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JANUARY-FEBRUARY, 1942

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THE COAST ARTILLERY JOURNAL

1115 Seventeenth Street, N.W.

Washington, D. C.

COAST ARTILLERY JOURNAL

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FOUNDED IN 1892 AS THE JOURNAL OF THE UNITED STATES ARTILLERY

VOLUME LXXXV

JANUARY-FEBRUARY, 1942

NUMBER 1

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PUBLICATION DATE: FEBRUARY 1, 1942





THE FIRS

Many of today's Coast Artillerymen, impressed by the Corps' multiplicity of weapons and missions, seem inclined to the belief that progress and initiative are qualities that belong peculiarly to themselves; that our artillery predecessors kept the torch burning but dimly through the long dull period between the Civil War and World War I. That belief is hardly valid; if one of the marks of the soldier is the willingness to perform the best possible job with the tools at hand, the artillerymen of 1892 were soldiers of the highest type.

It took foresight, initiative, courage and good hard work to bring to the service *The Journal of the United States Artillery*, as *The Coast Artillery Journal* was known at birth. The following extract from a letter written in 1902 by Captain E. M. Weaver to the Commandant of the Artillery School gives some idea of the beginnings of *The Journal*:

"In the year 1891 a number of artillery officers felt some form of publication should be provided for a class of technical artillery literature that could not well be printed in the service periodicals devoted to general military topics. Accordingly, toward the end of that year, these officers, through a representative, approached the Commandant of the Artillery School with their propositions and arguments. The Commandant (then Colonel), R. T. Frank, received the proposition favorably, and it was arranged that *The Journal* should be published quarterly from the press of the Artillery School to be devoted strictly to the presentation and discussion of subjects and problems pertaining to artillery, especially Coast Artillery."

Note that this letter was written ten years after *The Journal's* first issue, and five years before the artillery was divided into two branches. Even in its beginnings, *The Journal of the United States Artillery* was meant to be a Coast Artillery publication.

Colonel Frank designated a committee of five officers to manage *The Journal*. First Lieutenant William B. Homer, 5th Artillery; First Lieutenant Henry C. Davis, 3d Artillery; First Lieutenant John W. Ruckman, 1st Artillery; First Lieutenant Cornelius DeW. Willcox, 2d Artillery; and Second Lieutenant Lucian G. Berry, 4th Artillery made up the editing committee. Lieutenant Ruckman was Treasurer, and Lieutenant Willcox was Secretary of the board.

In the second year of the publication's existence, the

form of management was changed. Lieutenant Ruckman was given entire charge of the editorial management (editing by committee has rarely proved successful), and a committee of Direction and Publication was established. This committee consisted of Colonel Henry W. Clossen, 4th Artillery; Captain James M. Ingalls, 1st Artillery; Captain Edmund Zalinski, 5th Artillery; Lieutenant Erasmus Weaver, 2d Artillery; and Lieutenant George O. Squier, 3d Artillery. This arrangement lasted at least until the May-June issue of 1902 at which time the names of the members of the committee disappeared from the masthead. During this period, of course, the membership of the committee and the editor were changed with varying frequency.

The first article in the first issue was titled, *The Effect of Wind on the Motion of a Projectile*. Written by Lieutenant Ruckman, it is a very scholarly piece, replete with tables, sketches, and mathematical calculations. *The Fish-tail Wind* was one of the phenomena mentioned by Lieutenant Ruckman. *The Determination of the Velocities of Projectiles by Means of Sound Phenomena*, by Captain Ferdinand Gossot, of the French Marine Artillery, was the second article, followed by *Our Artillery Organization*, by First Lieutenant W. A. Simpson, Adjutant, 2d Artillery. *Range Tables for the 12-Inch Cast-Iron B.L. Mortar*, by Captain James M. Ingalls, 1st Artillery, carried entries of muzzle velocities up to 1,030 foot-seconds, and "Range 5 Miles. (8,800 Yards.)" *The Chilean Navy*, by First Lieutenant Henry C. Davis, 3d Artillery, mentioned the characteristics of the ships of this good neighbor, and expressed the view that the proposed coast defense guns would be more than capable of penetrating the armor of these ships. *Book Notices* and a review of other periodicals completed the first issue.

The bound Volume I of *The Journal* included an index for the year, a financial statement, and believe it or not, a list of subscribers.

Two hundred and eighteen subscribers were listed. Among the names were those of Lieutenant Colonel Samuel Breck of the Adjutant General's Department, the Inspector General and two of his officers, Captain Samuel R. Jones of the Quartermaster's Department, Captain William L. Alexander of the Subsistence Department, two officers of the Medical Department and two of the Corps of Engineers, and nine officers of the Ordnance Department. Second Lieutenant Peter E. Traub of the 1st Cavalry lent his support to the infant

FIFTY YEARS

WAR DEPARTMENT
OFFICE OF THE CHIEF OF COAST ARTILLERY
WASHINGTON

January 15, 1942

Fifty years ago a small group of officers published the first issue of the JOURNAL OF THE UNITED STATES ARTILLERY. Without missing an issue for half a century, that publication, now the COAST ARTILLERY JOURNAL, stands as a monument to the energy, foresight, and initiative of those artillerists of the early 90's.

It is not my purpose to go into the difficulties and the changing fortunes that have been the lot of the JOURNAL through the years; it is enough to know that today the COAST ARTILLERY JOURNAL stands in the front rank of military magazines, as benefits the publication of the Coast Artillery Corps.

Both as Chief of Coast Artillery and as a former editor of the JOURNAL, my interest in the magazine of the Coast Artillery Corps is sincere. I congratulate the COAST ARTILLERY JOURNAL on its fifty years of service to the Coast Artillery Corps and to National Defense.


J. A. GREEN,
Major General,
Chief of Coast Artillery.

magazine, as did Captain W. H. Brownson of the Navy. The Governor of Vermont was listed among the National Guard subscribers.

An asterisk beside the name of one officer indicated "Future support withdrawn." Evidently irate subscribers were no novelty, even fifty years ago.

Today when 100% regiments are no longer unusual, it seems most discouraging to note that of the five Artillery regiments, the 2d Artillery led the list with 41% of its officers listed. The 3d and 4th regiments each had 38%, the 5th had 29%, and the 1st was last with 28%.

Another interesting item in the first volume was a *Table of Errata, Volume I*, which listed thirty-eight errors in the volume, most of them typographical slips that might cause an editor annoyance but little concern.

The list of subscribers for 1893 indicates a net gain in circulation of six, bringing the list up to 224. Among the subscribers were Captain Tasker H. Bliss of the Subsistence Department, First Lieutenant Ernest Hinds, Captain William A. Kobbe, First Lieutenant Charles T. Menoher, Second Lieutenant Peyton C. March, Second Lieutenant Henry D. Todd, Jr., and First Lieutenants Adelbert Cronkhite, John A. Lundeen, and Medorem Crawford, Jr. All these names are well known to older Coast Artillerymen.

The JOURNAL exchanged with 103 publications in 1893, ranging from the *Aldershot Military Society* to the *Western Electrician*. The *Journal of the United States Cavalry Association* was included in the list; the Cavalry had organized their association in 1885.

Among the authors in this second volume were First Lieutenant G. N. Whistler, Henry P. Merriam, Captain James M. Ingalls, and First Lieutenants John P. Wisser, Willoughby Walke, and John W. Ruckman. Volume II was much thicker than Volume I, and contained more articles of a general nature than did the first year's effort. *Field Artillery Draft, A Few Thoughts on Practical Artillery, Vertical Fire* (mortars, not AA), and *Notes on Confederate Artillery Instruction and Service* were a few of the titles for that year.

The financial statement for 1893 was signed by First Lieutenant John W. Ruckman, Editor. It was audited by Captain Ingalls, and approved by the committee.

By 1895 the lists of subscribers and the financial statements were omitted from the bound volumes. In this year there appeared Part I of a very spirited article by Second Lieutenant George M. Wright, First Light Artillery, Ohio National Guard, entitled, *Shall the United States Have Light Artillery?* Lieutenant Wright held forth for the affirmative but evidently some person in authority did not take kindly to his arguments, because Part I was the only portion of the article published. "To be continued" seemed to be a false promise—Part II never appeared.

In 1896 there appeared a few dignified, circumspect advertisements for books, namely *History for Ready Reference and Topical Reading*, and *Johnson's Uni-*

versal Cyclopedia. In this year also, the first Prize Essay Contest was announced, with a prize of "\$50.00 or (at the option of the successful competitor) of a medal," for the best essay on any subject relating to the general subject of artillery, "or indeed, any paper of general interest to the artillery."

Even in these early days, The JOURNAL used many cuts and plates. Inserts of maps and illustrations too large for the 9 x 5 3/4 format were used throughout the book—for its time, the magazine was a credit to the Corps both for its editorial content and its mechanical excellence.

In 1896 The JOURNAL carried an article on the use of bicycles in warfare, written by First Lieutenant W. C. Davis. *The Infantry Journal* for December, 1944 carried a short piece on this same subject.

The quickening interest in seacoast artillery during the Nineties is evident in the articles published in The JOURNAL. New matériel, new fire control methods and a new outlook on the missions and capabilities of the arm brought about a wealth of searching articles by scholarly authors. Rifling of cannon, notes on foreign seacoast installations, and submarine mine defenses were topics under discussion.

Advertising increased; one brand of whiskey was included.

There was little change in the magazine for the next few years. A section of *Professional Notes*, the ancestor of the present *News and Comment* section, took up a large portion of the magazine. The first use of color (in a "B.C. Battle Chart") occurred in 1902.

One echo of the War with Spain was a reprint from *Memorial de Artilleria* on the bombardment of Puerto Rico. This article, written of course from the Spanish viewpoint, was a lugubrious piece, detailing the troubles of the local artillery commander and the reasons for the ineffectiveness of the defenses. The usual political difficulties and lack of coordination between the military and the civil governor, and the further absence of cooperation of the home government, resulted in many plans but few completed projects. However the article did point out that the defenses were unusually successful considering what they had to work with, and emphasized the fact that battleships are no match for properly armed and properly organized harbor defenses.

The lead article in the May-June, 1904 issue was written by Captain Oliver L. Spaulding. Captain Spaulding analyzed the advantages and disadvantages of the new organization of the artillery into companies, and made a strong case for reorganization into regiments. His plan of reorganization is strikingly similar to the organization of Coast Artillery regiments, harbor defenses and districts today.

The separation of the Field Artillery and the Coast Artillery Corps was effected in 1907, but The JOURNAL made no mention of this far-reaching change. The only evidence of the separation in the magazine was the designation "Coast Artillery Corps" after the names of

VOL. I.

NO. 1.

JOURNAL
OF THE
UNITED STATES ARTILLERY

PUBLISHED BY AUTHORITY OF THE
STAFF OF THE ARTILLERY SCHOOL,



JANUARY 1892.

ARTILLERY SCHOOL PRESS,
FORT MONROE, VIRGINIA.

several authors. The crossed cannon insignia had picked up its superimposed projectile several years before—there seems to be no information about when or how this came about. The Artillery School retained the same designation until January of 1908.

One outstanding virtue of The JOURNAL during the first fifteen years of its existence was the quality of its illustrations. Although engraving processes, printing paper, and photographic artistry were all at a comparatively low level in those days, The JOURNAL illustrations were remarkable for clarity and detail. Considering the general level of photographic reproduction in the magazines of the time, it might be said that The JOURNAL of those days was even more fortunate in its illustrations than The JOURNAL of today.

Volume 32, for 1909, included a line drawing of a woman in a nightgown (an illustration for a bedding advertisement) and more color, this time an illustration of a steam-boiler recording chart.

Coast Artillery thought at this time can be deduced from The JOURNAL's index for this volume. *Plans for the Defense of Coast Artillery Districts, Military Reasons for Fortifying the Panama Canal, Determination of Longitudinal Deviations at Target Practice from Photographs of Splash and Target, The Militia as Coast Artillery Soldiers, and Balloons and Dirigibles in War* were some of the titles. The last-named article, written by Major H. L. Hawthorne, predicted and recommended the antiaircraft gun. In the article on the militia, First Lieutenant W. C. Jacobs believed that once the militia realized the serious nature of military training, they would become good soldiers. We quote, "Almost without restriction, the entire personnel, both commissioned and enlisted, seem to regard the maneuvers as a holiday."

Captain John M. Gulick, later Chief of Coast Artillery, was a frequent contributor to The JOURNAL about this time.

To the beginning of the first World War, in 1914, there was little change in the magazine. An article on *Gun Erosion* by Lieutenant Commander H. E. Yarnell, U. S. Navy, gave little hint of the diplomatic capabilities this officer would exhibit in the preliminary jockeying for position in the present war, or of the accuracy of his estimate of the intentions of Japan.

The Prize Essay contest was revived. In 1910, Lieutenant Frank S. Clark (now Brigadier General), won the competition with an essay titled, *The Organization and Training of Coast Artillery Troops, Including Reserves and Supports, Which Will Insure their Maximum Efficiency, in Time of Peace, After their Withdrawal from the Coast Fortifications*. The titles of thirty years ago were documents in themselves; in 1911 Captain John S. Johnston won the competition with a piece titled, *What is the Best Organization of the Coast Artillery Corps, United States Army, for Tactical Control and Administration, Including its Relation to Existing Staff Departments—Both for Peace and War?*

Captain Paul D. Bunker won the competition in both 1912 and 1913, the first with an article on sea-coast projectiles, and the second with a piece on the military defense of harbors.

In 1912 we find a sepia frontispiece—The JOURNAL was ever progressive. It is about this time we find the expressions *Errata* and *Corrigenda* in the magazine. Several hours of personal interviews with the erudite seem to indicate that the first covers mechanical errors and the second author's errors, but no one seems to know definitely. In any event, the editor, Major James M. Williams, must be given credit for more than ordinary erudition.

In the May-June issue of 1915, Lieutenant Samuel H. McLeary had published a long (forty-eight page) article, *The Aeroplane in Coast Defense*. As might be expected Lieutenant McLeary made a number of predictions, but the surprising thing is that so many of his predictions were proved correct. Much of the material in the article is still good today after twenty-six years' progress in aviation. His bomb-dropping statistics of the then current World War were exceptionally interesting, viewed in the light of the exploits, real and claimed, of the *Luftwaffe* along this line.

In the same year the second article by Lieutenant Robert Arthur was published—*Historical Sketch of the Coast Artillery School*. His first article, *Armor and its Application to Ships*, had appeared a year before. Lieutenant Arthur's historical research and writing had made him nationally famous. Now a Colonel, he commands the Barrage Balloon Training Center, and has recently finished a tour of duty as Chief of the Historical Section, Army War College.

In 1916 the familiar red cover of The JOURNAL gave way to a beautifully embossed buff cover, with red and black printing. Aesthetic considerations were not the guiding reason for the change—the pinch of the European war had made the familiar red cover stock unobtainable. With true Coast Artillery resiliency, the editor (Lieutenant Colonel H. D. Todd, Jr.) had met the situation and had overcome it by substituting something better.

About this time we note the trend away from emphasis on technical articles that are now considered the proper sphere of the Ordnance Department, to articles of a type that instruct in tactics and technique. The war in Europe probably had its effect in this change, since the new tactics were of more importance to a using branch like the Coast Artillery than was research on matériel, which is properly an Ordnance function.

Some of the 1916 pictures of antiaircraft matériel indicated that a considerable proportion of the guns, at least, were better developed than the field-gun-on-stump variety.

Only three issues were published in 1918. The pace of work at the School printing plant was the greatest obstacle to regular publication. The JOURNAL had low priority at the plant, and Sergeant Charles R. Miller



Lieutenant John W. Ruckman
Editor, 1892-1895



Lieutenant John P. Wissler
Editor, 1895-1901



Captain E. M. Weaver
Editor, 1901-1902



Captain Andrew Hero, Jr.
Editor, 1902-1907

ler, who was holding the fort while the editor devoted most of his time to his numerous other duties, got the magazine out by haunting the printing plant and pouncing when a linotype or press was momentarily not in use. This catch-as-catch-can method produced results to a marked degree. A successful attempt was made to incorporate live material in the magazine; the war was a source of inspiration for most of the articles. As usual in wartime, the requirements of secrecy limited the variety of articles that could be published.

Ten issues were published in 1919. The urgency of war was past but military interest was still at white heat. The lid was off as far as secrecy was concerned, and The JOURNAL was packed with information about the war that could not be published before. Colonel R. R. Welshimer was editor and Lieutenant Colonel Frank S. Clark was his assistant. Their editorials were strong and pertinent, and are said to have had their effect in the organization of the post-war army. Much of the material in the magazine had to do with mobile land artillery, a natural result of the Corps' duties in France, where a large part of the Coast Artillery units performed as heavy land artillery.

The *Beaten Zone*, one of the most popular features ever to appear in The JOURNAL, began in March, 1920. The feature's purpose, as stated in the first issue in which it appeared, was "to supply a definite and progressive means of self-instruction to reserve officers, young regular officers (verily perhaps even the older regular officers), enlisted specialists and R.O.T.C. college students, who desire assistance in their effort to keep abreast of Coast Artillery tactics, technique and administration. It is proposed to bring out in the different subjects taken under consideration the important and salient points, considered in their proper relation and sequence, in order that they will be so logically coordinated as to be of the greatest practical value to the student."

The applicatory method was used. Much of the material was reminiscent of present-day extension courses, although presented with more informality. Major J. C. Haw, assistant editor at the time, did most of the spade work in the operation of the department. Colonel F. S. Clark, the editor, took great personal interest in the feature. Many Coast Artillerymen submitted problems for consideration.

The same issue of The JOURNAL announced the cessation of paid advertising, pursuant to act of Congress. *Liaison*, a newsy little magazine published as an adjunct of The JOURNAL for the purpose of keeping contact between the then-present members of the Corps and the wartime members, was discontinued by reason of the same law.

Among the editorials in that same March, 1920 issue was one urging contributions to the Keenie Chapman Retiring Fund. Chapman, the steward of the Fort Monroe Mess for forty years, was one of the most popu-

lar individuals ever to be connected with Fort Monroe in any capacity.

The December, 1921 issue was the first to be printed elsewhere than the School printing plant. An act of Congress required special authorization for publications to be printed in government printing plants, and the authorization for The JOURNAL was withheld. The magazine was printed in Hampton, Virginia, at the plant of the Houston Publishing Company. The move resulted in a particularly small issue, with *Beaten Zone* among the missing.

The financial blow was serious. With advertising suddenly cut off such a short time before, this second strike might have staggered less self-reliant or less resourceful men, but the editors of The JOURNAL had thought of retiring from the field. They tightened the belts and went after more sales in the Book Department.

The issue of January, 1922, was back in the familiar red cover. The Coast Artillery School imprint was back again—the special authorization had evidently come through. The *Beaten Zone* was back on deck. Almost the entire issue was devoted to the National Guard. The lead editorial was a plea to those in the regular establishment to learn more about the Guard, that "inspiration, training, and leadership of a great citizen war army" might not be lacking.

The February issue, continuing the theme, was devoted to the R.O.T.C.

About this time the magazine began to deviate from its preoccupation with the stories of the war that could not be told until after the armistice, and began to concentrate on current training problems. In this year the Coast Artillery Board gave notice through The JOURNAL that the ideas of all Coast Artillerymen were desired for consideration by the Board. *Coast Artillery Board Notes* began as a department in the magazine.

In July, 1922, the name was changed to The COAST ARTILLERY JOURNAL. It was felt that since the slogan of the publication was "The Spokesman of the Coast Artillery Corps," the *Coast* should be incorporated in the name.

An article on Barrage Balloons appeared in the issue for February, 1923. It is interesting to note that some of the ideas brought forth in this article are still used in present-day balloon tactics, as expressed by Colonel Turley's article in this issue.

The JOURNAL of this period was devoting much space to the so-called civilian components. The need for an easily-mobilized mass army was recognized.

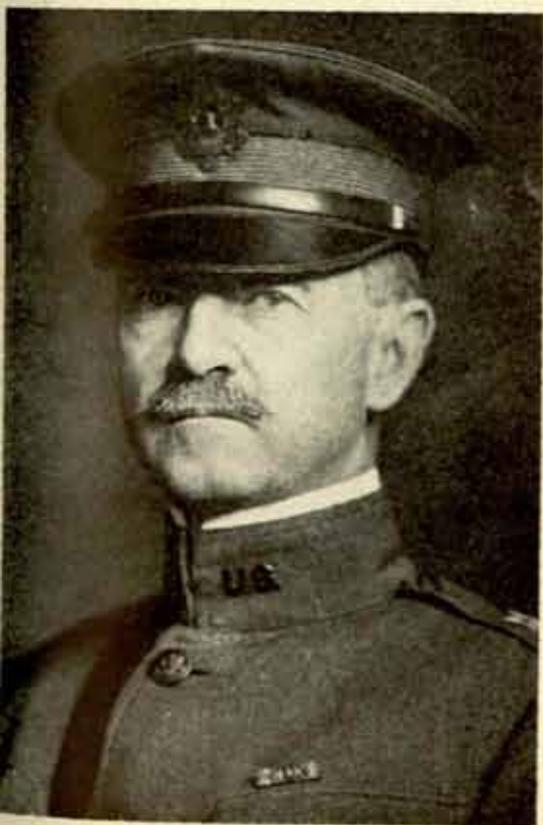
August, 1923, marked the disappearance of The *Beaten Zone*. In October of the same year there came to The JOURNAL a new editor, Major Joseph A. Green, the present Chief of Coast Artillery. Advertising, too, made its reappearance with this issue, but The JOURNAL had to move from the School printing plant, this time for good. With the resumption of advertising, it



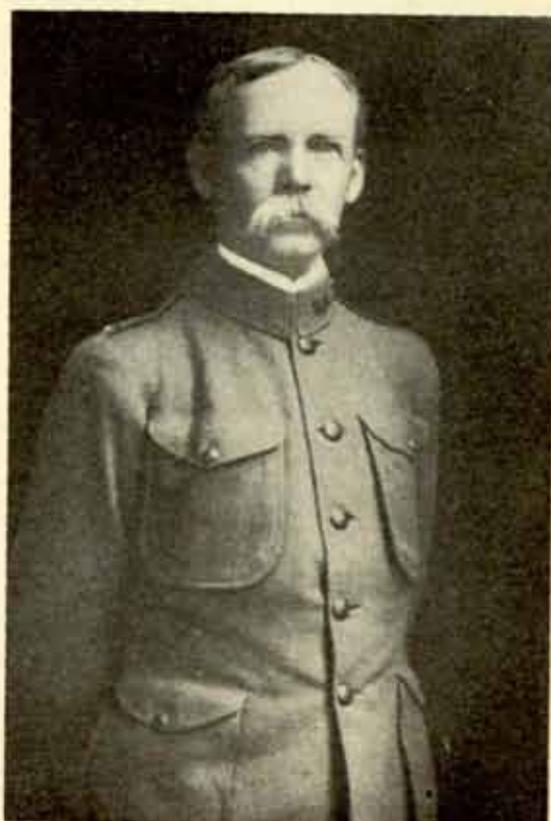
Major Thomas W. Winston
Editor, 1907-1912



Major James M. Williams
Editor, 1912-1915



Lieutenant Colonel Henry D. Todd, Jr.
Editor, 1915-1917



Colonel John A. Lundeen
Editor, 1917-1918

quality of the paper stock took a decided lift; slick paper made the illustrations stand out.

The lead editorial for April, 1924, expressed gratification with the reorganization of the Coast Artillery Corps into regiments. The editor was especially pleased with the elimination of the word "company."

In June, 1924, appeared the Centennial Number, in commemoration of the 100th birthday of the Coast Artillery School. In November of the same year there appeared the Summer Camps Number. The importance of the citizen army was recognized, and the Corps was making a real effort to make training thorough and practical.

The editorials of this period were strong without being brassily bold, and outspoken without being disrespectful of higher authority. It might be said that they make the best reading in the issues of the period.

By 1926 the influence of aircraft in warfare showed its effect on the contents pages. Antiaircraft was stressed, as was the rôle of the airplane in attack and defense of harbor defense installations. Many of the gadgets that aid and puzzle Coast Artillerymen today made their first appearance in *The JOURNAL* of this time.

In 1927 and 1928 there appeared several editorials concerning the blue uniform, then a much discussed topic. The advocates of "dress-up" evidently won the argument, if argument there was. The editor remained noncommittal, merely listing the points made by each side, and expressing the thought that the battery officers would not make the final decision. An editorial in January, 1928, mentions "the complete motorization of one entire regiment."

The statement, "The COAST ARTILLERY JOURNAL pays for original articles upon publication" appeared for the first time in July, 1928.

July, 1929, marked another important departure in the affairs of *The JOURNAL*. This issue was published in Washington, at the plant of the Hayworth Printing Company. There were many reasons for the move to the capital. Probably the most important reason was the desire to bring *The JOURNAL* to a par with the other service publications, as a national publication. There was the feeling (unfounded) that *The JOURNAL* was the organ of the Coast Artillery School, rather than of the Coast Artillery Corps. Other reasons for the move included the desirability of being close to the fountainhead of military thought, to other military and government bureaus, and to the Library of Congress where reference works are most complete.

You Tell 'Em, or letters to the editor, appeared in September of 1929, as did the *Activities* section. Also at this time, subscriptions hit a new low. It was too long after the first World War, and too long before the present wave of preparedness. The late lamented depression of October, 1929, did the rest. By December of that year, the circulation curve was at the lowest point in *The JOURNAL*'s recent history.

Major S. S. Giffin, the editor during those dark days,

manfully fought to hold his circulation and to gain new subscribers. Many of us remember his personal letters—they were masterpieces of the "The *JOURNAL* expects every man to do his duty" type—and they must have worked. The curve began its slow upward climb.

In August of 1930 the United States Coast Artillery Association was organized. Today, *The JOURNAL* published by the Association, which has done much for the Corps by its functions of providing medals and trophies, by holding get-together conventions, and financing *The JOURNAL* through the sale of books and other material. The first meeting was held January 1931, in Washington.

The JOURNAL blossomed forth in its present 8½ x 11 format with the January, 1931 issue. The larger format and the higher grade paper made possible better presentation of illustrations, better page makeup, and also permitted the magazine to exchange articles in type with the *Infantry Journal* and the *Cavalry Journal*.

In the lean depression years, this affiliation was designed to save all three of the journals from unnecessary expense by pooling hired civilian personnel, office space, machinery, and to some extent, printing costs. Articles of interest to all three branches could be printed with only one charge for typesetting and illustration.

On February 23, 1931, the President signed the military appropriation act for the next fiscal year, which once more prohibited *The JOURNAL* from accepting paid advertising. In a hasty reestimate of the situation the Association ordered that the magazine be published bi-monthly. The book and magazine-subscription business was stressed as the only possible source of income for *The JOURNAL*, since the amount received from subscriptions did not (and does not) pay even the mechanical costs of the publication.

For the next few years the military found itself in the doldrums. The articles in *The JOURNAL* were indicative of the trend—travel articles, historical treatises, and social activities took up a large portion of the space. There were few gadget stories, few articles on training tactics, or technique. But circulation was once more on the upgrade—the editor was fighting a good fight.

In 1933 the Civilian Conservation Corps stirred the army considerably, and the stir was reflected in a few articles on the forestry brigades. The consensus seemed to be that the experience with the CCC was a fine thing—but the sooner over the better. A few of the Reserve authors, glad of their opportunity to get more than the usual two weeks' summer training (some years), were a bit more lyric in their praises of the activity.

Crash On Artillery! made its bow in the September-October, 1934 issue. The few entries in *The JOURNAL* song-writing contest spoke ill of the musical fervor of Coast Artillerymen. The editor made little attempt to disguise his disappointment that more entries were not received.

In the July-August, 1936 issue *The JOURNAL* made



Colonel Robert R. Welshmer
Editor, 1918-1919



Major Frank S. Clark
Editor, 1919-1923



Major Joseph A. Green
Editor, 1923-1925



Major Robert Arthur
Editor, 1925-1929



Major Stewart S. Giffin
Editor, 1929-1933



Lieutenant Colonel Eli E. Bennett
Editor, 1933-1936



Lieutenant Colonel Aaron Bradshaw, Jr.
Editor, 1936-1940



Colonel C. Thomas-Stahle
Editor, 1940-1941

another break with tradition and dressed up its front cover, using a larger picture and a more striking cover design than the old one, which was the familiar red frame around a small picture.

Articles on training once more began to take precedence. The army was again coming into its own as events in Europe woke part of the public to the realization that an army wasn't such a bad thing to have around after all. Money came a bit more freely and with some of the tools with which to work, the Coast Artillery Corps began to prepare for December 7, 1941, the day which our Commander-in-Chief has said "will live long in infamy."

The November-December, 1937 issue came out with a four-color cover. The usual red banner was present, but blue and yellow were added to the red and the familiar black for a scene portraying Colonial Coast Artillerymen at Christmas. Emphasis on pictures resulted in a more readable publication. Articles on training and leadership, with a leaven of gadget stories, demonstrated the trend of military thought.

Color came to the inside of *The JOURNAL* with the November-December, 1938 issue. The very next issue instituted the use of "bleed" covers, in which the photograph or art covers the entire page. *The JOURNAL* was practically in its modern dress.

A few improvements have been made in the past year. May-June brought drawn heads for the *Activities* section, July-August brought the first 112-page issue under the 8½ x 11 format, and the November-December issue came out with 128 pages. The present issue speaks for itself.

This history of *The JOURNAL*, by order of the editor, must be factual rather than conjectural. However, it would be less than fair to close it without a figurative salute to the editors of *The JOURNAL*, the Commandants of the Coast Artillery School, and the Chiefs of Coast Artillery who have contributed to the publication's life and growth.

The editors of *The JOURNAL* served as follows:

Lieutenant John W. Ruckman	1893-1895
Lieutenant John P. Wisser	1895-1901
Captain E. M. Weaver	1901-1902

Captain Andrew Hero, Jr.	1902-1907
Major Thomas W. Winston	1907-1912
Major James M. Williams	1912-1915
Lieutenant Colonel Henry D. Todd, Jr.	1915-1917
Colonel John A. Lundeen	1917-1918
Colonel Robert R. Welshmer	1918-1919
Major Frank S. Clark	1919-1923
Major Joseph A. Green	1923-1925
Major Robert Arthur	1925-1929
Major Stewart S. Giffin	1929-1933
Lieutenant Colonel Eli E. Bennett	1933-1936
Lieutenant Colonel Aaron Bradshaw, Jr.	1936-1940
Colonel Charles Thomas-Stahle	1940-1941
Colonel Wilmer S. Phillips	1941-

Two enlisted men, by virtue of long and faithful service, as well as efficient and intelligent effort, must be mentioned in this brief outline. Master Gunner Claude L. Kishler, from 1909 to 1917, and for a brief period after he returned from service with the AEF, rendered service to *The JOURNAL* that is remembered with gratification by all who came in contact with him. Master Sergeant Charles R. Miller came to *The JOURNAL* in 1916, and since that time has served the publication and the Association in many capacities. At present Circulation Manager and Office Manager, he is probably one of the best known enlisted men in the Coast Artillery Corps. His knowledge of the affairs of *The JOURNAL* for so many years and his willingness to perform any task have lightened the labors of every editor with whom he has served.

No one man is responsible for *The JOURNAL*, and no one man carried it as his sole burden at any time. Several of the editors had a minimum of help, and kept the magazine in existence by faithful and heart-breaking labors, but the Coast Artillery Corps itself is responsible for *The JOURNAL* of today. In the inevitable ebb tides of military and professional interest there were always the loyal few who subscribed, who badgered others to subscribe, and who wrote for their *JOURNAL*. And there were always those in high places who saw the need for the publication and lent it their support when aid was necessary.



FANATICS

By Mark J. Gayn

Mr. Gayn is the man who wrote, in The Fight For The Pacific, months ago, "Today Japan is ready . . . Japan knows her hour has arrived, and she will strike tomorrow, next week, perhaps next month. . . ." This article is part of a chapter on the Japanese army, navy, and air force from the same book. The reader should keep in mind as he reads, not only the actual date when the material was written, but also that it is the personal opinion of a single observer.

In the last analysis, Japan's strength rests not upon her guns and battleships but upon the brawny shoulders of her conscript. Let us take a look at him.

The Japanese fighting man is short, stocky, tough. In seven cases out of ten he is born in the country and works in the fields most of his youth. He has at least primary schooling. At twenty he is put through a rigorous physical examination and, together with 149,999 other youths, is picked for two years of compulsory military service. As in Russia, the barracks are a school. There the youth is given not only a thorough training in war-making but also a mental bath in the philosophy of military fascism. For 730 successive days his officers feed him with a curious compound of Emperor-worship, state-socialist ideas, feudal chivalry and faith in Japan's mission to rule the world.

The youth is taught unquestioning obedience to his immediate superiors—the intensely jingoistic lieutenants and captains, most of whom (for one reason or another) have failed to gain rapid promotion. These embittered officers dream of Japan's imperial expansion in which every man of resolution is assured of advancement. The main obstacles to progress, in their opinion, are the profit-minded super-trusts, which must be purged. These doctrines are inculcated upon the great mass of the soldiery, already accustomed to blaming the super-trusts for the farmers' woes. The seeds of military fascism fall on fertile ground.

Thus inspired, fanatical soldiers and younger officers



between 1931 and 1936 assassinated some of Japan's outstanding liberal statesmen and bankers. Generals and admirals suspected of dallying with the "plutocrats" were mowed down with rare impartiality. It is a strange commentary on the Japanese public mind that these gruesome, unheroic assassinations are generally regarded as acts of supreme patriotism. The culprits often go unpunished. The Sino-Japanese war brought amnesty to many political killers, who promptly repaired to China to advance Japan's imperial ends.

The most surprising of all endings to a military mutiny capped off the "two-twenty-six" revolt of February, 1936. The uprising was staged by 1,400 soldiers and a score of younger officers. When—after assassinating three statesmen and a general—the rebels gave up their arms, the officers were court-martialed, the soldiers were let go scot-free. The official explanation was that the soldiers merely did their duty in following the orders of their rebellious superiors. But a Japanese officer in Shanghai told me: "The high command in Tokyo knew that the soldiers knew what they were doing. But the high command also knew that if it punished these soldiers for murdering—or wanting to murder—the plutocrats, it would have had to punish every man in the army."

Apart from his readiness to murder any general who does not toe the jingoist line, the Japanese soldier is a slave to discipline. Breaches occur only with the bless-

*From *The Fight for the Pacific*, by Mark J. Gayn, copyright 1941, by Mark J. Gayn. By permission of William Mortow & Co., Inc.

UNIFORM

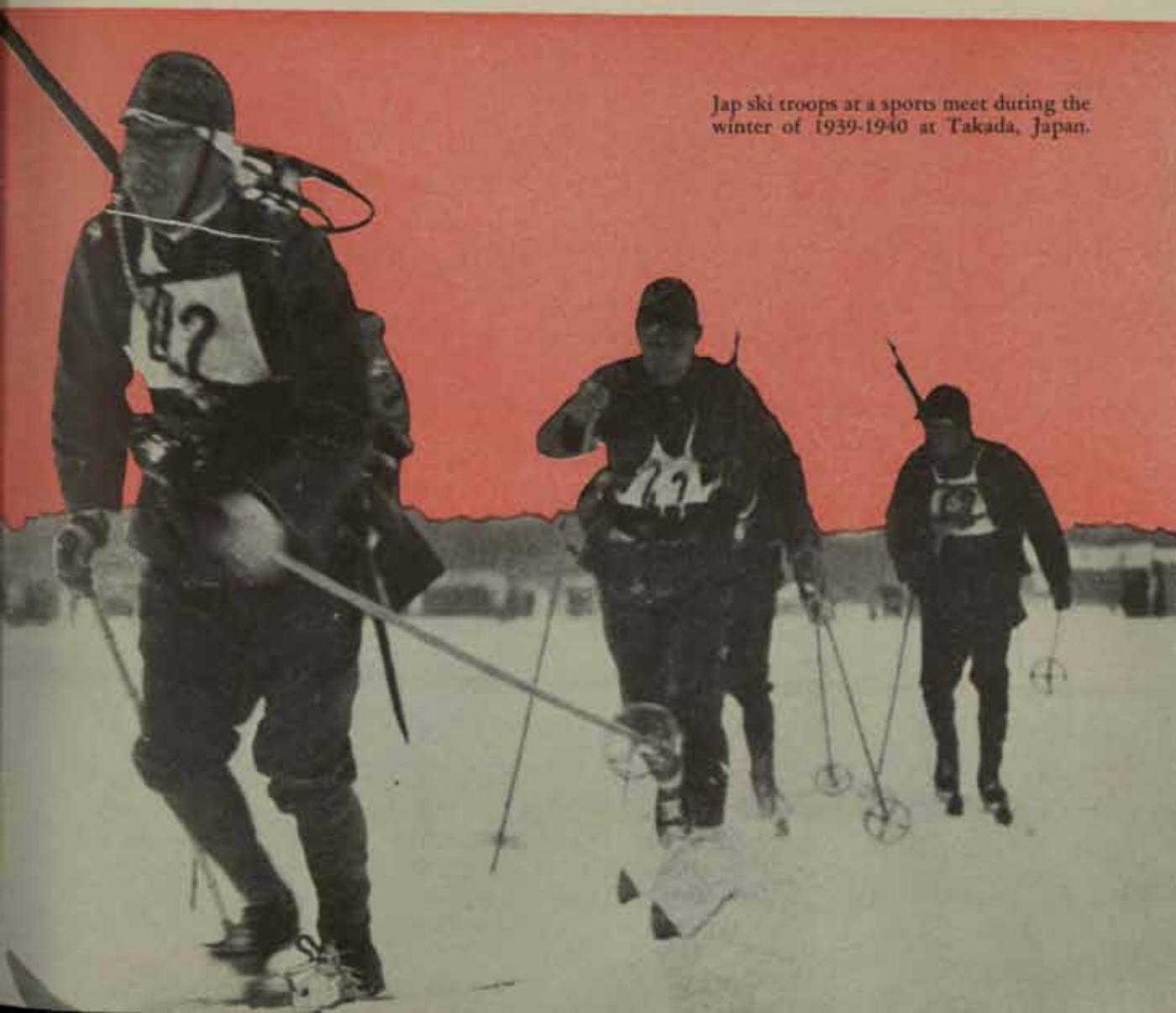
ings of the "younger officers," and these misdeeds do not affect the ultimate loyalty or the military efficiency of the Japanese war machine.

Critics of Japan have found great comfort in the orgy of rapine and looting which accompanied the seizure of Nanking and scores of smaller towns and villages of China. These critics judged the Japanese by Occidental standards. Such standards are only partly applicable in the Orient. There was every evidence that the Nanking affair had occurred with the tacit approval of the younger officers and possibly, at least in the initial stages, without the knowledge of the high command. Foreign eye-witnesses reported several cases in which the younger officers themselves took part in the excesses. At least one missionary reported seeing seven

young Chinese women in the rooms of a junior officer. Other foreigners frequently received outright demands for women by junior officers.

There was no reason for doubting the view that the younger officers deliberately took all bars down at certain intervals to relieve tension, and to reward the soldiers for months of bitter fighting. Perhaps such a course was immoral. It certainly could not have taken place in the Occident. . . .

In action under stress, in contact with other men and officers, the Japanese soldier has displayed exemplary discipline. It could not be otherwise, for the slightest infractions of army discipline met with speedy and harsh retribution. Cannily, the younger officers accepted the field of domestic politics and the treatment



Jap ski troops at a sports meet during the winter of 1939-1940 at Takada, Japan.

A group of Jap aviators at Saigon, French Indo-China, during the summer of 1941.



of the conquered from the book of rules. As long as they controlled the mind of the soldiery, the younger officers could permit the luxury of military meddling in political affairs.

The constant dependence of the soldiers upon their immediate superiors has led to one important shortcoming—a glaring, almost Prussian lack of initiative in the average soldier. Trained in the philosophy of blind obedience to his officers, the soldier places his entire reliance upon his platoon or battalion commander. Conversely, this phenomenon has produced a superior type of officer. In his daring, courage and ability, the Japanese officer stands high. As in the Russian army, the noncommissioned and the junior officers of Japan are well trained and capable. According to Occidental standards they are also unsentimental.

Under the dateline of "On the Foot of Purple Gold

Mountain," the *Tokyo Nichi-Nichi*, in December, 1937, displayed this exhibitory news item:

Sub-lieutenants Toshiaki Mukai and Iwao Noda, who are engaged in the rare race of killing 100 enemy men, met here on December 10, each carrying his edge-nicked Japanese sword in hand.

Said Lieutenant Noda: "I have killed 105. How many have you done?"

Lieutenant Mukai replied: "I've killed 106."

The two officers laughed: "Aha-ha, Mukai-san won by one."

Unfortunately, it was impossible to ascertain which one had first passed the 100 mark. Therefore, it was decided to call it a tie and extend the competition until 150 Chinese had been killed by each.

On December 11, the race was resumed with renewed vigor.

The work of the Japanese staff officers has been of the highest order. Against both China and Russia the tactics have been sound, well considered and imaginative. In more than one important engagement in China the Japanese owed their success as much to their superior equipment as to the excellence of their staff work. Each Japanese move was preceded by thorough preparation. When the zero hour arrived the officers knew their terrain, the mechanized units and aircraft were ready to support infantry action, the transport was in readiness, and—as often as not—the morale of the enemy had been undermined by treachery or sabotage.

On the debit side of the military ledger there has been naïve overconfidence. A Chinese colonel, paying a secret visit to Shanghai in December, 1938, told me he was certain that sooner or later a Japanese general would make a spectacular dash up the Canton-Hankow Railway into the wilderness of Kiangsi, far ahead of his transport and reinforcements. The Chinese, he said, were ready to let the division through and then cut off its line of communication—and of retreat.

The colonel's prediction did not come true in Kiangsi. But almost on the predicted hour a Japanese division made a sudden thrust towards the badly burned city of Chang-sha in Hunan, found its communications severed, and was decimated. Only a few of its tattered survivors were able to fight their way to the base. A year later another rash Japanese general, filled with ambition and overconfidence, led his men into a similar trap in the mountains of Kwangsi.

Through self-hypnosis the Japanese Fighting Services have convinced themselves of their invincibility. This factor cannot be ignored. . . . In the Army and the Air Force, much more than in the Navy, the Japanese command is apt to put accent on the daring, the spectacular—and the risky.

The Army and the Navy are bitter rivals. The roots of the enmity can be traced back to the nineteenth century, when most of the Army officers came from the proud Choshu clan, while the naval officers hailed from the no less proud Satsuma feudal group. The clan rivalry is still present. But far more important than feudal friction is their twin rivalry for control of the government, for the larger slice of the budget, for military glory as reflected in press headlines. An example of this feud was seen in Shanghai. On August 13, 1937, a small Japanese naval landing party in the International Settlement—barely 5,000 men—engaged an overwhelmingly larger Chinese force. The Army bigwigs in Tokyo were incensed. The original Army plans were hinged on the localization of hostilities in North China, and every effort was to be made to avoid the extension of fighting to other parts of the country. Jealous of the Army successes in the north, the Navy was obviously out to secure a few victories for itself.

But things turned out badly for the naval landing party. Within seventy-two hours it was pushed out of its positions to a precarious foothold on the very shore

of the Whangpoo River. The situation was desperate. Unless help arrived quickly the landing force, and with it the few thousand Japanese civilians remaining in Shanghai, faced annihilation. The Navy appealed to the Army for succor. On August 19, Army transports, filled to overflowing with picked troops, arrived off Woosung, where the Whangpoo River empties itself into the Yellow Sea. But the troops did not land. In effect, the Army said to the Navy: "You knew we did not want to get into a new fight here. You deliberately started this. Now you can take your licking."

