

THE COAST ARTILLERY JOURNAL

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THE 603RD COAST ARTILLERY (RY.) AT FORT MONROE, VA., AUGUST 3-16, 1930

Top row (left to right)—Lieuts. L. L. Richardson, C. I. Cather, R. M. Cohen, D. N. Cameron, A. B. Auty, A. R. King, H. K. Bache, O. W. Rust, R. D. Chew, and P. O. Emerick. Second row (left to right)—Lieuts. W. L. Gramer, G. S. McKee, H. Wahrman, R. L. Sinton, R. B. Riley, J. J. Murphy, H. P. Wade, S. M. Martin, R. M. King, E. G. Johnson, F. L. Stephens, A. C. Dick, and M. A. Gross. Bottom row (left to right)—Capts. C. Z. Rosecrans, J. J. Buchser, J. A. Malone, E. R. Anshutz, Maj. T. A. Scott Thropp (Commanding), J. A. Lindner, Capt. M. B. Bradley, A. C. Adair, Lieut. R. G. Rehkop.

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Army Publicity and the Professional Service Journals

By GEN. C. P. SUMMERALL, Chief of Staff, U. S. Army

TRUTHFUL publicity is one of the most important missions of the Army in time of peace. This is also the case in time of war, with the difference that in peace great efforts are required to secure proper publicity, while in war publicity is automatic. The Army is an instrumentality of the government, as necessary in peace to prepare for defense as it is in war to execute the defense. During war the people understand perfectly well the mission of the Army; in peace its mission is obscure. Even the people who participated in war have become largely occupied with their own affairs and have little time to devote to thought on the military establishment.

The Army depends for its existence and support upon the will of the people. The extent of their interest measures the degree of support that the Army receives. It is not fair to the Executive or to Congress to expect them to act arbitrarily in providing means for the support of the Army when the people know little about the reasons for its existence. It is one of the duties of the Army to acquaint the people with its mission and its performances in time of peace.

There has been in our Service an evident tendency for officers to avoid "bursting into print." As a result, our list of military writers who have achieved distinction is regrettably short. We still rely on British authors for standard works on Jackson, Lee, Sherman, Grant, and other outstanding American military leaders. Up to the close of the World War, our military text books were largely indebted to foreign publications for their contents. Recently, at a well-known conference for the discussion of national and international questions, a distinguished foreign official was led to ask why Americans always assumed an inferiority complex when discussing their own country with foreigners. There is no reason for our officers to feel inferior; or to imply, by their silence on military subjects, undue deference to the opinions of foreign military writers. There are many subjects of immediate importance to the Army that American officers should discuss in the pages of the professional magazines of the arms and services, which we call the Service Journals. The editors of these Journals may be relied upon to protect authors and the War Department from untoward incidents that might arise from the publication of undesirable material.

The peace-time activities of the Army embrace a wide range of interest-

ing subjects. Comparatively little of the available data on many of these subjects is confidential. The War Department General Mobilization Plan, for example, is a public document; the more widely it is known in the Service and in the country, the more smoothly will it operate in a national emergency. Similarly, much information concerning the annual military budget is set forth in the volumes of hearings before the Senate and House Appropriations Committees and in the Congressional Records. It is a fallacy to charge the Army *in being* with the costs of former wars—a fact that is clearly brought out in committee hearings—and yet this information might be in a sealed book so far as the public is concerned. Enough materials exist in little known public documents to enlighten the public in an interesting and authoritative way on every phase of military activities. Little has been accomplished along this line, though many officers are well qualified to utilize this material in articles that would be most acceptable to our Service Journals.

There appears to be an idea that news consists of only such items as appear on the front pages of the metropolitan newspapers. Nothing is farther from the truth. Our Service Journals afford an excellent means of making military news available to the public. When an article appears in any of the Service Journals it comes to the attention of publishers who are constantly on the lookout for interesting material on subjects connected with national defense. Any article that has value for their purposes receives prompt attention; it may be quoted at length or may serve as the basis for articles prepared by civilian writers. In either case, the author receives due recognition and the Army benefits by having its activities accurately portrayed. Many officers who are not directly connected with the Army's regularly established publicity agencies will find that the Service Journals afford the most convenient outlet for authoritative and interesting articles. They can thus pass on to the Service and to the public the results of their study, their thought, and their experience.

There are various sources upon which writers can draw. In the civil activities of the Secretary of War, the War Department is conducting vast projects for public improvements and construction. Work on rivers and harbors, inland waterways, flood control, the survey of the proposed Nicaraguan Canal, the operation and returns from the Panama Canal, the construction of legations and embassies abroad—these activities are scarcely known to the public. The offices of the Assistant Secretaries have ample quantities of non-confidential information on the development of aviation and on the mobilization of industry. If properly presented, this material would be of absorbing interest not only to the Army but to a great number of influential citizens. The War Department General Staff, corps area commanders, division commanders, chiefs of arms and services, the War College, the General and Special Service Schools, all have a wealth of material which would be far more useful and valuable if put into circula-

tion. Antiaircraft defense, reorganization of infantry units, the development of semi-automatic rifles, tanks, armored cars, all-purpose gun carriages and self-propelled gun mounts, the use of and defense against chemical agents, the National Guard, Organized Reserves, R. O. T. C., C. M. T. C., the Army school system, methods of instruction, methods of training, and leadership, are examples of subjects on which a great deal of non-confidential data are available.

The field is open, and some of our Service Journal editors are cooperating in an effort to make it more attractive. They propose to pool all articles received and to publish those of outstanding merit in several Journals at once. Valuable articles will thus receive the wide distribution that they deserve. In producing such articles, experienced officers of high rank should set the pace. Junior officers who devote their spare time to writing will acquire professional reputation in direct proportion to the value of their contributions. Writing is hard work, because clear thinking is the basis of good writing. Many a thought that sounds plausible in oral discourse shrinks to small proportions when crystallized in writing. Moreover, the successful writer must express his thoughts clearly in plain English, and he must employ tact. A tactful writer can avoid criticizing those in authority without neutralizing the persuasive power of his own views. I consider it highly desirable that our officers develop their talents by contributing well-considered articles to the professional Service Journals.

The wisest and most far-sighted of us are still unable to foretell the incidence of this most dreaded and ancient of our scourges. Our knowledge of war is like our knowledge of cancer. We can recognize its preliminary symptoms. We can take precautions against it. We can forestall it on occasion. We can make intelligent hypotheses as to its essential nature. But in the present state of human knowledge we cannot isolate the germ, and we cannot flatter ourselves that we have the malady under complete control. In the near or distant future war may or may not supervene. If it comes, you or your children or your children's children, will gird for battle as unhesitatingly as you and your forebears have done in the past. But even if this supreme need does not arise, and we will all pray that it will not arise, the need for reasoned, steadfast patriotism strongly persists. America is what it is today because our people as a whole have generally realized that country should come before self. If America is to continue America we must hold that realization unflinching before us.—From an address by Gen. Charles P. Summerall, Chief of Staff, at Gastonia, North Carolina.

Antiaircraft Machine Gun Service Practices

By CAPT. B. L. MILBURN, C. A. C.

MUCH progress has been made in the development of antiaircraft material and in the improvement and standardization of fire control methods and target practice procedure. Much, however, remains to be done in these respects and the contemporary battery commander of antiaircraft artillery is faced with the responsibility and the duty to devote his thought and energy to the solution of problems which will promote further development and progress. While the principal, and in all cases, the final development and experiments must necessarily be made at the Aberdeen Proving Grounds the practical experience of officers in the field is indispensable to substantial progress in antiaircraft artillery. This experience is necessarily restricted by the fact that we have only seven active antiaircraft regiments, all skeletonized. When we consider the fact that so few of our officers are gaining practical experience in antiaircraft artillery today and that the expansion in this branch of the corps will be enormous in the time of war, it becomes sufficiently clear that much is expected and required of the few that are able to speak from experience.

Annual service practices are the only means provided for gaining experience in antiaircraft artillery. Methods have been prescribed for conducting these practices. Frequent changes and revisions have been published with a view to standardizing and improving these methods. Most of these have been the result of recommendations and suggestions submitted from the field. Any further development and progress must come largely from the same source. It is only by a frank discussion and consideration of existing methods by officers who employ them that we can hope to attain the progress that is sought. The remarks that follow are submitted with this end in view.

GUNNERY

Training Regulations 435-210 are the only instructions of the War Department covering the subject of gunnery for antiaircraft machine guns. These regulations were published as early as March 21, 1924. They contemplate the use of either the Front (Forward) Area sight or the Peyser sight and contain the following provisions for the determination and application of the firing data:

“It is thus evident that antiaircraft machine gun firing data may be best attained by *expert estimation* until some simple accurate instrument, capable of giving results in the minimum amount of time, becomes available.”

The altitude and speed are *estimated* by a noncommissioned officer and transmitted to the guns. The range is also necessary in most cases but

no instructions are given as to how this may be obtained, unless it is inferred that this, also, shall be estimated. After applying the data determined in the manner indicated above "and after getting an idea of the lead on his target, the gunner, assisted by No. 2, should observe the flight of his tracer bullets and make such additional corrections as he deems necessary, but the gunner must bear in mind that the tracer may mislead him in regard to elevation unless the range of the tracer is equal to or greater than that of the target." The latter is a most important provision but no instructions are given as to how the gunner may interpret the appearance of his tracers.

Paragraph 33c (2) of Training Regulations 435-55, which govern the conduct of service target practices, contains the provision that "two record service practices will be fired with a 90° angle of approach; one record service practice with a 45° angle of approach; and one record service practice with 0° angle of approach." This requirement has led to experimentation and development in every active antiaircraft regiment, with the object in view of obtaining a more accurate method of determining fire control data than by estimation, as contemplated in T. R. 435-210. The general trend has been to determine vertical and lateral leads accurately and to announce these to the gunners, with definite aiming points, rather than to permit the gunner to determine his own lead. The adjustment of fire, based on appearance of tracers, has received similar attention.

MODIFICATION OF FRONT AREA SIGHT, MODEL 1917

This sight is not adapted for use in machine gun service practices, in which definite types of courses are prescribed. The peep in the center of the sight is too small to permit satisfactory tracking on fast-moving targets. The sight is also so open that no suitable aiming points for "lead" are available. By placing wires across the sight, however, these objections are overcome. Figure 1 shows the Front Area sight, modified in this manner. The vertical wires are placed 1.02 inches on either side of the peep in the center of the sight. These wires are 40 mils from the center of the sight, as viewed from the rear sight (center of large peep). The outside of the oval of the front sight, on the horizontal axis thereof, is 67 mils from the center of the sight; the inside oval, 60 mils from the center of the sight. Thus, any lateral deflection up to 87 mils may be accurately set in either direction by using the vertical wire, or the inner or outer edge of oval on the horizontal axis as an aiming point and by setting from 0 to 20 mils on the deflection scale of the rear sight. This amount of lead is insufficient at extreme ranges and speeds, but is the greatest that can be obtained with the present sight. A larger sight, including modifications similar to those described, is needed, to afford the maximum lead required.

A wire placed around the vertical bar in the inner oval of the front sight and extended to the lower vertical bar, as indicated, provides a satisfactory aiming point (at apex of triangle) for overhead and diving targets.

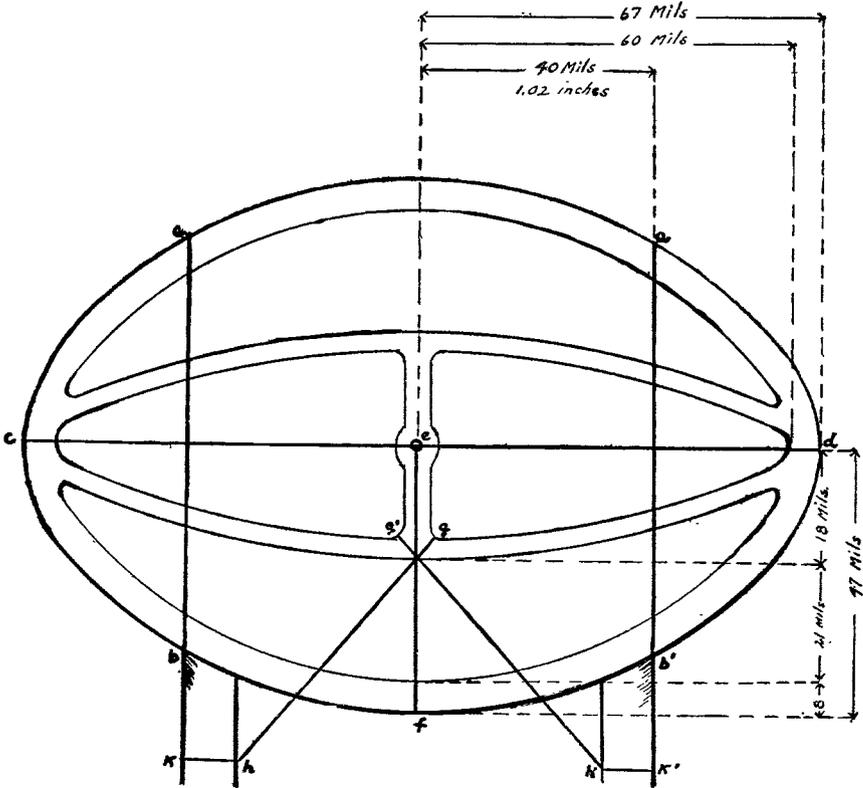


FIG. 1. FRONT AREA SIGHT, 1917

Lines a b, a' b', c d, e f, g h k, and g' h' k' indicate the position of wires.

With the sight as modified, the lateral deflection and the vertical lead are determined and transmitted to the individual gunners in terms of aiming point and windage, and elevation, respectively. For example, if it be determined that a lateral deflection of 45 mils and a vertical lead of 30 mils are necessary for a target approaching from the right, the gunner is instructed to aim on the right vertical wire (at intersection with horizontal axis) and set 5 points left windage (giving a lateral lead, or deflection, of 45 mils) and to set an elevation of 2275, corresponding to the necessary amount of vertical lead and additional superelevation required for the curve of the trajectory.

THE ANGLE OF APPROACH

Paragraph 13, T. R. 435-161 defines the angle of approach as "the horizontal angle formed between the symmetrical axis of the airplane and

the horizontal line in the vertical plane containing the line of sight." For antiaircraft service practice purposes a more simple, though somewhat less exact, definition may be taken as "The horizontal angle between the line of direction of the target and the line of sight." Let us consider this definition in connection with the requirement of Paragraph 33e (2), T. R. 435-55, that one record practice be fired with 0° angle of approach; two with 90° angle of approach; and one with 45° angle of approach. By definition, a course presents a definite angle of approach for only one instant. And, similarly, a particular course may pass from an 0° angle of approach to a 90° angle of approach.

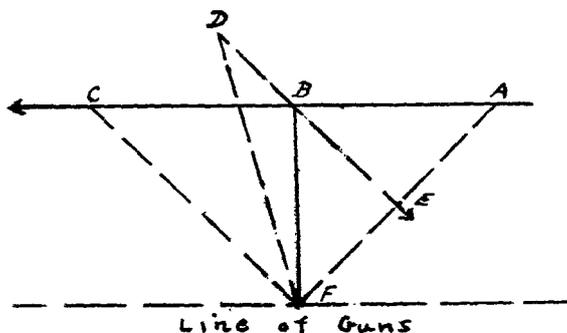


FIGURE 2

The common conception of a 90° course is one in which the target passes parallel to the line of guns (as *AC* in figure 2); a 45° course, one in which the target approaches the line diagonally (as *DE*) and a 0° course, one in which the target approaches perpendicularly to the line of guns (as *BF*). Course *AC*, however, is a 90° course only at point *B*, it is a 45° course at points *A* and *C* and a course of an increasingly greater angle between these points. Course *DE* is about a 30° course at point *D*, a 45° course only near point *B*; and it becomes a 90° course near point *E*. Course *BF* is a 0° course at all points but it must pass directly over or lead directly toward the gun to be a true 0° course and if it does not do so it is a course of a varying angle. Similarly, the true 0° course may approach from *any* direction; the only requirement being that it pass over or lead directly toward the gun. It may thus be seen that the regulations with reference to angles of approach are not sufficiently clear and may easily lead to misunderstanding and misapplication. In as much as a 90° course and a 45° course can be a true 90° course and a true 45° course, respectively, only for one instant, limiting angles of approach for firing should be prescribed.

Such a provision would also prevent a normal 45° course from being converted into a 90° course, such as firing at point *E* instead of at point *B*. To fire at the 90° point is a simpler and easier proposition than to fire at

point B. Paragraph 33e (2) T. R. 435-55 should be amended to provide that two record practices be fired within an angle of approach, extending from 75° on one side of the 90° point to 75° on the other side of that point; one service record practice within an angle of approach of 45° to 75° (lower limit for purpose of safety); and one record service practice with 0° angle of approach.

Of course, we are deviating from service conditions when we prescribe *any* definite angle of approach. In time of war a plane will approach or pass at any or all angles. We will not know in advance what these angles will be. To prescribe that a certain service practice will be fired with a 90° angle of approach, and to rate the organization on its efforts, quite naturally stimulates a plan to solve each particular type of course. The organization commander knows that the target will pass through the 90° point. (The point where the slant range is the shortest or the angular height, the greatest.) He prepares his data for that point. Fire is opened a little ahead of the 90° point and continued a little beyond it, to insure effective application of the data selected. This is a rather "cut and dried" method but it is inevitable under and justified by the conditions of target practice competition. It is not so "cut and dried," however, as it may first seem because the safety of the towing plane precludes unknown and surprise angles of approach and the unit commander is gaining valuable information and experience in dealing with targets at varying angles of approach. In time of war he would have the same problem except that he must determine for himself the probable direction or angle of approach of the target and deal with it accordingly. The perfection of glider targets will remove the element of safety and will permit the unit commander to solve his problem in a manner more nearly approaching that in war. Every effort should be made to provide and require this type of target at the earliest practicable date.

FIRE CONTROL DATA

In the absence of approved instruments for and methods of obtaining satisfactory fire control data the principal efforts and study in the field have been directed to this end. In an effort to determine more accurately than by estimation the proper lead on a target it is necessary to know one or more of the following, depending on the type of course the target is describing:

- Ground, or true speed of the target.
- The altitude of the target.
- The angular height of the target.
- The slant range of the target.

DETERMINATION OF GROUND SPEED

No entirely satisfactory instruments or means have been developed to determine accurately the ground speed of the target. (The speed computer described in paragraph 29, T. R. 145-160 is not suited to machine gun purposes but a similar instrument might be built which would be satisfactory.) If the plane is near the 90° angle of approach point the ground speed can be quite accurately determined by an angular travel method, using any horizontal angle measuring instrument and a stop watch. For

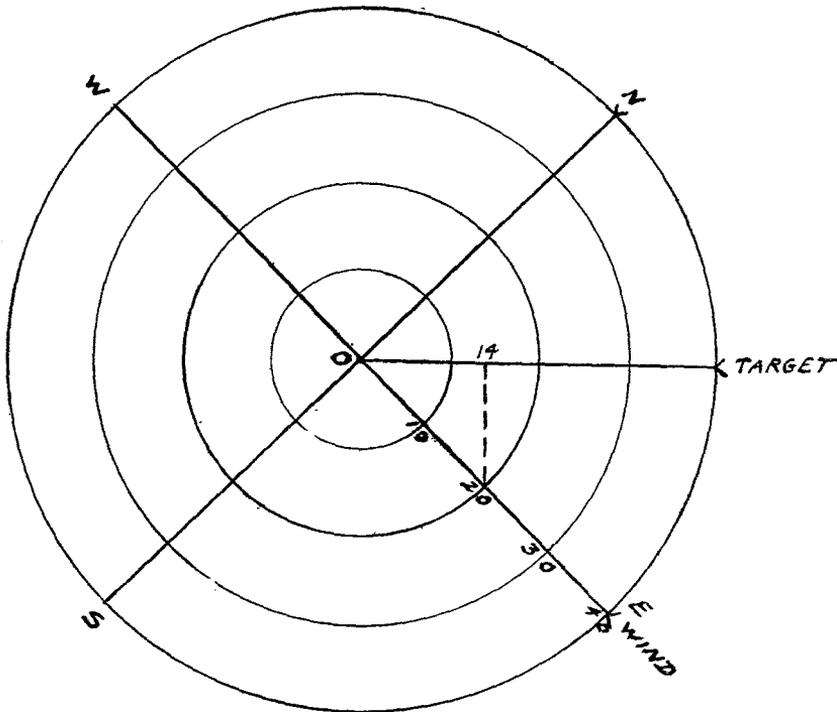


FIGURE 3

other points, however, this method would not be accurate. Pending the development of satisfactory instruments the ground speed must be obtained by correcting the engine speed (the speed in still air) for the effects of wind and the retardation of the sleeve target. The engine speed of most planes is known. The speed developed by a particular plane during target practice or other training is usually available. Although local conditions may require a different figure, normally about three-fourths of the maximum engine speed may be taken as the speed, corrected for retardation of the sleeve target. This speed must be further corrected for wind effects. A meteorological message is not always available nor absolutely necessary.

The velocity and direction of the wind and the direction of approach of the target can be estimated with fairly accurate results. The velocity of the wind in the plane of the target can then be determined by simple wind-rose methods and applied algebraically to the speed corrected as indicated above, to obtain the true or ground speed of the target. (The effect of wind on the trajectory of the bullet is negligible, as compared with other effects, and may be disregarded in antiaircraft firings.)

Assume that the known maximum engine speed of the plane is 100 miles per hour; that a 20-mile-per-hour wind is blowing from the east at the altitude of the target; and that the target is approaching from the northeast, at an angle of 45° . To correct the speed for retardation of the sleeve target take three-fourths (or any fraction determined locally as best) of 100, or 75 miles per hour. The wind component in the direction of the target is then determined mathematically as the sine of 45° (.7071) times 20, or graphically, as plus 14. (See Figure 3.)

Drop a perpendicular from the OW line, at the proper velocity point, to the OT line. The scaled distance from O to the point of intersection is the wind component for the target. If the W-O-T angle is less than 90° add this component to the speed of the plane; if greater than 90° , subtract it.

Plus 14 is added to 75, to obtain a ground speed of 89 miles per hour. Were the target approaching from the east the ground speed would be 95 miles per hour, from the west, 65 miles per hour.

ALTITUDE

Altitude can be estimated with a fair degree of accuracy but it is better to determine it instrumentally, if practicable. The use of 1920 altimeters, with a short base line, for this purpose will give fairly accurate results. (See T. R. 435-160 for method of determining altitude.) From the construction of the altimeter it may be noted that a base line may be set off as conveniently in feet as in yards and that the altitude scale will then indicate the altitude of the target in feet. The base line, of course, should be as long as practicable.

A self-contained instrument, such as a coincidence height or range finder, is not considered satisfactory for obtaining altitudes. Such an instrument has inherent limitations. Coincidence is difficult to obtain accurately and promptly enough for machine gun aerial firing. It is believed that the solution to the altitude problem lies in the building and perfection of instruments, similar to altimeters, which will give altitudes quickly and accurately from a short base line.

ANGULAR HEIGHTS

Angular heights can be determined with extreme accuracy from any vertical angle reading instrument. The new model 1920 Observation Telescope (B. C. Instrument) is most satisfactory for this purpose.

SLANT RANGES

Slant range is a function of altitude and angular height, whether obtained mechanically, graphically, or mathematically. As noted above, angular heights can be determined accurately; altitudes with a fair degree of accuracy. The accuracy of slant ranges depends, therefore, largely upon the determination of accurate altitudes.

Slant ranges can be conveniently determined by the use of an altimeter as explained in paragraph 43, Coast Artillery Memorandum No. 9, Office of the Chief of Coast Artillery, March 23, 1929. The slant ranges for various altitudes and angular heights may also be computed mathematically and arranged in convenient tabular form for use during the firings. Such a table should be constructed in any event for it is valuable in many other ways.

OVERHEAD (0°) COURSES

For 0° courses the ground speed, the altitude and the angular height of the target are the essential elements of the fire control data. Upon these elements depend the amount of superelevation required for vertical lead and for the curve of the trajectory. No lateral deflection is required for a true 0° angle of approach course, although it may become necessary to set off a few points windage after observation of fire.

Table F shows the rear sight settings required to obtain various superelevations of the gun, using the horizontal wire through the center of the front area sight and the lower edge of the inner oval (apex of triangle, Figure 1) as aiming points from the center of the large peep in the rear sight. The latter aiming point is used for overhead (0°) courses.

Table A has been prepared from range table data in which the amount of vertical lead in mils, required at varying speeds, altitudes and angular heights of the target has been converted into rear sight settings in yards, as shown in the "Apex" column of Table F. For example, it is found that a target travelling 50 miles per hour at an altitude of 1,200 feet and an angular height of 500 mils requires a vertical lead of 20 mils and 10 additional mils superelevation at this point, to allow for the curve of the trajectory. The "Apex" column of Table F shows a rear sight setting of 2,125 for a superelevation of 30 mils. Entering Table A with a speed of 50 miles, an altitude of 1,200 feet and an angular height of 500 mils we find the rear sight setting to be 2,125. Table A, therefore, furnishes a convenient and ready means for determining the proper rear sight settings for 0° courses.

Angular heights and altitudes are read continuously from the beginning of the course. The latter will rarely change, especially during the short time the guns are in action, normally not over 12 seconds; the former will change with increasing rapidity as the target approaches. The officer

conducting the firing selects an angular height through which the target must pass during the time the guns are in action. The angular height selected will be governed by experience. Low angular heights give long slant ranges. The target has a lower rate of angular travel and is comparatively easy to track but hits will be fewer at longer ranges, as the presented area is smaller and the cone of dispersion is greater. High angular heights give shorter slant ranges. The target has a high rate of angular travel and is more difficult to track but an increase of hits will result from the fact that the presented area is larger and the dispersion less. Fire is opened sufficiently far in advance of the angular height selected to allow for angular travel during the time of flight and about one-half of the time the guns are to be in action. One hundred mils in advance of the angular height selected is usually satisfactory.

90° COURSES

For 90° courses, the ground speed and the slant range of the target are the essential elements of the fire control data. Table B has been prepared from range table data for use with these courses. It shows the lateral deflections required for a target of a given ground speed and slant range and the rear sight setting for a given slant range. The latter is for superelevation to allow for the curve of the trajectory only, as no vertical lead is necessary in the immediate vicinity of the 90° point. The table also shows other valuable information, use of which will be explained subsequently. Slant ranges are read and announced continuously to the officer conducting the firing. He causes the firing to commence before reaching the 90° point and to be continued after passing that point, to allow for angular travel during the time of flight and to insure effective application of the data. There are no instruments available to determine angles of approach. Such an instrument would be decidedly helpful in all antiaircraft firings. The 90° point can be estimated with a fair degree of accuracy, however. It is always the point of minimum slant range and the maximum angular height.

To use the table, assume a target approaching from left with a ground speed (corrected) of 60 miles per hour and a minimum slant range of 1,000 yards. The lateral deflection is 56 mils. The gunners are instructed to set an elevation of 2,150 on the rear sight, 16 points right windage and to aim on the left vertical wire. Fire is opened at about 1,050 yards slant range, to allow for travel during the time of flight and about one-half the time the guns are to be in action.

