the gun and 12 rounds of ammunition were raised to this new position in three hours. At dawn the next day, it opened with a desultory fire joining the pounding from the other guns upon the strongly fortified Moro positions.

When the heights were stormed, the gun was carried up the last 200 yards. On the afternoon of March 8, when complete victory was achieved over the Moros, the gun was taken down to the foot of the mountain. "Nothing but a linchpin and washer appears to have been lost and the gun was used throughout with a little native hatchet head for a linchpin," reported Captain McGlachlin after the fight.

Of their action in the south trail sector, Major Bundy reported as follows: "Much praise is due Captain E. F. McGlachlin and Lieutenant P. H. Worcester, Artillery Corps, for the efficient and enterprising manner in which they handled their mountain guns and their excellent marksmanship was in evidence on many occasions. The difficult and arduous task of literally dragging the mountain gun up this steep trail to a height of 1700 feet to the very top and then using it with such telling effect form a unique feature in the experience of our mountain batteries."

While Worcester's gun was performing in sensational style, Mack's and Taylor's pieces were also giving a good account of themselves.

Mack's gun was posted on a high hill directly opposite the enemy's cotta and opened with a barrage which it kept up until almost the moment of the charge. The fire was remarkably accurate though the gun and supporting infantry were constantly under the fire of the enemy's snipers. In anticipation of the attack up the trail, the Moros had sunk sharpened bamboo spikes, which, on account of the heavy underbrush, were invisible to the soldiers. A number of them were painfully injured. After delivering fire, the detachment under Mack cared for the wounded

and also carried messages. The pack train brought rations and ammunition and evacuated the casualties to Jolo.

The artillerymen in the other columns were similarly employed. When the artillery firing was over and the last charges were being made by the infantry and cavalry, a number of soldiers of the 28th Battery volunteered to take carbines and accompany the attack. Many of them took position on the firing line.

At the foot of the west trail, Taylor's gun crew was keeping pace with the traditions of the battery. After firing its first concentration, it, too, started up the trail, which was "so steep in places that steps had been cut by the natives and we found it necessary to pull ourselves up from place to place by holding on to roots and vines." Captain Koehler reported that in some places the trail was so steep that the soldiers had to bivouac the first night right in their tracks lest a misstep hurl them headlong down the precipice.

Of the bravery and courage of the troops in the expedition, words of praise and appreciation abound in the reports of every officer from Major General Leonard Wood, who observed the battle, down to the junior second lieutenants who took part in the fight.

Of special interest to the field artillery is the report of Colonel Duncan upon the services of the 28th Battery. He said:

"The 28th Battery, Field Artillery, Captain E. F. McGlachlin, commanding, is deserving of great commendation. It took but a few hours after arrival in Jolo to become convinced that this battery was in excellent condition for field service. The men were trained down by constant practice marches and reconnaissances to stand the hardest kind of work and Captain McGlachlin and his lieutenants, Mack and Worcester, were found quite familiar with the country. During the assault of Bud-Dajo, men of this command, in addition to their legitimate work of firing on the enemy, traveled on foot night and day, up and down steep trails—some sixty miles, packed and unpacked dead and wounded, guns, ammunition, rations and supplies for the battery and others without a word of fault finding, but, instead, cheerfulness and good behavior and anxiety to be in the fighting."

Of the 2.95, Captain McGlachlin said, "The Vickers-Maxim

Mountain gun is a fine weapon of great accuracy and serviceability."

But two elements of the artillery command remain to be cited and of them Colonel Duncan said: "Last but not least, the Expedition Commander takes heartfelt pleasure in thanking the noble type of American, the friends and comrades of the noble and lamented General George Crook and every soldier who wrested from the American Indian the great West of the United States—the packers and with their greatest ally of the soldier, the army mule."

The 2.95 may be headed for limbo, but the old army mule goes on.

"ALKY"—HEADQUARTERS BATTERY, SECOND BATTALION, 18TH FIELD ARTILLERY. FROM A PEN AND INK SKETCH BY E. L. WOODBURY, 1ST LIEUTENANT, FIELD ARTILLERY RESERVES, BURLINGTON, IOWA.

THE R. O. T. C. AT YALE
(Anonymous)

YALE University was founded in part to train her sons for service in church and state. Her graduates, always loyal to her teachings, have ever been ready to serve their country in the hour of need. They have served in her armed forces from the colonial period down to the present. Over nine thousand were in the service during the World War. It has become a tradition at Yale that her undergraduates should prepare themselves to aid in the National Defense while they are in college preparing for the other responsibilities of citizenship and life.

Small groups of students organized for infantry drill in the early nineties. By 1897 two companies were drilling regularly. The Plattsburg Camps were supported by a large proportion of Yale men. Many of her graduates thus early prepared themselves for fulfilling positions of responsibility as commissioned officers in the World War. A battery of Field Artillery was organized at Yale in 1915. Under the able direction of the then First Lieutenant R. M. Danford, Field Artillery, this organization was expanded into a provisional regiment of Field Artillery in 1916 and affiliated with the National Guard of Connecticut. Thus began the tradition of "Yale and the Guns" which grew into a national military asset when the great majority of these young men were commissioned in the Field Artillery in 1917.

Later in the World War, a unit of the Students' Army Training Corps was established at Yale. The present R. O. T. C. units at Yale are the outgrowth of these earlier organizations and the spirit which actuated their foundation. Today, in addition to the Field Artillery and Engineer R. O. T. C. units, there is a Naval Training Unit maintained at Yale.

The present units are maintained under the provisions of the National Defense Act of 1920. These courses not only qualify students for commissions as Second Lieutenants of the Officers' Reserve Corps of the United States Army, but at the same time yield normal hours of college credit toward graduation. The unit at Yale is a voluntary one and comprises approximately ten per cent of the undergraduate student body.

Yale has, through the generosity of her alumni, provided an excellent armory with a riding hall, gun sheds, excellent stables and facilities for quartering the enlisted detachment. For class room instruction an additional building is provided. In the new Payne Whitney Gymnasium an excellent indoor pistol and rifle range is under construction.

The courses in the R. O. T. C. units are based upon the War Department Directive. The theoretical and practical periods of instruction adequately prepared the student for his six weeks' intensive summer camp which is scheduled for attendance in the summer between his Junior and Senior years.

The summer camp for the Field Artillery unit is conducted at Fort Ethan Allen, Vermont, from June 24th until August 4th, inclusive. The Yale students are formed into a provisional battery with the members of the Harvard Unit to form the Yale-Harvard Battery. The first three weeks of the summer training are carried out in the post of Fort Ethan Allen proper where the work is largely devoted to bringing the organization to a high degree of proficiency before it marches to the Field Artillery Range at Camp Underwood.

The training during the first three weeks' period consists of a review of calculation of firing data, conduct of fire, mounted and dismounted drills, the battery detail, parades, mounted reviews and pistol practice.

The second period of three weeks covers sub-caliber and service firing on the target range which is located in the foothills of the Green Mountains. In addition to the target practice, this period is used to instruct in overnight marches, tactical handling of a battery of Field Artillery and observation of machine gun and other infantry weapon demonstrations by the Corps Area Machine Gun School.

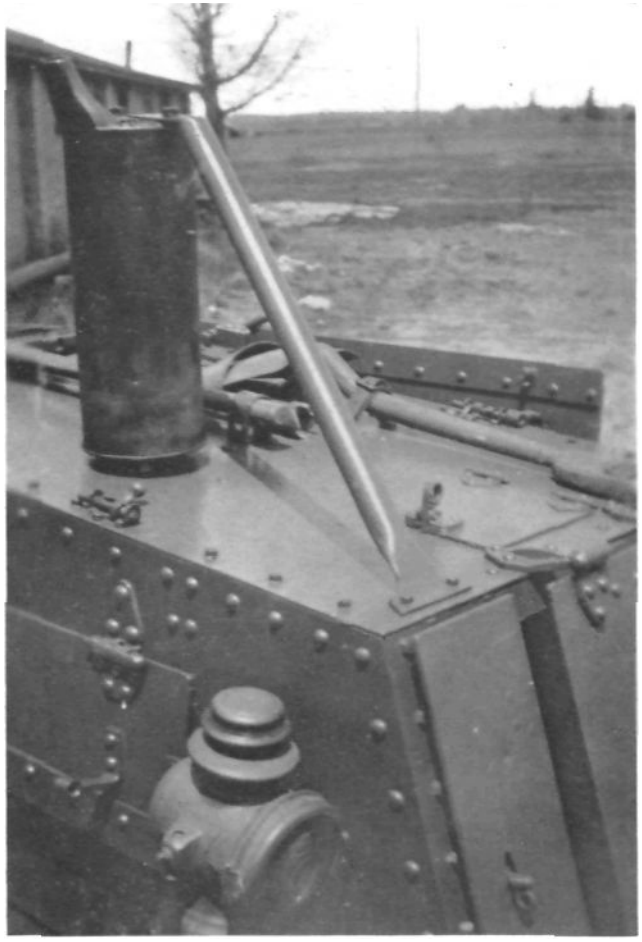
The summer training of the Engineer unit is conducted at Fort Humphreys, Virginia, where adequate engineer equipment is available to supplement a part of the theoretical training at Yale. The Yale unit is combined for training at that station with other engineer units from Massachusetts Institute of Technology and Virginia Polytechnic Institute.

The units at Yale are in a very healthy condition. An unusually large percentage of the Freshmen who enroll carry their military instruction on through the four years. The units have the wholesome respect and support of both the university authorities and the student body. During the past three years the ratings at the Annual Corps Area Inspection have been excellent.

What of the future? If we properly interpret the attitude of the student body as well as that of the Alumni, we are justified in stating that the Reserve Officers' Training Corps has become and will remain a permanent part of the instruction at Yale University. As the years pass and the memories of that unified spirit which characterized the nation in the vigorous prosecution of the World War become somewhat vague, there continues to grow a calm and determined insistence that opportunity shall continue to exist whereby the sons of Yale may prepare themselves to serve as commissioned officers in case of a national emergency involving the use of the armed forces. Happily the R. O. T. C. serves this useful purpose while the student is an undergraduate.

In these years of financial crisis when the world is still struggling for a peaceful solution of international problems, Yale finds herself in the ranks of those who favor a sane and reasonable Defense policy by her support of military training for her sons.

BATTERY "D," 4TH FIELD ARTILLERY, FORT ROBINSON, NEBRASKA, ON A MARCH THROUGH RED CLOUD BUTTE.



MUFFLER MOUNTING FOR 5-TON TRACTOR

EXPERIMENTAL HIPKINS TRACK INSTALLATION ON A 6-WHEELER

THE UNITED STATES ARMY OLYMPIC EQUESTRIAN TEAM Wide World Photo.

EQUESTRIAN SPORTS
GAMES OF THE XTH OLYMPIAD

BY MAJOR W. M. GRIMES, Cavalry*

GENERAL

THE equestrian sports of the Games of the Xth Olympiad are past history. However, I doubt very much if those fortunate enough to have witnessed that glamorous equine panorama will ever forget either the contests, the contestants, the spectators, the superb setting, or the staging.

Five chockablock days for horsemen! No matter where your interests lay, you could drink your fill. If schooling was the apple of your eye, what a feast was spread out on Riviera's lawns on August 10th and 11th, for the *Dressage and the Three-Day Training Test;* if you were a 'unting cross-country sort, the steeplechase and the endurance phases of the Three-Day event were enough to fill your cup to the brim. On the other hand, if the airs of the *haute ecole* and the gruelling endurance phases did not quench your equine thirst, you still might have found a *piece de resistance* in the *Prix des Nations*—a 1050 meter whirl-around of impressive fences, ditches and water, laid out on the floor of the Olympic stadium. If none of the foregoing interested you, I don't know what would have, as golf was not a sport on the programme of the Games of the Xth Olympiad!

As stated in the beginning of this account, the Games of the Xth Olympiad are past history. However, after all such contests, there always follows a period of explanations and the reasons for "this and that." No attempt will be made in this article to explain why "this" and why "that." The records speak for themselves. I don't suppose any Olympiad was staged under more perfect conditions as to facilities, management and weather. Suffice it to say that the equestrian sports were beautifully staged and managed by the U. S. Cavalry Association, as the American representative of the *Federation Equestre Internationale*. Lt. Colonel J. A. Barry, Cavalry, was the individual largely responsible for the detailed conduct of the equestrian events in Los Angeles, including

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*Major Grimes was present on duty at the Olympic Games in an official capacity as assistant to the War Department representative, Major General Guy V. Henry, Chief of Cavalry, U. S. A.

the selection, preparation, construction, etc., of all courses, and the detailed management thereof—a difficult task well administered and handled.

The schooling events took place on the beautiful turfed polo field of the Riviera Country Club. The setting was ideal. Approximately 25,000 people witnessed the two schooling tests. Looking back on it now, I doubt if ten per cent of the audience fully appreciated the marvelous exhibitions it was their privilege to witness. Once in a lifetime, perhaps, horsemen see such exhibitions as that given by Commandant Le Sage and the horse *Taine*. One will journey far before again seeing such a splendid layout as tested the endurance of the Three-Day horses; the fences on the cross-country course were designed to test the courage and skill of both rider and mount. How well our gallant Three-Day team measured every requirement of this course! Who will ever forget the beautiful setting of the Prix des Nations? The grassy turf of the Olympic stadium seemed to fairly bristle with fences of every description. Predominating were those of typical American hunting country; an old-fashioned snake fence, a Tennessee stake and rider rock fence, oxer, post and rail, Aiken Brush, water jump, ditch and bar bank, gates of various kinds, yawning ditches; a chicken coop seeming to be as high as the Olympic peristyle, with its white sides appearing to protrude abruptly out of the green carpet of the stadium's floor. Lastly, the stadium's population of 105,000, following in breath-like-silence the very performance of each horse and rider. If Chamberlin and *Show Girl* could not win, how happy the audience was over the well-earned and deserved victory of the smiling Nipponese Lieutenant Nishi riding the courageous and experienced *Uranus*.

THE COMPETITORS

As in past Olympics all entries were from the armies of the several competing countries. The United States, Sweden, and Mexico entered all three events (*Dressage, Equestrian Championship* or *Three-Day Event,* and the *Prix des Nations*). Japan entered the *Three-Day Event* and the *Prix des Nations*. Holland the *Three-Day Event* only, and France the *Dressage* only, Mexico made her debut in Olympic competition.

The Japanese team consisted of 11 horses and the following riders:

Colonel Kochei Yusa, Cavalry
Major Shunzo Kido, Cavalry
Major Yasushi Imamura, Cavalry
Major Shigetomo Yoshida, Cavalry
Captain Morishige Yamamoto, Cavalry-Reserve
Captain Taro Nara, Artillery
Lieutenant Baron Takeichi Nishi, Cavalry

The Swedish team consisted of ten horses and the following riders:

Count Carl Gustaf Bonde, Ecuyer
Count G. F. von Rosen, Swedish Royal Horse Guards
Major Bertil Sandstrom, King's Own Hussars
Major Ernst Hallberg, 2nd Hussars
Lieutenant Gustaf-Adolf Boltenstern, Cavalry Royal Horse Guards
Count Clarence von Rosen, Horse Guards
Lieutenant Arne Francke, 2nd Hussars
Lieutenant Thomas Bystrom, 2nd Hussars

The Dutch team consisted of four horses and the following riders:

Major C. H. Labouchere, Cavalry
Lieutenant Charles F. P. de Mortanges, Cavalry
Lieutenant Karel J. Schummelketel, Colonial Army Cavalry
Lieutenant Jonkheer A. Van Lennop, Artillery

The French team consisted of four horses and the following riders:

Commandant George Hector, Cavalry
Commandant Francois Le Sage, Cavalry
Commandant Charles Marion, Cavalry
Capitaine Andre Jousseaume, Artillery

The Mexican team consisted of nine horses and the following riders:

Colonel S. Urvina, Cavalry, Mexican Military School
Major Carlos H. Mojia, Cavalry
Captain P. Ortiz, Cavalry, Mexican Staff School
Captain Jose P. Allende, Cavalry, Aide to the President of Mexico

Captain N. Mazkiaram, Cavalry, Mexican Military School
Captain J. I. Lepe, Cavalry, Mexican Military School
Captain M. Figuerora, Cavalry, Mexican Military School
Captain Andres Bocanegra, Cavalry, Aide to the Minister of War
Captain Armando Barriguete, Cavalry, Mexican Military School
Lieutenant G. Gracida, Cavalry, 6th Regiment

The American team consisted of 15 horses and the following riders:

Lt. Col. C. L. Scott, Cavalry, Team Manager
Major Harry D. Chamberlin, Cavalry
Captain W. B. Bradford, Cavalry
Captain I. L. Kitts, F. A.
Captain E. Y. Argo, F. A.
Captain H. E. Tuttle, Q. M. C.
Captain Alvin C. Moore, Reserve
1st Lt. T. W. Wofford, Cavalry
1st Lt. E. F. Thomson, Cavalry

Of three European teams, France and Sweden shipped to New York and thence by rail to Los Angeles, returning over the same route; the Dutch team shipped to and from Los Angeles via the Panama Canal. The Mexican team shipped by rail to Los Angeles, and the Japanese team, of course, shipped direct by water.

The Japanese team was the first to arrive, landing at the port of Los Angeles early in July. All teams landed in Los Angeles in sufficient time to acclimatize horses and riders.

The horses of the foreign teams were stabled at the spacious Riviera Country Club, Santa Monica.

Captain Gustav B. Guenther, Cavalry, acted as Liaison Officer with the foreign teams.

JURIES, JUDGES, ETC.

The following gentlemen served on the several juries, etc:

Jury of Appeal

United States ..... Major General Guy V. Henry
France ..... Commandant Georges Hector
Sweden ..... Count Clarence von Rosen

Dressage

United States ..... Lieutenant Colonel Sloan Doak, Cavalry
France ..... General La Font
Sweden ..... Count Carl G. Bonde

Concours Complet

United States ..... Lieutenant Colonel Sloan Doak, Cavalry
Holland ..... Commandant C. H. Labouchere
Sweden ..... Count Carl G. Bonde

Prix des Nations

United States ..... Lieutenant Colonel Sloan Doak, Cavalry
Japan ..... Colonel Kochei Yusa
Sweden ..... Count Carl G. Bonde

International Examining Commission—Three-Day Event

United States ..... Carleton Burke
France ..... General La Font
Japan ..... Colonel Kochei Yusa
Veterinarian ..... Captain P. H. Hudgins, U. S. A., Ret.

In addition to the foregoing, numerous regular, national guard, and reserve officers served as ground judges in the stadium jumping events and the steeplechase and cross-country phases of the *Three-Day Event*. In this latter event approximately 65 ground judges were required; these included timers, starters, checkers, scorers, judges at jumps, etc.

THE DRESSAGE

The Dressage competition was held on Wednesday morning, August 10th, on one of the polo fields of the Riviera Club. Team and individual entries were made by France, Mexico, Sweden and the United States, ten entries in all, with three riders each from all save Mexico which made an individual entry only. Captain Moore of the U. S. Army, riding *Water Pat,* was the first rider, followed in turn by the first rider representing Sweden, Mexico and France.

Our team consisted of:

Captain Hiram E. Tuttle, Q. M. C., on *Olympic,* T. B. B. G.
16.2½—1225—8 years—
(Radius Rose-Odette VI).

Captain Isaac L. Kitts, F. A., on *American Lady,* T. B. B. M.
16—1025—11 years—
(Prince Henry—Half a Sovereign)

Captain Alvin H. Moore, Res., on *Water Pat,* T. B. Br. G.
15.3—1100—8 years.

The French Team consisted of:
Commandant Francois Le Sage, on *Taine*
Commandant Charles Marion, on *Limon*
Captain Andre Jousseaume, on *Sorolla*

The Swedish team consisted of:
Lieutenant Gustaf-Adolf Boltenstern, on *Ingo*
Major Bertil Sandstrom, on *Kreta*
Lieutenant Thomas Bystrom, on *Gullivor*

The Mexican team consisted of:
Lieutenant Vicente M. Brizuela, on *El Pavo*

After several riders from each country had ridden, it was very apparent that the audience was witnessing two distinct dressage schools—one the French, the other the Swedish. The French team were all mounted on light thoroughbreds; their schooling was indicative of extreme lightness, balance, evenness and grace; in passing from one movement to another there seemed to be an almost imperceptible pause. Our team showed unmistakable influence of the French school and doctrines; our horses, too, were all thoroughbreds. The Swedish team, on the other hand, rode a much heavier and what to us would appear to be a less breedy type of horse; their horses were well schooled, their movements smooth and uniform; one might say they were almost routine in their evenness. In passing from one movement to another the Swedes appeared to speed, to accelerate and even slur the transitions; whereas the French transitions were more clearly defined by an almost imperceptible pause.

Truly the record of our Dressage team was remarkable, when you consider that not a rider nor horse had ever before been in an International Dressage Competition; that the team had been in training less than 18 months; and that we were greatly limited in the quality and quantity of suitable dressage prospects and qualified riders. As a nation we are not dressage or school minded; at the Xth Olympiad we were competing with European countries whose Equestrian history reeks with the dressage; their riders and horses had the advantages and experience gained only through the medium of international competition, our riders and

horses were without this background and experience. Captains Tuttle, Kitts and Moore each put up highly creditable individual performances which in turn reflected great credit to the team as a whole. If ever long, faithful and hard effort was rewarded—certainly it was on August 10th in the showing of our Dressage team.

INDIVIDUAL CLASSIFICATION

A	B	C	D
Order	Name	Country	Standing of riders in rating of each judge; viz., place total
1	Commandant Francois Le Sage	France	6
2	Commandant Charles Marion	France	14
3	Captain Hiram E. Tuttle, Q. M. C.	U. S.	14
4	Lieutenant Thomas Bystrom	Sweden	16
5	Captain Andre Jousseaume	France	17
6	Captain Isaac L. Kitts, F. A.	U. S.	17
7	Captain Alvin H. Moore (Res.)	U. S.	20
8	Lieutenant Gustaf-Adolf Boltenstern	Sweden	21
9	Lieutenant Gracida	Mexico	30
*10	Major Bertil Sandstrom	Sweden	9

*Major Sandstrom was placed tenth by the Jury of Appeals for violation of a rule of the Federation Equestre Internationale—clucking to his horse, an unauthorized aid in the Dressage.