With their backs to the river, the bluejackets in desperation began to set whole blocks of buildings on fire, to drive the Chinese snipers back. For days hungry flames devoured the eastern portion of the settlement, obscuring the sun and blanketing the city with ashes. The heat drove the bluejackets to the waterfront. Still no help arrived. The Army transports waiting off Shanghai made no move, while on board the idle soldiers listened to the sound of distant cannonade.

Finally, on August 23—while Japanese destroyers were blasting Chinese machine-gunners from their crude sandbag and mud outposts in Woosung—the Army began its delayed landing operations. The Navy had had its lesson.

Japanese naval officers regard the Army with disdain. To them, the true guardians of Japan's great traditions and prestige are not the ill-disciplined soldiers but the hardy and well-trained sailors. When a regiment of the vaunted First Division in Tokyo mutinied in February, 1936, the High Command hesitated to call other Army units in to suppress the uprising. There was every reason to believe that the entire Army was infected with the germ of rebellion. Instead, the Navy was asked to do the job, which it proceeded to do with great relish. Eventually the mutiny was suppressed without bloodshed. But it was the heavy guns of the fleet in Tokyo Bay and the Naval landing force—rather than the troops reluctantly encircling the rebels—which put the latter in a submissive mood.

All foreign observers agree that in the Sino-Japanese war the Navy has made a better showing than the Army. In discipline, in machinelike precision and in utter disregard of danger, the Navy stood head and shoulders above the "landlubbers." Even physically, the sailors were superior to the soldiers. But the main difference between the Army and the Navy is in the field of politics. The Army is as much a political instrument as a military machine. The Navy consciously shuns politics. Japan's generals, colonels and even captains see in politics a springboard to promotion. In the Navy the admirals of the Ministry alone are allowed to stray from the narrow path of technical affairs.

Only since 1931 has the Navy's voice been heard in affairs of state. This was plotted to offset the Army's growing influence and secure an equitable share of the budget, rather than as a display of direct interest in politics. Yet even then the Navy made every effort to

muzzle such of its firebrands as Admiral Nobumasa Suetsugu, who once had publicly proposed to drive the white race from "our Asia."

Essentially, the Army is bellicose and fascist, the Navy moderate and conservative. The Army views Big Business as a distasteful, albeit necessary, ally in its effort to build up an invincible war machine. The Navy works in intimate contact with the super-trusts, both in the field of politics and finance. In the interminable squabbles between the Army on one hand and the Diet, Elder Statesmen and Big Business on the other, the Navy has almost always sided with the civilians.

The democracies would, however, commit a fatal error to underestimate the Navy's sting. The Navy is intensely jealous of the Army, which up to now has been stealing all the thunder. The Navy, furthermore, is a firm believer in Japan's mission. When the propitious moment arrives, the Navy will strike—against Hongkong, the Philippines or the Dutch East Indies—with the same terrible efficiency and disregard for all "scraps of paper" as did the Army. If the Navy is moderate now, it is simply because it feels it is not yet ready. The new super-dreadnaughts are still on the stays. The Naval Air Force is modern but small. Another year or two are needed to convert it into a formidable offensive weapon. The Navy's supplies, made low by the hostilities in China, have to be replenished. Crews for the new men-of-war have to be trained.

Moreover, the Navy has its eye on Japan's trade balances and on the international situation. Unlike the Army, the Navy is clearly aware of the importance of sound finances in a nation preparing for war. This is why the Navy aids Big Business in battling the Army-sponsored restrictions on the export trade. Nor will the Navy take the fatal move unless Japan's major foe—the United States—is involved elsewhere.

When the dull explosions of Chinese aerial bombs and the sharp crackle of rapid-firing Japanese naval guns marked the opening of hostilities in Central China in August, 1937, foreign military observers in Shanghai said China's best bet rested in her four-year-old, carefully nurtured "air force." For twenty-four hours Chinese airmen, trained by American and Italian instructors, lived up to general expectations, in courage if not in skill. But before the second day of the war was over the combined Japanese air force gave China a taste of its comparative might.

In a terrific China Sea typhoon, with the usual gale and driving rain, more than fifty Japanese "flying fortresses" staged a series of raids upon cities, airfields and military bases in Central China. Their objectives attained, they returned to their base minus eight bombers brought down by Chinese guns, pursuit planes, and the fury of the typhoon. In succeeding weeks naval planes continued to raid airdromes in the interior of China, practically annihilating the Chinese air force and play-

ing havoc with supply and communication lines, movement of troops, and construction of fortifications.

In Shanghai the performance of Japanese airmen was not at first spectacular. Day after day naval aircraft dumped tons of explosives upon the Chinese "Alcazar," the Railway Administration Building in Chapei, hitting everything but the target. With time, however, the Japanese naval airmen gained invaluable fighting experience. Day after day they remained aloft for hours at a time. Nanking, to give an illustration, was raided 130 times in less than 120 days. Canton was raided more than 180 times in the first six months of the undeclared war.

Between August, 1937, and the following January (as the Japanese Navy Minister revealed in the Diet in a moment of indiscretion), the Navy's airmen had made 13,000 flights. While 6,000 of these were in the Shanghai area where the engagements were sanguinary but brief, the rest involved flights to distant objectives under constant danger of attack by Chinese planes and difficult weather conditions. Within this period, so the Navy Minister proudly but probably untruthfully claimed, the Naval Air Force lost sixty-five planes while Chinese losses reached 659 aircraft, of which 281 were destroyed on the ground.

The Japanese airmen learned, however, to handle their machines in any weather and circumstance; and their bombing and machine-gunning began to register with alarming accuracy.

Long before the Sino-Japanese war broke out, the Army and Navy had clearly defined the functions and zones of activity of their air arms. The Navy took upon itself the task of combating the Chinese air force, of destroying airfields in South and Central China and disrupting the routes of supply and communication. In the earlier stages of the campaign in the Shanghai area naval pilots also collaborated with infantry operations.

The main task of the Army fliers, on the other hand, was to annihilate the Chinese troops and destroy defense works in North China. In the course of such activity the Japanese airmen had staged frequent raids upon Sian and Lanchow, 1,100 and 1,500 miles inland. On numerous raids the bombers made a flight of 1,200 miles with full load over an unfamiliar and rugged terrain.

General Chiang Kai-shek's decision to give battle to the invaders in the Yangtse Valley placed the brunt of aerial activity upon naval fliers. In the course of such operations in the first nine months of 1938, the naval aircraft raided 2,204 towns and villages.

There was an ominous significance in Tokyo's decision to use Army fliers in North China and to assign naval airmen to the warmer skies of South and Central China. It was but a rehearsal for tomorrow's wars, in which the Army hoped to invade Siberia and the Navy dreamed of attacking the sub-tropical possessions and outposts of Britain, Holland and the United States.

Both air branches used China as the testing ground for their equipment. The Navy's "terror of the skies"—a twin-engined pursuit plane—fought its maiden battle over Hankow in 1939. Carrying two men and eight machine guns . . . this trim craft outflew and out-fought the vaunted Soviet I-16 and the British Gloster Gladiator, regarded at the time as the masters of the skies.

Another machine—a ten-ton monoplane suitable for bomber duty—in 1938 had broken the world long-distance record over a closed circuit. Its mark of 7,240 miles was just 376 miles short of a round trip between Japan and the United States naval base in Pearl Harbor, Hawaii.

This flight made such an impression in Moscow that Major Vladimir Kokkinaki, Russia's ace test pilot, was ordered to make a nonstop flight to the Far East. Six weeks after the Japanese had hung up their mark, Kokkinaki left the Moscow airfield in a light bomber and did not land until he sighted Vladivostok, 4,500 miles away. Jubilant reports in Soviet newspapers pointedly noted that this mark was eight times the distance between Vladivostok and Japan's industrial centers.

Japan's air force has not yet come of age. Up to about 1933 aviation had been the stepchild of the Fighting Services. Because of Japan's rugged terrain, where a forced landing often meant death, fliers were regarded as doomed men. This reputation offered little incentive to ambitious youths. Official indifference, too, further hindered aerial progress. The initial exploits of flying aces in the Sino-Japanese war caught the public fancy, however. The youths immediately flocked

into the air force; and they took to flying as ducks take to water. In so doing they destroyed the myth that the Japanese were physically and temperamentally unfit for flying.

Three years of war against China and Russia have shown the Japanese pilot to be sound of eye and heart. He has further displayed good judgment and a thorough knowledge of his engine. But shortcomings of both though few are important.

Like his colleagues in the Army and Navy, a Japanese airman lacks initiative. He is merely an efficient tool, not the individually brilliant and quick-witted pilot of the American or the British flying services. Moreover, a Japanese flier will often allow his political views to overshadow his orders. More than once foreign officials in China have suspected that the "accidental" bombing of foreign property was motivated by the airmen's general dislike for the "rotten Occident." The bombing of the U.S.S. *Panay*—clearly marked with the stars and stripes—by half a dozen Japanese planes in December, 1937, has never been satisfactorily explained.

Today, Japan no longer economizes on her air force. Vast sums are being allotted for the modernization and expansion of the two air branches, for the mass training of pilots and mechanics, for research, and for the erection of new aviation plants in the Tokyo, Kobe, Nagoya and Gumma Prefectures. Most military craft are stationed in Manchuria and North China, ready for action against Russia and China. Of the naval machines, probably a half have seen action between Central China and Indo-China.



A Jap tank somewhere on the "Shanghai Front" in early October, 1937.

BARRAGE BALLOONS

By Colonel R. E. Turley, Jr., Coast Artillery Corps

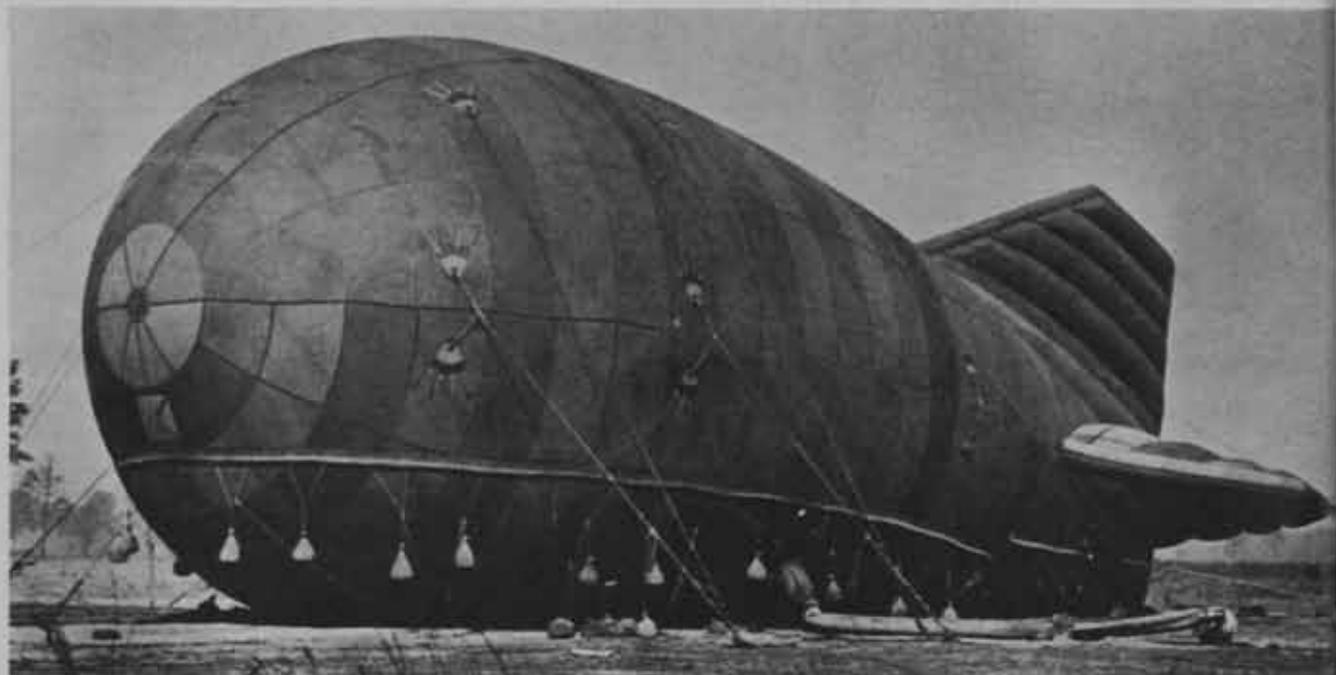
Barrage Balloons may be classified into three general types: high altitude balloons; low altitude balloons; and small barrage balloons which have certain special uses. With respect to their internal functional design, barrage balloons of any of the above three classifications may be either of the dilatible or the ballonnet type. The dilatible balloon is entirely filled with gas, and has elastic cords placed internally or externally to retain the shape during expansion and contraction of the gas. The ballonnet balloon has a horizontal diaphragm which divides it into two compartments, the upper of which contains gas and the lower part is filled with air by means of a wind scoop at the bottom of the balloon.

A barrage balloon consists essentially of a gas filled bag of woven fabric impregnated with rubber or a synthetic substitute, flown attached by means of rigging to a steel cable paid out from a winch. Hydrogen is the most suitable gas which can be made available in the quantity required, but several substitute gases may be used in emergency. The hydrogen may be obtained from conveniently located commercial factories, or it may be manufactured locally by portable field generators with which balloon units are equipped. A rip panel is built into the balloon and a rip link is attached to the upper end of the cable. The rip link is designed weaker than the cable, so that a rip cord, attached to the cable and the panel, will deflate the balloon when the shear pin fails. The hydrogen gas is stored in steel cylinders, and is hauled to the balloon site on trucks or trailers. Numerous items of auxiliary equipment are required.

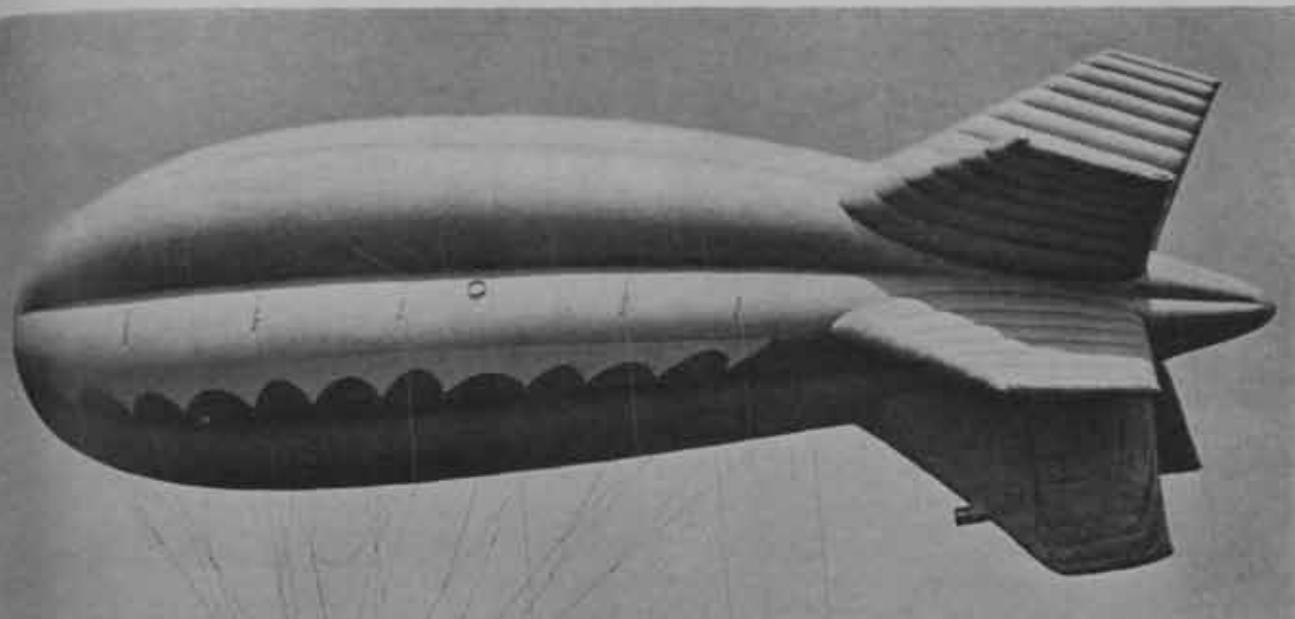
High altitude balloons should be capable of being flown up to such altitudes as would preclude precision bombing. Such altitudes can be reached by large single balloons, by connecting two balloons in tandem, or by attaching kites to the cables to assist the lift of the balloon. The single large balloon has an advantage in that it can be flown or hauled down more quickly than the tandem or kite assisted balloons, a very important consideration when operating in conjunction with friendly aviation and antiaircraft artillery, or when hauling down the balloons to protect them from sudden storms.

A possible use of high altitude balloons appears to be their joint employment with low altitude balloons, the high balloons being disposed around the outer perimeter of a barrage where they would be more effective against horizontal flight bombardment. In some cases, such as an extensive barrage defending large multiple areas, a more uniform distribution throughout the barrage might be desirable. Another possible use is the establishment of a surprise barrage put up during periods of low visibility to intercept hostile aircraft on a frequently used avenue of approach.

The low altitude balloon is the type having the most universal application. They are flown within the cloud layer, whenever it is practicable to do so, for several reasons: (1) to deny the use of the cloud layer by hostile aircraft as a means of concealment; (2) to conceal the balloons in order to render them less vulnerable; (3) to render the dispositions of the balloons less visible from



Low altitude ballonnet type.



High altitude dilatible type.

When barrage balloon protection is required, we list the elements, in order of priority, which are vulnerable to air attack and which are vital to the war effort, then assign balloon units according to their availability to the protection of these elements. Having established a balloon barrage for the protection of any element, the barrage becomes a static defense for the duration of the war, or so long as the protected element remains vulnerable and holds its relative priority. Except for the possible use of mobile units equipped with small balloons, as referred to in the preceding paragraph, barrage balloon units have no need for tactical mobility.

Barrage balloons may be employed strategically for the protection of: fleet anchorages; harbors and channel entrances; docks, naval yards and ship yards; specific vital areas in large cities; a single isolated factory or other installation; or any other vital area.

The tactical mission of barrage balloons is to deny the use of the cloud layer over critical areas by hostile aircraft as a covered position from which to launch surprise air attacks, particularly during daylight; to prevent precision air attacks on vital and vulnerable objectives by low-flying aircraft, including horizontal flight or dive-bombing, mine laying and torpedo launching attacks; and to require that hostile aircraft operate at higher altitudes over vital areas where they can be attacked with greater effect by friendly antiaircraft fire and pursuit aviation.

When maintained at full flying strength, a balloon barrage is highly effective against all forms of attack by aviation within the operational altitude of the balloons. When employed alone, barrage balloons ordinarily would not be effective since they are easily destroyed by hostile aircraft. In conjunction with other arms, barrage balloons constitute an element in the antiaircraft defense system complementary to antiaircraft artillery and pur-

hostile aircraft; (4) to prevent the dispositions of the balloons from disclosing the location of defended areas on the ground; (5) to prevent the superheating of the balloons by direct rays from the sun.

Small barrage balloons are effective only against low-flying aircraft employing hedge-hopping or dive-bombing tactics. They have principally been attached by cables to the masts of ships, or used for the protection of small installations which offer only precision targets. Mobile units, equipped with small balloons, could be used to accompany armies in the field, and employed in the protection of vital routes, defiles or installations against any form of low-flying air attack.

In the determination of these elements for which bar-



Low altitude dilatable type.

suit aviation, the balloons being most effective at low altitudes where the complementary arms are least efficient. If maintained at effective strength in spite of losses of balloons from storms, friendly antiaircraft fire and enemy action, barrage balloons constitute a dependable and ever ready defense against low-flying aircraft.

As in the case of all weapons, barrage balloons have certain limitations. Although vulnerable to attack by hostile aircraft, the incidental protection afforded by friendly aircraft and antiaircraft artillery may be expected to keep balloon losses from enemy action within reasonable limits. The balloons are subject to damage or destruction by friendly antiaircraft fire. Balloons are vulnerable to high wind, lightning and sunlight. Provision must be made for reserve balloons, gas and auxiliary equipment in order that serviceable matériel may be immediately available for replacement and the damaged matériel may be promptly repaired. A vital consideration in barrage balloon operations is that simplicity in the design of balloons and auxiliary equipment must permit speed in the service of the balloon and in its preparation for flight, in order that the time which elapses between the destruction of a balloon and its replacement by another flying balloon is reduced to the absolute minimum.

Because of interference with or danger to friendly aircraft, interference with gun laying instruments of the antiaircraft artillery when firing at unseen targets and the necessity for promptly hauling down the balloons for protection from sudden and violent storms, rapid operational control must be exercised over balloon barrages which requires transmission of orders by a telephone net extending down to each balloon site. Barrage or battalion commanders frequently broadcast simul-

taneous flash orders to all balloon sites with intermediate commanders listening in.

Many situations will arise when it is necessary to fly or close haul balloons quickly and on short notice. These and many other practical considerations limit the altitude to which barrage balloons may be flown with impunity. Therefore balloon barrages cannot prevent the indiscriminate bombing of large areas from high altitude. Balloon barrages will ordinarily have little or no tactical mobility, and are a deterrent rather than a lethal weapon. Because of the extensive installations required at a balloon site and the time required to prepare it, the defense is static once installed.

The basic balloon unit is the battalion, organized to keep fifty-four balloons in the air under air raid conditions. This number of balloons will ordinarily meet the requirements for a barrage to protect a single large area such as a vital factory, or for the protection of several objectives located within a comparatively small area. The wide dispersion of a balloon battalion when deployed under war conditions renders unit training of replacements very difficult. The personnel of a battalion must be free to devote the maximum of attention to the supply of widely scattered balloon sites, and to the operation and maintenance of the balloon barrage. Two or more battalions will be required to man a large barrage necessary for the defense of extensive multiple areas, or for the defense of several separate unit areas in one tactical locality. These considerations indicate the necessity for an echelon in the balloon organization higher than the battalion. The maintenance and repair of balloons and auxiliary equipment and the repair of motor vehicles and balloon winches will require extensive shop installations manned with adequate operating personnel. A balloon command or balloon regimental

headquarters must be organized in certain areas to relieve the battalion and smaller unit commanders from the maximum of administrative duties.

For peacetime training in fair weather, one balloon crew can operate several balloons at one time. Under war conditions, each balloon must be manned by an effective crew. If the balloon is destroyed or damaged by wind, lightning, friendly antiaircraft fire or enemy action, a serviceable balloon must be inflated and put in the air in the minimum of time. Frequently the cables or other auxiliary equipment will have to be replaced as well as the balloon. From the above considerations, it is obvious that barrage balloons require manpower in adequate strength, and this manpower must be highly skilled and well trained. Barrage balloon operations are greatly affected by the weather conditions, therefore meteorology is an important subject to the barrage balloonist. Each isolated barrage must have a weather forecaster who can predict the local weather from basic meteorological data and who can recognize the meteorological conditions as they appear. The manufacture and handling of hydrogen gas requires expert knowledge and training. Balloon rigging requires the attention of an expert.

A balloon barrage is the tactical unit for independent employment. A barrage consists of the organization and equipment necessary to fly a given number of balloons in one area from coordinated and mutually supporting sites located for the defense of a single isolated factory, or other single vulnerable point, or for the defense of a critical area containing several vulnerable points such as a large industrial city. A balloon barrage commander must act quickly and alone upon his own responsibility during air raids and upon the sudden appearance of dangerous weather conditions. He must render de-

isions and issue orders in the presence of changing supply, meteorological, and tactical situations. He has full authority to operate his barrage under the policies laid down by higher authority. Therefore, a barrage commander must be an officer who can make quick estimates of the situation and quick decisions, and he must be capable of exercising sound judgment at all times with respect to the operations of his barrage.

Balloon barrages will vary in size, as it is obviously uneconomical to employ more balloons than are required in the situation. A balloon barrage established for the protection of a relatively small single area against dive-bombing attack may be as small as nine to eighteen balloons. As a rule, however, other forms of an attack may be probable, and the desirable minimum number of balloons in a barrage is thirty-six or more. A barrage established for the defense of a large multiple area may contain several hundred balloons. It will be frequently necessary, therefore, to detach balloon squads, platoons, or batteries from battalions and attach them to other units. Balloon organization must be flexible in order that barrages may be established as each situation dictates. For defense of areas at shorelines, it may be necessary to fly balloons from barges or from sea-going boats, depending upon the character and roughness of the water. The boats must be powered with internal combustion engines to prevent sparks from igniting the inflammable hydrogen gas.

Barrage balloons employed in the defense of multiple areas should be sited for the defense of specific vital objectives in such areas. Such a defense offers an opportunity for the most economical employment of balloons when the individual defended points are close together so that the bomb-release lines, for the operational altitude of the balloons, around the adjacent objectives



Crashed Heinkel bomber with anti-barrage balloon bumper. This device increases fuel consumption and decreases bomb-carrying capacity and speed.

Acme Photo

will intersect, enabling some of the balloons to contribute to the defense of more than one objective.

Barrage balloons sited for defense against dive bombing attacks must be clustered close about the defended point, subject to the requirement as to the minimum allowable spacing between balloons to avoid entanglement of the cables in shifting winds. There is a limited area in which balloons may be sited effectively for the defense of an objective against dive bombers. For example, with a barrage altitude of 6,000 feet and an angle of dive of eighty degrees the radius of the effective area would be 353 yards. For an angle of dive of sixty degrees the radius would be 1,156 yards.

Some of the balloons in a barrage will ordinarily be sited for defense against low altitude horizontal flight or shallow dive attacks. From a theoretical standpoint, it would be preferable to force such low-flying aircraft to fly through part of the barrage before they release their bombs. Such a disposition of balloons may require more balloons than are available. Hostile aircraft ordinarily can bomb with some effect from altitudes above the balloons. As a rule, sufficient defense against low-flying attacks can be established by siting balloons on and within the bomb release line, since the attacking planes probably will encounter balloon cables before they can turn and go out.

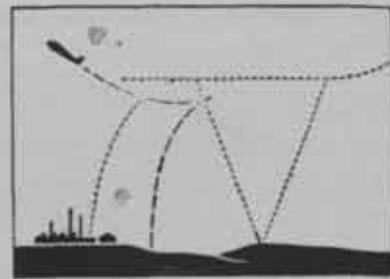
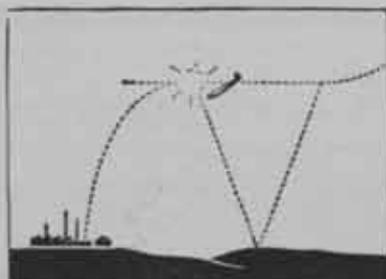
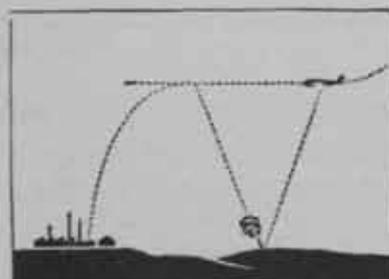
A balloon site requires considerable area, therefore as a rule the governing factor in the siting of the balloons will be the availability of areas suitable for balloon sites. A good practical method of siting balloons

is to color the vital areas to be defended on a map; plot the available balloon sites in another color; then take pins equal in number to the balloons available and stick them in the map at the available balloon sites. If the number of possible balloon sites exceeds the number of balloons, adjustments may be made until the best possible all around defense is obtained under the given conditions.

The coordination of barrage balloons with antiaircraft artillery introduces many vexing problems. Balloon cables which interfere with the position finding instruments of the antiaircraft artillery may be hauled down during the calibration of the instruments, especially at night when low-flying attacks are least probable. In case of a conflict concerning the occupancy of a site by elements of the antiaircraft artillery and the barrage balloons, adjustments may be made by the local commanders concerned, or the matter may be decided by the local air defense headquarters responsible for the coordination of the antiaircraft defense elements in the area. The antiaircraft artillery will open fire without regard to the presence of the balloons. If one of the balloons is shot down by the antiaircraft fire, the balloon commander takes an aspirin and puts up another balloon at once.

If maintained at or near 100% flying strength, the balloon barrage is probably the most dependable defense against air attack, within the operational altitude of the balloons, that has ever been devised.

IT HELPS!



March of Time

EVEN IF YOU MISS!

The Coast Artillery School Keeps Pace

By Colonel Clifford D. Hindle, Coast Artillery Corps

When the *Journal of the United States Artillery* first saw the light of day fifty years ago, it was an extra-curricular activity of the Artillery School. The half-century that followed has changed the names of both institutions, one to the COAST ARTILLERY JOURNAL and the other to the Coast Artillery School, but the progress made by both has been along far more important lines than a mere change of name. Both the JOURNAL and the School have made great strides in their ability to render service to the Coast Artillery Corps.

The history of the School up to the present emergency has been told more than once. This is the story of the Coast Artillery School today.

With national and international trends pointing to an emergency, a complete reorganization of the curriculum of the Coast Artillery School was foreshadowed. Each year to and including the fall of 1939, the School had received a few officers of the National Guard and Organized Reserve, and a few enlisted men of the National Guard for short courses, and for its regular courses about fifty officers and one hundred and twenty-five enlisted men of the Regular Army. It had spent nine months in imparting to the latter the instruction considered to be necessary in fitting them for their duties among the several types of Coast Artillery regiments. Since then the School has received students in far greater numbers, students with widely varying degrees of basic and technical education and of practical military experience. In addition it has been called upon to teach these students the basic principles of their respective callings in a comparatively small fraction of the former time.

Early in 1940, a gradual change began to creep over the School. Work in both the Officers' and the Enlisted Divisions was tapered off, and as courses were progressively brought to an end, students graduated at odd times and left at once to join old organizations that were being expanded or new ones being formed. By June 30th, the School "as it was" had ceased to exist.

On July 1st, the emergency program was ushered in with a series of six short refresher courses. Each course was of a month's duration, and the groups ranged in size from sixteen in the first course to eighty-nine in the fifth, averaging sixty for the series.

Meanwhile plans were laid, and work was started on many enlargements to the school facilities that even a modest beginning of the emergency program had strained. To meet the demand for space to provide study and lecture halls and classrooms for indoor instruction,

and adequate housing for an ever increasing number of students, more and more new buildings were begun. Increased enrollment has always been tramping on the heels of new construction.

The outcome of these plans has been the razing of the dilapidated buildings in the stable area, the filling hydraulically of low ground along Mill Creek and in the old camp areas, and the appropriation of the parade grounds in those areas that in the summer of 1940 had for the first time provided elbow-room for the Reserve regiments which yearly came to Fort Monroe for their two weeks' training. In all of these places, except along Mill Creek where the work is still in progress, new cantonment buildings—barracks, classrooms, storerooms, and other adjuncts—house the expanding activities, and in other places converted buildings supplement the new construction.

In shifting into high gear, the basic organization of the School has remained the same. Differences have been more in the way of additions rather than of changes. Major increments are the *Visual Aid* and *Information Service* Sections which have been added to the Department of Training Publications. Other departments remain substantially the same. The two principal divisions of the School—the Officers' and Enlisted Divisions—have continued as before, and within them the present expansion has taken place.

In expanding to meet the current situation, the mission of the School appears at first to have been to give the officers an intensive and systematic training in the technical duties of the branch in which they happen to be serving, and to train especially selected enlisted men for the higher non-commissioned staff grades. The main idea behind these objectives is to furnish large numbers of trained officers and non-commissioned officers conversant with the latest methods and equipment for the new army.

With the introduction of courses for Officer Candidates and for Field Officers the objectives seem to have embraced also the mission of training candidates for commissions as second lieutenants, and of training field officers and especially selected captains in the tactics of their branch and in command and staff duties.

Inherent in the problem of devising an intensive course of instruction is always the problem of providing well-rounded instruction. This problem was met first by divorcing seacoast and antiaircraft artillery, a separation that accorded with the general policy of limiting instruction to the field in which the student officer's inter-



est happens to lie, and then, within that field, of rounding out the instruction as fully as the saving of time permits. Even under this scheme, there is not time for everyone to learn to "run, kick, and pass," but at least there is time for everyone to see the broader picture of happenings in his own particular sphere of interest.

The problem of transportation was bound to rise. This was solved by requiring students to walk between their barracks and the main school building, a solution from which a certain amount of exercise is a wholesome by-product. Of course on field trips, motor transportation is provided, and when instruction is held at Wilson Park, the solitary train of the old "Back and Forth" Railroad shuttles up and down the beach with more than usual frequency.

THE OFFICERS' DIVISION

Whereas the first six groups had drawn their students from Thomason Act officers, reserve officers who were just then beginning to be ordered to extended active duty, and younger officers of the regular army, groups beginning with the seventh refresher course have drawn their students from the Coast Artillery Corps at large. Further expansion to meet the emergency began forthwith and has been in progress ever since. Enrollment was increased to groups of one hundred, and in the

main, a new class has entered each two weeks. Staggered courses enable the School to make the most of its facilities and maintain a satisfactory output of graduates.

The course was lengthened to ten weeks and the scope of instruction broadened. Students vary in rank from colonel to second lieutenant, and in one group there were two brigadier generals. The staff of instructors has been increased. Teachings embody new material and new methods based on observations of World War II, and are tuned up whenever events indicate a change. In short, every effort is made to keep the curriculum up-to-date in all respects.

Intervening in the series of Refresher Courses were three Replacement Center courses timed and devised to fit the needs of the replacement centers which were being organized to receive the drafts of Selected Service men. Two of these courses were in antiaircraft artillery and one in seacoast artillery. The former averaged ten weeks in length, and the latter only five. Administra-

tion, mess management, supply, infantry drill, physical training, guard duty, and other basic subjects appeared in the curriculum which differed widely from that of the Refresher Courses.

Early in July 200 candidates for commissions arrived for thirteen weeks of training. New quarters and classrooms were found in Camp No. 3 and a teaching staff was organized to meet this new demand. This course was carried through to a successful conclusion, with remarkably few casualties along the way and no lowering of standards.

A second Officer Candidate Course began in October. This course was shortened to twelve weeks, a length established as the duration of future courses. In these courses, classes of one hundred will start each three weeks. This method of successive increments will double the present rate of production and enable the School to keep pace with the demand for junior officers imposed by the creation of new Coast Artillery units.

A recent addition to the School has been a four-week Field Officers' Course, the first group getting under way with antiaircraft instruction during the middle of November. Courses will alternate in the ratio of two in antiaircraft artillery to one in seacoast.

The principal rôle of these courses is to provide instruction in the tactics of seacoast and antiaircraft artillery. Command and staff duties are stressed, as are troop leading for battalion and higher commanders, training matters, and motor transportation. In fact, about one-third of the course is devoted to general subjects, the remainder to the solution of tactical and logistic problems which are handled and presented by various student committees.

A series of Stereoscopic Height Finder Courses has been in operation for a year, with a view to training a few officers to establish similar courses upon return to their organizations. Submarine Mine and Army Mine Planter Courses, both under the immediate jurisdiction of the Submarine Mine Depot, have rounded out the activities of the School.

ENLISTED DIVISION

The problems which cropped up in the Enlisted Division were much the same as those just discussed, and much the same technique was applied to their solution. As finally reorganized, the Enlisted Division includes the following courses of study:

Truck Masters and Mechanics
Radio Communication
Master Gunner
Harbor Defense Electrician
Searchlight Electrician (AA)
Fire Control Electrician (AA)
SCR 268

Like the Officers' Division, this one has undergone material expansion both in the size of the student body and the faculty. The courses are of twelve weeks' duration, and stress both theory and practice. The title of any course indicates rather clearly the nature of the subject matter dealt with.

OTHER SERVICES

Innovations in the service rendered by the School are the Visual Aid and Information Service Sections. The former section has several training films in varying stages of completion, with many about ready for release. The latter section has endeavored to keep the Corps apprised of the latest tactical doctrine and technical methods through a series of troop school problems in seacoast and antiaircraft artillery and nearly a dozen general information bulletins.

Something entirely apart from the usefulness of the School in the field of military education is the contribution the School is making to the Good Neighbor policy. Through the residence here of officers from the armies of Cuba, Mexico, and several South American countries, a closer bond of friendship and understanding among the nations of this hemisphere has been promoted. The same bond links the United States and China through the latter's representatives who have been here.

It may be said that for an organization which at the very start of the emergency outgrew its capacity, the Coast Artillery School has functioned smoothly during a period of rapid expansion. Located on a spot where space has ever been at a premium, every foot of ground and floor space has been utilized in full measure. The emergency demands which have been made upon the School have been a challenge, and the high productive capacity already reached has met that challenge. Busy-ness typifies the whole establishment. The School is truly a pulsing center of life and progress for the Coast Artillery Corps.



AXIS AIR



All pictures courtesy of *Life*.

By
J. G. Underhill

The story of the development by our Axis enemies of air transport of ground troops and matériel can be studied with profit by the ground soldier: He may be called upon to repel such an attempted invasion or he may be attached to an American air-borne unit assigned to the task of invading and seizing enemy holdings that cannot be reached through ground attack.

Crete is perhaps the classical example of successful invasion by air-borne troops. The attack that swept over the British-dominated sea was audacious in conception and in results. But while Crete hit the headlines of the world's press and indicated the future possibilities of air transport of troops, it was not the first

such attempt. Earlier there had been Poland, and Norway which was followed by some use of the method in the invasion of the Low Countries in May, 1940.

But even before September, 1939, the Germans had successfully experimented with the theory in the laboratory of actual war.

On July 22, 1936, the Spanish Nationalist revolt seemed doomed. The uprisings in Madrid, Valencia, Barcelona, and Malaga had been quelled in bloody riots. Successful Rebel coups which had secured the provinces of Estremadura and Andalusia for the forces of Sanjuro and Franco were endangered. Without the support of the crack Moorish regiments and the Tercio

RANSPORT



legions stationed in Nationalist Morocco, the Fascist forces could do little against the ill-armed untrained Loyalist masses. And unfortunately for Franco, the Straits of Gibraltar lay between Morocco and the Spanish mainland and on those waters steamed the Loyalist battleship *Jaime Primo* with other Loyalist fleet units.

The German advisers of the revolt were equal to the emergency. Had the sailors of the *Jaime Primo* been more observant during the next few days, they might have noticed the black V's of white-tailed Junkers transports droning over the Straits—for the Ju.52's were on the wing. By ferrying the Moors across Rebel Spain, they were winning their first land campaign and justifying the hopes of their Axis masters.

The rest of the Spanish story is soon told: how the Junkers brought over 4,000 men and 200 tons of war

Spain. The Ju.52's which ferried the Moors to reinforce the Fascist revolt.



freight to the relief of Seville alone, how the re-constituted Rebels consolidated themselves in strategic positions, and gradually drove back the Loyalists till they were forced into France or into the sea.

The story of the Ju.52's and Axis air transport has yet to be spun out to completion. After their epoch-making transfer of Spanish troops, German transport planes flew 2,000 German infantrymen to Aspern Field to seize control of Vienna on the very morning of the Nazi occupation of Austria. Later they duplicated this

performance in parts of the Sudetenland and Czechoslovakia. The war in Poland saw the identical transports facilitating the movements both of men and matériel. By rushing air infantry, lighter field weapons, supplies and fuel into Denmark and thence to Norway they once more helped to foil seapower, and afforded

The Ju.90 is used to transport a task force staff. This is a portion of Von Falkenhorst's staff disembarking at Oslo.



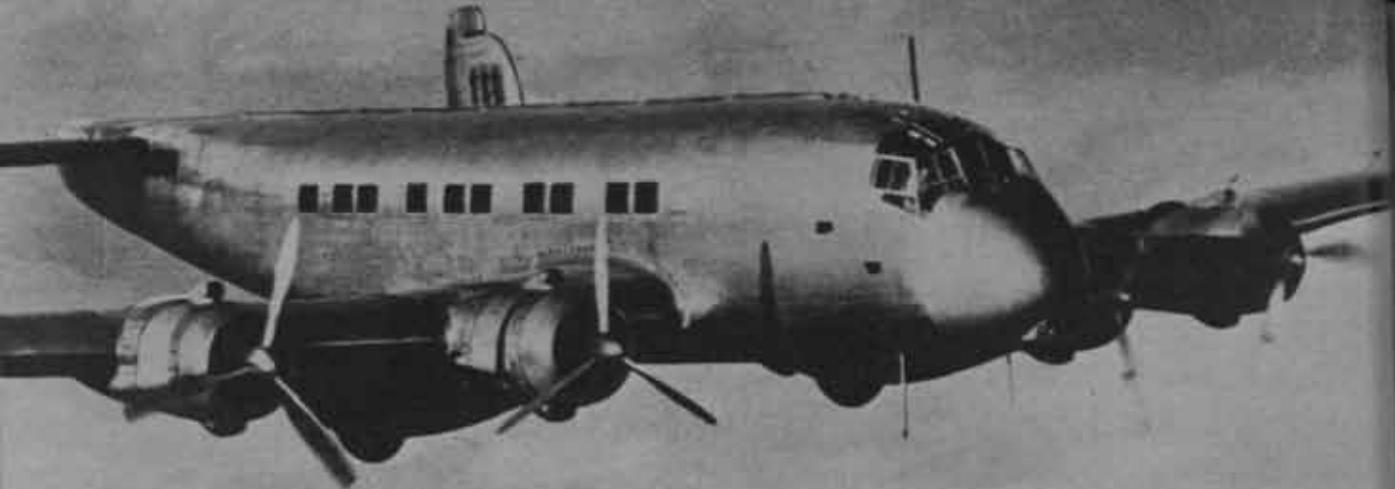
↑ A job-lot of Nazi infantry; the ubiquitous Ju.52 in the background.



↑ The Ju.52 is also used to transport motorcycles, spare parts, and drums of gas.

↓ This is the aerial ambulance version of the Ju.52.





The Ju.90, one of Germany's largest transport planes. The civil version carried 40 passengers.

land and air forces the extra mobility that was a deciding factor in the Norwegian campaign. Narvik saw the first well-authenticated battle use of parachutists when Junkers dropped their loads on the snow of the surrounding mountains. In Holland, of course, air transport was in large part responsible for the vertical envelopment that led to the rapid defeat and surrender of the Dutch Army. Vertical envelopments on a smaller scale contributed to the initial surprise in Belgium. In Flanders and also in France swarms of Junkers fed all kinds of food and ammunition as well as gasoline to

The Ju.90's roomy interior. Note the large freight doors in left foreground.

the troops which had out-run their motorized supplies. The next winter, Axis air transport established a thin overseas ferry, this time to Africa. Working in cooperation with sea-transport, they permitted an assembly of force which surprised the depleted British Imperial Army of the Nile, and made possible a land advance a month before the time anticipated by the British. Once under way, the panzer divisions of the *Afrikakorps* were so well fed by the Junkers that they kept rolling beyond their objective right up past the Egyptian border. Last spring the air invasion of Crete climaxed not only the Junkers' career but that of all the German theories which had led to the development of Axis air transport.



The origins of these theories can be traced back to the last war when the existence of unflankable lines of almost impenetrable depth compelled the German General Staff to look for something better than infiltration tactics against Russia and the Allies. This search resulted in the concept of vertical envelopment through parachutists and air infantry—a theory developed too late for use in that war. After the Armistice, restrictions imposed by Versailles on the use of military aircraft compelled the Germans to look elsewhere for experimental fields. Unemployed German officers training the progressive Red Army in the twenties sold the Russians the idea. But before the results of the Soviet proving ground could bear fruit, the internal political conditions in Germany gave Nazi theorists an opportunity of trying out the parachutists element of the vertical envelopment on home grounds. This trial was proved by a police officer named Wecke who in 1932 saw the utility of the army concept and applied it to the sporadic fighting between the Communists and the National Socialists in 1933. Organizing a special force of parachutists in March and April of that year, he descended upon workers' quarters in Berlin suburbs and took them from within. So successful was this method that the police force was expanded and in 1934 detachments were sent on army maneuvers. When the Nazi air force came into the open in 1935 these parachutists were fairly numerous. The original Wecke Detachment was absorbed into the Luftwaffe as the *Regiment General Göring* and the detachment's first battalion formed the basis for *Fallschirmjäger Regiment No. 1*.