OBLIQUE COURSES

Oblique courses are the most difficult of all, for they require both vertical and lateral lead. (This comparative difficulty should be recognized

in scoring formulae.) For these courses the ground speed, the altitude and the slant range of the target are the most important elements of the fire control data. The ground speed, in turn, must be reduced to lateral and longitudinal components, based on the angle of approach. Table C is a tabulation of lateral speed components. Table D is a table prepared from range table data, in which the amount of vertical lead (in mils) required at varying speeds, altitudes and angles of approach of the target has been converted into rear sight settings in yards, based upon use of the large peep in the rear sight and any point on the horizontal axis through the center of the front area sight.

To use the tables, assume that the corrected ground speed of a target passing from right to left is 70 miles per hour. It is desired that the target be at about the 60° angle of approach point (the 45° point is too near the margin of safety for the towing plane) at the mid-point the guns are in action. From Table C, we find that the lateral speed component is 61 miles per hour and the longitudinal speed component is 35 miles per hour. Assume further that a slant range of 1,200 yards will be reached at about the 60° point and that the altitude is 1,400 feet. Entering Table B with a lateral speed component of 61 miles per hour (interpolating between 60 and 70) and a slant range of 1,200 yards, we find that the lateral deflection is 64 mils. Entering Table D with a longitudinal speed component of 35 miles per hour (interpolating between 30 and 40), an altitude of 1,400 feet and a slant range of 1,200 yards, we find that a rear sight setting of 2,285 yards is required. This sight setting, 4 points *left* windage and the aiming point as the right inner oval (60 mils lateral lead) are announced to the gunners. Fire is opened a little ahead (about 100 yards) of 1,200 yards slant range to provide for travel during the time of flight and about one-half the time the guns are to be in action.

DIVING TARGETS

In time of war a machine gun would have occasion, frequently, to deal with a target diving directly toward the gun, a condition not met in service practice. Such a target would require no lateral deflection and no vertical lead but would require superelevation for the curve of the trajectory. For such a target the speed, the angular height, and the slant range of the target are the important elements of fire control data.

Table E shows the amount of superelevation required for targets of varying angular heights and slant ranges. Slant ranges and the angular heights are read continuously. The latter, ordinarily, would not change for a particular target. The former will change rapidly, depending on the speed of the target. It must, therefore, be determined in advance at what slant range the command "Commence Firing" will be given and to set a superelevation based on this data, corrected for the time of flight. After experience this may be estimated with sufficient accuracy but the change in slant

range during the time of flight may be accurately determined from Table B.

Assume a target diving directly toward the gun at a ground speed of 80 miles per hour, and at an angular height of 600 mils. It is desired to open fire at a slant range of 1,000 yards. Table B shows the ground speed of a target travelling 80 miles per hour to be 39.2 yards per second and the time of flight for a slant range of 1,000 yards to be 1.924 seconds. The slant range of the target will, therefore, be reduced 75 yards during the time of flight, or the target will be at a slant range of 925 yards when engaged. From Table E, a target with an angular height of 600 mils and a slant range of 925 yards requires a rear sight setting of 1,920 yards. This is announced to the gunners, with the "Apex" as the aiming point.

ADJUSTMENT OF FIRE

It is not claimed that the tables accompanying this discussion are mathematically exact in every instance. Their use has given satisfactory results in target practice, however, and practically every instance of their failure to do so has been traced to an inaccurate determination of one of the elements of fire control data used to enter the tables. In any event use of the tables will give satisfactory initial data and improvement in fire effect can be obtained by adjustment.

Adjustment of fire can best be made upon observation of tracers, although it should be noted in this connection that tracer cartridges do not describe exactly the same trajectories as ball cartridges. An additional basis for adjustment in target practice is furnished, of course, by examination of the sleeve target after firing one or more courses. It is impracticable to have the target dropped at the end of each course, however, and this method does not permit adjustment of fire to any particular course. Nevertheless, examination of the target should be made as soon as practicable and fire control data adjusted for subsequent courses. In time of war much the same information would be furnished by the observed effects on the target plane.

Adjustment of fire by observation of tracers is a more difficult operation than it would seem. The individual gunners, without considerable experience, training and intelligence, can hardly be trusted with this operation. In adjusting fire by observation of tracers it is essential to know the slant range of the target and the tracer range of the bullet. Unless this information is known and applied the observation of tracers will be extremely misleading.

Only when the tracer range is the same as, or a little greater than, the slant range of the target should the tracers appear to pass through the target. In all other cases they should appear to burn out at a varying distance from the target. This distance can be measured in target lengths, or in mils with a pair of field glasses or other instruments.

When the slant range is greatly in excess of the tracer range the tracers

should appear to burn out ahead of the target. The distance ahead of the target in terms of target length may be determined from the following equation in which,

TL = Target lengths.

t = Time of flight to target.

t' = Time of flight to tracer burning.

S = Ground speed of target in yards per second.

L = Length of target in yards.

$$TL = \frac{(t - t') S}{L}$$

Assume a target 10 feet long, a ground speed of the target of 70 miles per hour, a tracer range of 600 yards and a slant range of 1,000 yards. From Table B we find that the ground speed of the target is 34.3 yards per second, the time of flight to the target (1,000 yards) is 1.924 seconds and the time of flight to the tracer burning (600 yards) is .899 seconds. Using these figures in the above equation we find that the tracers should appear to burn out about 10 target lengths ahead of the target. A convenient table may be made up from this equation showing target lengths at which tracers should appear to burn out, using the known tracer range of the tracers on hand and the slant ranges and speeds expected from the targets.

Proper tracer leads may also be determined in mils, for use with field glasses or other instruments. Tracers should appear to burn out ahead of the target a number of mils equal to the difference between the lateral or vertical lead of the target and the lateral or vertical lead of a target at the range of the tracer burning.

Assume a target near the 90° angle of approach point, at a slant range of 800 yards, and a ground speed of 70 miles per hour and tracers which burn out at 600 yards. Table B shows the lateral deflection for the target to be 59 mils and the lateral deflection at 600 yards to be 51 mils, a difference of 8 mils. The tracers should, therefore, appear to burn out 8 mils ahead of the target.

As far as range is concerned, and this is a more difficult problem, the tracers should appear to burn out (approximately) a number of mils above the target equal to the difference in superelevation required for the target and for a target at the range of tracer burning. From Table B, we find that the rear sight settings required for a range of 800 yards and 600 yards are 2,100 and 2,065, respectively. From Table F, we find that these sight settings (using the horizontal wire as an aiming point) correspond to superelevations of 10 mils and 6.5 mils, respectively. This is a difference of 3.5 mils. The tracers should, therefore, appear to burn out approximately this number of mils above the target. The amount of vertical lead for overhead (0°) and oblique courses can best be determined by experience. It, however, can be computed, approximately, if desired. Assume a target on a

0° course with a ground speed of 70 miles per hour, and at an altitude of 1,200 feet and an angular height of 500 mils. From Table A, the rear sight setting for the target is 2,200. From Table F, this corresponds to a super-elevation of 38.3 mils. A target at 600 yards slant range (the tracer range) and an angular height of 500 mils would be at an altitude of about 825 feet (from any chart). The setting for 1,000 feet altitude is 2,150, corresponding to a super-elevation of 33 mils. The super-elevation for a target at the tracer range is therefore about .825 times 33, or 27.2 mils. This is 11 mils less than the super-elevation required for the target. The tracers should, therefore, appear to burn out about 11 mils ahead of the target and in the same vertical plane with it. Tables could be prepared locally showing tracer information in convenient form, based on the tracer ranges and other conditions obtaining.

Observation of tracers on overhead (0°) courses and (45°), or oblique courses, should be made on a flank at considerable distance from the guns, as the observations will be more reliable. For the latter courses the flank toward which the target is approaching will afford more reliable observation for vertical lead and the opposite flank, more reliable observation for lateral lead.

FIRE CONTROL SIGNALS

It is impracticable to change sight settings during fire on a particular course. Such adjustment must be secured by signals to the gunners to change aiming points on the target or the front area sight. Table G shows a convenient set of fire control signals. These signals conform as nearly as practicable to those given in T. R. 420-20. The individual gunner, of course, must understand to which particular points he must shift his aim upon the proper signal. Assume that he is tracking a target on a 90° course (right to left) with the nose at the intersection of the horizontal wire and the right vertical wire. Upon a signal to shift his fire to the right he could move his aiming point to about one-fourth the distance to the center of the sight (small peep), which would reduce the lead by 10 mils. Similar shifts can be made to various points on the sight, to afford changes in vertical or lateral lead, as desired. Slightly less lead can also be taken by shifting the aiming point on the target from the nose to the tail.

If change of data are determined to be necessary upon the conclusion of the course or upon examination of the target they can best be made by changing the rear sight settings and the windage. Table F will be found useful in this connection. For example, assume that a target approaching from the right on a 90° course, at a ground speed of 60 miles per hour, was fired upon at an average slant range of 1,000 yards and at an average angular height of 400 mils. A lateral deflection of 56 mils (right vertical wire and 16 points left windage) and an elevation of 2,150 were used. The position of the tracers with respect to the target were 8 mils to the right of

and 5 mils below those determined to be necessary in accordance with the method indicated under "Adjustment of Fire." An additional lateral deflection of 8 mils, or 64 mils, and an additional superelevation of 5 mils are necessary. The additional lateral deflection may be taken care of by setting 4 points left windage and using the right inner oval (60 mils) as an aiming point. From the "Hor wire" column of Table F, the superelevation for 2,150 yards is 15 mils. An additional superelevation of 5 mils will require a rear sight setting of 2,195.

Tables E and F are also useful in determining, if desired, the amount of vertical lead in mils required for a given target and the amount of additional superelevation required for the curve of the trajectory.

Assume a target on a 0° course, with a ground speed of 70 miles per hour and at an altitude of 1,200 feet and an angular height of 500 mils (corresponding to a slant range of about 860 yards). From Table A, the rear sight setting required for this target is 2,200. From Table F, this corresponds to a superelevation of 38 mils. From Table E, the rear sight setting required for a diving target (using superelevation for curve of trajectory, only) at a slant range of 860 yards and an angular height of 500 mils, is 1,915. From Table F, this corresponds to a superelevation of about 10 mils. The target, therefore, requires a vertical lead of 28 mils and 10 mils additional superelevation to allow for the curve of the trajectory.

COMBINED SIGHTS

This is a term used to indicate that guns engaging the same target are given different sight settings and windage settings, to insure at least some bullets striking the target. As a service condition this method has considerable merit, as the object of antiaircraft fire is to secure at least one effective hit in the shortest possible time. As a training proposition, however, it is not advisable and it is doubtful if better scores in target practice can be obtained by its use, although experienced officers will contend otherwise. It must be remembered in this connection that the dispersion of machine gun fire is considerable at best and that it is a very difficult matter for even an experienced gunner to maintain a constantly accurate aim on a fast-moving target. This condition leads to much the same results as combined sights and deliberately to effect further dispersion is obviously wrong in principle. A further objection is that this method affords no satisfactory basis for adjustment of fire and the personnel learn little from a training standpoint. It is much better to use the best initial data available and get all the guns on the target by adjustment as soon as practicable, than to rest content with a few hits, knowing that most of the guns are ineffective and, which is still worse, not knowing *which* are ineffective.

TARGETING OF GUNS

The object, or at least, the result of combined sights is to enlarge the sheaf of fire or to increase dispersion. The object of targeting guns is to reduce the dispersion (see paragraph 77, T. R. 150-35). From a training standpoint, every effort should be made to cause the guns to shoot together.

Two guns using the same barrel will not always produce the same results, nor will different barrels used with the same gun. Different muzzle velocities will often be developed with different lots of ammunition. Two or more barrels should be assigned to each gun and each barrel should be targeted with that gun, with the ammunition to be used in service practices. Results should be tabulated in convenient form for use during the firings. The process should be repeated if a different lot of ammunition is to be used, major repairs made on a gun, or barrels are used excessively long. In general, 8,000 rounds is the accuracy limit of a machine gun barrel.

The targeting of guns should be conducted on the 1,000-inch range. Machine gun target A (plate 9, T. R. 150-35), with the 700-yard square, may be used for this purpose. The small peep in the rear sight, and the front sight blade should be used for this firing. Twenty-five rounds with each barrel is usually sufficient.

Assume that barrel A of Gun No. 3 requires a rear sight setting of 900 yards and 4 points right windage to place the center of impact on the target. From column 2 of Table I of the Fire Control Tables of 1924 for the Browning Machine Gun we find the angular difference between ranges 700 yards and 900 yards to be + 4.2 mils. It may be noted from Table F that the value of a mil elevation varies from 10 yards to 5 yards in column 1 and from 13 yards to 6 yards in column 2, although the variation is practically negligible in either column for changes up to 25 or 30 mils. Service firings will usually be conducted within these limits of elevation. If oblique or 90° courses are to be flown and the rear sight settings will be around 2,150 yards, a gun difference of 4.2 mils would correspond to about 40 yards on the rear sight. The gunner manning the gun and barrel requiring this change is instructed to add 40 yards to each sight setting announced. Other gun differences in elevation are applied in a similar manner. If most of the guns require correction in elevation as a result of targeting, these can be taken as standard and differences in elevation applied to the data before it is given to the gunners, the remaining guns being given the elevation differences. Small differences of 1 mil or less should be disregarded to avoid possibility of confusion on the part of the gunner.

Differences in windage found by targeting the guns on the 1,000-inch

range are applied directly to the windage scale of the gun, a setting of 4 points right windage at that range calling for 4 points right windage correction for aerial firing. Differences of 1 mil or less should be disregarded, in order to avoid confusion to the gunner. If his gun and barrel difference is 4 points right windage and all points left windage is announced, he must mentally subtract the 4 mils difference and set 7 points left windage.

The range of tracers may also be checked by firing at a ground target, set up at a known distance, approximately that of the reputed tracer range.

AUTHOR'S NOTE: *With acknowledgments to Maj. H. R. Oldfield (C. A. C.), G. S. C.*

TABLE A

Rear Sight Settings for Overhead (0°) Courses

Aiming Point—Lower Edge of Inner Oval (Apex) of Front Area Sight

.30 Cal. Machine Gun, 1906 Ammunition, 150 Grain Bullet

Altitude (feet)	Speed of Target—50 M. P. H.						Speed of Target—60 M. P. H.					
	Angular Height—Mils						Angular Height—Mils					
	300	400	500	700	900	1100	300	400	500	700	900	1100
1000	2160	2095	2075	2085	2105	2125	2185	2125	2115	2125	2160	2180
1200	2260	2150	2125	2115	2125	2145	2285	2190	2160	2160	2180	2200
1400	2375	2215	2170	2145	2145	2150	2400	2250	2210	2200	2200	2210
1600	2450	2300	2225	2180	2170	2180	2490	2335	2260	2230	2220	2230
1800	2600	2380	2285	2205	2190	2190	2625	2415	2320	2260	2250	2250
2000		2470	2345	2250	2215	2215		2500	2385	2300	2275	2275
	Speed of Target—70 M. P. H.						Speed of Target—80 M. P. H.					
1000	2215	2150	2150	2170	2210	2235	2240	2185	2185	2215	2250	2290
1200	2310	2225	2200	2200	2235	2250	2340	2240	2240	2240	2275	2300
1400	2425	2290	2250	2240	2250	2270	2450	2320	2290	2280	2300	2315
1600	2535	2370	2300	2275	2275	2285	2575	2400	2340	2315	2325	2325
1800		2450	2360	2310	2310	2310		2475	2395	2350	2360	2360
2000		2530	2425	2345	2340	2340		2560	2460	2390	2390	2390
	Speed of Target—90 M. P. H.						Speed of Target—100 M. P. H.					
1000	2270	2225	2225	2260	2290	2345	2310	2270	2270	2300	2330	2370
1200	2370	2250	2275	2285	2315	2345	2410	2290	2315	2325	2360	2390
1400	2475	2355	2325	2325	2345	2360	2525	2395	2370	2370	2390	2405
1600	2590	2430	2375	2355	2370	2390		2475	2425	2395	2410	2440
1800		2505	2430	2395	2405	2410		2560	2475	2445	2450	2455
2000		2595	2495	2430	2430	2440			2545	2480	2480	2485

TABLE B
Lateral Deflection and Rear Sight Settings for 90° Courses and Lateral Deflection for Oblique Courses
.30 Cal. Machine Gun, 1906 Ammunition, 150 Grain Bullet
Aiming Point—Horizontal Wire Through Center of Front Area Sight

Slant Range (Yds.)	Speed of Target—Miles per Hour								Time of Flight (Secs.)	Rear Sight Setting	Slant Range (Yds.)
	30	40	50	60	70	80	90	100			
	Lateral Deflection—Mils										
500	21	28	35	42	49	56	63	69	.709	2050	500
600	22	29	37	44	51	58	65	73	.899	2065	600
700	23	31	39	47	55	62	70	78	1.120	2080	700
800	25	34	42	50	59	67	76	84	1.365	2100	800
900	27	36	45	53	62	71	80	89	1.635	2125	900
1000	28	38	47	56	66	75	85	94	1.924	2150	1000
1100	30	40	50	59	69	79	89	99	2.232	2175	1100
1200	32	42	53	63	74	84	95	105	2.567	2215	1200
1300	33	44	55	66	77	88	99	110	2.915	2250	1300
1400	35	46	58	70	81	93	105	116	3.300	2285	1400
1500	37	49	61	73	85	98	110	122	3.720	2325	1500
1600	38	51	64	76	89	102	114	127	4.155	2375	1600
1700	40	53	67	80	93	106	120	133	4.630	2425	1700
1800	42	56	70	83	97	111	125	139	5.120	2465	1800
1900	44	58	73	87	102	116	131	146	5.670	2520	1900
2000	46	61	76	92	107	122	137	153	6.250	2570	2000
Speed of Target Yards per Sec.	14.7	19.6	24.5	29.4	34.3	39.2	44.1	49.0			

TABLE C
Oblique Courses
Components of Target Speed

Angle of Approach for Lateral Component	Ground Speed of Target—Miles per Hour											Angle of Approach for Longitudinal Component
	50	60	70	80	90	100	110	120	130	140	150	
*0°	0	0	0	0	0	0	0	0	0	0	0	90°
*5°	4	5	6	7	8	9	10	10	11	12	13	85°
*10°	9	10	12	14	16	17	19	21	23	24	26	80°
*15°	13	16	18	21	23	26	28	31	34	36	39	75°
*20°	17	20	24	27	31	34	38	41	44	48	51	70°
*25°	21	25	30	34	38	42	46	50	55	59	63	65°
*30°	25	30	35	40	45	50	55	60	65	70	75	60°
*35°	29	34	40	46	51	57	63	68	74	80	86	55°
*40°	32	38	45	51	58	64	71	77	83	90	96	50°
45°	35	42	49	57	64	71	78	85	92	99	106	45°
50°	38	46	54	61	69	77	84	92	100	107	115	*40°
55°	41	49	57	66	74	82	90	98	107	115	123	*35°
60°	43	52	61	69	78	87	96	105	114	122	131	*30°
65°	45	54	63	72	82	91	100	109	118	127	136	*25°
70°	47	56	66	75	85	94	103	113	122	132	141	*20°
75°	48	58	68	77	87	97	106	116	126	135	145	*15°
80°	49	59	69	79	89	98	108	118	128	138	148	*10°
85°	50	60	70	80	90	100	110	120	129	139	149	*5°
90°	50	60	70	80	90	100	110	120	130	140	150	*0°

* Unsafe to fire at sleeve target.

TABLE D

Rear Sight Settings for Oblique Courses

.30 Cal. Machine Gun, Model 1906 Ammunition, 150 Grain Bullet

Aiming Point—Horizontal Wire Through Center of Front Area Sight

Slant Range (Yds.)	Altitude—1000 Feet					Altitude—1200 Feet					Slant Range (Yds.)
	Speed Component M. P. H.					Speed Component M. P. H.					
	30	40	50	60	70	30	40	50	60	70	
600	2150	2190	2235	2265	2300	2170	2215	2265	2300	2340	600
800	2180	2210	2245	2270	2300	2195	2230	2265	2300	2340	800
1000	2200	2235	2275	2300	2325	2220	2255	2290	2320	2355	1000
1200	2245	2280	2315	2340	2370	2250	2295	2340	2365	2390	1200
1400	2310	2350	2385	2400	2420	2315	2355	2395	2415	2440	1400
1600	2385	2425	2465	2475	2485	2390	2435	2480	2495	2510	1600
1800	2465	2500	2540	2555	2570	2470	2510	2555	2570	2585	1800
	Altitude—1400 Feet					Altitude—1600 Feet					
600	2195	2250	2290	2335	2385	2210	2260	2315	2360	2410	600
800	2200	2245	2290	2230	2370	2220	2270	2315	2360	2405	800
1000	2230	2270	2315	2350	2385	2245	2290	2340	2375	2410	1000
1200	2260	2310	2355	2380	2410	2275	2325	2375	2405	2440	1200
1400	2325	2365	2410	2435	2460	2340	2395	2430	2455	2485	1400
1600	2395	2440	2490	2510	2530	2405	2455	2505	2525	2550	1600
1800	2480	2525	2570	2585	2600	2485	2535	2580	2595		1800
	Altitude—1800 Feet					Altitude—2000 Feet					
600	2225	2275	2330	2385	2440						600
800	2235	2285	2340	2385	2430	2250	2300	2355	2405	2460	800
1000	2250	2300	2355	2395	2440	2260	2315	2370	2415	2465	1000
1200	2285	2335	2390	2425	2460	2300	2350	2405	2445	2485	1200
1400	2350	2400	2445	2475	2510	2360	2410	2460	2490	2525	1400
1600	2410	2460	2510	2540	2570	2420	2470	2520	2550	2585	1600
1800	2490	2540	2585	2605		2495	2545	2595			1800

TABLE E
Rear Sight Settings for Diving Targets

Aiming Point—Lower Edge of Inner Oval (Apex) of Front Area Sight
.30 Cal. Machine Gun, 1906 Ammunition, 150 Grain Bullet

Slant Range (Yds.)	Angular Height in Mils													Slant Range (Yds.)
	0	200	400	500	600	700	800	900	1000	1200	1400	1600		
100	1800	1800	1800	1800	1800	1800	1800	1800	1785	1785	1785	1785	1785*	100
200	1810	1800	1800	1800	1800	1800	1800	1800	1800	1800	1785	1785	1785	200
300	1825	1810	1810	1810	1810	1810	1810	1810	1810	1800	1800	1785	1785	300
400	1835	1825	1825	1825	1825	1825	1810	1810	1810	1800	1785	1785		400
500	1850	1850	1835	1835	1835	1835	1825	1825	1825	1810	1810	1785		500
600	1860	1860	1860	1860	1850	1850	1835	1835	1835	1825	1800	1785		600
700	1885	1885	1875	1875	1875	1860	1860	1850	1835	1825	1810	1785		700
800	1910	1910	1900	1900	1885	1885	1875	1860	1860	1835	1810	1785		800
900	1935	1935	1925	1925	1910	1900	1900	1885	1875	1850	1810	1785		900
1000	1975	1975	1960	1950	1950	1935	1925	1900	1885	1850	1825	1785		1000
1100	2005	2005	1995	1985	1975	1960	1950	1925	1910	1860	1825	1785		1100
1200	2045	2045	2025	2015	2005	1995	1985	1960	1935	1890	1835	1785		1200
1300	2095	2085	2065	2055	2045	2035	2015	1995	1975	1910	1850	1785		1300
1400	2145	2135	2115	2105	2085	2065	2045	2025	2005	1935	1860	1785		1400
1500	2190	2180	2160	2145	2125	2105	2085	2065	2035	1960	1875	1785		1500
1600	2240	2235	2215	2195	2180	2150	2125	2095	2065	1985	1900	1785		1600
1700	2300	2290	2270	2250	2225	2195	2170	2135	2105	2015	1910	1785		1700
1800	2355	2345	2315	2300	2275	2240	2205	2180	2145	2035	1925	1785		1800
1900	2405	2395	2370	2345	2325	2290	2260	2225	2180	2065	1950	1785		1900
2000	2455	2450	2415	2395	2370	2340	2310	2270	2215	2095	1960	1785		2000
2100	2505	2500	2470	2450	2425	2390	2355	2310	2250	2125	1985	1785		2100

* Corresponding to 0 Mils Superelevation.

TABLE F
Superelevation in Mils and Rear Sight Settings

.30 Cal. Machine Gun, 1906 Ammunition, 150 Grain Bullet

Elev. in Mils	Rear Sight Settings		Elev. in Mils	Settings Rear Sight		Elev. in Mils	Rear Sight Settings	
	Hor. Wire ¹	Apex ²		Hor. Wire ¹	Apex ²		Hor. Wire ¹	Apex ²
0	2000	1785	35	2315	2170	70	2550	2445
5	2050	1850	40	2355	2215	75	2580	2475
10	2100	1910	45	2390	2260	80	2605	2505
15	2150	1975	50	2425	2300	85		2535
20	2195	2025	55	2460	2340	90		2565
25	2235	2075	60	2490	2375	95		2595
30	2275	2125	65	2520	2410	100		2625

¹ For aiming point on horizontal wire through center of front area sight. The settings given in Table "D" include superelevations required for curve of trajectory and vertical lead. The settings given in Table "B" are for the former only.

² For aiming point at center of lower edge of inner oval of front area sight (Apex of triangle). The settings given in Table "A" include superelevations required for curve of trajectory and vertical lead. The settings in Table "E" are for the former only.

TABLE G
Fire Control Signals for Aerial Machine Gun Firing

Command or Action	By Unit Commander		By Asst. Gunner (No. 2)
	Day	Night	Day or Night
Commence firing	<i>Preparatory</i> —Calls “commence” and extends right fore arm horizontally across chest. <i>Execution</i> —Calls “firing” and extends arm rapidly to right.	Calls “commence” and turns on or exposes red light. Calls “firing” and turns off or conceals red light.	<i>Preparatory</i> —Taps gunner twice lightly in center of back. <i>Execution</i> —Taps gunner once smartly in same place.
Cease firing	<i>Preparatory</i> —Holds forearm horizontally in front of forehead. <i>Execution</i> —Moves forearm rapidly up and down.	Turns on or exposes red light. Turns off or conceals red light.	<i>Preparatory</i> —Places hand on gunner’s head. <i>Execution</i> —Pushes gunner’s head away from sight.
Increase vertical lead	Points hand upward.	Same as day signal with light in hand. (Preferably blue or other color.)	Taps gunner smartly between shoulder blades.
Decrease vertical lead	Points hand downward.		Taps gunner smartly on buttocks.
Shift fire to right	Points hand to right.		Taps gunner on right shoulder.
Shift fire to left	Points hand to left.		Taps gunner on left shoulder.

Coordination of Our National Strength

By COL. S. C. VESTAL, C. A. C.

THE World War has demonstrated the position of power and prestige which the United States holds, willingly or unwillingly, in the world in which we live. When Congress passed the bill on April 6, 1917, declaring war on Germany, few of our people recognized the point of vantage which the United States occupied in the world at that moment. She had been placed in this position through no conscious act of her own. For more than two and a half years all of the other great nations of the earth had been divided into two great hostile military alliances engaged in a deadly and very nearly evenly balanced conflict. At any time during this struggle it lay within the power of the United States, by entering the contest on either side, to bring victory to the side whose cause she espoused. Never before in the history of the world had a nation been put in such a position of power and prestige.

She owed her position of vantage to the fact that she had long and consistently followed the precept of Washington to steer clear of any permanent alliance with any part of the foreign world. If she had implicated herself by artificial ties in the ordinary vicissitudes of world politics or the ordinary combinations and collisions of friendships or enmities, she would never have been in the advantageous position which she occupied from the outbreak of hostilities in 1914; for the tendency of mutually hostile nations to form two equal and nearly evenly balanced camps is too well known to require demonstration.