NOTE.—The figure in Column D is obtained as follows: Commandant Lesage was rated, respectively, by the three Dressage jurors, as: Second Place, First Place, and Third Place, giving a place total of "6" as indicated.

THREE-DAY EVENT

I think we can safely say that if there was one event the winning of which meant more than any other, it was the Concours Complet D'Equitation or the Three-Day Event.

In the minds of most horsemen the Three-Day Event is the military event *par excellence* on the Olympic programme. The requirements for this event more nearly coincide with our conception of ideal charger. If in selecting and training our chargers we followed more closely the requirements of a Three-Day horse, how much better all of us would be mounted!

The Three-Day Event is essentially a *team* event. Entries were made by Holland, Sweden, Japan, Mexico, and the United States, as follows:

Holland

Lieutenant Charles F. P. de Mortanges, on *Marcroix*.
Lieutenant Jonkheer A. Van Lennop, on *Henk*.
Lieutenant Karel J. Schummelketel, on *Duiveltie*.

Sweden

Captain Ernst Hallberg, on *Marokan*.

Lieutenant Clarence von Rosen, Jr., on *Sunnyside Maid*.

Lieutenant Arne Francke, on *Fridolin*.

Japan

Lieutenant Colonel Shunzo Kido, on *Kyu Gun*.

Captain Taro Hara, on *Sonshin*.

Captain Morishige Yamamoto, on *Kinge*.

Mexico

Captain Armando Barriguete, on *Monza*.

Captain Jose P. Allende, on *El Torero*.

United States

Major Harry D. Chamberlin, on *Pleasant Smiles*.

T. B. B. G.—16.1—1100—8 years

Sire *Dam*

(Transvnal—Bread Winner)

Captain Edwin Y. Argo, on *Honolulu Tom Boy*.

T. B. Ch. M.—15.2½—1050—6 years

(Honolulu Boy—B. M. 534)

Lieutenant Earl T. Thomson, on *Jenny Camp*.

½ T. B. B. M.—16—1000—6 years

(Gordon Russel—B. M. 392)

Our team, with the exception of Thomson on *Jenny Camp,* a ½ T. B., was mounted on outstanding types of American thoroughbreds. They were in excellent condition—ready, fit and "raring to go." How well they and their riders were prepared is witnessed in the account that follows. None of the other teams were completely mounted on clean-bred horses. The Swedes had one clean bred, one three-quarter bred and one unknown; the Dutch horses were all ½ T. B.; the Japanese had no clean breds, neither did the Mexicans. It was the consensus of opinion of practically all competitors that the thoroughbred was the only type of horse that could satisfactorily meet the rigid present-day requirements of the Three-Day Event.

TRAINING TEST THREE-DAY EVENT

The Three-Day Event started on Thursday, August 11th, with the training test, at the Riviera Club.

The Federation Equestre Internationale in order to place more emphasis on the *training test* (schooling) of this event did two things, viz: First, increased the number of alloted points to 400; and then disqualified any rider who failed to make a score of at least 150 points. Knowing the Federation's attitude regarding schooling, those responsible for the training of our *Three-Day Team* recognized the necessity of concentrating on the schooling phase of the Three-Day. This was a sound and wise decision; if successful it would enable us to "feather our nest" prior to the endurance phase and give us a margin on which to operate. Just how successful we were is attested by the results listed below. Out of 14 competitors, all three of the U. S. Army riders placed within the first six viz: First, second and sixth. Our team stood first as a team with a total average score of 973.333; Sweden was second with 904.332, and Holland, third, with 856.833.

It was a very pretty sight, indeed, to witness the 11-minute period allowed for the execution of the prescribed movements. Listed below are the individual scores of this phase:

Order	Name	Country	Horse	Ave. Score
1	Chamberlin, Major	U. S.	Pleasant Smiles	340.333
2	Argo, Captain	U. S.	Honolulu Tom Boy	333.0
3	Mortanges, Lieut.	Holland	Marcroix	311.833
4	Von Rosen, Lieut.	Sweden	Sunnyside Maid	310.666
5	Francke, Lieut.	Sweden	Fridolin	303.333
6	Thomson, Lieut.	U. S.	Jenny Camp	300.000
7	Hallberg, Captain	Sweden	Marokan	299.333
8	Van Lennop, Lieut.	Holland	Henk	277.5
9	Schummelketel, Lieut.	Holland	Duiveltje	267.9
10	Yamamoto, Captain	Japan	Kingo	257.333
11	Nara, Captain	Japan	Sonshin	242.00
12	Kido, Lieut.	Japan	Kyu Gun	212.82
13	Allende, Captain	Mexico	El Torero	171.166
*14	Barriguete, Captain	Mexico	Monza	119.166

*Eliminated for failure to make the requisite number of points—150 points, minimum.

ENDURANCE PHASE, THREE-DAY EVENT

On Friday, August 12th, began the rigorous endurance phase of the Three-Day Event. There were many thrilling episodes connected with the running thereof. First a word as to the 22½-mile course to be made in two hours, 5 minutes and 6 seconds. There were 5 separate and distinct phases viz:

Phase A—4½ miles—roads and paths over a winding trail leading up a canyon and over some difficult foothills. Rate, 9 miles per hour.

Phase B—2½ miles—steeplechase course consisting of 15 fences—brush, open ditches and water jump—jumps as specified by National Steeplechase and Hunt Association rules—Rate 22½ miles per hour.

Phase C—9½ miles—more roads and paths. In order to get to Phase D, (Endurance) it was necessary to follow certain streets from the Riviera Club area to the high mesa in the vicinity of Loyola College. Rate 9 miles per hour.

Phase D—5 miles—the course included 34 obstacles, brush, post and rail, aiken fence, ditch in and out across road, stone fence, concrete culvert, logs, water trough, bale hay, chicken coop, etc. Fences were, in general, fairly solid and imposing in size. Rate 17 miles per hour.

Phase E—1½ miles—gallop on the flat, to be made in 6 minutes.

The terrain in and around the Riviera area is, from an Equestrian point of view, far different than the lovely galloping country to be found in the hunting areas of our eastern sea board, with their natural fences and stretches of nice galloping turf. In Los Angeles, it was extremely difficult to find suitable terrain on which to stage the endurance phase; it was necessary to construct not only a steeplechase course—since none was in existence—but likewise construct all the fences for the endurance phase. As I recall it, there was not a single fence that was not "planted" so to speak—post and rail fences, stone walls, etc., such as we know in the east are not to be found in and around Santa Monica. Unfortunately the going on both the Steeplechase and Cross-country courses was hard—the ground was baked with numerous cracks and ridges. However, it was the best to be had and it was as fair for one horse and rider as another.

Let us go through a few phases with several riders. First, Lieutenant Thomson of the U. S. Army riding *Jenny Camp*, winner of the endurance phase. Lieutenant Thomson and the gallant *Jenny Camp* received not a single jump penalty in either the steeplechase or cross-country phases—some forty odd jumps clean as a whistle, truly a remarkable achievement. Lieutenant Thomson gathered up a six-point bonus for the steeplechase. Second place went to Lieutenant Mortanges riding *Marcroix,* the winner

of the Individual Three-Day Event in 1928; he received a 70-point penalty in the cross-country phase and a 6-point bonus in each of the cross-country and steeplechase phases. Lieutenant von Rosen of Sweden, placed third in the individual classification with a 50-point penalty in the steeplechase and with a 12.5-point time penalty and a 4-point bonus for the cross-country phase. Captain Hallberg, of Sweden, placed fourth, with Major Chamberlin, of the U. S., in fifth place. Lieutenant Schummelketel, of Holland, was sixth, and Captain Yamamoto, of Japan, seventh. Captain Argo, of the U. S., who was eighth, on this day, gave one of the highlight performances of the games. Prior to the team's departure from Fort Rosecrans, Argo slipped and fell on a staircase and dislocated his shoulder; he entered the events with his shoulder strapped to his side. The training test caused him no difficulty, but the water jump on the steeplechase was a disastrous fence, for him. Here Argo's shoulder popped out once more, as a result of a peculiar twist of *Honolulu Tom Boy*—during this period the excruciating pain caused intense suffering and it was only by the greatest display of grit and determination that Argo carried on, riding a distance of approximately twenty miles and negotiating some forty odd fences with a score high enough to warrant an individual classification of eighth for the endurance phase. After the water jump on the steeplechase course it became necessary for Argo to radically change his seat in order to ease the strain from his injured shoulder.

Colonel Kido, of Japan, was unfortunate enough to be eliminated at the last fence of the endurance phase jump (No. 34, a chicken coop across a road). This was the irony of fate after a twenty mile gallop and negotiating over two score fences. Captain Nara, of Japan, was eliminated on the twelfth jump of the steeplechase, and Captain Allende, of Mexico, was eliminated for failure to keep to the course between the twelfth and thirteenth obstacles. Lieutenant Francke, of Sweden, was eliminated three jumps from the finish at Jump 31 of the cross-country phase. Major Chamberlin had a perfect performance on the steeplechase course; but on the cross-country course *Pleasant Smiles* plowed through the thirty-second jump with a resultant terrific fall for Chamberlin and his mount. However, undeterred *Pleasant Smiles* gallantly carried his rider on to the finish.

Of the thirteen riders who started the endurance phase two were eliminated in the steeplechase course and two were eliminated in the cross-country phase. Three riders got through the steeplechase and cross-country courses without any faults at fences (Schummelketel, of Holland; Thomson, of the U. S., and Yamamoto, of Japan). Lieutenant Mortanges, of Holland, was the only rider to receive a bonus on both the steeplechase and cross-country phases, six each, or a total of twelve.

The finish of the endurance phase was a scene of intense activity, as each horse and rider drew up after the long twenty-two mile ride. Only two teams finished with three riders up—Holland and the United States. Each of these teams finished with all three horses in reasonably good shape. By far the most alert, the most unconcerned and the least fatigued horse was the bold and courageous thoroughbred filly *Jenny Camp*. Alert, keen and wide awake, she was a picture of perfect health and condition as she nibbled on some hay a few minutes after completing the course. Only a courageous hearted thoroughbred like *Pleasant Smiles* could have carried on and finished after the terrific fall toward the end of the cross-country phase—the same applies equally well for *Pleasant Smiles'* rider.

At noon on Saturday, August 13th, all horses which had satisfactorily completed the endurance phase were examined by an international commission, for the purpose of eliminating all horses suffering from the effects of the first two days' tests. All satisfactorily passed the commission.

Insofar as the *Endurance Phase* itself is concerned the *individual* classification of the first three riders follows:

1st—Lieut. E. F. Thomson, U. S., *Jenny Camp* 1271
2nd—Lieut. C. F. P. de Mortanges, Holland, *Marcroix* 1242
3rd—Count G. F. von Rosen, Sweden, *Sunnyside Maid* 1241.5

Team standing for endurance based on total of individual scores:

1st—United States 3286
2nd—Holland 3144.5

At the close of the *endurance phase* (including the schooling) the *team* standing was:

1st—United States 4259.33
2nd—Holland 4001.33

Individual standings:

1st—Lieut. Thomson, U. S., *Jenny Camp*.....1571
2nd—Lieut. Mortanges, Holland, *Marcroix* 1553
3rd—Lieut. von Rosen, Sweden, *Sunnyside Maid*.....1552.1

Here again we see an American officer winning the Individual *Endurance* phase and our team first as a team.

STADIUM JUMPING PHASE

The final phase of the test was the stadium jumping held on the afternoon of August 13th. A beautiful course of twelve jumps faced each horse and rider; the fences were between three feet seven and three feet nine in height. Each horse was required to take the course at a fourteen mile gallop.

The standing of the several riders was:

Order	Name	Country	Horse	Total Penalty
1	Argo	U. S.	Honolulu Tom Boy	0.75
2	Mortanges	Holland	Marcroix	40.0
2	Hallberg	Sweden	Marokan	40.0
3	Yamamoto	Japan	Kingo	40.25
4	Von Rosen	Sweden	Sunnyside Maid	42.75
5	Schummelketel	Holland	Duiveltje	58.0
6	Thomson	U. S.	Jenny Camp	60.0
7	Chamberlin	U. S.	Pleasant Smiles	60.0
8	Van Lennop	Holland	Henk	114.25

NOTE: Again we win individual first place in this phase and our team still standing number one.

Captain Argo, riding *Honolulu Tom Boy,* made a remarkable performance; not a fault at a jump—only a time penalty of 0.75. Lieutenant Thomson, on *Jenny Camp,* went into the final phase of the Three-Day Event with a 17.2 point lead over his nearest competitor, Lieutenant Mortanges, of Holland, on *Marcroix*. However, in the stadium jumping phase, *Marcroix* negotiated the course more cleanly than did *Jenny Camp. Marcroix* had one knockdown and touched the water once; whereas *Jenny Camp* had one knockdown and was in water at the fourth and eighth obstacles, which lost Lieutenant Thomson the Individual Three-Day Championship.

The final scores of the Three-Day Event are listed below—and what records of achievement they are:

TEAM STANDING

Rider	Country	Horse	Score
Lieutenant Thomson	U. S.	Jenny Camp	1811.0
Captain Argo	U. S.	Honolulu Tom Boy	1539.25
Major Chamberlin	U. S.	Pleasant Smiles	1687.833
Team Total	U. S.		5038.083
Lieutenant Schummelketel	Holland	Duiveltje	1614.5
Lieutenant Van Lennop	Holland	Henk	1260.75
Lieutenant Mortanges	Holland	Marcroix	1813.833
Team Total	Holland		4689.083

Our team led from the start; the victory was a glorious achievement for our riders and horses. Each rider of our team won an *individual* phase, viz: training, endurance and stadium jumping. The *team,* as a team, likewise won every phase! This is the first time that the Three-Day Event has been won by any nation but Holland and Sweden. The foundation for this victory was begun in 1912 and was added to by the experiences gained in 1920, 1924, and 1928. The result speaks volumes for the resourcefulness, determination, courage, and skill of our riders and mounts. The cornerstone of the Three-Day victory was laid on "condition"—for which two individuals are largely responsible—namely, Lieutenant Colonel Charles L. Scott, Team Manager, and Major James E. Noonan, Veterinary Corps, Team Veterinarian.

Condition, while a great contributing factor, alone could not assure victory. There were long tedious hours spent in the saddle preparing for these events; here is where the experienced eye of Major Chamberlin was so useful for the schooling and jumping.

It goes without saying that victory would not have been possible without the loyal and wholehearted cooperation of every officer and enlisted man serving with the team. For loyalty, faithfulness and devotion the work of the enlisted attendants of the team, under conditions which at times were most trying, stands out as one of the highspots of the games of the Xth Olympiad. The part played by these men cannot be measured. Suffice it to say that theirs was a contribution that assured success to our team.

Individual standings of competitors follows:

Order	Rider	Country	Horse	Score
1	Mortanges, Lieut.	Holland	Marcroix	1813.833
2	Thomson, Lieut.	U. S.	Jenny Camp	1811.0
3	Von Rosen, Lieut.	Sweden	Sunnyside Maid	1809.416
4	Chamberlin, Major	U. S.	Pleasant Smiles	1687.833
5	Hallberg, Captain	Sweden	Marokan	1679.33
6	Schummelketel, Lieut.	Holland	Duiveltje	1614.5
7	Yamamoto, Captain	Japan	Kingo	1609.583
8	Argo, Captain	U. S.	Honolulu Tom Boy	1539.25
9	Van Lennop, Lieut.	Holland	Henk	1260.75

To win a *Three-Day Event* is a glorious victory; to win it twice in two successive Olympics with the same horse is an honor that has never before been achieved. Lieutenant Mortanges, of Holland, and the gallant 12-year-old half-bred bay gelding *Marcroix* richly and truly deserve the title of *Olympic Champions*.

PRIX DES NATIONS

The Prix des Nations was the closing event of the equestrian sports; indeed it was the *grand finale* of all the sports of the Games of the Xth Olympiad. On Sunday afternoon, August 14th, over 105,000 people were seated in the Olympic stadium to witness the closing ceremonies and the Prix des Nations. This audience saw the greatest jumping exhibition ever staged in this country.

There were four team entries—Mexico, United States, Japan, and Sweden, making a total of twelve individual competitors.

The United States team consisted of:

Major Harry D. Chamberlin, Cavalry, on *Show Girl*.
T. B. Gr. M.—15.3—1150—8 years
(Stress-Chanata)

Captain William B. Bradford, Cav., on *Joe Aleshire*.
½ T. B. B. G.—16.1—1200—12 years
(Red [S. B.] McDonald T. B.)

Lieut. John W. Wofford, Cavalry, on *Babe Wartham*.
½ T. B. B. G.—16.2½—1175—13 years
(Henry of Havare—½ Coach)

Our riders need no introduction; all were veterans seasoned and experienced in past international competition. As to horses, they likewise were experienced. Our Prix des Nation nominations

were originally *Babe Wartham, Joe Aleshire,* and *Tan Bark,* with *Show Girl* as substitute.

Forty-eight hours prior to the actual event the final team was selected with *Joe Aleshire, Babe Wartham,* and *Show Girl. Tan Bark* had not been in the best of condition and it was decided not to enter him. Evidence of the soundness of *Show Girl's* selection, both as the general reserve mount for the entire team, and as a competitor in the *Prix des Nations,* is borne out by her wonderful showing in this event. Many were disappointed in not seeing *Ugly* nominated; however, he was not in satisfactory condition.

The course as set up had twenty obstacles; it was approximately 1050 meters long and required a gallop of 400 meters per minute. The fences were stiff, mostly patterned after natural hunting country. They were also higher than in past Olympics due to new requirements as to dimensions. Without doubt it was one of the most difficult courses ever set up in the United States; however this was but to be expected—this was Olympic competition—a fact often overlooked by carping critics.

The Olympic stadium course demanded a galloping "leaper"—one bold, courageous, dependable, and experienced. Mere jumping ability was not sufficient—time and space factors demanded a horse that could move along. To these two qualities one had to add boldness and courage so as to face the yawning ditches, stretches of water, the breadth, height and variety of the fences; lastly, but not least, there was required dependability and experience—to steady, place and lift the bold gallant horse over the tight spots and trappy places at the fences.

Let us follow the four teams and the twelve riders. The first to attempt to negotiate the course was Captain Bocanegra of the Mexican Army—horse and rider reached the fifth obstacle, ditch and bank, where they were eliminated for three disobediences (refusals). Then came our first rider, Lieutenant Wofford, on *Babe Wartham*. Wofford was eliminated at the eleventh fence where he had his third disobedience, the other two being at the eighth and tenth fences. In this connection, however, it was noticed that the Jury permitted Wofford to complete the course, although the official records show elimination at the eleventh fence. The third

entrant was Major Imamura, of Japan; he was eliminated at the tenth fence, having suffered one disobedience at the eighth fence and two more at the tenth. All eyes now turned to Lieutenant Von Rosen, of Sweden. Due to individual penalties up to this moment, the teams of Mexico, United States, and Japan were already eliminated as teams. Lieutenant Von Rosen was the first rider to safely negotiate the course, with the excellent score of sixteen penalties. Major Mejia, of the Mexican Army, was eliminated at the second fence for three refusals. Then came Captain Bradford on old *Joe Aleshire;* they completed the course with a score of twenty-four.

Sweden was eliminated as a team at the tenth fence—an aiken brush—where Lieutenant Francke had three refusals. Up to this time Lieutenant Francke's mount was jumping very nicely. All teams were now eliminated. So attention was now focused on the individual. So far Lieutenant Von Rosen was standing first, with sixteen faults; and Captain Bradford was second with twenty-four faults. The last Mexican rider, Captain Ortiz, was eliminated at the eighth fence where he had his third disobedience. Next came the final United States representative, Major Chamberlin on *Show Girl*. Many the time Chamberlin has ridden forth in team competition faced with the insurmountable task of turning in a perfect score—and how well he has succeeded is well known to all followers of our Army equestrian teams. Chamberlin and *Show Girl* were the cynosure of all eyes and the hopes of every American in the Olympic stadium. Chamberlin and the graceful, grey, rakish mare got away to a lovely start—four fences in perfect form—then a knockdown at the fifth fence (a four point penalty)—feet in the water at the sixth fence and in water again at the thirteenth fence, making eight faults over water, or a grand total of twelve faults. What a roar of applause greeted this gallant rider and horse, and well the audience might cheer, for the U. S. Army was now first with a rider leaving a score of twelve—no mean score for the Prix des Nations. Then came Lieutenant Baron Nishi, riding the Japanese Army entry, *Uranus*—a big upstanding 14-year-old French half-bred. *Uranus,* under the skillful riding of Lieutenant Nishi, incurred no penalty until the water was touched at the sixth obstacle (4

faults)—a quick recovery, then three clean leaps and the first refusal at the tenth fence—an Aiken Brush (3 faults)—then on again with not a single remaining fault, a total of seven faults at fences and a time penalty of one fault, or a grand total of eight faults, and the crowd hailed the winner of the Prix des Nations! A great victory for Japan and well might they be proud of Nishi and *Uranus*.

Following is the scores of the individuals:

Order	Rider	Country	Horse	Score
1	Lieut. Nishi	Japan	Uranus	8
2	Major Chamberlin	U. S.	Show Girl	12
3	Lieut. von Rosen	Sweden		16
4	Captain Bradford	U. S.	Joe Aleshire	24
5	Captain Hallberg	Sweden		50.5

Some interesting sidelights:

a. No team had three riders to complete the course; therefore there were no team awards.

b. United States and Sweden the only two countries having two riders up at finish.

c. Out of twelve riders—five completed the course.

d. Of those who finished the course, Lieutenant Nishi was one of the two competitors who had a time penalty. Lieutenant Nishi had no knockdowns; his penalties were "feet in water," a "refusal" and "time."

e. Not a single rider and horse escaped a 4-fault penalty for feet in water at the sixth obstacle, leaning bar and water. The only rider whose horse did not touch the water at the thirteenth fence was the winner, Lieutenant Nishi.