Though Spain proved the value of the use of air-borne infantry and freight, the Nazis were at that time only beginning to work out their ideas on the function of transport planes. Perhaps the most important of these ideas came to the public attention when the Luftwaffe swept into the Vienna airdrome. At that time foreigners levelled severe criticism at the Germans for crashing at least two Junkers into hangars because of the swift tempo of operations. We now know that the Germans were teaching their pilots that loss of lives and matériel ranks small when compared with the importance of getting the maximum number of troops and supplies on the ground in the minimum time. To the Nazis it is false economy to risk an entire operation and hence all lives for the sake of a few planes and pilots unskilled and unlucky enough to crack up. Pushed to the utmost, this idea has meant more than split-second traffic control at fields. It has meant crash-landing planes on Dutch and Cretan beaches, or pouring them into bomb-pocked airdromes on the chance that the few which do get through will win the day and redeem the wastage. This appreciation of the time factor and of the fact that troops and matériel are the coin with which war gains are bought has been of great military value to Germany.

With such an appreciation it is easy to see how the

Germans were able to grasp the idea that planes had a vital function in speeding land operations. While relatively unspectacular, these duties are no less important for the added mobility provided. Certainly a commander is well-advised if he avails himself of air transport to ship antitank units and matériel by air in three hours when a ground march would take as many days. This German use of air transport has been matched by the freight-carrying activities of our Army Air Forces and by the success of our airlines' air-express service. But while we and the British have utilized wings for personnel and freight, it appears that only lately have the democracies thought in terms of air transport whenever air transport is possible.

Just as these theories, involving extreme mobility and surprise action, represent a revolt from the slow, expensive and prolonged World War I drives, the part of German air-transport doctrine that seeks to circumvent seapower also appears as a reaction to conditions of the last world conflict when Allied navies ruled the seas. By combining their combat planes and air transports the Nazis have not infrequently thumbed their noses at Allied sea dominance and proceeded to fly across waters which the enemy would interdict if seapower and land power were the only gauges. This concept asserts that seas over which friendly air forces maintain dominance form no barrier to the continuance of land operations. Unless the enemy has land bases permitting short-range interceptors to break the air curtain of friendly fighters, he will certainly be unable effectively to interfere with the passage of troops and matériel. This was proven in the air attack upon the convoy including the carrier *Illustrious* and the cruiser *Southampton* in the Straits near Sicily. There the Germans severely damaged the carrier and knocked out the cruiser at a cost of 12 planes and as many pilots. Since the *Illustrious* was out for a year, and a much-needed cruiser which took two and one-half years to build was finally sunk, the German material loss of Junkers mass-produced at the rate of twenty-five a week was small. Also, an ordinary good deck petty officer takes forty-eight months to train as compared with nine months for a pilot.

Obviously such a rate of exchange was entirely unprofitable for the British, and so the Luftwaffe was allowed to exercise a large measure of control over those narrow waters. There is also the possibility that carriers and surface craft can strike slow-moving sea transports by occasional raids. Submarines and bombardment planes can get in their stabs, too. Therefore, the German narrow waters concept has specified the less vulnerable, faster, and more elusive air transport as a vital element in maintaining a campaign across seas which are not German oceans according to the doctrine of Admiral Mahan.

To implement these theories of air transport the Germans had the great civil airline system that formed the so-called secret basis of the Luftwaffe. As state-

supported projects for a shadow air force, German airlines in 1925 were unified under the control of the Deutsche Lufthansa, a corporation whose officials later turned up as prominent Luftwaffe officers. With government subsidy for airport development and operations, ridiculously short hops at frequent intervals were made possible. By 1930 this state encouragement had brought Lufthansa to the point where its planes were flying on ninety different schedules, and averaging over 56,000 miles a day. Government-trained pilots were used exclusively and by 1925 they were schooled so thoroughly that a four-year course was required to earn a command-pilot license and a three-year course to earn a pilot-mechanic rating. The duration of German training at that date compares with that of a present-day United Air Lines pilot who takes about an eighteen-month course before being rated a co-pilot. In training, and after, German transport pilots were never allowed to forget that military and not commercial flying was to be their chief duty. So obvious was this stress on the martial side that no one who has been slammed around in a German transport plane can retain the slightest conviction that the plane was handled by a purely civil flyer. Thus, German pilots did not get so absorbed in routine instrument and contact time-table flying that they forgot the scat-of-the-pants style so necessary when slapping down a Junkers through heavy gunfire onto a bomb-cratered field.

Like the pilots the majority of German planes were designed for military duty. After the unveiling of the air force in 1935, such airliners were actually used as combat craft. Junkers Ju.52 passenger and freight transports and Dornier Do.23 freight-carriers were fitted with defensive armament, had bomb racks and flew combat missions. Meanwhile, real military models progressed from the prototype to production stages. Finally, when new fighting aircraft replaced the makeshifts, the Luftwaffe could boast a great number of military ships, manned by military airmen, all of which it could place at the disposal of the General Staff's air transport theorists.

Of all the planes used in German military transport, the Ju.52 stands foremost. An extremely successful commercial ship, her design was completed between 1930-32. In the nine years since her completion she has seen wide service on every continent but the North American. Her only competitors have been the American Douglas DC-2 and DC-3 series, variations of which are incorporated into our Army transport squadrons. Although the Junkers Ju.52 has been referred to as junk, and although she falls short of the civil Douglas DC-3 in speed (195 to 175 mph cruising), and range (2,125 miles to 1,000 miles maximum), the Ju.52 is actually an old but very good ship and has a greater disposable load than the DC-3. Still being turned out in large numbers, she is cheaper and an easier production job than the Douglas. Her sturdy construction eminently suits her to the hard knocks and wastage of

modern war. Easy to handle, the Junkers really comes into her own when landing. Here her slow landing speed and excellent control contrasts with the high speeds and tricky landing characteristics of some of our civil and military transports. Once touched down, the Junkers rests on rugged non-retractable landing gear, and thus is eminently adapted to the hard service of bad, runwayless fields and crash landings. When wheels are replaced by floats, she can operate off water.

Unlike our civil transports, all these Junkers are intended to carry freight as well as passengers. On short-range military work, the landplane can haul 5,060 pounds of freight at 120 miles an hour for 250 miles—just about enough to make the Sicily-Africa crossing if conditions are favorable. With 4,070 pounds of freight, extra fuel can be loaded to stretch the range to several hundred miles. For freight storage, there is a space of 695 cubic feet above the floor, access to which is provided by a hatch six by three feet in the roof and another hatch six by four feet in the starboard side. Below the floor, four holds with 124 cubic foot capacity can be got at by separate small hatches.

When used for high-ranking personnel, commercial equipment may be retained in the plane. If it is to be converted into an air ambulance, fittings for twelve stretchers are installed. But ordinarily, the civil chairs are ripped out and replaced by benches along the walls, leaving only the wireless operator's seat to the starboard against the wall of the pilot's cabin. As many as twenty men with full field equipment can be sardined into the cabin. Parachutists loads run from twelve to fifteen men, the latter number being disgorged in as short a time as thirty seconds.

Protection was normally provided by one 7.9 flexible defensive gun mounted atop the fuselage towards the rear, but since the invasion of Norway at least two additional guns have been fitted. Stuck out either side from windows overlooking the wing, this additional armament delivers beam fire. Because the tri-motored arrangement precludes effective forward firing armament, the Junkers is still vulnerable to head-on attack, but the measures that have been taken do safeguard it from being a sitting bird for bomber or other non-pursuit craft which otherwise might have a lick at it in a chance encounter.

Luckily for the ground soldier, the Ju.52 has some outstanding visible characteristics: three radial engines (built on Pratt and Whitney license), fixed landing gear (with or without "pants" to streamline the wheels), corrugated metal skin and square built-for-production lines, and finally the Junkers double wing that shows a space between the wing and its trailing edge and wing-tip ailerons. When the infantryman spots a plane with two or more of these characteristics, he may be in for trouble and should take steps accordingly.

Naturally there are many other axis transports, but the chances are that they will be subsidiary to flocks of Ju.52's. While big four-engined transports like the

Focke-Wulf Condor and the Junkers Ju.90 are in service they are not numerous and appear on the scene of action after initial work has been done by their smaller sisters. Like the Ju.52, they have been built with military considerations in mind, but their bomber versions are not readily convertible into transports or vice-versa. Of course, ease of production and of maintenance have been stressed. In fact, one Junkers gave a demonstration at Berlin's Tempelhof airport in which engines were changed in fifteen minutes. Nevertheless, the four-engined planes are cleaner jobs than the Ju.52, and because of this enhanced value plus factors of speed and weight (58,000 pounds or up for the Ju.90, and 38,500 pounds for the Condor), they are not expected to use bad fields or to be expended in the manner of the cheaper, handier ships. Generally, their cargo is more valuable, for the Ju.90 can carry a freight payload of 12,000 pounds in a 2,791 cubic foot space. The lighter Condor has carried a very light tank. Reports that this was the Czech TNH38 seem unreasonable on a weight basis. Compared to American planes, both suffer from short normal ranges—800 to 950 miles. Their cruising speed of 230 miles per hour is roughly equal to that of their non-freight-carrying American counterparts.

Though the forty passenger Ju.90 can lay claim to being the biggest land-transport weight-lifter in the world, undoubtedly the Italian Savoia Marchetti SM82 Canguru is the most remarkable transport of all. This is not completely surprising for the Italians have paid a great deal of attention to movement by air. While lacking the excellent organizational ability of the Germans, the Italians in the first 100 days after their entry into the war flew 19,185 military passengers and 3,086,000 pounds of war freight a total of two million miles. Broken down, the freight included 154,000 pounds of spare parts for planes, 465,000 pounds of arms and ammunition, 108,000 pounds of radio equipment and 920,000 pounds of mail and parcel post. The strangest cargo, however, was carried by the Canguru and that is what has made her outstanding. Since her introduction she has been ferrying loads of either one Macchi C200 single-seat fighter or of a similar Fiat Cr-42 sesquiplane—wings and all—to Libya.

Before these short-ranged fighters are stowed in the Canguru's pouch, wings and tail surfaces are removed so that the fuselages can be lifted in via the bomb doors by chain hoist. Wings and empennage are then slid into the bomb bay and cargo space, capable of holding forty equipped infantrymen.

Axis air transport has made a strong beginning. If

the Nazi General Staff continues to favor the airplane as a means of transportation for land armies, very possibly the face of war may undergo further changes. If this is to be so, the revolution will probably be heralded by the advent of plastic gliders. Already in Crete and now in the new Libyan campaign, the Germans have put into service cheap fourteen-passenger gliders for air infantry and freight. Without the dead weight of twin motors and fuel, weighing 8,600 pounds, or more, gliders make efficient transports, and while vulnerable in assault work, in ordinary duties they can safely squeeze into landing grounds that no plane can safely negotiate. This is because spoilers atop the wings reduce lift on landing, permitting the gliders to come in over obstacles ordinarily prohibitively high. If plastics are introduced, gliders could be slapped out in astronomical numbers in comparison with the production speed of the fabric-covered tubing type of glider used today. The structural strength and durability will be greater than that of any known plane structure as the performance of our Clark plastic transport has indicated. It is possible to conceive of large four- to six-ton capacity gliders, launched by catapult together with special tractor planes to tow them.

Startling as the fact may be air transport is already more economical than motor or rail movement. If weight alone is considered, 500 German Ju.52 transports could move a United States triangular division from Crete to Libya in less than twenty-four hours. From June 22 to the beginning of August one German transport squadron—probably equipped with fifteen Ju.52's—moved about 6,000,000 pounds of supplies to the Russian front and carried 2,381 wounded back to hospitals. In this work they flew 2,336 missions for a total of 280,000 miles. Using fields and landing grounds limited in number by peculiar terrain and by the short time that elapsed after the conquest of Greece, the Nazis flew over fifteen thousand men into Crete via the air. If arms were designed to break down into compact loads—for in all transport waste of space is a crime—and fit into large freight gliders, the above figures indicate that long-range towing planes could move quite fantastic amounts of air freight. With plastics reducing the production problem of instruments and engines for towing planes, the numbers of both gliders and tractors built could run well into the tens of thousands in a matter of a few months. Plastic gliders could even be regarded as completely expendable. It is not inconceivable, then, that we are in sight of the day when the extremely rapid movement of an expeditionary force across the South Atlantic largely by air will be feasible.





Shooting the 'Chutists

By Lieutenant William D. Workman, Jr., Coast Artillery Corps

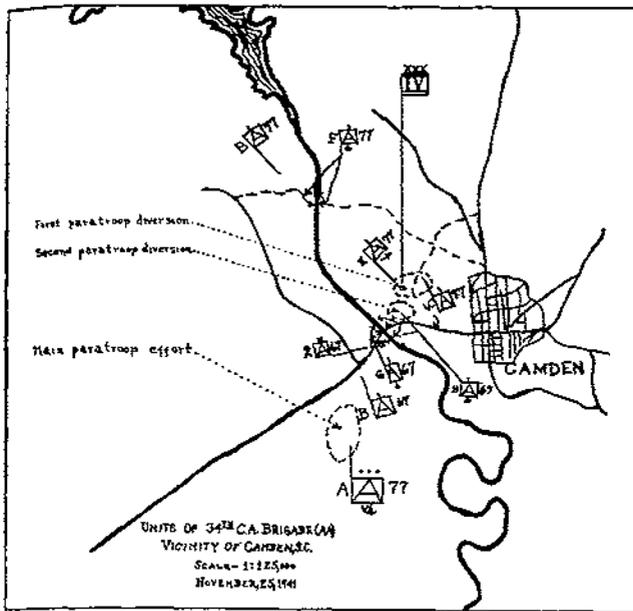
The advent of parachute troops has given to antiaircraft artillery a long-awaited opportunity to add one more offensive mission to its collection, which has been rather overbalanced with defensive missions. The injection of the element of personal contact into antiparatroop action has given an added incentive to all antiaircraft personnel, for the prospect of occasional personal combat adds stimulus to the performance of the normally impersonal duties of firing at aircraft.

Facing the threat of paratroop attack, antiaircraft artillerymen have evolved tactics which combine several attributes peculiar to their branch with a plan of action which proved effective in the recent maneuvers in the Carolinas.

Since parachute troops and antiaircraft units have opposing missions, in many instances paratroop attacks

will be launched against objectives already defended by AA troops. Airdromes, landing fields, bridges, ammunition dumps, munitions factories and such vital installations, often in rear areas, normally would be defended by the available antiaircraft artillery in proportion to the anticipated strength of enemy action against the installations. The defensive priority accorded any one objective usually will be in close proportion to the destructive priority given the same objective by the enemy. By being actually on the ground in many cases, AA troops are in a position to make merely an enlargement of the primary AA task what for other ground troops would be a diversion from their basic mission.

Antiaircraft artillery fire is well suited and one of the most effective means which can be employed by AA



troops against paratroops, for such fire not only will prevent the preliminary softening up of the objective by bombardment planes but will make it hazardous, if not suicidal, for the paratroop-bearing transports to come within range of the guns. The statement just made, however, borders too closely on the hypothetical to be given full weight. A leaf torn from the German war diary shows that such a thought cannot be relied upon completely, for back of the Nazi success in paratroop employment is the willingness to sacrifice men, planes and equipment in quantities sufficient to insure attainment of the objective. Indicative of the state of mind which dictates such a policy was the attack on Crete, where the loss of German paratroops and accompanying planes was enormous, but where success was attained by speeding the pace of operations until the defenders were inundated by sheer weight of opposing numbers and fire power. Thus it is that antiaircraft artillery fire of itself will not always prevent paratroop landings. Where the assault will be pressed regardless of losses, it will be impossible to prevent all planes from reaching the defended area.

Any antiaircraft unit in an area subject to paratroop attack can anticipate continuous and savage attack by both high level and dive bombers. It also can be expected that antiaircraft installations will be subjected to strafing with fragmentation bombs and machine guns by light bombers and long-range pursuit ships which normally will accompany paratroop transports. This latter form of attack will be as detailed in its execution as will be the bombardment, for both are conducted by the Germans with the thoroughness and exactness of artillery barrage fire. Consequently it must be borne in mind that terrific attacks will be launched against the AA installation themselves prior to the dropping of paratroops. To withstand such attacks by adequate local security measures is prerequisite to the adoption of standard paratroop action.

The AA artillery, particularly the automatic weapons which remain operative after the strafing and bombing, should be able to wreak considerable havoc on the transports. Flying at a low and constant altitude, in straight flight and at a constant and comparatively low speed to facilitate the discharge of paratroops, the transports become optimum targets for AA fire. It is at this juncture, when level flight is in effect just preparatory to the release of paratroops, that greatest results may be obtained with the automatic weapons. Shooting down one plane in the air may remove the need of dealing with from eighteen to thirty paratroopers on the ground.

After jumping, the parachutists become individual targets for the automatic weapons, especially machine guns. It will be pointed out by some that falling parachutists make very poor targets and that the men are in the air for only about fifteen of twenty seconds in the descent. In answer to that, it will be well to remember that the crews of AA automatic weapons are trained to fire at planes traveling at speeds from 200 to 400 miles per hour and that such speedy targets are in the field of fire for approximately twenty seconds.

As individuals, paratroopers are most vulnerable in the few minutes beginning when they leave the plane and ending when they have secured their equipment on the ground and have begun to organize. It is during that period that forceful antiparatroop action must be initiated with speed and effectiveness. The rapidity with which a paratroop attack develops leaves no time for hesitation. The employment of antiparatroop units must be automatic to the point of reflex action, not only as regards the decisions of officers but to the functioning of individual men. Constant study of paratroop tactics and constant drill in antiparatroop action is prerequisite to effectiveness.

In the 34th Coast Artillery Brigade, the policy has been carried into effect. The Commanding General has included antiparatroop training in all exercises of his brigade and has incorporated a section on antiparatroop defense in the brigade's Standing Operating Procedure. The section itself is brief, but it has been the focal point of much training and discussion, with tactics evolved from many practice drills under simulated battle conditions.

The section follows:

"Antiparatroop Defense

Each regiment will have plans and designated personnel, including officers, for antiparatroop defense as follows:

One gun crew from each 3" gun battery.

One gun crew from each of two platoons of each 37-mm. battery.

One gun crew from each platoon of the machine gun battery.

Each gun commander concerned will command his own crew as a separate detachment. All detach-



'Chutists collecting equipment

ments of each battery will be under the command of a battery officer detailed for that purpose in addition to his normal duties.

In the event of an attack by enemy parachute troops detachments will act at once without further instructions. Their mission will be to mop up such parachute troops before they have had an opportunity to organize.

Antiparatroop detachments will be prepared to move immediately upon call from higher authority to any desired location away from the battery positions. Trucks will be made available for such rapid movements."

Throughout the field problems conducted on and near the vast military reservation at Fort Bragg, the three regiments of the brigade drilled on antiparatroop defense and it was seldom the brigade, or a regiment, went into the field that an "attack" of some sort was not held to test the effectiveness of the antiparatroop defense.

Culmination of the training came during the recent GHQ directed maneuvers in the Carolinas, where units of the 34th Brigade were able to operate effectively against approximately 400 Blue paratroopers who had set out to wreck a number of bridges held by the IV Army Corps Red forces. Oddly enough, it was a searchlight platoon rather than a fire unit which took greatest honors in the antiparatroop action, although both gun and AW batteries rendered yeoman service in invalidating the parachutists' efforts.

The paratroop attack occurred on the opening day of the second GHQ maneuver. Mission of the Red forces, for which the 34th Brigade was providing AA protec-

tion, was the defense of a bridgehead at Camden, South Carolina. The only commercial bridge was a ramshackle affair over the Wateree River on U. S. Highway No. 1 a few miles south of Camden. Red engineers augmented the river crossing by building two ponton bridges adjacent to the existing highway bridge and placed two more ponton bridges across the river about three miles upstream.

As shown on the accompanying sketch, the command post of the Red Corps was located not far from the bridge. Whether the Blues knew the CP was there is a moot question, but its being there affected the ensuing action. The Blues had reconnoitered the area from the air, as was learned when a new aerial photograph of the region was taken from a captured paratrooper. The paratroop attack was launched in three areas amply protected by AA artillerymen.

The mechanics of the paratroop attack itself were well carried out but the tactics worked admirably into the plan of defense set up by the antiaircraft. Accompanied by a number of fighter craft and light bombardment planes, the paratroop-carrying transports first appeared near the IV Army command post, where considerable excitement occasioned as the 'chutists began falling to earth. Shortly afterwards another group were dropped near the Camden approach to the bridges. Both groups were rounded up, except for a few men who had escaped into the woods, in short order by troops of the 77th Coast Artillery near the command post and by Battery H of the 67th Coast Artillery near the bridge, both assisted by infantrymen stationed near both spots.

Apparently the two initial attacks were intended to be nothing more than diversions, since the main body



Enemy on the way

of paratroops did not appear until a short while later, after sufficient time had been allowed for all attention to be concentrated on the previous landings. This diversion was unsuccessful, however, and it is believed that it would prove so in actual combat, for AA personnel except antiparatroop detachments, should remain with their installations and not let themselves be lured into committing themselves as infantry.

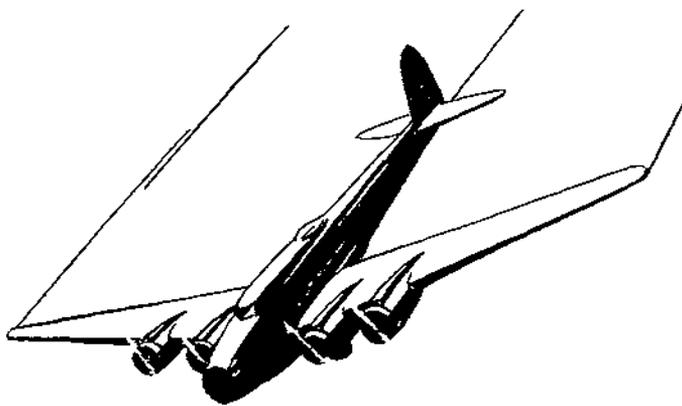
The main effort of the paratroops was concentrated in an area south of the Camden bridge, where they landed in a large field. The first transport to pass over dropped bundles of equipment and armament for the 'chutists. At that moment, however, an antiparatroop detachment from the searchlight platoon rushed out, seized the equipment and resisted successfully all efforts of the paratroopers to obtain it. The paratroopers themselves descended into what would have been a withering fire under actual conditions, for they fell into simulated fire from twelve automatic rifles, fifty-six Spingfields and eight .45 pistols. The artillerymen on the ground, completely organized and armed, should have proved effective against the approximately 200 paratroopers who dropped, armed only with side arms and possibly grenades. It is to be recalled that their

other arms and equipment were in the possession of the artillerymen.

The umpire who jumped with the 'chutists ruled that the antiaircraft artillerymen would turn over the equipment to the 'chutists and release the group. The group then went on to the bridge, encountering further opposition from other units of the 67th and 77th, and theoretically blew up one of the bridges. A GHQ umpire ruled that the action of the paratroopers be discredited in view of the action initiated by the searchlight platoon commander and his men.

As the sketch shows, three gun batteries, three 37-mm. batteries and a .50-caliber machine gun battery were emplaced about the area attacked by paratroopers.

One robin does not make a spring, and one example does not make a certainty, but the writer believes that these maneuvers showed conclusively that antiaircraft artillery is a valuable weapon against paratroops. It is not claimed that the AA defenders of such an area could wipe out or capture all the paratroopers falling into the vicinity, but prompt antiparatroop action against 'chutists falling within the active zone of AA troops should be able to cripple badly the main striking force.



Camouflage School

For Harbor Defense

By Lieutenant Ralph E. Ketchum, Coast Artillery Corps

Coincident with the work of camouflaging one of the forts in the Harbor Defenses of ———, a camouflage school for Coast Artillerymen has been in operation. Experts from the Engineer Board at Fort Belvoir designed the project and supervised its erection. Personnel from every harbor defense in the First Coast Artillery District did the work—a modern case of earn while you learn. Each officer, on completion of the course, became camouflage officer for his own harbor defense, and the enlisted men who went through the course with him became his assistants.

Thus a dual purpose was served. The work was completed under the expert supervision offered by the Corps of Engineers, and the men who did the work were trained in the art of camouflage.

The problem itself is a rather unique one that presents a number of interesting, as well as difficult, obstacles to be overcome. The fort's location happens to be on one of the numerous fingers of land that jut into the ocean. In the vicinity are many landmarks such as

a well-known race track, oil refineries in near-by towns, a mile long breakwater and light houses. Obviously, the complete concealment of the fort itself is impossible without camouflaging these check points. However, the project as planned included such expedients as the erection of both permanent and removable nets, dummy buildings, trees, roads, and brush, disruptive painting of the barracks, storerooms, and toning down of the emplacements with paint.

Of the eight officers who attended the district school, five were graduate engineers with a knowledge of construction methods and technique. This knowledge solved many of the problems that arose and speeded up the actual construction work. The enlisted men were divided into groups of five or six men under an officer and functioned as work parties. None of these men were skilled workmen at such occupations as electric arc welding, carpentry, painting, and allied trades. However, in the comparatively short length of time that the school was functioning, approximately six weeks, these



Experimental camouflage at Fort Belvoir. Note use of horizontal screen over doorway, and horizontal silhouette to break line of eaves.

Photo: Engineer Board, through Military Engineer.



1—Removable net in place over gun pit. Plotting room flat-top in background. 2—Dummy bridge. 3—Standard paint spray equipment. 4—Ground Painting with bituminous paint.

men have become proficient enough at the practical side of construction to do a very good job.

The removable nets that cover the emplacements are standard size fish nets, 36' x 44', four of which are laced together. These nets were then garnished with strips of osnaburg cloth which were painted to approximate the color and texture of the surrounding terrain. Along the back of each gun pit, a row of pipe frames was erected and the overhead framework field welded to the uprights. Cast steel tiller ropes were stretched from the forward edge of the pipe frames to the pipe frame across the front of the emplacement. The fish net itself is fastened across the rear pipe frames and to a pipe roller which is designed to roll on the tiller ropes. In order to clear the gun pit to enable the disappearing guns to go into action, the following procedure is used:

(a) Nine men are previously designated from the gun crew to be the clearing crew;

(b) The net is rolled back from the front of the emplacement to the rear of the pipe frame;

(c) The tension on the tiller ropes is released by releasing the load pullers on the front frame, allowing it to fall back;

(d) The turnbuckles on the tiller ropes are un-



hooked, gathered together, and carried to the sides of the pit;

(e) The front frame is then dropped forward and the pit is clear.

Experiments have shown that with a trained crew, the emplacement can be cleared for action in less than five minutes.

The project as planned is not completed as yet. Included in the plan is a long range planting program. Since winter is now at hand, this phase of the project will not be completed before late spring. The purpose of this planting program is to break up tell-tale shadows, slopes, and contours of the emplacements and barracks. In the spotting of these shrubs and trees on the location plan, consideration was given to the possible effect of the concussion of firing over these trees. Vines are used to break up the regular geometric pattern which the

concrete makes with the ground. This concrete has been toned down with an asphalt paint also.

All the painting on the project was done with the standard spray gun as developed by the Corps of Engineers. Two sizes of gun are used: the small size for spraying casein paint, and the large size for the asphalt paint. Power is supplied by a gasoline motor which operates the air compressor. The entire apparatus is portable and can be taken anywhere. There is approximately fifty feet of rubber hose included to enable the operator to reach the roof of a building or some other location where it would not be advisable to take the compressor. A hand spray gun with a container attached integrally is supplied to reach spots where the compressor-driven gun can't go.

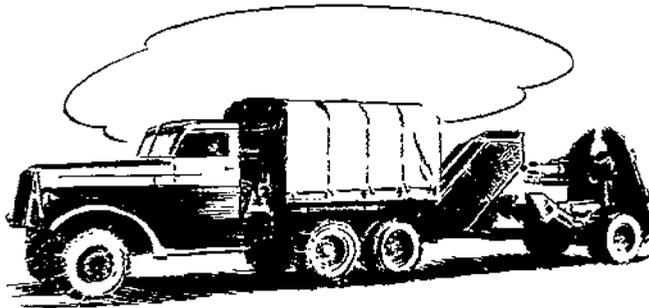
In order to facilitate the painting of the osnaburg cloth, a fifty-five gallon paint mixer was used to mix the colors. The paint was then put into a vat attached to an ordinary laundry wringer. The osnaburg was fed into the paint vat and then through the wringer. After it had dried, the painted cloth was cut into lengths of approximately five feet. Then, using a rotary cutter, these five foot lengths were cut lengthwise into strips about $1\frac{1}{2}$ or 2 inches wide. These garlands were then woven through the interstices of the fish nets and chicken wire.

Several field expedient methods were also tried for cutting the osnaburg. The one which gave the best results was conducted as follows: The osnaburg is rolled into a tight cylinder and held on a log, railroad tie, or some other piece of heavy timber. It is then chopped into several pieces, using a sharp hand axe or hatchet. While this method of cutting the garlands is very fast it does not give as good results as the use of a rotary cutter.

Naturally, the garlands cut by this method will vary in width according to the accuracy of aim of the individual wielding the axe.

Behind the emplacements themselves are a number of installations that are also very important and conspicuous. The plotting room, several base-end stations and a group commander's station were covered with a flat-top made of chicken wire, garnished with strips of osnaburg and supported on timber uprights. The garnished chicken wire has been carried down to the ground at an angle, the percentage of garnishing decreasing as the wire nears the ground. On top of the group station, which has a flat roof, a fake or dummy roof was sloped and a chimney added. The chimney itself has been built to serve as an observation post, a board being omitted to make a slot for the observer to look through. It has been used in a number of Command Post Exercises recently and has been quite convenient.

Finally, in order to make the camouflage project successful, the troops manning the armament have been given lectures on camouflage discipline maintenance. In order to facilitate the enforcement of the disciplinary aspects of the project, paths leading to the various installations have been wired in and warning signs posted. These wired paths and roads follow existing arteries as far as possible and when it becomes necessary to make a new trail, a dummy installation has been erected to make the existence of the road or path as plausible as possible. The problem has now become one of maintenance and repair, and with the climate and temperatures of New England, not to mention wind velocities, this part of the project will undoubtedly be an eternal one.



From Butter to Guns

By Major Paul L. Reed, Coast Artillery Reserve

The transition from peace economy to war economy disrupts many normal industrial processes. The faster the transition, the greater the disruption may appear to be. However, our industrial changeover has been on an accelerated basis for about eighteen months, and the changeover problem at this time is one of stepping up the present estimated 15% of industry now engaged in armament work to a 50% utilization. This latter figure is the estimated minimum required. We are told again and again that the present war is one of productive capacity. On the basis of our entire effective manpower, we now have approximately 11% of our effort engaged in our war effort, according to a recent pamphlet of the Public Affairs Association (*Guns, Planes and your Money*); this total must rise to at least 25% by mid-year 1942.

We have not only the greatest industrial capacity in the world—our industries, particularly our metal working industries, possess the skill and experience to make rapid changeovers efficiently. This ability to changeover from one model to another, to design and set up new tooling and to achieve quantity production quickly, is one of the most important factors in the acceleration of our Victory Program.

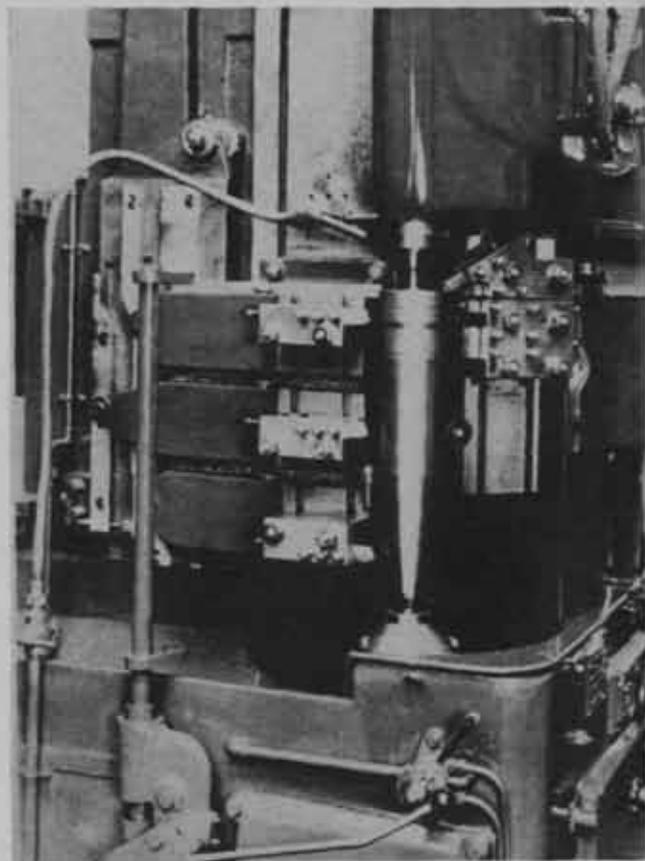
Yet, it must be remembered that some critical items in the Victory Program are so different from products of plants, even plants that are best equipped to build such items, that some time must elapse before production can begin. We will briefly survey some of the problems involved in the processes behind the procurement of anti-aircraft guns, ammunition and equipment.

As a standard of the time needed in the conversion to a highly specialized armament job, the example of the first private industrial production of the Garand M-1 rifle is representative. In October, 1939, one of our arms manufacturers was awarded a contract to manufacture 65,000 rifles. The contract called for the delivery of the first rifles in 12 months. Actually, the first rifles were delivered after 15 months. This was considered a good record. Intricate machines to use the tooling had to be purchased or adapted and the operators trained. This period, usually lumped as "tooling" is of critical importance since it must precede any production.

This organization, incidentally, delivered the Garands at a rate higher than called for in the contract. Only recently this company has been awarded a second contract for more rifles. While the Garand contains only 72 parts, over 20 parts fewer than the Springfield rifle, its manufacture requires hundreds of machining operations and over 2,000 gaging operations for parts and assembly.

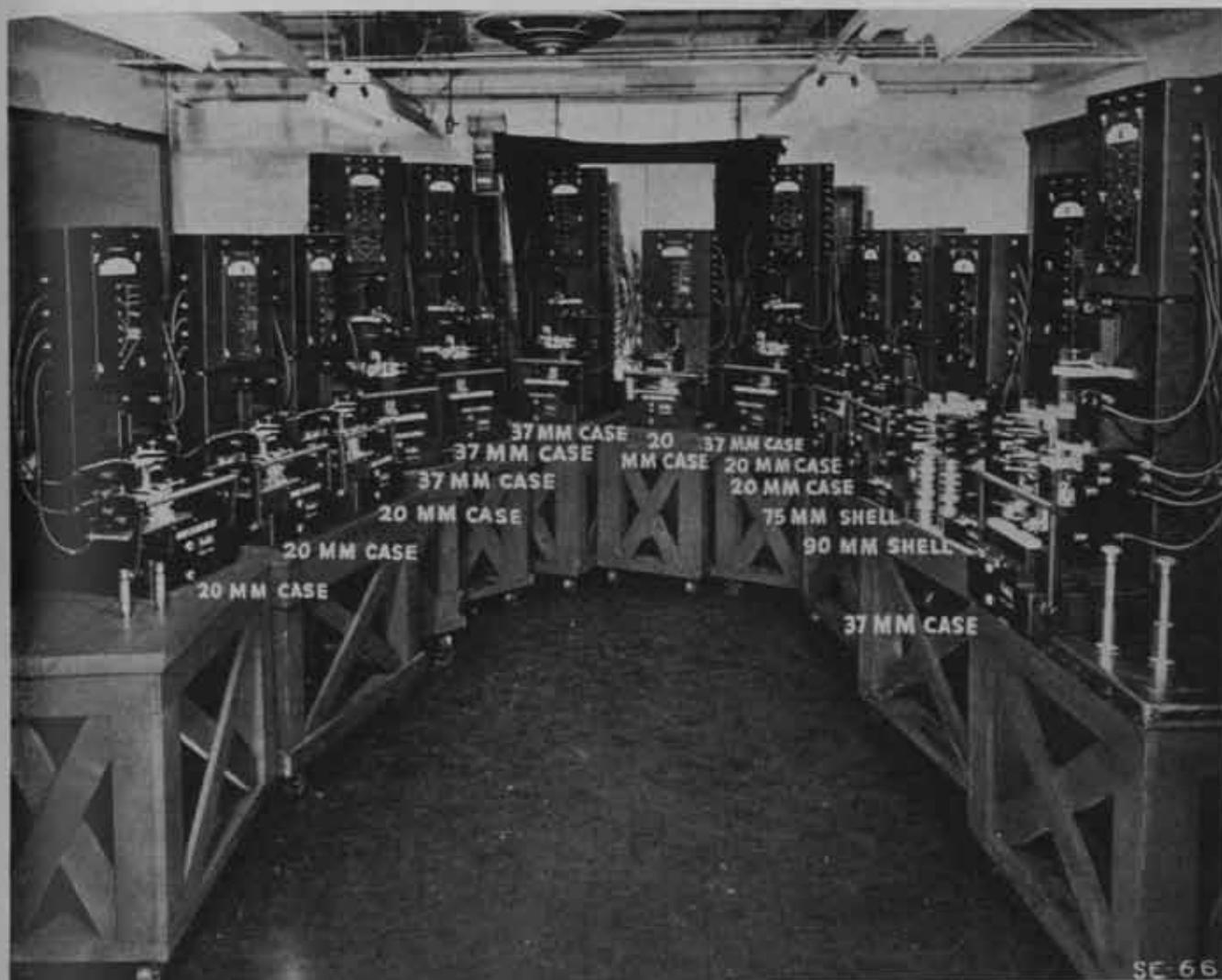
Large scale production tooling of established products usually takes longer than most people realize. The automobile industry is an outstanding example of an industry that is highly organized to do a changeover quickly. Planning, research and design often take from eight to fourteen months or longer for each model. The actual tooling time, i.e., the building of tools, is then crowded into a period of four or five months. This period is usually from February or March to June or July, immediately preceding the introduction of the new model. As a matter of fact, it is sometimes true that the dies, jigs, fixtures and other tooling for models two years hence are in process when the "new" model is being introduced to the public.

Our newspapers, magazines, radio stations and other means of disseminating information have been insistently naming anti-aircraft guns as one of the critical shortages. The first sizable anti-aircraft gun order awarded to industry was given to another manufacturing company in September, 1940. This order was for 3-inch anti-aircraft gun parts. The intricate nature of this job



Lathe used for finish turning 4.5-inch shell. This machine uses carbide-tipped tools.

Photo by Corbaling Company



A group of Multicheck Electriganes is set up to show their adaptability (in checking diameters) on both cases and shell. The gage points checked in each case are shown on the indicator panel above the gage heads. Individual gage head port lights indicate each gaging operation. A master light (white panel at top) flashes if all gage points are correct.

Photo by The Sheffield Corporation

is appreciated when it is remembered that the 3-inch antiaircraft gun carriage contains 6,000 parts. This company, by skillful planning which included extensive subcontracting, has been able to make deliveries ahead of schedule. This company now has more than twenty contracts.

At present, several additional plants are tooling for or producing barrels, carriages, instruments and accessories for the 37-mm., 90-mm., and 3-inch antiaircraft guns. While definite data is restricted, it is understood that in practically every case deliveries are ahead of schedules in contracts.

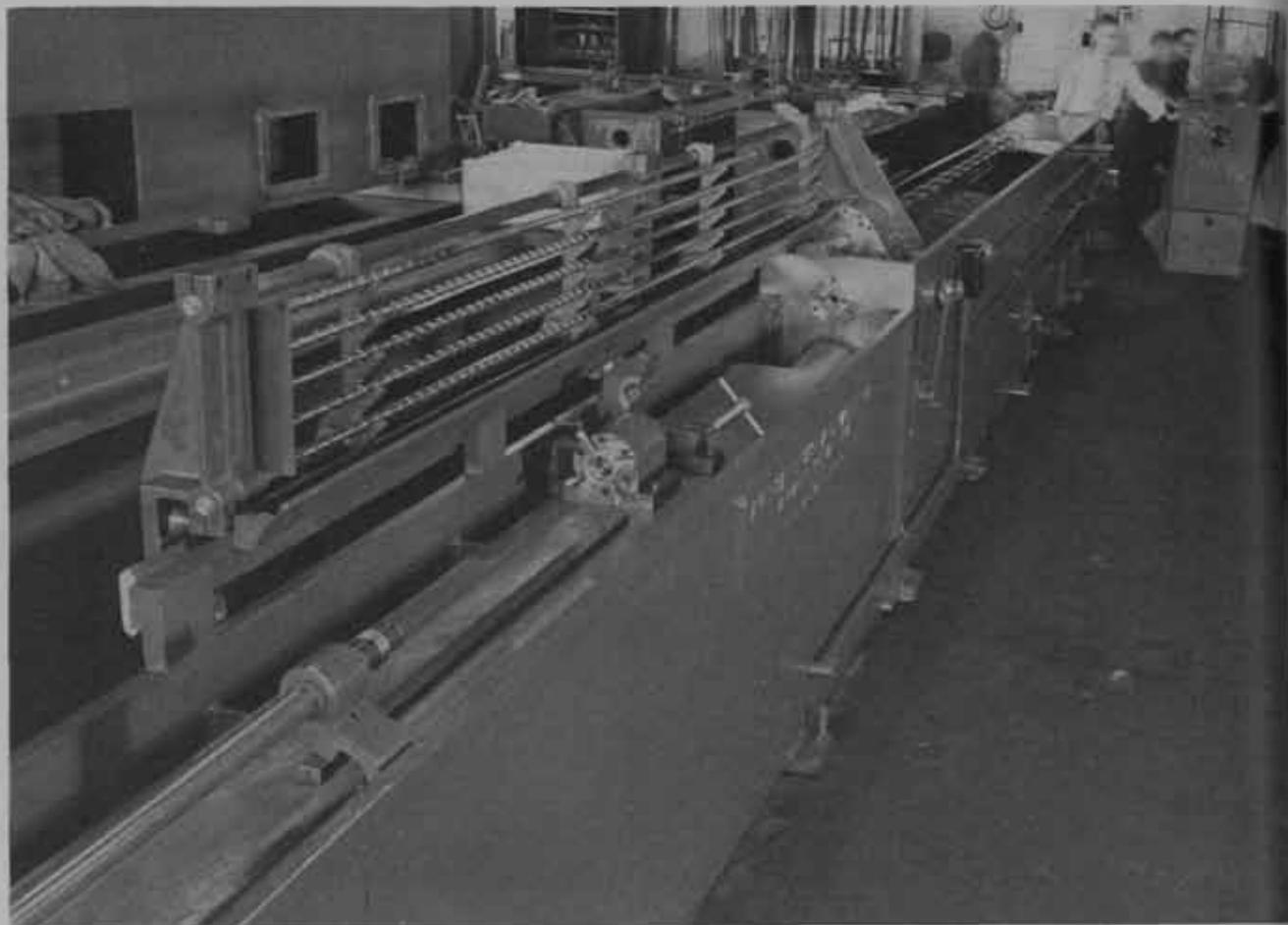
Centrifugal casting of gun barrels has been a great aid to increased production. This process, developed by Brigadier General T. C. Dickson, who commanded the Watertown Arsenal from 1918 to 1933, is essentially one of casting by rotation of tubular molds. Induction furnaces loaded to hold exactly the correct amounts of gun steel are used. When the molten metal is ready, overhead cranes pick up the entire furnace and place it in a tipping car from which the metal is poured into

the rotating mold or casting machine through a pre-heated pouring box.

After the casting has solidified sufficiently to be handled the end cover of the casting machine is removed and the barrel is pushed out by a hydraulic ram. A crane moves it to a slag floor into which it is dropped, buried and left to cool. The barrel is then normalized and air-cooled. After a heat treatment, water quenching, and tempering, the barrel is ready for machining. The metallurgical advantage of greatest importance is that the centrifugal force throws the heavy metal outward, leaving the slag and impurities in the center. The boring operations which follow remove all the imperfect steel.