When we entered the war, many believed that the financial and economic aid, and the assistance which our belligerency would lend to the blockade of the Central European powers, would incline victory to the side of the Allies, without the necessity of our active participation on the battlefields of Europe. It was only gradually that America learned that the issue of the war depended upon the action of American soldiers upon the Western Front.

When the French Commission, headed by General Joffre visited the United States, shortly after we entered the war, the higher officers of our government learned for the first time that American divisions were sorely needed to bolster up the Allied cause in France; but the French themselves were unaware of the great trial of strength which was to come on the Western Front in the following Spring. It took the great German drive of March 21, 1918, to awaken America to a realization of the situation into which she had been unconsciously drifting.

When the crisis was over and thoughtful Americans were at liberty to look about and take account of things, they perceived that America had neglected to follow the requirement which Washington laid down as a

prerequisite to their steering clear of permanent alliances. I shall quote the words of Washington: "Taking care always to keep ourselves by suitable establishments on a respectable defensive posture, we may safely trust to temporary alliances for extraordinary emergencies."

We had followed the easy part of Washington's Farewell Address and had most carefully steered clear of any permanent alliance; but we had neglected that part of his address which demanded effort and preparation.

The events of 1917-18 brought a new vision into the lives of Americans. The bitter, hard doctrine of efficiency, the cold, merciless logic of conquest descended like an east wind over the world. After America's entry into the war, the French were defeated under Nivelle; Italy was crushed; the Fifth British Army was overwhelmed; and the French front was driven in west of Rheims. The spectre of defeat walked time and time again over the battlefields of Italy and France. America saw it; and the recollection will not soon be effaced from the minds of the present generation of her people. The answer was preparedness. Congress addressed itself to the task of providing a suitable establishment; and the result was the National Defense Act of June 4, 1920.

The experience which we had gained by our participation in the World War had thrown a flood of light upon the things which we should do in order to place ourselves in a respectable defensive posture. Young America imbibed a new faith. It manifests itself in action when the youth of the land comes out each year for its annual training in the Citizens' Military Training Camps and the Reserve Officers' Training Corps.

We are now carrying into effect the provisions of the National Defense Act of 1920; and as we gain experience, the question often presents itself as to whether we would ever have had to face the extraordinary emergency of 1917-18, if America, through the long years of her history, had followed all the wise maxims laid down in Washington's Farewell Address. This is a question upon which opinions will differ; but the answer to it is of immense import as a justification of our present and future efforts in carrying out the provisions of the National Defense Act. I am firmly convinced our surest and most certain guarantee of peace in the past lay always in taking care to keep ourselves by suitable establishments on a respectable defensive posture; and that it is the surest and most certain road to peace in the future.

The National Defense Act enacts that the Army of the United States shall consist of the Regular Army, the National Guard while in the service of the United States, and the Organized Reserves, including the Officers' Reserve Corps and the Enlisted Reserve Corps; and it makes the Army the great co-ordinator of our national strength.

The War Department was originally charged with all the functions of government connected with the prosecution of war, both by land and sea, as its name implies. As the government grew and specialization became

necessary, certain functions were taken from it and given to other departments or bureaus. Thus the Navy and the Interior Departments, the Bureau of Public Roads, and the Weather Bureau all sprang from the parent War Department, which still remains, however, the great residuary department of the war-making functions.

Certain functions carried on by super-agencies during the war, such as Industrial Preparedness, which was under the War Industries Board in the World War, are entrusted to officers or bureaus of the War Department during peace. Other functions, like the draft, which is in abeyance until revived by act of Congress on the outbreak of war, are entrusted to the War Department or to the Army for study and preparation of proposed legislation.

When war comes and the draft, by special act of Congress, goes into effect, it must furnish men not only to the Army but also to the Navy and to Industry. For obvious reasons it would not be proper for any one of these departments to exercise the draft, furnishing to the other departments their quotas of men. Hence it was found wise, when we entered the World War, to entrust the operation of the Selective Service Law to a special bureau, the Provost Marshal General's Office, acting directly under the President of the United States, at the head of which was placed an officer of the Army. When the war was over, the records of his office were turned over to the War Department; and the functions of the Provost Marshal General in time of peace are carried out by G-1 of the War Department.

In the World War the great powers of the President over industry were exercised by the War Industries Board. This was a great super-agency of the government, which was under none of the administrative departments, and which was, in a way, over all of them, since all of these departments were dependent upon the War Industries Board for all of their supplies.

The story of the War Industries Board is one of the most wonderful chapters of the history of America's participation in the World War. The simplification and mechanization of American industry in the last half century, and her inexhaustible stores of raw materials, have given her a power in war unparalleled in any other age or country. The War Industries Board took control of America's industries, both great and small, and marshalled them for the service of the government. The Board was composed of captains of industry; but it had at its service military and naval men who pointed out the ends to be attained; and the Board drove without faltering, fear, or favor, at the main objective.

The records of the War Industries Board are deposited with the War Department, and the National Defense Act of 1920 charges the Assistant Secretary of War with the "assurance of adequate provision for the mobilization of material and industrial organizations essential to war-time needs." Thus in time of peace the Assistant Secretary of War is charged

with making the necessary studies and plans to enable a new War Industries Board to begin operations in the event of a national emergency of sufficient gravity to call it into being.

In no other way is the Army's rôle as the coordinator of our national strength manifested in a clearer light than in the provisions of the National Defense Act which make it the duty of the Regular Army to train the other contingents of the Army, that is, to say, the National Guard and the Officers' Reserve Corps.

In formulating the provisions in the Constitution relating to the militia, it was the intention of the members of the constitutional convention of 1787, that the militia should be a national force in federal pay, under the control of the respective states, except when it was called into the service of the United States.

Congress never exercised its power to provide for the militia, or National Guard, in a material way, by providing pay and other emoluments in an annual appropriation act, until it passed the National Defense Act of 1916. It is true that it gave occasional doles to the militia; but the aid was so small that it did not entitle the United States to exercise any real control over the National Guard. Prior to 1916, the militia of the various States was in no way a national force any more than are the state constabularies today. With the passage of the National Defense Act, the effect of the change of policy was seen in an increased efficiency of the militia; the relation of employer and employee was quickly and naturally established; and the term National Guard, as applied to the militia, ceased to be a misnomer. In the World War, National Guard divisions as such appeared upon the battlefield for the first time in our history.

The National Defense Act of 1920 came to reinforce and strengthen the policy initiated by the National Defense Act of 1916 of making the National Guard truly a national force, with an increase of pay, increased numbers of officers of the Regular Army on duty with the National Guard, and increased facilities for the participation of National Guard officers in the advantages of service schools of application. The National Guard organizations are recognized as first line troops; and no efforts are to be spared to make them so in fact.

The Organized Reserves, including the Officers' Reserve Corps and the Enlisted Reserve Corps, are raised, not under the militia clauses of the Constitution, but under the power of Congress to raise and support armies. So long as the militia received practically no aid from the Federal Government, there was a natural barrier to the formation of a Reserve Corps, either of officers or of men, directly under the Federal Government. But when the intention of the framers in regard to the militia was carried into effect, there was no reason why a national reserve of officers and noncommissioned officers might not be formed for the purpose of officering the unorganized reserve, upon which we must draw for men in case of a great

national emergency. The barrier vanished; and the Officers' Reserve Corps and the Enlisted Reserve Corps sprang into existence.

One of the most impressive lessons of the war was the necessity of having a large reserve of officers, in fact, of training as Reserve officers, all the men whose age and capacity fit them to be officers. The mobilization in one country (Italy) was limited during the World War, not by the number of men available to fill the ranks but by the number of men qualified by natural capacity to be officers.

As long as the American people abide by the spirit of the Declaration of Independence, it may be expected that they will use their influence, as in the past, for honorable peace and justice to all men. Such influence, however, will be effective only so long as they retain their freedom to choose peace or war and remain a power with which ambitious nations must reckon. The military power of a nation lies in the potential strength of its citizens; but unless this potential strength, in the event of an emergency, may be converted into active fighting strength, it is of no avail. Hence the importance of our Army as the sentinel of our security and the coordinator of our national strength.

**TRAVEL ON ARMY TRANSPORTS
RESTRICTED**

In connection with the action of the Secretary of War directing that, beginning July 1, 1930, the tour of duty for Army personnel in Porto Rico, Panama, and the Hawaiian Islands shall be reduced from three years to two years, a policy based on the requirement for rigid economy in operation and maintenance, as well as in the interest of morale and health, a study has demonstrated that it will be necessary to restrict travel of persons on Army transports to and from overseas departments and between the East and West Coasts of the continental United States, to personnel of the War Department and dependent members of their families, traveling under orders, and, in emergency or exceptional cases, to those on foreign service and dependent members of their families traveling on leave or furlough to or from their foreign stations. The Secretary of War has directed this strict limitation of travel on Army transports in order to insure the necessary accommodations for authorized personnel of the War Department under the new policy of reduced length of tours.

The Reserve Component

By LIEUT. COL. E. A. EVANS, 977th C. A. (AA), Commanding

THE *Army of the United States*—few words, but such as patriots need. And we of the *Reserve*—what of us? By the grace of God and a kindly Congress we may consider ourselves a part thereof without even the equivocal appendage of “Reserve” any too prominently displayed. Not that we are in the slightest measure ashamed to be known as the Reserve component of the Army of the United States—however, we do have an unconscious feeling of pride in the fact that too heavy a line of demarkation has not been drawn between the Regular component and ourselves.

Do we of the Reserve component fully appreciate our responsibilities? Are we doing all that we should to merit the honor that has been conferred upon us? Are we properly trained and prepared for all emergencies? The answer is “*No.*” Only in isolated instances will one find officers as appreciative as they should be of their accountableness or as thoroughly well trained for a national emergency as these somewhat questionable days of unrest throughout the world would seem to warrant.

The above answer may appear, at first thought, to be rather unpromising but do not forget that we of the Reserve have had a grave responsibility thrust upon us by the people of these United States—that of leading into battle, if an emergency should arise, not trained soldiers of the Regular Army or National Guard, but the large mass of citizen soldiers that will be drafted into service through the medium of the National Defense Act. These citizens will become soldiers only when we make them such and will be only as well trained to defend themselves and their country as we ourselves are prepared to teach them. Charged with this responsibility we should be more thoroughly prepared, if it were possible so to be, than even the Regular Army.

This article is being written with the hope of stimulating a spirit of responsibility in the minds of Reserve unit commanders and for the purpose of setting forth suggestions of possible methods to be employed in the generating of teamwork and of unit “*Esprit de Corps.*” The application of these methods together with the establishment of certain well-defined policies outlined herein should produce results in work and general interest, that will be not only gratifying to the unit commander but pleasing to all officers in his command.

There are three means by which Reserve officers may receive training, namely: training camps, extension courses and unit schools. These three methods have most generally been considered separately in the past. Officers undertake the extension courses but do so as individuals. There is usually no coordinated or systematic scheme of work laid down for a

specific group to follow. One officer will do very little, and that spasmodically, while others perform a large amount of work and are constant in their application. One officer takes one subject and another in the same unit works on one that is totally different, neither having any knowledge of what the other is doing. Unit schools are established but are poorly attended and, by the majority, not considered seriously. Training camps—yes, but entirely too much laxity in insisting that a unit attend camp as a complete entity. There is prevalent too much of a feeling that for any reason, trivial or otherwise, if an officer cannot participate in active duty training with his own regiment that nothing is lost in allowing this officer to attend camp with another unit at some other period of time.

The tremendous importance of "teamwork" has been overlooked. Organized, systematic effort can accomplish much more than haphazard individual attempts, and yet this point appears to be unfortunately disregarded by many. The three phases of Reserve training must be coordinated one with the other, and this can only be done by the unit commander, who is the focal point around which all of this work revolves is the unit school. These schools must be made interesting and a systematic scheme of instruction installed, with the extension courses as a working basis. Those officers who have performed the sub-courses that are established as class work for the school, must be required either to act as instructors or do the work over again as it is essential that the regiment start working and thinking together. Take only one cog out of a wheel and it prevents that wheel from running smoothly, and so it is with this work. Every effort must be made to make all officers realize the objective desired and to understand that the only way in which it can be accomplished is by working together.

The training camp period must be set up as the climax of the inactive training and it must be considered obligatory by all officers to attend as a unit. This is the only time in which the teamwork that has been built up can be tried out; the only time when the "Esprit de Corps" which is under process of being established, can be demonstrated with any degree of satisfaction, and the only time when a check can be made on the practical value of the unit school training.

In order to successfully establish these methods and to put into effect the policies which will bring about the attainment of success in the creation of this scheme of things, one must understand certain fundamental errors that have been committed in the past, together with certain faults that are existent at the present time. In addition an understanding of the desire and motive which prompts the average Reserve officer to accept a commission in the Army of the United States during an era of peace, is of vital importance.

The most serious error committed in the past has been the general attitude which the Regular Army officers apparently have held toward

those in the Reserve component and this error in thought has likewise been held by most Reserve unit commanders toward their junior officers. Briefly, it is the feeling that Reserve officers must be humored; that they must not be crossed in any way; that they cannot be expected to devote a systematic portion of their time to Reserve work; and that they will resent any orders given them by their superiors to such an extent that they may become totally disinterested and inactive and at the end of their five-year period fail to renew their commissions.

This attitude and feeling toward Reserve officers is a grievous misapprehension which has grown of late years until it has become an obsession in the minds of most Regular officers assigned to Reserve duty. It has also become so strong in the minds of senior Reserve officers that it has kept them from establishing live, working organizations. It is true that in a few isolated cases individuals might take exception to requirements imposed upon them as Reserve officers of the United States Army, but these instances would be extremely rare. One may stop to consider whether such objecting individuals are really necessary to the service and had not better be eliminated therefrom.

Let us attempt to analyze what is felt to be the actual situation and the true feelings of the Reserve officer. At heart he is a "good soldier," otherwise he would not be in the peacetime Army. He is prompted to carry on his military work because he has a sense of national duty which in most instances is coupled with a feeling that may be described as the "love of the game." This "love of the game" is an intangible something that only those who have experienced it can understand. It carries with it love of teamwork, a fondness for Army routine with its established detail, and a knowledge that the participant is an integral part of the whole, with definite work to perform and a positive objective to attain. To those who honor and respect the military, and this applies to the Reserve officer, the receiving of orders from one's superiors is not resented, but welcomed, and the knowledge that the orders issued to your juniors will be received in like manner gives one a satisfaction and joy in making them definite, reasonable, understandable and fair.

Another error that is committed is to assume that Reserve officers cannot give the time to attending unit schools which in most instances are held only twice a month. Wrong again—as they can and will attend providing they are made to fully appreciate the responsibilities of their commission. We are all human, and Americans, and as such have a natural tendency to follow the course of least resistance. The time of the business man is not so fully occupied in the pursuit of the almighty dollar as he would perhaps have you believe or perhaps as the Regular Army may think. There are multitudinous diversions, such as card parties, golf matches, dances, tennis games, luncheon clubs, night clubs, radio programs, theaters, committees, lodges, conventions, good books and easy chairs

that are an absolute necessity for some particular evening, together with innumerable other forms of "work" that in the minds (only of the uninterested) eliminate any possibility of performing a patriotic duty in giving a few hours a month to National Defense.

A fault, which is a question of policy, in dealing with the Reserves is in the matter of assignments. As the situation now stands Reserve officers must express a preference before they are assigned. This has the effect of allowing the Reserve officer to virtually dictate his own assignment. There is certainly no objection to an expression of preference—first, second and third choice, if necessary—but it is felt that some scheme might be evolved whereby assignments or change of assignments might be recommended to District Headquarters by the Regular unit instructor, due credit having been given to the stated preference. In other words, why should a Reserve officer's assignment be so wholly dependent upon his personal preference? Why should not assignments be made for the good of the service as in the Regular component rather than according to any fanciful whim of the individual? One or two misplaced officers, having virtual control over their own assignment can do more to break down esprit in a regiment than any other one thing.

A fault quite common to unit commanders is the assumption that because their schools are poorly attended and because they have no power of command during peacetime that there is nothing of a definite nature they can do to remedy the situation. While it is a fact that the Reserve commander does not have the physical right or power to require attendance at his unit school, he does have other means that are just as effective if they will only be put into use. He has the force of his own personality, the exhibition of his own interest and willingness to work, as well as the knowledge that in the minds of all true soldiers there exists that aforementioned "love of the game." In addition, he has, or should have, the means of exhibiting true leadership as well as the opportunity of creating among his officers an "Esprit de Corps" which can come about only through his own efforts. Esprit de Corps does not just happen to come into being or to exist of its own accord, but is a reflection of the ideas and ideals promulgated by the leaders of a group.

Another error sometimes perpetrated by Reserve commanders is that of failing to exert their prerogatives of leadership in a definite and thorough manner. There is a tendency on the part of some to be lenient in this most necessary function and to allow the feeling to exist that the unit is running itself. Work may be assigned to committees. Decisions may be left to popular vote or to the individual officer or juniors. This procedure cannot be followed successfully. There must be absolutely no question as to who is guiding the destinies of the group and that discipline and command are being administered through the commander's own interpretation of firmness, kindness and justice.

A criticism has been offered that this whole scheme of things is impracticable of operation in cases where officers live at far distant points. It is felt that this is not true. Granted that the situation is somewhat more difficult to handle, there are a number of ways in which the same results may be accomplished by approaching the problem from different standpoints, and, while it is felt that unit schools are the best possible means of accomplishing this purpose it is by no means the only way that coordination of thought and work as well as general interest and "Esprit de Corps" can be effected.

Certainly, in all large centers of population, attendance at regimental schools can be made obligatory. Officers must be made to realize the importance of knowing and understanding one another through close personal contact. Furthermore, field officers of the Reserve should have no reason to complain of lack of duties in peacetime if they will only exert the power of leadership which is conceded to be the prime requisite of an officer. Many complaints have been registered at training camps by senior officers that they have had no work to perform commensurate with their grade. These same officers have no one to blame but themselves, for the opportunity to command and organize has been granted them by virtue of the rank they hold and it only remains for them to develop it.

It should be the "mission" of all senior officers of the Reserve, during peacetime, to develop their organizations so that upon being called to active service it will only be necessary to perfect the more intricate technical details that can only be learned through practical experience in the field. Unless these officers are doing all this it is felt that they are failing in their duties as officers of the United States Army. Let us not forget the words of Huxley: "The great end of life is not knowledge but action."

The success or failure of any theory can only be proved by a fair trial over a period of time. As an indication, therefore, that there may be some merit to the above theories—the realization of responsibilities, centralization and coordination of work, definite requirements of unit school and training camp attendance and a more military viewpoint taken toward Reserve officers—the case of the 977th Coast Artillery (Antiaircraft) is offered for consideration.

This regiment has sixty-one officers assigned out of a war strength of sixty-three, and has been in existence for a period of one year. The following statements were made personally to the regimental commander to each officer as he was assigned to the regiment:

1. It is expected that each officer will attend all regimental schools. Three such schools were held each month, one on Infantry drill and two on classroom Artillery work.

2. All officers are expected to perform the work scheduled for the year's inactive training period.

3. All officers will attend camp with the regiment when it is called to active duty.

Battery commanders were made responsible for the attendance of their battery officers and battalion commanders were held responsible for the attendance in their battalion. A very accurate attendance record has been kept by regimental headquarters and the results were periodically posted on a bulletin board made for such purposes.

By contacting the right office-building manager (after an explanation of National Defense work) he was convinced that it was a patriotic duty on his part to see that we were given offices free of charge, in which we might establish our own regimental headquarters. (There are always a few vacant offices in any office building and it is not serious if headquarters have to be moved from one office to another within the same building, although this will probably not happen very frequently. The 977th still have the same offices which they have occupied for a year.)

During two noon periods each week regimental headquarters are open, the regimental commander, adjutant, or both being present. It is regrettable that a record was not kept on visits to these offices as the results would have been interesting, and surprising. The establishment of unit headquarters has not only aided general interest within the regiment but has afforded the regimental commander an opportunity to become personally acquainted with each individual in his command.

A regimental fund was established and maintained by levying a yearly assessment, according to rank, on each member of the regiment. Through this means, regimental stationery and incidentals were purchased. A complete file of Army Regulations and Training Regulations, in binders, together with current issues of the COAST ARTILLERY JOURNAL have been made the nucleus of a unit library.

Application was made to Corps Area Headquarters to obtain the regimental allowance of office furniture. In due time this arrived and this, together with a few other pieces which were in most instances donated, have created a presentable office where regimental orders, files and correspondence may be kept in excellent order, and where small conferences may be carried on without interruption.

As soon as an officer is assigned to the regiment orders are issued assigning him within the regiment. Battery and battalion headquarters are required to maintain records and files which are periodically inspected by the regimental commander.

Officers are required to attend all regimental meetings in uniform. The class work and instruction is preceded by an officers' call, attended by battalion and battery commanders. Next follows a general meeting of the entire regiment where important announcements are made and any instruction of a general nature given, and, finally, the group divides into battalions for instruction and study under the direct supervision of the

battalion commanders. Infantry drill is conducted in the drill hall of the National Guard Armory and, having an insufficient number of enlisted men for drill purposes, the officers are formed into battalion drill teams. Single rank platoons and batteries are created and excellent results have been attained in platoon and battery drill, voice command, and in practicing ceremonies.

Social functions are encouraged. A regimental dance in honor of the 63rd Coast Artillery (AA) was given with marked success.

The following results in attendance at unit schools, and training camp as well as worked performed will, it is thought, speak for itself.

SCHOOL YEAR 1929-1930

Credit for attendance and instruction at unit schools	3,333 hours
Credit for extension course work.....	2,725 hours
Special 977th Antiaircraft course	486 lessons
Completed extension courses	144 sub-courses
Attendance, 1930 Training Camp	56 officers (93%)

The thought behind the writing of this article is one of possible mutual helpfulness to unit commanders in the administration and training of their unit. However, that which may be successful with one may not be so with another and, furthermore, there may be points mentioned to which there may be serious objection. If, therefore, the line of thought expressed herein has the effect of causing others in the Army to express their personal views on the subject or to comment or criticize in writing the policies outlined, together with the theories set forth, the writer will have experienced some measure of satisfaction in what he feels is a somewhat labored article.

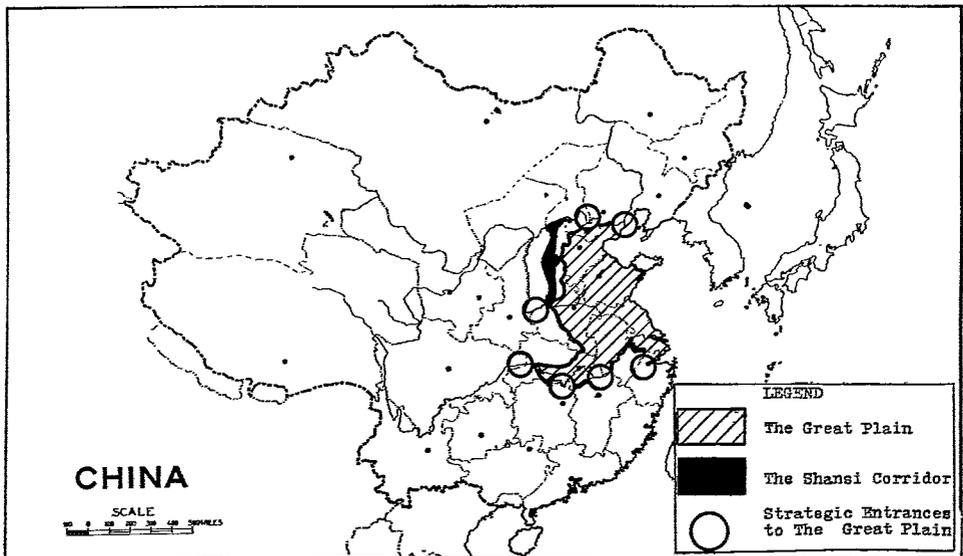
Strategic China

By CAPT. T. J. BETTS, C. A. C.

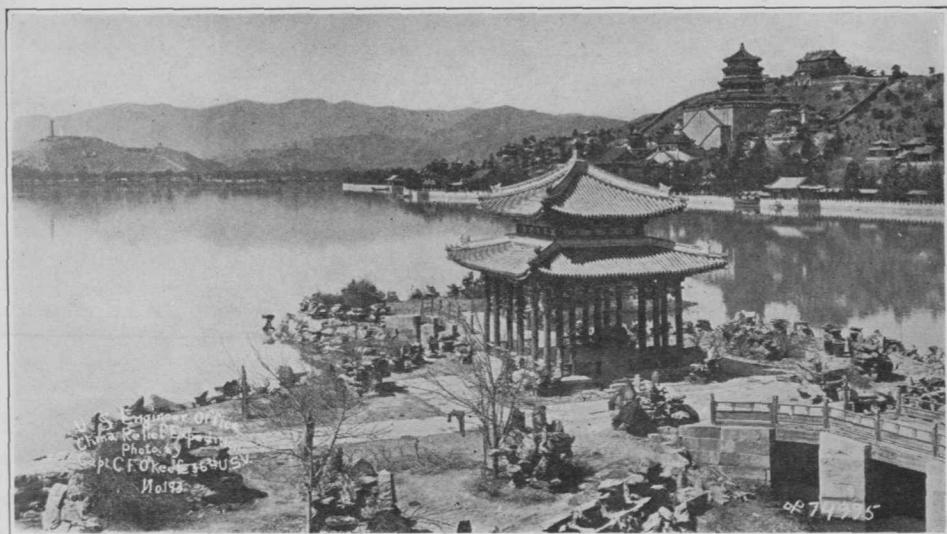
THE perennial warfare that has smouldered and often flamed in China ever since 1911 is based superficially on politics and fundamentally on economic and sociological factors. While these forces are so complex and vague as to preclude their complete evaluation, nevertheless the observer of current events in China and the student of Chinese history cannot fail to notice that military operations in that country tend to fall into definite strategic patterns. It is believed that these patterns can be interpreted in terms of terrain and area, and that in this interpretation space, rather than distance, is the controlling element. It is from this point of view that the following essay is undertaken.

China, within her broad political boundaries, possesses a strategic unity that is unique for such an enormous area. To the east and south the country is belted in by the sea. Where the boundaries swerve from the coast, there rises a mountain barrier that, practically uninterrupted, sweeps west, then north, then east again in a sprawling semicircle. Moreover, this mountain wall has on its outward side a great delaying zone of jungle, or upland or desert, that almost hems the country in. The mountain barrier of China proper is approachable only in the area extending from the Gobi Desert to the Sea of Japan, and even here the facility of approach is only comparative. Thus girt on all sides, the country enjoys a strategic unity similar to that of Italy or India, but incomparably vaster than the first named country and of much greater compactness than the second.

Considering the interior of China, the strategic dominance comes to



hand at once. This is the great northern Plain, watered in the main by the Yellow River and its feeders, and comprising the greater parts of the provinces of Hopei, Shantung, Honan, Hupeh, Anhui, and Kiangsu. This single plan is a veritable kingdom of approximately 350,000 square miles. It is characterized by extreme flatness of surface, by numerous rivers, generally shallow and fordable, and by the abruptness with which its mountain boundaries rise from its level. Armies can debouch into it and retreat from it by a number of passages. Its strategic value has continued unchanged down the years to modern times; for its great natural features have not altered, and the country's avenues of communication are the



CHINESE SUMMER PALACE

same in this day of modern transportation as they were at the time of the ox-drawn chariot.