RECAPITULATION

To summarize, the showings made by the 1932 Olympic Games Equestrian Teams are as follows:

	DRESSAGE		THREE-DAY		PRIX DES NATIONS	
Nation	Team	Indiv.	Team	Indiv.	Team	Indiv.
United States	III	III	I	II	__	II
France	I	I & II	__	__	__	__
Sweden	II	__	__	III (a)	__	III (a)
Holland	__	__	II	I	__	__
Japan	__	__	__	__	__	I
Mexico	__	__	__	__	__	__

(a) These phases were won by an outstanding rider, Lieut. von Rosen, Jr., of Sweden.

The 1932 Olympic Games Equestrian Team will go down as one of the most successful teams that has ever represented our Army in Olympic competition. It has set a high record of achievement. The team was fortunate in its personnel, as well as in its horseflesh. Extremely fortunate, too, the team has been in having as Chief of Cavalry one who rode on and captained the first Olympic equestrian team, the 1912 of the American Army. This in itself assured the team a broad and sympathetic understanding. This factor, coupled with the War Department's policy of helpfulness and cooperation, materially assisted the efforts of all concerned in winning an Olympic equestrian victory on American soil.

FRENCH ARTILLERY DOCTRINE

(Third Installment)

(The following is a digest by Major John S. Wood, F. A., of the course in artillery given at the Ecole de Guerre under the direction of Colonel de la Porte du Theil. Major Wood was a student there in 1929-1931.—EDITOR.)

PART II

ARTILLERY IN THE OFFENSIVE

Foreword

TROOPS cannot advance in the face of effective fire from modern weapons without sustaining ruinous losses. To advance, the effectiveness of enemy fire must be reduced. Nothing is gained by piling up corpses in front of an active machine gun.

Superiority of fire is essential in the attack. If it cannot be secured by infantry alone, the artillery must help. Of course, effectiveness of fire depends largely on morale, and morale is influenced not only by fire but by other factors—surprise, enemy aggressiveness, menace to one's flanks or rear. Even in these, however, fire plays its part.

The French regulations distinguish several phases in the offensive action of large units:

Approach march,
Engagement,*
Attack, ending in the assault,
Exploitation of the success,
Pursuit.

For the smaller units engaged, all these situations are simply a matter of closing with the enemy, driving him from his positions, and pursuing him until he stands again at bay. The role of the artillery in these different phases will be considered, including the important question of ammunition supply.

SECTION I—MANEUVER OF FIRE

In the French regulations for artillery in combat, maneuver of fire in the offensive is defined as follows:

"Before the attack, the artillery destroys any obstacles to the infantry advance designated by the higher commander** and

*A sort of combined advance guard action and deployment, directed by the Corps.
**Generally, division or corps commander.

seeks to reduce the enemy's capacity to fire (mission: *preparation* by destruction or by neutralization).

"During the attack, the artillery protects the infantry by fire on points from which the enemy may see or fire (mission: *protection*); accompanies the infantry by fire to neutralize the enemy in immediate contact (mission: *neutralization*); and fires on enemy artillery which may inflict losses among the infantry (mission: *counterbattery*).

"In attack as in defense, certain *interdiction* (or harassing) fire is placed on selected points within the enemy lines."

PREPARATION FIRE

For initial discussion, preparation fire will be taken as meaning fire executed prior to H-hour, although this commonly accepted definition is too restricted. By many, the preparation is considered more of a detriment than a help in that it gives warning to the enemy and prevents surprise. However, one must not be too quick to infer that it is always a drawback in this respect. In large operations against deeply organized defenses, surprise of the enemy higher command is sought rather than surprise of the front line elements. On May 27, 1918, the Germans broke through the French lines using a preparation that left no doubt as to their intentions, but it was too late for the blow to be parried.

Against defenses of little depth, the surprise effect of a sudden attack is often the best guarantee of success. This was abundantly proved in Morocco in 1925. Nevertheless, there have been successful surprise attacks on a large scale against deep zones, and the question must be closely analyzed.

PREPARATION IN 1914

In 1914, the doctrine was that the artillery acted only with the infantry in attack. It was not to prepare attacks, but to support them. The theory, based on the idea of a short war, was that the 75 would suffice against open formations and that no heavy artillery was needed, as field works would be rare. It overlooked the protection provided against artillery fire by even the simplest defenses and, also, the disappearance of formed bodies of troops from the battlefield. Shrapnel is certainly capable of destroying

troops in such formations, but not when they are scattered and lying down, and still less when they are intrenched in any degree. In this case, shell is needed and plenty of it.

Moreover, certain unexpectedly strong field works were encountered against which the 75 was powerless. Most of these, however, existed only in the imagination of excited troops and no trace has been found of them except in regimental histories. With a proper density of fire, the 75 would have sufficed in many cases to prevent terrible losses.

"Give me a hundred thousand rounds of 75 and I will give you the Mortmare wood," said an artilleryman to his general on one of these tragic days. He was right, but three years were required to convince people of it. Meanwhile, the same Mortmare wood was attacked again and again with a total expenditure of many more than one hundred thousand rounds to no purpose other than the decimation of several magnificent battalions of infantry.

Caliber is, of course, a factor in preparation, but mass of ammunition is an equally important one.

PREPARATION BY DESTRUCTION, 1914-17

From 1914 to 1917, the idea of destruction was predominant. "The object of the preparation is to destroy all obstacles in the zone of the attack. Artillery of all calibers will take part, destroying wire, flanking defenses, fire and communicating trenches, and enemy batteries." (Instructions for the Attack, 1915.)

Preparations lasting from three to ten days and expending nearly a ton of ammunition per meter of front became the regular thing. Heavy artillery was demanded and installed in ever increasing proportions (from 1 piece per 35 meters of front on the Somme in 1916 to 1 piece per 10 meters at la Malmaison in 1917).

The time factor was entirely overlooked. Not until after the disastrous failure of the Nivelle offensive in 1917 was it realized that the long preparation defeated its own ends by making the terrain in front impossible for artillery, by creating craters to shield enemy machine gunners, and by giving the enemy time to bring up his reserves. Strategic surprise was made practically impossible.

PREPARATION BY NEUTRALIZATION, 1918

In October, 1917, a new set of instructions was issued for the offensive combat of large units. "Strategic surprise," it stated, "requires that an attack be launched suddenly after a rapid preparation, allowing the enemy insufficient time to bring up his general reserves, to strengthen his defenses, or to withdraw."

In March, May, and June, 1918, the Germans gave a masterly demonstration of this principle. Preparations were reduced to a few hours or not used at all. The successful attacks of the 1st French Army on August 8th and September 26th and those of the 10th French Army on July 18th and August 18th are also striking examples.

By ceasing the attempts at destruction, the attendant delay arising from the necessity for continuous daylight observation was obviated. The result desired, that of preventing effective enemy reaction, was obtained in a more decisive and rapid fashion by fire for neutralization.

Neutralization results from the effects obtained by successive zone fires on selected portions of the enemy defenses. As stated in Part I of this study, destruction fire and neutralization fire differ only in the manner in which they are conducted. The number of rounds of zone fire required to neutralize an accurately located dug-out, for example, is about the same as that prescribed by the regulations for its destruction by observed fire. In practice, this figure is adopted as a first approximation in calculating expenditures of ammunition, and it is then increased from 0% to 100%, according to the degree of precision possible in the preparation of fire. At night, it is well to count on an increase of at least 50%.*

Of course, the effects obtained depend on many factors—the strength of the defenses, the morale of the defenders, the extent of the zone to be covered. In any case, all neutralization missions can rarely be carried out simultaneously. Such fire must be sudden and powerful, producing a crushing, terrorizing effect on the enemy, whence the necessity to increase the density of concentrations for the small calibers.

The possibility of acting at night, of using smaller calibers, the

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*The regulations give 80 rounds of 155H or 220H to destroy a shelter at 5,000 meters by observed fire. With a transfer of fire, neutralization may be expected from about the same number of rounds by day, or from 120 rounds at night.

consequent saving of time, and the added chance of surprise are the principal advantages gained through the use of a preparation for neutralization.

PREPARATION—PRESENT DOCTRINE

As stated by Marshal Petain in 1915, the object of preparation is "to so weaken the resistance of the defenders that the attacking troops will find before them a shaken and disconcerted enemy." All fire prior to the arrival of the assault lines at the objective leads to this result, whether put down before H-hour or afterward. The preparation does not constitute a separate phase.

Certain fires for destruction will still be required. For example, heavy artillery will still be necessary for destructions in the attack of permanent fortifications. Also, a certain amount of destruction of wire entanglements will usually be demanded of the artillery.

When practicable, the attack orders of a higher commander define the purpose of the preparation, the destructions desired, the ammunition allotted, and the duration. The artillery commander then draws up detailed firing tables for his units, giving the kind of fire, the time, the number of rounds, and the conditions of observation. For the corps artillery, the fire missions apply ordinarily to counterbattery and distant interdictions. When time is limited, the orders for the preparation will be much less in detail.

Troops advancing under fire must have cover of some sort. Attacks by daylight over open ground cannot succeed unless the enemy has been neutralized during at least the short time occupied by the final assault. These considerations govern the decision of the higher command as to whether or not a preparation is required.

The decision as to the duration of a preparation is also made by the higher command. The time required for firing the number of rounds deemed necessary to accomplish neutralization is determined, also the time required by the infantry to advance from the line of departure to the limit of safety behind its supporting artillery fire. A comparison of the two will indicate whether to set the hour for opening the preparation at H-hour or sufficiently in advance to allow proper neutralization. In this computation, any

time required by the artillery for preliminary registration must be considered.

The question of counterbattery enters into the problem of preparation, but its scope is such that it will be discussed separately.

SUPPORTING FIRE

GENERAL CHARACTERISTICS

The purpose of supporting fire is to neutralize the enemy at the moment of assault. As indicated previously in this study, it is the ultimate preparation for each bound of the attack; and, as such, it conforms to the requirements for preparation fire, utilizing similar quantities of ammunition.

Supporting fire, however, cannot be as definitely limited as preparation fire, for the final neutralization should cover without exception all defending troops capable of acting against the assaulting infantry.

Disregarding for the moment the question of counterbattery, the problem is one of dominating the fire of enemy infantry. This would be relatively simple if the emplacements of the various enemy weapons were known, but such is not the case.

During the preparation, fire has been directed on the zones which most probably contain elements of the enemy defense—field works, edges of woods and villages, photographed emplacements. During the attack, however, the problem becomes more complicated. Infantry fire, once a simple matter of riflemen in firing lines and in more or less regular formations, has evolved into a complex affair comprising weapons of all kinds—rifles, light and heavy machine guns, auxiliary small caliber howitzers and cannon, tanks, and even field pieces. All these are dispersed widely according to their various characteristics. The line of skirmishers has been replaced by isolated small combat groups of infantrymen dispersed in depth according to the terrain and to their state of training. The entire zone covered by them must be considered dangerous.

In general, therefore, concentrations of accompanying fire will cover deeper zones than those covered by concentrations fired during the preparation. They must, nevertheless, conform in precision

and in density to the general requirements for all artillery zone fire.

SUPPORTING FIRE AT H-HOUR

The short limit of artillery fire at H-hour is evidently the enemy front line. Starting at this line, the depth of the zone to be neutralized is determined by the distance to the next crest or mask. Even in open country, this zone is rarely more than 1500 meters deep. Nevertheless it is often more than can be uniformly and, at the same time, effectively covered by the artillery available. Ordinarily, however, the zone does not need to be covered uniformly with fire. The enemy cannot be everywhere, and careful study of the terrain may eliminate many areas from consideration.

Concentrations on the front line elements are of short duration, hence of maximum intensity. Since those on rear elements may be repeated, they may be reduced in density. Also, in the forward portion of the zone, infantry fire augments that of the artillery. The effects of infantry fire are not as durable as those of artillery fire, but they are more certain. A combination of the two is indispensable.

Infantry advances by bounds which determine the rhythm of the attack. For each bound a systematic distribution of fire is established in depth. It comprises: first, dense and continuous concentrations of infantry and artillery fire; then, a series of artillery concentrations of variable density which become less intense and less continuous in the distant portions of the bound. The front of the attack will be limited, necessarily, to that which the artillery can cover effectively with such a system of fire.

AMOUNT OF ARTILLERY REQUIRED

The amount of artillery necessary for an attack depends upon too many factors—many of them imponderable—to be made a matter of fixed rules or formulas. The experience of the war in the attack of fortified fronts led to certain rules for the allotment of artillery to large units, but such allotments were approximations for convenience in planning rather than set quantities to be applied blindly.

The allotments given in the French combat regulations for large units in May, 1918, may be of interest. Maximum, average,

and minimum allotments were defined as corresponding to the following situations, respectively: enemy on the alert, position completely organized; enemy more or less surprised, not reinforced, or position incompletely organized; enemy in withdrawal. The figures per kilometer, exclusive of trench artillery, were as follows:

	Maximum	Average	Minimum
Light gun batteries	18	14	10
Heavy howitzer batteries	10	7	5
Heavy gun batteries	8	6	5

The doctrine today is that the organic artillery of a division in open warfare can support an attack on a front of 1000 to 1200 meters and that the corps artillery can cover double this front, which amounts to about the same thing as the minimum allotment given above.

DISPLACEMENT OF FIRE

The establishment of a system of supporting fire from H-hour until the moment when the infantry has pushed up to the safety limit behind it (200 meters for the 75mm, 400 or 500 meters for the 155mm H) is a relatively simple matter. The displacement of such fire, however, is a more difficult affair. The artillery must know exactly when the various infantry units arrive at the limit of safety. Both infantry and artillery must know the exact manner in which the fire is to be lifted.

LIFTS BY ARTILLERY OBSERVERS

No sure method has yet been found for informing the artillery of the infantry progression during an attack. The simplest procedure is to have artillery observers in position to see each stage of the advance. As the German post-war regulations put it: "The artillery must always seek in every possible way to maintain liaison by close observation of the infantry front line." The French had no other method at the beginning of the war. They used it with great success in many shallow zone attacks in France and, after the war, in Morocco. Their regulations today, however, make no mention of the procedure, since they consider the difficulties so great as to render impossible any system of liaison based on observation alone.

To begin with, suitable observation posts are rare. Also, in the confusion of smoke and dust of the attack, an observer cannot always distinguish his own infantry from that of the enemy. Moreover, even in the most favorable circumstances, as the distance between the observer and his guns increases, he becomes less capable of making rapid and delicate adjustments of fire. The extreme importance of observation of the field of combat by the artillery is fully recognized, but the limitations of such observation must be admitted. At the beginning of the attack, the observation posts are usually organized so as to permit general control of the whole scheme of fire. As the advance continues, they rapidly become incapable of assuring the detailed surveillance required and, in consequence, observers must be pushed forward behind the front lines. These observers may undoubtedly render great service in adjusting certain fires, bringing fire to bear on enemy troops in movement, answering calls from the infantry; but to intrust to them the affair of displacing an entire system of fire and of maintaining it before an advancing line is another matter entirely.

LIFTS ON CALL FROM THE INFANTRY

Both the French and the German regulations contemplate displacement of fire on signal from the infantry, who, knowing the prearranged scheme of successive concentrations, demand the appropriate fire at the beginning of a new bound. The German regulations remark that the signal, isolated at first, will soon be followed by others all along the line. This fact in itself indicates the defects of the method.

How long will it take for all the signals to be launched and just when will the fire lift? And how are the various signals to be differentiated? If too rapid, the lift risks the possibility of uncovering the slower units; if too slow, of endangering other units which have counted on it and pushed ahead.

The use of such a system is indicated only in the case of a single infantry unit in line, signalling to a single unit of artillery. Even in this case, if the signal is to be released only on order from the regimental or battalion commander, as appears logical, how is he to know the exact state of his front line units?

On August 8, 1918, the 15th French Division prepared a very ingenious system of lifts on signal from the infantry. The conditions of observation were most favorable, but the scheme failed. A similar scheme had been tried by the Moroccan Division on July 18th with like results.

LIFTS BY TIME TABLE

The time table method has obvious disadvantages. Too slow a schedule saps the infantry energy and aggressiveness; one too fast leaves the infantry behind, unprotected. The time table is, of course, calculated on the probable rate of infantry advance. Once set, however, its rigidity severely limits infantry freedom of maneuver, since the troops are constrained to attempt to follow close behind the scheduled fires—a heavy task. The Germans undertook to schedule their fire all the way from Tahure to Chalons in the attack of July 15, 1918. The painful results are well known.

Nevertheless, in a general attack, the use of the time table is imposed by the situation. Frequent halts of fire, generously calculated, must be included in order to permit the infantry to close up and reorganize. Provision must also be made by the higher command for setting the schedule forward or backward as may be required during the advance. In spite of all precautions, however, too often during the war the fire moved blindly forward leaving the infantry far behind.

For small detailed attacks or very limited advances, we may conclude that lifts of fire by means of artillery observation are entirely justified. For general attacks or deep advances, while the first lifts may be determined by observation, the later ones must either conform to a time table or be made on signal from the infantry.

CLASSIFICATION OF FIRE

In the course of any bound, beyond the first dense and continuous fire close to the advancing infantry, we find concentrations applied to the various points from which the enemy may act with machine guns during the bound and to those from which he may observe the advance. The first is termed *fire in direct support;* the latter, *protection fire*. Fire in direct support is executed by

the projectile having the least radius of action—the 75. Protection fire may be executed by any caliber, but is usually confined to the 155 howitzers and any 75s which may remain after direct support requirements have been met. These terms are only words chosen for convenience in definition. They should convey no significance as to the relative importance of the fires so designated. The most important fire is that applied to the most dangerous enemy, no matter whether close or distant.

The system of fire for any particular bound is, of course, not displaced *en bloc*. The protection fires, remaining on their objectives, are often reinforced automatically by the fire in direct support as it advances. The whole system moves accordion fashion, supporting the infantry at any given moment by covering dangerous points throughout the entire zone from which the enemy may act effectively.

MECHANISM OF FIRE IN DIRECT SUPPORT

Fire in direct support is of two sorts—the rolling barrage and successive concentrations. The rolling barrage is the familiar one of continuous shell fire at the rate of 4 rounds per gun per minute, covering 100 meters in depth, preceded by raking fire with shrapnel to a depth of 200 to 400 meters; the whole lifting in 100 meter jumps at the end of 3 minutes, followed by the infantry from 100 to 150 meters in rear. One battery of 75 per 100 meters is required for shell fire and one battery per 200 meters for raking fire; in other words, one battalion per 200 meters of front.

The rolling barrage seeks to neutralize the entire terrain of the attack and requires a great quantity of guns. With fewer guns available, the terrain is studied more carefully and the most dangerous areas are selected to be covered successively by concentrations of short duration. These may be repeated, if necessary, and they may be lifted on call from the infantry. In consequence, successive concentrations present a less rigid mechanism than that of the rolling barrage.

Both kinds of fire create a series of closed areas within which the infantry must operate with its own weapons. The main difference is in the depth of these areas: 200 to 300 meters with the rolling barrage, 300 to 800 meters or more with successive concentrations—a

point in favor of the barrage; for the deeper the area, the more difficult the task of the infantry left to its own devices.

The responsibility of determining the kind of fire to be used rests with the higher commander. The amount of material and ammunition required for a rolling barrage is rarely available, hence artillery support will usually be by successive concentrations. To simply state this in orders, however, is not sufficient. The commander must announce the successive bounds and the time they are to consume, also the halts between them.

During these halts, all fire stops except that required to prepare the next bound. When the infantry again advances, the supporting fire is renewed, ending always with maximum density and power at the moment of assault.

The completion of such a concentration must be clearly indicated to the infantry. In this connection, the French inspector general of artillery says, "We must reject the idea of allowing artillery fire to proceed until its cessation is demanded on signal from the infantry. It is practically impossible to see whether or not the neutralization is sufficient. Moreover, if the signal is not caught by the artillery, there may be a great waste of ammunition or, worse, the aggressiveness of the infantry may be lessened by long waits.

"The simplest plan is to arrange short concentrations (3 or 4 minutes) with a signal indicating their completion; for instance, a salvo of smoke shells. If the infantry commander desires, the fire is repeated. In general, a method of this sort will promote rapid and effective liaison between the two arms, the detailed procedure being varied in order not to warn the enemy."

MECHANISM OF PROTECTION FIRES

These are zone fires for neutralization. They usually begin at a rapid rate of fire and are then reduced to normal cadence, interspersed with irregular periods of rapid fire. One battery cannot properly cover an area of more than 10,000 square meters (1 hectare) or a linear target of more than 200 meters. Smoke shell may be very effective in such fires. In this case, the 155 howitzer is particularly useful and under favorable wind conditions

one battery may suffice for fronts of from 300 to 600 meters.

The problem of lifts is simple. When the fire in direct support comes forward and reaches their areas, protection fires move ahead to the next set of objectives designated by the higher commander.

COUNTERBATTERY

NECESSITY, RESULTS

Although the cannon does not create as deadly a barrage as that of the machine gun, nevertheless it is capable of breaking the spirit of attacking infantry in a rapid and decisive fashion. To attack in the face of light artillery firing freely is a foolhardy procedure which should be made clear to young officers who have not yet experienced the devastating effects of artillery fire on the battlefield. The necessity for counterbattery action is rarely questioned by those who have undergone such fire.

The possibilities of counterbattery, however, are not always appreciated. Complete mastery of the enemy artillery is no more possible than complete mastery of the air or sea. Nevertheless, considerable losses may be inflicted, and the sum total of such losses may finally be beyond remedy. In four months of 1918, the Germans suffered losses of 30% for light artillery and 45% for heavy artillery acting on the French front. A large part of these losses was due to counterbattery fire. Ludendorff remarked in a note of August 1, 1918: "In one month we have lost 13% of the guns in action. This illustrates clearly the value of diligent counterbattery." Ordinarily, however, the result will be neutralization of the enemy artillery personnel for limited periods, with a consequent loss of effectiveness in his fire, rather than the destruction of his guns.