At present the trend is toward centrifugal casting of antiaircraft guns. Other advantages are: greater speed of production, 2 or 3 times faster than forging; 25 to 40 per cent less material and labor; less weight, which has added to mobility; improved physical characteristics of cold working has reduced machining time.

The production of antiaircraft ammunition is also a



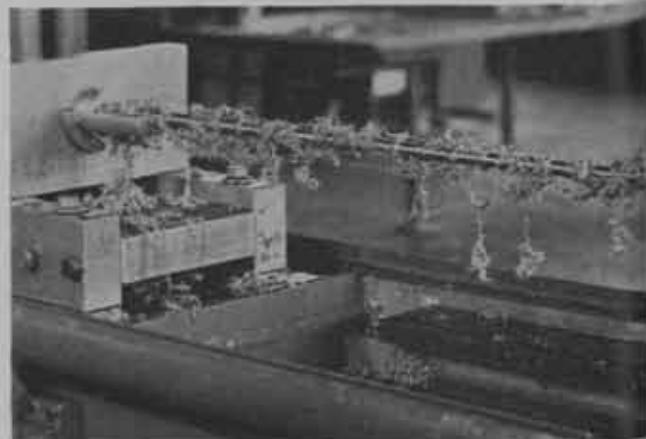
Broach rifling machine for cannon up to 105-mm.

critical problem. Fortunately, our basic shell designs are simple and can be machined more rapidly with less expensive setups than most European shell.

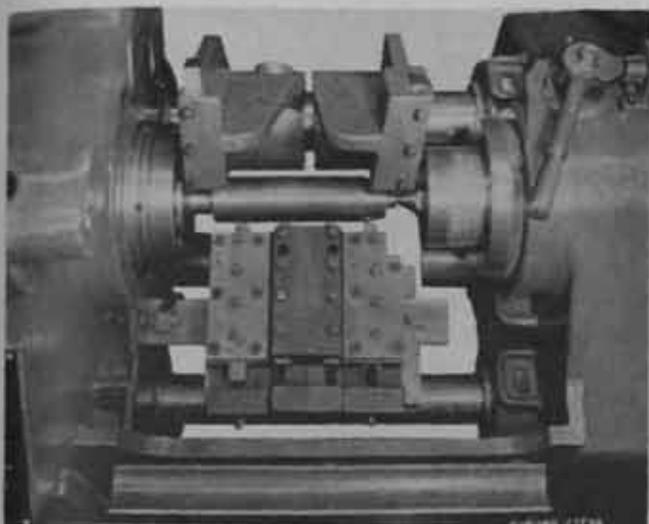
New tools have made their appearance to do the shell making job. Both automatic multi-purpose tools and single purpose production machines have been introduced. The National Machine Tool Builders Association sponsored a single purpose machine. Individual manufacturers have designed and built one or more special machines.

Another factor that has been helping in speeding shell production is the rapidly increasing use of carbides—carbide tipped tools of tungsten-tantalum, tungsten-titanium, and tungsten-tantalum-titanium. According to a recent statement of the controller of machine tools for the English Ministry of Supply, the use of carbide tipped tools has produced shell in minutes as compared to hours in the last war when steel cutting tools were used. Carbides cut much faster and finish more shell per grind. In 1918 the hardest cutting tools available retained efficient cutting edges for an average of fifty medium calibre shell; carbide tipped tools average 400 to 500 shell per regrind. Speeds vary for different operations, but carbide equipped machines are designed to operate at two to six times the speed of machines which utilize high speed steel tools.

Much of the research on the use of carbides for cutting has been carried on by leading American companies and efficient carbide tools are available in large numbers. In addition it has been estimated that the use of tungsten in the form of tool tips of cemented carbide results in twenty to sixty times as much work per pound of tungsten as when this strategic material is employed in tungsten high speed steel. The overall time saving in producing work, averaging all classes of operations is from 30 to 50 per cent.



The machine at work



Tooling set-up for 75-mm. shell

Another critical manufacturing problem is the production of small arms ammunition. The production of cal. .30 and cal. .50 ammunition is considered as the same problem because of the practically identical manufacturing sequences. The Small Arms Ammunition Section of one of our arsenals operates the key or model tooling for manufacturing both cal. .30 and cal. .50 cartridges. Private plants also are producing this ammunition under close Arsenal control. New plants for the exclusive manufacture of small arms ammunition are nearing completion. These will be government owned.

Perhaps the most difficult problem at present in the small arms manufacture is the building of tools—the dies, punches, gages, cutting and form tools. Subcontracting of these tools is widespread in the precision tooling industry. Such tools are required in tremendous quantities since they are expendable. Cartridge brass,

used for self-contained shell or cartridges, wears tools rapidly. Tools are replaced at the first indication that tolerances are not being held. Cartridge tools must be extremely accurate—the average tolerance is .0002 inch. In World War I .001 inch was considered accurate. Even closer tolerances are now essential, particularly for aircraft guns and automatic cannon where stoppages due to ammunition simply must not be allowed to happen. These tolerances are resulting in far "cleaner" firing of all types of hand and automatic weapons.

The intermediate calibre shell, 20-mm., 37-mm., and 40-mm., are being produced by private companies, many of them now in quantity production. Tooling machine tool setups and procedure are all under close Ordnance Department control.

Several guns of European design are also in production in private plants. Two such weapons are the 20-mm. Oerlikon and the 40-mm. Bofors, the latter standardized by the Ordnance Committee as the 40-mm. gun M1.

Both these guns, particularly the Bofors, have proven themselves as highly efficient medium calibre anti-aircraft weapons. The Bofors made a brilliant record in the Spanish Civil War.

The facilities of two of our greatest industrial organizations are engaged in the manufacture of the 40-mm. Bofors. The finish machining and honing operations on each barrel is being done in one-fifth the time reported in a European plant.

A company famous in the automotive industry is the prime contractor for the carriage. Practically all the carriage parts are being made by 368 subcontractors—the contractor's operations being largely that of final assembly of the carriage and entire weapon. American industry is doing the job that needs to be done—doing it at an accelerated rate that will put ample guns and ammunition into the hands of the fighting men.



Pioneer Training for AAA

By Major Paul B. Nelson, Coast Artillery Corps

Although the writer has no official reports at hand with which to prove this statement, there is every reason to believe, on the basis of published material, that there was a very low percentage of casualties among the antiaircraft gunners in Hawaii on that December 7 "which shall live in infamy."

Probably, one of the important reasons for the low percentage of casualties among the antiaircrafters was that they were prepared for this sort of thing. Gun emplacements had been constructed laboriously, ammunition shelters were dug in and fire control installations had been prepared in advance. The maximum use of cover and concealment had been stressed in training, to a point where battery commanders vied with each other to create emplacements of the most deceptive appearance while retaining all of the advantages of fields of fire and fire control.

If the AA troops in Hawaii were able to give a good account of themselves, and there is every reason to believe that they did, a substantial amount of credit must go to the field engineering training, application of which gave them deception and protection when they needed it most and in consequence enabled them to deal effective fire against surprise air attack launched with overwhelming numbers of combat airplanes.

In current operations abroad, regardless of terrain there is need for engineers to aid antiaircraft artillery units. In our own maneuvers the engineer troops could seldom be spared from their own pressing missions to assist antiaircraft organizations with their problems. Because the engineers have so many missions and duties, the antiaircraft artillery commander can not expect, with any degree of certainty, that the engineers will be able to assist when needed. Because the antiaircraft artilleryman finds many diversified engineering problems confronting him both in war of movement and position warfare, each antiaircraft artillery regiment and separate battalion should have an organic pioneer platoon suitably organized, equipped, and trained. Individuals selected for such a platoon within the regiment should have the qualities of leadership, aggressiveness, and initiative, and should, if possible, possess engineering qualifications. They have a hard job to do and performance should be amply rewarded. Promotion on the basis of merit should be rapid to a point that good men would clamor for an opportunity to join such a platoon.

During some of the restless training periods at the Antiaircraft Training Center at Camp Haan, California when the available supply of ammunition and towing airplanes was to all intents and purposes nil, a program for the development of such an experimental pioneer unit was adopted and put into execution by the following training memorandum:

HEADQUARTERS ANTI-AIRCRAFT ARTILLERY
TRAINING CENTER
Camp Haan, California

(S-3) PBN/jwm
August 25, 1941

TRAINING MEMORANDUM)
NUMBER 112)

PIONEER TRAINING

Engineer Field Manual, Reference Data FM 5-35
1. Under the provisions of the following War Department training circulars, antiaircraft artillery troops are charged with the task of anti-mechanized defense in addition to their normal antiaircraft mission.

Training Circular No. 3, September 23, 1940, Antimechanized Defense.

Training Circular No. 12, December 12, 1940, Operations in snow and extremely cold weather.

Training Circular No. 8, February 12, 1941, Antitank mines.

Training Circular No. 9, February 13, 1941, Warning signals, air or mechanized attack.

Training Circular No. 41, June 27, 1941, Antitank mine fields.

Training Circular No. 47, July 18, 1941, Local Defense of Air Bases.

These training instructions have been further amplified by War Department Letter File AG 353 (8-14-40) M-C, August 16, 1940, Subject: "Training of Antiaircraft Artillery Regiments in Antimechanized Defense," in which emphasis is placed upon field fortifications FM 5-30 (or FM 5-35) as supplementary to such training. More recent instructions, namely, GHQ Letter File 353/22 (AT Defense) dated July 17, 1941, Subject: "Training of Mobile Coast Artillery Units in Antimechanized Defense and Firing on Landing Boats" further intensify the missions for antiaircraft troops.

2. The multi-mission assignment of antiaircraft troops involves extensive use of various field fortification expedients and necessitates operations in many cases over extremely adverse terrain, with heavy equipment. In most cases engineer troops will not be available to facilitate troop movements, to construct stream crossings or to reinforce weak bridges to accommodate heavy artillery loads, therefore the burden of this duty will fall on Coast Artillery troops. The organization of provisional pioneer units within each antiaircraft artillery regiment, (a common practice in Europe) appears to be a logical solution.

The widely dispersed nature of antiaircraft fire



The Pioneer Platoon's tool truck.

units in combat, both for antiaircraft and antimechanized operations, requires a high degree of self sufficiency on the part of searchlight sections and fire units of gun and automatic weapon battalions. A thorough knowledge and ability to apply the sound principles of field engineering to increase the combat efficiency of small units is therefore imperative. Field engineering, instruction, or pioneer training of all units, will therefore stress the following: Stream crossing expedients, field fortifications, construction

of obstacles, camouflage, and the improvements of access routes of communication. Field Manuals FM 5-15, 5-30, and 5-35 cover in detail the description, training and essential data on applicable engineering expedients, while FM 5-25 covers details of explosives and demolitions. Paragraphs 55-53, inclusive, FM 5-25 are applicable to all troops.

3. On August 21, 1941, all regiments and separate battalions of this training center were furnished quantities of field fortification matériel for combat training. *This matériel is for combat training only.* Brigade Commanders will take positive steps to insure that this matériel is not diverted to other purposes, as it cannot be replaced by additional procurement.

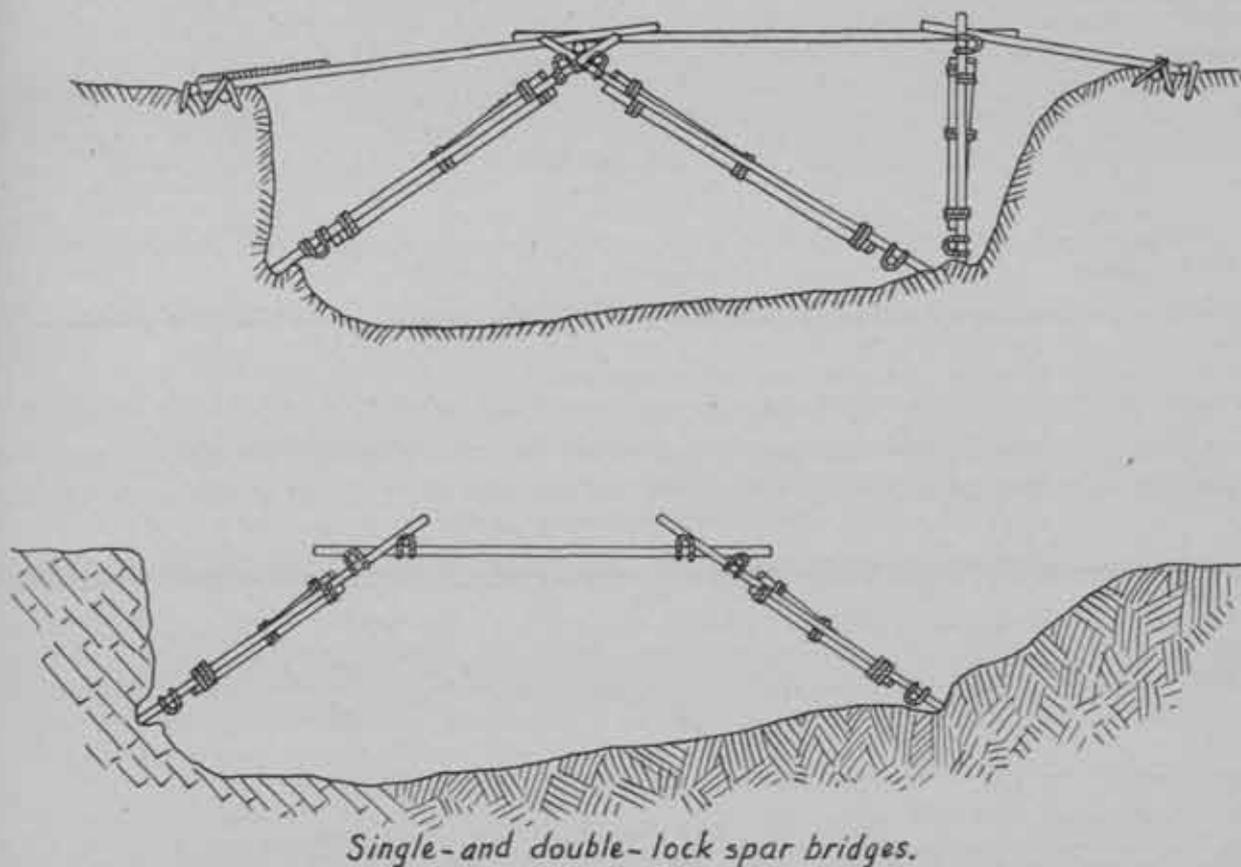
* * *

5. Miscellaneous:

Material now available at the salvage piles on the post is available for field engineering instructions and will result in the conservation of much of the new materials recently issued. The maximum use of this material for such purposes by all concerned is therefore directed.

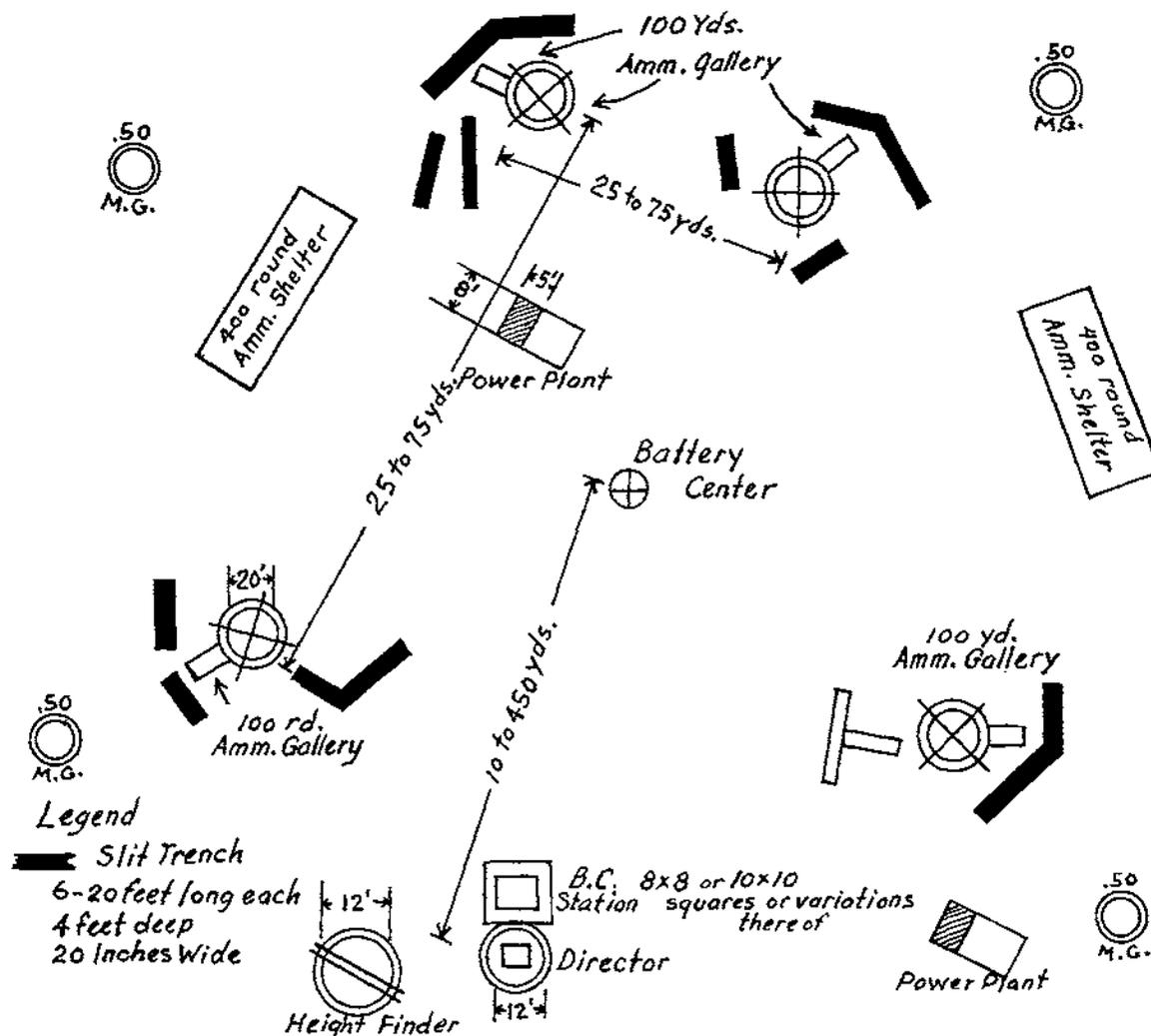
By command of Major General GARDNER:

The following illustrations were inclosed with Training Memorandum 112:



Single- and double- lock spar bridges.

SUGGESTED TYPE AA GUN BATTERY DISPOSITION AND EMPLACEMENT



Note Not to Scale

Avoid regularity of Pattern! Particular geometrical patterns such as Squares, rectangles or diamonds.

Battery Latrine on low side away from battery.

Battery mess on high side, away from battery.

Keep parked motor vehicles at least $\frac{1}{4}$ mile away from Installations.

Guns placed Variable distances.

Suggested spacing; 25-45-60-75 yds.

Any logical variation embracing general dispersion indicated is acceptable. Local conditions and judgement of Battery Commander govern.

Designed by *Paul Spilsome*

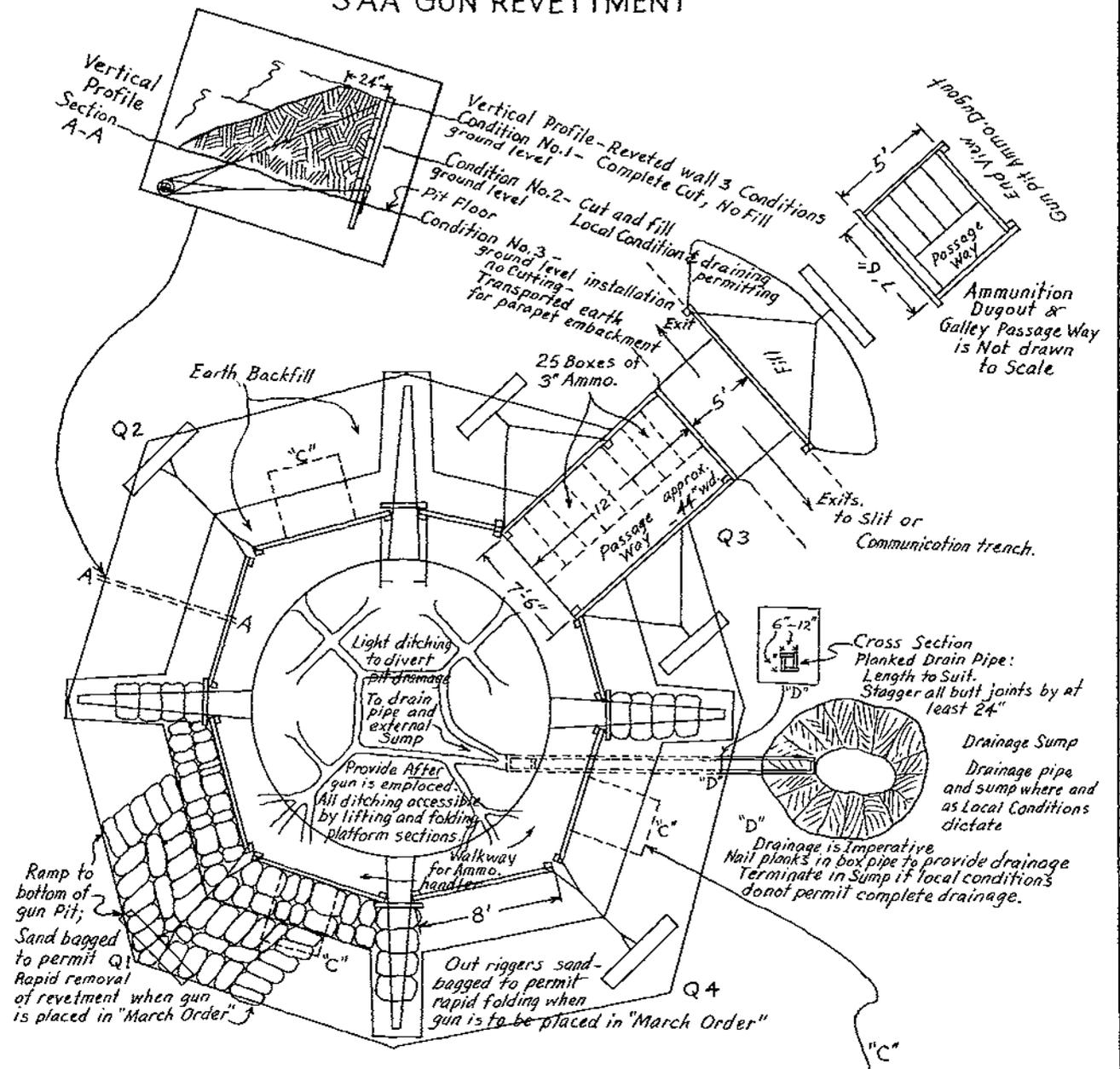
Drawn By: MS.

Maj. C.A.C.

Dec. 12, 1941

S.3 AAATC. Camp Haan

SUGGESTED GUN EMPLACEMENT 3" AA GUN REVETTMENT



Bill of Materials
 60ea-2"x12" x 8' Plank
 30ea-2"x12" x 3' "
 20ea- Posts 4"x4"x6'
 6ea- Dead Men 6"x6"x48"
 200# Wire 12 gauge or Larger
 25# Spikes 20 D
 3000 Sand Bags per Gun.

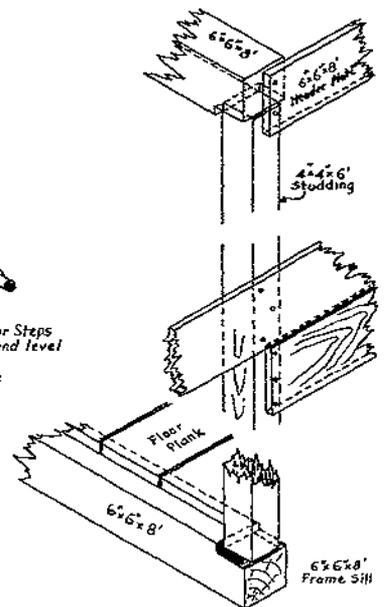
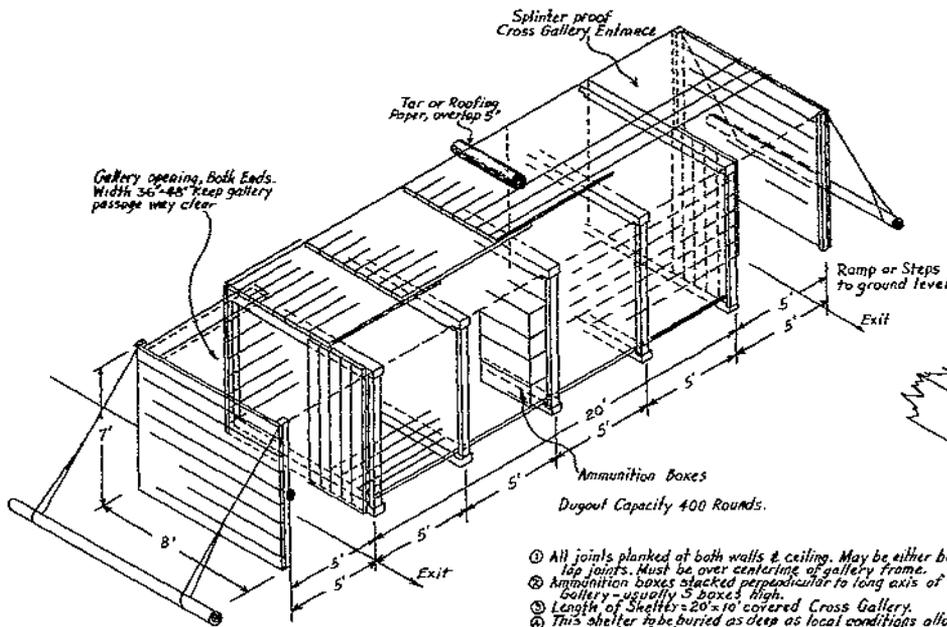
Revetment - 5' high
 Cut & Fill preferable.
 Quadrant #1 - ramp to ease
 gun into emplacement; sand bagged
 when gun is in place.
 Quadrant #3 - Pit dugout to
 accommodate 100 rounds.

Inlet box frames or
 cylindrical containers in
 walls of Quadrants 1, 2, and
 4 sufficient in size to
 accommodate 15 rounds of
 Ammo, each.

DESIGNED BY *Paul Walker*
 TRACED BY: G.B.B. Major C.A.C.
 5-3 AAATC
 Camp Haan
 Dec. 10, 1941

400 ROUND AMMUNITION GALLERY & PERSONNEL SHELTER

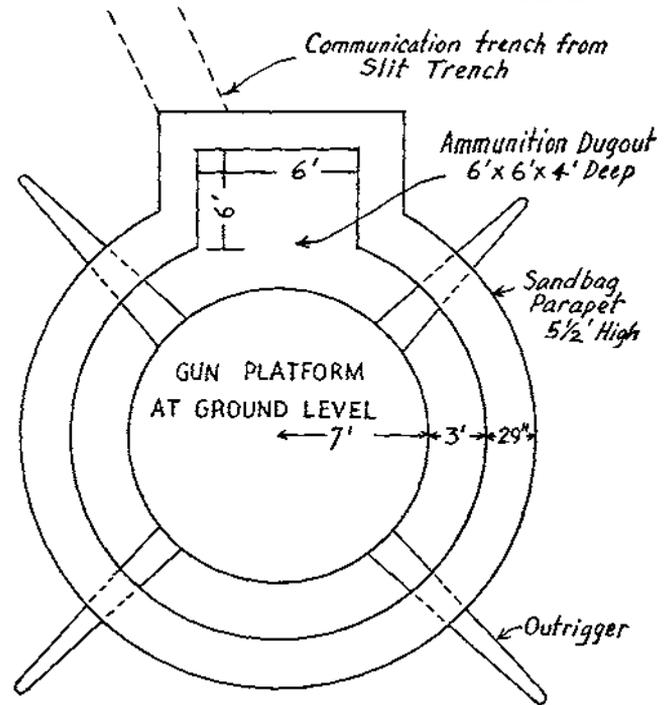
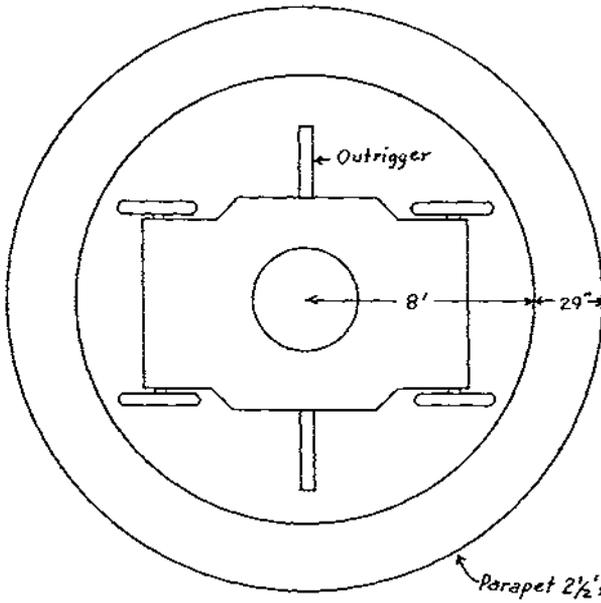
Not to Scale



- ① All joints planked of both walls & ceiling. May be either butt or lap joints. Must be over centering of gallery frame.
- ② Ammunition boxes stacked perpendicular to long axis of Dugout Gallery - usually 5 boxes high.
- ③ Length of Shelter 20' x 10' covered Cross Gallery.
- ④ This shelter to be buried as deep as local conditions allow. Draining is governing factor.
- ⑤ At least 3' of earth over roof. Sides embanked to natural angle of rest if soil used.
- ⑥ Entrances on each end of shelter.
- ⑦ Bill of materials, for One Shelter.

14 ea.	6"	4"x4"	Studs
5 "	8"	6"x6"	Slope Beam
30 "	10"	4"x6" (Notched)	Roof
60 "	8"	2"x12"	Sides, Roof, Floor
20 "	8"	2"x12"	Ends "
14 "	4"	2"x12"	" "
	40"	40d	Nails
			3 Rolls - Roofing or Tar Paper

Drawn By: G.B.B. 5-3 AAATC. Comp. Heen Dec. 12, 1941

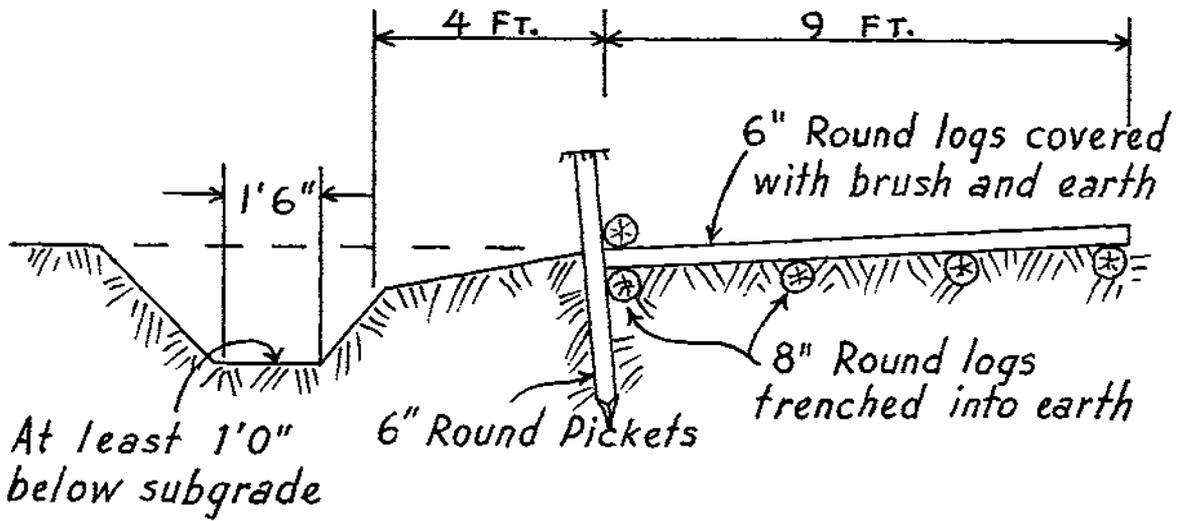


Note - Wheel Supports may be provided in wet or soft soil.

PROTECTION FOR 37MM AA AUTOMATIC CANNON

PROTECTION FOR 3 INCH ANTI-AIRCRAFT GUN

CORDUROY ROAD



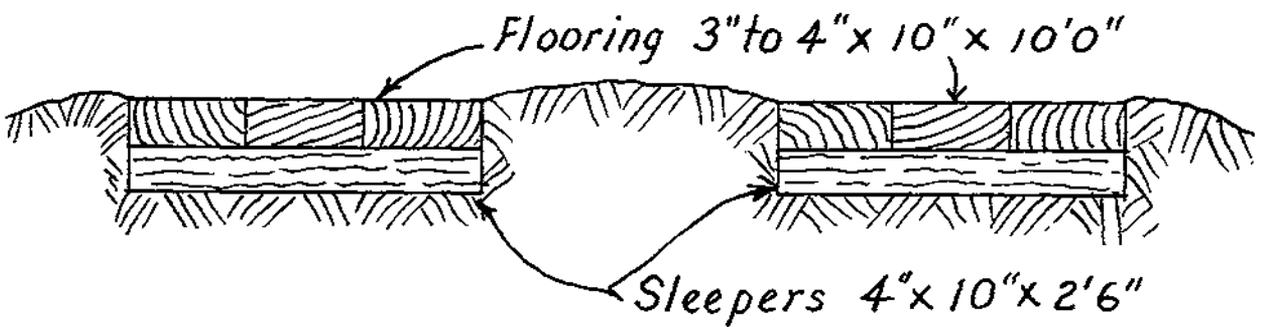
HALF SECTION

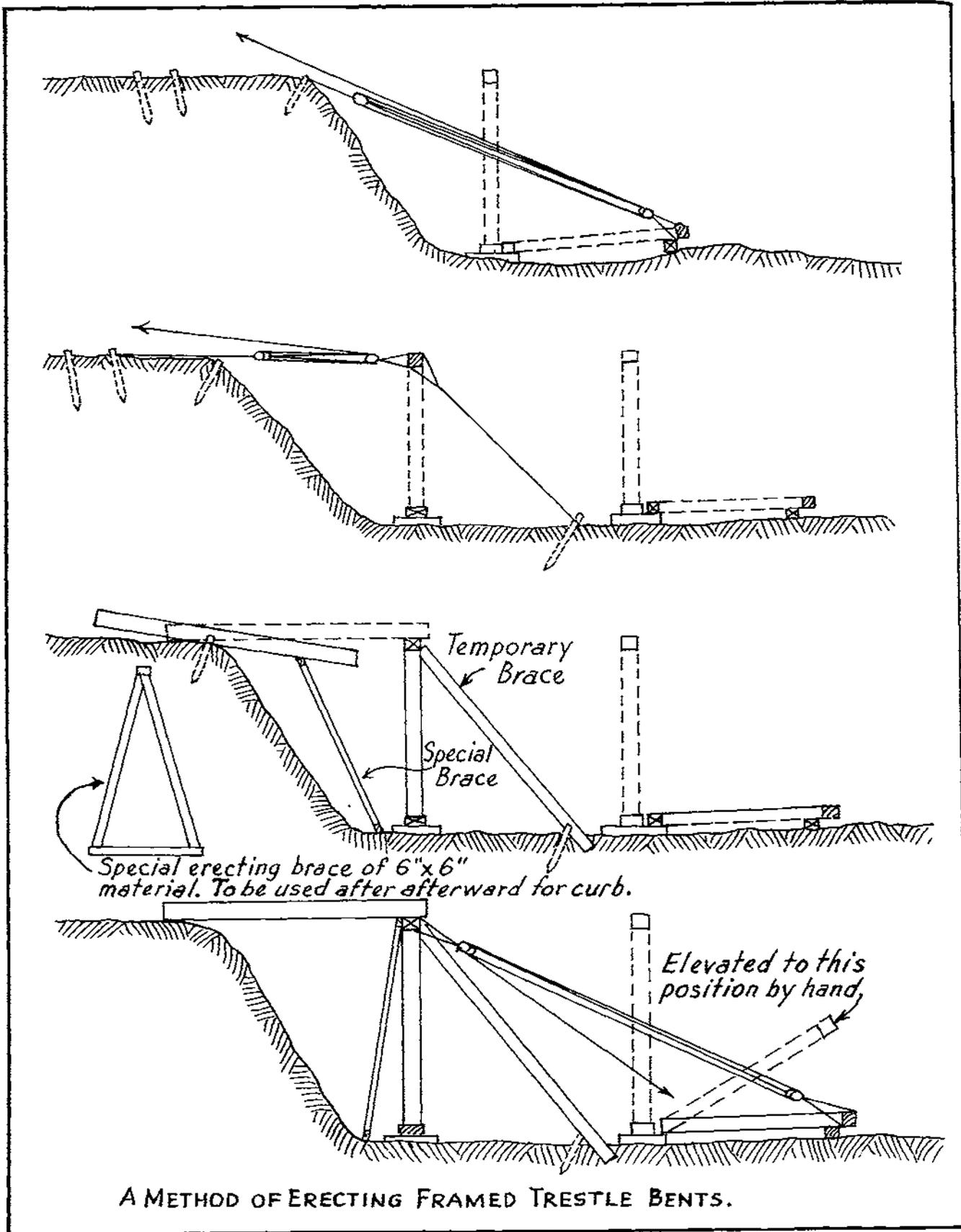


Mean 6" diameter logs - Alternate Tips and Butts

LONGITUDINAL SECTION

STANDARD LUMBER PLANK TYPE ROAD





A METHOD OF ERECTING FRAMED TRESTLE BENTS.

The report of one of the regiments which established an experimental Pioneer Platoon in compliance with Training Memorandum No. 112 appears below. Since this report outlines very concisely the experiences of most of the units which acted upon the training memorandum, it is reproduced in full.

21 October 1941

Subject: Pioneer Platoon.

To: Commanding General . . . C.A. Brigade
(AA) Camp Haan, Calif.

1. Transmitted herewith is report covering experiences of this command in connection with the establishment of experimental pioneer platoon within the regiment.

a. *Need for Platoon.*

Field exercises have demonstrated time and time again to this command that a mobile Antiaircraft regiment is sufficiently mobile ONLY when favorable road and terrain conditions either already exist or are made favorable. Many times it has been found that minor road bottlenecks acted to seriously hold up and at times actually threaten the successful completion of the regiment's mission. Since the mobile antiaircraft regiment's mission almost always calls for independent action, it is seldom that engineer troops could be called on for needed assistance. Operations under actual battle conditions would serve to accentuate these conditions.

b. *Establishment of experimental Pioneer Platoon.*

With the above in mind, therefore, and with the end of seeking to facilitate the movement of this regiment under all conditions, without the need for outside assistance, an experimental pioneer platoon was organized within the regiment. The new Army Classification System proved extremely helpful in the selection of qualified men and in a short time the nucleus of the platoon was chosen and assigned to special duty under a commissioned officer with engineer knowledge. Partial equipment and supplies were secured from the Camp Haan Plans and Training Department. Experiment and training were immediately begun to determine the feasibility of the plan and the extent of development necessary.

c. *Training given and conclusions drawn.*

The following duties received attention: Removal of road obstacles (natural and artificial); resurfacing sandy, mud or other soft surfaces; sanding ice covered roads; making ravines and steep banks passable to heavy vehicles by breaking down sides of banks; determining solid-bottom and good-approach, shallow stream crossings; bridging deep streams, reinforcing weak bridges, selecting and constructing detours when necessary. Each man was trained with the objective of producing a highly qualified specialist in his field; one capable not only of performing his own



Neat, safe and useful.

duties, but acting as instructor to the remainder of the regiment as well. In addition each man was given concurrently, training on the use and employment of his individual weapon with special emphasis on self-protection. The group as a unit was instructed as to position occupied by them in columns under various situations and objectives.

After a suitable period of observation of the work and results obtained by this platoon, it was concluded that it definitely deserved a place within the regiment, that its work gave to the unit a greater degree of independent action and self-sufficiency, and that the importance of its mission warranted its inclusion in the Tables of Organization of the mobile Antiaircraft regiment as a complete pioneer platoon fully manned and equipped.

d. *Proposed organization.*

It is thought that administrative and tactical requirements would necessitate the inclusion of this platoon within the Regimental Headquarters Battery with the Platoon Commander directly responsible to the Regimental Commander. Battalion requirements upon the platoon would be taken care of by order of the Regimental Commander upon the request of Battalion Commanders. Requests would, of course, be determined by prior Staff reconnaissance. Suggested Table of Organization follows:

PIONEER PLATOON MOBILE AA REGIMENT

	Spec. Ratings	Total
First Lieutenant		1
Second Lieutenant		1
Master Sergeant, Platoon Cmdr		1
First Sergeant		1
Sergeant, including Section leader		3 (2)
Transportation		(1)
Corporal, including Squad leader		7 (6)
Radio		(1)
Private First Class, Privates, includ.		42
Carpenter	4th	(1)
Cook	4th	(2)
Radio operator	5th	(1)
Chauffeur	6th	(10)
Mechanic	6th	(1)
Basic		(27)
Total Commissioned		2
Total Enlisted		54
Trailers, kitchen		1
Trucks, 1½ ton w/w		5
Trucks, 2½ ton w/w		6
Trucks, ½ ton pickup		1
Trucks, ½ ton reconnaissance		1
Trailer, Pole		2
Pistol		7
Rifle, US Cal 30		33
Rifle, B.A.R.		6
Machine Gun, Cal 30		2

The above Table of Organization would provide for the following elements, Personnel, Mess and Supply Section, Communication Section, Pioneer Train, and Local Ground Protection Section.

e. Equipment and Armament.

Inasmuch as the platoon would necessarily operate frequently as a separate unit far in advance of the main column, it should be equipped with full mess, supply, communication and self-protection facilities. Pioneer equipment does not necessarily need to be overly extensive but should be modern, easily transported, and adequate for needs of existing climatic and terrain conditions. Much use can be and is made of material and supplies found within the immediate vicinity of the construction or demolition area. Necessary vehicles are listed in T/O above. 1½ ton trucks could be substituted satisfactorily for the 2½ tonners listed if a longer platform stake body was substituted for the present 1½ ton body. Two pole



Quick and convenient.

trailers for transporting long timber and metal girders are also desirable. Acetylene torches and other welding equipment, together with a portable forge are considered necessary. A certain amount of material for construction of tank traps and obstacles should be included, although, as previously stated, much use can be made of existing country-side material. Explosives are essential at all times.

Armament should combine the maximum amount of fire power with the minimum amount of armament weight.

f. Duties of Personnel as determined to date.

Commanding Officer. Charged with basic training and with administration, discipline, maintenance and supply of the platoon. Is responsible for technical and tactical training of platoon personnel. Accompanies Regimental and Battalion commanders on reconnaissance.

Executive Officer. Principal assistant and adviser of the commander. Transmits the wish of the commander to those who execute it and is the principal coordinating agency insuring the efficient functioning of the platoon.

Master Sergeant. Supervises all work done by the platoon. Has thorough knowledge of all types of bridge construction, use of explosives, methods of mine laying and all other duties connected with platoon.

First Sergeant. Usual duties as in batteries.

Section Sergeant. Commands section. Is responsible for the proper loading of section equipment. Supervises immediate building of pioneer job.

Transportation Sergeant. Insures that pioneer train is prepared to move at a moments notice. Keeps all records dealing with transportation.

Corporal. Charge of squad and immediate supervision of squad duties.

Radio Corporal. Charge of all communications.

Private 1 cl and Privates. Cooks, radio operators, chauffeurs, mechanics, observation and ground protection.