It is on this Plain that the military destinies of China have been decided for centuries. It was over its face that the Chinese race slowly expanded when it first made its appearance on the stage of history. Considering it in its relation to the country as a whole, the obvious similarity to the position occupied by Flanders in relation to the west of Europe springs to mind at once. Here, too, is a broad and level surface, easy of access and transit, in itself immensely rich and intrinsically precious to its possessors. Here is an area that invites to maneuver and to battle, one that is a rich prize for conquest. No wonder that this vast Plain has been for centuries the cockpit of China.

But the analogy does not hold good indefinitely. Flanders is small and easy of control. Its fate in the past has been decided on occasion by the shock of armies twenty thousand and thirty thousand strong, and its

domination has generally followed easily as a simple consequence of military victory. On the other hand, the Yellow River Plain is so wide in extent that its mere administration as a military appanage requires extraordinary talents and organizing ability. It is easy to win a footing in this theater, it is hard to obtain military control over its entirety, it is most difficult to make this control definitive and permanent.



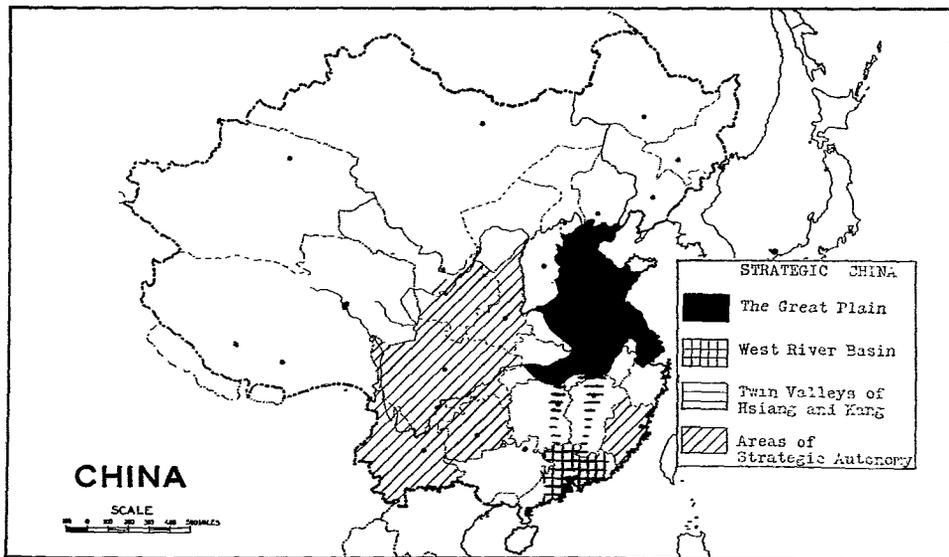
THE GREAT WALL OF CHINA AT NANKOW PASS

The above statements are borne out by the entire military history of China, and strikingly so in the period since the 1911 revolution. Time after time militarists of varying abilities have been enticed out into the open Plain. Those who bid modestly for a limited portion of its area have been shouldered out by the bolder and stronger leaders who could assume the initiative and deliver attacks at will over a broad semicircle of front. Two men, Yuan Shih-kai and Wu P'ei-fu, have controlled the whole area, but neither could consolidate his hold nor put absolutely trustworthy subordinates in charge of territorial subdivisions, and each in turn was defeated by attacks that debouched into the Plain through one of the great avenues of approach. The fighting of 1930 is only another instance of history repeating itself.

Thus from the Great Plain can be drawn two valid strategic generalizations. The more important cannot be put in positive form. To say that dominance of China proceeds from control of the Plain would be to ignore the revolts and conquests which have had their geneses elsewhere and which have swept down or up to the Plain as a final step to success. The

most that can be affirmed is the negative statement that China, as a whole, cannot be dominated strategically except through consolidated possession of the Great Plain. The second generalization is the obvious one that, for dominance in the Plain to be effective, it must be complete and consolidated. Anything less is an invitation to invasion.

The unwieldy character of this strategic dominance brings into special relief the major avenues through which it may be approached. As noted above, the rebellions and conquests that eventually debouch into the Great Plain almost invariably have their geneses in the secluded hinterlands that are relatively distant from the Plain, and which, at the same time, afford room for handling large troop concentrations, have sufficient natural resources to support and finance armies, and which permit of easy descent at the proper time on the Plain itself. These major avenues of approach are seven in number, symmetrically disposed to the south, west, and north. By name they are the Hangchow area in Chekiang, the valley of the Kan River in Kiangs, that of the Hsiang River in Hunan, all to the south and making contact with the Yangtze Kiang. To the west lies first the path



of the Yangtze Gorges that leads into Szechwan, then comes the famous T'ung Kwan route into Shensi. To the northwest is situated the Nankow Pass region, especially sensitive because of its nearness to Peking, and opening out into the Mongolian plateau. Finally, to the north and east, is situated the easy, sea-level corridor that lies between the mountains and the sea of Shan Hai Kuan.

It must not be assumed that the above are the only breaks in the ramparts that surround the Plain. None of the mountain country is more

difficult than the Pyrenees, and it can be penetrated in many places at the will of a sufficiently resolute commander. As a matter of fact, however, these other avenues have been comparatively seldom used, except for purposes of demonstration. The appeal of the entrances enumerated is overpowering, both because of the ease with which they can be used and because their symmetrical disposition permits of their coordination.

Considering these major avenues of approach in order, the Hangchow area consist of a pocket of plain, bounded on the east by the sea, on the west by an intricate, but militarily weak tangle of streams and lakes and hills, and buttressed on the south by the Fukien mountains. Because of its lack of back country and of opportunities for organization in depth, it is strategically a weak position. The scene of much warfare in the past, it has usually figured as a place of last stands, when Chinese dynasties have been swept from the Great Plain. In modern times its importance has increased with the rise of the port of Shanghai, which lies, so to speak, under its guns, and which has given it splendid overseas connections, almost inexhaustible sinews of war, and not least, under the obtaining system of extraterritoriality, a secure harbor of refuge for defeated leaders. The area remains strategically weak, however, and since the Revolution has been dominated from the Great Plain whenever the latter region even nominally has been consolidated.

The two southern river corridors have much in common, geographically and strategically. They consist of broad valleys, running parallel north and south, for a distance of about 400 miles. Their geological constitution is identical, heavily rolling limestone country with navigable, canalized rivers flowing north throughout their entire lengths. Both give on the Yangtze on the north and on the broad and fertile basin of the West River in the south, in the latter case over very slight watersheds. They thus lend themselves readily to offensive movements, north or south, especially when jointly employed. During the Manchu dynasty these valleys were the most serious avenues of insurrection, combining as they did breeding space for revolt and easy access to the Plain. Thus the T'ai P'ing rebellion of the mid-nineteenth century had its inception in Hunan, and erupted from the Hsiang valley to defeat on the face of the Great Plain. It was up these avenues that the Kuomintang armies advanced in 1926-7 and eventually installed the Nationalist government in Nanking.

The next avenue to the west is the rough and scenically magnificent route up the Yangtze into Szechwan. While as blood-drenched in the past as the rest of China, this corridor has figured little as an avenue of descent upon the Great Plain. Szechwan, beyond the Gorges, is an empire in itself and its rulers have been more concerned ordinarily in conserving their emporium than in territorial expansion. This situation is confirmed in modern times by the difficulty of obtaining munitions in this province.

In consequence the tide of conquest has usually set up the Gorges, rather than down the river to the Plain.

Historically speaking, the T'ung Kuan pass, leading from the banks of the Yellow River into the province of Shensi, is the most ancient in China. Here it is that the Chinese people first emerge from the mists of legend. For centuries the capital of the country was located in its vicinity. In historic times the strategic value of the pass has waned, for with the progressive dessication of Central Asia a bulwark of arid and desolate plains has been reared to its west, making an approach to it in force over the uplands a serious matter. T'ung Kuan is thus rather an outward opening door to the domination of the plains north of Tibet than a passage to the invasion of the major strategic area. Its chief employment in the latter direction is in conjunction with pressure exercised at Nankow.

This Nankow area is the most interesting, strategically, of the group. The point of closest approach of the Mongolian Plateau to the Great Plain, its sensitiveness is attested by the location of Peking at its mouth. The peculiar value of Nankow is that it may be used as a pivot of maneuver, either in conjunction with T'ung Kuan or with the Shan Hai Kuan passage. The Nankow area is characterized by numerous passages into the level lands, but this advantage to the offensive is cancelled to a great extent by the rough and broken character of the country between the interior defensive crests of the mountains and the Mongolian upland. Historically, the Nankow passes have usually been points of pressure, of feints and raids, with the major efforts to reach the Plain developing through T'ung Kuan or Shan Hai Kuan.

In connection with Nankow, attention must be given to the plateau province of Shansi. A mountainous region, with few entrances or exits, it seems designed by nature as a stronghold and an area of isolation. It is characterized by one important strategic feature, however. This is the route extending from the Mongolian uplands at Ta T'ung clear south, some three hundred and fifty miles, to the Yellow River plain in Honan. This route is a convenient alternative to the T'ung Kuan approach in conjunction with pressure exercised at Nankow. Furthermore, the possession of Shansi by forces based to the west assures them quick and convenient interior lines of communication. The whole province is thus of great assistance to eastward operations from the western plateau, and is a decided liability to a defense of the Great Plain.

Comes now Shan Hai Kuan, the royal road into the fat lands of North China. Here the mountains that compass China proper end abruptly, some five miles from the sea, leaving a broad avenue of entry, flanked on the west by several practicable passages through the mountains themselves. The chief virtues of the Shan Hai Kuan route as a path of invasion are that it is backed up to the north by a fertile plain that can subsist armies

on their march, and that its level expanse offers no difficulties to transit. The region of the true pass, while the broadest and easiest route into China, is still so constricted as to permit the active use of only some thirty thousand or forty thousand effectives at a given time. In consequence, major efforts to force this barrier must be made in conjunction with immobilizing attacks elsewhere, or with a treacherously or foolishly administered defense.

All the above has left out of consideration the water frontiers of the Great Plain. As a matter of historical fact, no major military effort has ever been made on this area from the sea. Certain foreign expeditions, based on sea-power, have landed on the Plain in modern times, but their objectives invariably have been limited, usually to the capture of Peking and the intimidation of the governmental powers centralized there. At the same time the fact must not be lost to sight that complete command of the sea offers opportunities for debouchment on the Plain. These opportunities are not confined to coastal ports, but include also the whole navigable length of the Yangtze River from Shanghai to Hankow. Armies based on sea-power and entering this stream have their points of landing and debouchment in the heart of China practically increased to infinity.

The Yangtze itself is a river of paradox. From the Gorges to the sea, its valley, which commercially is one of the most potent areas in the world, does not exist strategically. To the north it is differentiated from the Great Plain by a low divide which is hardly out of sight from its own banks. On the south its very size splits it up into the area bordering its estuary (which by attraction is to all intents and purposes part of the Great Plain) and into the valleys of the Hsiang and Kan, which have been considered already. Again, while its valley thus eliminates itself from strategical consideration, the river itself practically alone among its peers, is a major strategic obstacle. It is so broad, so deep, and above all, its current is so swift, that it is unbridged; and even unopposed crossings by large bodies of men are fraught with dangers and attended by delays. Thus it is a perplexing obstacle to north-south movements, though a great avenue of east-west communications; and, granted sea-power, it is the eastern and southern door of the Great Plain.

The scope of this paper precludes more than mention of the great areas of strategic isolation or strategic autonomy in China,—namely Szechwan, Kweichow, Yunnan and Fukien,—though each is as large, as populous, as wealthy, and as much of a prize for conquest as a European kingdom. There remains for consideration the basin of the West River, which forms in southern China a counterpart of the Great Plain of the north. Its size, however, is so much smaller that the difficulties to control that are encountered in the case of the Yellow River plain are minimized. Containing some one hundred million people, and reputed the wealthiest portion of China, this area is as though suspended from the Great Plain by the twin

valleys of the Hsiang and Kan. These corridors, militarily speaking, run both ways, and there is no valid reason why northward operations based on the southern plain should not be conducted as successfully as descents southward from the domain of the Yellow River. Historically, this has not been the case. Northward movements have been rare, and successes few, although their feasibility has been proved as recently as 1926-27. The reason is probably that the great tides of conquest have usually swept in from the north, and have advanced into the West River basin after consolidation has been effected in the Great Plain. On the other hand, rebellions have usually taken form in the more secluded portions of the country, and having recognized their true objective, have headed for the Plain by the most direct route. Still, the conquest of the North by the South remains a valid concept, granted always that the control of the Plain is not secure.

This concludes a general study of China as a strategic whole. Even so brief an examination throws into relief the essential strategic unity of the country, the transcendent strategic importance of the Great Plain, the fact that *de facto* occupation and control of the whole country are absolutely conditioned upon effective control of that Plain, and that such control, if weakly exercised, is in itself a liability rather than an asset.

A Fault Detector

By CAPT. HARRY R. PIERCE, C. A. C.

REPAIRING cable, either submarine or subterranean, is often an important part of the Coast Artilleryman's task of keeping materiel in condition for service. A small part of this, but nevertheless an important one, is the location of faults, breaks or grounds.

The most common fault in cable is a ground. In submarine cable this is due generally to bending and twisting by wave action until a leak occurs in the lead. Subterranean cable may often be passed through a pipe, for example, when crossing a road or where entering the ground from aerial construction. Such pipes have been known to fill with water, freeze and in that way break the lead. In either case the water quickly seeps in and forms a perfect ground.

Such breaks are almost impossible to find by inspection and consequently some electrical contrivance is resorted to. The most commonly used is some form of a loop test. Such tests depend primarily upon the resistance of the wire conductors to determine the distance of the break from the end where the test is made.

Cable ships are used to make repairs to all submarine cables and they are specially designed and equipped for this purpose.

I have in mind two incidents which happened in the Harbor Defenses of Portland during the past two years placing the burden of repairing submarine cables upon the shoulders of the harbor defense personnel. They both show that it may often be necessary to repair submarine cable without waiting for the cable ship. One shows that such breaks cannot be definitely located with the loop test.

In the spring of 1928 a cable connecting Fort Levett with Fort Williams went out, grounded. A loop test showed quite accurately that the break was about one hundred and fifty yards from the Fort Levett end. The cable ship was requested but at the time was in the south. The biggest event of the year from a military standpoint is the July National Guard Camp. It was necessary that this cable be repaired at once. Authority was requested and obtained to hire a lighter and to repair it locally. The cable was under-run from the beach several times to a distance of half a mile from shore without discovering the break. The particular section near the location indicated by the loop test was very carefully observed, but no fault was found.

In the spring of 1929 a new cable laid by the cable ship in 1928 went bad due to a ground. A loop test was made from both ends. The tests varied the location of the break by half a mile, the nearest average seeming to indicate a point about eight-tenths of a mile from shore. For a person

with experience in this manner of work these discrepancies might have told something but they only served to cause perplexity with the result that more tests were conducted, each one with a different answer. Megger tests indicated different readings at different times. The cable ship was requested but as before was not available. This cable was needed by the National Guard and had to be repaired.

A dozen other similar incidents that happened during the past few years might be enumerated to include faults that were located in subterranean and aerial cables, but these two seem to illustrate the need for some better way of finding such breaks.

The failure to discover the break in the Fort Levett cable in 1928 led to the improvisation of a detecting apparatus that is so efficient it is considered worthy of mention to all Coast Artillery troops. The break in this cable was discovered in the course of an hour, that time being necessary to under-run one hundred and fifty yards of cable. The break in the other cable in 1929 was found ten minutes after the test started, being not eight-tenths of a mile at sea but on the beach. So accurate was the test that the cable was cut for observation exactly two inches from the break.

A description of the apparatus follows. Most of the Coast Artillery School graduates are familiar with the exploring coil. This consists of a coil of wire, perhaps eighteen inches square, with about three hundred turns hooked in series with a telephone receiver. If it is desired to discover the whereabouts of a subterranean cable it is first necessary to run a buzzer circuit through the cable. These buzzer impulses form a varying magnetic field around the cable, which, if the exploring coil is placed in proximity, will cut through the coil and cause the sound of the buzzer to be heard in the receiver.

In case of a break in the cable the conductors are usually shorted together at the break by action of moisture. This serves to complete the buzzer circuit at the break and to prevent the impulses going beyond that point.

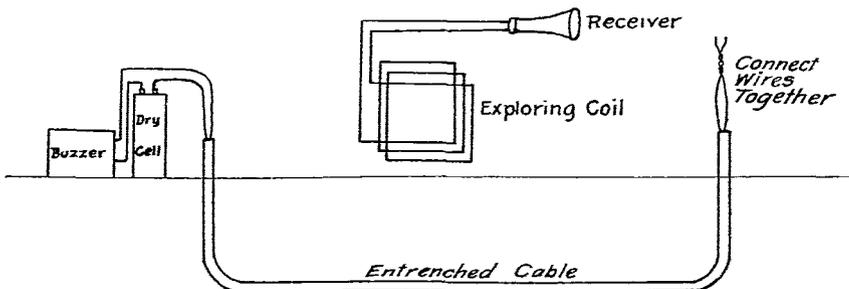


FIG. 1. EXPLORING COIL USED TO LOCATE ENTRENCHED CABLE

Buzzer signals are put through the cable by allowing conductors to form part of the buzzer circuit. Signals are loudest in receiver when exploring coil is nearest the cable.

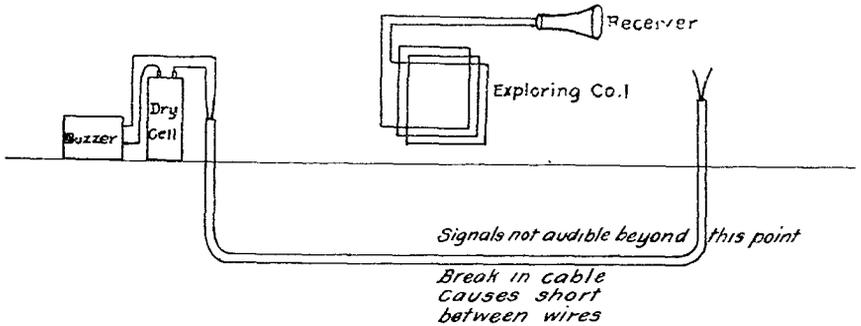


FIG. 2. EXPLORING COIL USED TO LOCATE GROUND
Signals die out when break is passed.

Such an arrangement has been used for years. The exploring coil must, however, in order to be of value, be used fairly close to the cable. For instance, if the cable is entrenched deeply, as is sometimes the case, the signals may be too weak to be heard. The particular development made in these harbor defenses is the attachment of the exploring coil to a vacuum tube amplifier.

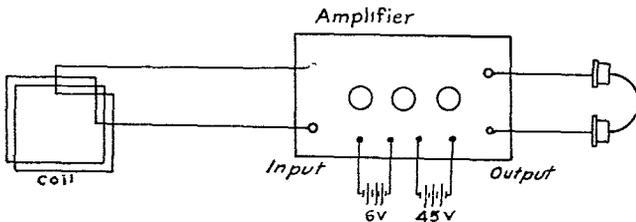


FIG. 3. AUDIBILITY OF SIGNALS INCREASED BY ATTACHMENT
OF A THREE-TUBE AMPLIFIER

In the example given in 1928 a BC 44A transformer coupled to a two-tube radio amplifier was used. At this time the cable was followed from the shore through ten feet of water.

In 1929 a three-tube, resistance-coupled amplifier was used with a six-inch coil of three thousand turns of wire instead of the eighteen-inch exploring coil. This latter arrangement worked even better than that used the year before.

At present we have on hand a portable outfit shown by the photographs. It is easily carried from place to place by one man and is convenient to use. A field buzzer is used to send out the impulses which can be picked up anywhere within a hundred feet of the cable. Experiments are now being

conducted with a waterproof coil for submarine cable. This will allow the dropping of the coil to the bottom of the bay in locating breaks and in locating cable will obviate the necessity of under-running.

It is believed that anyone having to locate underground cables prepara-

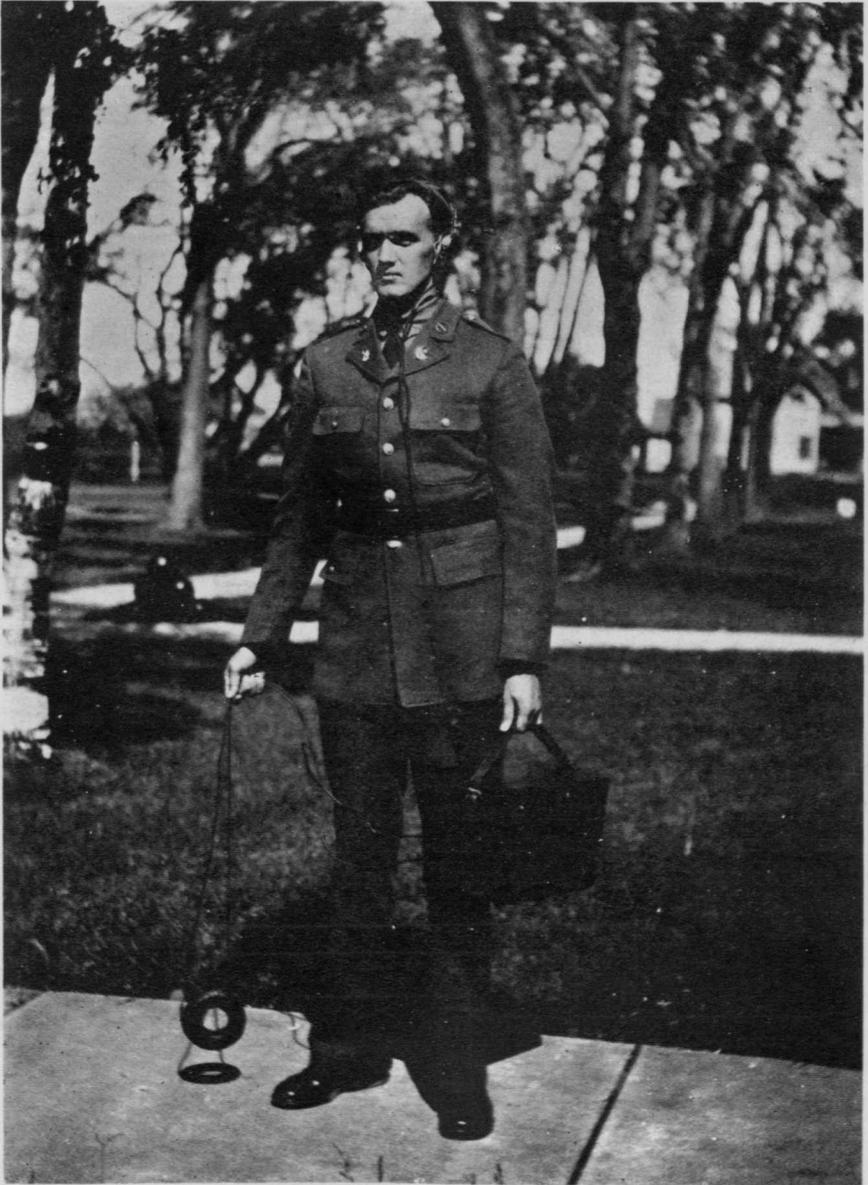


FIGURE 4

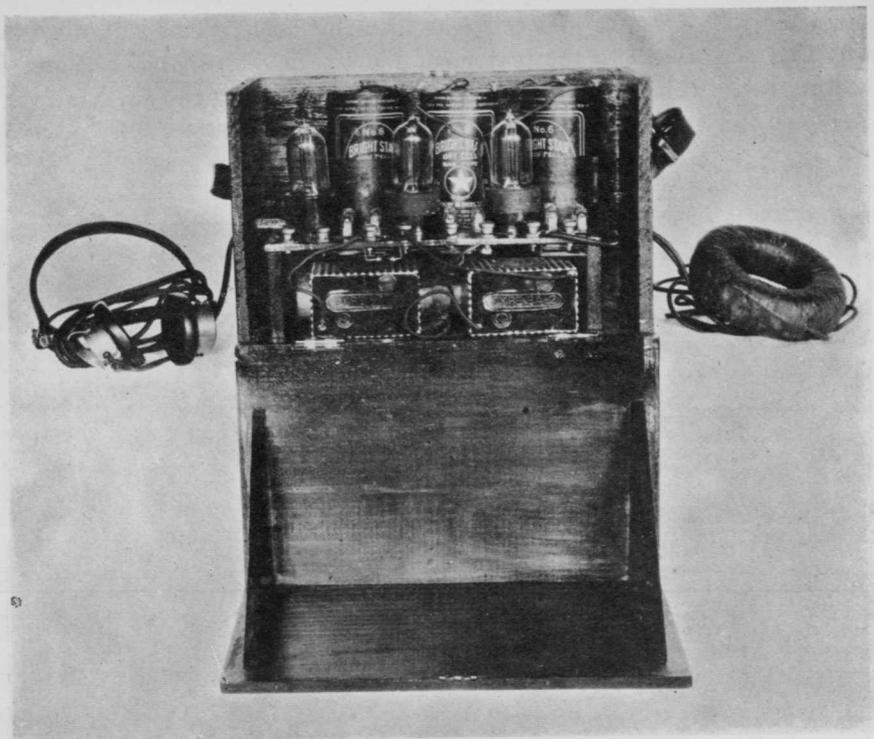


FIGURE 5

tory to digging for them will do well to investigate the possibilities of this arrangement. This also applies to the locating of faults in cables or wire.

AMPLIFIER FOR DATA PHONES

The National Guard have complained that the data phone in 12-inch gun emplacements, although clear, is not loud enough to be heard above the other noises. This year this same amplifier will be used to step up the telephone signals for the operator of that phone. The hook-up of that arrangement is as simple as the former and is as per sketch. A radio headset will be used instead of the regular receiver.

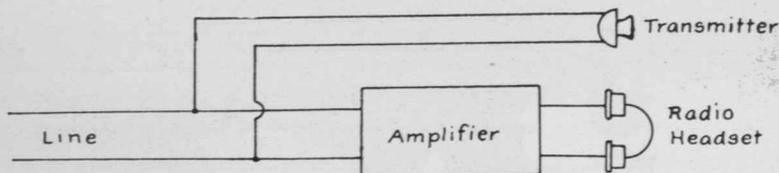


FIG. 6. AMPLIFIER TO INCREASE SIGNAL STRENGTH OF TELEPHONE RECEIVER

No wiring diagram of the amplifier is considered necessary as it is believed that almost any similar type will do. There is no name on the one used here but it is believed that its cost did not exceed one dollar.

Behind the Curtain of the Anglo-American Fleet Parity

By GENERAL D. VON MIERKA, Austrian Army, Retired

(Translated from the Austrian bi-monthly magazine "Militarische und Wissenschaftliche Mitteilungen, March-April, 1930, by Col. George Ruhlen.)

THE STRATEGIC OUTLOOK FROM THE POINT OF VIEW OF THE UNITED STATES

FOR more than a hundred years, there has prevailed, for the English war fleet, the principle of "The Two Power Standard." In accordance with this principle it was accepted that the English fleet would always be at least equal in strength to the fleets of any two other powers, whoever they might be. One had at that time in mind Europe only. During the war the United States were called upon for assistance and the spirits that were then summoned cannot now be banned; a new factor had to be reckoned with.