The question of whether the artillery employed for counterbattery would not be more useful if assigned to fire in direct support of the infantry is one for the higher commander to settle. Since the guns are not specialized, he can use any proportion of his artillery for one mission or the other, as he sees fit.

OBJECTIVES

The modern conception of counterbattery is very different from the 1914 idea of the artillery fight—a sort of duel between batteries

preliminary to the infantry attack. Today, the idea is to disrupt the entire artillery system of the enemy; to keep cannoneers from firing, drivers from bringing up ammunition, observers from seeing, and chiefs from commanding—a combined task which must be carefully organized in detail.

The objectives are many—batteries, command posts, observation posts, dumps and depots, telephone centrals—all of small dimensions and scattered over a large area. Consider a battery, for example: the personnel is distributed in four or five small groups of 5 or 6 men each, more or less under cover; the matériel is vulnerable to direct hits only; the ammunition is scattered here and there in small heaps—the whole covering an area of some 10,000 square meters of which only a hundredth part is occupied by about a dozen sensitive points. To reach these points the entire area must, ordinarily, be covered with fire of effective density. For targets of this sort, the problems of location and of observation become more important and more difficult than ever.

ARTILLERY INFORMATION SERVICE*

The artillery information service was developed in order to seek out and identify such targets and to distribute information regarding them or any others of interest to the artillery. It was first organized only in the corps and army but now extends to all echelons, including the groupment, attaining its greatest importance in the corps.

The service utilizes its own personnel and communications and, in addition, the intelligence personnel of divisions and corps. Information is sent out daily by bulletin, if possible; if not, by messages to the various units concerned. During combat, the post of the corps chief of service is at the advance information center, in close communication with the heavy artillery groupments.

OBSERVATION OF FIRE

The problem of fire adjustment is a delicate one, for the objectives are usually located in zones invisible to direct observation. Terrestrial observers may sometimes render important services; but, except in open warfare, they are rarely able to locate enemy batteries.

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*Service des Renseignements de l'Artillerie—S.R.A.

Adjustments by high bursts should be sufficient theoretically, but a general counterbattery action is too important an affair to be entrusted to blind calculations unchecked by observation. In this, balloon observers are of no great assistance since they must remain five or six kilometers behind the front.

Airplane observation offers the only satisfactory solution. Without it effective counterbattery is impossible. In the first place, the aviation furnishes the indispensable photographs of regions probably occupied by artillery. Next, it seeks out the enemy batteries and controls fire on them.

In such fire the air observer places the center of impact within 50 meters of the objective, and then proceeds to another target. If the errors become greater the control must be renewed. A well prepared control for one battalion requires about 15 minutes for the 75 and 30 minutes for the 155.

In order to utilize every sortie made by an observation plane, liaison is usually centralized so as to operate between plane and groupment. Observers will probably not know the exact location of the firing batteries, hence the necessity for careful preparation of all details prior to a plane's departure. In spite of all precautions, however, the observers will often have to exercise great initiative. They should be exceptionally well versed in the methods of fire and the possibilities of artillery, and should know the artillery personnel with whom they work. For this reason two artillery observers form a part of each corps heavy artillery headquarters.

ORGANIZATION

The extent of the task involved leads the French to confine counterbattery to the corps rather than the division. The narrow fronts occupied by divisions, as well as their necessarily limited means of action, reduce the possibility of obtaining the dense mass effects of fire which are the essential feature of counterbattery. Moreover, the real mission of the division is combat against infantry, and it should not be diverted from this task. The Germans give both tasks to the division; but they are obliged, nevertheless, to set aside part of their division artillery for separate counterbattery missions.

MECHANISM OF FIRE

The object of counterbattery is domination of the enemy artillery, whether accomplished by neutralization or destruction. Destruction is the ideal; but one must ordinarily be content with neutralization, accepting gratefully the destructions that may also result.

Neutralization being the object, the simplest solution would be to maintain continuous fire on enemy batteries, assigning a certain number to each counterbattery unit available. This method would facilitate execution of fire and maintenance of communications, also control by airplane. On the other hand, the effect is likely to be negligible, except with precisely adjusted fire. Even so, no appreciable results would be obtained without a minimum expenditure of 100 to 200 rounds per hour. The moral effect of sudden and dense fire is lacking.

A better solution is to hammer each target successively with quick dense concentrations *from several battalions*. Surprise and mass action are secured.

Consider, for example, the combined action of three battalions (2 battalions of 155, 1 battalion of 105). The hourly expenditures are 40 rounds for the 155 gun and 60 rounds for the 105. Not more than four concentrations can be fired in one hour on account of time lost in shifts. Assuming a quarter of the hourly expenditure for each concentration, we have:

10×24=240 rounds of 155
15×12=180 rounds of 105

or calculating in tons of explosive:

240×15.4 lbs.=3696 lbs.
180× 4.4 lbs.= 792 lbs.
} about 2 tons

The average target covers about 2.5 acres (10,000 square meters) and the fire will spread over about double that surface. Hence we have an output of a half a ton of explosive per acre, approximately, in less than ten minutes.

Such fire is certainly capable of causing serious disturbance of enemy matériel and morale—but for how long? If our hammering unit of 3 battalions has, for example, 12 objectives to attack, two or three hours must elapse before they can all be covered. Meanwhile, the first batteries attacked will have had time to regain

their morale and the last ones will have fired peacefully along, undisturbed until the end of the period.

Two remedies are possible. All available artillery, including that of the divisions, can be combined for certain periods of reinforced counterbattery action, giving eight to ten hammer groups instead of two or three. Or the two methods of continuous fire and of mass concentrations can be combined, leaving a part of each groupment to execute continued fire on an objective, as the remainder passes on to hammer the next one.

The general mechanism of counterbattery fire is fixed by the commander of the corps heavy artillery; the execution is left to groupment commanders. The methods used depend mainly on the presence or absence of air observation. At night or in heavy weather, the system of fire must be based solely on information obtained by the artillery information service. The objectives are classified as certain, probable, or doubtful of occupation by the enemy. They are also classified according to precision of location and as to previous adjustments made on them.

Such a system is only an expedient and it must be bettered as soon as possible by all means available. Of these, the airplane is of prime importance. The ideal solution would be for each groupment to have an airplane at its disposal. In any case, whether acting for one or several groupments, the observer must have his mission clearly defined. He cannot seek out batteries in action and control fire on others at the same time. Priority in the two missions is influenced mainly by the effectiveness of the artillery information service. If the majority of enemy batteries have been precisely located so that the artillery may adjust its fire on them by its own means, the air observer's first task is to seek out other batteries in action. If not (the usual case in open warfare), the first mission is the control of fire on known batteries in action.

No hard and fast rules can be followed. The system must be susceptible of rapid modification by groupment commanders. The commander of the corps heavy artillery supervises the whole affair, reinforcing his groupments as the situation demands.

Counterbattery action requires time. The information service must locate the enemy batteries, most of which are silent until the

final critical moment. Adjustments must then be made and the necessary concentrations fired. As previously indicated, the duration of the artillery preparation for an attack is often determined by the time required for counterbattery. The higher commander, recognizing this, tells his artilleryman to have the enemy batteries neutralized at a certain hour, leaving to him the determination of the hour for opening fire.

HARASSING AND INTERDICTION FIRE

The purpose of harassing fires is to cause losses and to keep the enemy constantly disturbed. They range in intensity from a few rounds (fired at distributing points, for example), to the powerful concentrations on all enemy rear establishments, utilizing all the artillery of the army, even railroad guns. Harassing on a grand scale may cause profound disturbances in the enemy organization, but the cost in ammunition is tremendous. Properly speaking, harassing fire conforms to no general plan, but is delivered in accordance with programs quickly prepared to fit the situation of the moment. Irregularity is sought in conduct of fire and in the intervals between fires. When the ammunition allowance is sufficient, mass concentrations are used as much as possible.

Interdiction fire is quite different. Its object is to prevent enemy supply and reinforcement in a certain area for a certain time, and it can be successful only as the result of a general plan of systematic fire covering the entire period of the operation.

The simplest plan of interdiction is to choose a certain line (stream, railroad, or valley), and systematically cut off all crossings. In the defensive the interdiction is combined with destructions by the engineers. If prolonged, however, it loses the effect of surprise and the enemy will soon reorganize his affairs to meet it. In stabilized situations several systems of interdiction must be established, shifting the objectives and the hours of fire so that the enemy will not find any combination of routes free from fire at any given moment. The regulations prescribe 100 rounds an hour for each point to be interdicted—a figure which shows that interdiction is only justified in large scale operations. In other cases simple harassing fires must suffice.

Both kinds of fire require such quantities of ammunition that the decision as to their use must be left to corps or army commanders. Also, since they are usually delivered in strict cooperation with counterbattery actions, their direction is a function of the corps chief of artillery who determines what proportion shall be handled by the division artilleries.

INTERCOLLEGIATE FOOTBALL SCOUTING

BY 1ST LIEUTENANT EDWIN L. JOHNSON, F. A.

WITH the advent of autumn the thought of the coming football season seems quite naturally to occupy the American mind, for a touch of crisp and frosty air has become almost analogous with the term "football weather." So popular has the game become that every Saturday throughout the autumnal months, hundreds of thousands of people throng into huge stadia while perhaps even greater numbers listen to detailed accounts of the game broadcast over the radio. Many pages of every Sunday morning newspaper will carry descriptions of the games, stories of the players and coaches, and articles concerning the standings of the teams in their race toward real and mythical championships.

There are at present, some seven hundred normal school, college, and university football teams representing their various Alma Maters, while several thousands of high school teams play the game with no less ardor than their older brothers, before crowds equally enthusiastic.

The present intercollegiate football game is far indeed from a casual athletic engagement between two friendly rival institutions. Much is at stake, for victory means far more today than it did in the games of twenty years ago. True enough, athletic laurels are the obvious, even if intangible, goal toward which the teams are fighting, but, besides the honors which are granted the winning teams, there are numerous results, not so apparent at first, but eventually more material. A championship football team brings enthusiastic crowds to see its games, and consequently brings thousands of dollars into the athletic and school treasury annually. This money furnishes funds for the support of a dozen other nonself-supporting sports; it supplies the means for the erection of bigger and more modern buildings, up to date equipment, modern facilities of education, and the procuring of more able instructors. The modern youth is easily attracted to the college which is noted for its prowess in athletics, as is proved by the rapidly increasing enrollment at schools which have produced famous football teams during the past decade.

The game of football has a tremendous popular appeal. It seems to typify, as no other game could do, the American spirit of vigorous young manhood, the spirit of teamwork and fairplay. It has at the same time every facility for individual excellence, and an opportunity for utter abandon in the excitement of the very fierceness of the contest. It is for this reason, primarily, that collegiate football games are so much more popular than games between professional teams. Great rivalry between schools, rivalry almost akin to hatred between traditional enemies, has repeatedly whipped coaches, players, and student bodies into an intense feeling of emotion and a frantic desire to win.

Despite the cry of old-time players, who bewail the fact that football has become a "molly-coddles pastime" the game as played today requires not only the strength and endurance that was needed twenty-five years ago, but in addition it demands a coordination of mind and muscle that was unnecessary when the game was played and won by the sheer force of brute strength. In those early days the mass formations of the offensive team swept before it with ease a lighter and therefore a weaker team. The rules permitted the locking of arms, pushing and pulling, and even allowed the ball carrier to be hurled bodily over the heads of other players on the scrimmage line. The result was that the game was little more than an organized melée. Such formations as the "guards and tackles back" and the "flying wedge" developed such tremendous power that no defense could stand long under the assault of their shock action. The forward pass was unknown, and kicking when resorted to, acknowledged a lack of offensive power.

Today the game is one of personal sacrifice; the synchronized effort put forth by eleven men who subordinate their every individual action to the success of the team. The players must be trained to be alert, keen thinkers, as well as splendid athletes, capable of displaying both strength and agility, and of possessing the necessary stamina to carry them through several months of tremendous physical exertion reaching periodic climaxes in weekly games which demand all the effort the players can muster. Football today demands resourcefulness, coordination, initiative and judgment from its players. It requires that they be clean sportsmen,

disciplined to accept the orders of their leaders, and trained to put forth increasing effort as the tide of battle turns against them. Affording, as it does, every opportunity for the study and use of strategy and tactics almost identical with the principles employed in warfare, it also places a premium upon the ability of the player to diagnose rapidly and correctly the method and purpose of his opponent. It is this chance for diagnosis that so appeals to the American temperament, and so well fits the young man for later life wherein the correct analysis of character is such a valuable asset. The youth stops playing football when he leaves school, but he carries with him into his business or profession the sturdy principles learned and displayed in the game. Some of these qualities existed in football since the first game was played, but in its onward march to take on its present form it has required more and more of the player, until it has become much less a game of strength, and much more a test of skill.

Such is our most popular, national game today. If it is to continue to hold its ranking place its future is worthy of serious thought. If we are to have football then let us have the finest type of game possible, always strive for improvement by discarding all factors which tend to counteract its benefits, and carefully retain and develop those which have aided in its refinement.

Scouting has had a most important part in the evolution of football to its present stage of development. No secret espionage as its unfortunate name might imply, it is an accepted practise, an integral part of the modern game, and, if properly employed, will continue to aid in the improvement of the game. To the layman, ignorant of its general use, scouting implies spying, or suggests duties similar to those of the professional baseball scout. There is no similarity between them. The baseball scout has for his principal duty the discovery and subsequent engagement of promising players. The football scout has no interest in procuring players for his team. He is a trained observer, a representative of the head coach, sent to see games played by rival teams. In order to enhance the chances of his team's success at a later date, it is his task to secure all available information of his opponent, but his work is carried on in the spirit of friendliness that typifies the good will and good sportsmanship of his school. This

exchange of scouts has done much to foster friendly feeling. In former days rival coaches seldom met except on the day when their teams faced each other on the gridiron; today they are afforded an opportunity to know each other intimately through the medium of frequent contacts. Visiting scouts are always cordially received. It is not at all uncommon for the scout to have luncheon with the rival coach before the game, and sometimes he joins the officials, sports-writers, or the team at its training table. After the game the rival coach and scout may meet again to spend the evening in football discussion and to exchange ideas which must surely be of mutual value.

When a scout visits the campus of a rival school he sees many types of training apparatus, new equipment to aid in the physical development of players, and procures new ideas for the prevention of injury and new methods for medical treatment. In his intercourse with scouts from other schools he hears of the experiments being worked out in various sections of the country, ideas which he may then incorporate into his own coaching system. The scout watches the play of his several opponents, and constantly searches for improvements. He is able to take back to his own head coach and team many suggestions which will aid in the elimination of inferior methods, and will give to his players the broader knowledge which will enable them to play a more intelligent game of football. Without scouting the game would have been retarded materially. It would lack a great portion of its appeal to both player and public, and would be wanting in many of its present splendid qualities.

Twenty years ago when football was on the eve of a period of rapid growth, schedules contained but few hard games. It was then the custom to play several games with teams assuredly inferior to prepare for one or two hard games with teams of equal strength toward which the training of the team was shaped. The game with the traditional enemy was the factor which decided the success of the season; to win all minor games and to lose in this climax of the year was to be unsuccessful, but to win this game, in spite of a few early season defeats, was to count the season a success. During that early period it was customary for the head

coach to delegate to one of his assistants the responsibility of handling the team in some easy contest, while he journeyed to the campus of the most formidable opponent to watch its team in action. Gradually schedules became harder until there remained but few easy games, and it became increasingly difficult and dangerous for the head coach to leave his own team. His option then was to select an able assistant to see the opponent play, and to base his plan of attack for future games on the report of the returning scout. Certain members of the coaching staff, best qualified for this peculiar type of work, became the chief scouts, invaluable to the coach as his observers.

The practise grew to be generally accepted by all individuals connected with the coaching system, but it was unfortunately misunderstood and consequently frowned upon, by others. Even in its infancy there was nothing dishonorable about scouting. The scout used no underhanded methods and sought no information not available to all other spectators. It is not to be denied that there may have been occasional exceptions to this statement, but such practises are rigidly prohibited by all institutions in good standing. As long as fair play is the dominant characteristic of amateur athletics, particularly inter-collegiate contests, these exceptions will continue to decrease in number and scouting will remain an honorable asset to the game.

It is customary today for each college to send one or two members of its coaching staff to see the important games of all of its major opponents. In most sections of the country tickets are procured from the coach or athletic office of the adversary who afford the same courtesy to scouts and to members of the press alike. Scouts are usually given their choice of seats, and are generally assigned space in the press-box which is situated in the most desirable location at the top center of the stands.

Although the press-box is some distance removed from the players, the scout gets a panoramic view of the entire field and may then follow any particular player, or concentrate on one vital part of a play, and still maintain a view of the entire picture. The most difficult task of the scout is to divorce himself completely from all of the excitement of the game and to restrain himself from watching that center of all interest, the ball carrier. His

duty as a scout includes the observation of every detail that will be of any help in the defeat of this team. It is most important that he learn exactly wherein lies his opponent's greatest offensive strength, and most penetrable weakness. He must decide whether their forward passing attack is a greater threat than their ability to advance the ball by running plays. He must compare his team with the eleven men who are playing against his rival today, and then make the necessary recommendations to his coach, in an attempt to capitalize on the mistakes of his rival's opponent. He tries to select the weakest defensive players on the team he is watching in order that his attack may be directed at them. One of his most difficult tasks, is to decide definitely what style of forward passing attack is used by his opponent, and how they operate their particular type of defense against the forward pass. If he is able to accomplish these things in the short period of actual playing time he may feel that he has materially added to his team's chances for victory. During the few moments of warming-up practise before the game, and at any time during its progress, he must look carefully for individual characteristics that indicate strength or weakness. There are innumerable instances in which trained scouts have discovered mannerisms which have later proved to be important. A triple-threat halfback may unconsciously stand with his right foot to the rear when he is to carry the ball on a running play, with his feet on line when he is to kick, or may nervously adjust his belt when he is to throw a forward pass. A dangerous forward pass receiver may habitually place both hands on the ground as he crouches for his start, but may take a different stance when he is going down the field to catch a forward pass.

In the first few games played by an Illinois football team three or four years ago, one of their star halfbacks gained an amazing number of yards with his broken field running after catching passes and punts. A scout noted that this player started to the left after catching the ball, and then turned and cut to the right sideline for his long runs. The scout knew that each long gain made in this manner was causing the star to favor his right, to the detriment of his all-around ability. By impressing this fact on his own team the scout was able to train his players to force

the star to run to his weaker left where he was more easily tackled. Another example somewhat similar to this one occurred in the east some years past when a Yale scout watched the Harvard punter habitually kick to the left side of the field. Just before the Yale-Harvard game the position of the fastest Yale back was changed to capitalize on the habit. The resulting run-backs contributed materially to the Yale victory. The scout must possess keen powers of concentration. He must be a sharp observer, not easily deceived by outward appearances, and must take nothing for granted without personal verification. In spite of a great deal of newspaper publicity given an Army player recently, clever scouts disregarded his selection for a position on the All-American Team and discovered a weakness in his play, and set about to put it to their advantage. Spectators of the subsequent game were puzzled to see this popular player, apparently so able, trying in vain to stop the gains which were steadily made over his position. The two touchdowns which resulted from these gains were sufficient to enable an inferior team to tie the West Point score. If a scout can determine the general plan of attack used by a quarterback, or has the opportunity to see what play this particular field general will depend upon for a short, sure gain, the defense of his own team can be greatly strengthened. If he can definitely say the opponents backfield men line up for scrimmage in positions which vary even slightly according to the type of play that is to evolve, he can train his men to be ready to stop the play before it gathers momentum, since they can concentrate on the dangerous point of attack.

From the instances related it may appear that scouting tends to destroy the initiative of the players, but in reality this is not so. All of these things are incorporated into the training of the men in such a way as to sharpen their powers of observation, and to give them a broader conception of the various methods of play. It also makes the game faster, more thrilling, and harder to win.

It must be remembered that it is not practicable to reproduce here an account of how a scout carries on his work to obtain all the information he seeks. The few incidents recounted demonstrate relatively minor points in comparison with the major duties of the scout. These, in general, are the analysis of the opponent's

defense, and their tactics in all three departments of the offensive game; running with the ball, kicking, and forward passing, and in the discovery of their greatest offensive threats and just how they are employed.

When a scout returns to his own practise field after watching a future opponent, he usually converts all of the relevant items of his observation into a written report, and then aids the coach in planning the attack for the coming game. He trains the substitute and freshman teams to play the formations of the rival team and sometimes has them wear the numbers and even the names of the opponent's players. The Varsity team becomes familiar with the general style of play of the rival, and after several practise periods is able to solve the strongest plays that may possibly develop from each formation. The details of defense are left to the individual. To attempt regulation of individual play by a pre-arranged plan would be futile. It would be extremely detrimental to the player. The cleverness and resourcefulness of the individual therefore remain unhampered.

Scouting properly used can be of great value to the head coach, and in addition to its other benefits can save him a number of valuable hours. He is able to give full value to the report of his scout. He knows that this man, as one of his assistant coaches, is thoroughly familiar with every detail of his own team's play, with its weak points and its strength, and he knows further that the scout has discarded from his report all superfluous information. The scout is present to clear up any doubtful points and to discuss the situation with the coach. The scout's presence saves a busy coach many hours which might otherwise be spent in reading and answering voluminous letters from alumni, who, through misdirected altruism usually supply the coach with a mass of valueless detail, frequently exaggerated or erroneous and typical of an untrained spectator.

The head coach frequently uses one of his trained scouts to watch his own team during a game. The scout's observation of rival teams in action puts him in a position to make valuable comparisons and recommendations. In addition to this he is able to see weaknesses and individual idiosyncrasies which the coach has

failed to notice because of his constant contact with the players.