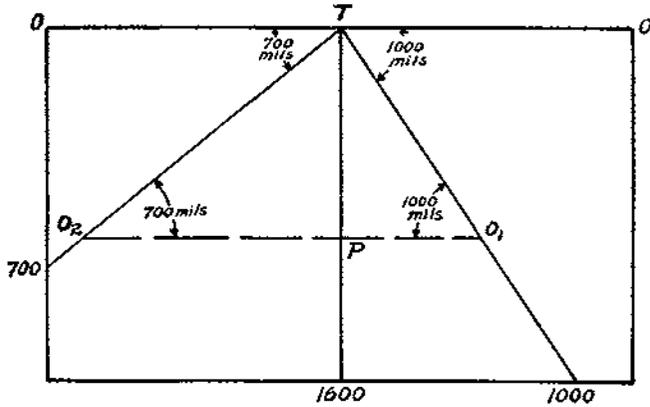
Trial Shot Plotting Chart

By Major Marion G. Pohl, Coast Artillery Corps

The Trial Shot Problem in antiaircraft artillery has brought forth many methods of computation and solution. All have their advantages and disadvantages; none is ideal for use under all conditions. It is believed that the method described below will provide certain advantages in use which are not found in some of the methods heretofore advocated.

GENERAL DESCRIPTION

The horizontal plotting chart (Fig. 1; pages 58 and 59) consists of a rectangular mil protractor whose center (T) represents the trial shot point. The mil scales are graduated according to the angle between the horizontal line through T (zero line) and a line joining T with the particular graduation. Since the horizontal lines are



The Problem

parallel to the zero line, the scales also read the acute angle between any line through T and any line parallel to the horizontal lines. Thus any oblique triangle TO_1O_2 may be plotted and solved by making T one vertex and the opposite side parallel to the horizontal lines. Any right triangle TO_1P or TO_2P may be plotted and solved by making T one vertex, one leg along the 1,600 mil line and the other leg parallel to the horizontal lines.

Although lines are mentioned frequently in the instructions that follow, practically all operations can be performed by merely placing a straight edge in the proper position and locating the point desired, or by drawing a light line which can be easily erased. The triangle O_1O_2TSP should be drawn in to give a picture of the trial shot triangle, and other lines should not be allowed to confuse the picture.

All operations follow logically from a few simple geometric and trigonometric truths, so that rules do not have to be memorized, nor the instructions referred to after once using the chart.

Any scale may be used for any one triangle. For

greatest accuracy always use the largest scale that will fit the chart. Since the chart has no distances printed on it, its accuracy cannot be effected by shrinkage or expansion of the paper. The scale printed at the bottom of the chart may be cut off and used if a rigid scale is not available. A three-cornered engineer's scale is handy, since it carries six different scales.

All angles plotted and read are interior angles.

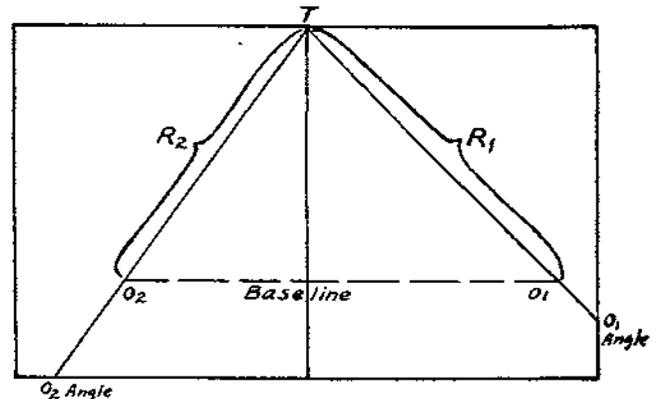
A pin stuck in T as a stop for the straight edge is convenient.

Any trial shot point may be selected, as nothing on the chart or in the instructions pertain to any "standard" trial shot point.

INSTRUCTIONS

A. To Plot the Trial Shot Triangle.

Rule a line from T to the scale graduation corresponding to the interior O_1 angle, using the right side of the chart if O_1 is on the right, and vice versa.



Step A

Measure a distance along this line from T equal to the horizontal range from O_1 to the trial shot point. The point located is O_1 .

Draw the baseline through this point parallel to the horizontal lines.

Measure off the baseline length along the baseline to left or right of O_1 according as O_2 is on the left or right of O_1 , thus locating O_2 .

Rule a line through T and O_2 . Where this line strikes the mil scale read the interior O_2 angle. Measure the horizontal range from T to O_2 .

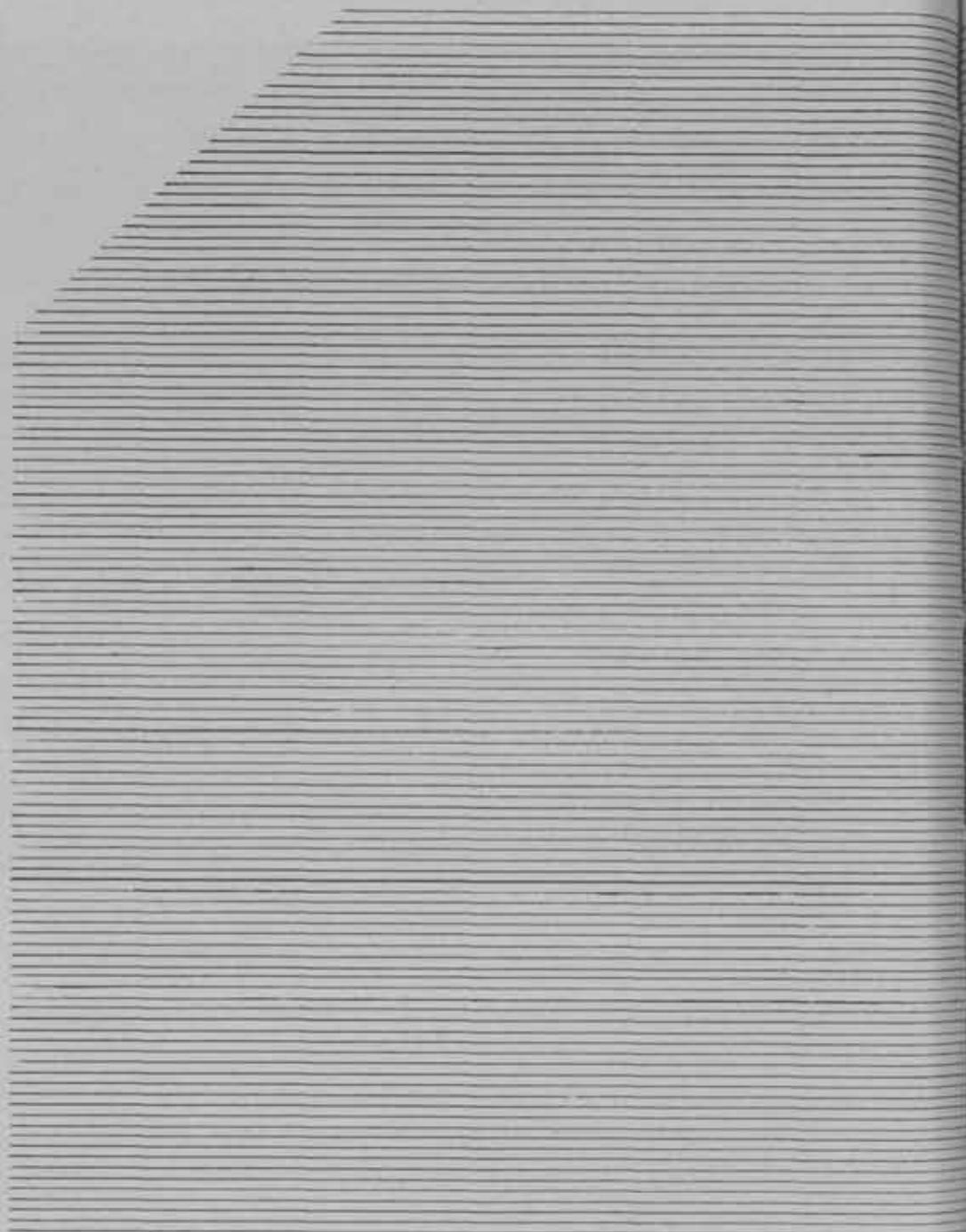
B. To Find the Angular Height from O_2 .

Measure along the 1,600 mil line from T a distance equal to the altitude of the trial shot point (above O_2). The scale used may be different from that used in A.

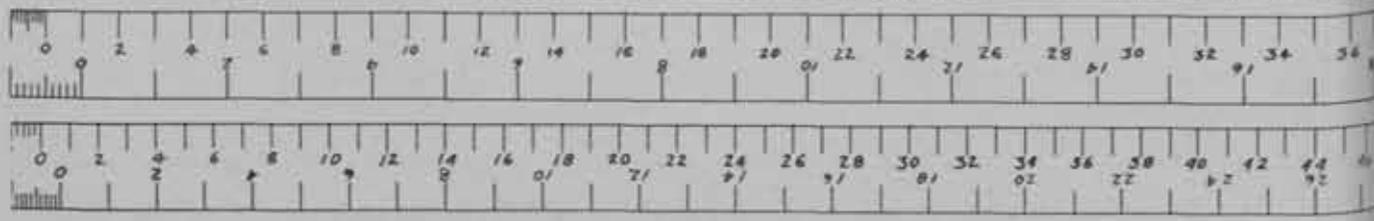
With the scale parallel to the horizontal lines lay off a distance from this point equal to the horizontal range from O_2 .

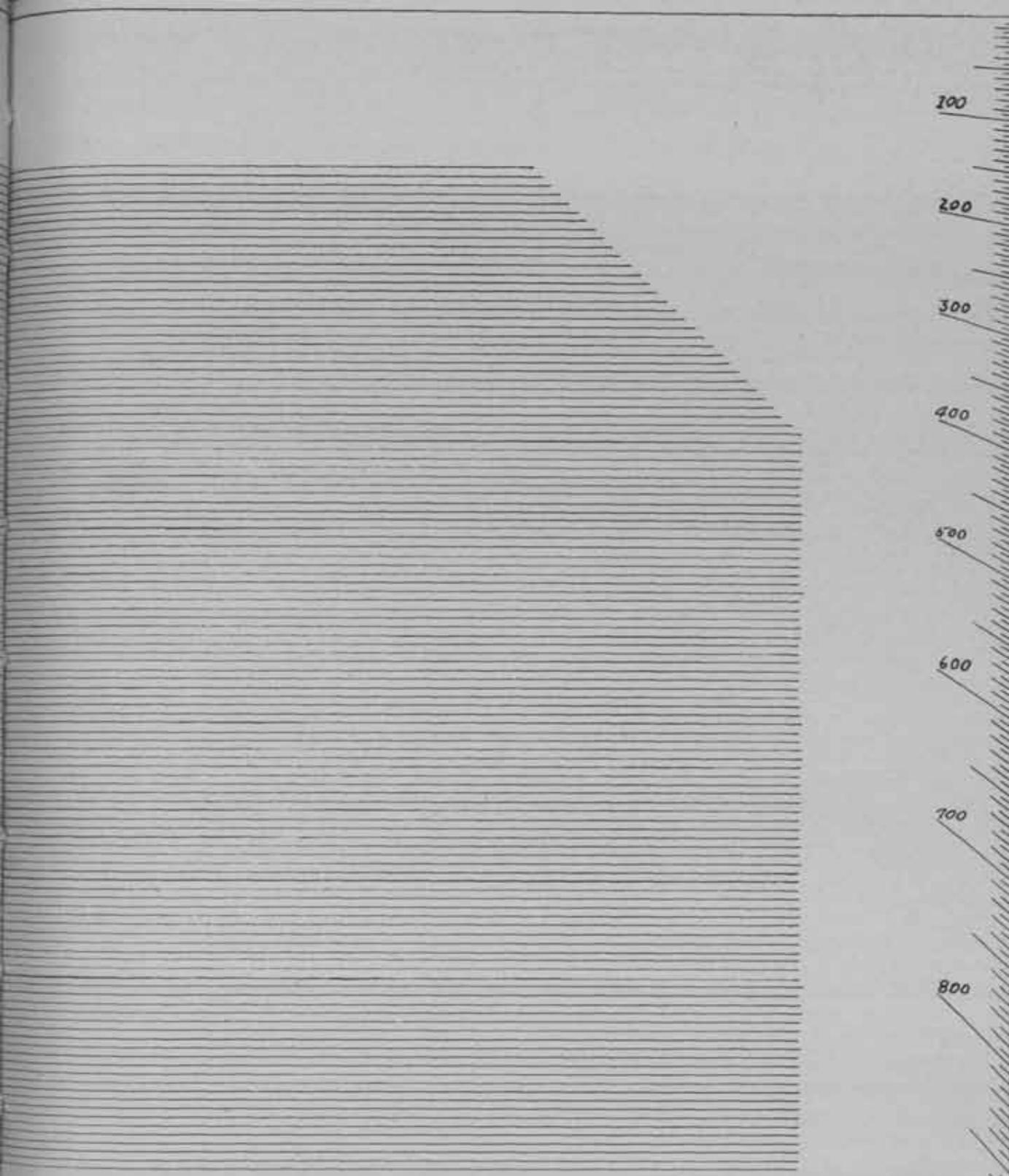
Table of factors for converting mls in the slant plane to the horizontal plane.

€	500	600	700	800	900	1000	1100	1200	1300	1400
Factor	1.1	1.2	1.3	1.4	1.6	1.8	2.1	2.6	3.4	5.1



10/00 11/00 12/00 13/00 14/00 15/00





100

200

300

400

500

600

700

800

15 00

14 00

13 00

12 00

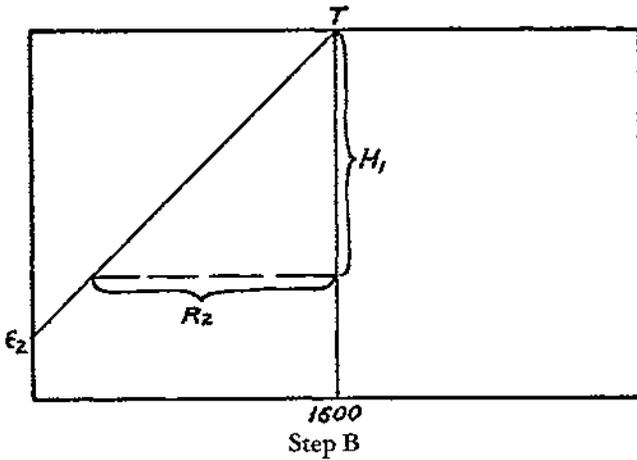
11 00

10 00

900

02 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78

04 06 08 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98

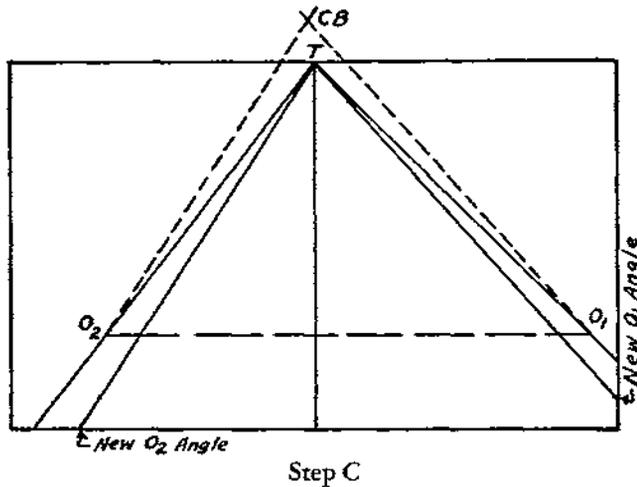


With the straight edge through the point thus located and T read the angular height from O_2 .

C. To Plot the Center of Burst.

Compute the new O_1 and O_2 angles. (The angle between the baseline and the line from O_1 to the horizontal projection of the CB is the new O_1 angle. Remember to convert the average deviation to the horizontal plane before computing.)

Draw a line through T to the graduation on the mil scale corresponding to the new O_1 angle.



With the straight edge placed through O_1 and parallel to this line, draw a short line in the vicinity of T. Do the same at O_2 , using the new O_2 angle. The intersection of these short lines is the horizontal projection of the CB.

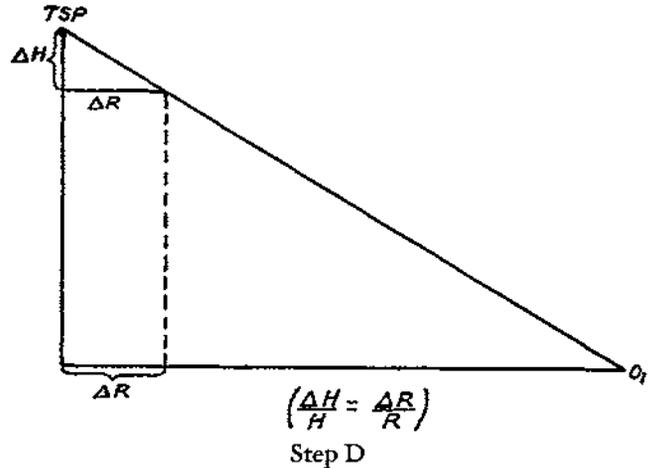
The horizontal range deviation of the CB can be measured from T to the foot of a perpendicular from CB to the line T- O_1 .

D. To Compute the Altitude Correction.

The percentage altitude correction equals the horizontal range deviation divided by .01 times the horizontal range from O_1 .

If the altitude correction in yards is desired take this per cent of the altitude of the trial shot point.

In order to account for the effect on horizontal range of a vertical correction, for each plus 10 mils of vertical correction add one per cent to the per cent altitude correction.



Example:

%H cor.	Vert. cor.	Final %H cor.
+3.1	+12 mils	+3.1 + 1.2 = +4.3
-2.0	-7 mils	-2.0 + (-.7) = -2.7
+2.4	-10 mils	+2.4 + (-1.0) = +1.4

E. To Measure Trigonometric Functions of Angles.

The distance from T to the zero graduation of each scale is 10 inches, therefore the tangent of any angle up to 900 mils is one-tenth the distance in inches from zero to the proper graduation. For the tangent of an angle greater than 900 mils or for any other function of an angle, draw a line from T toward the graduation corresponding to the angle. This line with the 1,600 mil line and any horizontal line form a right triangle in which the horizontal line is adjacent to the angle whose function is sought. In order to find the function divide the lengths of the proper sides.



USCAA ROTC Medal Winners

Each year the United States Coast Artillery Association gives a medal to the outstanding student in each Coast Artillery senior ROTC unit. The medal is awarded by the Association on the recommendation of a board of three members appointed by the P.M.S.&T. of the institution concerned.

The selection is made on a grading scale of one hundred points. Grades in academic subjects exclusive of military subjects carry a weight of thirty points; grades in military subjects, both theoretical and practical, rate forty points; personal qualifications, including character, initiative, force, leadership, cooperation, loyalty, industry, military bearing and neatness, count thirty points.

The award is made to a student who has completed his junior year, and is based on three years of military and academic work.

Awards for the academic year 1940-41 were made as follows:

University of Alabama: Cadet Second Lieutenant Winston P. Anderson, of Montgomery, Alabama. Cadet Anderson has an A plus record in the Military Department, and an outstanding record in other college studies. He is working for an A.B. degree.

University of California: Cadet Walter Leland Connolly, of Santa Cruz, California. Cadet Connolly is majoring in Mechanical Engineering and is a member of several fraternities and campus societies including Scabbard and Blade and Tau Beta Pi.

University of California at Los Angeles: Cadet Stephen E. Cavanaugh, of Los Angeles. Cadet Cavanaugh is majoring in Mechanical Engineering and is a member of Scabbard and Blade and the varsity water polo team.

University of Cincinnati: Cadet Captain Dick E. Tullis, of Dayton, Ohio. Cadet Tullis is working for a Commercial Engineering degree. He has been active in military fraternities, and was elected Captain of the Pershing Rifles. He is an outstanding student in the Military Department.

The Citadel: Cadet Robert M. Anderson.

University of Delaware: Cadet First Sergeant Samuel P. LaPenta, of Wilmington, Delaware. Cadet LaPenta is studying Chemical Engineering.

Fordham University: Cadet Raymond G. Valerio, of New York City. Cadet Valerio's work in both military and academic subjects has been outstanding, and his personal characteristics are favorable to a marked degree.

He is studying for a B.S. degree, majoring in Chemistry.

Georgia School of Technology: Cadet Sergeant Paul A. Morton, of Fort MacPherson, Georgia. Cadet Morton was recalled to army duty under his enlisted reserve status. While at Tech he was an outstanding student.

University of Illinois: Cadet Donald K. Stevens, of Urbana, Illinois. Cadet Stevens has received six awards for military excellence in the past three years, not including the present medal. He is a member of Scabbard and Blade and other campus military and general organizations. As a freshman he received the Keramos award for having the highest scholastic average in Ceramics.

University of Kansas: Cadet Presson S. Shane, of Junction City, Kansas. Cadet Shane is studying Chemical Engineering.

Kansas State College: Cadet William R. Bixler, of Emporia, Kansas. Cadet Bixler recently received an award as the outstanding junior in Mechanical Engineering, was president of his freshman class, and expects to graduate in the fall of 1942.

University of Maine: Cadet Captain Carl Raymond Brown, of Levant, Maine. Cadet Brown is studying Electrical Engineering.

Massachusetts Institute of Technology: Cadet Herbert Granger Twaddle. Cadet Twaddle is studying Chemical Engineering.

Michigan State College: Cadet Richard Dunning Redfern, of Saginaw, Michigan. Cadet Redfern was rated number one man among Michigan State College cadets at the recent ROTC camp at Fort Sheridan, and was awarded a gold medal by the American Legion Auxiliary, Department of Illinois, as the outstanding cadet from Michigan State College at the Fort Sheridan ROTC camp.

University of Minnesota: Cadet First Sergeant Robert H. Eustis, of Minneapolis. Studying Mechanical Engineering, Cadet Eustis has an average about midway between "A" and "B" for all his university work to date.

Mississippi State College: Cadet Sergeant Charles Robert Smith, of Greenwood, Mississippi. Now a Cadet Lieutenant Colonel, commanding the artillery battalion, Cadet Smith is an "A" student in Aeronautical Engineering, and has a private pilot's license. He is active in campus organizations, including Scabbard and Blade.

University of New Hampshire: Cadet Robert Doran Sanborn, of Chichester, New Hampshire. Cadet Sanborn is studying Electrical Engineering, has been on the university honor roll each year, and received a rating of excellent at the 1941 ROTC camp.

University of Pittsburgh: Cadet James Joseph Dimel.

University of San Francisco: Cadet Lieutenant Eugene Francis O'Meara, of San Francisco. Cadet O'Meara is a member of the university rifle team, and has won numerous awards for oratory and debating.

Agricultural and Mechanical College of Texas: Cadet Master Sergeant Thomas S. Gillis.

Utah State Agricultural College: Cadet Battalion Sergeant Major David Hulme. Majoring in Commerce Accounting, Cadet Hulme has a point average of 2.73

out of 3. Among other campus honors, he is Secretary to the Dean of Men.

Virginia Polytechnic Institute: Cadet James Gordon Shankel, of Bristol, Virginia. Cadet Shankel has demonstrated outstanding personal qualifications of military value. He is captain of the swimming team, holds office in several campus honorary organizations, and is a member of Scabbard and Blade.

Washington University: Cadet Henry Matthew Reitz, of St. Louis. Cadet Reitz was appointed Cadet Major, October 1. He is studying Civil Engineering, and is captain of the Scabbard and Blade company.

University of Washington: Cadet First Lieutenant Albert L. Mondt, of Seattle. Cadet Mondt is majoring in Civil Engineering.



America looks forward to 1942 with highest confidence in our land, sea, and air forces, but with the grim knowledge that the horizon of victory may still be far distant. Realistically, we know that it will be a year of sacrifice, of hardship, of bitter effort. It will be a tough year. But we are a tough people. The big error which the totalitarian powers made at the outset—and it will cost them this war—was their assumption that we Americans could not be jolted out of our complacency until it was too late. We are jolted out of it already. Pearl Harbor did that.—HON. ROBERT P. PATTERSON.

Organization of An AA Firing Point

By Captain Wofford T. Caldwell, Coast Artillery Corps

Because we are at war is no reason to presume that there will be less emphasis placed on target practices. To the contrary, it is apparent that even more careful study should be given to this preparatory work. Proper utilization of ammunition and training time must be made.

With this in mind, a few pointers on the organization of firing points seem applicable at this time. Then, since there is a maze of detail work necessary before and during target practice, a check list of these duties is suggested. Each commander will encounter different problems and will add to or subtract from such a check list to suit his own situation.

An ideal firing point is one where an all-round field of fire is possible for antiaircraft. Very seldom is this condition present, however, and most firing points are located along water ways where there is constant passage of shipping and fishing vessels. There are a number of things which can be done at almost any firing point, though, to make its operation more efficient.

Whenever possible, the area for emplacing guns should be divided so that several units can fire at the same time. This is important. Air missions are becoming even harder to get in many locations, and the missions that are available must be utilized to their fullest extent.

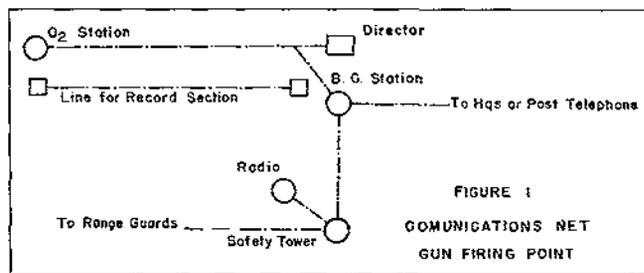
The positions selected for emplacing antiaircraft guns when firing target practices should be improved so that the guns can be emplaced properly with the minimum of time and effort. In target practice an attempt is being made not to simulate field conditions, but to get in as much effective fire as possible. Prepared positions for the guns themselves and certain permanent installations will aid.

Observation towers high enough to allow vision to the maximum range required should be constructed at each unit firing position. These towers can be further utilized if they are built with a storeroom underneath for ammunition or matériel. Another valuable building at each position would be a shed of temporary type construction to store matériel or for use as a work shop.

If the firing point is to be of fairly permanent construction, certain fixtures should be emplaced. For instance, the wire net for communication can be emplaced in cables in the ground. This serves two purposes. In the first place it does away with the time required for each unit arriving at the point to string its own wire. In the second place, cables permanently in-

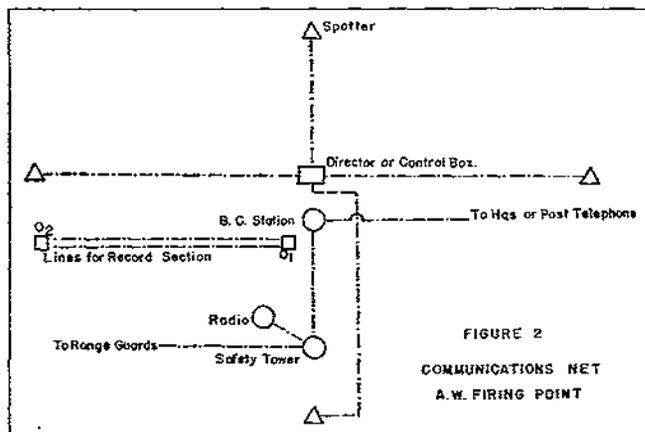
stalled in the ground will be less subject to damage by accident or pilferage.

Figure 1 shows a suggested wire net for use of 3-inch or 90-mm. gun batteries. Figure 2 shows a suggested wire net for automatic weapons platoons. If a position is to be used by both of these units, the few lines in Figure



2 that are different from those of Figure 1 can be added, and the point will be ready for both.

It will be noticed that in both cases there will be a communication line from the Safety Officer's tower to the radio, to the B.C. post, and to the range guard's position where such are used. The battery or platoon commander will want lines to the radio, to the safety tower, to the "net" station (unless it is right on the spot) and to headquarters. A line will be run from the B.C. station to the O₂ station for spotting, and other lines from the B.C. station to the O₂ station for use of the records section. For use with automatic weapons platoons, the only other lines that may be needed are telephone lines to the flank spotters. This communications hookup should be made so that either adjuster (for use of the



control box) can select any one of the four flank spotters.

Most firing points now are putting in certain other semi-permanent installations for use of the platoon or battery commanders and for setting up the recording and observing instruments. Six by six posts are emplaced in the ground to hold the records cameras. Other such posts, with a screw head on top to receive the spotting and observing instruments, are set in the ground at both the B.C. and the O₂ stations.

Another small tower or platform about ten or twelve feet high has been found valuable for the platoon or battery commander to use in directing the fire of the unit. This platform should be portable so it can be moved to the place most convenient to the control of the type of unit firing.

An installation that has been found valuable at various firing points is a loud speaking system. A microphone at the B.C. platform and loudspeakers placed along the firing line greatly facilitate transmission of

orders and directions. Some commanders feel that an officer commanding a firing unit should get used to giving such orders orally, and loud enough so he will be able to do this in actual combat. This is true, except that on a target practice point there are many instructions that would not have to be given in a combat situation. Loud speaking systems are not items of issue, but must be improvised locally.

Dust is quite a problem at many firing points. So is the hazard of grass or brush fires. Where possible, water should be piped to the firing positions. It is always a good idea, where there is dusty ground, to sprinkle the ground before firing even machine guns. To reduce the hazard from fire, the dry grass and brush should be cleared off around the gun positions and the place for stacking ammunition. Fire fighting apparatus may be needed in addition to these other precautions.

Much firing time is lost in cooling the caliber .30 machine guns; especially when firing quite steadily. An experiment is being made to hook up the local water



The safety officer is present.

line to each of these guns. If this can be done, it will prove a valuable time saver.

The main thing about the organization of any firing point is to provide those things that will facilitate getting in the maximum amount of firing in the time allotted. Any unit commander who has such a point organized is almost certain to see its results in a better score.

The following are check lists suggested to help a commander remember to take care of the many details before and during target practice:

BEFORE GOING TO THE FIRING LINE

MATÉRIEL

1. Guns.

a. Are all guns that are to be fired properly serviced and adjusted?

b. Are there any worn or defective parts which can be replaced?

c. Do you know of any corrections that should be put on the guns before starting to fire? Has this been done?

d. Are the necessary tools for emplacing, bore-sighting and synchronizing available and on hand?

2. Automatic weapons.

a. Are all guns and mounts to be used in firing properly serviced and adjusted?

b. Do you have new barrels in the machine guns? If not, are the ones you have properly matched by breech bore-gauging?

c. Have worn or defective parts been replaced where possible?

d. Do you have available extra firing pins and other parts which may break during firing?

3. Control Equipment.

a. Have you worked check problems ahead of time on your director?

b. Do you have the proper *cams* in the director for the ammunition to be used?

c. Is the director *working*?

d. Is the control box (for automatic weapons) in working order? Are there any broken cables?

e. Are all electrical cables in serviceable condition? Do you have any extra ones?

4. Signal Equipment.

a. Do you have on hand all telephones, communication wire, and radio that will be needed?

b. Are any communications wires defective?

c. Batteries good in telephones?

d. Tubes and batteries good in the radio?

e. Do you have signal panels available for use if the radio communication fails?

f. Is communication provided for between every point that may be necessary while firing?

5. Records Equipment and Printed Forms.

a. Do you have your spotting instruments available and ready for use?

b. If you are using camera records, are the cameras available and ready to go? (This is for the officer in charge of the records section.)

c. Are timing instruments ready? Watches, time interval bell, etc.?

d. Are all forms for records on hand?

AMMUNITION

1. Do you have it *on hand*, or have you assured yourself that it will be on hand at the proper time?

2. In the case of machine guns, do you have a sufficient number of belts loaded so that no firing time will be lost?

3. Has proper provision been made for safeguarding and caring for ammunition on the firing point?

4. Has ammunition been cleaned ready for firing?

5. Have you checked lot numbers of ammunition to see if there will have to be any corrections made during firing?

6. For machine guns, have you checked ammunition lots to see that tracer and ball ammunition match? (Note that the new M2 ball and the old M1 ball have different ballistic characteristics and will not follow the path of the tracers quite the same.)

7. Are you going to fire practice or high explosive 37-mm. ammunition? (Note that the muzzle velocity of these two rounds is different, and that this will affect the value of the leads put on the guns.)

PERSONNEL

1. Does every man who is to function during firing have his job? Has there been a man *assigned* to every needed job?

2. Are you going to have the specialists available to keep the matériel functioning? To make any necessary repairs?

3. Have you other men trained for the important posts in case some are declared "casualties"? Gunners? Operators on the director, control box, or height finder?

SAFETY

1. Has provision been made for the presence of a safety officer and his assistants? Line of metal men? Range guards, where necessary?

2. Are danger flags and/or lights provided? Signal bell and/or horn?

3. Have you requested an ambulance?

4. Have all safety regulations in connection with fire been looked into? Do you know under what conditions you may or may not fire your own particular weapons?

TOWING MISSION

1. Has the towing plane or boat been requisitioned far enough in advance?

2. Has the course to be flown, the altitude, the range from the firing point, the type of target, etc. been clearly indicated to the pilot of the plane?

3. Does the pilot of the towing boat understand the course that he is to tow?



4. Is the exact time for taking course known to the pilot? Or is he to stand by until he gets word from you? In this latter case, are you going to have communications with him?

5. Do you know how long the towing mission will be available to you, and does the pilot know how long you want him?

6. Has signal communication been provided for from ground to plane?

ON THE DAY OF FIRING

MATÉRIEL

1. Are the guns properly emplaced? The height finder? The director? Then spotting and observing instruments?

2. Are the guns properly boresighted and synchronized with the director?

3. All mechanisms working?

4. Have you test fired automatic weapons?

5. Are you going to fire calibration or trial fire? If so, are all observing and recording instruments ready?

6. As a result of trial fire or calibration, have proper corrections been applied to the guns or director?

7. Radio working? Communications hookup working?

AMMUNITION

1. Is ammunition properly placed and protected at the firing point?

2. With 3-inch or 90-mm. ammunition, are the projectiles properly cleaned and ready for firing?

3. With automatic weapons ammunition, are belts and clips properly loaded? Have the belts been checked for short rounds?

4. If more than one automatic weapons platoon is going to fire on the same target, has provision been made to distinguish which platoon gets hits on the sleeve?

RECORDS

1. Is the records section (if to be used) in place, with instruments and printed forms, ready to go?

SAFETY

1. Is the firing point in communication with the safety officer?

2. Are assistant safety officers, line of metal men and range guards at their proper places?

3. Is the red streamer at the safety tower? Red flags in the hands of the line of metal men and the range guards?

4. Safety horn and/or bell working?

5. Ambulance on hand?

6. Is there *anything* about the firing point that seems unsafe?

IS YOUR UNIT READY TO COMMENCE FIRING THE INSTANT THE SAFETY OFFICER DECLARES THE FIELD OF FIRE SAFE???

A Solution for the AAAIS

By Lieutenant Colonel Horton L. Chandler, Coast Artillery Corps

When the 197th Coast Artillery (AA) was charged with the coordinated antiaircraft defense of the Lake Charles, Louisiana, area for the Second Army *versus* Third Army phases of the September, 1941 maneuvers it had two main problems. The first was the disposition of the fire units available so as to give all-around gun and automatic weapons defense to (1) a major air-drome, (2) the Headquarters of the Third Army, (3) the ammunition and supply establishments of the Army in the Lake Charles area, (4) three highway and three railroad bridges on the north and west of the city located on roads and rail lines of paramount importance to the Army. These establishments could be enclosed in an egg-shaped area somewhat over four miles in length and three miles wide. For this defense we had our regiment less one 37-mm. gun battery, and the 69th Coast Artillery (AA) less one 37-mm. gun battery, and Battery D, 63rd Coast Artillery (AA) attached.

The selected dispositions are shown on figures 1 and 2, which maps, incidentally, illustrate the normal situation wherein terrain features and other restrictions cause unequal spacing of fire units. We also had to allow for the probable (and actual) withdrawal of the battery from the 63rd Coast Artillery (AA) in the middle of the phase.

The second problem involved the establishment and maintenance of the Antiaircraft Artillery Intelligence Service, better known as the "triple AIS." We wanted adequate warning of all approaching planes to be given all installations, with a minimum of alarms for friendly planes and with a minimum of strain on the personnel operating the service and responding to its alarms. We based our plans on experience gained in two maneuvers in New York State and in a considerable number of field exercises in Texas and Louisiana, plus that of the 203rd and 69th regiments, which were in the area before us.

This was our first opportunity to shape an AAAIS for the defense of a large area defended by more than one regiment, and to have it well tested by repeated action both by day and night. We were convinced that we wanted as much warning as possible and so pushed the observation posts out farther than they had been before; to the limits set by the amount of field wire available and the requirement of good transmission of messages at all times. We anticipated, and experienced, extensive aerial activity, both hostile and friendly. We prescribed constant vigilance for every hour of the combat period. We are satisfied with the form, and feel that it is adaptable to almost any situation if sufficient wire and phones are available.

Only five searchlight platoons of four lights each were available for the area. Most of them were equipped

with sound locators. Eleven observation posts, manned by two men each, were set up five to seven miles outside the outer ring of searchlights and were on the alert twenty-four hours a day during the combat periods. Each post was connected directly by field telephone to the switchboard of the nearest searchlight platoon. The platoon switchboards were in turn connected directly to the AAAIS Center, which was a switchboard located near the center of the defended area and manned at all times by an officer and at least one enlisted man. These latter direct lines were tapped by direct lines to the nearest gun battery where they were attached to a separate telephone at the battery command post. It is considered of prime importance that this line should *not* go through the battery switchboard or have *any* other phones connected to it.

A field telephone line ran directly from AAAIS Center to the S-2 section of the 197th CA(AA) command post, and a combination field-commercial line was continually connected directly to the AAA Information Center on the roof of the Charleston Hotel in the center of the city. Our command post was in turn connected by direct field line to the Operations Office of the 27th Bombardment Group at the Lake Charles Airport and a liaison officer was on duty there during all operations hours of the Group. The usual lines connected our command post with the command posts of the gun and automatic weapons battalions of both regiments.

Operation of the AAAIS was straightforward due to the direct connections. As an example, outpost 5, on spotting an approaching plane or formation rang and gave his message to the operator at the searchlight platoon switchboard of the 1st Platoon, 69th CA(AA). Unless that operator was transacting other business at the moment the ring was superfluous as the observation post lines would be carried open to him—the ring called his attention if he was otherwise busy. He recorded the message, opened his line to the AAAIS Center and repeated it. The operators at Battery D, 63rd CA(AA) Battery B, 197th CA(AA), both alert at their phones, overheard the message and repeated it to their duty officers. The operator at the AAAIS Center cross-plugged the other four searchlight platoon lines and repeated the message to all four operators at the same time, and they in turn passed the warning out to the lights and observation posts connected to their boards. The other gun battery operators had, of course, intercepted the message as it came from the AAAIS Center. By that procedure, first the nearest searchlights and gun batteries are alerted, then in turn the rest of the gun batteries, the remaining searchlights, and all the other observation posts.

The AAAIS Center operator also repeated the warn-

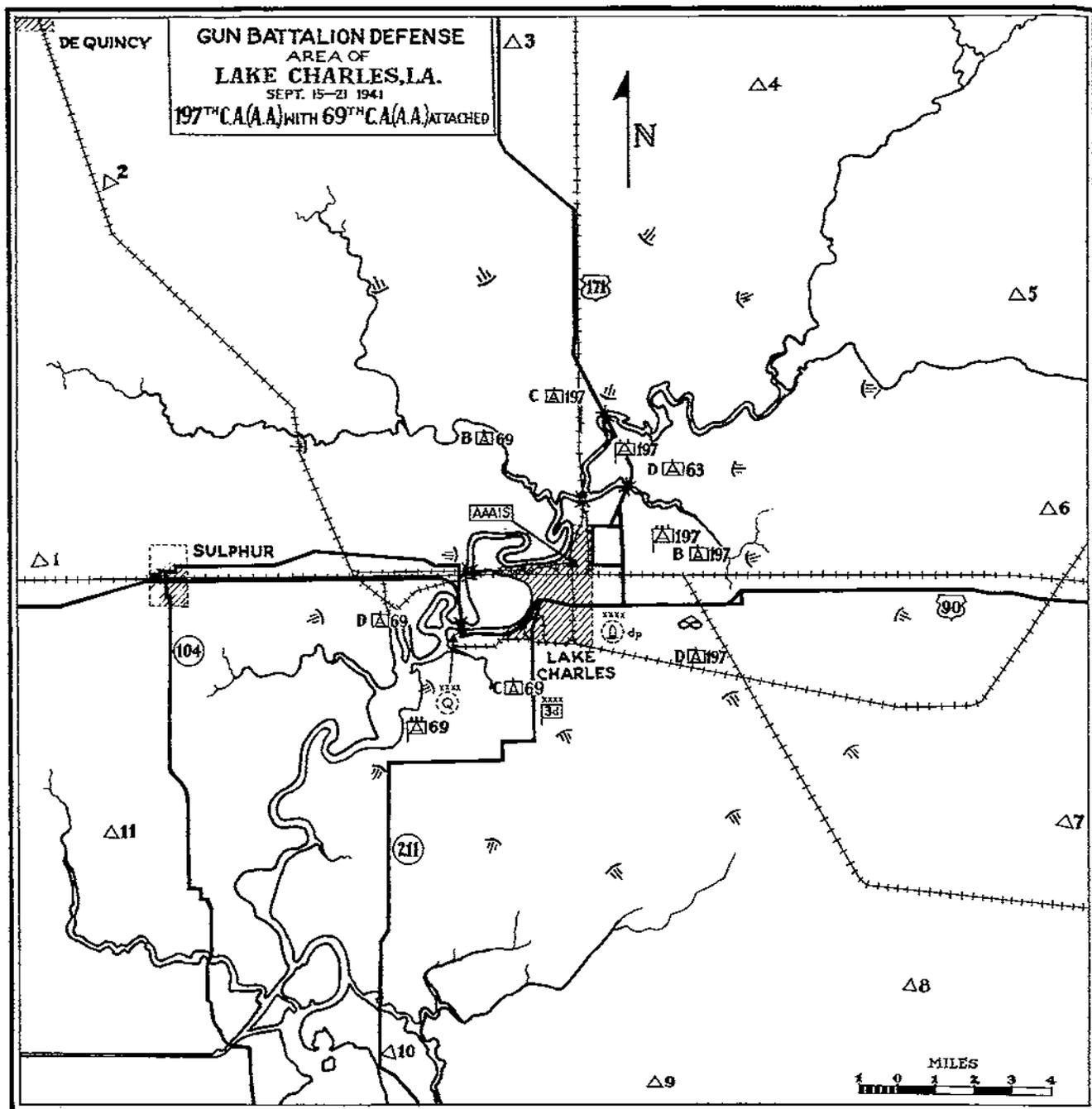


Figure 1

ing message to the CP 197th CA(AA) and to the AAAS Information Center. Our command post in turn relayed it to the automatic weapons battalions. Incidentally, we have been asked whether more could not, or should not, be done to expedite warnings to the automatic weapons units. Our experience is that the most effective warning to an automatic weapons unit comes from its own outposts. Their warning is definite as to the direction and height of actual approach to the fire unit, and usually they are able to identify the plane as friendly or hostile, thereby saving unnecessary alarms and displacement of camouflage. The usual AAAS warning comes from so far away that the plane may never approach within range of the automatic weapons,

or may have changed direction and altitude materially by the time of its arrival over the unit.

It is of course essential, in order to secure the maximum value from any warning service that both the communication and artillery personnel be constantly alert, at their phones or in the immediate vicinity of their matériel. There must be no unnecessary loss of time in transmission of messages or in taking necessary steps to open fire. The repetition of the warning message by the searchlight platoon switchboard operator might in some set-ups be eliminated, but where the outposts are way out or the lines have to travel an indirect path so that the lines are long, repetition may actually be a timesaver as it will insure the message being

heard and understood the first time spoken. We proved to our satisfaction that if the personnel is alert this system will give adequate warning so that every target coming within range can be taken under fire. At least one observation post reported every plane, enemy or friendly, which entered the defense area.