But for that it can hardly be disputed that the policy initiated by England's diplomacy might still have served its own interests. England soon comprehended the new situation. The European states could be harnessed to its cart by baiting them one against another in order to attain one's own political, economical and colonial aims but with our uncle beyond the seas there was only one way out: get along with him. With the entrance of the United States into the sphere of European tensions its Monroe doctrine and England's two-power standard were heaved overboard.

Why this illumination came about so quickly and one of the world's fundamental conditions of the dominance of the world's sea power was so complaisantly given up may be readily understood when one has read the article which appeared as early as 1927 in the May number of the United States COAST ARTILLERY JOURNAL under the heading: "The Strategic Position of the United States" by the American Artillery, Colonel Kilbourne. His communication will be taken up here by extracts from the writing.

The United States possess above all and in greatest measure the possibility of self preservation and self supply in regard to provisions as well as of every kind of war material. In addition they are in position, after China and Russia, to set up the largest army. Inasmuch as the Kellogg pact excludes from the very beginning an aggressive war it can therefore be a question only of defending the country and its interests. No country in the world occupies so favorable a geographical position for its defense as that of the United States. Land boundaries exist only with reference to Canada and Mexico. Of course large hostile armies could be collected in both of these countries but they would be bound, for want of adequate

equipment industries, to depend in part upon sea routes for supply and replacement. Supply of these from Asia is hardly thinkable. It is a possibility for Canada from Europe but not likely for Mexico because, as will be shown later on, all routes by sea are in the hands of the United States. Colonel Kilbourne considers the possibilities of attack from the following points:

A. FIXED LAND BOUNDARIES

The Canadian boundary offers no peculiar difficulties to an aggressor except in the regions of the lakes. The endless agrarian areas lying west of the lakes and some of the Rocky Mountain sections present no objectives worthy of strenuous operative effort for their conquest because they occupy no vitally important centers. East of the lakes the attack would lead into the industrial centers that supply the army with war necessities. Across the Mexican boundary every major attacking operation against the United States is practically excluded on account of the extended desert regions and inadequate roads and means of communication on both sides of the boundary. Since neither Canada nor Mexico has the equipment that would cause apprehension of an attack from them alone, only attacks by other European or Asiatic states over the Atlantic or Pacific ocean need be considered. The defensive capacity of either coast is adequate for such a contingency.

B. THE EAST COAST

A glance at the map shows that the American coast lies, so to say, in extension of the shortest crossing route from northern Europe. The fortified harbor group of Kennebec, Portland, Portsmouth, Boston and Narragansett Bay flanks, and threatens as well, the sea routes toward Canada and those to the harbors of the United States further south. They also protect New York. The further south the enemy extends his sea route, the more would he be menaced by the fleet bases established at the ports named. He would have to secure these points of support one by one, which is hardly practicable. The Bermuda Islands come into consideration as points of support for hostile fleets but they are not at this time built up as large fleet bases. The way from these islands to the coast is also exposed to attack from the harbor groups alluded to. The Bahama Islands are still less favorably situated as hostile fleet bases since they are wholly dominated by the Greater Antilles which are in part, actually, and in part, by treaties, tightly in the hands of the United States. Still more unfavorable is the outlook, for the same reasons, from the Lesser Antilles, to which must be added the greater distance from Europe and from the east coast of the United States.

C. THE WEST COAST

Here the excellent ports of Puget Sound, the mouth of the Columbia River, San Francisco, Los Angeles, and San Diego offer most excellent

fleet supporting points that mutually support one another. The distance from Yokohama to San Francisco is four thousand five hundred and thirty-six nautical miles (eight thousand four hundred and forty-four kilometers). The last two-fifths of this route are menaced for a hostile fleet by the American fleet based on the Hawaiian island of Oahu and from Alaska, on the Aleutian islands, in flank and in rear. The enemy would have to make these points of support harmless before undertaking a main attack against the coast or else take a course south of Oahu which could nearly double the length of his route without protecting him from liability of a concentric attack from Oahu, San Francisco and from the Panama Canal Zone.

After these considerations Colonel Kilbourne reaches the conclusion that danger threatens the United States neither from the east nor west nor from the south (Mexico), but he turns to the possibility of a hostile attack across the Canadian boundary. The object of the opponent there would be the acquisition of the great decisive industrial areas in the north-eastern part of the United States. The line of separation between these and the extensive agrarian sections lies approximately along a direct line from Norfolk toward Chicago. By weighing the various lines of action Colonel Kilbourne arrives at the conclusion that a serious threat against that area would necessitate a simultaneous attack by the enemy across the Canadian boundary east of Lake Ontario and from the south from the region of Chesapeake Bay. This would compel the opponent to bring the needed troops and war material by sea to Canada and to land the southern group approximately at Chesapeake Bay. The difficulties confronting such an undertaking are the menace to the sea routes by the northern United States harbor groups heretofore referred to.

D. THE PANAMA CANAL ZONE

This is strategically, by far, the most valuable possession of the United States. A fleet coming from Asia finds no proper anchorage in the entire seven thousand eight hundred and sixteen nautical miles (fourteen thousand five hundred kilometers) of this long route. This distance exceeds in the greatest detail the radius of action of any fleet. In order to reach any point of support it would have to extend the voyage another three thousand miles (five thousand five hundred and sixty-six kilometers). Most favorably situated would be the French Marquesas Island, four thousand nautical miles (seven thousand four hundred kilometers) from the Panama Canal. A fleet base would have to be built there; the tropical climate interferes with any great ammunition production and storage. From these islands to the Canal Zone the attacking fleet would undoubtedly be subjected to a concentric attack from the Canal Zone and San Francisco. It is clear that the opponent will attempt to make a surprise attack against the Oahu port at the very beginning of the war but the flank at-

tack from Unalaska, before mentioned, would make that a risky venture. Unalaska is barely attackable on account of its fogs, its turbulent flood movements and unfavorable coast formation.

A serious danger would threaten the Panama Canal on the Pacific side only if one of the Pacific states of South or Central America should build a great fleet but such a contingency is not expected within a century. Neither have these states any dangerous alliances and they do not possess any adequate points of fleet support. Therefore, the United States can meet with confidence all attacks against the Panama Canal from the Pacific ocean.

On the Atlantic side the distances from northern Europe to the Panama Canal are materially shorter, in round numbers four thousand five hundred nautical miles, about eight thousand nine hundred kilometers. The greater portions of the islands (West Indies) are, in part, militarily, and in part, politically, in the hands of the United States. Aside from that they form a closely connected flying craft base that insures control of the air by means of aviation fighting supplies brought by airplanes. Similar to the measures of the harbor groups north of New York, any attempt to penetrate the bar of the Antilles would be continually threatened in flank and rear. The situation of the United States in the Panama Canal is one of the strongest in the world. Colonel Kilbourne can therefore say with pride: "We hold fast in our hands one of the bottle necks of the most important world traffic routes and have the power to open and close them at our will."

E. SECURITY OF TRANS-OCEANIC POSSESSIONS

Except for the Hawaiian Islands, whose defenses have been before alluded to, the only possessions of the United States beyond the seas are the Philippine Islands. While the Hawaiian Islands are marks of a strengthening of the strategic situation of the United States, the Philippines must be accepted as their weakest point. This is not affected by the fact that the fleet station Zamboanga is at Mindanao, the southernmost island group. In case of war these islands cannot be held defensively and would undoubtedly be lost. In recent times they rendered good service as a fleet station in connection with the entanglements in China but the American government appears to have long since regretted the adventure of their seizure since it is earnestly considering their relinquishment as colonial possessions.

Colonel Kilbourne says, in concluding his article: "We possess one-half of the world's raw materials needed for the production of munitions. In this lies the great value of an alliance with us and the danger for an enemy." He further urges the need of keeping the necessary fighting forces in readiness in order that the favorable situation may be upheld and utilized in case of a forced necessity. Kilbourne mentions no names

but does not leave it in doubt that England and Japan are meant as the most possible opponents. England's supply of subsistence depends upon an uninterrupted traffic with Canada which could hardly be upheld in case of a conflict with the United States because command of the sea would be difficult to maintain at a distance of two thousand miles from the homeland. It is, therefore, incomprehensible why England should oppose so strenuously the inviolability of ships carrying provisions. Can it still think only of Germany as the state to be injured?

If one adds to this rather uninviting exposition of the consequences of an attack against the United States as set forth by this writer, with respect to the strategic aspect of the attempt, the fact that England clearly realizes that it could never keep step in its naval establishment with the financially greatly superior America, which, in spite of gigantic equipment expenditures, has for years reduced taxation, one will understand why one so readily threw the "Two-Power Principle" overboard and was grateful for the graciously granted fleet parity.

As far as concerns Japan it appears that the qualified declaration of Wakatsuki, published in the *Times* of January 4, 1930, relative to the seventy per cent cruiser force indicates that the Philippines would cease to be an objective of future wars.

At any rate the United States must be given credit for having brought the great powers into the conference seats with gentle pressure. But if one looks at it honestly and accurately one must admit that they succeeded in this only on the basis of the age-old saying: *si vis pacem para bellum*. Geneva knocked the bottom out of the barrel in 1927; since the great powers of the entente could not be brought to listen to sensible reasoning there was nothing left to the United States except to show them that they could not get along without them.

FOREIGN PERIODICALS

Reviewed by MR. J. MARRON DUNDAS

Bulletin Belge Des Sciences Militaires, June, 1930

Operations of the Belgian Army During the Campaign of 1914-1918. Engagements of Hautem-Sainte-Marguerite and Grinde. (To be continued.)

We have here the third chapter of this series. It should be valuable historical material since it contains the orders of the G. H. Q. and of other commanders for the retreat of the brave Belgian First Army when menaced by superior forces. The fights mentioned occurred on August 18, 1914, and were participated in by the First Army Division during the retreat.

The Infantry Chronicle. British Doctrine on the Use of Machine Guns in the Offensive. Chapter V.

The British army division has three brigades of four battalions each. The regiment is not a tactical unit but is of an exclusively administrative character. The battalion has three companies of infantry and one machine gun company with twelve machine guns. This company is divided into three sections and each of these are sub-divided into two sub-sections. The thirty-six infantry companies of the division are thus supported by twelve machine gun companies. The principles governing the use of machine guns and here commented on are taken from the 1925 edition of the British Machine Gun Training Manual. In their order they are: (1) Machine gun companies are not necessarily attached permanently to their battalions; (2) Machine guns should be echeloned in depth and (3) Tactics for the use of machine guns are based on as close cooperation as possible with the infantry they support.

With the Prussian Guard on the Sambre in August, 1914. (Continued.)

The narrative is that of Lieut. Col. B. E. M. Van Egroo. After accounting for the tactical movements the author, in his conclusion, says that if the German maneuver *Entre-Sambre-et-Meuse* failed, the Command was responsible for it.

Siege of the Citadel of Antwerp in 1832. (Continued.)

Before detailing and explaining the operations during the course of this siege the writer, Maj. F. Delvaux, tells us of two other sieges of citadels similar in character to the one under consideration, that of Turin in 1706 and Pampelona, which took place in 1823. The siege of the former was an episode of the War of the Spanish Succession so often cited in military journals everywhere. Turin citadel was constructed by the Italian engineer Paciotto. It was considered one of the best in Europe. Pampelona was built in 1571, by order of Philip II of Spain. The citadel was profiled on the Vauban system.

FRANCE

Revue d'Artillerie, April, 1930

Modern Systems of Artillery.

General Challeat's first chapter defines his subject and shows its importance; in his second he describes an artillery system conceived before 1914, while the third chapter shows the influence of the teachings of the war upon the organization of modern systems. Sixty-five pages.

Study of a Concrete Case of the Use of Artillery in an Attack. (Continued.)

Artillery on the Offensive in a War of Position. (Continued.)

The Lombard Fire Tables.

This quaint old book, a small volume of one hundred and seventy-seven pages, published in 1787, is by M. Lombard, who was Royal Professor at the Artillery Corps School in Paris. It is entitled "Firing Tables for Cannons and Mortars, with Instruction on the Manner of Using Them, for the Use of Officers of the Royal Corps of Artillery." Napoleon must have used them when a lieutenant of artillery. The *Dictionnaire d'Artillerie*, published by Colonel Cotty in 1822 (with a supplement issued in 1832), mentions these fire tables as the only ones in use. They therefore went through all the campaigns of the Revolution and the Empire.

Revue Militaire Francaise, May 1, 1930

Operations in Morocco. (To be continued.)

One seeking to acquire an idea of the conditions of warfare in French Africa, as well as of the natives who occasionally wage it, would profit from this narrative by Lieutenant Colonel de Boisboissel.

Motorization in the United States Army. (To be continued.)

The author, Captain Cammas, writes clearly and intelligently. He allots first place to Great Britain and the United States. Second, though far behind these two, come the other principal powers, Italy, Poland, Russia, and Belgium; Germany being prevented by the Treaty of Versailles from motorizing wholly or in part the units of the Reichsheer. The balance of his observations turn upon the development of motorization in the U. S. Army and motorized or mechanized materiel actually in use or in the experimental stage.

Revue d'Artillerie, April, 1930

The Utility of Permanent Fortifications.

These being at present required in France to compensate for the loss of the feeling of security entailed by evacuation of the Rhineland the author, Lieutenant Colonel Morin, is prompted to inquire if works of this character are effective. After repeating what was expected of the various permanent fortresses in France during the World War and what they enabled the French armies to accomplish, he concludes that permanent fortifications can render immense services both tactically and strategically and that they therefore fully justify the money spent upon their construction.

Supplying Troops in a War of Movement.

The stabilized character of the last war made the conveyance of supplies from the rear a singularly easy task. So easy was it that the Intendance, or Quartermaster's Department, is still organized as it was in 1918, as far as provisioning is concerned. This is not as it should be, and a change is necessary to provide for the exigencies of mobile warfare. What the nature of the change should be the author is at some pains to tell us.

The Spanish Army in Morocco. (To be continued.)

Spain lost all of her overseas possessions during the course of the XIX century with the exception of her African colonies. Spanish Morocco is the

most interesting of these. It cost Spain twenty years and three billion pesetas to conquer it. What she has done with it is interestingly told by Captain Turret.

GREAT BRITAIN

The Journal of the United Service Institution of India, April, 1930

The Last British Raids on France and the Battle of St. Cast.

The title brings back to one memories of readings in the literature of the Seven Years' War in boyhood's happy days. Marlborough who "rode in the whirlwind and controlled the storm"; Pitt, the famous Prime Minister of England, and Chevalier Mazin, *Ingenieur de la Place*, St. Malo, who directed engineer operations for the French. It was in 1758 that the British were defeated on the shores of the Bay of St. Cast by the French, this being the last time that the former landed as an enemy on French soil. A memorial window in the church of the village of St. Cast commemorates the event.

Account by an Eye Witness of the Taking of the Delhi Palace on the 20th September, 1857.

This narrative, chatty and spicy, consists of extracts from letters of the late Lieut. Gen. F. C. Maisey, Indian Army, at that time a Captain and Deputy Judge Advocate General of the Delhi Field Force. The letters were addressed to his mother and sisters in Switzerland and are dated July, 1858.

Mechanization. How Far It Is Possible and Desirable in the Imperial Army.

British policy as regards mechanization must be, says the author, a conservative one as the British Empire extends to the four quarters of the globe and its troops may be called upon to fight in widely different countries and under widely varying conditions. The financing of experiments—a costly process—is another difficulty. The Government, in taxing the United Kingdom motor vehicles according to their horsepower, has not made the problem any easier. Broadly speaking, the writer finds, mechanization has today reached the point where mechanical vehicles (wheel or truck) can traverse any country passable to animal-drawn wheeled vehicles, but no mechanical contrivance has yet been invented that can take the place of animal pack transport. Until some form of mechanical pack animal is invented mechanization on an Empire-wide basis cannot advance much further than its present position.

Tigris and Hydaspes.

The Tigris, it may be recalled, is one of the tributaries of that river which, according to the second chapter of Genesis "went out of the place of pleasure to water paradise" (Gen. II, 14). The Hydaspes (now the Jhelum) was crossed by the army of Alexander the Great in B. C. 326. General Maude and his army crossed the Tigris in 1917. Lieut. Col. H. E. Crocker contrasts one operation with the other and finds that a study of both illustrates the two great principles of war, personal reconnaissance and surprise.

ITALY

Rivista di Artiglieria e Genio, February-March, 1930

A Knowledge of the Laws of Practical Geodesy and Astronomy a Necessity in Artillery Fire.

This sounds unpracticable, but our author intends it for those artillerymen who, deprived of topographic maps, must forsooth consult the heavens to direct their

fire, as the ancient Greek navigators did to guide their barks. Geodesy, too, is a useful handmaid for certain measurements. Contributed by Antonio Loperfido, originally as a communication made to the XVIII Congress for the Advancement of Science which met at Florence in September, 1929.

A Graphic Process for the Study and Justification of the Rules of Fire.

The above is presented by Col. Ettore Baldassare, Artillery. The necessary graphs and formulae are embodied in the text.

Outboard Motors.

In this contribution by Angelo Grammatica, Captain of Engineers, two types are offered for consideration of the reader, the *Corsa Tourist* for light, and the other unnamed for heavy, floating plant. Three illustrations.

Topographic Preparation of Fire. Measuring a Base.

While admitting that there are many topographic and analytic methods of fire preparation, and that the one he offers is not new, Ing. Carlo Geloso, Colonel of Artillery, believes it to be simple and speedy both on the terrain and otherwise, and quite sufficiently exact for the purpose. Six pages are devoted to a mathematical exposition of the method.

Self Hooping.

This process, too well known to gun manufacturers to need particular description, receives adequate treatment from one A. L., who declares it to have been the invention of Colonel Bianchi, an Italian, and presumably an artillery officer, in 1869. To prove this he quotes an extract from a letter of the latter written July 13 of that year.

Output of the Wartime Industries of the Austro-Hungarian Monarchy During the World War.

An excellent article of twenty-seven pages by Maj. Giulio Turcsanyi, Hungarian Army. The numerous tables giving materiel produced, etc., may be consulted with profit by those interested.

PORTUGAL

Revista de Artilharia, April, 1930

Some Considerations on Coast Defenses. (To be continued.)

Major A. J. Aguiar laments the slight interest taken by his comrades in the Artillery in making the Portuguese coast line secure from invasion. Coast defense is of fundamental importance for three reasons: first, as a means of national defense, and second, as a means of cooperating with and completing the action of the Navy. The coasts of a country are but its maritime frontiers, more important, save in certain peculiar circumstances, than its land boundaries, and should be guarded with jealous care.

The Moral Preparation of an Army Officer. (Continued.)

Full of good sense, as a quotation or two may serve to show: "The first requisite of a commander is to convince himself of the utility of his mission or, in other words, to profoundly convince himself of the necessity of the Army, and to look upon war more as a possibility than a certainty, a natural fatality like many others." That all is not golden in the universal military service system may be gleaned from a paragraph culled by the writer from the pages

of the Course of Military Education in the Brussels Military School: “. . . and in this way the problems of national defense—personal service, annual appropriations, length of service—have for a long time been at the mercy of politics, the greatest glory a party could boast of being to take as many citizens as possible from military service, or to continually reduce, without regard to the necessities of national defense, the length of service of those called to the colors.

MAY, 1930

Ballistics and Aerology. (Continued.)

For previous articles on this subject see Nos. 49, 50, 54 and 55 of the *Rivista de A.* Certain errors in equations in previous installments are corrected here in an insert.

SWITZERLAND

Allgemeine Schweizerische Militarzeitung, May 18, 1930

The Aviation Bill.

While the Nationalrat has not acted as yet upon this measure the writer does not doubt that the twenty million fcs. necessary for the completion of the air fleet will be forthcoming. If Switzerland possesses an aviation service as a constituent of the Army it must be properly weaponed and equipped for war. Obsolete planes are a public proof, either that the nation is ignorant of the drastic demands of war or, what is worse, that in spite of better knowledge it neglects national defense and sets it down as needless. Our author also glances briefly at the status of the air arm in various nations of continental Europe.

Italian Infantry Tactics.

Italy took up after the war, under the Fascist régime, the upbuilding and reorganization of her army. The first efforts at reform were not spent upon revision of the existing tactical manuals, but upon moral strengthening and material reconstruction of the fighting forces. Accordingly, as compared with other armies, the Italian tactical code has “come but newly.” It comprises: *Norme Generali per l'Impiego dell Grandi Unita* (1928); *Norme per l'Impiego Tattico della Divisione* (1928); and *L'addestramento della Fanteria* (1929).

COAST ARTILLERY ACTIVITIES

Office of Chief of Coast Artillery

Chief of Coast Artillery
MAJ. GEN. JOHN W. GULICK

Executive
COL. H. L. STEELE

Plans, Organization and Training Section

MAJ. J. B. CRAWFORD
MAJ. R. V. CRAMER
MAJ. S. S. GIFFIN
CAPT. J. H. WILSON
CAPT. H. N. HERRICK

Materiel and Finance Section

MAJ. J. H. COCHRAN
MAJ. C. H. TENNEY
CAPT. F. J. MCSHERRY
Personnel Section
LT. COL. H. T. BURGIN

Maj. Gen. Henry D. Todd, Jr., Retires

It is with sincere regret that the *Coast Artillery Corps* records the retirement from active service of one who for forty years has had an influence on its policies and development and in doing so has endeared himself to his associates in such a manner as to leave an indelible influence on the arm and service.

While this is customarily the time for felicitations and congratulations we are inclined to be selfish and regret the earned retirement of Maj. Gen. Henry D. Todd, Jr. His service, marked by high professional knowledge, human interest and progressive thought, is a narrative of honor, self sacrifice, loyalty and accomplishments. By operation of law we are being deprived of service under an officer whose energy, ability and zeal are yet in their prime after these many years of activity.

A recitation of General Todd's service is one of superlatives. Any pen would be poor in its power of narrating his accomplishments and deeds.

Born in New York in 1866 he studied at St. Johns College, Annapolis, Md., and the University of Pennsylvania where in 1886 he was granted a bachelor of science degree. During the following four years he attended the U. S. Military Academy graduating No. 7 in his class. Assigned to the Artillery he served four years with the 3rd Artillery. In 1894 he was detailed instructor in Ordnance and Gunnery at the Military Academy in the grade of second lieutenant. In 1898 he was promoted to first lieutenant, 1st Artillery, and transferred to the 7th Artillery where he served with a battery of heavy artillery and as ordnance officer at Tampa, Florida. From 1898 to 1900 he was assigned to the 7th Artillery with station at Forts Totten and Schuyler, New York. During the year 1900 while



MAJ. GEN. HENRY D. TODD, JR., U. S. A.

engineer and signal officer of the garrison and also commanding officer, Battery G, 1st Artillery, he attended the Coast Artillery School and completed the course as an honor graduate. The years 1901 to 1908 found him successively, as a captain, in the following positions: Commanding a battery and Artillery Engineer of the Southern District of New York, student and graduate of the School of Submarine Mine Defense, Fort Totten, New York; Adjutant C. D. of Narragansett Bay; Artillery Engineer C. D. of Boston; student and graduate of the Army War College. Promoted to major in 1908 he served the next four years with the General Staff in the following capacities: Secretary, Army War College, Secretary of Second Section of the General Staff, Assistant to the Chief of Staff and in charge of M. I. D., Philippine Department. In 1913 he was promoted to lieutenant colonel and commanded Fort Mott, New Jersey, later taking command of Fort McKinley, Maine. From 1915 to 1917 he managed and edited the COAST ARTILLERY JOURNAL. The advent of the World War found Colonel Todd commanding the Coast Defenses of Narragansett Bay. In August of that year he was made a brigadier general in the National Army and given command of the 58th F. A. Brigade of the 33rd (III) Division. From September to December of 1917 he organized Camp Logan, Texas, and the 33rd Division. In May, 1918, he took the 58th F. A. Brigade to the Ormans-Valdahon training area in eastern France. His service in France included: Training of his brigade and reorganization of the artillery training center, Chief of Artillery of the 89th Division in the line northwest of Toul, Chief of Artillery, 1st Division, where he commanded the 1st and 58th F. A. Brigades together with the 76th F. A. Regiment and a part of the 44th C. A. Regiment, Chief of Artillery of the 91st Division where he commanded the 58th and 158th F. A. Brigades and part of the 65th C. A. During this assignment he participated in the attacks of the division through Avocourt to Gesnes and later remained with his brigade in support of the 32nd Division during its advance through Kriemhilde Stellung. On October 30 he was slightly wounded while on reconnaissance in front of the infantry lines. While on duty as Chief of Artillery, 89th Division, he participated in the attacks through Romagne, Barricourt, Tally, Laneurville and Stenay. Subsequent to the Armistice he was Chief of Artillery, 33rd Division, and in May, 1919, he was again assigned to his original World War command, the 58th F. A., and brought it back to Camp Grant, Illinois. Reverting to his permanent grade of colonel he graduated from the General Staff College in 1920 and was placed on the Initial General Staff eligibility list. On September 7, 1920, he was appointed brigadier general, U. S. A. During 1920-1921 he commanded the 31st Artillery Brigade, C. A. C., at Camp Lewis, Washington. From 1921-23 he commanded the C. D. of Manila and Subic Bays; 1923 to 1926, District Commander, 9th C. A. District; 1926-29, in command of the Hawaiian Separate C. A. Brigade;

1927, appointed major general; and in 1929 he was assigned as Commanding General, 3rd Coast Artillery District, and Commandant of the Coast Artillery School at Fort Monroe, Virginia.

General Todd received a number of commendations during the World War for the efficient manner in which his brigade supported the infantry at St. Mihiel, at Gesnes, at Romagne, and during the advance on November 1. He was cited by General Pershing for gallantry in action "near Romagne, 30 October, 1918, in making a personal reconnaissance under heavy machine gun and shell fire."

He was awarded the Distinguished Service Medal by the President:

"For exceptionally meritorious and conspicuous service. As Commanding General of the 58th F. A. Brigade, he demonstrated marked skill as an Artillery officer in the preparations for the attack of the 5th Corps on the Kriemhilde Stellung on November 1, 1918, and in support of the 89th Division in its further advance and crossing of the Meuse River from November 6 to 11, 1918. The Brigade which he commanded effectively supported the 1st, 91st, 32nd, and 89th Divisions during the period of the operations in which it served with them. His services have been of particular value to the American Expeditionary Forces."

With these citations, the Distinguished Service Medal and each of his important jobs well done, General Todd's career and personality may well serve as a model for junior officers.

Not only were his varied and important accomplishments well done but in the doing he has always evidenced that mark of human kindness and interest in his subordinates which has endeared him to all in the Corps. The Coast Artillery Corps congratulates General Todd and wishes him Godspeed in his future endeavors.

Commendation for Captain Hohenthal

Captain W. D. Hohenthal now in the Philippines with the 60th C. A. should be much pleased with a letter he has recently received from the Chief of Coast Artillery.

While with the 63rd C. A. (AA) Captain Hohenthal was much interested in methods of fire adjustment for antiaircraft artillery and devoted much time to an investigation of suitable methods for use. He devised a method in which corrections are made based upon the rule that a change of one fork in range may be accomplished by a change in altitude of approximately four per cent. This method has been included in Volume II, Coast Artillery Field Manual, as one of the accepted methods of fire adjustment.

For this contribution the Chief of Coast Artillery has expressed his appreciation and asked that a remark to that effect be filed with his records in the Adjutant General's Office.