Thus in a variety of ways scouting has aided in the development of football to its present advanced stage. The great majority of coaches readily appreciate its value and have devoted a fair amount of time and money to the realization of its benefits, but unfortunately there are some who vastly overestimate its importance. In many schools elaborate scouting systems have been installed, scouts are sent to see ALL games played by ALL opponents, and an incredible amount of enemy information is carefully filed and catalogued. In these institutions a large amount of time and money is necessarily expended on scouting. The cost of maintaining such an organization at one eastern university in 1929 was approximately six thousand dollars, which covered the expenses of scouts who travelled a total of some sixty-five thousand miles during the football season.

Fortunately for the future of scouting, this lack of a sense of its proportionate value is exceptional. To combat the assertions of those who claim scouting is generally overemphasized and even detrimental to the game, some steps have already been taken towards regulation. The "Big Ten Conference" of the Middle Western States, including the Universities of Wisconsin, Chicago, Illinois, Purdue, Northwestern, Michigan, Minnesota, Iowa, Ohio State, and Indiana, controls scouting as it does other phases of football, such as eligibility and the setting of a time limit on early season practise. Two scouts are authorized to watch a rival conference team in two games against other conference teams. Similar agreements will probably be enforced in the Missouri Valley and Southern Conferences in the near future.

In scouting, as in any business, there is little hope of preventing clever, unscrupulous men from obtaining results in an unapproved manner. Such persons probably exist in the football system today, posing as exponents of good-sportsmanship. Their dishonesty is difficult to detect for they may easily use the reputation of the vast majority of scouts as a cloak for their malpractises. The scout of today is proud of his ability to do an unusual task and of the tradition that has grown up about his methods. His position is hard to maintain. In addition to the experience and

knowledge necessary to carry on the technical part of his work he must possess tact, a pleasing personality, and a character that holds him rigidly to the rules of fair play. He bitterly resents the presence of scouts who are willing to take unfair advantages. No laws govern his conduct except the unwritten laws of scouting ethics. In the following discussion of this code, the term of "Scout" is intended to include only the coaches who uphold the football code and it does not recognize the existence of that other small group of untrustworthy coaches who unfortunately may still be found in collegiate athletics.

Inasmuch as he has written to the rival coach for tickets the scout need not necessarily inform the coach of his actual presence at the game, but in cases where it would not be an intrusion, he usually seeks a brief interview with the coach. Since he wants the rival team to win all games except the one played against his own school, he is sincere in his wishes to the coach before the game, and in his congratulations on the team's victory. It is considered improper for a scout to watch the practise of a rival team. He sits in the stands at the game observing only what every other spectator is privileged to see, but his special training and ability enable him to convert his observations into valuable information, since he confines his attention to certain items which are probably lost to the casual spectator. Each play may be seen only once and he must therefore apply himself most diligently to his task. It is considered most unethical to use a camera, for the procuring of pictures, either still or moving, of a rival team in action would insure a repeated performance of that particular incident. This would allow a careful study of details, many of which would have been missed by the scout in his one view of that particular play. Pictures taken by the press, however, are public domain, and when printed in the newspapers may be used to every possible advantage. The same is true of newsreels exhibited at moving picture theaters. The scout never attempts to secure any information by engaging in subtle interrogatory conversation with members of the student body or employees of a rival school. There exists no specific group of laws or written regulations governing the conduct of the scout, but it is understood that all of his scouting methods and actions are above reproach, and have no odor of

unsportsmanlike tactics. Unfortunately all men are not controlled by a strict code of ethics. The honorable occasionally find themselves at a disadvantage because of the low moral standard of an opponent. In scouting certain evils attend and evidences of underhanded methods sometimes reveal themselves. These cases are greatly in the minority for such practises are not tolerated and a college involved in such an occurrence soon finds itself outlawed.

There are some individuals who deny that scouting has a place in intercollegiate football. They claim that it affords an opportunity for sharp practises and consequently paves the way for unfair advantages. They advocate its complete prohibition. They point out that scouting, with its resultant training of teams along certain lines, confines the player to the will of the coach and hampers initiative, resourcefulness, and the ability to diagnose; three treasured attributes of football. It is true that a player is not left to solve all problems by himself, but it is extremely doubtful whether scouting could ever confine him to the harmful point of restriction. Football is too uncertain a game played far too cleverly to permit coaches to make automatic puppets of players. A good quarterback can quickly discover that a defensive team has been coached too specifically for certain plays, and by the use of fake plays he can easily deceive the defensive player who has lost his individuality to the coach. This would spell disaster for the whole team, and months of work would be wasted. It is obvious that no coach would be foolhardy enough to risk the success of his team to such an extent. He lays down no stereotyped rules of play. He gives to his men certain vital information that will help them to recognize situations more quickly, but at this point the individual player must make his own decision and act accordingly.

Adversaries of scouting further decry its existence on the grounds that it has contributed to the commercialism of amateur athletics. The importance placed upon football has probably given rise to corrupt practises which may be found in some schools today. Proselyting players is not uncommon. Good athletes are induced to attend certain colleges by the promise of financial aid from wealthy alumni who expect their "scholarship loans" to be repaid only by athletic victories. It is obvious that an increase in

practises such as this would be harmful to intercollegiate athletics, but if their increase is dependent upon the future status of scouting, there is little danger. By the adoption of regulation similar to those in force in the Big Ten Conference already mentioned, the emphasis placed on scouting could be controlled to a point of satisfactory uniformity, and would then yield even better results than it does at present.

It is extremely doubtful whether the complete abolition of scouting would be possible, and even if possible, whether it would be advisable. Yale University, long an enemy of scouting, attempted in 1925 to start a movement for its elimination from football. Since that year Yale has had annual agreements with her various opponents wherein it was understood that a place on the Yale football schedule for that year included a non-scouting pact. Several other colleges followed her lead but it is quite generally conceded that these attempts proved unsuccessful. In spite of widespread publicity given the experiment unsolicited letters containing information of rival teams continued to reach the coaches and players of both Yale and her opponents, who could return the letters unread, destroy them, or use the information surreptitiously, according to the dictates of conscience. Rumors of failure to comply with the non-scouting agreements quickly spread, carrying with them distrust, and threatening to cause breaks in athletic relationships that had always existed on a friendly basis. Still the champion of non-scouting, Yale contemplates reaching voluntary agreements with all of her opponents who desire them, but the concensus of opinion has been that the evils resulting from the attempted prohibition of scouting would be much more harmful to football than any which may exist under the present system.

Scouting has contributed greatly to the progress of football. It has been a prime element in the spread of new ideas and has forced teams to exert their utmost efforts in attempting to reach a state of perfection in play that will bring victory. It has helped to make the game more versatile, cleaner, more open, and a far more exciting contest to watch. It has added many qualities to football which have made the game a real factor in the character moulding of the modern American youth. Football could surely

exist without scouting, but the game would lose a great impetus toward improvement. There is possibly danger in the fact that a value has been attached to scouting that its benefits do not warrant. In the desire to win, coaches may be inclined to go to extremes and there might occur a laxity in the code that now governs the conduct of the scout.

The remedy for any evils which are now present in the scouting system lies in the control of scouting rather than in its prohibition. It would be short-sighted to shut our eyes to the possible growth of undesirable aspects in the future, and since the elimination of scouting would surely prove detrimental to the game, the logical solution seems to indicate supervision. This could be effected in several ways. A Central Board, as part of the National Rules Committee might easily regulate scouting by framing certain rules for national intercollegiate observance, or it could be controlled by the governing boards of sectional conferences as simply and effectively as they now control eligibility. With an assurance that schools of equal caliber would then spend approximately the same amount of time and money on scouting, thereby making its benefits more uniform, scouting could continue to add its share to the value of football, without overstepping the bounds of mutual respect, good sportsmanship and confidence, which form the basis for all intercollegiate contests.

SKETCH OF ORIGIN OF THE FIELD ARTILLERY ASSOCIATION

(Second and Final Installment)

BY WM. J. SNOW

Major General, Retired, Chief of F. A. 1918-1927

(The following was written by General Snow in order to outline the history of the origin of the Field Artillery Association. It was not written for publication. However, the value of this history to the Association was known to be so great that General Snow was prevailed upon to permit its publication.—EDITOR.)

NOW I want to go back a little. When leaving the War College in the summer of 1908, I was sent to a National Guard camp in the middle west for duty. This was my first contact with the guard in 15 years. In our problems at the War College, we had treated the National Guard as a force in being. Actual contact with it shocked me at the backward condition of its Field Artillery—so much so that, upon completion of my tour of duty, I returned to Washington (at my own expense) to lay matters before the War Department. Here, among others, I talked to Colonel E. M. Weaver, Chief of the Division of Militia Affairs. He asked me what was the quickest and most practicable way of remedying this condition and, after some thought, I suggested a camp at Fort Riley to be attended by the maximum number of field artillery officers of the organized militia, so that by watching the 6th Field Artillery, they could at least get a conception of the use of field artillery, and, in addition, receive such instruction as time permitted. He accepted the idea, but said the finances could not well be worked out to hold the camp before the summer of 1910. I think this was due to the fact that only in every alternate year (each even numbered year) was an appropriation made by Congress for "Encampment and Maneuvers, Organized Militia."

My observation of the National Guard Field Artillery had shown me that they needed a Field Artillery Journal even more than did the regular army. Accordingly, in drawing the Constitution, I had provided for membership of Field Artillery National Guard officers on the same status as regular field artillerymen. All other service associations at that time took in National Guard officers merely as associate or similar members, without voice in the affairs of the Association.

I had, however, no means of knowing whether these National Guardsmen would join in the organization of the Association, and I considered the advisability of circularizing them. But, as this procedure, even with the regular army, had been none too encouraging (less than half having taken the trouble to reply), I finally wrote the Chief of the Division of Militia Affairs and asked him as to the prospects for holding the summer camp at Riley I have already spoken of. He replied that it would be held. I, accordingly, determined that in the end, time would be saved by waiting for this camp to ascertain the sentiments of the Field Artillery National Guard officers, rather than starting correspondence with them during the winter of 1909-10.

The camp was held in June, 1910. It was well attended, and, under Captain W. S. McNair, was illuminating. Much enthusiasm for the arm was created, all saw the necessity of somehow "spreading the gospel," and Captain McNair talked up the Field Artillery Association idea to them. They liked it. Accordingly, a meeting of these officers was held, at which I presided, and they were invited to join with the regular field artillery in forming a Field Artillery Association. We elected a committee consisting of Colonel Eli D. Hoyle, Captain John F. O'Ryan of New York, Captain Branch Johnson of Virginia, and myself to draw up a constitution. I submitted to this committee the constitution I had previously written, and they accepted it with two minor changes.

A meeting of Field Artillery officers of the regular army and National Guard was then held in the Administration Building at Fort Riley on June 7, 1910. Lieutenant Colonel Hoyle presided and I was Secretary. The committee, above referred to, reported the above constitution, which was read by me, and, with a few minor changes, was adopted.

The names of the officers who then signed the Constitution, thereby becoming charter members, and the order in which they signed, are as follows:

Eli D. Hoyle, Lt. Col., 6th F. A., Ft. Riley, Kans.
Jno. E. McMahon, Major, 6th F. A., Ft. Riley, Kans.
P. C. March, Major, 6th F. A., Ft. Riley, Kans.
F. E. Stevenson, Major, Arty. Bn., Ind. N. G., Rockville, Ind.
C. F. Sargent, Major, 1st Bn., Mass. N. G., Lawrence, Mass.
T. M. Wortham, Major, 1st Va. F. A. (N. G.), Richmond, Va.
J. B. Goodman, Jr., Major, Light Btry. A, F. A., Colo. N. G., Denver, Colo.

Wm. J. Snow, Capt. & Adj., 6th F. A., Ft. Riley, Kans.
W. S. McNair, Capt., 6th F. A., Ft. Riley, Kans.
Charles Rees Lloyd, Captain, 6th F. A., Ft. Riley, Kans.
A. F. Cassels, Capt., 6th F. A., Ft. Riley, Kans.
W. B. Carr, Capt., 6th F. A., Ft. Riley, Kans.
J. W. Kilbreth, Jr., Capt., 6th F. A., Ft. Riley, Kans.
Edward Hill, Capt., 6th F. A., Ft. Riley, Kans.
Raymond W. Briggs, Capt., 6th F. A., Ft. Riley, Kans.
C. M. Bunker, Capt., 4th F. A., Ft. D. A. Russell, Wyo.
D. F. Craig, Capt., 4th F. A., Ft. D. A. Russell, Wyo.
Charles A. Salisbury, Capt. & Adj., F. A., Mass. N. G., Lawrence, Mass.
Louis S. Cox, Capt., Btry. C, 1st F. A., Mass. N. G., Lawrence, Mass.
Joseph A. Smith, Capt., Paymaster, Mass. N. G., Worcester, Mass.
Quida A. Kulish, Capt., F. A., Ohio N. G., Cleveland, Ohio.
J. S. White, Capt. & Adj., Arty. Bn., Ind. N. G., Rockville, Ind.
F. E. Hopkins, Capt. & Adj., 1st F. A., Ft. Sill, Okla.
John F. O'Ryan, Capt., 1st Btry., F. A., N. Y. N. G., New York City.
Robert H. Tyndall, Capt., Btry. A, F. A., Ind. N. G., Indianapolis, Ind.
Branch Johnson, Capt., F. A., Va. N. G., Norfolk, Va.
Edwin H. Tracy, Capt., 6th Btry., F. A., N. Y. N. G., Binghamton, N. Y.
William C. Webb, Capt., Utah Battery N. G., Salt Lake City, Utah.
Philip C. Westfahl, Capt., Btry. A, Wis. N. G., Milwaukee, Wis.
Luther E. Gilmore, Capt., F. A., Conn. N. G., Branford, Conn.
D. S. Hossley, Capt., Btry. E, F. A., Miss. N. G., Vicksburg, Miss.
Grant S. Taylor, Capt., F. A., Ohio N. G., Toledo, Ohio.
J. Ed. Eubanks, Capt., Btry. B, F. A., Ga. N. G., Atlanta, Ga.
Tilman Campbell, Capt., Commissary, U. S. Army.
S. G. Barnard, Capt., Btry. B, N. J. N. G., Camden, N. J.
D. H. Currie, 1st Lieut., 4th F. A., Ft. D. A. Russell, Wyo.
Charles J. Ferris, 1st Lieut., 6th F. A., Ft. Riley, Kans.
Cortlandt Parker, 1st Lieut., 6th F. A., Ft. Riley, Kans.
John W. Downer, 1st Lieut., 3d F. A., Ft. Riley, Kans.
Wm. O. Richardson, 1st Lieut., 2d Btry., F. A., N. Y. N. G., New York City.
Jno. L. Thomas, 1st Lieut., 1st F. A., Va N. G., Portsmouth, Va.
A. J. McBride, Jr., 1st Lieut., Btry. B, F. A., Ga. N. G., Atlanta, Ga.
Frank H. Hines, 1st Lieut., 1st Btry., F. A., N. Y. N. G., New York City.
William W. Mullen, 1st Lieut., Btry. A, Conn. N. G., Guilford, Conn.
Frank H. Frisbie, 1st Lieut., Btry. A, F. A., Conn. N. G., Branford, Conn.
E. O. Sanguinet, 1st Lieut., Btry. A, Mo. N. G., St. Louis, Mo.
Beverly F. Browne, 1st Lieut., 6th F. A., Ft. Riley, Kans.
Robert M. Danford, 1st Lieut., 5th F. A., Ft. Riley, Kans.
Chas. G. Mortimer, 1st Lieut. 3d F. A., Ft. Riley, Kans.
Dawson Olmstead, 1st Lieut., 5th F. A., Washington, D. C.
D. C. Cubbison, 1st Lieut., 1st F. A., Ft. Riley, Kans.
Walter J. Cookson, 2d Lieut., Mass. N. G., Worcester, Mass.
A. L. P. Sands, 2d Lieut., 6th F. A., Ft. Riley, Kans.
Thomas D. Sloan, 2d Lieut. 6th F. A., Ft. Riley, Kans.
J. W. Rumbough, 2d Lieut., 6th F. A., Ft. Riley, Kans.
John J. Coates, 2d Lieut., Btry. B, F. A., Penna. N. G., Penna.
Thorndike D. Howe, 2d Lieut., Btry. C, F. A., Mass. N. G., Lawrence, Mass.
Marshall Magruder, 2d Lieut., 6th F. A., Ft. Riley, Kans.
Samuel E. McRickard, 2d Lieut., 2d Btry., F. A., N. Y. N. G., New York City.
Harvey D. Higley, 2d Lieut., 6th F. A., Ft. Riley, Kans.

H. M. Boyer, 2d Lieut., Btry. B, Mo. N. G., Kansas City, Mo.
T. W. Peck, 2d Lieut., Btry. A, Mo. N. G., St. Louis, Mo.
E. P. King, Jr., 2d Lieut., 6th F. A., Ft. Riley, Kans.
E. S. Steinel, 2d Lieut., Btry. A, Wis. N. G., Milwaukee, Wis.
Paul C. Hunt, 2d Lieut., Btry. A, Mo. N. G., Jefferson City, Mo.
A. C. Allen, 1st Lieut., 1st F. A., Texas N. G., Dallas, Texas.
Roger D. Swain, 2d Lieut., Btry. A, 1st Bn., F. A., Mass. N. G., Boston, Mass.
O. W. Scharch, 1st Lieut., Btry. B, Va. N. G., Norfolk, Va.
John S. Williams, 1st Lieut., Btry. C, Pa. N. G., Phoenixville, Penna.
Harry W. Vint, 1st Lieut., Btry. A, Ind. N. G., Indiana.
Ralph McT. Pennell, 1st Lieut., 6th F. A., Ft. Riley, Kans.
William G. Hinderer, 1st Lieut., Btry. B, N. J. N. G., Camden, N. J.
Alonzo J. Comstock, 1st Lieut., Btry. A, Wis. N. G., Milwaukee, Wis.
Harry F. Speakman, 1st Lieut., Btry. C, Penna. N. G., Phoenixville, Penna.
John S. Purucker, 1st Lieut., Btry. B, Penna. N. G., Pittsburgh, Penna.
Joseph W. LeFever, 1st Lieut., Btry. A, Colo. N. G., Denver, Colo.
Henry C. Moriarity, 1st Lieut., Btry. B, Ind. N. G., Ft. Wayne, Ind.
Robert H. Lewis, 1st Lieut., 6th F. A., Ft. Riley, Kans.
Clinton T. Bundy, 1st Lieut., Btry. B, Penna. N. G., Pittsburgh, Penna.
Chester B. McCormick, 1st Lieut., Btry. A, F. A., Mich. N. G., Lansing, Mich.
Chas. F. Nowell, 1st Lieut., Btry. A, F. A., Wis. N. G., Milwaukee, Wis.
John C. Scheffer, 2d Lieut., Ind. N. G., Ft. Wayne, Ind.
A. N. Smith, Capt., Ill. N. G., Waukegan, Ill.
Maurice Woolman, 1st Lieut., F. A., Ill. N. G., Chicago, Ill.
Richard K. Hale, 1st Lieut., F. A., Mass. N. G., Boston, Mass.
John H. Sherburne, Jr., Capt., F. A., Mass. N. G., Boston, Mass.

The Chairman then appointed a nominating committee for members of the Executive Council follows:

1st F. A. ..... Capt. F. E. Hopkins, 1st Lt. D. C. Cubbison
3rd F. A. ..... Capt. Tilman Campbell, 1st Lt. C. C. Mortimer
4th F. A. ..... Capt. C. M. Bunker, Capt. D. F. Craig
5th F. A. ..... 1st Lt. R. M. Danford, 1st Lt. Dawson Olmstead
6th F. A. ..... Maj. J. E. McMahon, Capt. Wm. J. Snow
Georgia ..... Capt. J. Ed. Eubanks
Indiana ..... Maj. F. E. Stephenson
Massachusetts ..... Maj. C. F. Sargeant
Michigan ..... Lt. C. B. McCormick
Mississippi ..... Capt. D. S. Hossley
Missouri ..... Capt. P. C. Hunt
New Jersey ..... Capt. S. G. Barnard
New York ..... Capt. E. H. Tracy
Ohio ..... Capt. G. S. Taylor
Pennsylvania ..... Lt. C. T. Bundy
Texas ..... Lt. A. C. Allen
Utah ..... Capt. W. C. Webb
Virginia ..... Maj. T. M. Wortham
Wisconsin ..... Capt. P. C. Westphal

The nominating committee withdrew and, prior to selecting names, held a discussion as to where the Headquarters of the

Association should be, as that would largely determine the selection of nominees. Most of the committee favored Fort Riley, as I had originally. I insisted the Headquarters should be Washington if the Association were to carry out the broad functions we had in mind. This view was finally adopted and, accordingly, the committee reported the following nominations for the Executive Council:

Colonel M. M. Macomb
Captain Oliver L. Spaulding, Jr.
Captain Fox Conner
Captain John F. O'Ryan of New York National Guard
Captain Robert H. Tyndall of Indiana National Guard.

There were no other nominations. The meeting unanimously elected the ticket viva voce. Here, I would like to state that the nominating committee experienced considerable embarrassment in making the selection of the senior man for the Executive Council. The nominating committee was unanimous in desiring to select Colonel Hoyle for this position. But he was stationed at Fort Riley, and the Association Headquarters were to be in Washington. It was decided that the difficulties in starting the Association would be so numerous as to necessitate the continuous presence in Washington of the Association president, and hence the selection of Colonel Macomb.

The following resolution was then adopted:

"RESOLVED: That it should be the duty of the senior member of the Association to notify members of the Executive Council of their election and to furnish each member of the council with a copy of the Constitution; and it shall further be the duty of the senior member of the Association to make report to The Adjutant General, U. S. Army, War Department, Washington, D. C., of the formation of the Association, the names of the Executive Council, and to forward to him a copy of this Constitution."