Mention has been made of the AAA Information Center. A station was maintained on top of the Charleston Hotel in the center of Lake Charles with a primary purpose of receiving warnings from the Army's Aircraft Warning Service and from antiaircraft units to east and west, and to evaluate and disseminate them. Incidentally the post served as an accessible place with fine all-around vision, where record could be made of hostile activities reaching into the defended area, and where the location and activity of the antiaircraft defense could be recorded and disseminated to all proper persons. The Army AWS reports were received in radio (code), confirmed by teletype relayed by telephone from Third Army Headquarters. Warnings were also received by telephone from the antiaircraft units at Beau-

mont and Port Arthur to the West, and at Mermentau and Lafayette to the East. In turn we sent them warnings of hostile flights going in their directions.

Our liaison officer in the Operations Office of the 27th Bombardment Group at the Lake Charles Airport gave us warning when formations of friendly planes were due to leave, which warning was repeated to the AAAIS Center and by it to the guns, searchlights and observation posts. When time permitted we repeated our AAAIS warnings to the Air Corps, but since they received the same AWS warnings by radio that we did we only relayed to them our reports from adjacent antiaircraft.

The difficulties of establishing and maintaining the telephone lines in an AAAIS system of this size are considerable. Over 300 miles of field wire were laid for it alone—the river net in the area complicated the problem considerably. Commercial lines were built into the system where possible. One line crossing the river below Lake Charles had to be sunk forty feet below the surface as the river was navigated by ocean-going steamers.

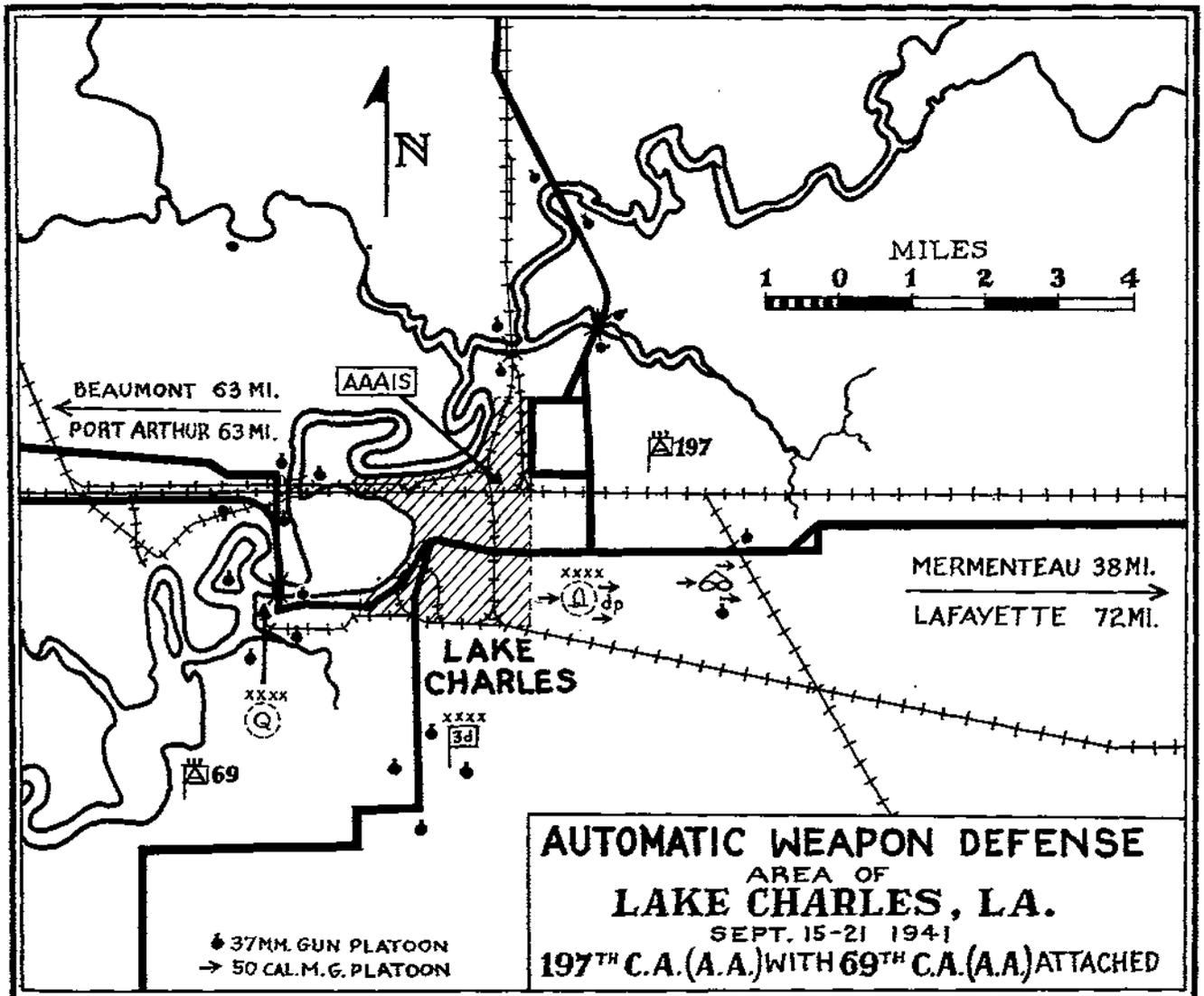


Figure 2

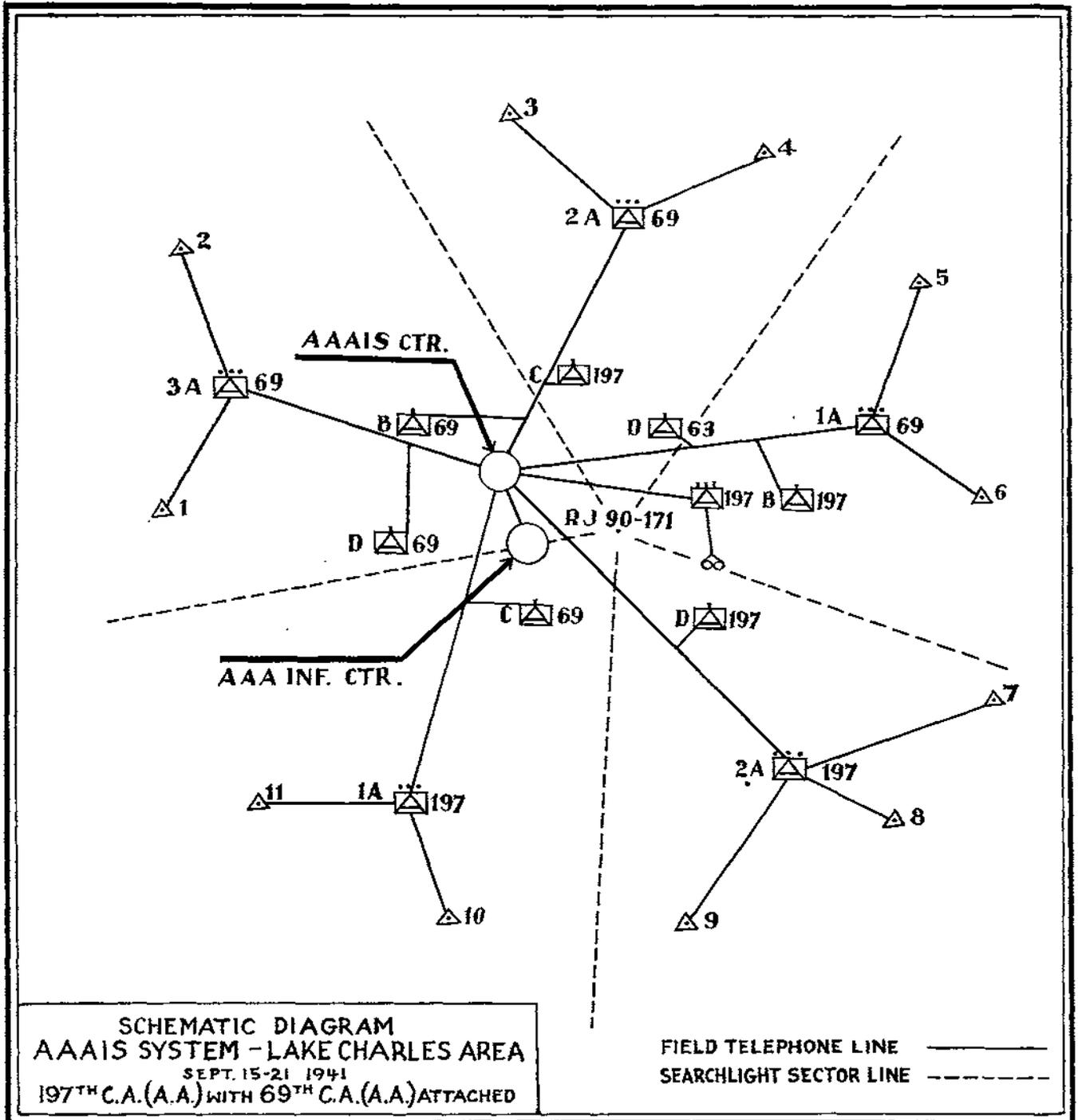


Figure 3

and then laid a mile and a quarter across marsh land waist-deep in water. The usual difficulties were experienced in destruction of lines.

The AAAIS Center made check calls every half hour to check the status of the lines, requiring both gun battery and searchlight platoon operators to reply. If either failed to reply, or if either failed to receive the periodic call at the proper time, line crews were started at once from all ends to locate and repair the fault. Similar checks were made to the observation posts. As a result communication was hardly interrupted before its restoration was started.

It is essential that the AAAIS line system should be used for no other purpose except in emergency—administrative and tactical matters should be handled over the normal net or by messenger. Alertness of all personnel must be stressed, to which end proper relief should be insured. Three men would be better than two at the observation posts, so one could sleep while two work. Under the present tables of organization we feel that the Searchlight Battery should operate the system, reinforced by personnel from the gun battalion and Headquarters Battery.

Harbor Defense Directing Point

By Colonel F. H. Holden, Coast Artillery Corps

"Time check: zero six one five, affirm."

"First contact: South channel, approximate range one eight thousand, Heavy Cruiser, moving North."

"Track."

"Chester, Target, South Channel, one eight thousand, Heavy Cruiser, moving North, report when on target."

And then the umpires at Groupment and at Chester did their duty: "Chester base-end stations are out."

"Auxiliary fire control system from Groupment to Chester; next bell time one."

On time five, datum was beginning to flow into Chester plotting room.

This was a test; but is there a battery commander, or any other officer in the tactical chain of command in any harbor defenses, who has not wondered if fire on fixed points in the channels, or case one firing, without data, would be effective?

In this test the problem was solved by use of a *Harbor Defense Directing Point* and two *auxiliary plotting boards*.

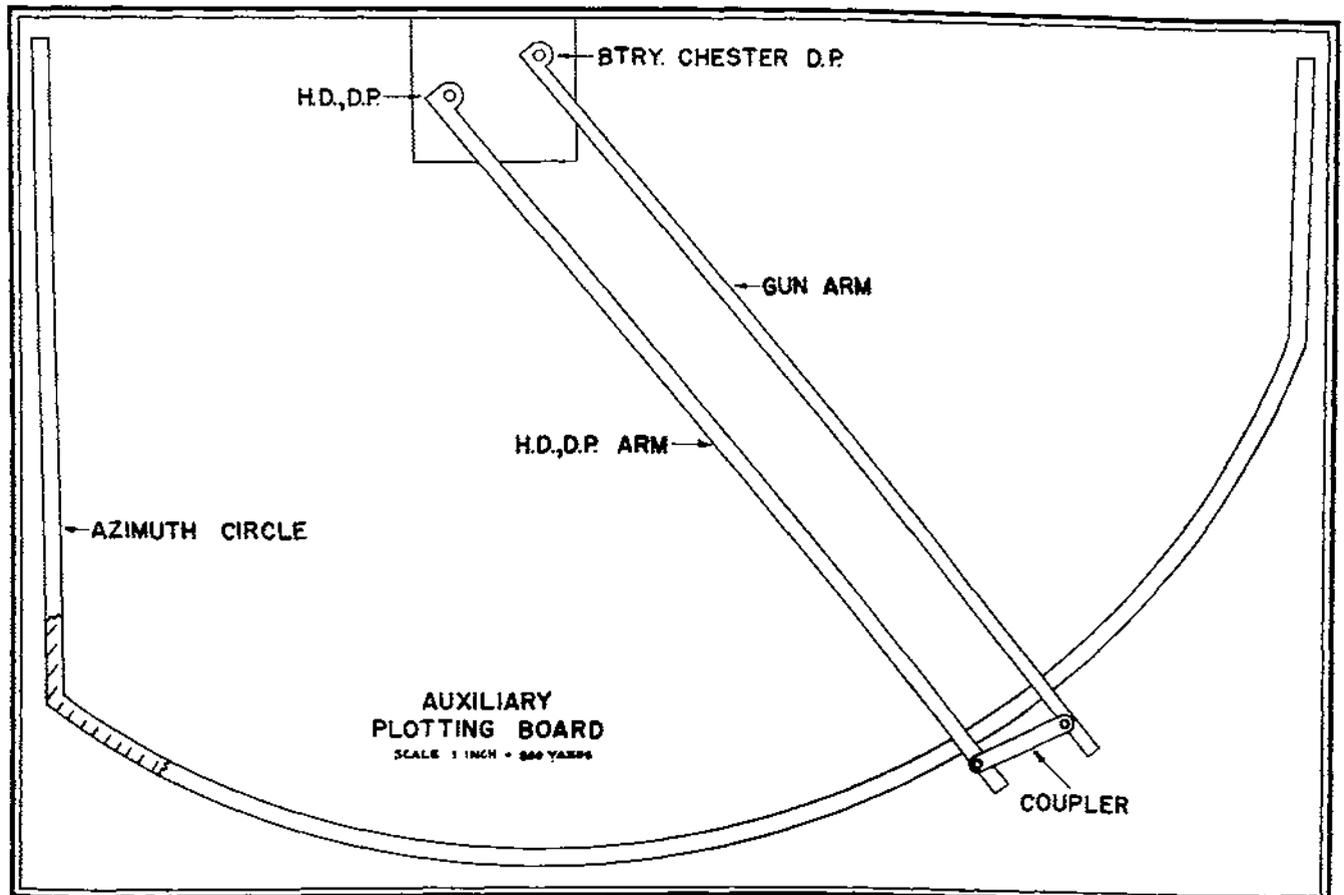
Just as each battery's DP is the point of origin of the polar coordinates used in locating targets for a battery and for laying the guns in azimuth and range, so the

HD-DP is the *common point of origin* of a polar coordinate system usable by all plotting rooms and OP's (whether base-end stations or CP's) in the harbor defenses.

In order to use this common point of origin, simple auxiliary plotting boards were constructed. Each consists of a board, a station (or gun) arm, an azimuth circle, an HD-DP arm, and a coupler connecting the two arms. By means of such a board, data from the OP are converted into range and azimuth from the HD-DP. or HD-DP data are converted into range and azimuth from the battery DP. In the plotting room the board is used for more than relocating, as it becomes an auxiliary plotting board for the use of the battery.

Two such auxiliary boards were constructed and used in the tactical inspection test in the Harbor Defenses of San Francisco. One was constructed for Funston Groupment CP, for use with the DPF installed there. The second was made for use in the plotting room of Battery Chester, twelve thousand yards to the North.

When the announcement was made that Chester's base-end stations were out, fire control switchboard was ordered to connect a 'phone in groupment to the B¹ arm setter's headset in Chester's plotting room. A relief



operator was assigned in groupment CP to read, and transmit to Chester, HD-DP azimuths and ranges, as the location of the target was plotted in a normal manner by the groupment plotter. In the plotting room of Chester these data were handled as though the DPF were located at HD-DP.

This method of locating targets for a battery must be considered as an auxiliary system for use when the battery's normal position finding systems fail. It is a method which enables any battery, or all batteries, in harbor defenses equipped with these boards, to use the azimuth and range of a target obtained by any OP or plotting room.

Basically the method should find other uses. As methods of location by sound or radio waves are developed and installed as harbor defense systems, this relocating method should enable any battery to be given the necessary data for firing.

This also opens up the possibility of *harbor defense* plotting rooms connected with OP's for the location of targets with a horizontal base, or for the use of HD-OP's equipped with self-contained instruments. Such plotting rooms or OP's could be assigned quickly and easily to the desired battery, and the necessary communications established by radio or telephone. Islands, or headlands on the flanks, not easily used for base-end stations with normal plotting boards, could be utilized advantageously as HD-OP's.

When the target may be between the OP and the HD-DP, or when the OP is so far on the flank of the HD-DP as to require much shifting of the arms in the process of relocating, independent arms, set to clear each other, each with an independent azimuth circle, should be used. (The Funston Groupment auxiliary board is an example. Targets will normally be in a sector which would require approximately a 90° shift of the arms in relocating azimuth and range from HD-DP. Operation in this CP will be simplified by making the arms independent and installing a second azimuth circle for the HD-DP arm.)

For intelligence reports this relocating system will prove as rapid as, and much more accurate than, the grid

square system now in use. While the increased accuracy may not be necessary to give the commanders in the tactical chain a picture of the situation, the relocation of targets by polar co-ordinates referred to a HD-DP will keep all the data used in the harbor defenses in a polar co-ordinate system, and this will make other uses available.

Three weeks is not a long period to test a new "gadget" for Coast Artillery, but in this case the underlying principle of a Harbor Defense Directing Point and of the means employed in relocation are such simple modifications of proved methods that its usefulness is axiomatic.

Although this system is new, some observations already have been made: One of the obvious additions to this auxiliary plotting board would be to have sockets for various batteries or OP's in addition to that for a HD-DP, and to have corresponding couplers available. It is believed that this, in most cases, would complicate the board unnecessarily, and not give corresponding benefits.

With Whistler-Hearn or 110° boards adjustment or modification to include HD-DP could be accomplished; but again, the auxiliary board should be so easily made and so quickly placed in service that it is believed that the adjustments or modification would not be worth while.

In the selection of a HD-DP care should be exercised. In harbor defenses where data are received from the Navy, they should be received in terms of range and bearings from the point selected as HD-DP. Thus, the Coast Artillery and Navy data are immediately interchangeable by adding or subtracting 180°.

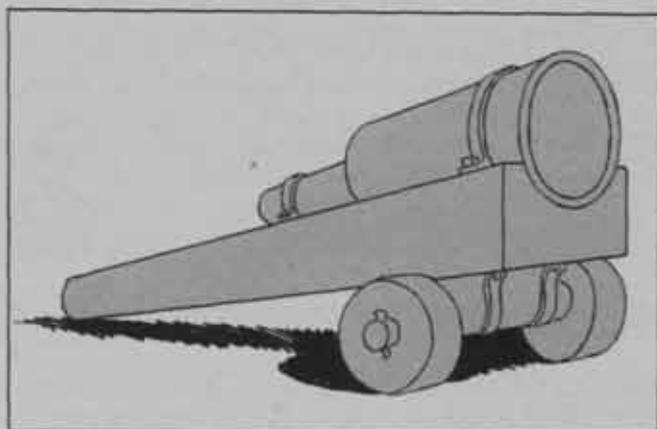
One of the advantages of reporting data from flank OP's is that, if the ranges are obtained from a DPF, the personnel errors which occur affect deflection rather than range in the firing. In most cases such lateral deviations will be corrected more easily by the battery than errors in range.

Use of a Harbor Defense Directing Point and this auxiliary board is one, possible, simple solution of a Coast Artillery problem which has needed attention.



The Story of Artillery Through the Ages

By W. A. WINDAS



Chapter 18: FIRST WHEELED GUNS



A 1941 mobile gun

The prime defect of all the early heavy guns lay in the fact that they had practically no mobility. This fault was especially noticed in the short-range weapons, which had to be mounted close to their targets. A determined sortie from the beleaguered castle almost inevitably meant the destruction of the gun.

The first attempt to correct this situation was to carry the gun in a wagon, and even to fire it from the vehicle, but only small guns could be so employed.

Shortly after, a wheeled carriage was designed, like the one shown in the upper illustration.

This carriage mounts a 14th century bombard, intended for short-range work against castles.

Limbers for guns had yet to be thought of, so the weapon although wheeled is in no sense a field gun.

The mount, though crude, was a vast improvement over the earlier practice of sinking the breech into the ground for firing. The gun could now be brought into position much faster, and engage new targets more readily.

This mortar has other interesting features. Prior to this, heavy guns had to be cast of brass or bronze. They were the best metal castings of the day, but expensive.

Here was the first attempt to economize, for the gun is made of wrought iron. It was built on a wholly erroneous principle, and must have been very dangerous to fire. It was built of iron bars, beaten and welded.

Shot of lead and of iron had been cast, but stone was still in general use, being much cheaper, and incidentally lighter.

COAST ARTILLERY



BOARD NOTES

Any individual, whether or not he is a member of the service, is invited to submit constructive suggestions relating to problems under study by the Coast Artillery Board, or to present any new problems that properly may be considered by the Board. Communications should be addressed to the President, Coast Artillery Board, Fort Monroe, Virginia.

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A high percentage of the correspondence and projects considered by the Board are classified and cannot, therefore, be released for publication. The following is a brief summary of unclassified items of interest to readers of *The Journal*:

Four-wheel steer ¼-ton trucks. During the month of December, three Ford and three Bantam 4-wheel steer ¼-ton trucks were received and tested.

In conventional 4-wheel steering when a change in direction of travel is made the rear wheels of a vehicle are caused to turn in the opposite direction, in respect to the axis of the vehicle, from that taken by the front wheels. This fact presents a disadvantage when the vehicle is parked close against a curb, building, ditch, or other obstacle, and it is desired to turn away from the obstacle. The rear of the vehicle is carried into the obstruction when the front wheels are steered away from it.

The Ford 4-wheel steer truck is provided with a rear wheel delay steering feature which eliminates the difficulty described above. The rear wheels are steered through a linkage which provides that the front wheels must be turned through an angle of at least 10.5 degrees from the center line before the rear wheels begin to steer. However, the turning ratio between the steering wheel and the rear wheels is such that as soon as the rear wheels start to steer they immediately take up a position to track the front wheels. The result of the delay steering feature is to permit the truck to be driven on a straight highway with the conventional front wheel steering and to permit turning away from a curb or obstacle without difficulty.

The Bantam 4-wheel steer vehicle is not equipped with the delay steering feature, and when operated on

a straight highway proved to be extremely sensitive to a slight turn of the steering wheel at high speeds; this characteristic is believed to be dangerous because, unless great care is used in steering around bumps or holes, or in an emergency traffic situation, it is quite conceivable that the extreme sensitivity of steering might cause the driver to lose control of his vehicle or might result in causing the vehicle to overturn. In addition to the danger present, it was found in the test that when driven at a speed of approximately thirty-five miles per hour it was difficult to keep the car from weaving.

In general, the facts determined in the test for each make of vehicle are as follows:

a. Stability on the highway. The stability of the Ford vehicle on a highway is excellent. The lack of a rear wheel delay steering feature on the Bantam truck makes it extremely dangerous to drive at a speed in excess of thirty-five miles per hour. While negotiating turns on a slippery roadway, both makes of 4-wheel steer trucks are superior to the 2-wheel type because the tendency for the rear wheels to skid is not present.

b. Turning radius. The 4-wheel steer vehicles can make a 180-degree turn in a space twenty-four feet wide, while the 2-wheel steer truck requires approximately thirty-seven feet of space.

c. Cross-country mobility. The cross-country mobility of these 4-wheel steer ¼-ton trucks is superior to that of any wheeled vehicle with which the Coast Artillery Board previously has had experience. Its short turning radius gives it the ability to travel through wooded areas or to maneuver between obstacles with greater facility than a motorcycle and

much faster than can a 2-wheel steer truck of the same type. In the matter of operation through mud and sand or in crossing ditches, no difference could be found in the cross-country ability of the 4-wheel steer and 2-wheel steer trucks.

d. *General performance.* The 4-wheel steer feature added to the standard type ¼-ton 4 x 4 truck has changed none of the performance characteristics of the vehicle except in steering or maneuvering the vehicle, and the addition of this feature calls for no change in basic design.

From the facts determined as a result of the limited test of these vehicles in beach sand, on paved highways, and cross-country, the Coast Artillery Board concluded that:

a. The 4-wheel steer feature as provided on the Bantam ¼-ton, 4 x 4 truck is unsatisfactory for Coast Artillery purposes because of the sensitivity of steering on the highway.

b. The 4-wheel steer feature as provided on the Ford ¼-ton, 4 x 4 truck gives the vehicle the following advantages over the 2-wheel steer vehicle of the same type:

(1) Turning radius of approximately two-thirds that of the 2-wheel steer type.

(2) Increased cross-country speed and mobility due to short turning radius.

(3) When used for convoy control, this vehicle is more convenient than the 2-wheel steer because of its ability to maneuver between closely spaced trucks and its ability to turn around in a 24-foot road space.

(4) When used on messenger duty, the 4-wheel steer vehicle is to some extent more efficient than the 2-wheel steer vehicle because of its added cross-country speed.

c. The Ford ¼-ton, 4 x 4, 4-wheel steer vehicle possesses the following disadvantages:

(1) It costs approximately \$155.00 more than the 2-wheel steer vehicle.

(2) Due to the additional mechanism, maintenance of this vehicle will to a considerable extent exceed that of the 2-wheel steer vehicle.

It is the opinion of the Coast Artillery Board that the disadvantages of the Ford ¼-ton, 4 x 4, 4-wheel steer truck slightly outweigh its advantages from the point of view of its use for Coast Artillery purposes. It is believed that the added maneuverability of the vehicle is useful only to a small extent, and that it is not worth the extra cost and the maintenance difficulties that such a vehicle brings with it.

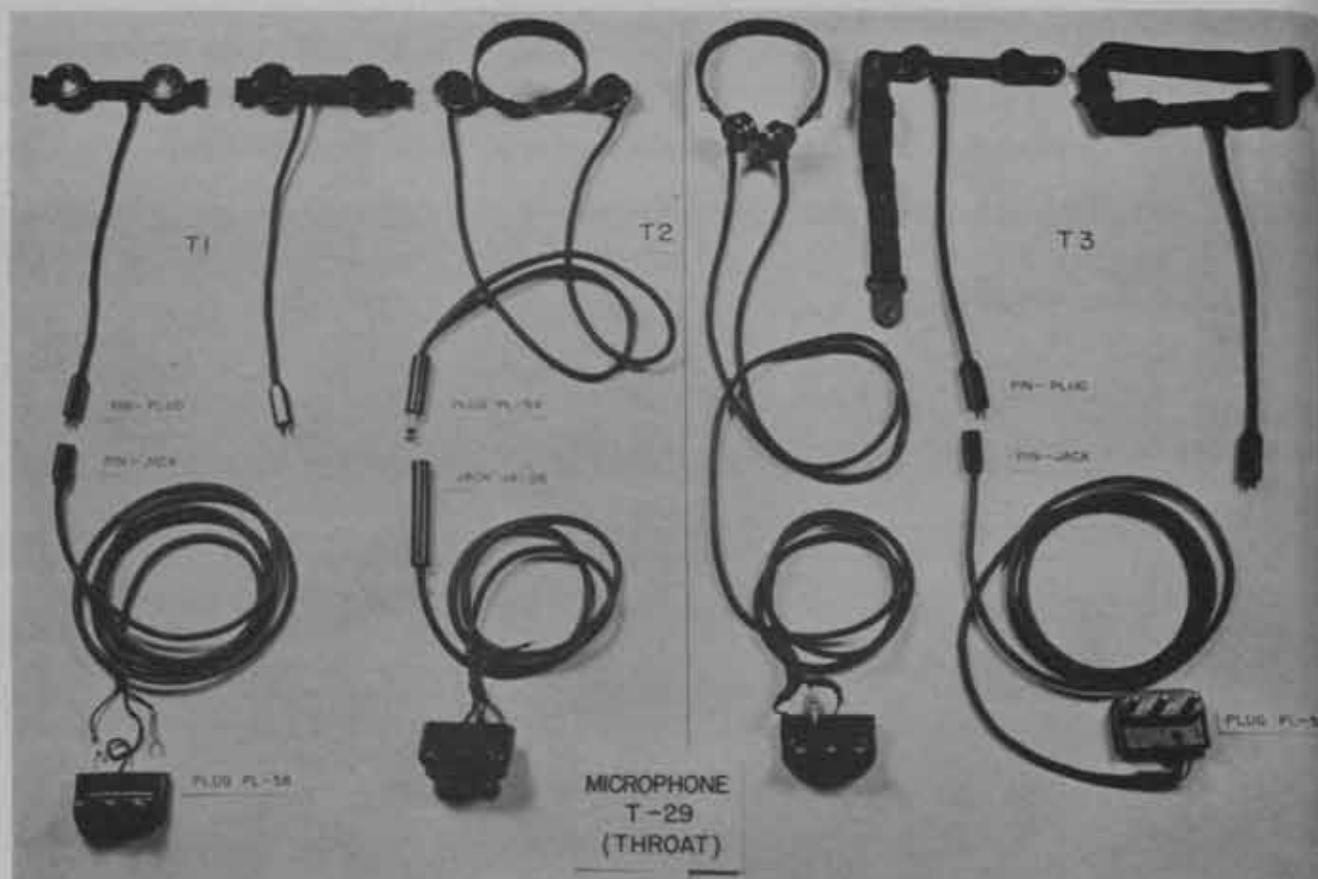
Truck mount for caliber .50 machine guns. The caliber .50 anti-aircraft machine gun equipped with the Anti-aircraft Machine Gun Tripod Mount M2 cannot be installed in and fired from the 1½-ton cargo truck

without modification to mount or truck. It is highly desirable from the standpoint of column protection that these guns be capable of being set up in and fired from the 1½-ton cargo truck.

Of the many improvised mounting schemes which have been suggested the one described below appears to be the simplest of those capable of being constructed readily by troops, using locally procurable materials. Since this scheme places the center of the mount on the lengthwise center line of the truck slightly forward of the rear wheels, it will be found that the back rest interferes with the truck sideboards and front boards at certain angles of elevation. It will permit firing through a wide arc forward and to a limited extent to the rear. For maximum possible field of fire, the truck sideboards and front boards must be removed. For safety to personnel while the truck is in motion, it is believed that the truck sides should be kept in place until the truck is at rest, and the limited field of fire be accepted while in motion.

The mount is placed forward of the rear wheels, between two transverse channels which support the truck floor. The tripod leg which would normally be placed transversely across the truck body is removed. A large timber (preferably hardwood) is used as the support for the side of the tripod base from which the leg was removed. This timber must be long enough to bridge the two transverse channels in order that the stresses may be carried by them and not by the sheet metal floor. A tie rod entering the tapped hole in the tripod base passes down through a hole drilled in the floor of the truck and draws up against a channel which spans the two transverse channels. This new channel requires stops at either end to prevent sliding lengthwise, and a hole with sufficient clearance to accommodate the tie rod. A large bolt or pieces of flat iron secured in place by small bolts will serve as a stop. The end of the tie rod terminates in a welded fork which allows a bar to be used to turn this rod and draw down or loosen the mount. A long bolt will serve as a tie rod if welding facilities are not available. In this case, it will be necessary to block out under the head of the bolt with washers or other metal in order to place the head in a convenient location for tightening with a wrench. It will be found when firing that the tripod base gradually crushes into the timber due to the impact stresses set up. It will be necessary to tighten the tie rod after every 100 rounds or so until no further crushing takes place. It is undesirable to place a flat bearing block of steel between the base of the mount and the timber because of possible damage to the base. However, if flat copper bar stock is locally available (electrical bus bar stock 3/16-inch by three inches or larger) a satisfactory block can be made which will distribute the pressure uniformly over a considerable area of the timber, avoiding crushing of the wood.

It should be borne in mind that this mounting is not the best which can be designed but is believed to be



the simplest yet suggested which satisfies the following requirements:

- Is completely stable under all conditions of terrain when the truck is in motion and stable under firing conditions when the truck is halted on irregular ground.
- Requires a minimum of modification to the truck.
- Distributes the stresses to the truck structure in such a way as to keep resulting damage to the truck to a minimum.
- Does not impair the usefulness of the truck as a cargo carrier when the gun is not in place.
- Permits ready removal of gun and mount if it is necessary to go into action on the ground or to transfer to another truck in the event of the disabling of a gun truck.
- Materials used are locally procurable.
- No special skill in fabrication is required.

Brake cable for three-inch antiaircraft mounts. Original equipment on mobile 3-inch antiaircraft gun mounts provided an electric brake jumper cable eight feet long, which is secured to the drawbar by three clamps. A change in the location of the cable receptacle on prime movers has resulted in a condition whereby the brake cable may be dangerously stretched under certain conditions.

The Ordnance Department is initiating action to remove the forward cable clamp from the drawbar on mounts considered above, leaving two clamps on the drawbar. After this is done, the free end of the cable

should be secured as indicated below, to prevent injury to the cable when the gun mount is not attached to a prime mover.

- Before uncoupling the gun mount from the prime mover, detach the brake cable from the cable socket on the prime mover.
- Pass the free end of the cable under the drawbar from left to right.
- Carry the free end of the cable over the drawbar and back inserting the plug in the dummy receptacle which is located on the left side of the drawbar.

Experimental machine gun target. The Board is experimenting with a machine gun target which consists of a large box kite and a target which ascends the kite string and descends on reaching a stop placed near the kite. Another type of target is under construction which releases on striking a stop and then falls free from the kite string. If warranted, full details will be published in the next issue of the JOURNAL.

Throat microphone. The Board recently tested the Microphones T-29-T1, -T2, and -T3. These are service test models of throat microphones developed for use with field telephones and field switchboards when the operators are wearing gas masks. Each of the three types is a product of a different manufacturer. The microphones are equipped with various arrangements for fastening to the throat of the user, and with cords containing various combinations of jacks and plugs for

connection to field telephones and switchboards. The microphones and component neckbands and cords are illustrated in the accompanying photograph.

The throat microphones were tested in both field telephone networks and harbor defense fire control telephone networks. The field networks contained as much as ten miles of Wire W-110 and as many as twelve telephones. The microphones were used as transmitters with Handsets TS-9-A and Head and Chest Sets HS-19, when these units were connected to Telephone EE-8A and EE-5, and Switchboards BD-71 and BD-72. The longest fire control network used in the tests consisted of about three miles of 19-gauge non-loaded submarine cable and fifteen miles of 16-gauge quadded submarine cable. In the tests over fire control cables, the microphones were used with Handsets TS-12-A and EE-69, Head and Chest Sets HS-17-A, and Head Sets EE-70, when the latter were connected to Telephone Boxes EE-91 and EE-73 and the older common battery artillery type telephone.

In general, the sound output from the throat microphones was slightly inferior to that from field and fire control handsets and head and chest sets, both in volume and quality, when the users were not wearing gas masks. When gas masks were worn, the output from the throat microphones was markedly superior. Further-

more, the throat microphones were very much more effective than other transmitters in the presence of loud extraneous noises such as gun fire, noise of motors, and shouting, either with or without gas masks. The only sounds picked up by the throat microphones are those which emanate from the throat of the user.

Among the various types of Microphone T-29, the T1 was slightly superior in volume and quality of sound output, while the neckband of the T2 was by far the most satisfactory. The Board recommended the standardization of a throat microphone which would be the equivalent of the T2 shown just to the left of center in the photograph, if the carbon button microphones shown were replaced with those of the T1. For use with fire control head and chest sets, the cord containing the Jack JK-26 and Plug PL-58 should be ten feet long. The use of throat microphones in the form illustrated requires the connection of two cords to the telephone, one for the handset or head and chest set, and one for the throat microphone. This inconvenience can be circumvented in the case of the Head and Chest Sets HS-17-A and HS-19 by mounting a Jack JK-26 on the Chest Unit T-26, which is a component of these sets and wiring it in parallel with the transmitter. The Board recommended that the head and chest sets be modified in this manner.



We have a job to do that dwarfs anything ever before undertaken by this country. In the last World War our armies were equipped and armed by our allies. This time it is the other way 'round. We must equip and arm our own Army, and we must help in equipping and arming the armies of our allies. That is the size of our task. One big job will be on the fighting front, where we will have American soldiers the equal of any fighting men in the world. Our other big job is on the home front, where we must produce the machines and guns which will enable our soldiers to gain victory in battle.—HON. ROBERT P. PATTERSON.

Coast Artillery Journal

Fiftieth Year of Publication

COLONEL W. S. PHILLIPS, Editor

CAPTAIN ARTHUR SYMONS, Associate Editor



The JOURNAL prints articles on subjects of professional and general interest to officers of all the components of the Coast Artillery Corps in order to stimulate thought and provoke discussion. However, opinions expressed and conclusions drawn in articles are in no sense official. They do not reflect the opinions or conclusions of the Chief of Coast Artillery or any other official or branch of the War Department.

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The purpose of the Association shall be to promote the efficiency of the Coast Artillery Corps by maintaining its standards and traditions, by disseminating professional knowledge, by inspiring greater effort towards the improvement of materiel and methods of training and by fostering mutual understanding, respect and cooperation among all arms, branches and components of the Regular Army, National Guard, Organized Reserves, and Reserve Officers' Training Corps.

News and Comment

Going Up!

The very unofficial Society of Journal Boosters has been keeping the center of burst very close to the target since the last issue. From Colonel Paul D. Bunker, in the Philippines, came a list of seven subscriptions; Lieutenant Colonel W. W. Scott, in Panama, sent nine; Lieutenant Colonel Wilmer F. Lucas, of the 369th, has forwarded eighteen names of new subscribers, bringing his unit into the elite circle of 100 percenters. Twenty-one subscriptions came from Lieutenant Colonel Percy Lowe of the 9th Coast Artillery; Lieutenant Colonel Arthur L. Warren, of the 34th, sent fourteen. Major G. W. Whybark sent in the names of twenty-four students at the University of Alabama who are starting their military careers with the right spirit. Nine subscriptions came in from Lieutenant Colonel Robert W. Mackin, of the 4th Training Battalion at Fort Eustis; the 10th Coast Artillery raised him ten with a list of nineteen subscriptions from Colonel M. J. O'Brien. Just in time to be included in this summary, Lieutenant Colonel C. R. Jones of the 96th Coast Artillery also sent in nineteen signatures.

Field Manuals Available

Field Manuals 30-38 and 30-58 have been removed from the "classified" category and are now available for sale. FM 30-58, *Identification of Japanese Naval Vessels*, is available through The JOURNAL for 15c; no price had been set on FM 30-38, *Identification of Japanese Aircraft*, at the time The JOURNAL went to press. It is believed that the restriction soon will be relieved on the German and Italian series.

Orders for these Field Manuals placed with The JOURNAL now will be shipped as soon as the publications are available.

Keep 'em Falling

By Clark Lee, Associated Press Staff Writer

With the (—) United States Coast Artillery on Batan Peninsula, Jan. 16 (Delayed).—The day starts early for the crack antiaircraft units of the United States' armed forces of the Far East.

The sun has been up less than forty minutes when the radiophone in the dugout beneath us crackles: "Flash, flash, six planes flying from the China Sea just above the lower layer of clouds."

Captain A. A. Abston, a tall, sandy-haired, red-mustached, battery commander, eases from his seat on the sandbags into action.

Sergeant Paul Verdi beats out the alarm signals which alert the battery. All around us men take their posts with disciplined speed.

Edward R. Wright, a raw-boned, taciturn, red-mustached private, glues his eyes to the range finder. Privates Ernest E. Wheeler and Louis Rio help him operate the big device.

"Flash, flash," sounds the radiophone again. "Those planes are enemy dive bombers, now flying 2,000 yards altitude."

The motors are now audible.

The second report had come from another of the outposts which ring vital American positions in this area and whose teamwork has made the Japanese pay a costly price for their raids.

Corporal Clarence Graham directs the operations of the range finder in a quiet voice.

"Elevate . . . depress a little . . . hold it . . . take reading."

This instrument, together with another which Lieutenant L. Peterie operates a few feet away, gives complete data to the gunners, making their work almost automatic.

The instruments do everything except tell whether the enemy pilot's name is Momotarosan or Habakkari.

Just as Corporal Graham calls out "on the target!" we see the planes.

They are flying single file and plunge through the bottom layer of clouds into the clear. They are out of range of our big guns.

Captain Abston takes over.

"Flash, flash, flash," he says, putting in an extra flash. "Six Japanese dive bombers flying certain direction at 1,850 yards altitude. Leading three diving. Two others flying straight ahead. One winging toward us."

He speaks rapidly in a tone of controlled excitement which pervades the entire battery.

This battery has set a world antiaircraft record for number of planes downed per number of rounds fired, the officers say.

It has shot down a total of twelve and is after its thirteenth.

In front of us three Japanese planes go into a shallow forty-five-degree dive, and we hear a series of heavy "whoomphs" as the bombs hit.

The sixth plane is diving straight for us now, too close for the big guns.

Captain Abston grabs the interbattery phone.

"Machine guns open fire," he orders.

The guns cut loose with a deadly, staccato chatter.

"Take cover," Captain Abston shouts to the remaining battery men.

But everybody is too interested to think of safety.

Golden tracer fire streaks past the Japanese pilot, and he quickly changes his mind, dumps his entire load of bombs at random and reaches for the safety of the clouds as the bullets tickle his tail.

The Japanese give us time for an uninterrupted breakfast, but immediately after they are back again.

A low-flying observation plane slips by and Captain Abston decides to "give him a few, just to keep our hands in."

At his order, "Open fire — (so many) rounds only," we crouch behind the sandbags watching the plane.

The big guns crack, and the shells scream skyward.

Some pray audibly, "Get him, knock him down!"

The first shell bursts within 50 yards of the plane, and the pilot does not tarry to do more observing. He has seen enough. He dives sharply and streaks for home.

Says I. McDaniels, Air Corps first lieutenant, attached to the battery as an observer: "He's sure as hell got some shrapnel to pick out of his tail."

This battery got one Japanese plane yesterday for sure, and probably another. The confirmed hit blew the plane into infinitesimal pieces.

These antiaircraftmen actually pray for enemy planes to come, partly because of the fun of shooting them down, mostly because every plane destroyed is one less to harass the USAFFE ground forces.

They realize that pending the arrival of American airplanes, antiaircraft is the USAFFE's sole means of defense against air attack.

All morning long we get alerts. Once it is a twin-engined, twin-tailed bomber on an observation mission. Usually the planes are single-motored, two-seated 97 dive bombers. One of the latter comes close enough for our battery to fire, but another battery opens simultaneously and the pilot dives out of range. So Captain Abston orders ours to cease fire.

Lieutenant J. D. Kwiatkowski reluctantly records the number of rounds fired and gives his mates a friendly bawling out.

"Quit wasting those shells. Think of our average. If you keep missing it will be back to the infantry for you."

All except the observers take shelter from the mid-morning sun in the dugout where we swap the names of our home towns.

Captain Abston explains that the remarkable score of antiaircraft is "ninety per cent information, ten per cent in using information."

"We are just part of a smooth-working antiaircraft defense organization which supplies us information. We happen to be in a good spot to get a crack at the Japanese."

As he talks he keeps looking at his watch and wondering where "Tojo's big ones" are.

Throughout the afternoon Japanese planes fly in the general vicinity, but the big bombers do not appear.

As I leave the post, the gunners extract a promise to revisit them "when something's really popping."

In farewell, they call out, "Keep 'em flying," and I reply with the antiaircraft gunner's slogan, "Keep 'em falling."

They grin. "We sure will."