New Directors for AA Regiments

A number of new directors (M1A1) now under manufacture at the Vickers Plant will soon be distributed to antiaircraft regiments in the States and in the Hawaiian and Panama Departments. One of these will be sent to the United States Military Academy so that cadets may be instructed in the use of the latest antiaircraft instruments.

When these new directors are distributed it will be possible to pass on to seacoast units some of the old equipment for use by them in carrying out their dual mission training.

Four binaural training instruments (M1) will also be distributed to the 69th, the AA battery of the 12, 65th, and the Hawaiian Department.

Seacoast Versus Antiaircraft

Because the COAST ARTILLERY JOURNAL has consistently plugged for antiaircraft artillery some of our readers have obtained the impression that seacoast artillery is considered passé in the Chief's Office.

Nothing could be farther from the fact. *Fixed* seacoast artillery as well as railway and tractor-drawn artillery are still part of the Coast Artillery and will be given their place in the sun.

The Chief of Coast Artillery, while he appreciates the importance of aircraft as a military weapon, is not at all convinced that seacoast artillery has passed out of the picture or even lost any of its importance. In a recent communication (with reference to the assignment of personnel) he said:

“The statement that officers with antiaircraft regiments need to be of the best is concurred in but this statement is also applicable to officers with Coast Artillery regiments other than antiaircraft. In my opinion it does not require only officers rated superior with antiaircraft regiments. The equipment and materiel is so simple of operation that it is easier to fire an antiaircraft battery than any one of our heavy seacoast batteries. It should not be our policy to build up an elite service in our antiaircraft organizations. The present policy of rotating officers between regiments of different types is believed to be sound and is being carried out as far as practicable.”

General Gulick, since his appointment, has devoted a great part of his time to the inspection of seacoast artillery, especially at posts in the hands of caretakers. His object is to insure the maintenance of this armament in a condition of instant readiness and he has many times emphasized the importance of caretaking duties. His attention to this armament is an indication of his opinion as to its value.

It is true that seacoast artillery is primarily for use against hostile naval vessels. In the case of fixed guns their only use is against naval targets. When the nations of the world decide that it is no longer advisable to build battleships then we may begin to consider the abandonment of our seacoast artillery. The recent naval conference furnished ample

evidence that all the great powers still rely mainly upon their fleets for offensive and defensive action and during the conference each nation fought to preserve for itself a proper parity among other nations. Without wishing to enter the field of political discussion it might be stated that such reductions as were agreed upon were based more on considerations of economy than on any conviction that naval vessels were in danger of eclipse.

Antiaircraft gunnery is a new art. Our officers should be as proficient in it as they are in any other branch of artillery. Those who are inclined to pass it up will very properly be considered back numbers—but no more so than those who devote all their time to star gazing to the neglect of our ancient enemy from King Neptune's realm.

Preview of Antiaircraft Training Film

The new Antiaircraft Training Film, recently previewed at the War Department, should be a matter of pride to Maj. C. M. Thiele, 62nd C. A. (AA) who wrote the scenario and to Capt. Alonzo P. Fox, S. C., who directed the picture. This picture is a real thriller. It is really a visual solution of a troop leading problem and should have great interest for all officers who have no opportunity to participate in exercises in the field.

This film was recently reviewed by the Chief of Coast Artillery and other officers who pronounced it a "hit." It has a few thrills. The views of a burning flare brought down by the antiaircraft guns were particularly thrilling. It is said that this part of the film was an actual happening where an automatic camera set on the tail continued to operate after the pilot had bailed out. The final crash was a real one. A touch of humor is added by the effort of the supply officer to avoid signature on the receipt for supplies issued at a rail head.

This film will be available at each Corps Area about October 1. It will be furnished in two sizes—the standard size and the 16-mm. size suitable for use in the usual size portable commercial projector.

Trophies for Excellence in Target Practice

The award of the Knox Trophy is a subject which generally causes considerable discussion, sometimes acrimonious. With one trophy to award the personnel of the Chief's office is often puzzled to make the award so that all contestants will be satisfied. Several times the award of more than one trophy has been suggested. Any public-spirited Coast Artilleryman—whether Regular, Reserve, or National Guard—is hereby invited to perpetuate his name and fame by providing additional trophies which may be contended for. Delicacy forbids the mention of what the cost of this trophy should be. The cost could be limited to the provision of one cup to be awarded to the winning organization, to remain in its possession for a period of one year or during such time as the organization remained on

top. Names of organizations winning it could be engraved thereon. A more pretentious project would be the furnishing of a new cup or other trophy to remain in the permanent possession of the winning organization.

The difficulties of awarding a single trophy to one organization of the entire Coast Artillery Corps are obvious. Consider the following table showing calibers of guns and organizations firing or otherwise holding an annual exercise upon which a rating is made.

<i>Armament</i>	<i>Approximate number of organizations who will fire</i>
3-inch guns	4
6-inch guns	9
155-mm. guns	11
8-inch guns, railway	2
12-inch mortars, railway	4
12-inch mortars, fixed	11
12-inch guns	9
14-inch guns	5
10-inch guns	2
3-inch AA guns	19
Machine guns	14
Searchlights	11
Mines	5

If a trophy were provided for each type of armament it would be necessary to provide thirteen of them. This would be an unduly large number of awards and the prestige of winning would be reduced greatly. Even if the number was not considered too great the same effort in competition would not be required in all types. For instance, in two cases only two batteries would be competing for the 8-inch railway and the 10-inch gun trophy. Any one of these batteries would not meet as stiff a fight as with the three-inch antiaircraft guns where nineteen batteries would be competing.

If certain types of armament should be grouped the following divisions could be made and appear reasonable.

<i>Type</i>	<i>Approximate number of batteries competing</i>
Fixed Seacoast	40
Tractor-Drawn	11
Railway	7
AA Guns	19
AA Machine Guns	14
AA Searchlights	11

This division would result in nine trophies and appears to be very simple.

It has been proposed to award pennants instead of trophies. This could be used to adorn the dayroom wall or to be displayed otherwise on

special occasions. The adding of streamers to the battery guidon is apparently not contemplated by the regulations.

In addition to the Knox Trophy there is at present an award of the letter "E" (authorized by the uniform regulations for wear by individuals) for superiority in target practice. Possibly some scheme could be worked out whereby the individuals of the organization making the best record in each type of artillery could be awarded a badge indicating a superiority over all others in that class. This subject is almost endless in its possibilities for discussion. The discussion is bound to include the manner of award. The general opinion seems to be that award should be based on score which implies some system for computing a score. The present scoring system is a result of lengthy discussion between members of the C. A. B., officers on duty in the Chief's Office, and others. In its present form it is believed that it is satisfactory.

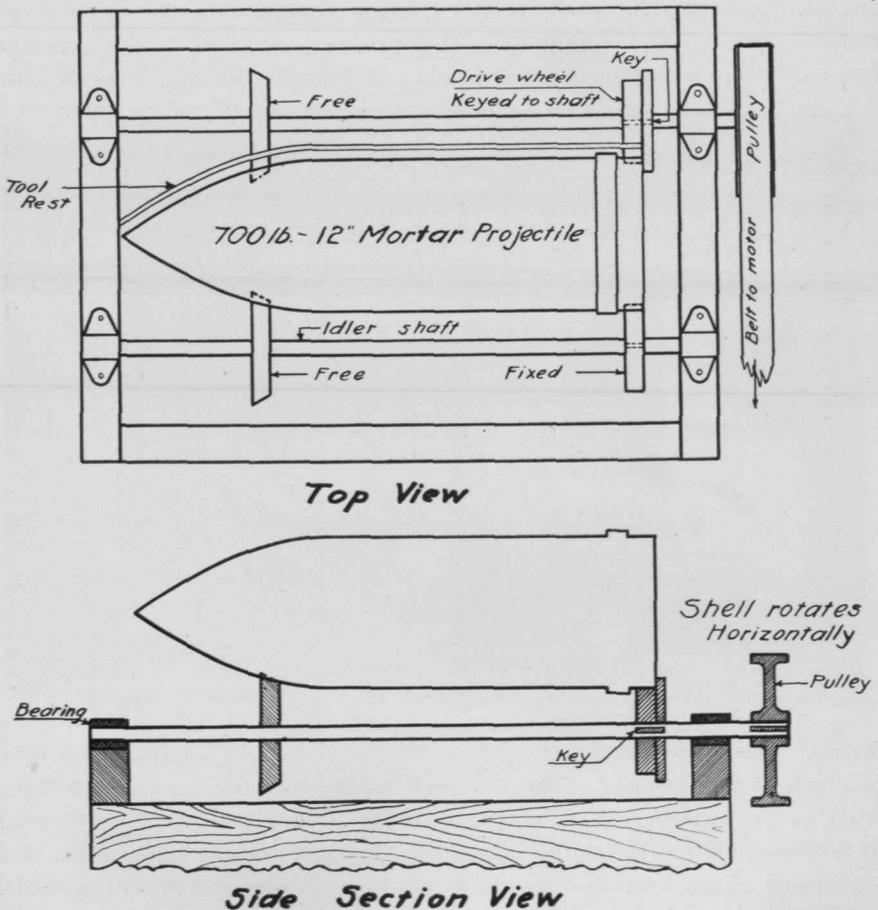
It is not desired to introduce, especially, discussion of the scoring system. It is desired to present for discussion the award of trophies and distinguishing badges of excellence in Coast Artillery firing or exercises. Some readers of the JOURNAL no doubt have very definite ideas on this subject. Articles are desired from them setting forth these ideas and the reasons therefor. No entrants are barred. When the subject has been thoroughly aired the question of securing such additional trophies as seem desirable (if any) will be taken under consideration by the Coast Artillery Association.

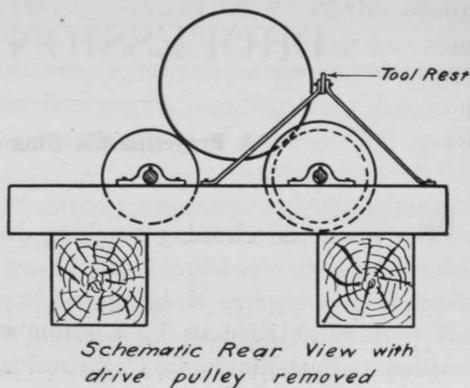
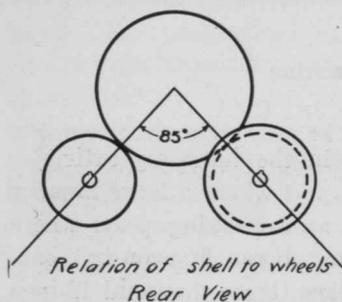
PROFESSIONAL NOTES

A Projectile Cleaning Machine

By 2ND LIEUT. J. W. MOSTELLER, JR., C. A. C.

The projectile cleaning machine described in the following article is believed to have considerable usefulness at any post where a large number of projectiles require cleaning and especially at caretaking posts where this work must be done by a small number of men. It was first constructed at Fort Randolph, C. Z., and used to clean three thousand 12-inch mortar projectiles at that post. It was afterward shipped to Fort Amador, C. Z., and used at this post with the same success. The saving of time and labor was considerable.





The drawings and photographs almost suffice as a description of the machine. Briefly it consists of the following:

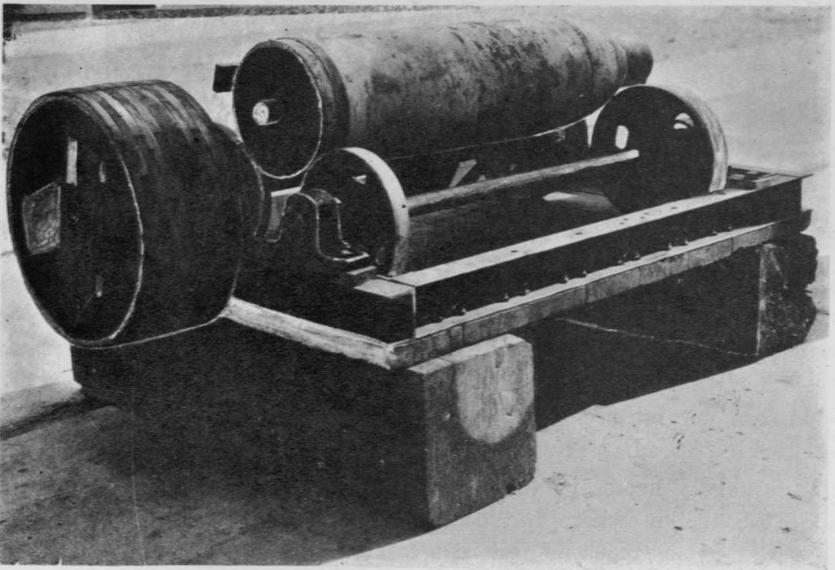
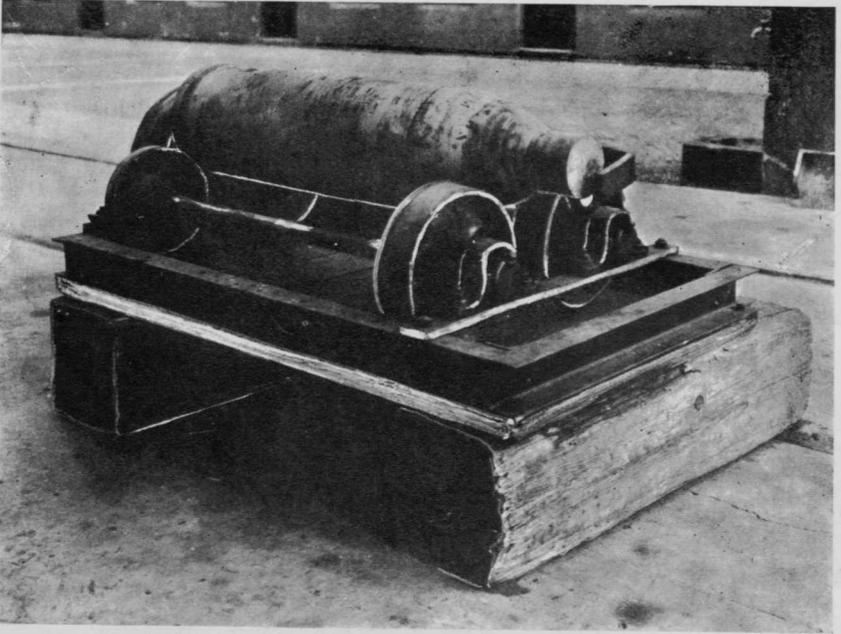
Two parallel rollers supporting a projectile in a horizontal position, one wheel rotating the projectile by friction against its surface; a steady-rest, conforming to the contour of the projectile, against which one man (or more) holds sharpened, flat-edged scrapers in contact with the pro-



jectile. The projectile is caused to rotate at about one hundred and fifty revolutions per minute. The scrapers rough-clean all paint, rust, etc., from the projectile. A finishing operation, using emery paper instead of the scrapers, completes the cleaning. The entire cleaning operation was performed at an average time of about two minutes for each projectile.

The chassis of the machine was constructed from material obtained

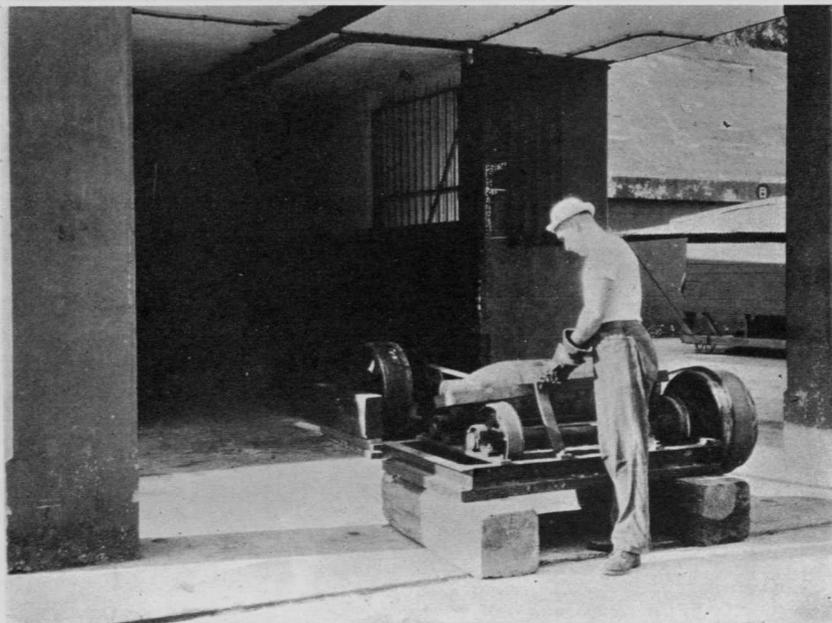
from a salvaged narrow gauge railroad car. One axle was removed and a longer axle substituted on one end of which a driving pulley was attached. The two axles were then moved closer together and the wheels machined down, both in diameter and width, so that the axis of the projectile, when lowered on to the wheels would be horizontal. To prevent injury to the



rotating band the driving wheel was machined to a thickness less than the distance from the base of the projectile to the rotating band. A three-quarter inch disc whose radius was about one inch greater than the driving wheel was bolted thereto. The wheels on the other ends of the shafts were free to turn on the shafts and so machined as to fit the curve of the ogive and to insure the projectile remaining horizontal. This caused the projectile to press against the disc bolted to the drive wheel and prevented the rotating band from touching the rear wheels.

The steady-vest was so placed that it was about one inch higher than the longer axis of the projectile and at a distance from the projectile of about three inches. Old files, sharpened, were used as scraping tools. Several of these could be held against the surface of the projectile by as many men, simultaneously.

Dimensions are not indicated because the machine can be constructed from a number of similar materials, whose dimensions may vary. Electric motors of varying power may be used. Any motor of at least one horse



power is suitable. Regardless of the motor speed the speed of the driving wheel should be reduced until it operates at about one hundred and fifty revolutions per minute. This speed was found by experience to be the best working speed.

It is hardly necessary to mention that the machine should be set up under the trolley where the chain hoists can be utilized to place the projectiles on the machine and remove them therefrom. A detail of four

men is a reasonable number to do the work. Two men are used for scraping and two are kept occupied feeding the machine and placing projectiles removed therefrom. A detail of eight men cleaned, painted, and stacked three thousand 12-inch mortar projectiles at a rate of fifty per day.

This machine, or an adaptation thereof, is believed suitable for cleaning projectiles of a weight of seven hundred pounds or above.

Retirement Ages in the French Army

It may be news to some of our readers that the French law regulating retirement for age differs greatly from ours. Instead of fixing one age for all grades the age limit is fixed for each individual rank, and, indeed, depends in some cases upon the position filled. Recently a French law has been introduced designating new ages of enforced retirement. Since civil officers are not compelled to retire before reaching the age of fifty-five the same age is designated as the minimum for officers in the military service. A further reason for the proposed changes was to increase the difference between retirement ages of certain contiguous grades so that opportunity would be offered to obtain promotion in a certain grade before retirement became necessary.

The following table shows the present and proposed retirement ages:

	<i>Present</i>	<i>Proposed</i>
Second lieutenants	51	55
Lieutenants	52	55
Captains	53	55
Majors	56	57
Lieutenant colonels	58	59
Colonels	59	61
Generals of brigade	60	63
Generals of division	62	65
Regional commanders	—	66
Members of <i>Conseil Supérieur</i>	65	67
Vice-President of <i>Conseil Supérieur</i>	—	68

Course "A" and Course "B" Causes Trouble

Machine gunners (antiaircraft) have been somewhat puzzled when looking up the allowances for antiaircraft machine gun practices given in A.R. 775-10. This regulation indicates two courses—Course "A" and Course "B"—while reference to T.R. 435-211 indicates only one course to be fired.

This came about through anticipating that a revised T.R. 435-211 would be published prior to the publication of the ammunition allowance regulations. It is true that the revised T.R. 435-211 prescribes two courses—Course "A" is for antiaircraft machine gun batteries; Course "B" is for seacoast batteries also assigned to antiaircraft machine guns.

What to do. Pending the publication of revised T.R. 435-211 the courses to be fired are those contained in *old* T.R. 435-211, modified by local commanders, where necessary, to conform to ammunition allowances.

Chief of Coast Artillery Desires Tests of Antiaircraft Adjustment Methods

The methods of fire adjustment for antiaircraft artillery included in Volume II, Coast Artillery Field Manual, were arrived at after extended study by the Coast Artillery Board and were based on tests conducted by the 63rd Coast Artillery (AA). It is believed that the methods described in the manual provide the best means so far developed for solving the fire adjustment problem.

However, in order that additional data may be secured for further consideration the Chief of Coast Artillery desires that battery commanders take advantage of every opportunity to test the methods given in the manual of other methods that may be developed hereafter. In order that the methods used may be thoroughly understood it is further desired that the reports of practice include a detailed description of them.

The bulletin covering antiaircraft fire adjustment methods which is referred to in T.R. 435-55 will not be published since the subject matter has been included in Volume II, Coast Artillery Field Manual.

Antiaircraft Sight for Infantry Machine Guns

After two years of experiment tentative regulations governing Infantry antiaircraft machine gun training methods have been issued to twelve Infantry regiments for exhaustive tests and recommendations as to their efficiency.

During these two years the Infantry has developed an antiaircraft sight and an adapter for the machine gun which enable the gunner quickly to lay his gun on a low-flying plane and to follow it in flight.

The sight used at present and now issued to twelve regiments of Infantry was developed at the Infantry School by Maj. Leonard R. Boyd and 1st Lieut. Joseph I. Greene. Major Boyd has recently assumed his new duties as infantry instructor at the Coast Artillery School.

The so-called forward area sight is generally recognized by both Infantry and Coast Artillery machine gunners as deficient for the purpose for which it was designed. In both arms independent development of a better machine gun sight has been under way. The problem in the two arms has been somewhat different because of the difference in caliber between the machine guns of the two arms. The Infantry will continue to use a machine gun not above .30 inches in caliber while the standard antiaircraft machine gun in the Coast Artillery is the .50 caliber Browning. For this reason the Coast Artillery has concerned itself with the development of a sight suitable for use at ranges much beyond those possible with the .30 caliber gun. The Boyd-Greene sight is probably a good sight for the short ranges but it is believed that further development is necessary to enable it to be suitable for ranges of two thousand yards and beyond. The Ordnance Department and the Coast Artillery Board still retain the ma-

chine gun sight as one of the major projects. In this connection it might be said that the "Director" system is losing ground in its application to machine gun firing.

Antiaircraft Target Developed for the Infantry

In developing the efficiency of its small arm weapons against aerial targets the Infantry has experienced some difficulty in securing a suitable target. It has been found impracticable to provide, for all firings, the towed sleeve target due to the fact there are not a sufficient number of planes and pilots for this mission. Infantry units at stations remote from Air Corps stations, in particular, have been compelled to rely, for the most part on improvised targets.

Recent experiments by the Signal Corps and the office of the Chief of Infantry in the use of moving pictures for antiaircraft sub-caliber practice were put to a practical test during the National Rifle Matches at Camp Perry, Ohio, this summer.

With the cooperation of the Chief of Air Corps, the Signal Corps has made motion pictures of low-flying planes simulating the tactics of attack planes. They are depicted moving across the screen, hedge hopping, diving, and moving at various angles to the spectator.

These pictures were then projected on an opaque screen made of target cloth and a dull white wrapping paper. Behind this screen several lights are so arranged as to permit the light to penetrate through a puncture in the screen made by the stroke of a bullet. Using non-inflammable film projected by a portable projector the picture can be stopped the instant a shot has been fired and the projected image held stationary on the screen. In this manner a record of the strike and its relation to the moving target may be made and the puncture repaired by means of gummed stickers.

Preliminary tests indicate that this will prove to be a very efficacious method of instruction in antiaircraft firing. The towed target itself is an improvisation since the antiaircraft machine gunner when opposed by an attack plane will find it capable of much greater maneuverability than can be simulated by the towed sleeve target. In some respects, the moving picture target may be an improvement on the towed target. Certainly, it will be a suitable method for use where towing planes are not available. For this reason it will probably have some use in the Coast Artillery.

Distribution of T.R. 435-55 Delayed

Due to the press of work in the Government Printing Office the distribution of the revised T.R. 435-55 will be delayed. The revised regulations refer to the publication of "an annual letter of instructions for Coast Artillery Target Practices," supplementing the training regulations. Since distribution of T.R. 435-55 will be held up, the official

instruction letter will also be held until the regulations are ready for distribution. The COAST ARTILLERY JOURNAL has obtained a copy of the approved letter of instructions which is published for the information of its readers. It is believed that in conjunction with the article, "Comments on the Revision of T.R. 435-55" (prepared by the Coast Artillery Board and published in the March and May numbers of the JOURNAL) this letter of instructions may be used by battery commanders in their 1931 (fiscal) target practices. The following is the gist of the letter of instructions.

SEACOAST ARMAMENT

Record practice. All practices will be record practices.

Trial fire. Batteries not equipped with plotting boards may utilize six shots for trial fire.

Allocation of ammunition allowance, and minimum ranges. The following table shows the minimum ranges for day practices; the number of guns required to be manned in batteries consisting of two or more guns; the allocation of the ammunition allowances for each type of armament; the number of practices:

Caliber	Minimum ranges yards (day)	Number of guns	Battery service practices		Total service practice ammunition	Subcaliber allowance rounds
			Number of practices	Number of rounds		
3-inch	6000	2	2	20	40	4000
6-inch D. C.	8000	2	1	24	24	400
6-inch B. C.	9000	2	1	24	24	400
155-mm.	(1)	4	2	(2)	71	400
8-inch	10000	2	1	15	15	400
10-inch	11000	2	1	15	15	400
12-inch D. C.	12000	2	1	15	15	400
12-inch B. C.	18000	2	1	15	15	400
12-inch M. ...	2 zones	2(3)	1	24	24	100
14-inch	15000	2	1	15	15	400

(1) Destroyer target, 10,000 yards; transport target, 14,000 yards.

(2) Not more than eight shots of the total allowances may be used as settling shots, at the discretion of the regimental or harbor defense commander, and the remainder divided approximately equally between the two practices.

(3) If the battery has two pits, at least one mortar in each pit will be used.

Salvo and Case III firing. Batteries equipped to fire Case III will fire battery salvos by this method.

Mortar practice in two zones. a. Conduct of practice. Each mortar record service practice will be conducted in two zones with approximately the same number of record shots in each zone. Not more than four trial shots are authorized and these will be fired in one zone. After entering the second zone an allowance of "time out" is authorized of an amount equal to the time of flight corresponding to the mean actual range of the

shots upon which the first correction in that zone is based. This "time out" will be entered in the columns "Time out allowed" on Timekeeper's Record, Form 21, and will be deducted from the "Time in action R. F." in computing the "Total corrected time R. F." and "Time per shot per gun R. F."

b. Graphical analysis.

(1) *Dispersion ladders.* The dispersion ladders called for in Par. 21 c (II), T.R. 435-55, will be shown in the following manner: the ladders pertaining to the first zone will be drawn between the last trial shot and the symbol for "commence firing"; those for the second zone will be drawn as shown in Figure 4, T.R. 435-55.

(2) Symbol Σ will be shown for each zone.