The following representatives were selected by the state field artillery officers present to act as representatives in facilitating the carrying on of the work of the Association, after which the meeting adjourned sine die:

Major J. P. Goodman, Jr., Lt. Btry. A, F. A. N. G., Denver, Colo.
Capt. L. E. Gilmore, F. A. N. G., Branford, Conn.
Capt. J. Ed. Eubanks, F. A. N. G., Atlanta, Ga.
Lieut. H. C. Moriarity, Btry. B, F. A., N. G., Fort Wayne, Ind.
Capt. C. A. Salisbury, Adjt. 1st Bn. F. A. N. G., Lawrence, Mass.
Lieut. P. C. Hunt, Btry. A, F. A. N. G., Jefferson City, Mo.
Capt. R. C. Vandercock, Btry. A, 1st F. A. N. G., Mich.

Capt. G. S. Taylor, F. A. N. G., Toledo, Ohio
Capt. E. H. Tracy, 6th Btry., F. A. N. G., Binghampton, N. Y.
Capt. D. S. Hossley, Btry. E, F. A. N. G., Vicksburg, Miss.
Lieut. C. T. Bundy, Btry. B, F. A. N. G., Pittsburgh, Pa.
Major T. M. Wortham, 1st F. A. N. G., Richmond, Va.
1st Lt. C. F. Nowell, Btry. A, F. A. N. G., Milwaukee, Wis.
Capt. F. A. Logan, F. A. N. G., Dallas, Texas.

In accordance with the resolution adopted June 7, Colonel Hoyle notified each member of the Executive Council of his election and furnished him a copy of the Constitution. He also, at the same time, notified The Adjutant General, U. S. Army, of the formation of the Field Artillery Association in the following letter:

Fort Riley, Kansas.
June 9th, 1910.

The Adjutant General,
United States Army,
Washington, D. C.

SIR:

In compliance with a Resolution of The United States Field Artillery Association adopted at its first meeting June 7th, 1910, at Fort Riley, Kansas, I have the honor to inform you that the above named association was formed at this post on June 7th, 1910, at a meeting of Field Artillery Officers in which there were present representatives of the 1st, 3rd, 4th, 5th and 6th Regiments of Field Artillery and of the National Guards of the States of Colorado, Connecticut, Georgia, Indiana, Massachusetts, Michigan, Mississippi, Missouri, New Jersey, New York, Ohio, Pennsylvania, Texas, Utah, Virginia and Wisconsin. Enclosed is a copy of the constitution of the association and list of the members of the Executive Council elected at the first meeting.

It is believed that this association will prove an instrument of much good for the field artillery of the regular army and of the organized militia and I respectfully bespeak for it the fostering care of the War Department.

Attention is invited to my letter (on file in your office) dated Headquarters 6th Field Artillery, Fort Riley, Kansas, December 5th, 1908, in regard to establishing a Journal for the field artillery and to indorsement thereon from your office dated January 5th, 1909.

Very respectfully,
ELI D. HOYLE,
Lieutenant Colonel 6th Field Artillery,
Senior Member of The United States Field Artillery Association.

AHM.

The Field Artillery officers of the Regular Army and National Guard (there were no Reserve officers at this time) had thus been united into an organization, a constitution had been adopted by this organization, and an executive council had been elected under this constitution, the members of this council had been notified of their election, and each had been furnished a copy of the constitution

showing that the management and all further action depended on them. The scene was thus presumably all set for the publication of THE FIELD ARTILLERY JOURNAL.

Shortly after the date upon which the constitution was adopted (June 7, 1910), I was relieved from duty at Fort Riley, ordered to attend a number of summer camps of the Field Artillery National Guard east of the Mississippi, and then to report to the Chief of the Division of Militia Affairs in the War Department at Washington. I reached that city early in the fall, and at odd moments again investigated the cost of getting out a Journal. The results, compared with our finances, present and prospective, were not encouraging. Colonel Macomb and I held several informal talks over the matter, and finally he decided that nothing was being gained by waiting any longer, now that I had all cost data on hand, and that the Council should meet and organize.

Accordingly, he called a meeting of the Executive Council for November 3, 1910. The meeting was held, all the members of the Executive Council being present and also myself.

Under the Constitution, the Council elected the following officers:

President—Col. M. M. Macomb, General Staff Corps
Vice-President—Lieut. Col. E. St. J. Greble, Gen. Staff Corps
Secretary-Editor—Capt. Wm. J. Snow, 6th F. A.
Treasurer—Capt. Wm. J. Snow, 6th F. A.

The Council then, after settling certain matters as to membership, annual subscription price for the Journal, etc., discussed ways and means of getting out a Journal at all, without finally seeing how it could be done. It then adjourned. We all felt rather discouraged.

During the balance of the month, $4 subscriptions for the Journal came in gradually, so that on December 1st we had on hand $87.75, neglecting any bills I had personally paid. I had also gotten a promise of a few advertisements. I decided that I had gone too far in the Journal idea to let it fail without an actual trial, and, therefore, I asked Colonel Macomb to call a meeting of the Executive Council and I told him that, if they would approve a resolution I would draft, giving me certain authority, I would get out a Journal.

The Executive Council met on December 7, 1910—all the regular

army members being present and the national guard members absent—and adopted the following resolution, drafted by me:

"The Secretary-Editor is hereby authorized to enter into such contracts and make such expenditures as may be necessary in carrying on the business of the Association; provided that no obligation is incurred in excess of the total amount of funds on hand or becoming due before the maturity of such obligation."

The Council then adjourned and did not meet again for six months.

The publication of the Journal was now "up to me" personally, and here again, in this narrative, I would like to again go back to Fort Riley.

While I was still Secretary of the School there, and before there was any legislation separating the Coast and Field Artilleries, I had as a clerk, Mr. Charles S. West. Mr. West was too good a man for the position. He wanted to get transferred to Washington and asked my help. Distressing as it was to me to lose him, I secured the transfer for him. At this time, there was no thought of my ever being stationed in Washington, and, of course, still less of there ever being a Field Artillery Association. Yet, my act in securing this transfer proved later to be "bread cast upon the waters." For when, three years later, the publication of the Journal was finally "up to me" personally, I asked Mr. West if he would help me. He said he would. He was enthusiastic. He was indefatigable. He possessed, in addition, much business ability and versatility. He could, and did, do typewriting, keep books, read proof, take dictation, draw contracts, and many other things necessary to the success of the Journal. Without his aid, I question whether I could have gotten the magazine started, for we were doing it on a shoestring, and all of the work had to be done at night—we were both busy in our respective offices all day. He remained with the Association twenty years and then he also retired. During the early part of the World War, when there was much confusion, and before I came to Washington as Chief of Field Artillery, he kept the Journal going. He added many thousands of dollars to its treasury. I alone know all the inside history of the Field Artillery Association, and, hence, it gives me the greatest pleasure to call attention to the yeoman service by Mr. West in our behalf over a long period of years.

But to return to 1910. Before we got the first issue out, twenty-eight hundred letters (mostly form letters it is true) had been mailed so that even postage was worrying me. We finally got the manuscripts ready for the first number. I personally wrote every article in it, except two, although only one article appears under my name. Then we hastily designed a simple cover, selected the cheapest publisher we could find and the Journal was started. The "cheapest publisher" did not prove to be the best, for he went into bankruptcy before the issue was printed and distributed. The sheriff levied on the plant, including our magazine and some plates I had borrowed from the War Department. This was a severe blow. However, I finally secured the release of everything.

The first Journal was the January-March, 1911, copy. The next number was easier to get out, and by then it appeared that the magazine could be successfully published, and, as I was unable to longer continue the physical strain of habitually working until late at night on the magazine, I asked the Executive Council to meet and select a successor for me as Secretary-Editor. The Council met June 28, 1911—Captains Conner, Spaulding, and O'Ryan being present. I explained that if some one would relieve me of the time-consuming duties of Secretary-Editor, I could and would continue as Treasurer, so as to strengthen the weakest end of the publication—its finances. The Council accepted my resignation as Secretary-Editor to take effect September 1st and elected Captain Spaulding to this position.

Captain Conner then resigned as a member of the Executive Council, due to his early departure for France where he had been ordered to duty. I was elected to the Council in his place.

Prior to Captain Conner's resignation, however, the Council passed the following resolution:

"WHEREAS, The credit of successfully organizing the Field Artillery Association is due more to the efforts of Major Wm. J. Snow than to those of any other officer, and

"WHEREAS, in the face of many obstacles, Major Snow has, as Editor, Secretary and Treasurer succeeded in establishing the FIELD ARTILLERY JOURNAL upon a firm basis, and

"WHEREAS, It is known to members of the Executive Council that in accomplishing the above, Major Snow has made considerable expenditures from his personal funds:

"THEREFORE, Be it resolved that as some slight recognition of his services,

Major Wm. J. Snow be, and he is hereby declared a Life Member of the Field Artillery Association."

I continued on the Council and as Treasurer, until I sailed for the Philippine Islands late in 1914, the Journal matters having gotten easier as we went along, and being by that time on a firm foundation.

APPENDIX

BY C. S. WEST

General Snow has permitted me to read this, his story of the genesis of THE FIELD ARTILLERY JOURNAL, in order that my recollection might supplement and confirm his. Perhaps he has been somewhat influenced toward writing it by my assertion made to him sometime ago that the history of an institution which has done so much for the Field Artillery, indeed for our entire military service, should be written down ere those who have knowledge of the facts shall have passed away.

My recollections of the facts he recites agree with his in every particular. But there is something more important in history than the narration of events. Events may be said to make up the body; but a picture of the living soul, the immortal thing, is necessary to make the story complete. In his story General Snow has not clearly set forth the most vital fact of all, for in his modesty *he could not*. The soul of the story is this: that the things which brought THE FIELD ARTILLERY JOURNAL into existence from nothing, not even a reasonable prospect, and nursed it through its early and lean years until it became a successful business institution, were the indomitable courage, the abiding faith, the superb leadership, of the man Snow!

The industry and devotion to duty of the field artillerymen who throughout its life have edited THE FIELD ARTILLERY JOURNAL were primarily, of course, for the benefit of the service; but they, too, bear testimony to the leadership these men were following. Most magazines as important have four or five editors and a whole roomful of business managers and stenographers and bookkeepers. But during the first ten years and considerable of the time since, two of us did all of the work on THE FIELD ARTILLERY JOURNAL, and that entirely outside of our regular office hours in the War Department. We had to, or the bills could not have been paid. But in every year except two, I believe, we laid up a little money, at least, for the Association's rainy day. When General (then Captain) Marlborough Churchill was editor he edited one edition of THE JOURNAL on horseback at the Tobyhanna camp and another on board local railroad trains in Virginia and Maryland, while I looked after the office work in Washington. I have known more than one editor to work until his hands trembled alarmingly. And always the editor was thus admittedly, willingly, indeed joyfully, following his acknowledged leader!

It was about twenty-two years ago that General (then Captain) Snow came hurriedly into the room where I was employed in the War Department and asked if I could come to his office at four-thirty. I could and would,

and I did. I found him with his feet on his desk. "Come in, West," he said. "Have a cigaw." And then he unfolded to me his amazing plan of beginning the publication of a large illustrated magazine, without capital, the only clientele the commissioned officers of six regiments of Field Artillery of the regular army and a few shadows of batteries in the national guard! Now, I had had some experience in magazine and newspaper work, and I had seen the shores of time strewn with the wreckage of periodic literature started with far better prospects; and had I been thus approached by any other man on earth I would have declared the plan foredoomed to failure and that I would have no parts of it. But the faith, courage, leadership of the man swept me off my feet and without hesitation I agreed to go along with him. And I know that the things about him which inspired me and gave me enthusiasm inspirited and encouraged alike those distinguished officers who throughout the years have edited the magazine.

I knew he was a dreamer, but I also knew that his dreams had a surprising way of coming true! I had seen him dreaming over the breaking and training of a fractious horse at Fort Riley, and when he got through the horse loved him and would obey his lightest word. Then he was telling me of his dream of publishing, without visible means of support, a large illustrated magazine, costing thousands of dollars a year to print and mail, making it pay its way from the first and ultimately pay a profit. And that dream came true!

He dreamed that down through the years to come he could always find an officer of Field Artillery possessing literary talent and business ability who would be willing to take up the work of managing and editing THE JOURNAL whenever a predecessor who had worked himself thin at the task should be relieved by War Department orders and assigned to an easier job with troops. And that dream came true!

He dreamed that a better distribution of strength would sometime give the Field Artillery a larger portion, affording a wider field of effort and support for THE JOURNAL, the arm to be represented in Washington by a Chief of Field Artillery; and his influence and counsel did much to make that dream come true. Perhaps he dreamed that some day he himself might be that Chief; but if he did he *should* have dreamed that in that day the Chief would be personally known to and loved by every field artilleryman in America, for, by the gods of war, *that* dream came true!

"I'll not give way to an emperor,
I'll hold my road with a king,
To the triple crown I will not bow down;
But this is a different thing.
I'll not fight the powers of air!
Sentry, pass him through,
Drawbridge let fall, *he's the lord of us all,*
The *dreamer* whose dreams come *true!"*

MUFFLER MOUNTING FOR 5-TON TRACTOR

BY CAPTAIN J. A. CHASE, F.A.

Instructor, Wisconsin National Guard

THE most satisfactory method, that I have seen, of disposing of exhaust gasses from tractors is that shown in the picture on page 474. This method was conceived and developed by First Sergeant Horace C. Atkins, Battery "D," 120th Field Artillery and Sergeant Roman F. Nalborski, Headquarters Battery and Combat Train, 2nd Battalion, 120th Field Artillery, Wisconsin National Guard.

Due to the fact that the exhaust gasses blow back directly into the driver's face with the muffler as originally mounted in a horizontal position, it is the general practice to remove the muffler entirely and replace it with a piece of straight pipe projecting about a foot above the armor. This prevents gassing of drivers but makes a terrific noise whenever a motorized battery is in motion.

Since the National Guard units mentioned use a drill field inside the city, some other solution had to be found to prevent complaints of noise by citizens residing in the vicinity of the Armory.

The modification is very simple. The exhaust elbow and muffler bracket are removed, leaving the original short exhaust pipe in place on the exhaust manifold. The rear end of the muffler is then set directly on the exhaust pipe with the outlet pointing to the right and is fastened in place with the original set screw.

The brackets illustrated are made of 1¼ inch pipe. Any size from one inch to two inch would be satisfactory. As originally constructed the front end of the support was heated in a forge and flattened, then bent to the required angle and split to form a fork sufficiently wide so that holes could be drilled corresponding to the holes in the armor by which the muffler bracket is bolted on. This was later modified by flattening the pipe and welding on a steel plate with an acetylene torch. The holes are then drilled in this plate. This makes a somewhat neater job.

The pipe on the upper end of the support is simply heated in a forge and flattened and bent to the required angle, then drilled so that it can be bolted to the front end of the muffler by the two

cap screws which originally fasten the muffler to the muffler bracket. In practice it was found that the exhaust pipes inclined somewhat differently and some difficulty was encountered in lining up bolt holes. Slotted holes in the muffler end of the support would allow for this variation and insure complete interchangeability.

This mounting has been in use for more than a year, including one Field Camp of Instruction at Camp McCoy, Sparta, Wisconsin. Most of the Camp McCoy reservation is covered with a dense growth of scrub oak. No difficulty was encountered in passing through this growth, the pipe bracket acting as a shield and deflecting the branches upward and backward so that they did not catch on the muffler. The mounting remained absolutely rigid at all times.

No difficulty was encountered in covering the tractors with paulins, the usual care being exercised to insure that the mufflers were cold before covering up.

It is believed that these brackets could be made and installed by any battery mechanic from any old pipe which happens to be available. It certainly is a relief to the nerves to silence the terrific din raised by the usual motorized battery. It appears that the exhaust back pressure is considerably reduced by the elimination of the elbow and that the tractors develop as much power as those from which the muffler has been removed.

A PROPOSED CHANGE IN ARTILLERY ORGANIZATION

BY COLONEL ALLEN J. GREER, F.A.

PRIOR to the World War practically all European Armies had what was known as the square type in the organization of their infantry divisions. In other words the division consisted of two brigades of infantry, which in turn consisted of two regiments. In our Army, on the contrary, we had three brigades of three regiments each, or what is known as a triangular organization. Our regiments were very much smaller than those of the French and Germans, and due largely to French arguments when we entered the war, that our type of organization would not fit the system of trenches, which they had so elaborately constructed, our division was changed to the one which we now have.

For several years at the War College studies have been made and much discussion has occurred as to whether our division should be of the square or triangular type. As a rule the majority of officers have inclined to our present organization—that is the two brigades of infantry, each consisting of two regiments. It is rather difficult to understand why this should be the case in view of the fact that all leading European armies, based on their war experience, have permanently adopted the triangular type, and their infantry is organized into one brigade of three regiments. Shortly after the war General Pershing recommended this form of organization. In the writer's opinion the triangular division offers a great many advantages over the square, particularly in mobility, ease of forming a reserve, and maneuvering facilities. This article, which will deal principally with the artillery of the division, will not go into details of infantry organization, but it is mentioned before proceeding to the artillery. None of the armies in the early days of the war had sufficient artillery, and this deficiency existed at the end. Bismarck once said: "The wars of the future will be decided by artillery. Troops can be replaced in time of need; big guns must be made in time of peace." This was a prediction more than fulfilled during the War. Of our losses more than 70 per cent of all battle casualties were from artillery fire alone.

Plans for future organization and operation must be largely based upon past experience. The argument is frequently, in fact usually, advanced that the trench system of warfare in Europe was most exceptional and not what may be expected in future wars. However, history shows otherwise. Take for instance our own Civil War. From the spring of 1864 on, the campaign in Northern Virginia was trench warfare of a highly developed type, and the latter phases of the Russo-Japanese and First Balkan War became such also. It is, therefore, believed that after a certain stage of operations the defender always will be found entrenched. Consequently our organization must be such to meet these conditions. Basing our ideas on World War conditions it is surprising how rarely is taken into consideration the fact that in all major offensives, every division participating had, not only its own divisional artillery, but also that of one or two divisions, the infantry of which were in rest areas. There was of course in addition Corps and Army artillery, and units from GHQ Reserve.

In future campaigns we cannot expect to have available such reinforcements for the division artillery, and each division must have in its organic composition the complete units necessary for its operations, and it must also be supplemented by corps and army artillery, the former primarily on counter-battery missions, the latter the great reserve of fire power of the Army. Napoleon said "It is the artillery of my Guard which decides most of my battles, because having it always in hand, I am able to use it whenever necessary." A similar use of the General Reserve Artillery was made by General Hunt at the Battle of Gettysburg. With the greatly increased range of modern artillery over that of the Napoleonic period, the Commander of an army has means at hand whereby he can have his artillery placed over a wide front and yet concentrate at will an overwhelming fire on the point selected for attack. The real reserve of an attacking army is its mass of artillery, giving it fire superiority and permitting the element of surprise essential for a successful attack.

While in all operations at some time divisional artillery must fire on the enemy artillery, that is not its primary purpose. This should be a Corps function. During the war, due to conditions and to the fact that the 155mm howitzer was so especially suited

for counter-battery, in some instances the artillery brigade commander gave more attention to the work of the heavier regiments and to counter-battery fire, than to that of the light units which were directly supporting the infantry. To prevent such a situation, and to give the divisional artillery the needed mobility and capacity to carry out all its missions, it is believed all guns and howitzers should be light. The details for this organization will be given later.

An infantry division in an attack against a zone defense will have a frontage of from about 1 to 1½ miles, and in more open warfare from 1½ to 2¼ miles. A battalion of infantry will attack on a front from about 500 to 800 yards, or even more. Assuming that a regiment will have two battalions in line, and that it is supported by the one battalion of three batteries of light artillery at present provided in our Tables of Organization, it becomes apparent that the artillery support is entirely inadequate for an attack to possibly succeed. It is imperative that more guns be provided. The infantrymen themselves will be the first to make this demand. The solution, in the writer's opinion, is not to indefinitely increase units, but to provide fire power and as far as possible cut down overhead. In this connection it may not be out of place to call attention to the fact that in France for every gun we had more than seventy-five artillerymen. This counts officers and enlisted overhead, but is nevertheless considered an unreasonable proportion.

It has always been fundamental that each commander from the squad and platoon up, should handle the greatest number of men that could be done efficiently. In artillery the battery should contain the greatest number of guns the fire of which the captain can conduct. Napoleon reduced the number from 8 to 6 and while with our highly trained peace time battery commanders some could still handle six pieces, still in war, with our emergency officers, this would not be the case, and four guns to the battery, as our army and most European ones have adopted, may be accepted as the correct number.

A battery firing concentrations can cover fairly efficiently a front of about two hundred yards. A battalion of three batteries will cover about six hundred yards, or about the front over which

an infantry battalion will operate. This determines almost certainly that a battalion of artillery must support a battalion of infantry if the latter is to successfully attack. However to divide up the front equally leaves nothing directly at the disposal of the Battalion Commander for targets of opportunity and for use of the liaison officer with the front line infantry companies. Incidentally it is believed we have never figured on this officer conducting fire as much as should be done. If an infantry battalion commander can handle three rifle companies and a machine gun company, a platoon of one pounders and mortars and frequently an accompanying gun or battery, there is no reason why an artillery battalion commander should not direct four batteries. An added advantage to having four batteries in the battalion is that two batteries could make displacements while the others stayed in position, making the displacement therefore within the battalion and maintaining a much closer liaison with the supported infantry.

It has always been somewhat of a mystery why our artillery regiments contain only two battalions. The task of a colonel of artillery in action is certainly simpler than in the infantry. With battalions supporting infantry battalions, artillery regiments should support infantry regiments. Assuming then that the infantry regiment in the attack will have two battalions in the front line, and one in reserve, the artillery regiment will have two battalions directly supporting their corresponding battalions of infantry, while one would remain at the disposal of the colonel for special missions, firing particularly on that part of the enemy's line where the main effort is to be made. As the infantry reserve battalion is thrown into action the artillery battalion then supports it.