KEPT THEIR PROMISE LATER

Postscript: With the USAFFE on Luzon Island, Jan. 17 (Delayed) (AP).—They kept their promise. The official report just received said a Japanese dive bomber plunged in flames a few minutes ago. Captain Abston's battery downed it with less than a score of shots.—*Associated Press.*

/ / /

AA Brings 'em Down

Six hundred enemy planes have now been destroyed by antiaircraft fire over Great Britain since the war began. Hundreds more have been damaged, many of which have probably crashed on the way home. Quite recently, when an enemy bomber was heading towards the River Humber, guns on three sites went into action and fired thirty-two rounds. They were then ordered to cease fire because no further trace of the plane could be found. Infantry manning beach defences reported seeing the plane diving towards the sea in flames at a height of 300 feet. But the gunners did not learn until later that they had been responsible for bringing the A.A. total to 600. The Infantry had picked up part of a tail-piece and a portion of the leading edge of a bomber wing. The destroyed bomber was believed to be a Junkers 88 and had been hit, while flying at 2,000 feet, just off the coast.

The Antiaircraft Command count as definitely destroyed only those aircraft whose fate is confirmed by the evidence of independent witnesses, which explains the delay before the 600th victim was claimed. The number of other enemy planes either hit or damaged by near misses, which have managed to just slip across the coastline to meet a watery end, are only quoted as "probables" and have found no place in the final score sheets.

Britain's A.A. guns at one time shot down more than fifty enemy aircraft in a week, and later reached seventy in seven days. In twenty-four hours they cleared the skies of twenty-three enemy machines, gun batteries in seven cities from Dundee to Dover taking part. Dover had eleven definite destructions, Tyneside and Teeside contributed seven between them, with Southampton, Harwich and Dundee making up the balance.

During the Battle of Britain, when batteries at Dover were constantly in action, firing between 250 and 300 rounds in an hour, enemy planes fell in flames on land, on the beaches and in the sea.

—*The Gunner*, London (November, 1941.)

/ / /

German AA Improves

LONDON.—The Germans appear to be scoring with what is reported to be much-improved antiaircraft defense.

Take the reports on two of the mass raids the British made in November, which cost them 56 bombers—37 on November 6 and 19 the night of November 30.

Although the British blamed "devilish weather" for half the losses earlier in the month, defenses got the rest, and were reported to have been responsible for the losses on November 30.

Recent heavy bomber losses are frankly attributed to the concentration and accuracy of the German ground defenses.

"Jerry is using searchlights by the hundreds," one British pilot said, "but the funny thing lately is that they all seem to switch on at once. We go in in darkness, no beams around, and level out at bombing height. Suddenly a great wall of light flashes up."

TERRIFIC GUN BARRAGES

Another said: "People in this country think they've got gun barrages, but none of them compares with the tremendous concentration of light and heavy guns the Germans use."

A third added that he believed the Germans use night fighters only "in the country," and let the ground defenses take care of attacks on big military, naval and industrial centers.

The opposing argument was that British losses were due to the fact that their bombers went "down and in" for their objectives, and didn't stay high and out of range like the Germans—a view which found plenty of support.

"If Jerry tried to attack British targets at the same height as we did those in Germany they'd have a different tale to tell," was a further comment. "It doesn't matter how high Jerry goes; he's still got our night fighters to dodge."

NO RECENT MASS RAIDS

Protagonists of the British method of antiaircraft defense seemed untroubled. They argued that, as a whole, "we get the better results," adding "anyway the Germans haven't tried a mass raid for a long time. When they do—well, I'd better not say any more."

One remarked that "the ratio of German losses compared to the number of planes sent over is much higher than ours, and I think it will remain so."

He added, "Our searchlights do their job all right, and Jerry knows it."

It was pointed out that British planes mostly relied on navigational methods for reaching their targets, but, said the same speaker, "I can't say the German beam system is quite as successful. They let go everything usually on a target of a square mile or so. Our point is much narrower."—*The Washington Star.*

/ / /

New Six-Inch Guns in Production

Powerful six-inch guns, whose crews will work within the safe shelter of newly-designed, streamlined armorplate "hoods," will augment fixed armaments on the United States' seacoast and island defense chain.

Production of barbette carriages for the guns and the

newly-conceived hoods has begun, according to Brigadier General G. M. Barnes, Chief of Ordnance Research-Engineering Division, who added that six-inch cannons sufficient to meet all initial requirements are already on hand.

Pilot model of the new mount, which has all-around traverse, has been tested at Aberdeen Proving Ground, Maryland. The gun is very accurate and its projectiles, weighing more than 100 pounds, can disable or sink at long range, light or medium class warships, General Barnes said.

The thick armorplate "hood" forms full protection for the gun crew against aircraft bombs or artillery shell. Its rounded and low silhouette would make it a difficult target to hit.

Cable Fenders for Aeroplanes

The fact that antiballoon barrage "fenders" are now being fitted to German bombers* and that our own bombers use a form of cable cutter has recently been made public. The use of the word "fender" for the German device and the statement that it weighs between 600 and 800 lb. suggests (although further details are not as yet available) that the German method of dealing with the menace of the balloon cable differs fundamentally from our own.

Whereas the British contrivance cuts the balloon cable, the Germans appear to have developed an anti-

dote on the lines of the experiments conducted in this country during the last war. In 1917 Captain Roderic M. Hill (now an Air Vice-Marshal) carried out experiments with a fender fitted to an F.E.2b. This consisted of a pylon fixed to the nose of the nacelle and projecting forward which held two wires stretching to the wing tips. Captain Hill carried out a test with this device by deliberately ramming a balloon cable. The fender served its purpose by deflecting the cable, but the impact threw the old F.E. into a spin. After extracting his machine from the spin Captain Hill landed safely, having performed what was undoubtedly an exceptionally courageous experiment.

That was the very beginning and by now, no doubt, the devices have improved as much as the aeroplanes. Nevertheless it would be foolish to assume that they have completely neutralised the balloon barrage. They have not. Not only does the weight of the device reduce the disposable load of the bomber but it may have an adverse effect on its performance. Thus the German device is said to reduce the maximum speed of their bombers by some 20 m.p.h. and, perhaps more awkward still, the single-motor performance of two-motor types is seriously affected. This naturally increases the losses of raiders which have one engine put out of action.

The possibilities of "lethalised" balloon cables must also be borne in mind. The balloon barrage, despite developments, is likely to remain (for some time at least) an important part of our air defences—*The Aeroplane*, London.

*See picture, page 23.



Proof firing the 40-mm. AA cannon

Photo: Army Ordnance



Coast Artillery Activities



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Fort Monroe

BRIGADIER GENERAL ROLLIN L. TILTON, *Commanding*

By Major Franklin W. Reese

December 30, 1941.

HEADQUARTERS
FORT MONROE, VIRGINIA

"On this, the Golden Anniversary of The COAST ARTILLERY JOURNAL, I wish to extend my sincere congratulations to the editor, staff, and The United States Coast Artillery Association, publishers, for the high standard of excellence maintained over 50 years of continued publication.

"The COAST ARTILLERY JOURNAL has adhered, in the highest manner, to the express purpose of the Association—namely, the promotion of efficiency of the Coast Artillery Corps by maintaining its standards and traditions, and by disseminating professional knowledge. This in turn inspires greater effort towards the improvement of matériel and methods of training as well as fostering increased esprit de corps

among all arms, branches, and components of the Army of the United States.

"As a Coast Artillery officer it gives me great pleasure to be able to praise the outstanding work of Major General J. A. Green, president of The Coast Artillery Association; Brigadier General William Ottmann, vice-president and Colonel W. S. Phillips, secretary-treasurer of the Association, and editor of The COAST ARTILLERY JOURNAL, and members of the executive council of the Association for exceptional capabilities displayed.

"Further, I should like to add my best wishes for successful continued publication of the JOURNAL not only for 1942 but for many years to come."

ROLLIN L. TILTON,
Brigadier General, U. S. A.,
Commanding.

Officers and men of the Harbor Defenses of Chesapeake Bay comprising Fort Monroe, Fort Story, Fort Wool, Fort Winslow, and Camp Pendleton were immediately ordered to a full wartime footing when news of the treacherous Japanese attack in the Pacific reached headquarters Sunday afternoon, December 7th.

Gun parks of 155-mm. and AA guns, peacetime battery areas, and barracks were emptied over night, and the guns were trundled into camouflaged battle positions covering vital naval and commercial installations. The personnel of firing batteries slept near their guns ready for instant action. Practice blackouts were carried out throughout the entire area both by the military and civilians with complete success.

Morale of all units of the command, whether they had just returned from extensive maneuvers or remained on garrison duty, bounced up to a new high with the declaration of war despite the cancellation of all (save emergency passes), discharges, furloughs, leaves and curtailment of Taps passes.

Since going on a wartime basis all troops have been busy digging in near their gun positions and fortifying themselves against the cold of the Virginia winter, and the possibility of any surprise attacks.

All of the AA (mobile units) and two of the semi-mobile 155-mm. regiments have completed an intensive period of training in the field. They all participated in local maneuvers and exercises and several units also participated in First Army maneuvers in the Carolina area.

The 71st Coast Artillery regiment travelled approximately 10,000 miles, participated in thirty-nine maneu-



vers and exercises, and spent 163 days in the field. Throughout the Army Maneuvers this unit operated as an antitank organization as well as antiaircraft. In one instance they were credited with knocking out eight enemy tanks during a single morning's action.

The 155-mm. units, the 57th Coast Artillery (tractor drawn) and the 244th Coast Artillery (Old Ninth of N. Y.), were trained and operated as part of the Blue provisional field artillery brigade in the recent First Army Maneuvers. Their lessons included: the use and methods of camouflage, rapid placing of guns in traveling and firing positions, blackout discipline and convoys, rapid packing and unpacking of equipment, supply problems in the field, and local protection with tank mines, machine guns, rifles, grenades, and 37-mm. guns.

On November 5th the 74th Coast Artillery, with 330 trucks and 1,400 men set out on a five-day convoy



Ready and waiting.

which took them down into North Carolina, up through western Virginia to Skyline Drive, and back toward Richmond to Virginia Beach. The purpose of the exercise was to train the men in transportation, convoy discipline, and the setting up and taking down of equipment in the field. Tactical problems were solved en route and demonstrations of simulated night firing with searchlights were put on for the citizens of Rocky Mount, North Carolina, and Lynchburg, Virginia. The most important single convoy test was the gruelling trip up Skyline Drive in western Virginia. Open convoy formation was maintained up the drive to a point 3,400 feet above sea level. An overnight encampment was set up at Big Meadow. The remainder of the route down

the mountain and back to camp was covered in close convoy formation, the latter part including an extensive night movement and blackout march.

Meantime, Battery G of the 74th, on detached service in the Carolina maneuvers, established a firing record of twenty-two planes credited as shot down in one day, for the highest total of direct hits among the First Army antiaircraft units. Commendation by high officials was given Battery G for its splendid record.

As a result of the closer confinement of the men to their posts every effort is being made by the athletic and recreation officer, the local Y.M.C.A.'s and the U.S.C. organizations to provide additional entertainment and recreation for the soldiers on or near their posts.




Camp Stewart

BRIGADIER GENERAL NATHANIEL H. EGGLESTON, *Commanding*

By Lieutenant Walter H. Dustmann, Jr.

The first antiaircraft machine gun firing at targets towed by airplanes began at this antiaircraft training center on December 15 and has resulted in thousands of rounds of ammunition being fired by Stewart units.

Further intensification of this firing is planned for the new year.

A special towing detachment from the Savannah Air Base at nearby Savannah, Georgia, was utilized by Post Headquarters for the antiaircraft firing; and a special AA machine gun range was constructed to enable workmen to continue uninterrupted on the north-south access road which is adjacent to the already-built antiaircraft Range C of the camp.

Post authorities reported the antiaircraft firing at the towed targets made a lasting impression on the antiaircraft units and gave them increased confidence in themselves, as hitherto all antiaircraft training had consisted of small-arms firing at miniature targets or balloon,

water target and burst problem firing at the island range area at Fernandina, Fla.

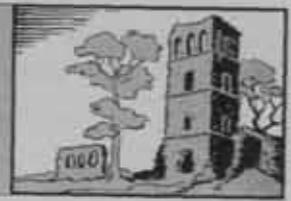
The firing procedure permits one unit to take over a machine gun for an entire morning or afternoon and run in its own gunners as it desires. The range officer of each unit supervises its firing.

The use of planes from the Savannah Air Base will continue until the construction of Camp Stewart's own airfield, projected for the near future. Plans are now shaping for the building of the field, to be adjacent to one of the large firing ranges on the 280,000 acre Stewart reservation.

The plans for the proposed Camp Stewart airfield call for a personnel of approximately 25 officers and 275 enlisted men, a 7,000 square foot field, with macadam runways, a suitable hangar, gas tanks, quarters for the fliers and ground crews and night landing facilities.



Panama Coast Artillery Command



MAJOR GENERAL WILLIAM E. SHEDD, *Commanding*
By Captain Franklin B. Reybold

All Coast Artillery training should have one principal objective: "the attainment and maintenance of a complete state of readiness for combat of both the individuals and the units" which comprise any one organization. Major General Wm. E. Shedd, Commanding General of the Panama Coast Artillery, has emphasized the importance of the above policy and consequently the training of all units within the Command has been aimed directly at such attainment and such maintenance.

Within the smaller units of the Command attention has been focused upon the individuals and the part which they play in the general makeup. The proper state of proficiency of the individual is attained only through proper preliminary schooling and consequently such schools have been set up for operation under competent instructors. These schools specializing in courses on such subjects as stereoscopic observation, sound locator operation, radio operation, gun director operation, and other important phases of the Coast Artillery have definitely proved their worth in the training of individuals for key positions within the battery. With the acquisition of additional new type armament and detection equipment many well trained enlisted men were required. Gas and camouflage schools have been conducted for both enlisted and commissioned personnel and the instruction received at these schools has been disseminated within the smaller units by the graduates

of such schools. Commissioned personnel have been trained in tactics, gunnery, fire control and position finding in order that each position regardless of armament or mission may be properly prepared for actual combat. These Officers Schools within the regiments have been successfully conducted, each student being required to talk on various subjects to the class and to devote intensive study to the improvement of local defense. Such schooling is of great potential value only if proper means are taken to test the knowledge gained by subjecting the student to actual combat conditions.

The actual combat conditions necessary to properly test the proficiency of the individuals were brought about by joint exercises with the Air Corps, by actual service target practices of all types of armament, and by joint maneuvers with the Panama Mobile Force or the Navy. Several such exercises have been completed and each in turn revealed that the participating units were thoroughly trained and prepared for any emergency. Planes were quickly detected, tracked, identified, or fired upon according to mission. Aerial photography and observation disclosed great improvement in the camouflaging of positions.

Service target practices were conducted by several organizations on both sides of the Isthmus, and each revealed certain points for improvement. The mine batteries received excellent classification with the Pacific Siders holding a slight edge over the group from the Atlantic.

The anti-aircraft searchlight practices and gun detection showed a high state of training within the Command. Several special test firings were held during the month of December from field positions in an effort to disclose certain features of barrage firing and also to prove the suitability of an Emergency Board designed by Lieutenant Frank F. Tenney for use in the event of director failures. Joint exercises held in conjunction with the Panama Mobile Force and the Navy proved to be extremely enlightening with regard to close-in defense of local positions and sea observance.

The present emergency has reduced very greatly the old pass privileges and necessitates additional recreational facilities at each outlying jungle position. The cooperation received from the Panama Canal Department Motion Picture Service has made it possible for each gun battery to have one movie per week shown at the position. These shows are of the very latest productions and consequently are received with a great deal of enthusiasm by the enlisted personnel.



Ventilated classroom.

PUERTO RICO



C. A. COMMAND

COLONEL C. THOMAS STAHL, *Commanding*

By Lieutenant W. C. Devereaux

Although the present war has not struck this island as yet, it is interesting to glance back through the pages of history and see what a prize it has been considered in wars of the past and to study the methods of fortification and defense used by the countries formerly in control here. Probably the most formidable of all the ancient defenses is El Morro, located to control the harbor entrance to the Port of San Juan. The first sight that greets the visitor to Puerto Rico, while the boat is still far out at sea, is the high wall of the Castle that rises from the sea to a height of about 150 feet.

Castillo De San Felipe Del Morro, the real name of El Morro or Morro Castle, was first started in 1539, a year before the completion of the first fort, La Fortaleza (now the Governor's Home) which had already proven worthless as a defense, and the lower battery and tower, now known as Carmen Fortification was completed by 1554 from plans of Juan De Heli, a Spanish military engineer who designed the Morro Castle in Havana, Cuba.

It is evident from all descriptions of the building of El Morro, that the Spanish in days gone by had the same difficulty building up their military defenses as the United States has in modern times. Work on the fortification only progressed when invasion was threatening or after an invasion. Therefore, threats or actual invasion by the English, French and Dutch over a period of two hundred years caused the final completion of El Morro in 1776 and the complete fortification of San Juan. The labor for the construction was mostly slave labor and it was stated that negro slaves brought to Puerto Rico to work on the fortification died of old age before the work was complete. A great deal of the financing was from the gold and silver mines in the new world.

To describe all the wars and battles that El Morro has withstood would necessitate the writing of volumes of books and today it probably stands as having been one of the most contested fortifications in the new world. Besides the many European powers that attacked Puerto Rico, the island was in the center of the area of operations of most of the pirates that roamed the Caribbean during the 16th and 17th centuries in quest of gold laden ships sailing from the New World. The first major attempt by a European power to overthrow the Spanish control of Puerto Rico occurred in 1595 when Sir Francis Drake, who was raiding Spanish

shipping from the New World, arrived off San Juan on the morning of November 22nd, seeking a Spanish fleet laden with gold that had sought refuge in San Juan Harbor. The guns of El Morro fired on the English fleet and kept it from entering the harbor. During the battle that day one of the shots from El Morro made a direct hit on the cabin of Drake's flagship while he was at dinner with his staff and although Drake himself was not hurt, Sir John Hawkins, a famous English mariner, was mortally wounded. Angered by the death of his fellow seaman, Drake made a daring attack by night on the four Spanish ships in the harbor in an endeavor to destroy them by fire. But the light from one ship fired by Drake's men made the English ideal targets for the guns at El Morro and the sailors were driven off after losing many men. This loss caused Drake to give up his attack; El Morro had proved its usefulness.

Again in 1598 the English under the Earl of Cumberland attempted to take Puerto Rico from the Spanish. El Morro was not so successful this time in holding off the enemy. The English did not attempt to gain control of the harbor, but landed their troops east of San Juan and approached El Morro by land. Retreating from the City of San Juan the Spaniards took up position in El Morro but they were unable to stop the English from opening breeches in the walls and the fortress had to surrender. Fortunately for the Spanish a severe epidemic broke out among the invaders and after occupying Puerto Rico for a month they were forced to give up the island and again it came under the control of the Spanish.

The next country that tried to challenge the defenses of El Morro was the Dutch in 1625. The invaders followed the course of the English and first occupied the City of San Juan, which had been abandoned by the population, and besieged El Morro, where the Spanish forces had concentrated their defenses. This time the fortress withstood the assault and after a thirty-eight day siege the Dutch gave up and left the island, first burning and plundering the city.

For almost two centuries peace reigned and El Morro was not bothered with invading forces. Then, in 1797 the British again attacked San Juan. At the time El Morro was well fortified and after a series of attempts to land in the city the British gave up and sailed away.

A century of peace followed to be broken on the

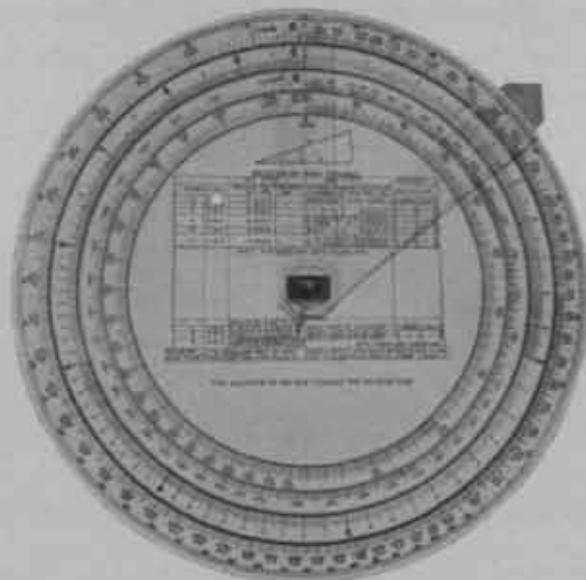


1—El Morro Castle in the distance. 2—A sentinel on the outer walls of the castle. 3—The castle walls.

early morning of May 12, 1898, when, during the Spanish-American War, the United States fleet, under command of Admiral W. T. Sampson bombarded the city, directing most of the fire over it and into the harbor where Admiral Cervera's fleet was thought to be anchored. During the three hour's bombardment several shots hit El Morro with the effects still to be noticed on the walls of the Fort that face toward the sea.

Although during the World War I there was no action in Puerto Rico, the people of San Juan always claim that the first United States shot fired in this war was from El Morro. Before the United States entered the war a German ship named the *Odenwald* was in-

terned in San Juan harbor and during the judicial struggle to get the ship's clearance papers, the crew decided to sneak the ship out of the harbor. Captain Marxuach, an officer of the Puerto Rican Regiment of Infantry, as officer of the day, ordered a shot fired at the *Odenwald* as she attempted to steam past El Morro fortress. The shell crossed the ship's bow but the gun, being of another era and long unfired, kicked back off its mounting and was disabled for further use. The Germans thinking that they had been fired on by a disappearing gun turned back to anchorage. So again El Morro served its purpose although in a rather unusual manner.



The Coast Artillery School

BRIGADIER GENERAL FRANK S. CLARK, *Commandant*

Since our last news letter, the "emergency" has been transformed into war. The conversion was soon manifested in calls for many of the student officers to return at once to their units. These calls will affect in varying degrees the number of graduates in Groups XXXI through XXXVIII. Their effect on the first three of these groups is seen already, Group XXXI graduating only thirty-two; Group XXXII, forty; and Group XXXIII, fifty-four. Normally each group would have graduated about one hundred officers.

In all three cases, the dates of graduation were advanced a few days, the date for Group XXXI to December 19th, that for Group XXXII to December 24th, and that for Group XXXIII to December 31st.

In the period covered by this letter, there have been 522 graduates of the Refresher Course, all but ninety-six being in Antiaircraft Artillery.

In this period also, six new groups have entered, one of these, Group XXXV, being in Seacoast Artillery and the remainder in Antiaircraft Artillery.

Also in the Officers' Division two groups entered the Stereoscopic Height Finder Course and two graduated, a total of eleven officers completing the instruction.

In the Submarine Mine Course one group of eighteen graduated, and in the Army Mine Planter Course, one group of ten completed the work. Neither course has a new group under instruction at the moment.

On December 13th the first of the Field Officers' Courses drew to a close, twenty-three students completing the antiaircraft instruction. A second course will begin on January 5th, this one being in seacoast artillery. Twenty-five students are expected to attend.

In the Enlisted Division, 239 have been graduated. Of this number 110 were from the Regular Army, 123 from the National Guard and six from the Marine Corps.

Major General Sanderford Jarman and Brigadier General Claude M. Thiele were recent visitors at the Coast Artillery School. General Thiele commands the 34th Coast Artillery Brigade; General Jarman is in charge of the Antiaircraft Defense Command of the First Army.

Brigadier General Frank S. Clark and Lieutenant Colonels Leon C. Dennis and Norman E. Hartmann were in conference recently with the Chief of Coast Artillery on personnel matters concerning the School. Questions were discussed which will result in a greatly increased output of graduates from the Officer Candidate Course, in the detail of personnel, at least temporarily, of "school troops," and in fixing the future source of students for the various courses in the Department of Enlisted Specialists.

A number of new buildings in the area allotted to the Officer Candidates have been completed. The increase in facilities will permit the output of officers to be quadrupled. The increased rate of enrollment begins with the course that starts in January and ends in April. By that time a staggered system of instruction will permit of an output of 800 second lieutenants each three months.

Brigadier General and Mrs. Frank S. Clark entertained Friday noon, November 14th, at a luncheon in their quarters. Guests were Admiral French and Commander A. M. Hutchinson of the British Navy; Lieutenant Colonel J. H. Jenkins of the Canadian Army; Dr. P. C. Frye, and Colonel L. C. Dennis; Lieutenant Colonel N. E. Hartmann, Captain A. L. Fuller, and Captain J. E. Jennings of the Coast Artillery School Faculty.

Fort Monroe and the Coast Artillery School experienced their first blackout on December 16th, and their

second on December 29th. Both were pronounced to be successful. Both interfered somewhat with evening "study hall," lights being out during the period between the alarm and the all-clear signal.

On December 24th occurred the second of the graduations from the Officer Candidate Course. A class of 173 students took the oath of office as second lieutenants in the Army of the United States. The oath was administered by Major Herbert T. Benz, C.A.C.

Brigadier General Frank S. Clark, U.S.A., the Commandant of the Coast Artillery School, addressed the

graduating class. He congratulated the class upon having successfully passed a difficult course. In his remarks, General Clark stressed the quality of leadership and the sense of responsibility which leadership implies. He also laid emphasis on the fact that each one should prepare himself for advanced leadership and increased responsibility, opportunities for which would undoubtedly be presented as time goes on.

Certificates of graduation and commissions as second lieutenants, Coast Artillery Corps, were awarded by General Clark at the conclusion of his address.



Fort Eustis

BRIGADIER GENERAL FORREST E. WILLIFORD, *Commanding*



Anticipating the demand on this center for more and faster replacements for the nation's key harbor defenses and other coast artillery units, the training period here has been cut to eight weeks instead of twelve and the program has been speeded and geared up accordingly.

Troop training strength has remained constant, but under the new emergency the instruction cycle whirls faster and the training mill grinds at a pace that is now supplying the needed manpower.

Selectees, until recently, all went through an intense course in service firing of antiaircraft and seacoast guns at Grand View and at Fort Eustis. The seacoast firing at Eustis was successfully accomplished at towed targets with all communications for the firing effected by short wave radio instead of the usual telephone hook-up.

New stress is being placed on extended order drill and bayonet training. Under the original training setup here the plan called for only a limited period of instruction in these subjects. However, the revised and accelerated program includes extensive bayonet drill; to afford such training each battalion now has its own bayonet course which is being used to capacity.

Selectees here participated in an actual wartime blackout. Such a test blackout was conducted at Fort Eustis in cooperation with the rest of the cities and counties in the Hampton Roads area and the trial was termed a success by commanding officers. The blackout

was planned for three hours but so completely and effectively was the test in its first few minutes that it was not enforced for the full period.

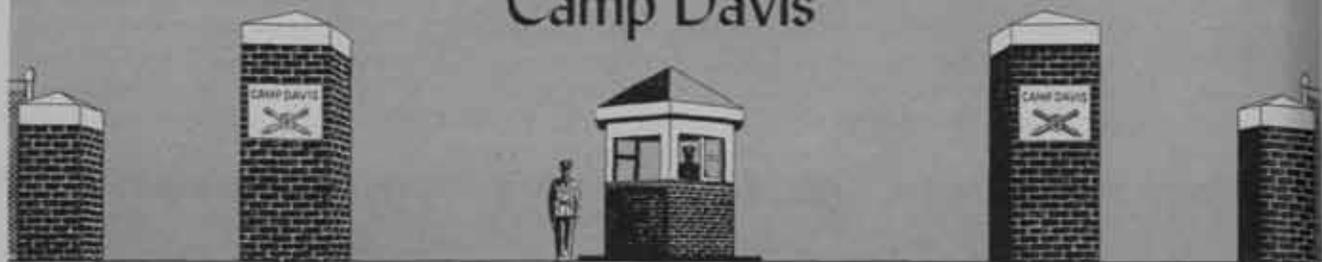
The entire training personnel has completed a series of lectures on chemical warfare and all have viewed gas weapons and anti-gas apparatus and equipment. The course was even opened to certain designated civilian groups who visited gas chambers, heard lectures and observed gas warfare drills. Among these groups were students from William and Mary College, and civilian employees of the Naval Mine Depot of Yorktown.

While selectees observed the Christmas and New Year holidays in customary army fashion, the training pressure and curtailed period permitted only a brief suspension of drills. Men were off on the two main holidays, but for the intervening days selectees were pushed steadily through their regularly scheduled training despite some rough weather.

The pangs of denied furloughs and unpermitted leaves were in most cases eased by the round of battalion and battery celebrations, the big Christmas dinner in camp and the series of dances and entertainment provided for the men in the gayly decorated service club.

Fort Eustis, which is nearing its first birthday as a rehabilitated World War No. I camp, is now under the command of Brigadier General Forrest E. Williford, who was assigned here in November, relieving Brigadier General Harold F. Nichols.

Camp Davis



MAJOR GENERAL FREDERIC H. SMITH, *Commanding*

By Captain E. Jeff Barnette, CAC

It was a pretty thunderstruck group at Camp Davis that received the news that the United States was at war with Japan, but when the first news of the Pearl Harbor incident filtered into camp, the soldiers settled down to make the most of it.

There was a noticeable display of enthusiasm as the men took the drill field the following morning, and at noon when the President called for a declaration of war soldiers grouped around radios applauded loudly. When the Star Spangled Banner was played at the conclusion of the broadcast from Washington, to a man, soldiers stood and saluted until the last bar was struck.

The spirit of Davis men in the early days of the war was exemplified by a colored soldier who returned Tuesday morning, December 9, seven days early, from

a furlough in Pittsburgh. When asked by his top sergeant why he had returned so soon, since there had been no call from camp to return to duty, the soldier replied: "I heard about the war over the radio and started right back to camp; if there's a war, I want to be in it." Many men returned voluntarily from furloughs.

An oversized selectee who had consistently grumbled about early morning exercises and long hikes announced: "From now on if I hear anyone grumbling about all this training I'll push his teeth down his throat." He paused a moment, remembering his own record in the battery, and added: "And that goes double for me."

Grumbling, following declaration of war, was confined to one subject—Christmas furloughs. All pending



Mural in Camp Davis Service Club.



The 54th Coast Artillery fires 155's at Fort Fisher.

furloughs were cancelled. Seventy-two hour passes took the place of Christmas leaves. One soldier observed that it will be an unlucky Jap who faces a furlough-less service man during this war.

Immediately following the declaration of war, Major General Frederic H. Smith, commanding general, issued the following training directive: "The next month's training program will include intensive corrective measures for improvement of uniform, set-up, carriage and general appearance of individual officers and enlisted men. Special attention will be devoted to close order drill, ceremonies and appearance and conduct of personnel visiting civilian communities." General Smith also stressed care and maintenance of weapons, equipment and transportation; individual and small unit training (36 hours a week) to include physical training, mass games, and antiaircraft marksmanship, and continuation of training for units that had not completed their 17-week basic program.

One of the most important developments at Camp Davis in recent weeks was the relinquishment of direct command of the Barrage Balloon School by Colonel Robert Arthur, commandant of both the Barrage Balloon Training Center and School. The exigencies of the present emergency prevented Colonel Arthur from devoting full time to direction of school activities. However, he retains command of the training center. Colonel Robert Turley, assistant commandant of the school, was named commandant, and Colonel Harold R. Jackson was designated assistant commandant of the school.

The Barrage Balloon School is the educating unit of the Barrage Balloon Training Center and consists of an officers' division and a division of enlisted specialists. To date more than a thousand officers and men have graduated from the school. Courses include gas service,

weather, rigging and repair, maneuvering, winch operation, communications and aerostatics. Lieutenant Colonel Parry W. Lewis is director of the officers' division and Lieutenant Colonel John Johnson directs the enlisted division.

Units of the 54th Coast Artillery, only 155-mm. GPF regiment with colored troops in the Army, have completed their service target practice at Fort Fisher, new firing point and tent camp forty miles south of Camp Davis, on the Atlantic ocean. The six-week practice session marked the first time guns had been fired at Fort Fisher since 1865 when the original fort was reduced to a shambles by vast Union land and sea forces. All of the regiment's 24 guns were fired, setting up an ear-splitting, dust-kicking rumpus that will long be remembered by the men in the gun crews.

The 54th has been made a part of the 19th Training Group at Camp Davis, which previously included only the 99th and 100th Coast Artillery antiaircraft regiments. Colonel Robert M. Carswell, commanding officer of the 54th, has assumed command of the training group, replacing Colonel R. D. Brown, who was called to duty with Headquarters First Army, Governor's Island.

While the training program at Camp Davis increased in tempo following entry of the United States into the war, the morale program moved apace. One of the most noteworthy activities of the camp Morale office is the art program, which includes mural painting and life classes. A huge mural depicting activities of Davis units has been completed at Service Club No. 1. In the mural a 90-mm. gun crew is shown in action, while barrage balloons form a protective ring about a city on the horizon. The art project at Davis was the first to be launched by the Morale Branch of the War Department.



Camp Callan

BRIGADIER GENERAL FRANCIS P. HARDAWAY, *Commanding*

By *Captain W. J. Hauser*

Two training cycles or periods, each of twelve weeks, had been completed at Camp Callan, the Coast Artillery Replacement Training Center of the Pacific Coast, and the third cycle was rapidly nearing completion when the abrupt change in international affairs on December 7, 1941, changed the tempo of things.

The requisitions for replacements at the end of any training period usually play a definite part in the specific training in the particular cycle. In the total number of batteries about one-half of them prepared replacement troops for Seacoast and Harbor Defense forces. These units were divided equally into fixed and mobile Coast Artillery training even though basically the armament used for training is the same. A few of the batteries concentrated on subjects to qualify their soldiers for duty in Headquarters Batteries. Some troops were classified for special training. The remaining batteries were trained in Antiaircraft Artillery, with 3-inch guns, searchlights, and automatic weapons. The original plan for the succeeding cycle was to decrease the Harbor Defense Batteries and proportionately increase the Antiaircraft Batteries. Circumstances may change this, however.

Training is proceeding in a reasonably normal manner. It is regretted that since this Replacement Training Center now lies geographically in a theatre of operations it is no longer possible to furnish certain definite information as to our general activities at Camp Callan. Likewise it must be realized that it is not possible to give information as to the disposition of trained replacements, or the arrival of new replacement troops.

The entire military personnel of Camp Callan staged the first (and what might be the last for some time), mammoth night parade of the West, on the evening of December 2, 1941, with the searchlight batteries forming their lights in a rectangle surrounding the parade ground. At the sound of Adjutant's Call, all of the lights came on, converged upon a common point over the center of the parade ground, and all the separate battalions marched under the canopy of lights to their places in the line. For many of the troops this night

spectacle was the graduation climax to their basic training at Camp Callan.

Along with the basic training in previous training cycles, specialists were trained. The first four weeks were occupied with elementary training, during which time the various administrative matters such as inoculations, vaccinations, classification tests, and other matters carried on, even to the selecting of men to attend specialist training courses. In the fifth week, the Enlisted Specialists' School classes started. Those selected for this special instruction were of sufficient number to supply the requisition requirements, and an attempt was made to select students who were best qualified by their previous qualifications. This school provided training in ten specialists' courses necessitating instruction in forty-seven different subjects, and as the students selected for this training came to school in four different groups, as many as one hundred and twenty-eight classes were taught at the peak period of the school in the third training period. Upon completion of the courses of instruction, the qualified specialists were thus available to fulfill the special requirements of the requisitions for replacements. The Enlisted Specialists' School, during the fourth training cycle will have to undergo certain changes to meet the present developments.

With these late developments, the third training cycle was shortened for some battalions, because of the need of troops in field units, and reactivation for the fourth cycle started without delay. The new cycle was cut to eight weeks, and all effort is now being made to train men in basic soldiery in eight weeks. Thoughts that we were moving fast before are now replaced by the fact that we are moving faster.

Now, as well as before war was declared, first impressions of selectees just inducted is a very important factor in the progress of the training in a Replacement Training Center. The favorable impressions at the start have played a great part in helping these new men change into soldiers at Camp Callan. There are many activities which have been distinct aids in this all-important task. Battalion Recreation Halls and the Service Club



Night parade at Camp Callan.

provide the scene for interesting attractions such as frequent shows, dances, and many pastimes without cost to the soldier. Those interested in various types of classes may develop their talent under expert instructions. Upon any reasonable request, various clubs have been formed, and are carried on even though the selectee population has its turnover. The Camp Callan Camera Club has interested many, and the excellent exhibits have only partially portrayed the interest manifested in this activity.

The civilians in the neighboring communities have assisted in a most coöperative manner in aiding and supporting various diversified activities. Large civic groups conduct weekly automobile tours, taking large numbers of men on very delightful half-day outings. Other civic groups arrange for young ladies to attend the weekly dances at the Service Club. The busses for transportation are supplied by the Chambers of Commerce of our near-by communities.

Among the trainees we find an abundance of diversified talent, which requires little effort to bring forth. Examples include prominent cartoonists from well known motion picture firms, experienced musicians, entertainers, actors, comedians, golfers, baseball, basket ball, and football players, masters of ceremonies, authors, and others.

Radio programs from several prominent Southern California broadcasting stations have created a great interest among the trainees. The soldiers are always eager to participate extensively in the Camp Callan hour each Wednesday evening at 7:30 P.M. over station KFSD, the NBC station in San Diego. *Mental Maneuvers* is a new Army game, broadcast each Tuesday evening at 6:00 P.M. from Station KGB, Mutual station, also located in San Diego. In this broadcast, the brains of the Army enlisted men are matched against picked civilian talent from the near-by communities. *The Calling All Camps*, NBC-Red Network program, from KFI, Los Angeles, attracts the participation of many Camp Callan men, as well as does the *Army Camp News* program broadcast each week from KECA, Los Angeles, and affiliated NBC-Blue Network Stations.

The newly constructed obstacle course at Camp Callan has attracted not only a very wide comment within the Camp itself, but outside as well. Metro-Goldwyn-Mayer Motion Picture Studio recently used this training course as a subject in their *News of the Day*.

Congratulations and best wishes from the Commanding General and all members of this command to *THE COAST ARTILLERY JOURNAL*. May it continue to prosper.

Camp



Haan

MAJOR FULTON Q. C. GARDNER, *Commanding AAATC*

By Lieutenant Erwin Clement

With the designation of Major General Fulton Q. C. Gardner as Commanding General, AAATC, Colonel A. D. Cowley, Infantry, has been assigned as camp commanding officer.

Camp Haan is under wartime blackout conditions. Officers and men were ordered to twenty-four hour duty, many having their army cots placed beside the telephones. The overflow of officers took over the guest house—guests, of course, being excluded from the reservation. Black paint and roofing paper were used to black out windows and sentries were ordered on strict vigil.

Pioneer technique is an important phase of training, and troops of Camp Haan have had ample opportunity to learn about it. Men of the 37th and 101st brigades constructed temporary bridges right out in the backyard of Camp Haan. Trucks and guns were then driven over the bridges to simulate their actual use in wartime—the movement of men and equipment over rough spots in the field.

Camp Haan's gallery rifle firing range, designed by Major Paul B. Nelson, AAATC Plans and Training officer, will be completed January 1, 1942.

The range is a reinforced concrete structure with concrete overhead shelter, walls, and pillar supports. Its construction began in April, and each of its first three bays was put into use immediately upon completion.

The range, constructed by troops of the training

center under civilian supervision, will have a total capacity of sixty-four targets. The bays are separated by concrete, bullet-proof walls.

Modern, weather-proof, and designed for night firing, the range is the only one of its type in the United States and was located at Camp Haan only after an exhaustive search was carried on in the camp's vicinity for a site suitable for a full-scale range. The camp's range has 15-yard, 25-yard and 1,000-inch firing points. It accommodates pistols, rifles, automatic rifles, and machine guns. A concrete back-stop with earth fills is used for stopping the bullets.

An intensive course in cutting and preparation of meats has been provided by the National Live Stock and Meat Board for mess officers and enlisted mess personnel of all batteries in camp. Demonstrations and lectures were held in the lecture room of the School for Bakers and Cooks, where First Lieutenant Harvey A. Towner, QMC, directs training in all phases of cooking, baking, and mess management.

Since the school opened on April 5, 365 students have been graduated. Instruction includes actual demonstrations in the use and care of the new army gasoline field range and equipment. Other courses include mess management, duties of mess sergeants (for selected graduates from the cooks' course), and army cooking and baking. Practical work is done in battery kitchens under supervision of instructors.



Left: The new rifle range. Right: Practical pioneering.

Camp



Hulen

BRIGADIER GENERAL HARVEY C. ALLEN, *Commanding*

By Lieutenant Samuel H. Tumlinson

The first presentation ceremony in Camp Hulen's short life as an antiaircraft training center was held recently. The spotlight was on First Lieutenant Grevenberg, 105th Sep. C. A. Battalion who was presented with the War Department Soldier's medal. The young officer received War Department recognition for rescuing two soldiers from drowning last May. The incident occurred while Lieutenant Grevenberg was attending the Coast Artillery School, Fort Monroe, Virginia.

Several units have fired practice firings from the Turtle Point firing range. The range met all expectations and positive benefits accrued to the men and officers who participated. It was the initial fire for some of the men.

Units here have wasted no time in going into action at the new Well Point Rifle and Pistol Range. Expected improvement in the road to this range will mark the final phase in the completion of this project. Work has also started on the camp for the Firing Range near Indianola and completion of this camp will mark another milestone in providing firing facilities for this training center.

The completion of many projects will usher in the New Year. Two theatre buildings and the new field house will be open in the near future. Grass has been transplanted to cover bare areas and trees are being set out. The latter will make the camp a distinctive land-

mark since there are very few trees within miles of the camp.

With Christmas in the past, and restrictions resulting from the war curtailing leaves and furloughs, the men at Camp Hulen have shifted their main conversation to field service. The only thing they wanted from Santa was a chance to exercise their training where it will do the most good.

Miss Winningham, American Red Cross, took particularly good care to promote Christmas cheer for those who were confined to the hospital during the Christmas period. Her personal interest in the problems of those who are unable to provide their own pastime almost makes being in the hospital a pleasure.

Long range planning on the part of Miss Winningham will provide the patients with many forms of recreation. However, she was not content to wait and pending the completion of the Red Cross Recreation Building she has established a recreation room in a vacant hospital ward. Here patients who are able to get about gather for games and talk.

Immediately after the declaration of war Camp Hulen went into high gear. For several days sleep was at a premium. The affair was an excellent test of the ability, drive and endurance of all concerned and was a good indication that these soldiers can and will carry out special assignments even though they vary from the usual line of work.





Camp Wallace

BRIGADIER GENERAL JOHN B. MAYNARD, *Commanding*

By Major Robert J. Harris

Houston, Galveston and nearby communities outdid themselves to spread Christmas cheer, showering the command with turkey dinners, presents, and a gay round of parties. Climax of the entertainment was a huge Christmas ball in the Houston City Auditorium, with 2,500 Texas beauties and 6,000 soldiers taking

part. Houston papers stated it was the biggest soldier party in the country.

Wallace soldiers put on a Christmas radio program widely "piped," teaming up with Fort Sam Houston and other Texas posts.

Dramatic incident of December 8. Just before noon



Tow-targets are expendable at Camp Wallace.

chow, men all over camp were intently listening to radios; jumped to attention and saluted when the National Anthem was played.

Camp rifle records were shattered recently by trainees of the 27th training battalion—85 per cent of the men qualified, making scores of 102 or better out of a possible 150. Only outfit to threaten this mark so far was Battery B of the 31st battalion, which qualified 75 per cent of its men.

Wallace batteries did a lot of shooting in November and December from the beach at Fort Crockett. Targets were riddled by cheering gun crews manning 3-inch anti-aircraft guns, 37-mm. guns, machine guns, and 155-mm. harbor defense batteries. The pilot of the towing plane had a hard time keeping a supply of sleeves, and direct hits were scored on water targets several miles offshore. Firing at Crockett will be resumed in January, as the new, intensive, 8-week training program gets under way.

Thirty-seven junior officers from various National Guard units of the 3rd Army were detailed to Camp Wallace for three months' duty, to acquaint the lieutenants with the men and methods at a replacement training center. Most of them have now rejoined their outfits.