(3) *Score.* In the space provided for score above the graph, Form 24, will be indicated the scores for A, B, C, and D for each zone. The total score shown on this form will be that as determined in the manner shown in *c* below:

c. Computation of score. The score for each zone will be computed as though it were a separate practice, using the additional section of Form 24 (reverse side) for the second zone computations. The corrected time for each zone will have the same relation to the total corrected time (Form 21) as the number of record shots in that zone has to the total number of record shots; e. g., if there are twelve record shots in the first zone and eight record shots in the second, and if the total corrected time, from Form 21, is 600 seconds, the time for the first zone is 360 seconds and for the second zone 240 seconds. If the number of shots fired in one zone exceeds the number fired in the other by more than four, the lower of the scores for the two zones will be taken as the score for the practice. When the difference between the shots fired in the two zones is equal to or less than four the following example illustrates the method of determining the score for the practice.

(1) If the total score for a + B + C for the first zone (12 record shots) is 120.0 and the score in the D component of that zone is 10.0; and if the total score for a + B + C for the second zone (8 record shots) is 90.0 and the score in the D component of that zone is 5.0, then the score for the practice is

$$\frac{(12 \times 120) + (8 \times 90)}{20} - (10 + 5) = 108 - 15 = 93.0$$

(2) The computation in detail as shown above will be indicated on the reverse side of Form 24 (Graphical Analysis).

d. Battery commander's narrative report. The battery commander's narrative report will contain a complete discussion of the methods employed in determining and applying the corrections in passing from one zone to another.

N. G.; O. R. C.; R. O. T. C.; C. M. T. C. These firings will be held under the old or new (1930) target practice regulations, at the discretion of the Corps Area Commander.

ANTI-AIRCRAFT ARTILLERY

Allocation of ammunition allowances. The following table shows the number of guns to be manned for each battery service practice, and the allocation of ammunition allowances for each type of armament:

<i>Unit</i>	<i>Caliber</i>	<i>No. of guns</i>	<i>Preliminary service practice No. of rounds</i>	<i>Record service practice No. of rounds</i>	<i>Total allowance</i>
Gun Battery AA Regiment.	3-inch	4	(1) 80	(2) 320	400
Gun Battery Additional Assignment	3-inch	3	(3) 150	—	150
M. G. Battery. AA Regiment.	.30 .50	8	(4) —	(5) —	64000 Cal. .30 3200 Cal. .50 (7)
M. G. Battery Additional Assignment30	4	(6) 16000	—	16000

(1) Half to be fired at towed sleeve target.

(2) Four practices will be fired, three day and one night. Each practice will consist of not more than 80 rounds fired at a towed sleeve target.

(3) 120 rounds to be employed in firing two preliminary practices at a towed sleeve target.

(4) At least two preliminary practices at towed aerial targets; one to be fired by each of two platoons of four caliber .30 guns.

(5) Five record practices; three day and two night, each fired by a platoon of four guns.

(6) Three preliminary practices at a towed sleeve target.

(7) To be fired for instruction purposes; at least half to be fired at a towed sleeve target.

Minimum ranges and altitudes. *a. 3-inch AA guns.* During record service practice the range will not, at any time, be less than 3500 yards and the altitude not less than 6000 feet except in the case of civilian components of the Army, where training period is limited. During the series of record practices each battery will be fired at least once on targets towed on courses whose angles of approach are 0 degrees and 90 degrees. One record practice will be fired at an altitude greater than 10,000 feet. These conditions may all be satisfied during one practice if it is so desired or may be spread over the whole series of record practices, as the regimental commander may direct.

b. Caliber .30 and .50 machine guns. During record service practice the range will not, at any time, be less than 600 yards. During the series

of record service practices each battery will fire at least one course on targets towed on courses whose angles of approach are 0 degrees and 90 degrees.

Notes on conduct of fire. a. 3-inch AA Guns (75-mm. guns). The maximum number of rounds per practice is 80 for units of antiaircraft regiments and 60 for units firing as additional assignment. Attention is called to the provisions of T.R. 435-55 which prescribe the minimum value of S as 50. Where the full allowance has not been used on four courses the practice ends, except as provided for supplementary courses. A record sleeve practice started on one day must terminate the same day; in no case will a record practice be fired in parts on different days. Attention is invited to the provisions of T.R. 435-55 relative to the conduct of record practices.

b. Machine guns. Caliber .30 and .50 machine gun practices will be conducted in the same manner. Five courses constitute a record practice and these must all be flown the same day. Since the minimum value of S in the scoring formula is 2000, at least that number of rounds should be fired. Each antiaircraft machine gun battery will organize two firing platoons which will alternate in record practices; one to fire two practices, the other three. Units firing machine guns as additional assignment will fire with one platoon. A practice started on one day must be completed the same day.

c. General—Guns and machine guns. Units must fire the entire practice with the guns or machine guns with which they start. Under no circumstances will crews be shifted to other guns or machine guns. Repairs may be made between courses, but the towing plane will not be held off the course while this is being done. Units must make every effort to see that equipment is in working order when the practice starts. Once the practice begins it must continue until completed, without any delay, and where one or more guns go out of action no credit will be given in the score, and no time out allowed.

d. Searchlights. The searchlight platoon will be placed to cover a 90-degree sector. Courses will be flown along the sides of this sector as well as in the center. Where no course has been flown near a boundary a penalty of 25 per cent of the score will be assessed; where all courses are in the center a 50 per cent penalty will be given. No time out is permitted in case any lights go out of action, nor will the practice be held up until repairs can be made. A practice once started must be completed the same night.

Harbor defense and regimental commanders will forward schedules of target practices direct to the Chief of Coast Artillery.

COAST ARTILLERY BOARD NOTES

Communications relating to the development or improvement in methods or materiel for the Coast Artillery will be welcome from any member of the Corps or of the Service at Large. These communications, with models or drawings of devices proposed, may be sent direct to the Coast Artillery Board, Fort Monroe, Virginia, and will receive careful consideration. J. C. Ohnstad, Lieutenant Colonel, C. A. C., President.

Projects Completed During July

<i>No.</i>	<i>Title</i>	<i>Action Taken</i>
712	Conduct and Adjustment of AA Fire.	Completed July 18. Recommend no bulletin be issued—matter contained in Vol. II, CAFM; AA regiments to test various methods.
722	Tow Chains for Tractor Artillery.	Completed July 25. Recommended 16-foot chains be adopted as standard.
731	Lighting Devices for Panoramic Sights, Scales and Aiming Rules, Ry. Arty.	Completed July 30. Statement of requirements submitted.
750	Faster Loading for Coast Artillery.	Completed July 25. Recommend counterweight be attached to operating handle of breech mechanism.
789	Comments on Manual for Commanders of Large Units.	Completed July 14. Comments submitted.
790	Fire Control Power Panel.	Completed July 3. Recommend pilot model be constructed for test.
791	Development of Motor Vehicles.	Completed July 16. Statement of requirement of C. A. submitted.
793	Proposed Training Regulations for Data Transmission System M2.	Completed July 10. Recommend publication to the service.
795	Comments on Tech. Reg. 1365-120, HD and Ry. Arty. Ammunition 12-inch M.	Completed July 8. In general, satisfactory.

Projects Under Consideration

<i>No.</i>	<i>Title</i>	<i>Action Taken</i>
661	Illumination of Mortar Pits and Gun Emplacements for Night Firing.	Further tests to be conducted during August.
665	Source of Power Supply for EE-5 Telephones.	Expect to complete by August 10.
681	Test of Fast Towing Target.	Awaiting result of study by Navy Department.
689	Special Seacoast Target Practice for Training of Aerial Observers.	Awaiting reports of practices.
694	Test of Erosion Charts.	Awaiting return of Jekaduma Chronograph from Panama.
701	Comments on Target Practice Reports.	Comments submitted as reports are received.
702	Test of Headset, Type HS-17.	Expect to complete by August 10.
707	Test of Artillery Lantern M-1 and Lantern Mask T-1.	Awaiting receipt of reports of tests by 55th and 92nd C. A.

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|---|--|
| 727 Standard Single Conductor Mine System. | A continuing project. |
| 761 Test of Experimental Reel Cart, Type RL-23. | Expect to complete by August 10. |
| 764 Reminder List for AA Target Practice. | Under study. |
| 796 Test of Elevating Mechanism T4 for 12-inch Ry. Mortar Carriage. | Awaiting receipt and installation of materiel. |
| 797 Test of Ordnance Tractor Caterpillar "30" M1. | Test to be conducted at Aberdeen Proving Ground. |
| 798 Test of Flash Message Switch for Use with Monocord Switchboard. | To be tested at Aberdeen, 1930. |
| 799 Trajectory and Fuze Setter Charts for 3-inch AA Guns. | To be tested at Aberdeen, 1930. |
| 800 Test of Radio Direction Finders. | Under study. |
| 801 Portable Terminal Center, Telephone Lines of Mobile Artillery. | Under study. |

YOU TELL EM

AMERICAN LEGATION

Office of the Military Attache
Peking, China

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

I have just returned from two roasting months in the interior and hasten to enclose my check before you check me off the subscription list.

You ask for my ideas on the JOURNAL. My first impulse is to answer "Well, *Yes* and *No*" and mail it unsigned to insure being uncommitted. That's a result of living in the cautious atmosphere of one of our legations in a ticklish country. However, like all good (low-ranking) Coast Artillerymen I will reserve my native caution for dealing with C. A. School mounts and our so-called boy majors, so here goes.

I realize I am reading the JOURNAL more avidly and thoroughly than in former years. It is but fair to note, however, that this may be merely that ol' devil, Distance, lending enchantment, etc. In the States my JOURNAL often lay for days in its wrapper—just another of those things to feel guilty about. Here in China when the JOURNAL arrives my voice goes husky and my fingers, tearing at the wrapper, tremble like a Chinaman with an opium hangover. Last May I left for Shensi Province. (To help you find this on the map it is simplest merely to tell you that there are *two* provinces pronounced alike in Chinese, except one has the third tone and the other has the first tone, and that it was to the third tone that I went. I hope this is clear.) Before leaving I told the No. 1 to forward all red-covered magazines. I forgot that *Time* was red also, but I am sure you know which one I opened first. I received but one number there, the May number. This copy made two records. First, it was wheel-barrowed three hundred and sixty Chinese li from the end of the railroad in the next province (the one with the first tone) to Sianfu, the capital of Shensi. Is that a record? (Before you answer I might say that a really good Chinese li, brand new and not even shop-worn, is equal to about one-third of a mile. The li—these three hundred and sixty—have been in use some centuries and come in the original package. It takes about three of our unimproved miles to equal one of them. The other record is that it was read, cover to cover, by a *Field* artilleryman. This misguided artilleryman, having finished *Time*, snook my JOURNAL when he thought I wasn't looking. (I was using it at night as a wind shield for my candle and so missed it at once.) A few days later this Field bozo wrote several long letters and stopped sneering (so much) at the Coast Artillery in general.

The JOURNAL certainly has it over other service publications I have seen, in the matter of illustration. Even at that it would seem that more photographs could be used. As yet I am unable to jabber Chinese *quite* (give me ten years more) fluently enough to vividly describe, say, a mechanized machine gun. Even a Chinese can understand a photograph. These people, in this year's war, are just beginning to realize there is a defense against the airplane which they hold in great awe and fear. Their antiair defense is just developing as indicated by this recent announcement quoted here:

“Antiaircraft invention—A Chinese named Chao Chi-li, a workman of a certain arsenal at Nanking, has submitted a petition to General Ho Ying-Ch'in, Minister of Military Administration, transmitting a design of his invention by which lighted arrows can be used to burn airplanes, and requesting the establishment of a factory to turn out such arrows. The material for such arrows can be produced entirely in China. General Ho has referred this petition to the aviation office for consideration.”

I am sorry I cannot give the detailed data on the Chinese Antiaircraft “Artillery” that Lieutenant Engelhart gave on the Japanese. The muzzle velocity, maximum elevation, traverse, range, and rate of fire are secret but can be guessed since the invention, I am told, strongly resembles our garden variety of sky rocket.

I showed the photographs included in Major Barnes' article to two Chinese officers. Both thought the motorized antiaircraft machine gun was “a good idea.” But, to be honest, they were more interested in the photographs of General Gulick and Master Sergeant Mapes. To them, the range of pay was vastly more vital than the range of machine guns. The first question a Chinese officer generally asks is the amount of pay and “squeeze” we get. The fact that the average American lieutenant gets almost as much pay, figured in (Mex) at the present exchange, as a Chinese major general but who, on the other hand, is old enough to be the average Chinese general's grandfather, is just put down as another of those queer ways of the foreign devil.

One of these Chinese officers, looking at the two photographs mentioned above, was surprised to learn that Sergeant Mapes was not a general too, as, he remarked earnestly, “he *looks* like one.” The other Chinese, in spite of the difference in rank, decided that Sergeant Mapes had the best job, *provided*, that when the North or South, as the case might be, seized the government at Washington and set up a new one, the retired pay did *not cease*. All this discussion came from the photographs so, you see, they do help.

It would seem that the frequent printing of articles by officers of other arms and of other countries would be advantageous because through them we can see ourselves as others see us (and how) as well as furnishing information from which comparisons can be made (favorable or otherwise)

between our methods and foreign methods. Many such articles would contain controversial statements which would cause our Coast Artillery readers to reply to them since it is our usual custom to write an article in defense of a pet idea attacked by a previously published article or letter. For a number of reasons the average Coast Artilleryman, albeit he may have some very good and very definite ideas on a subject in which he has had experience, is not going to suddenly write an article for the JOURNAL or anything else. But if, someday, he reads in an article in the JOURNAL, that Captain Troupe, C. W. S., said in effect (as he did) that sound locators are superfluous and the bunk and if he has had much experience with sound locators and feels that Captain Troupe was misled, misinformed (perhaps by the Air Corps) he would, especially if encouraged by the editorial policy, write a hot, indignant letter or article for the JOURNAL, setting forth his ideas and pointing out where Captain Troupe was incorrect. Captain Troupe might reply producing proof of his original statement (as he might well do if his knowledge and information had any real basis in fact) or accept the correction (if it had not). This would be a reassurance, for instance, to a lone Coast Artillery lieutenant in China who would not have to spend months worrying over the idea that maybe his arm was, after all, grotesquely mistaken about locators. He might even send in a few of his own ideas to finish baking if others were doing it, too, and if it "were being done."

For instance. I know I am dumb (That's not really the truth, Mr. Editor, for no one is smart enough to *know* he's dumb, i. e., if he sure enough *is* dumb) but it had never occurred to me that searchlights gener-

ally grouped about the battery like this  , aids the aviator in

locating it (and I used to be an aviator myself). I have been wondering just how true this is; what ideas have been considered to obviate it, etc. How am I to know how dumb I really am unless someone who has thought this thing all out writes about it to the JOURNAL and gets it off his chest? (I am sure laying myself open, Mr. Editor, writing like this, but "Service for the line," is my motto—which comes from being, to all intents and purposes, in the Quartermaster Corps for I don't want to remember how long.)

In reading Air Commander Sampson's article in the June number, one at once wonders how his ideas may differ from those of our own Air Corps on this subject (attack of daylight bombing formations).* A letter written to one or two Air Corps officers enclosing a copy of such

* The Editor has the promise of an article from 1st Lieut. K. N. Walker, A. C., on the subject of "tactics and technique of bombardment aviation, including the methods by which a bombardment formation will defend itself against hostile pursuit and antiaircraft attack."

an article as this in question, together with four or five leading questions might bring a highly interesting and instructive reply.

I hope you won't reply to this, "Why in hell don't you really *read* the JOURNAL. Then you would see that we have *always* encouraged you officers to write in at any time about anything." I believe the custom of writing letters to the JOURNAL needs active encouragement and nursing by the editorial staff.

Well, anyway, Mr. Editor, this is an idea and it implies a criticism of the JOURNAL in that it has yet to supply a convenient, informal medium for exchange of ideas concerning the Coast Artillery arm of the service in which we are all interested. Or am I all wet?

"Coast Artillery Activities," "Professional Notes," "You Tell Em," and "Coast Artillery Orders" are four departments the fondest I am of. Here I often see and read (some) of the service publications of the Infantry, Field Artillery, and Cavalry, as well as the *Air Corps News Letter*. Some are more imposing to look at than the JOURNAL on the outside, but none as good inside.

Sincerely yours,

HARRY S. ALDRICH,
1st Lieut., C. A. C.

BATTERY "A," 91ST COAST ARTILLERY (P. S.)
Fort Mills, P. I.

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

We have received the Gunners' Instruction Pamphlets which we ordered by radio on June 7, and are disappointed to find, upon examination, that these pamphlets contain no reference to the many important changes that have taken place in submarine mine control in recent years.

This battery will never have another practice using the 19-conductor system. The new single conductor casemate apparatus and the 1916 anchor will arrive here in October; upon their arrival the casemate apparatus and the automatic anchor described in your pamphlet will become obsolete.

In view of these circumstances it is felt that we should be furnished a supplement to your pamphlet, without delay, giving the latest information on the following subjects:

- a. The new single conductor casemate apparatus.
- b. The 1916 anchor (automatic).
- c. The new mine case swivel and mooring cable.
- d. The method of preparing the distribution box in which is contained the new selector.
- e. A description of the details of the work on the water using the one hundred and seventy-two-foot planter.
- f. An appendix covering the Diesel engine for L-boats and small boats.

In view of the fact that this organization is at the time of writing with its Gunners' Instruction program, it is requested that every effort be made to rush the data requested to us.

H. P. HENNESSY,
*Captain, C. A. C., 91st C. A. (P. S.),
 Commanding.*

EDITOR'S NOTE: *The COAST ARTILLERY JOURNAL does not contemplate publishing a revised Submarine Mine Gunners' pamphlet. Due to the small number of mine batteries and the consequent small demand for this pamphlet, publication could be undertaken only at a financial loss to the JOURNAL, not believed justified.*

The new Submarine Mine Manual will contain all information concerning the new equipment and single conductor system. Battery commanders of mine batteries are advised to supplement the old submarine mine pamphlet with mimeographed pamphlets prepared locally from the new manual.

The revised Submarine Mine Manual will be distributed (in the States) about January 1. It is regretted that the date of distribution offers little comfort to battery commanders who must begin gunners' instruction earlier. For Captain Hennessy's information it is stated that the Philippine Department has been furnished a manuscript copy of the revised manual.

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

* * * * *

Just a word concerning Mister Jack-of-all-trades in the August JOURNAL. We must grant him the fact that to a novice set down amongst the varied weapons and equipments of the Coast Artillery, bewilderment and confusion occupy his mind and he thinks "What to do, what to do." If it is necessary in the training program to consider a number of weapons concurrently, the variety should keep him interested. I believe that he has permitted himself an undue exhibition of lack of adaptability and while I am just a graduated second lieutenant I didn't like his letter.

For myself, my service has been entirely with 12 and 14-inch D. C. guns with the usual secondary assignments of minor armament and, when I am relieved from DOL, I expect to be in the same boat with Jack but he will probably be the coxswain and I anticipate much rowing on my part to stay in the race. When I say I "anticipate," I mean that I think I will enjoy it.

* * * * *

Yours sincerely,

First Lieutenant, C. A. C.

HEADQUARTERS

Harbor Defenses of Manila and Subic Bays
 Fort Mills, Philippine Islands

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

I would appreciate your informing Coast Artillery officers ordered here that automobiles are a great convenience on Corregidor and add much to

the pleasure and comfort of the owners. This is the reverse of the general opinion.

Smaller types best but our roads are OK for the larger.

Sincerely,

C. E. KILBOURNE,
Brigadier General, U. S. Army,
Commanding.

This camp song was concocted, in part, by a few of the boys of Battery "A," 211th Coast Artillery (AA), (the old First Corps Cadets), Maine N. G. Colonel Dusenbury sent it in with the advice that some verses are to be sung with fervor, others lowly and sweetly, but that the last line of each verse is sung at the top of your lungs. The 211th hopes that it may cheer up other organizations.

CAMP SONG

Air: Old King Cole

1.

Old King Cole was a merry old soul,
And a merry old soul was he.
He called for his pipe
And he called for his bowl
And he called for his Privates three.
BEER, BEER, BEER, said the Privates,
Merry men are we.
There's none so rare as can compare with the Coast Artillery.

2.

(Repeat first four lines and add):
And he called for his Corporals three;
GIDDAP, GIDDAP, said the Corporals,
BEER, BEER, BEER, said the Privates,
Merry men are we.
There's none so rare as can compare with the Coast Artillery.

3.

(Repeat first four lines and add):
And he called for his Sergeants three;
FORWARD, RIGHT BY SQUADS, said the Sergeants,
GIDDAP, GIDDAP, said the Corporals,
BEER, BEER, BEER, said the Privates,
Merry men are we.
There's none so rare as can compare with the Coast Artillery.

4.

(Repeat first four lines and add):
And he called for his "LIEU-ES" three;
We do all the work said the "LIEU-ES."
(Repeat lines for Sergeants, Corporals, and Privates)
Merry men are we.
There's none so rare as can compare with the Coast Artillery.

COAST ARTILLERY ORDERS

Maj. Gen. Henry D. Todd, Jr., Fort Monroe, to his home, August 28, and await retirement.

Col. Robert S. Abernethy, Hawaii, to 1st C. A. Dist., Boston.

Col. Percy P. Bishop, Boston, to Coast Artillery School, Fort Monroe, August 15.

Col. Lawrence C. Brown, 9th C. A. Dist., Presidio of San Francisco, to Panama, sailing San Francisco, August 30.

Col. Louis R. Burgess, Org. Res., Erie, Pa., to the Philippines, sailing New York City, October 28.

Col. William F. Hase, to 12th, Fort Monroe, upon completion of foreign service.

Col. Charles H. Hilton, sailing from San Francisco October 28, instead of October 10.

Col. Harrison S. Kerrick, from Kansas City to Omaha, to report to Army retiring board for examination.

Col. Marcellus G. Spinks, General Staff, from Panama, to Org. Res., Erie, Pa.

Col. Joseph P. Tracy, Gen. Staff, to 2nd C. A. Dist., Fort Totten, instead of as previously ordered.

Col. Robert E. Wyllie, to home awaiting retirement, August 27.

Lieut. Col. Charles C. Burt, transferred from Inspector General's Dept., to Finance Dept., October 1, and to Washington, D. C.

Lieut. Col. Hartman L. Butler, 13th, Fort Barrancas, to St. Louis.

Lieut. Col. Francis H. Lincoln, 12th, Fort Monroe, to 13th, Fort Barrancas, October 1.

Lieut. Col. Walter Singles, from Panama, to 8th, Fort Preble, Maine.

Lieut. Col. James F. Walker, New York City, to home and await retirement, August 14.

Maj. Joseph D. Brown, 6th, Fort Winfield Scott, to Panama, sailing San Francisco, October 23.

Maj. Roger B. Colton, to Panama, sailing New York, August 21, for duty with Signal Corps.

Maj. Edward B. Dennis, from Panama, to Org. Res., Columbus, Ohio.

Maj. Bird S. DuBois, previous orders relieving him from assignment C. A. School, November 1, revoked; to be relieved August 15 and proceed to 61st, Fort Sheridan.

Maj. Paul H. French, 62nd, Fort Totten, to Georgia School of Technology, Atlanta; previous orders revoked.

Maj. Elmore B. Gray, from Washington University, St. Louis, to Richmond, Va., with Org. Res.

Maj. James P. Hogan, from Hawaii, to 62nd C. A., Fort Totten.

Maj. Willis C. Knight, Org. Res., Richmond, Va., to 7th, Fort Hancock, September 1.

Maj. Reinold Melberg, to sail New York, October 10, instead of August 12.

Maj. Gooding Packard, 62nd, Fort Totten, to New Orleans, with Org. Res., October 1.

Maj. Charles Schaefer, Jr., Ca-Res., orders to active duty revoked.

Maj. Francis J. Toohey, to sail New York, August 21, instead of July 18.

Maj. Ralph W. Wilson, from duty at Washington University, St. Louis, September 15, instead of September 1.

Capt. Sam W. Anderson, from Hawaii, to 12th, Fort Monroe.

Capt. Ben B. Blair, 12th, Fort Monroe, to Honolulu, sailing New York, October 10.

Capt. Maitland Bottoms, 12th, Fort Monroe, to Hawaii, sailing New York, December 5.

Capt. John B. Day, retired, disability in line of duty.

Capt. Reginald J. Imperatori, 62nd, Fort Totten, to Panama, sailing New York, September 11.

Capt. Harold S. Johnson, from Hawaii, to 6th, Fort Winfield Scott.

Capt. Paul S. Roper, from Hawaii, to 6th, C. A., Fort Winfield Scott.

Capt. J. A. Ryan, 14th, Fort Worden, to Honolulu, sailing San Francisco, November 20.

Capt. L. E. Spencer, 62nd, Fort Totten, previous orders to Coast Artillery School, Fort Monroe, as student, revoked.

Capt. Arthur W. Waldron, 11th, Fort H. G. Wright, to Hawaii, sailing New York, December 5.

Capt. LeRoy A. Whittaker, from Hawaii, to 62nd, Fort Totten.

1st Lieut. R. M. Arthur, from Hawaii, to 14th, Fort Worden.

1st Lieut. Orley D. Bowman, 10th, Fort Adams, previous orders to 69th, Aberdeen Proving Ground, revoked.

1st Lieut. F. R. Chamberlain, Jr., 51st Fort Monroe, to Honolulu, sailing New York, October 10.

1st Lieut. Edward A. Dolph, 62nd, Fort Totten, orders to Panama, revoked.

1st Lieut. D. S. Ellerthorpe, to 61st, Fort Sheridan, instead of 14th, Fort Worden.

1st Lieut. Forrest J. French, 12th, Fort Monroe, to Cincinnati, September 1.

1st Lieut. C. W. Gettys, to Panama, sailing New York, October 23, instead of September 11.

1st Lieut. J. R. Goodall, 12th, Fort Monroe, to Panama, sailing New York, September 11.

1st Lieut. W. E. Griffin, 63rd, Fort MacArthur, to 3rd, Fort Rosecrans.

1st Lieut. F. K. Gurley, from Hawaii, to 52nd C. A., Fort Monroe.

1st Lieut. Raleigh R. Hendrix, 14th, Fort Worden, to Hawaii, sailing San Francisco, November 20.

1st Lieut. L. S. Kirkpatrick, from 25th Inf., Fort Huachuca, Arizona, to Coast Artillery School as student, Fort Monroe, September 4.

1st Lieut. H. B. Kraft, to retiring board for examination.

1st Lieut. John A. McComsey, sailing New York for Panama, October 23, instead of September 11.

1st Lieut. S. H. Morrow, to 52nd, Fort Hancock, instead of 51st, Fort Monroe, upon completion of foreign service.

1st Lieut. I. H. Ritchie, detailed in Ord. Dept., September 1, will proceed to Augusta Arsenal for duty.

1st Lieut. J. H. Smith, 13th, Fort Barrancas, to Honolulu, sailing New York, September 5.

1st Lieut. Rupert E. Starr, from Hawaii, to 14th, Fort Worden.

1st Lieut. H. P. Tasker, 12th, Fort Monroe, to Honolulu, sailing New York, October 10.

1st Lieut. G. W. Trichel, to Coast Artillery School, Fort Monroe, as instructor, November 10.

1st Lieut. H. W. Ulmo, to Panama, sailing San Francisco, November 25, instead of September 12.

2nd Lieut. D. S. Alexander, Yakima, Wash., to March Field, Riverside, Calif., for duty at the Air Corps Primary Flying School, September 12.

2nd Lieut. N. E. Ausman, Cherokee, Iowa, to Brooks Field, San Antonio, for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. D. H. Baker, Richmond Hill, L. I., N. Y., to March Field, Riverside, Calif., for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. O. B. Beasley, graduate U. S. Military Academy, to 62nd, Fort Totten.