Carrying out the plan proposed for a triangular infantry division, the details of which would not be very different for the square one, and assuming that the operation called for two regiments in the attacking line and one in reserve, we should have two regiments of artillery directly supporting the infantry attack. These should have 75mm guns. However, to cover dead spaces, supplement the fire of the 75's, destroy light obstacles, do counter battery when absolutely needed, and for all special missions it is proposed to have in the division a regiment of 105mm howitzers.

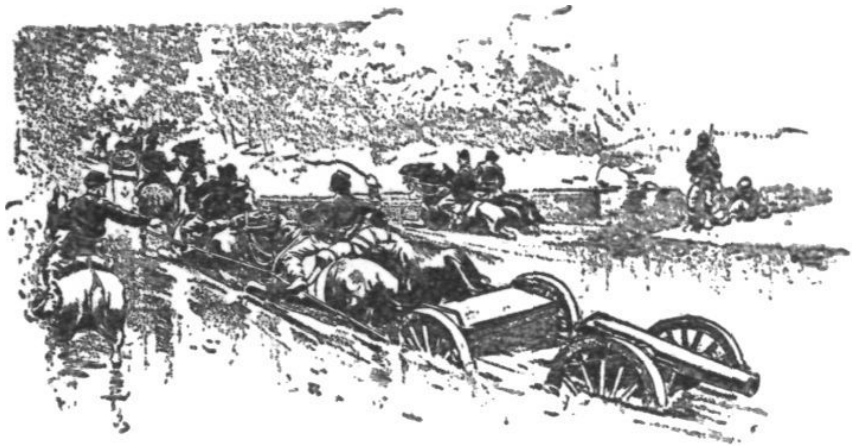
This regiment is directly at the disposal of the artillery brigade and the division commander. It is the fire reserve of the division Under this organization as proposed the infantry division would have 96 light guns, and 48 light howitzers, just twice that which we now have with the same brigade and regimental headquarters. At times it has been proposed that our light regiments consist of two battalions of 75mm guns and one 105mm howitzers, but it is believed a better plan to have the organization as given. It may also be added that for the corps artillery the same organization of batteries and battalions is advocated.

An objection to the large increase of guns in the division is the amount of road space that will be occupied by the artillery. In reply to this it may be stated that the old system of calculating road space is as obsolete as horse drawn transportation. Waving aside the romance of horse artillery, there can hardly remain much doubt now that all artillery in warfare will hereafter be motorized. Whether guns will be tractor drawn, truck drawn or self propelled, all will be motorized. Infantry will move to its deploying areas by motors. Troops two hundred miles from the battle field will be found there the next day, and their artillery must be there also. So concentrations will be made by motors, a thin screen covering the movement, and columns such as we have known in the past will give way to waves of different types of transportation and organizations.

To the objection of the increase in the number of artillerymen, it may be pointed out that their percentage to the other arms has continually increased since artillery first appeared, until they have almost reached a parity with the infantry upon the battle field. At times, such as at Malmaison early in 1918 the French artillerymen actually exceeded the infantrymen in numbers.

Before closing this article something must be said about liaison between the infantry and artillery. To the writer it seems the artillery has viewed this always as an artillery problem. Such a viewpoint is entirely too limited. The artillery has the mechanical means and personnel for this work; it is done for the infantry; therefore the artilleryman must view it from the infantryman's view-point. So far this has not been done. The organization the writer has advocated lends itself far more than our present organization,

to efficient liaison. The two battalion commanders will have command posts in immediate contact, and the observation command posts of battery commanders must not be far distant, while that of the battery of opportunity would be with the battalion commander's. It is more important for the battalion and battery commanders to be in close contact with the infantry battalion commanders than to have ideal observation posts, but which will be difficult to keep in communication with the infantry. They may also have if necessary additional O. P.'s. The liaison officer should be with the support of the firing line companies, where he can observe front line conditions and if necessary conduct fire on points where it would be impracticable for the commander of the battery of opportunity to do so as well as he could. The very fact that he may have to do this and on account of his other responsibilities, should determine the character of the liaison officer. He should be the best, because he is the most important lieutenant in the battalion.



TYPE PROBLEMS

Lateral Percussion Bracket, Forward OP

Target: Machine Guns in the vicinity of a lone tree. *Mission*: To neutralize, using shell. *Estimated data*: Adjusted range to Base point and approximate direction of base line known.

O.P. on the Right.

Adjusted Range to Base Point—3400 yds.

The target is estimated to be 300 yards left and 400 yards over the Base point.

Deflection shift=300/3.8=79 mils.

T=300, r/R=.2, S=7.

Initial Commands: Base Deflection Left 80, on No. 1 Close 5, Site O, Shell MK I, Fuze Long, No. 2, One Round, 3800.

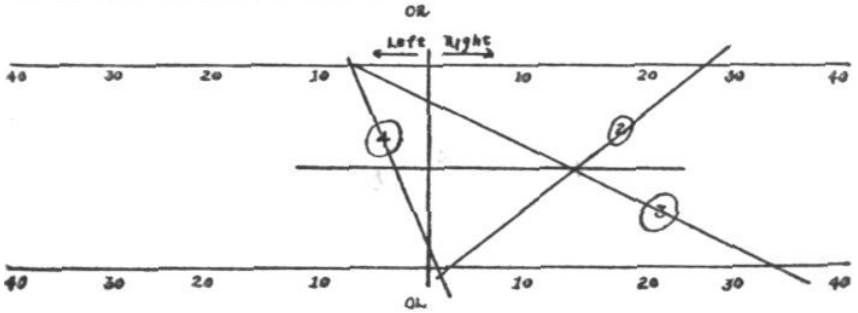
Commands	Range	SENSINGS: Deviations as viewed from the O.P. but not announced	SENSINGS: Range	Deflection	Remarks
1 Round	3800	< —20— > X 	Over	?	Range appeared to be close
Right 10, Battery Right	3600	 x  xxx	Over Short Short Short	Correct	Left 20×.2=4 _ Right 2×7=14 Right 10
Right 5, on No. 2 Open 9, Battery One Round, Zone	 3700 3500				 Starting fire for effect

Summary: Errors in initial data: Range 200 yards, Deflection 5 mils. Time to 1st Range, 50 seconds. Total time of problem 2 minutes, 20 seconds. Classification, satisfactory.

With this type of observation Range errors can be estimated with a fair degree of accuracy justifying range bounds of 200 yards, or in some instances of assuming a bracket after seeing a salvo near the target.

Bi-lateral Adjustment—Diagram Methods
Par. 94, TR 430-85

Estimated data. One observer on right and one on left of the G-T line. Range: 4000. Materiel: French 75mm.



INITIAL COMMANDS: No. 1 adjust. BDR 150. Shell Mk. I, Fuze short. No. 1, one round, Q 130.

Commands	Elev.	Rd. No.	Observations OR	Observations OL	Range Sensing	Remarks
	130	1	80R	60R	?	Deflection is to the right. Arbitrary change is made. This shot is not plotted on the diagram.
L 50	130	2	26R	2R	+	Fork is 5 mils. Change elevation 4 forks.
	110	3	6L	33R	–	Deflection is to the right.
L 20	120	4	7L	1R	–	20 mil deflection change gave a variation proportional to DX. DO/DX=1/5. ∴ Command R4 is appropriate.

At this point the adjustment is continued using only the left observer. The deflection is assumed to be approximately correct.

	Elev.	Rd. No.	Deviation	Sensings Rn.	Sensings Def.	
R 4	125	5	Line	+	+	
L 2,3 rds.	123 (or 122)	6	2 L	+	?	
		7	Line	–	–	
		8	5 L	+	?	
R 1	123 (122)	9	4 R	–	?	
		10	Line	–	–	4 shorts, 2 overs
		11	Line	–	–	123+(2/12×5)=123.8 (122.8)
6 rds.	123.8	End of problem				

Summary: Errors in initial data: Deflection, 67 mils right; elevation, 62 mils, or about 120 yards. Ammunition expended, 11 rounds. Classification: Satisfactory. Comments: An excellent problem.

Axial, Time Bracket—Forward OP

Target Description: Machine guns in the vicinity of a clump of bushes. *Mission*: To neutralize. *Type*: Forward observation, axial. *Materiel*: French 75mm Model 1897. *Visibility*: Excellent. *Wind*: Direction, right to left.

Initial data obtained: The battery commander with his prismatic compass took a Y-azimuth reading to his battery from the F.O.P., added 3200 mils and fired a round of smoke at 4000 yards, thus materializing the Gun-OP line extended. Point of impact of this round is taken as the Base Point. The guns were laid parallel and Base Deflection recorded. The guns are estimated to be 2400 yards behind the O.P. The machine gun fire is estimated to be about 400 yards beyond the base point and 180 mils right as measured at the O.P.

On this basis r/R=20/44=5/11

Initial Commands: Battery Adjust, Base Deflection Right 80, On No. 2 Open 5, Site+5, Corrector 35, Battery Left, 4400.

Remarks: (Initial data believed to be fairly accurate.)

Commands	Range	Rd. No.	Sensings	Remarks
	4400	1	G?	Sheaf regular; 65m wide as seen at OP; adjusting point 20 mils wide; No. 2 gun def. correct.
		2	G+	
		3	G+	
		4	A?	
On No. 2 Close 7, Up 5,	4200	5	A–	Sheaf 20 mils wide, viewed at OP.
		6	G–	
		7	A+	
		8	G–	
On No. 2 Open 5, Up 3, B 1 Round, Zone	4100 4300	C. F. End of problem		

Summary: Errors in initial data: Deflection, none. Range, + 200 yards or 5%. Time from identification of target to announcement of 1st range, 1 min. 10 seconds. Average sensing and command 10 seconds. Ammunition expended 8 rounds. Classification: Satisfactory. General comments: an excellent problem, correctly handled. The procedure illustrated is normal and makes forward observation comparatively simple.

Lateral Time Bracket, Forward OP

Target: Machine guns in the vicinity of a bush. *Mission*: To neutralize—using shrapnel. *Plotted Data*: Relative location of Battery, OP, and Base point known approximately from previous fire—O. P. on left.

Measured Deviation L 400.

Estimated Distance O—T=1000 yds.

Data obtained from Plotting.

r=1000, R=4500, T=240.

Shift=BDL 30.

Factors r/R=.2.

S=24/4.5=5.

Initial Commands: Base Deflection Left 30, On No. 1 Close 5, Site O, Correcter 35, No. 2 One Round, 4400.

		SENSINGS			
Commands	Range	Deviations viewed from O.P. but not Range announced	Range	Deflection	Remarks
1 Round	4400	O< —5— > 	A short	Short	Effect appears close to target
Right 10, D5, Battery Right	4600	xxx  O	A over G over G over G over	Over	
L5, on No. 2 open 7, up 5, Battery 1 Round	4400				Starting fire for effect

Summary: Errors in initial data: Range, 100 yards; Deflection, 5 mils. Time to 1st Range 1 minute. Total time 2 minutes, 50 seconds. Classification, Satisfactory. Range and Deflection fans used with estimated distance O—T.

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Lt. Col. S. Miles
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- H. Van Wyk
- D. J. Oyster
- W. J. Eyerly
- Albert J. Hastings
- Conrad S. Follansbee

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Charles A. Piddock
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E. V. Kerr
W. D. Webb, Jr.

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Lt. Col. F. T. Cruse
Lt. Col. R. M. Pennell
Major E. B. Edwards
Major T. R. Kerschner

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G. E. Burritt
T. A Jennings

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R. S. Carter
J. F. Stroker

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C. R. Hall
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J. H. Hinds

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J. W. Hansborough
G. K. Cusack
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Major S. G. Brady
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L. A. Des Pland
F. E. Kauffman
F. Camm
L. M. Haynes
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J. F. Hepner
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SECOND LIEUTENANTS:
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J. B. Evans

Lt. Col. T. G. Gottschalk
Major A. R. Ives
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W. D. Williams
F. W. Crary
W. J. Klepinger
W. L. Carr
M. B. Stokes
W. E. Watters
T. E. Binford
P. H. Enslow
J. M. Whistler
B. Furnholmen
E. A. Niblack
F. G. McGill
W. F. Millice
J. P. Kennedy, Jr.
E. A. Banning
L. L. Hittle
J. H. Workman

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1st Lt. F. A. Henning

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J. W. Cave
R. H. Harrison
H. M. Peyton
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J. W. Park
P. H. Lash, II
C. L. Heitman
P. Sather
C. W. Stratton

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Floyd A. Hansen
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H. R. Evans
J. A. Wallace
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G. E. Wrockloff
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L. H. Slocum
S. M. Smith

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T. W. Carrithers
M. S. Davis
R. G. Crandall
H. H. Hunt
C. W. Land

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H. Crawford
T. A. Roberts, Jr.
C. C. Blackeney
F. N. Leakey
E. V. Williamson
L. M. Rouch

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Lt. Col. A. L. P. Sands
Major F. B. Inglis

CAPTAINS:
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J. M. Hamilton
C. G. Holmes
J. C. Cook
J. G. Cook
W. B. McCollum

SECOND LIEUTENANTS:
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P. A. Gavan
G. E. Dietz

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R. C. Cameron
R. D. Waring
R. C. Lawes

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James B. Rankin
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SECOND LIEUTENANTS:
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G. S. Speidel, Jr.
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W. T. Kirn
George W. Power
Edwin S. Hartshorn, Jr.
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Bernard Thielen

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Major O. M. Moore

CAPTAINS:
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A. S. Quintard

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W. S. Nye
E. T. Owen
H. W. Kruger

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Lt. Col. J. L. Collins
Lt. Col. G. M. Peek
Major H. R. O'Dell
Major O. E. Beezley

CAPTAINS:
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H. J. Gaffey
G. L. Danforth
W. C. Goessling
C. M. Lucas
B. C. Anderson
R. de P. Terrell
H. H. F. Gossett
W. P. Bledsoe
J. W. Russey
F. H. Black
R. G. Barkalow
J. W. MacKelvie
M. C. Walton, Jr.
R. H. Dixon
H. Kernan
W. A. Ray
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D. F. Brown
R. R. Mace
D. C. Dwyre
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H. S. Whitely
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P. L. Martin
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D. S. Babcock
F. Dorn
L. J. Tacy
W. W. Scott
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G. L. Holsinger
R. L. Taylor
L. J. Greeley
J. A. Cella
H. C. Fowler
W. N. Gillmore
J. Massaro
S. H. Fisher
J. B. Horton
C. L. Taylor
L. E. Heyduck
H. H. Parks
C. B. Magruder
L. J. Stewart
H. C. Larter, Jr.
George E. Mitchell
R. P. Turner
S. C. Lombard
I. Schindler

1ST BATTALION, 3RD FIELD ARTILLERY
(FORT BENJAMIN HARRISON, IND.)

Major J. K. Boles

CAPTAINS:

H. F. Searight
W. B. Leitch
W. D. Davis

SECOND LIEUTENANTS:

W. W. Sisson
T. J. Edgar
F. D. Atkinson
H. A. Hughes
J. J. Davis
C. P. Westpheling

FIRST LIEUTENANTS:

E. M. Quigley
E. A. Routheau
R. S. McClenaghan
M. Faulhaber
R. P. Hollis

GRADUATES, 1932 CLASS, U.S.M.A.

SECOND LIEUTENANTS:

Roland F. Bower
Arthur W. Blair
James E. Godwin
Francis G. Hall

2ND BATTALION, 3RD FIELD ARTILLERY (FORT SHERIDAN, ILLINOIS)

Lt. Col. O. L. Brunzell

CAPTAINS:

O. M. Marshburn
C. B. Cole
A. M. Goldman
M. A. Dawson

SECOND LIEUTENANTS:

R. C. Cooper

FIRST LIEUTENANTS:

A. Vepsala
H. D. Reed
J. Hinton
C. E. Hixon
D. V. Johnson
S. E. Stancisko

C. Wesner
W. R. Gallup
F. H. Tapping
A. R. Hercz

GRADUATES, 1932 CLASS, U.S.M.A.
SECOND LIEUTENANTS:
Robert A. Hewitt
Frederick W. Ellery
John C. McCawley
Charles C. Williams, Jr.

2ND BATTALION, 4TH FIELD ARTILLERY (FORT BRAGG, N. C.)

Major J. R. Brabson

CAPTAINS:
R. L. Gervais
E. S. Brewster, Jr.
R. L. Allen, Jr.
R. T. Adams
R. H. Knapp
SECOND LIEUTENANTS:
A. P. O'Meara

FIRST LIEUTENANTS:
H. E. Sanderson, Jr.
E. L. Andrews
J. J. Deery
S. V. Hasbrouck
G. P. Harrison
W. H. De Lange
GRADUATES, 1932 CLASS, U.S.M.A.
SECOND LIEUTENANTS:
Edward C. Shinkle
Harry C. Porter
Dale E. Means
Charles A. Clark, Jr.

1ST BATTALION, 9TH FIELD ARTILLERY (FORT LEWIS, WASHINGTON)

Major B. Frankenberger

CAPTAINS:
H. F. Long
J. R. Williams
K. K. Jones

FIRST LIEUTENANTS:
H. Cort
J. G. Anding
W. H. Bertsch, Jr.
L. M. Johnson
C. J. Kanaga
F. B. Porter
H. I. Harper

1ST BATTALION, 16TH FIELD ARTILLERY (FORT MYER, VIRGINIA)

Lt. Col. C. P. George

CAPTAINS:
G. D. Shea
H. W. Blakeley
H. T. Brotherton
W. R. Frost
P. G. Tenney
SECOND LIEUTENANTS:
A. G. Stone
A. Watson, II
W. H. Hoover
P. S. Thompson

FIRST LIEUTENANTS:
A. R. S. Barden
G. B. Barth
L. B. Downing
J. L. Chamberlain, Jr.
A. T. McCone
C. A. Billingsley
Wm. H. Barksdale, Jr.
D. G. Erskine
GRADUATES, 1932 CLASS, U.S.M.A.
SECOND LIEUTENANTS:
Andrew Hero, III
Alexander Graham

OFFICERS ASSIGNED TO REGULAR ARMY F. A. UNITS

2ND BATTALION, 16TH FIELD ARTILLERY (FORT BRAGG, N. C.)

Lt. Col. C. S. Blakely

CAPTAINS:
D. L. Crane
C. W. Glover
J. L. McIlhenny

SECOND LIEUTENANTS:
A. R. Fitch
C. F. Buck, Jr.
M. Moses
M. O. Perry
F. R. Radden
J. A. Berry, Jr.

FIRST LIEUTENANTS:
L. C. Friedersdorff
G. McK. Williamson, Jr.
C. Cavelli, Jr.

GRADUATES, 1932 CLASS, U.S.M.A.

SECOND LIEUTENANTS:
John C. Street
Samuel W. Horner, II
Horace K. Whalen
John A. Meeks

1ST BATTALION, 82ND FIELD ARTILLERY (FORT BLISS, TEXAS)

Major L. C. Sparks

CAPTAINS:
C. A. Beaucond
A. F. Doran
W. Hitzfeldt
S. C. Hilton
L. J. Whitlock
W. B. Weston
H. B. Hester

SECOND LIEUTENANTS:
P. C. Wehle
J. J. Macfarland
J. P. Holland
M. L. Fisher
D. A. Herman
W. Taylor, Jr.
A. H. Hogan
G. F. Lillard

Major C. L. Clark

FIRST LIEUTENANTS:
W. W. Ford
T. L. Langevin
G. B. McReynolds
E. J. McGaw
L. R. Garrison
G. B. Conrad
R. G. Miller

1ST BATTALION, 83RD FIELD ARTILLERY (FORT BENNING, GEORGIA)

Major C. A. Selleck

CAPTAINS:
J. G. Brackinridge
F. H. Gaston
W. L. Bevan
R. G. Mangum
L. S. Partridge

SECOND LIEUTENANTS:
J. J. Heriot
W. E. Grubbs
R. A. Ports
C. E. N. Howard, Jr.
J. R. Beishline
George E. Lynch
Arthur L. Cobb
Thos. L. Sherburne
William E. Hall

FIRST LIEUTENANTS:
G. B. McConnell
W. A. D. Thomas
C. H. Studebaker
L. W. Haskell
W. C. Lucas
G. H. McManus, Jr.
L. B. Ely

24TH FIELD ARTILLERY (PHILIPPINE DEPARTMENT)

Colonel U. Birnie, Jr.
Major H. L. McBride
CAPTAINS:
L. J. Compton
S. F. Clark
J. H. Keatinge
M. H. Doty
J. P. Eckert
S. F. Reyes
F. V. Segundo
H. W. Tarkington
I. L. Foster
W. C. Green
R. B. Willis
R. D. Delehanty
L. M. Kilgarif
E. A. Henn
SECOND LIEUTENANTS:
D. N. Sundt
H. E. Brooks
F. G. Terry
J. Q. Brett
G. C. Duehring
B. C. Patrick
R. L. Carmichael, Jr.
A. C. Goodwin, Jr.
Wm. H. Allen, Jr.