Red Cross Roll Call ended with 2,251 memberships and \$3,453.36. A Red Cross administration building is under construction; a splendidly equipped recreation building in the hospital area was recently opened.

Heralded by Iowa (they ought to know) newspapers as the world's champion corn picker is Private Howard C. Nielsen of Battle Creek, Iowa. He picked and husked 247 bushels of corn, more than eight and a half tons, in eleven hours. He's now learning to be an anti-aircraft machine gunner.

USO is going to town with its musical shows, with topflight Broadway stars and elaborate Gae Foster chorus routines. Camp Wallace placed its stamp of approval on "Razzle Dazzle" and "Follow the Crowd"; is looking forward to "The Laugh Parade" and "Out of the Frying Pan."

Already a veteran of World War II is Private Jack Calhoun, Battery A, 35th battalion. For his work as an ambulance driver in France, he received the Croix de Guerre. He was captured by German panzer units, but was released in August, 1940.

Camp Wallace's biggest review, staged recently, elicited praise from General Maynard: "The assembling of the entire command, together with its transportation, presented a striking indication of the growth of Camp Wallace. The appearance and performance of each unit was a result of the conscientious effort of both officers and men."

With Galveston girls taking the feminine parts, "Room Service," a three-act farce, won many requests for repeat performances. Duncan Whiteside, civilian adviser on soldier theatricals, directed the show.

Increased interest in athletics and physical fitness marks the war time training program. So far, Wallace's basketball team has "mowed down" all comers. Lieutenant Ernie Sutter, former intercollegiate tennis champ, was stationed here until recently.

The camp recruiting office was swamped with volunteers for foreign service following Uncle Sam's declaration of war. Fifty-five trainees from one battery arrived in one party. It looked like everybody in camp was going to follow suit, when word was received that discharge of selectees for enlistment didn't figure in the war picture.



This is every American's war — every American man's, every American woman's, every American child's. It can be won only by the united effort, the united determination, the united sacrifice of a united America.—HON. ROBERT P. PATTERSON.

Fort



Bragg

BRIGADIER GENERAL CLAUDE M. THIELE
Commanding 34th Coast Artillery Brigade (AA)
By Lieutenant William D. Workman, Jr.

Unaware that the November maneuvers were but the prelude to actual war, the 34th Coast Artillery Brigade (AA) moved into the field early in the month to provide antiaircraft protection for troops and installations of the IV Army Corps, commanded by Major General Oscar W. Griswold and comprising the Red forces for the GHQ-directed maneuvers. Attached to the brigade for the maneuvers was the 101st Separate Battalion, Automatic Weapons, from Camp Stewart, Georgia.

Many and varied were the tasks performed by the antiaircraft artillerymen during the maneuvers, for the AA troops were called to perform functions running the range from infantry employment to fire against transport planes carrying paratroops. The single brigade, with the battalion attached, was spread over a considerable area throughout both phases of the GHQ maneuvers, for upon the 34th fell the responsibility of providing AA protection not only for the troops and installations in the forward areas but for the airdromes many

miles behind the lines and in most instances, completely out of the maneuver area.

With the initial mission of providing "continuous protection for Corps airdromes, strong initial protection for crossings of Catawba River, continued protection of essential crossings with provisions for extension of protection to elements East of the river," Brigadier General Claude M. Thiele, brigade commander, ordered two regiments to protect airdromes and placed the third regiment, plus the separate battalion, in the forward areas. To the 76th Coast Artillery, now commanded by Colonel Charles A. French, went the task of defending airdromes at Spartanburg and Greenville, South Carolina. The 77th Coast Artillery, under Lieutenant Colonel Riley E. McGarraugh, set up AA protection for airdromes at Columbia, South Carolina, Augusta, Georgia and emplaced one 37-mm. battery at Laurens, South Carolina. In addition, the 77th also provided gun protection for a crossing of the Wateree



Command Post, 34th Coast Artillery Brigade (AA) during the Carolina maneuvers.

Photo by Lieutenant W. D. Workman, Jr.

River near Camden for a period during the first problem.

Bulk of the movement, and there was considerable of that, fell on the 67th, under Colonel James P. Hogan; the 101st, under Colonel Joseph B. Fraser, and brigade headquarters and headquarters battery. The brigade command post remained within a few miles of the Corps CP throughout the problem, moving with it, and in some instances, before it, when moves were necessary. The rapidity of action of the first problem kept all units, particularly the gun and AW batteries of the 67th, on the go almost constantly. The experience gained was invaluable, particularly so in that the AA troops were working hand in glove with armored units comprising the bulk of the IV Corps.

The effectiveness and efficient operation of the AA units in the first problem gave to all commanders of other units a better understanding of the necessity for AA protection and resulted in still smoother cooperation in the second GHQ phase. For the second problem, the brigade's mission was to "provide AA protection for the Corps with particular attention to the bridges over Wateree River at Camden and Great Falls (S. C.) and

to the airdromes. It will cover and protect the movement of the I Armored Corps."

To spread the training of maneuvers, General Thiele readjusted his units, bringing the 77th into the forward areas, sending the 67th to the rear to protect Columbia and adding Laurens to the airdromes to be protected by the 76th. The 101st was given the exacting mission of accompanying and furnishing AW protection for the I Armored Corps. To strengthen the AA defense of the Wateree River crossings at Camden, a composite battalion of the 67th was ordered up from Columbia and joined the 77th in defending the area.

The first day of the second phase brought considerable action to the units in the Camden area, for Blue paratroops launched an attack against the bridge. The action was fast and effective on the part of the brigade and proved the worth of anti-paratroop training.

Within an hour after the cessation of "hostilities," all units of the brigade were on the move into a bivouac area bordering the maneuver area. The next afternoon the three regiments and headquarters battery hit the road again and rolled into Fort Bragg the night of November 29.

BATTERY COMMANDERS!

Have you ordered your requirements
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DO IT NOW!

COAST ARTILLERY ORDERS

(Covering period November 1, through December 31, 1941)

Colonel Karl F. Baldwin to Ninth Corps Area Service Command, Fort Winfield Scott.
Colonel Joseph D. Brown to retire November 30, 1941.

Colonel Robert D. Brown to headquarters First Army, Governors Island.

Colonel Charles C. Curtis to 33d CA Brigade, Camp Hulen.

Colonel William M. Goodman to War Department General Staff.

Colonel Monte J. Hickok to retire December 31, 1941.

Colonel Henry B. Holmes, Jr., to War Department General Staff.

Colonel Lloyd P. Horsfall to his home to await retirement.

Colonel Franklin Kemble to CARTC, Fort Eustis.

Colonel Rufus F. Maddux to Ninth Corps Area Service Command, Seattle, Washington.

Colonel Ralph M. Mitchell to retire March 31, 1942 upon his own application.

Colonel John T. H. O'Rear to retire March 31, 1942 upon his own application.

Colonel Wilmer S. Phillips to H. D. of Chesapeake Bay, Fort Monroe.

Colonel Frederic A. Price to Office of the Chief of Coast Artillery.

Colonel Frank C. Schofield to H. D. of the Delaware, Fort DuPont.

Colonel LaRheft L. Stuart to H. D. of San Francisco, Fort Winfield Scott.

Colonel Ralph W. Wilson to Second Corps Area Service Command, Fort Hancock.

Colonel Charles K. Wing, to CAUTC, Camp Davis.

Lieutenant Colonel Benjamin McC. Aldrich to Commandant Army Institute, Headquarters Ninth Corps Area, Presidio of San Francisco.

Lieutenant Colonel Charles E. Atkinson to Office of the Chief of Coast Artillery.

Lieutenant Colonel Thomas J. Betts to War Department General Staff.

Lieutenant Colonel Benjamin N. Booth to Office of the Chief of Coast Artillery.

Lieutenant Colonel Benjamin Bowering to Ninth Army Corps, Fort Lewis.

Lieutenant Colonel William C. Braly to AATC, Camp Haan.

Lieutenant Colonel Arthur K. Chambers to retire March 31, 1942 upon his own application.

Lieutenant Colonel John H. Featherston to First Army, Governors Island.

Lieutenant Colonel Lester D. Flory to CAUTC, Camp Davis.

Lieutenant Colonel Charles S. Garrett to Selective Service System, Washington, D. C.

Lieutenant Colonel Joseph H. Gilbreath to BBTC, Camp Tyson.

Lieutenant Colonel Joseph E. Harriman orders to Naval War College revoked.

Lieutenant Colonel Charles W. Higgins to Office of the Chief of Coast Artillery.

Lieutenant Colonel Ephraim R. Jolly to Coast Artillery Section, Columbus General Depot, Columbus, Ohio.

Lieutenant Colonel Peter K. Kelly to 9th CA District, Presidio of San Francisco.

Lieutenant Colonel John Kennard to Fourth Corps Area Service Command, Camp Davis.

Lieutenant Colonel Robert H. Kaeuter to War Department General Staff.

Lieutenant Colonel Rolla V. Ladd to

Fourth Corps Area Service Command, Camp Davis.

Lieutenant Colonel Joseph D. McCain to his home to await retirement.

Lieutenant Colonel John W. McCormick to retire March 31, 1942 upon his own application.

Lieutenant Colonel Samuel L. McCroskey to Office of the Chief of Coast Artillery.

Lieutenant Colonel Frank J. McSherry to War Department General Staff.

Lieutenant Colonel Edward A. McTamany to Headquarters, Sixth Corps Area, Chicago, Illinois.

Lieutenant Colonel Howard S. MacKirdy to H. D. of Los Angeles, Fort MacArthur.

Lieutenant Colonel Bryan L. Milburn to General Staff with troops, GHQ, Washington, D. C.

Lieutenant Colonel Reuben N. Perley to station complement, Maxwell Field.

Lieutenant Colonel Joshua D. Powers to retire February 28, 1942 upon his own application.

Lieutenant Colonel Woodburn E. Remington to CARTC, Camp Wallace.

Lieutenant Colonel Joseph S. Robinson to Headquarters, Third Army, San Antonio, Texas.

Lieutenant Colonel Rexford Shores to retire December 31, 1941.

Lieutenant Colonel Joseph C. Stephens to his home to await retirement.

Lieutenant Colonel Edmund H. Stillman to retire February 28, 1942 upon his own application.

Lieutenant Colonel LeRoy A. Whittaker to Office of the Chief of Coast Artillery.

Major William V. Appuhn, Jr. to 9th CA District, Fort Winfield Scott.

Major Robert W. Berry to War Department General Staff.

Major Oscar C. Bohlin to AATC, Camp Hulen.

Major Laurance H. Brownlee to General Staff with troops, Panama Canal Department.

Major James B. Carroll to Headquarters, New England Frontier Sector, Army Base, Boston, Massachusetts.

Major Alvin M. Cibula to Office of the Chief of Coast Artillery.

Major Richard M. Costigan to BBTC, Camp Tyson.

Major Frederick B. Dodge, Jr. to 62d, Fort Totten.

Major Charles E. Dunham to New Orleans Port of Embarkation.

Major Raymond E. Dunnington to Office of the Chief of Staff.

Major Robert E. Gullette to Coast Artillery Section, Columbus General Depot, Columbus, Ohio.

Major George L. Holsinger to BBTC, Camp Tyson.

Major James S. Keller to Office of the Chief of Coast Artillery.

Major Melford M. Lothrop to Panama Canal Department sailing Charleston, South Carolina.

Major Halvor H. Myrah to BBTC, Camp Tyson.

Major Arthur B. Nicholson to 1st Provisional Searchlight Battalion, Camp Stewart.

Major Montgomery B. Raymond, Headquarters Second Army Corps, Wilmington, Delaware.

Major Dalton J. Shapo to Puerto Rican Department sailing New York.

Major Selby M. Skinner to BBTC, Camp Tyson.

Major Foxall Sturman, Jr. to General Staff with troops, Panama Canal Department.

Major Carl F. Tischbein to GHQ, Army War College.

Major William A. Wallace to 75th, Fort Richardson.

Captain Frank W. Andrews to BBTC, Camp Davis.

Captain Joe L. April to 2d Interceptor Command, Fort Lawton.

Captain Charles P. Austin to 61st, Fort Sheridan.

Captain Charles H. Blumenfeld to General Staff with troops, Sixth Corps Area, Chicago, Illinois.

Captain Ralph O. Bowman to 5d Interceptor Command, Drew Field.

Captain Hubert E. Brakke to BBTC, Camp Davis.

Captain John J. Brindley to 1st Interceptor Command, Mitchel Field.

Captain Francis W. Darling to Office of the Chief of Staff.

Captain Howard B. Davis to 1st Interceptor Command, Mitchel Field.

Captain Walter G. Dexter to 1st Interceptor Command, Mitchel Field.

Captain Robert J. Donnelly to General Staff with troops, Second Corps Area.

Captain Leland R. Drake to Headquarters, 9th CA District, Presidio of San Francisco.

Captain Richard P. Fisk to Office of the Chief of the Morale Branch.

Captain Lawrence J. Fox to 2d Interceptor Command, Fort Lawton.

Captain William N. Fritsch to 1st Interceptor Command, Mitchel Field.

Captain Robert L. Gibson to Headquarters, 2d Interceptor Command, Fort Lawton.

Captain Burton R. Gilbert to Post Utilities, Camp Davis.

Captain Harold F. Greene to instructor, Coast Artillery School.

Captain Sigurd Grondahl to 2d Interceptor Command, Fort Lawton.

Captain James S. Hamilton to Hawaiian Department, sailing San Francisco.

Captain William V. Honey to Philippine Department sailing San Francisco.

Captain James J. Horeau to 1st Interceptor Command, Mitchel Field.

Captain Wilhelm Jorgenson to 1st Provisional Searchlight Battalion, San Diego, California.

Captain Robert E. L. Knapp to 2d Interceptor Command, Fort Lawton.

Captain Hubert DeB. Lewis to BBTC, Camp Davis.

Captain Edward W. McLain to BBTC, Camp Davis.

Captain Thomas K. MacNair to H. D. of Chesapeake Bay, Fort Monroe.

Captain Charles A. Pinkerton to Office of the Quartermaster General.

Captain Erin E. Rente to New Orleans General Depot.

Captain Allen M. Sell to 3d Interceptor Command, Drew Field.

Captain Seth L. Weld, Jr. to Rio De Janeiro, Brazil.

Captain Frank J. Wise to 2d Interceptor Command, Fort Lawton.

- First Lieutenant King P. Aitken to BBTC, Camp Davis.
- First Lieutenant Edwin F. Black to H. D. of Chesapeake Bay, Fort Monroe.
- First Lieutenant Lewis A. Bonifay to CARTC, Fort Eustis.
- First Lieutenant Hubert K. Borden to BBTC, Camp Davis.
- First Lieutenant Paul S. Button to instructor, Coast Artillery School.
- First Lieutenant William P. Carlin to Office of the Under Secretary of War.
- First Lieutenant John T. Dabbs, Jr. to 75th, Fort Richardson.
- First Lieutenant Clarence R. Downs to Fourth Corps Area Service Command, Fort Moultrie.
- First Lieutenant Ferdinand Gladzik, Jr. to Fifth Corps Area Service Command, Camp Conley.
- First Lieutenant Danforth M. Googins to 61st, Fort Sheridan.
- First Lieutenant Philip J. Gundlach to Third Corps Area Service Command, Fort Eustis.
- First Lieutenant Edwin D. Herr to 1st Interceptor Command, Mitchel Field.
- First Lieutenant Bascom F. Hodge to 1st Interceptor Command, Mitchel Field.
- First Lieutenant Burchell E. Horn to Hawaiian Department sailing San Francisco.
- First Lieutenant Clarence E. Johnson to assistant post utilities officer, Fort Worden.
- First Lieutenant Walter V. Johnson to H. D. of Chesapeake Bay, Fort Monroe.
- First Lieutenant Oswald E. Kleugel to 2d Interceptor Command, Fort Lawton.
- First Lieutenant Robert A. Klockau to AATC, Fort Bliss.
- First Lieutenant Robert G. Lavell to instructor, Coast Artillery School.
- First Lieutenant Edward A. Maxwell to BBTC, Camp Davis.
- First Lieutenant Mandel J. Mierbach to AATC, Camp Haan.
- First Lieutenant Marion E. Morrison to instructor, Coast Artillery School.
- First Lieutenant Charles R. Murphy to Panama Canal Department sailing Charleston, South Carolina.
- First Lieutenant John T. O'Brien to instructor, Coast Artillery School.
- First Lieutenant Martin O. Pattison to 75th, Fort Richardson.
- First Lieutenant Roger B. Payne to Panama Canal Department, sailing New Orleans.
- First Lieutenant Melvin E. Pernutt to Panama Canal Department sailing Charleston, South Carolina.
- First Lieutenant Edwin C. Ploetz to instructor, Coast Artillery School.
- First Lieutenant Otto W. Pongrace to Panama Canal Department, sailing New York.
- First Lieutenant Morton H. Rainey to CARTC, Camp Wallace.
- First Lieutenant Robert C. Raleigh to AATC, Fort Bliss.
- First Lieutenant Francis H. Robinson to Instructor, Coast Artillery School.
- First Lieutenant Charles R. Rockwell to 52d, Fort Hancock.
- First Lieutenant Wesley C. Royer to Headquarters, 2d Interceptor Command, Fort Lawton.
- First Lieutenant John R. Schrader, Jr. to BBTC, Camp Davis.
- First Lieutenant Kenneth J. Schultz to Las Vegas Sub Depot, Las Vegas, Nevada.
- First Lieutenant John R. Singleton to 1st Interceptor Command, Mitchel Field.
- First Lieutenant Jackson A. Smith to 2d Interceptor Command, Fort Lawton.
- First Lieutenant Geddie B. Strickland to 3d Interceptor Command, Drew Field.
- First Lieutenant William D. Sydnor, Jr. to BBTC, Camp Davis.
- First Lieutenant Albert H. Veitch to Office of the Under Secretary of War.
- First Lieutenant Charles N. Walker, Jr. to BBTC, Camp Davis.
- First Lieutenant Robert Wardle, Jr. to Office of the Under Secretary of War.
- First Lieutenant Eben L. Webber to 1st Interceptor Command, Mitchel Field.
- First Lieutenant Michael F. Aliotta to AATC, Camp Hulén.
- Second Lieutenant Windsor T. Anderson to AATC, Camp Stewart.
- Second Lieutenant Albert E. Bahrt to 94th, Camp Davis.
- Second Lieutenant Leon A. Briggs to AATC, Camp Stewart.
- Second Lieutenant Alan S. Bull to 3d Interceptor Command, Drew Field.
- Second Lieutenant Tom D. Collison to AATC, Fort Bliss.
- Second Lieutenant Robert P. Detwiler to AATC, Camp Haan.
- Second Lieutenant Charles P. Downer to CARTC, Fort Eustis.
- Second Lieutenant John J. Feeley to CARTC, Fort Eustis.
- Second Lieutenant Edward M. Ford to Headquarters 2d Interceptor Command, Fort Lawton.
- Second Lieutenant Richard B. Frankel to Philippine Department sailing San Francisco.
- Second Lieutenant Joseph F. Gieck to 75th, Fort Richardson.
- Second Lieutenant Matthew C. Harrison to Puerto Rican Department, sailing New York.
- Second Lieutenant John R. Henderson to instructor, Coast Artillery School.
- Second Lieutenant Charles W. Holmes to BBTC, Camp Davis.
- Second Lieutenant Robert V. Huffman to BBTC, Camp Davis.
- Second Lieutenant Raymond S. Isenson to Headquarters 2d CA District, Fort Hamilton.
- Second Lieutenant Howard H. Johnson to Puerto Rican Department sailing New York.
- Second Lieutenant Harold W. Keller to 3d Interceptor Command, Tampa, Florida.
- Second Lieutenant Paul S. Kimball to 75th, Fort Richardson.
- Second Lieutenant Eugene F. Lawrence to USAMP Knox, Point Pleasant, West Virginia.
- Second Lieutenant Duane F. Lillie to 75th, Fort Richardson.
- Second Lieutenant Leon Lotstein to Panama Canal Department sailing New York.
- Second Lieutenant Judson D. Lowd, CA-Res to active duty, Coast Artillery School.
- Second Lieutenant James M. Lyles, Jr., to Puerto Rican Department sailing New York.
- Second Lieutenant Edward J. McGrane, Jr., to 54th, Camp Davis.
- Second Lieutenant Louis Michelson to Submarine Mine Depot, Fort Monroe.
- Second Lieutenant Paul J. Monohon to 75th, Fort Richardson.
- Second Lieutenant William W. Neely to 34th CA Brigade, Fort Bragg.
- Second Lieutenant Milton H. Nelson to Office of the Chief of Coast Artillery.
- Second Lieutenant Lloyd E. Olsen to H. D. of Puget Sound, Fort Worden.
- Second Lieutenant William W. Orr to 29th, Camp Stewart.
- Second Lieutenant William L. Porteous to Panama Canal Department sailing New Orleans.
- Second Lieutenant Stanley DeB. Richards to CARTC, Fort Eustis.
- Second Lieutenant John L. Robinson to 34th CA Brigade, Fort Bragg.
- Second Lieutenant Norman B. Stote to Hawaiian Department, sailing San Francisco.
- Second Lieutenant James W. Stigers to Puerto Rican Department sailing New York.
- Second Lieutenant John B. Styles to 52d, Fort Hancock.
- Second Lieutenant Richard F. Taylor to H. D. of Los Angeles, Fort MacArthur.
- Second Lieutenant Joseph H. Valliere to AATC, Camp Davis.
- Second Lieutenant William R. Webster to Panama Canal Department sailing New Orleans.
- Second Lieutenant Rex H. White, Jr. to instructor, Coast Artillery School.
- Second Lieutenant Alfred L. Whitney to instructor, Coast Artillery School.



The grim fact that we are at war must in this year
1942 permeate all our thinking, all our action.—HON.
ROBERT P. PATTERSON.



BOOK REVIEWS

The JOURNAL can supply any book in this list at the usual Association discount.

The Art of War

Stranger Than Fiction

MODERN BATTLE. By Major Paul W. Thompson. Washington: The Infantry Journal, 1941. 209 Pages; Illustrated. \$2.00.

Major Thompson is one of the most brilliant of the younger military writers; one who combines the patience for research with a knowledge of modern war and the ability to tell the complete story in few words. Fluent in German, he has been able to choose the essential information from reports, official and otherwise, of the German armed forces in battle. These stories give the little picture—the tactics rather than the strategy.

The fifteen actions described and analyzed by Major Thompson cover all forms of fighting, from a stream crossing to a parachute attack. The accounts are written vividly without being theatrical, and in an instructive manner without being pedantic. Well illustrated with maps and charts, the book might be called a text for the study of the so-called blitzkrieg. From a point in time so close to the events portrayed, the reader might believe that he is reading fiction rather than military history. The author's style, sometimes informal and always down-to-earth, removes the work from the dry-as-dust class that makes such deadly reading.

Modern Battle will be one of the most valued works to come out of the present conflict. It should be one of the best analyses of the Nazi technique of war to come from either side of the conflict.

Gasoline and Generalship

ARMIES ON WHEELS. By S. L. A. Marshall. New York: William Morrow and Company, 1941. 242 Pages; Illustrated; Index. \$2.50.

After wading through the hundreds of thousands of words written each week by so-called military experts and by assorted ax-grinders, it is refreshing to read an honest and finely-phrased analysis of the campaigns since Dunkirk, written by a well-informed civilian who has thought deeply and sincerely. The pattern of the war and of the stages of the war to come shines through this analysis very clearly.

Mr. Marshall, the famed military writer of *The Detroit News*, especially abhors loose thinking and snap judgments. Sometimes with a bludgeon and sometimes with a rapier, he demolishes many of the arguments of the faddists, those strange people who are able to construct an argument for the necessity of a separate air force from a newspaper headline, or who see the decline of the infantryman in a single photograph of a tank advancing.

With as little mercy he disposes of the advocates of things as they were, those equally strange people who fail to take advantage of past mistakes and present trends. The author sympathizes with the problems of the military, who are held and hemmed by legal and financial bonds until war begins, and then are held accountable for the failure they tried to avert; at the same time he deplores the Colonel Blimp mentality that places its entire faith in undigested and misinterpreted history.

Armies on Wheels goes into practically every theatre of the war between Dunkirk and late September, 1941, and tells what happened, how it happened, and why it happened. And then conclusions are drawn for the future.

At the risk of committing one of the blunders Mr. Marshall accuses others of committing, that of oversimplification, the theme of the book seems to be that there is no single formula for military success. Motorization, mechanization, air power, and all the rest of the get-rich-quick formulas for winning wars are of limited value only taken by themselves. With examples from the sands of Africa to the mountains of Albania, Marshall proves that coöperation between arms and services, and between forces using different types of armament, leadership, industrial preparation, civilian education, geographical considerations, and many other factors all have their bearing in the outcome of any struggle, and that an unbalanced force or an unbalanced nation can expect to lose in the fair percentage of cases.

Pistols and Machine Guns

AUTOMATIC ARMS: THEIR HISTORY, DEVELOPMENT AND USE. By Melvin M. Johnson, Jr. and Charles T. Haven. New York: William Morrow and Company, 1941. 310 Pages; Appendices; Illustrated; Index. \$4.50.

Since Captain Johnson developed the Johnson semi-automatic rifle, which was apparently the runner-up in

the competition for adoption by the United States Army, the reviewer was particularly interested in this book's comments on the Garand. The authors have leaned over backward to be fair—they say the Garand is a fine arm for its purpose, that it is practically everything that is claimed for it, but that they still like the recoil-operated principle better. Even this estimate is not written in so many words; it is necessary to read the book as a whole to get their opinions on the controversy.

The book itself is one for a soldier to cherish. The FM's and TM's and the GIP's tell much about automatic weapons, but this volume is as different as is a course in radio engineering from the instruction book that comes with a \$17.95 radio set. The history, development, principles and tactical uses for practically every conceivable automatic arm makes fascinating reading. If the reader is not a "gun crank" when he starts the book, there is a fair chance he will be by the time he puts it down.

The reviewer claims average knowledge of a few automatic weapons, but he learned much about those weapons he never heard of before, and much about other weapons that some day he might come in contact with. The section on *How to Keep Them Firing* alone is worth the price of the book. The style of the writing is especially fortunate; there is just enough informality to make the work pleasant reading. The tables and illustrations are complete and informative. If this were a movie review, four stars would be awarded.

Friend or Enemy

AIRCRAFT SPOTTER: Aircraft Identification for Army, Navy and Civilians. By Lester Ott. New York: Harcourt, Brace and Company 1941. 64 Pages; Illustrated; Paper Bound. \$1.00.

Both pictures and silhouettes of American and foreign planes make this particular work especially valuable. Designed for the beginner in aircraft spotting, its approach is rather elementary, which is all to the good for training unfamiliar personnel. British, German, Italian, Russian and Japanese planes are illustrated. A supplement depicting some of the latest models brings the book up to date, and the section showing planes in flight is good practice for the beginner. It is high time that Americans, both civilians and soldiers, begin to take their aircraft identification seriously.

✦ ✦ ✦

Legal Angles

MILITARY LAW AND DEFENSE LEGISLATION.
By A. Arthur Schiller. St. Paul: West Publishing Company, 1941. 641 Pages; Index. \$5.00.

This is a book primarily for lawyers, for law students who expect to come into the military service or to have contact with it, and for army officers whose duties require more familiarity with military law than an occasional assignment as a member of a court-martial. The average ex-

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✓ ✓ ✓

AIR BASE. By Boone T. Guyton. New York: Whittlesey House (McGraw-Hill Book Company, Inc.), 1941. 283 Pages; Index; Illustrated. \$2.50.

The glamour of Navy flying is well-portrayed in this informal account of the experiences of the author, a Naval Reserve officer who is a test pilot for Vought-Sikorsky. It would make a grand gift for the air-minded youngster of the fourteen-to-eighteen-year age group.

✓ ✓ ✓

The Mistakes of 1917-1918

SIGNPOSTS OF EXPERIENCE: WORLD WAR MEMOIRS. By Major General William J. Snow, U.S.A. (Ret.). Washington: The United States Field Artillery Association, 1941. 312 Pages; Index; Illustrated. \$2.75.

General Snow was the first Chief of Field Artillery. Taking over the assignment in February, 1918, he went immediately to work to untangle the problems of field artillery supply and training that were threatening to nullify our entire war effort. This book is the story of how he went about this Herculean task, and how he got results.

At a time like this, with another war two months old, this book is extremely valuable in pointing out the pitfalls that beset the path of a rapidly expanding army. For the blissfully ignorant who expect to wave a wand and have the job completed, there are hundreds of eye-openers in this hard-hitting history. Personnel, matériel, organization, and plant facilities have no relation to Topsy, they don't "just grow." It takes work, planning, cooperation, devotion and judgment to get things moving, and it takes an elastic mind, free of all considerations of personal dignity, to keep them moving.

Every army officer can profit from it.

✓ ✓ ✓

Biography

Twelve Military Figures

GREAT SOLDIERS (OF THE TWO WORLD WARS). By H. A. De Weerd. New York: W. W. Norton and Company, 1941. 369 Pages; Illustrated; Index. \$3.50.

Biographies often become boring because the authors find it necessary to drag in all the minutiae about their subject. Professor De Weerd's group of twelve biographies is the direct opposite of the usual biographical volume. He

has omitted the conventional information and has presented the life stories of twelve military leaders in a hard-hitting, vivid style, economical of words. He has subordinated the other facets of his characters' lives to their deeds as soldiers.

Schlieffen, Hindenburg, Hoffmann, Kitchener, Lawrence, Pershing, Petain, Gamelin, Wavell, Churchill, Seeckt, Hitler—he has chosen well. The characterizations are sharp, in clear relief. The author has spared neither criticism nor praise; not one of these military figures is painted lily-white or coal-black.

It might be easy to accuse De Weerd of being a Monday-morning quarterback for pointing out so sharply the errors of his characters after the errors were committed, but still it would be difficult to obtain a clear picture of these military leaders without evaluating their mistakes as well as their successes. The author is editor of *Military Affairs*, as well as a contributor to *The Coast Artillery Journal* and other military publications, and is a recognized authority on military history. He has done a masterful job with this book; the book belongs in every complete military library.

West Point Alumni

NOT ALL WARRIORS. By Captain William H. Baumer, Jr. 304 Pages; Bibliography; Index. \$2.50.

Captain Baumer has selected seven illustrious sons of Nineteenth-Century West Point who made their mark in other than military pursuits, and has given us short biographies of these men. Calling the roll of Benjamin Louis Eulalie de Bonneville, explorer; Jefferson Davis, statesman; Leonidas Polk, clergyman; Edgar Allan Poe, author and poet; Henry du Pont, businessman; James McNeill Whistler, artist; and Horace Porter, diplomat, Captain Baumer keeps the biographies short enough to be interesting and long enough to be informative.

Not all the characters were graduates of the Military Academy, although all attended for varying periods. Leonidas Polk, although a bishop at the outbreak of the Civil War, is best known for his part as a general in that war. And for Captain Baumer's information, it was Nelson Appleton Miles, and not Sherman Miles, who commanded Fort Monroe at the time of Jefferson Davis's incarceration.

Free Frenchman

CHARLES DE GAULLE. By Philippe Barrès. New York: Doubleday, Doran and Company, 1941. 260 Pages. \$2.00.

It is not stretching conjecture too far to predict that when the present war is grist for the historians, General de Gaulle will be considered one of the most significant figures of the times. His tactics were adopted by the Germans, whose reward was success (at least initial success); they were refused by the French, whose punishment is one of the tragedies of the war. His Free French movement alone would be sufficient cause for de Gaulle's place in history.

Philippe Barrès, who was both a soldier and a writer gives us a biography that is stripped of "cherry trees." It is factual and concise—and although it is sympathetic it is a result

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survived the investigations of that campaign with popularity unimpaired.

The author, although a Southerner with an admitted bias in favor of Wheeler, has made every effort to make the biography as fair as possible, bringing out the General's weaknesses as well as his successes.

About An Ally

GREAT MEN AND WOMEN OF POLAND. Edited by Stephen P. Mizwa. New York: The Macmillan Company, 1942. 386 Pages; Illustrated; Index. \$4.00.

Thirty Poles, famous in diversified fields of endeavor, were selected for inclusion in this volume. Rulers, soldiers, musicians and painters were selected by the committee, which could not agree on the selections with any degree of unanimity. Even Stefan Batory, one of Poland's great kings, was omitted in the final line-up.

More valuable to the American leader than the facts of the lives portrayed, is the picture the book gives of the tragedy of Poland. This nation, poor but proud, has been the victim of its geographical location as well as of the individualism of its citizens. While outside nations overran and looted the country, its own citizens could not always agree on what should be done to protect their homeland, with the result that the work of subjection was made that much easier.

The book gives us an understanding of the country that has furnished America with so many staunch citizens, and that was the fuze that set off the powder barrel of Europe.

1939 to ?

Mahan: American Nostradamus

THE ATLANTIC SYSTEM: THE STORY OF ANGLO-AMERICAN CONTROL OF THE SEAS. By Forrest Davis. New York: Reynal & Hitchcock, 1941. 339 Pages; Appendix; Bibliography. \$3.00.

This work is a compendium of United States foreign policy from 1890 to the historic "Atlantic Charter" of President Roosevelt and Prime Minister Churchill. There is scarcely a single point of American foreign policy during this period, which begins with Admiral Mahan's acceptance as an authority on Sea Power, that is not treated in some measure by the author. In many ways, the book is a testimonial to the foresight and statesmanship of Mahan. His presentiments and opinions, with their impact on both American and British leaders, are discussed in the light of their present-day importance. As a matter of fact, this tribute to the Admiral's perspicacity in the realm of power politics continues throughout the story and is well sustained by the author.

Forrest Davis is a journalist, author, and student of political phenomena in international relations. He has been correspondent for leading newspapers, covering the Washington Conference, the political scene at our capital, and in Europe. He presents a thesis which will crystallize clearly the sentiments of those who have long favored close cooperation with the British in world affairs. The case for



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such action, as he represents it, will almost surely convince those, who have held that our nation should not concern itself with world affairs, that their position is hard to maintain in the light of events during the past fifty years.

Besides dealing with broad issues of foreign policy, the author throws light on the personalities of the American leaders who have directed the course of our history. Replete with editorial quotations from newspapers of the period, and with excerpts from the personal correspondence of governmental officials, the book captures most realistically the atmosphere of public attitude toward the pageant of international episodes he discusses. Revealing is the treatment of two of our great presidents. Theodore Roosevelt's boyish impulsiveness does not overshadow his hard common sense in handling matters of national interest. Woodrow Wilson is portrayed to less advantage, as an idealist born too soon; but his sincerity is never questioned.

Mr. Davis demonstrates with convincing logic that, regardless of personal prejudices, and without denying British self-interest, American interests and those of Britain have been parallel ever since control of the sea has been recognized as the means to maintain the way of life which is cherished alike by Americans and Britons. There have been instances of friction between us. These occurred when certain precincts, wherein either of the two powers has had a peculiar interest, have been threatened. However, geography, history, economic considerations, and the common background of Anglo-Saxon institutions have almost foreordained a community of Anglo-American interest and action whenever we have become involved in international questions of general significance.

In the light of history, the author castigates the isolationist attitude, ascribing to it an air of defeatism and infantile indecision which has been inconsistent with American decisiveness and foreign to our idea of progress. For those who would appreciate a clarification of the issues involved in the present conflict this book is a prerequisite. Moreover, it is a confirmation of Mahan's prophecy. Finally, it interprets the "Atlantic Charter" as the basis for a new world order, to be established after this war is won. This basis will not neglect national self-interest, but will advance practical means to insure peace and happiness by collaboration between the two great liberal powers of the world.

Nazi Handiwork

NORWAY, NEUTRAL AND INVADED. By Halvdan Koht. New York: The Macmillan Company, 1941. 212 Pages; Appendices; \$2.50.

This is another account of the fate of a small nation which succumbed to the designs of overpowering aggression. It is a chronicle of brave but futile resistance to the well-laid plans of Hitler. It is a brief for the Norwegian people, whose dogged resistance to German invasion has been overshadowed by the cataclysmic events which transpired contemporaneously in France. The German occupation described in this work follows a now-familiar pattern. This pattern has become the classic example of treachery and fifth column activity, minute and thorough preparation, wanton disregard of all civilized institutions, and self-justification for acts perpetrated.

Dr. Koht is a scholar who has traveled extensively and is

the author of several books on Norwegian history, as well as on American institutions. He was Foreign Minister of Norway at the time of the invasion and personally treated with the German emissaries who subsequently relegated his country to the status of a puppet of Hitler.

For those who would see the working of Hitler's blueprint for conquest and its results in operation, this book will confirm in detail the fate which has been dealt subject peoples and the one which awaits others who fall before the German juggernaut of relentless force.

* * *

No!

IS TOMORROW HITLER'S? By H. R. Knickerbocker. New York: Reynal and Hitchcock, 1941. 376 Pages; Index. \$2.50.

Long famous as a foreign correspondent and interpreter of foreign news, Mr. Knickerbocker here answers the most frequently asked and the most important of the questions that were put before him during a recent lecture tour. Two hundred questions and their answers make a readable and interesting book.

As for the question in the title, the answer is qualified. If we are willing to fight for our freedom and liberty, no matter what the cost or how long it takes, tomorrow is not Hitler's. The tone of the entire book is that we cannot expect to retain our way of life without sacrifices; our choice is that of giving up some of our comforts and perhaps many of our lives, or our way of life.

Since this book was written, the American people, through their Congress, have given part of their decision. We will fight. Time alone will tell if we will fight long enough and hard enough to stamp out the totalitarian menace, but I'm sure most of us agree that Hitler is a poor political risk from now on.

* * *

DAKAR: Outpost of Two Hemispheres. By Emil Lengyel. New York: Random House 1941. 301 Pages; Bibliography; Index. \$2.00.

Dakar the islands in the Atlantic off northern Africa, and much of the interior of Africa are discussed. Geography, strategical values, political developments, history and sociology are treated. There is more to the question of Dakar than has been discussed in the daily papers.

* * *

The Morning After

ARMS AND THE AFTERMATH. By Perrin Stryker. Boston: Houghton Mifflin Company, 1942. 157 Pages; \$1.75.

For those who cannot understand why it takes so many months from the order for 50,000 planes a year to the actual sight of those planes in the air, or why Detroit cannot run medium tanks along its assembly lines with the same speed and facility as sedans, this book contains a lot of answers. Mr. Stryker, a former *Fortune* magazine writer, has the knack of explaining technical problems in layman's language.

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The author covers a wide field in a few words. Production and supply problems from raw material sources to assembly lines, dislocation of workers and industry due to the defense program, and what will happen after peace disrupts our war economy are discussed. Mr. Stryker seems care not where his chips fall; industry, labor, the government, the Army and Navy, OPM, and management, all come in for criticism at some time in the book.

The part concerning the aftermath, or what happens after the war is over, is of course conjectural. Mr. Stryker seems to indicate that the disgruntled industrialists, obstreperous labor, and the government will just have to solve the problem among themselves.

Part II

THE WAR: SECOND YEAR. By Edgar McInnis. New York: Oxford University Press, 1941. 282 Pages; Illustrated; Appendix; Chronology; Index. \$2.00.

Newspaper headlines are evanescent things—the stirring banner-line of today is tomorrow's wastepaper. How many of us who read of the gallant stand of the *Jervis Bay* even think of that heroic ship today? And so it is with the rest of the incidents of a widespread and fast-paced war.

As he did in his *The War: First Year*, Mr. McInnis has collected all the significant incidents of the second year of the war, coordinated them in relation to time and effect, and presented them with a lack of bias surprising in an interested Canadian. The author has the knack of making every word count; he writes vividly, but without much use of descriptive words. The book is not only a compilation, it is editing in the highest sense.

The historians of the future are certain to use this series of books as source material on World War II.

Bombs in London

CIVILIANS MUST FIGHT. By Raymond Daniell. New York: Doubleday, Doran and Company, Inc., 1941. 322 Pages; \$2.50.

Raymond Daniell is (or was) Chief of the London Bureau of the *New York Times*. As the representative of one of this country's greatest newspapers, he went places and saw things that many of the lesser journalists missed. But he did not miss the sound of falling bombs, or the half-dazed feeling of the man who has missed being blotted out by some little quirk of circumstance.

Mr. Daniell has tried to be honest with his readers, telling them what is happening in London, what he likes about England and the English, and what he dislikes about them. All through the book is the undertone of "Don't trust the Axis—they'll go to work on America when they're ready." That he was proved right is now history.

The book is largely straight reporting, with a little feature writing and a little propaganda for preparedness and aid to Britain. Written by an ace newspaperman, it is interesting, and entertaining as well as solid. We believe it is one of the best of its type—the personal experience of the war reporter in London.

Miscellany

Famous Regiment

THE DELAWARE CONTINENTALS. By Christopher L. Ward. Wilmington: Historical Society of Delaware, 1941. 484 Pages; Appendices; Notes; Index; Illustrated. \$3.75.

The Delaware Regiment was the only regiment the small state of Delaware furnished to the Continental armies. The regiment never had more than 550 men, and towards the last of the war it had less than one hundred, but it fought in as many engagements, and gave as good an account of itself as any other regiment in the whole Colonial army. It fought four years in the North and three years in the South.

Princeton was the only important battle the regiment missed. Beaten more than once, the regiment was never disgraced. Had the entire patriot army been on a par with this organization, the war might have been ended much more quickly, and with much less suffering to the nation as a whole.

The author, a staunch son of Delaware himself, misses no opportunity to impress the reader with the quality of the Delaware soldiery in the Revolution, but it must be admitted that these men of Delaware were worthy of praise. The history of the regiment reads like the history of the war because the regiment seemed to be where the war was.

The book itself is a worthy addition to any library, military or otherwise. Aside from its content, a rich store of Revolutionary history, the book is exceptionally well printed and bound.

Smile, Darn It

THE 1942 NEW YORKER ALBUM. New York: Random House, 1941. \$2.50.

With the gloom of war darkening the world, a touch of humor is a great morale factor. Here are several hundred of the best cartoons from the *New Yorker* to bring many a smile and a few laughs to even the most sober. The best of the current crop of cartoonists have contributed the best of their current crop of cartoons to this volume. If the reviewer were a battery commander or a morale officer in any situation where even the smallest library were possible, this album would be near the top of the list of books to be procured.

Speak to the Neighbors

PAN-AMERICAN SPANISH SELF-TAUGHT. By Francisco Ibarra. New York: Random House, 1941. 330 Pages; Illustrated; Index. \$2.50.

Francisco Ibarra is the instructor in Pan-American Spanish for the short-wave department of the Columbia Broadcasting System. This book is the complete system he has used in that instruction.

The serious student of Pan-American Spanish should find this book very helpful. The lessons are short, the vocabularies are logically arranged, and the pictures aid in visualizing thoughts rather than tying those thoughts to English words. The section on the idioms of the different South American countries should be particularly valuable, especially for the student who has a smattering of Castilian Spanish.

The catechism and conversation at the end of each chapter should aid in helping the student *think* in the language he is learning. The book is not a pocket-manual for a casual visit to South America, but a complete and easily-understood text for the student who really wishes to learn the language.

/ / /

For Shutterbugs

THE PHOTOGRAPHER'S RULE BOOK. By Larry June. New York: The Macmillan Company, 1941. 89 Pages; Illustrated; Index. \$1.25.

This book is not written for the candid-camera owner—it is directed at the novice with his first Brownie. All the many fine pictures reproduced in the volume were taken with cameras that retail for less than \$15.00.

Mr. June has succeeded in explaining the elements of picture-taking for pleasure in language that is far from technical, and yet that does not give the more intelligent reader the idea that the author is talking down to him. The author goes into detail on the handling of human subjects, and his little tricks should be worth the price of the book to those of us who always manage to make our snaps look like pictures of wooden dolls or oafs. The book includes just enough about the mechanics of the camera to aid the photographer to get the best that's in it. His analogies of the operation of cameras are homely enough to be understood by any ten-year-old.

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