Lt. Col. D. C. McDonald
Major J. C. Wyeth
FIRST LIEUTENANTS:
W. T. Sexton
F. S. Kirkpatrick
W. J. Epes
T. A., Doxey, Jr.
W. D. Paschall
S. L. Cowles
J. L. Graves
R. M. Cannon
C. F. Burback
V. Z. Gomez
M. S. Sulit
A. D. Garcia
H. P. Storke
J. P. Woodbridge
R. D. Powell
V. H. Connor
G. R. Carpenter
J. D. Balmer
David Larr
R. A. Ellsworth
G. M. Lindsay

11TH FIELD ARTILLERY BRIGADE HEADQUARTERS (HAWAIIAN DEPARTMENT)

Brigadier General James B. Gowan
Captain H. M. Findlay
Captain E. T. Hayes

FIRST LIEUTENANTS:
D. F. Healy, Jr.
W. L. Coughlin
L. Vocke

8TH FIELD ARTILLERY

Colonel C. F. Cox
Lt. Col. T. P. Bernard
Major H. G. Fitz
Major F. B. Jordan
CAPTAINS:
D. S. McConnaughy
J. W. Faulconer, Jr.
H. J. Guernsey
A. E. King
M. A. Stuart
A. B. Wade
L. F. Kosch
T. C. McCormick
R. H. Bacon
P. A. Reichle

W. G. Bennett
A. W. Bliss
C. E. Hart
H. Y. Grubbs
F. A. March, 3d
W. C. Stout
F. H. Morse
A. R. Sewall
B. P. Heiser
H. D. Baker
J. O. Taylor
H. E. Baker
W. J. Morton, Jr.
SECOND LIEUTENANTS:
R. E. Chandler

R. J. Sothern
FIRST LIEUTENANTS:
C. W. Cowles
W. C. Stanton
E. S. Molitor
J. H. Sampson, Jr.
E. M. Link
L. E. Jacoby
E. H. Barr
D. M. Perkins
J. G. Harding
E. H. McLemore
J. B. Daly
C. C. Smith, Jr.
W. E. Johns
B. A. Holtzworth
F. A. Lightfoot

11TH FIELD ARTILLERY

Colonel E. Swift, Jr.
Lt. Col. E. W. Wildrick
Major H. L. C. Jones
Major G. W. Sliney
CAPTAINS:
D. F. Jones
C. R. Lehner
C. E. Boyle
F. H. Boucher
A. W. Shutter
W. H. Philp
V. L. Oleson
J. H. Corridon
T. R. Willson
B. M. James
M. E. Scott
FIRST LIEUTENANTS:
E. F. Kollmer
G. C. Benson
C. D. Calley
O. W. Martin
J. B. Clearwater
P. A. Berkey
L. R. Woods, Jr.
R. H. Donaldson
R. T. Tompkins
N. C. Cureton
R. C. Conder
R. C. Ross
S. Y. McGiffert
SECOND LIEUTENANTS:
W. W. Whelchel
T. J. Counihan
V. B. Barnes
F. P. Miller
W. E. Kraus
S. L. Morrow, Jr.
F. E. Fellows
P. Clark, Jr.
B. Hamlett
J. F. Ammerman
R. W. Timothy
R. H. Booth
L. H. Wyman

13TH FIELD ARTILLERY

Colonel R. S. Pratt
Lt. Col. W. Bryden
Major C. Andrus
Major M. C. Heyser
CAPTAINS:
J. H. Ball
P. E. Shea
M. Ross
M. H. Greene
Z. E. Lawhon
H. R. Hansen
F. G. Chaddock
P. P. Rodes
T. L. Futch
J. F. Sheetz
J. E. Bush
E. H. Brown
G. R. Middleton
S. V. Krauthoff
R. L. Mabie
C. L. Boyle
J. L. Lewis
D. Dunford
J. K. Gibson
J. C. Strickler
T. Calhoun, Jr.
S. A. Dickson
SECOND LIEUTENANTS:
R. J. West, Jr.
M. C. Walter
R. W. Goldsmith
W. J. Thompson
J. P. Hannigan
C. E. Hughes
R. E. Hatton
W. P. Connolly

W. N. White
FIRST LIEUTENANTS:
M. P. Chadwick
J. G. Howard
K. W. Hisgen
L. E. Snell
C. G. Blakeney
J. L. Hardin
V. R. Smith
D. R. French
J. K. Bryan
J. L. Beynon
J. H. Rothschild
K. H. Ewbank
R. L. Brunzell
R. S. Pratt, Jr.
J. R. Pitman, Jr.
C. I. Hutton

2D FIELD ARTILLERY (CANAL ZONE)

Lt. Col. E. L. Gruber
CAPTAINS:
L. McHale
H. B. Dawson
D. L. Ruffner
E. S. Van Benschotten
L. S. Arnold
W. M. Wright, Jr.
G. H. Duff
FIRST LIEUTENANTS:
F. J. Achatz
C. H. Carlson
J. E. Slack
E. F. Hammond
R. B. Hart
J. C. Campbell
G. R. Scithers
T. C. Wood, Jr.
J. W. Black
J. H. Baumann
O. W. van den Berg
T. McGregor
J. M. Callicutt
C. P. Summerall, Jr.
R. C. Partridge

FIELD ARTILLERY NOTES

Issue of Automatic Rifle, Caliber .30, M1918, to the Field Artillery

The caliber .30 automatic rifle, M1918, has been approved for issue to the Field Artillery for protection on the march against air attack.

The following basis of issue, recommended by the Chief of Field Artillery, has been approved and will be included in the next revision of Tables of Organization:

Units	For Peace	For War
Headquarters Batteries (less Pack Artillery)	4	4
Regimental Hq. Battery, Pack Artillery	1	1
Battalion Hq. Battery, Pack Artillery	1	1
Service Batteries, 75 mm Gun	17	17
Service Batteries, 75 mm How. (Pack)	6	6
Service Batteries, 155 mm How	10	14
Service Batteries, 155 mm Gun	12	14
Service Batteries, 240 mm How	..	18
Firing Batteries, 75 mm Gun	10	12
Firing Batteries, 75 mm How. (Pack)	5	6
Firing Batteries, 155 mm How	10	10
Firing Batteries, 155 mm Gun	10	10
Firing Batteries, 240 mm How	10	10
Combat Trains, 75 mm Gun	8	20
Combat Trains, 75 mm How. (Pack)	4	4
Combat Trains, 155 mm How	6	14
Combat Trains, 155 mm Gun	7	18
Combat Trains, 240 mm How	..	12
AMMUNITION TRAINS		
Field Artillery Brig. Inf. Div. Amm. Train	17	45
Corps Artillery Ammunition Train	..	74
Army Artillery Ammunition Train	..	89
Observation Batteries	6	6

AR 775-10 (Ammunition Allowances) prescribed an allowance of 100,000 rounds of cartridge ball, caliber .30 and 65,000 cartridges, ball, caliber .22, long rifle for the Chief of Field Artillery, which will be used for anti-aircraft training with automatic rifles

during Fiscal Year 1933. This allowance which has been sub-allotted to organizations is inadequate to provide satisfactory training with the 1,576 automatic rifles which are to be issued. However, no additional funds are available for this purpose during Fiscal Year 1933.

The tentative ammunition estimates for Fiscal Year 1934 are based upon providing 300 rounds of cartridge ball, caliber .30, and 200 rounds of cartridge ball, caliber .22, long rifle, for each of the 1,576 automatic rifles.

A description of the weapon and instructions for its care and use are contained in TR 320-25. Training in the use and firing of the weapon will be conducted as prescribed in tentative TR 300-5, Anti-aircraft Combat. Indoor instruction will be based on a tentative text entitled, "Infantry Defense against Aircraft, Anti-aircraft Rifle Marksmanship, Indoor Instruction."

Pending the availability of .22 caliber rifles for issue to the Field Artillery, these rifles will be borrowed from Infantry units. Steps to obtain .22 caliber rifles for issue to Field Artillery organizations have been initiated.

100-Mile Forced March May 16-17, 1932, at Fort Riley, Kansas

A forced march of approximately 100 miles in twenty-four elapsed hours was held on May 16-17, 1932. Battery D, 18th F. A., Captain Edward R. Brooks, commanding, formed part of the column, marching at the tail, with instructions to march with any distance but as rapidly as condition of animals and men would permit. With the exception of distance intentionally lost, as prior to a halt for watering to avoid a long halt at the watering place, the battery was at all times closed on the column.

During the winter months animals in this battery had an average of about twelve hours per week in harness devoted to maneuvers limbered and difficult draft. They were therefore in excellent condition with very little excess weight when training for the march began, six weeks prior thereto. Marches for condition were as shown below.

The third week of conditioning an extra feed of grain, three pounds, was added, hay increased to eighteen pounds in proportion

thirteen pounds prairie to five pounds alfalfa, animals watered at seven P. M., tied in and bedded down. Grain was fed four times per day, hay, salt, and water were available to animals at all times in the corral. A few thin horses received special feeding. As soon as grass came up the animals were grazed one hour per day. This was cut to approximately half hour per day with excellent results for the ten days just preceding the march. On the march the animals were fed three pounds of oats and alfalfa chop mixed for the first two feedings and three pounds of oats for the third.

A great deal of attention was given to shoeing, all animals being shod within ten days of march, and the inside hind heels left a little high, depending on conformation of animals, as an attempt to prevent interfering when the horses became leg weary. No trouble was encountered from this source. Manes were roached all the way, animals thoroughly groomed and massaged before the march and double saddle blankets used.

The battery was organized as horsed artillery and all cannoneers' mounts carried adjusted collars. Equipment, rolls, etc., were packed on the carriages to prevent unnecessary fatigue of the horses and to facilitate their interchange for rest. A rigid march discipline was enforced. At all halts animals and harness were inspected; eyes, nostrils and mouths were cleared of dust, water for this purpose being carried in buckets slung high on the limbers. Necks were massaged and collars and neck pads cleaned. The hourly halts were used entirely for the resting and invigorating of the animals, much as the minute between rounds is for the boxer. The men were rested by dismounting and leading twice each hour. Gaits: at the walk, a good four miles per hour; at the trot, nine miles per hour, except the last three hours when they were approximately eight miles per hour. Drivers alternated the diagonals when posting. Trotting was "by carriage" over rolling terrain to avoid fatigue. Trot periods did not exceed seven minutes and were occasionally much shorter due to terrain.

Upon completion of the march, backs and legs of all animals were massaged and the legs packed. A march of about twelve miles was made the morning following the forced march, and

while some horses were a bit stiff at the start, all heads and tails were up and the stiffness worn off in an hour.

CONDITIONING SCHEDULE

Wk.	No. hrs. daily	No. trots per hour	Duration of trots	Terrain	Load	Remarks
1	2-2½	2 and 3	3 to 5 min.	Level roads	Stripped	Six days per week resting Sunday
2	3	do	do	Rolling rds.	Caissons loaded with sand	do
3	3	do	do	Rolling rds. & open fields	do	do
4	3-3½	3 and 4	do	do	do	do
5	3½-4	do	varying	Dirt roads	do	do
6	do	do	do	do	do	do

NOTE: Marches varied from 12 miles at the beginning of conditioning to 16 and 18 at the end, with an average rate of march of 5.2 miles per hour. The last two weeks two marches of approximately 25 miles were made. Ten days before the march the horses appeared a bit fine and conditioning was tapered off to bring them back to the peak. Animals rested the two days before the march.

NOTES ON FEEDING AND MESSING

Place	Arrive	Leave	Distance	Remarks
Fort Riley		1:14 P. M.	0	
Abilene Fair Grounds	6:58 P. M.	7:41 P. M.	33.2 mi.	Fed animals 3 pounds oats and alfalfa mixed. Fed men hot coffee and sandwiches.
Bivouac	1:03 A. M.	4:47 A. M.	61.6 mi.	Fed animals 3 pounds oats and alfalfa upon arrival and 3 pounds oats before leaving, hay was spread on picket line. Men were fed a hot meal on arrival and coffee before leaving. Mess from rolling kitchen, gas burner constructed from salvage material.
Fort Riley	12:46 P. M.		100.3 mi.	

Tests of Signal Equipment

Tests of the SCR-183-T4 radio sets (RCA-Victor; 5 to 6.66 meters) by the Field Artillery Board to determine the suitability of this type of radio equipment for field artillery use and to determine its suitability for use in observation balloons as requested by the Chief of the Air Corps, continue.

Experiments with these sets tend to prove the theory that the sky-wave of frequencies above about 43,000 kilocycles (7 meters) does not return to earth. Signals on these frequencies appear to

be free of distortion due to fading, but the range is limited to the ground-wave range.

Tests to date indicate that within the limited power of the sets, the range is uninfluenced when line-of-sight transmission is possible; in close country, where hills, wooded crests, buildings, etc., intervene between stations, the inter-operation of the sets is extremely erratic and their range cannot be predicted with certainty. In attempts to overcome these difficulties, experiments with several types of antennae have been made, operating between 5 and 6.66 meters, without obtaining satisfactory results. In these experiments, operations on 8 meters gave very satisfactory results, ranges up to 12,000 yards being obtained consistently with a workable signal strength. Further experiments within the narrow limits of the equipment available to the Board are being made to determine whether or not a small radio set of this general type, operating in the neighborhood of 8 to 10 meters, will not be more suitable for field artillery purposes.

Tests of Field Telephones, type EE-8-T2, continue in the Ford Battery. This test is now approximately 50% complete and the results obtained thus far have been very satisfactory.

Tests of Signal Lamp Equipment, type EE-84-T1, continue. This test is approximately 10% complete. The lamps have been operated during daylight up to 5,000 yards and during darkness up to 7,700 yards.

Fragmentation Effect of 155mm Shell, Mark III

Recent tests have been made by The Field Artillery Board on the fragmentation effect of the 155mm H. E. Shell, Mark III.

Analysis of the results brings out the following:

The shell is twice as effective against standing figures as it is against prone, at either a medium or large angle of impact.

At the medium angle the area effectively covered may be taken as an oval 90 yards by 40 yards against standing figures.

At the high angle the area effectively covered may be taken as an oval 120 yards by 60 yards against standing figures.

In either case there will be a number of effective fragments outside the oval.

Indications of a few effective fragments were found as far as

170 yards from the point of burst. Some large stray fragments probably had an effective velocity at a greater distance, but none were found in the brush and grass.

Examination of the holes in the targets and of the fragments found indicate that the average size of effective fragments was about 4 inches long. A few were found that were 8 or 10 inches long, and one about 13 inches long.

Books Completed at Fort Sill

Since January 1, 1932, the following books have been completed at the Field Artillery School:

No. 101 Ammunition

No. 123 Marches and Shelter, Tractor Drawn

No. 142 Marches and Shelter, Horse Drawn

No. 162 The Firing Battery

The following numbered books are now in the process of being printed:

No. 100 Elementary Matériel.

No. 223 Elementary Tactics

Ford Battery Notes

While the past summer has been just another summer to the average battery, Battery "D" of the 17th Field Artillery, which has been assigned the vehicles and the guns of the experimental Ford battery, has been on the move, constantly, through the deep sand, the swamps, and the brushland of Fort Bragg in an endeavor to prove that a light commercial truck will or will not answer field artillery requirements as a prime mover for our 75mm guns.

To date, after some three months of test, during which time the terrain of Fort Bragg has been pretty well exhausted, the "ayes" apparently have it. Anyhow, the battery is daily overcoming the "accidents" of the Bragg terrain and those who had had service in this area know that an accident of terrain here is practically a catastrophe elsewhere. The bottomless sand of Yadkins Road has pulled the heart out of many a highly touted motor vehicle before this time.

In May, Captain Alan L. Campbell, the battery commander, with a detail of drivers and mechanics, received the vehicles and

guns at the Holabird Quartermaster Depot and set sail for Fort Bragg. A demonstration was held in Washington, as the battery passed through, but after a total of fifteen hours of driving, over a highway filled with all types of motor traffic, the battery rolled into Fort Bragg intact. The distance travelled was 387 miles. Ninety quarts of oil and 434 gallons of gasoline were used by the eleven trucks and five station wagons, during the march.

Upon arrival at Fort Bragg the battery was organized under the provisions of the plan contained in an article in the May-June edition of THE FIELD ARTILLERY JOURNAL. The latter part of June was devoted to elementary instruction necessary to convert the personnel, formerly trained to man an 155mm howitzer unit, to the entirely foreign operations of a truck drawn light field artillery unit. The month of July was spent in determining the relative stability of the 75mm gun carriage (M1897 M1E3) when fired from the steel wheel segments and when fired directly from the pneumatic tires. While the cannoneers were engaged in such operations, with the guns, the remainder of the personnel continued their work in becoming fully acquainted with the tactical and technical limitations of the Ford trucks and station wagons.

The month of August was devoted to tactical problems over varied terrain. A few extracts from the Board's partial report of this period of test are of interest:

"On August 15, the Ford Battery left the Park at approximately 7:45 A. M., and moved out on the Vaughn Hill road to carry out a tactical exercise prepared by Major F. C. Wallace. The problem involved reconnaissance of a position on South Mac Ridge and occupation of a position to carry out firing missions given. The reconnaissance was completed in a short time and the position occupied without difficulty. The ground traversed in reaching the position has been fired upon for many years and was deeply pitted with shell holes. This resulted in extremely rough going for the trucks, but no difficulty was experienced in reaching or leaving the position except by one truck which got its front wheels in one shell hole while the rear wheels were in another, and had to be assisted to proceed by the personnel of the battery.

"After simulated fire in the first position the problem called for a reconnaissance of a covered route to a position about 3500 yards in rear, and this reconnaissance was followed by movement of the battery on this covered route. The route selected ran partly through woods, on sandy roads, but required crossing a very wet and swampy place and some movement through scrub oak off the road. The battery executed this move in about 35 minutes with all vehicles and made a very creditable showing through rather difficult going.

"On August 16, the battery moved out at 7:45 A. M. for a short march prior to engaging in a tactical exercise. During this march the battery was accompanied

by the two Franklin trucks under test. These two Franklin trucks were equipped with small radio sets under test by Major Fitzhugh. The march by the battery was intended to test the performance of these radio sets in a column of vehicles and to determine whether they offered a method of control of the column. The battery executive rode at the head of the column in one of the Franklin trucks, the battery commander at the rear of the column in the other truck. Using two-way telephone communication, the battery commander directed the route of the battery during the entire march, which included travel on one of the main highways through the post and a woods road connecting the two main highways. On nearing the completion of the march the battery commander directed the speed to be reduced to eight miles an hour, and, with his detail, moved to the head of the column and preceded the remainder of the battery to the vicinity of a position to be occupied in carrying out the tactical mission assigned. On reaching the position the battery commander selected the observation post and the gun position and computed the initial firing data. The firing battery was directed to the position and given the initial data by radio telephone before the battery had reached the position. Further report on the functioning of the radio equipment will be submitted by Major Fitzhugh."

The Hipkins traction devices, provided for the driving wheels of the trucks, have been used to advantage, especially in deep mud and up steep sandy slopes. In August, Mr. O. F. Hipkins, the inventor and manufacturer of this device, made a visit to the Board and, in conjunction with members of the Board, devised an oval track for the six wheel, four wheel drive, trouble-truck of the battery. This development, which is shown in the illustration on page 475 practically converts the two rear wheels of the six-wheeler into a crawler tractor tread.

Further quotations from the Board's partial report of test on the operation of this vehicle equipped, as stated, follow:

"After these bands had been installed on the 6-wheeler a short test run was made to determine the action of the truck thus equipped. The truck gave a satisfactory performance, and there was no apparent difficulty in crossing small ditches or short elevations with the bands on the wheels. As a test of the tractive power of the truck a load was coupled to the rear of the truck. The load used was one of the ammunition trucks of the battery with a body load of about 2300 pounds. In order to increase the load the towed truck was put in low gear so as to use the engine as a brake, and the driver was instructed to use the foot brake to lock the wheels. With the wheels thus locked the 6-wheel truck, with the traction devises, pulled the load up a slight grade with a soft sand surface covered with bunch grass. The wheels of the towed truck, while locked, were dragged along and cut furrows about two inches deep into the sand. While there were no means available of measuring the drawbar pull developed, it was evident that the 6-wheel truck, with the traction bands, developed surprising tractive power.

"On August 17, the battery proceeded from the Post through the Raeford cutoff to the Plank Road and turned in to Finlayson Mountain. From Finlayson Mountain, the battery proceeded down the Chicken Road to a point about two

miles east of Finlayson Mountain, and turned to retrace the route and ascend the mountain. The route traversed was badly water-worn, clay for a part of the distance traversed, and the ascent up Finlayson Mountain begins with a short and very rough climb up a clay hill and ends with a stretch of about 200 yards of very soft sand on a moderate up grade. All of the vehicles managed to make the grade. One gun truck was sent through without using the Hipkins' devices on the wheels. The second gun truck used the Hipkins' devices, both required assistance, but were pushed through by the personnel of the battery. The six-wheel truck was equipped with the traction bands over the rear wheels, made up by Mr. Hipkins on the preceding afternoon. The truck carried the Caterpillar 10 tractor (about 4200 pounds) as a pay load with about 300 pounds additional equipment. On descending a very steep and rough clay slope, before beginning the ascent of Finlayson Mountain, a stud connecting the chain to one track link was broken. Examination showed that this stud had already been broken nearly half way through before the test, the old fracture being filled with rust. This stud was replaced and the truck proceeded without difficulty toward Finlayson Mountain.

"At the foot of the ascent a station wagon was coupled to the truck to give a towed load. Seven men rode the station wagon to increase the load. The truck climbed the mountain without a pause and without any difficulty whatever on the sandy stretch. Near the top of the sandy stretch the driver of the station wagon was ordered to use his brake to lock the wheels and the station wagon was dragged steadily on with all wheels locked. The driver of the truck stated that the pull required about half throttle, the motor did not heat enough to boil the water in the radiator. The performance of this truck with the traction bands on the rear wheels far surpassed the performance which has been given to date by any of the vehicles in similar road conditions. Further tests will be carried on to determine how reliable this use of the traction devices proves to be. It will be necessary to await modifications of the tracks by installation of the guides, referred to as an improvement by Mr. Hipkins, on the traction devices now issued to the battery."

During the months of September and October the battery will operate in conjunction with horse drawn field artillery in various tactical exercises involving firing problems and cross country tactical maneuvers.

Later, either in December of 1932 or in January of 1933, it is intended that the battery shall make a test march from Fort Bragg to Fort Ethan Allen, Vermont. Upon arrival at Fort Ethan Allen, a period of approximately three weeks will be spent in determining the value of this type of transport in heavy snow and in freezing temperatures. Following this period the battery will return to Fort Bragg.

Later in the spring of 1933, providing funds will be available and the necessary authority obtained, it is contemplated to send the battery overland to the Field Artillery School to take part in the spring maneuvers at Fort Sill. Upon completion of the maneuvers

the battery will either return by marching to its home station or the vehicles and guns will be turned over to a designated unit at the Field Artillery School and Battery D of the 17th Field Artillery will again take over its howitzers and tractors at Fort Bragg, returning to its home station by rail transportation.

Further notes on the progress of the unit will appear at intervals in the JOURNAL.