2nd Lieut. L. A. Bosworth, graduate U. S. Military Academy, to 63rd, Fort MacArthur.

2nd Lieut. H. R. Boyd, Danielson, Conn., to March Field, Riverside, Calif., for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. R. C. Broadhurst, 55th, Hawaii, to 61st, Fort Sheridan.

2nd Lieut. R. C. Cloud, Jr., Lancaster, to March Field, Riverside, Calif., for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. J. T. Darrah, graduate U. S. Military Academy, to 61st, Fort Sheridan.

2nd Lieut. K. L. F. deGravelines, from Hawaii, to 14th, Fort Worden.

2nd Lieut. A. E. Dennis, transferred to QMC and to duty as student, Quartermaster Corps School.

2nd Lieut. J. B. F. Dice, graduate U. S. Military Academy, to 13th, Fort Barrancas.

2nd Lieut. C. R. Dutton, promoted to first lieutenant, August 1.

2nd Lieut. C. H. Fernstrom, graduate U. S. Military Academy, to 62nd, Fort Totten.

2nd Lieut. A. L. Fuller, Jr., San Francisco, to Hawaii, sailing San Francisco, November 4.

2nd Lieut. R. F. Haggerty, Suffolk, Montana, to March Field, Riverside, Calif., for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. Marvin L. Harding, Pulaski, Va., to March Field, Riverside, Calif., for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. W. H. Harris, to Fort H. G. Wright, sailing San Francisco, September 23.

2nd Lieut. G. E. Hill, graduate U. S. Military Academy, to 61st, Fort Sheridan.

2nd Lieut. Hubert duB. Lewis, Salem to Hawaii, sailing San Francisco, November 4.

2nd Lieut. G. E. Keeler, Jr., 62nd, Fort Totten, to Panama, sailing New York, October 23.

2nd Lieut. P. A. Roy, Lewiston, Maine, to Hawaii, sailing New York, October 10.

2nd Lieut. J. W. Mosteller, Jr., from Panama, to 12th, Fort Monroe.

2nd Lieut. R. J. Moulton, to 5th, Fort Hamilton, instead of to 13th, Fort Barrancas.

2nd Lieut. W. F. Niethamer, from Hawaii, to 10th, Fort Rodman.

2nd Lieut. C. J. Odenweller, Jr., Boston, Mass., to March Field, Riverside, Calif., for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. G. F. Peirce, from Hawaii, to 10th, Fort Adams.

2nd Lieut. E. S. Perrin, Custer, S. D., to Brooks Field, San Antonio, for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. W. A. Perry, St. Louis, to Brooks Field, San Antonio, for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. A. C. Peterson, New Rochelle, N. Y., to Brooks Field, San Antonio, for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. Cyrus L. Peterson, graduate U. S. Military Academy, to 63rd, Fort MacArthur.

2nd Lieut. Clark N. Piper, Paris, Ill., to Brooks Field, San Antonio, for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. John F. Powell, from Hawaii, to Hq. 9th Corps Area, Presidio of San Francisco.

2nd Lieut. J. G. Reynolds, relieved from Air Corps, Fort Sam Houston, to Hawaii, sailing San Francisco, November 20.

2nd Lieut. J. S. Sutton, Findlay, Ohio, to March Field, Riverside, Calif., for duty in the Air Corps Primary Flying School, September 12.

2nd Lieut. A. P. Taber, Bluffton, Ind., to Hawaii, sailing New York, October 10.

2nd Lieut. J. H. Twyman, Jr., to the Philippines, sailing San Francisco, November 19.

2nd Lieut. W. M. Vestal, 6th, Fort Winfield Scott, to Hawaii, sailing San Francisco, November 20.

2nd Lieut. R. J. Wood, graduate U. S. Military Academy, to 69th, Aberdeen Proving Ground.

Warrant Officer H. A. Ash, U. S. A. M. P. Service, Fort H. G. Wright, to the Philippines, sailing New York, October 28.

Warrant Officer J. W. Guthrie, U. S. A. M. P. Service, Sandy Hook, Fort Hancock, revoked.

Warrant Officer Patrick J. Keating, U. S. A. M. P. Service, Philippines, to Fort H. G. Wright, instead of Fort Hancock.

Master Sgt. H. M. Forbes, Service Btry., 64th, retired at Fort Shafter, August 31.

Sgt. W. L. Day, Fort Monroe, to 69th, Aberdeen Proving Ground, August 15, for temporary duty with statistical section.

Sgt. W. H. Ingle, 51st, Fort Monroe, to 69th, Aberdeen Proving Ground, August 15, for temporary duty with statistical section.

1st Sgt. E. J. O'Rourke, Battery B, 69th, retired, August 31, Aberdeen Proving Ground.

1st Sgt. J. R. Thompson, Btry. G, 4th, retired at Fort Amador, August 31.

Private James Kravitz, 12th, Fort Monroe, to 69th, Aberdeen Proving Ground, August 15, for temporary duty with statistical section.

Private M. D. Smith, 10th, Fort Adams, to Fort Totten for temporary duty.

Private D. F. Stroup, Fort Monroe, to Fort Totten for temporary duty.

Corp. A. E. Fishkin, 13th, Fort Barrancas, to 69th, Aberdeen Proving Ground, August 15, for temporary duty with statistical section.

Corp. L. M. Thomas, 13th, Fort Barrancas, to 69th, Aberdeen Proving Ground, August 15, for temporary duty with statistical section.

BOOK REVIEWS

The Naval Blockade, 1914-1918. By Louis Guichard. Translated by Christopher R. Turner. New York: D. Appleton & Co. 1930. 5½" x 8½". 308 pp. Price \$3.50.

Lieutenant Guichard of the French Navy, attached to the historical section of the Ministry of Marine, has prepared this work with the assistance of documents in the archives of the Ministry. The facts given can therefore be relied upon as being authentic and as setting forth the actual conditions of the so-called blockade inaugurated by the Allies against the Central Powers.

The author maintains that it was not a blockade in the true sense of that term, nor would it have been possible for the Allies to have maintained a real blockade. It was rather an economic encirclement of the central empires, achieved principally by dealing with neutral powers which would otherwise have supplied Germany's wants.

It is a remarkable story and no one who has not already studied the question deeply can have the faintest idea of the strangle hold the Allies obtained nor of the means they employed to reach it.

As the Allies never controlled the Baltic, the seaborne commerce with Germany with Sweden and Norway was in no danger from naval operations. Likewise Denmark, Holland and Switzerland were able to supply the Central Powers over land frontiers. This precluded the possibility of the old-time blockade and Lieutenant Guichard relates how naval action was soon supplemented by diplomatic in the neutral capitals in the effort to prevent goods from being transshipped to Germany. This resulted in the Allies virtually putting those neutrals on a ration basis, permitting the importation of only such articles and in such quantities as were needed by the neutrals themselves, acting through associations formed in the different neutral countries.

The author relates many complications that arose, as the Allies could not afford to be unduly harsh, they being themselves partially dependent on those neutrals for certain articles. Furthermore the maintenance of the rate of exchange often caused them to tolerate the exportation of goods from their countries to neutrals, even though ultimate enemy destination was strongly suspected. Finally, until 1917, the Allies were much hampered by the attitude of the United States, with whom a good understanding was essential.

Lieutenant Guichard shows how, even with these handicaps, the economic encirclement became more and more pressing until it forced Germany to declare unlimited submarine warfare, which placed the United States in the rôle of a belligerent, practically closing American markets to European neutrals.

There was not so much necessity then of being careful and the rationing of the neutrals was carried out systematically until the encirclement of the Central Powers was complete.

Each neutral country was a problem in itself and each had to be handled on its own merits, all of which is most graphically told by Lieutenant Guichard.

The author gives the greatest praise to the German people for their remarkable staying powers and for their achievements in procuring substitutes for articles they could not obtain, such as rubber, copper, tin, wheat and fats. The efforts made by Germany in this respect and the condition of the country at the time of the armistice are given in great detail.

That this economic encirclement had a great effect on the final result cannot

be doubted, although, as the author says, "not until the armies of the central empires had been defeated did it bring about the total demoralization of an undefeated nation which, after setting a wonderful example of endurance for four years, gave way for a short time to despair."

The book is so filled with statistics that it is not easy reading, "skimming" will give nothing but a hazy mental picture; it must be read carefully, but the result will then be worth the effort.—R. E. W.

Verdun. By Henri Philippe Pétain, Marshal of France. Translated by Margaret MacVeagh. New York: The Dial Press. 1930. 5¾" x 8¾". 235 pp. 17 illustrations and 10 maps. \$4.00.

Ils ne passeront pas was the slogan of the Second French Army in front of Verdun in 1916 and Marshal Pétain, its commander, here tells the story of how the Germans were prevented from passing.

Unlike most books of the war written by leading statesmen and military men, this is neither a justification nor a glorification, in fact, neither is necessary. The gallant defense of Verdun is universally recognized as one of the outstanding achievements of the war, so that nothing the Marshal could say or write would add one whit to the military reputation of the Second Army or its commander.

On the other hand "Verdun" amply demonstrates that the election of Marshal Pétain to the French Academy was no idle gesture. It was evidently not his fame as a soldier that gave him a place among the Immortals, but his ability as a man of letters. In simple, straightforward and effective language, entirely free from bombast and heroics, the Marshal unfolds his narrative. Every step in the action is explained and impartially analyzed from both the French and German standpoints, so that we have a clear critique of the entire engagement, which lasted from February till December, of great value to the military student, but at the same time one which can be readily understood by the layman. Part of this credit must go to the translator, who so ably caught the spirit of the original and produced an easy flowing narrative in English.

Marshal Pétain severely criticizes Falkenhayn, the Chief of Staff of the German Army, who was responsible for the attack of Verdun. On the other hand many readers will be surprised to find the Crown Prince, who commanded the attacking forces, coming in for high praise. It appears that he opposed the plan from its inception on grounds approved by the Marshal, and this notwithstanding the activities of his own Chief of Staff, who ranged himself with Falkenhayn, instead of with his own immediate chief. This seems to dispose of the prevalent idea that the Crown Prince was merely a figurehead, while the disregard of the Prince's opinions and the disloyalty of a general under him, throw considerable light on the relations existing between the General Staff and the Imperial family.

Not the least important of the lessons derived from the defense of Verdun was the value of forts. In the early stages of the war, fortifications fell into disrepute, Liège, Antwerp, Namur, Mauberge, Kovno, all fortified towns, fell in a few days before the high-powered German artillery, so that the circle of forts around Verdun were considered of such little value that they were abandoned. The famous Fort Douaumont was captured by one company with no losses. The Germans simply walked into the place, capturing a working party engaged in dismantling the emplaced artillery. However, as the battle progressed, "the forts, in spite of their imperfections, demonstrated that they were

indisputably superior to every other system of defense. They came out of the test at Verdun completely rehabilitated." The forts around Verdun were very difficult to destroy. "At the lowest estimate one hundred and twenty thousand shells fell on Douaumont. At least two thousand of them were 270 m/m caliber or larger. The southern face of the casemates, of masonry construction, was demolished by our artillery, but was the only part of the work to be destroyed. The subterranean portions received no damage whatever." Other forts showed a like result, so Marshal Pétain concludes that they "greatly increase the resisting strength of troops who know how to use them."

As might be expected of a book written by a soldier, there are many and excellent maps, so that the dispositions of troops and the operations can be followed without difficulty.

This is a book which should be included in every officer's reading course, no one can afford to miss it.—R. E. W.

Houdon in America. Ed. by Gilbert Chinard. Introduction by Francis Henry Taylor. Baltimore: The Johns Hopkins Press. 1930. xxvii + 51 pp. Illus. \$3.50.

Continuing its collection of records of France and Frenchmen in America, the Institute Français de Washington has assembled in this thin volume the correspondence pertaining to the voyage of the famous sculptor Jean-Antoine Houdon to America for the purpose of making a statue of George Washington and to the bust of Lafayette which Houdon made on order from the Commonwealth of Virginia. Mr. Houdon, who, according to Thomas Jefferson, was "without rivalship the first statuary" of his age, had done most of the famous people of Europe when Benjamin Franklin and Thomas Jefferson urged him to undertake a voyage to America to make a statue of General Washington. Delayed by illness, Houdon finally sailed in July, 1785, and arrived at Mount Vernon on October 2. He soon completed a bust and life mask, which he carried back with him to France and from which he completed the statue.

Houdon, being modest and simple himself, was probably the one sculptor of the time who could appreciate American simplicity and reproduce it in his work. America is fortunate in possessing a number of examples of his work. The Capitol at Richmond has the statue of Washington and a bust of Lafayette, the American Philosophical Society possesses busts of Franklin, Jefferson, Fulton, and Condorcet, the National Academy of Design has a bust of John Paul Jones, and the Pennsylvania Academy of Fine Arts has one of Joel Barlow.

Kaleidoscopes of Other Peoples and Places. By Edward Chambers Betts. Boston: The Christopher Publishing House. 5¼" x 7¾". 143 pages.

In 1928 Edward Chambers Betts found himself in Manila with four months in which to reach New York. So he decided to return by way of Aden and the Red Sea, visiting the interesting places en route. This brief travel volume is the result of that journey.

For two years previous Mr. Betts had made his home in Mindanao and had adopted for his motto one typical of existence in the Orient—"Life is so short, why hurry through it?" He had formed the habit of living leisurely, and he remarks that the pleasure of his trip was tempered by the haste with which he was compelled to hurry along from one interesting place to another. But from his shrewd observations and clever comments it is evident he used his limited

time to the best possible advantage, and the result is a very readable journal of impressions of peoples and places.

Mr. Betts writes in an informal, humorous, chatty style that is most entertaining and he carefully omits all tedious accounts of tedious things. It is clear on every page that he thoroughly enjoyed his trip and is in love with travel for travel's sake. The concluding paragraph proves this: "Adopting for my own the words of another, 'I hope, when I am dead, that my hide is made into a valise,' to serve one who feels that life is so short, why hurry through it?"

Her Privates We. By Private 19022. New York: G. P. Putnam's Sons. 5" x 7½". 334 pages. \$2.50.

"*Her Privates We*" is a war book of English origin that is receiving such favorable press notices and reviews that it may be included among the books presenting unusually vivid records of personal experience in the great war. It is an honest, straightforward, unsentimental account of the daily life of a group of enlisted men belonging to a British infantry battalion during the heaviest fighting of 1916.

The author, who signs himself P 19022, is said to be a well-known English writer who served in the ranks and who prefers to keep his identity hidden. The book recounts his own adventurous life on the Somme and Ancre fronts; and while the events narrated actually happened, the characters are to a certain extent fictitious in that they represent types of soldiers rather than individuals.

Private Bourne, the central character, is a mature, cultured, reserved man, intellectually and socially on a footing with the officers of the battalion but by the fortunes of war identified with the mass of fighting men. Enabled to view the war from both angles, he is in a position to analyze the physical and spiritual reactions of the average individual toward the business of fighting. Private Bourne does not idealize war, but undoubtedly represents the viewpoint of P 19022, who says in his preface: "War is waged by men; not by beasts, nor by gods. It is a peculiarly human activity. To call it a crime against mankind is to miss at least half of its significance: it is also the punishment of a crime."

But Private Bourne's thoughts about the meaning of war are not shared by his fellow soldiers, who are too closely in contact with misery and death to live beyond the moment at hand, forgetting the past and making no plans for the future. To them war is an unavoidable situation to be accepted as sanely as possible. If one may judge by other British war books, this is a typically English attitude, and is a welcome relief from the hysteria, apprehension and sentimentality of war books of the type of *All's Quiet on the Western Front*.

Retreat. By C. R. Benstead. New York: The Century Company. 5" x 7½". 355 pages. \$2.50.

"*Retreat*" by C. R. Benstead, is yet another book to be added to the ever-increasing literature of fact and fiction dealing with the World War. But "*Retreat*" justifies the claim of the publishers that it is a war book with a difference, for the war serves as the background for the physical, mental and spiritual struggle of an English volunteer chaplain to find himself when thrust unprepared into the terrific fighting of the last great German offensive of 1918.

Chaplain Warne, middle-aged, frail of body, impractical, over-sensitive and fanatically religious, left his placid English country parish for service in the

field, picturing himself "in the rôle of a spiritual Saviour, welcomed by an ecstatic people crying out for salvation."

Just five hours before Ludendorf launched his famous drive the chaplain was unloaded from a truck at the brigade headquarters of a veteran artillery regiment holding a front line position.

Thoroughly demoralized by the opening bombardment, Chapain Warne realized he was a physical coward and became "that most pitiful of all men, the craven who fought with his pride." At first, in a blundering, uncertain way he groped toward his fellow officers for moral support; but as he looked upon their attitude toward the business of war he drew away from them with horror. He could not understand that these men who had faced possible extermination for four years had found that sanity lay only in ignoring the danger and in refusing to discuss or to even admit the suffering and death about them. He felt that they were cruel, blasphemous and indifferent, and they in turn regarded him as yet another burden in their time of stress, viewed his hysteria and fear with impatience, but saw to it that each night he was bundled into a lorry and sent safely to the rear with the supplies. Knowing he was "unwanted, an impediment," each day "found him solitary, silent and miserable, a victim of stark disillusionment, painfully conscious of his own uselessness and slowly drifting toward a state of mental inertia."

Dr. O'Reilly, the staff medical officer, was the only one who realized something of the struggle Chaplain Warne was making to retain his hold on his sanity and his religion, and the doctor's interest was naturally more professional than personal.

"I think," remarked Dr. O'Reilly to the Adjutant, "the fellow's nothing short of an idealist, and one of the few orthodox Christians alive. On top of that, he's an immense capacity for feeling. . . . You can see what sort of hell he lives in. . . . Warne has only his Faith. You can see where it's landed him. No: Faith without a reinforcement of sound, practical good sense is like a modern battleship without engines. It gets nowhere."

In a tragic scene the inevitable physical and mental collapse came, and Chaplain Warne was taken from the war—"a war in which hope had set out to achieve so much and had accomplished so little; a war that had crushed his spirit and killed his soul without so much as revealing itself to his face."

In reading "Retreat" one is strongly reminded of "Journey's End," although the subject matter is entirely different. But there is the same restraint of expression, the same effective suggestion of tragedy not actually put into words.

The author, C. R. Benstead, served during the World War with the British troops in France, but is now an officer in the British Navy.

Makers of Modern Europe. By Count Carlo Sforza. Indianapolis: Bobbs-Merrill Co. 6" x 9". 407 pp. 21 illus. \$5.00.

Count Sforza is eminently qualified to write on the leaders of twentieth century Europe as he was in the Italian diplomatic service for thirty years and has had personal contact with nearly all mentioned in his book. This book gives his personal impressions and recollections in the form of short character studies, and they serve to explain in large measure the recent history of the world. The Count states that he hopes the reader will realize that many men from so many different countries "are all moved more or less by the same springs, even when they go in different directions." Such a realization will beget a lesson of tolerance and assist in mutual understanding. "To love one another is difficult, less sterile is it to try to understand one another. That is the excuse

for Economical Transportation



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IT'S WISE TO CHOOSE A SIX

WHEN WRITING ADVERTISERS PLEASE MENTION THE COAST ARTILLERY JOURNAL

and the reason for this book." It must be an extremely bigoted nationalist who will not have a fellow feeling for many of the foreigners Count Sforza so ably describes.

The disruption of the Austro-Hungarian Empire is made clear by reading the Count's sketches of five of its leaders before the World War, in fact it seems a marvel that it lasted so long. We were accustomed to hear in those days that it would fall when Francis Joseph died, but there is nothing in the author's description of that monarch to indicate how he could have been the tie that bound so many diverse elements together, quite the contrary in fact.

Military readers will be specially interested in the Count's narratives of Foch, Cadorna, Diaz and Kemal. He quotes the French Marshal as telling him that his comparatively easy armistice terms were due to his fear of the American Army. He did not want to see his country militarily occupied by the rapidly increasing American forces. "From a military standpoint we (the French) would have counted less than we did at the Peace Conference." This is what Foch told the Count.

Cadorna was a reversion to times of Louis XIV—he ruled with an iron hand, not understanding the psychology of a people in arms in modern times and he failed, to be succeeded in the Italian command by Diaz, who was not a great general in the old sense of the term, but he had sympathy and understanding of men. By good treatment he raised the morale of the army and led it to victory at the Piave. "The whole period of Diaz' command establishes that, in modern warfare, a great problem of social economics and psychology has imposed itself on the strategical problem." This is a lesson for us all.

The author is not enamored of Kemal's "childish games of alphabetic and sartorial reforms," but of his military campaigns and of the real political innovations which Kemal "has had the courage to devise and carry out" he speaks in the highest praise. The occupation of Smyrna by the Greeks was what gave Kemal his chance and Count Sforza is unsparing in his denunciations of the British statesmen who brought about this fiasco, of Lloyd George in particular. The Count is especially well informed on this episode as he was one of the Allied High Commissioners in Constantinople when the occupation was decided upon.

The author is not impressed by Austen Chamberlain, "well meaning withal, but simply a passive man," and his direction of British diplomacy until the general elections of 1929 "was the weakest and most hesitating that England has ever known."

Count Sforza's sketches of the three last Popes: Pius X, who was in the Holy See when war was declared; Benedict XV, who was Pope through the greater part of the war; and Pius XI, under whom the Papacy regained territorial sovereignty, makes very interesting reading. Benedict was a liberal and encouraged liberty, while the two Piuses were reactionary opponents of democracy, in fact it was this characteristic which brought Pius XI and the Fascist leaders together and produced the Vatican treaties, "the same hatred of political liberty."

The Count is an opponent of Mussolini and Fascism because of the lack of freedom under their rule and he claims that the overthrow of Bolshevism by the Fascisti was only an excuse, in fact he quotes Mussolini's paper of a year previous to the march to Rome as saying, "To say that a Bolshevist danger still exists in Italy means taking base fears for reality. Bolshevism is overthrown."

Many other notable personages are reviewed in these pages, but one is struck by the absence therefrom of Clemenceau, although he is mentioned several times in sketches of other statesmen. The illustrated plates are especially good. Altogether this book is well worth having.—R. E. W.

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A Saga of the Sword. By F. Britten Austin. New York: Macmillan Company. 1929. \$2.50.

Grey Maiden. By A. D. H. Smith. New York: Longmans Green and Co. 1929. \$2.50.

These are short stories of war from the dawn of history down through the centuries. Equipment, tactical methods and bloody struggles are described. Carthaginians, Greeks and Romans, Moslems, Crusaders and World Warriors march past. "Saga of the Sword" is not so good. Austin stutters a bit as he lathers on the local color. These tales appeared in the *Saturday Evening Post*—and he dragged a sweet love story into almost every one of them.

"Grey Maiden" is the story during twenty centuries of a wonder sword. These tales are much better than the others. The only false note is in the first. "Heroes" and "Crusaders" talk about important questions such as sore feet and rations and not about high ideals and noble thoughts. They leave that to the Four Minute Men. Smith realized this later on.

The Little Entente. By Robert Machray. New York: Richard R. Smith, Inc. 1930. 5¾" x 8¾". 373 pp. Ten illustrations and a map. \$4.00.

Mr. Machray has produced a comprehensive and detailed history of the international relations since the World War of the three countries known as the Little Entente: Czechoslovakia, Yugoslavia and Rumania. The term was originally derisive being first applied by an Hungarian newspaper. Contemptuously it compared "the small and insignificant Little Entente as a ridiculous analogue of the Big Entente." However, the name stuck and is now universally applied to those three nations, as it expresses so exactly the relations which exist between them for the common defense.

The basis for the entente exists in three treaties, viz., between Czechoslovakia and Yugoslavia, between Czechoslovakia and Rumania and between Yugoslavia and Rumania. In all three the contracting parties agree to assist each other in case "of an unprovoked attack" by Hungary, while Bulgaria is coupled with Hungary in the last-named treaty. Hungary is the *bête noir* of the Little Entente and Mr. Machray is strong in his denunciation of the Magyar kingdom. That he has no sympathy with the Hungarian viewpoint is only too evident, in fact, his strictures lead one to believe that he would not be willing to admit that there are two sides to the Hungarian-Little Entente question.

On the other hand the author is very partial to the Little Entente, especially for Czechoslovakia whose actions he praises in the highest terms and his account shows the remarkable strides which have been made by that country under the able leadership of President Masaryk and Foreign Minister Benesh. Mr. Machray shows in great detail the influence which the Little Entente, and Czechoslovakia in particular, has had on the diplomatic relations of Europe, an influence which will doubtless surprise most readers who think of Great Britain, France, Italy and perhaps Germany as deciding European affairs to their own liking. However, the Little Entente, considered as a unit, is no weakling, and in most affairs it has acted as a unit. Furthermore, its relations with Poland are most cordial, and even with Austria in general. This makes a central European bloc of considerable power. Only on the question of the union of Austria with Germany does the Little Entente oppose the former, it is bitterly opposed to such action.

Mr. Machray is most anxious to show stability and good relations in the Little Entente, so much so that he is inclined to be over-optimistic regarding the

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NOTICE

THE UNITED STATES COAST ARTILLERY ASSOCIATION

Applications for membership in the United States Coast Artillery Association have been mailed to all eligible readers of the JOURNAL. If you failed to receive yours please notify the JOURNAL Office.

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settlement of troubles which have arisen, at least newspaper reports appear to make them more serious than does the author. As examples can be cited his account of Croat-Serbian question which culminated in the shooting of three deputies in the Belgrade parliament in 1928 and his view of Italo-Yugoslav relations. However, his book is certainly authoritative and detailed in its facts and must be of value to the student of current history in central Europe. It gives evidence of a great amount of research, is presented in a scholarly manner and well illustrated with portraits of the leading statesmen of the Little Entente.

R. E. W.

The Sunken Fleet. By Helmut Lorenz. Translated from the German by Samuel H. Cross. Boston: Little, Brown & Co. 1930. 5¼" x 7¾". 342 pp. \$2.50.

This is fiction, something rarely reviewed in the pages of the JOURNAL, but it is interwoven with what is, undoubtedly, a true picture of the German navy during the World War and is therefore of military value. The author was a commander in that navy, serving on a battleship in the High Seas Fleet until after the battle of Jutland, when he was transferred to the submarine service. In this book he relates an episode of a submarine being disabled by depth charges and taking refuge in a Spanish port, where it was interned. After the armistice he evaded the Spanish authorities, sinking the ship on the high seas, rather than turn it over to the French, as ordered. This incident actually happened to Commander Lorenz, and probably many more in the book were personal experiences, or happened to friends of the author. That this is a true account of historical events as seen through German eyes, and gives a correct representation of the feelings prevalent in the German navy cannot be doubted, it is evident throughout the book.

The story begins with the Kiel regatta, held in June of 1914, just before the assassination of the Archduke Ferdinand. The British fleet participated in the festivities, fraternizing with the Germans, but there was a mutual suspicion between the two services which is well shown by the author. Then came the war and we learn from Commander Lorenz that the German plans were laid under the expectation that the British fleet would at once sail into Heligoland Bight to overwhelm the Germans. Needless to say the latter were well prepared for such an encounter, and great was their disappointment when no such attack took place. The fleet waited for the enemy, and impatience at the resulting inactivity is easily understood. The failure of the fleet to support their light cruisers on August 28th, 1914, when three were sunk by British armored cruisers north of Heligoland, was bitterly resented. The strategy of playing a waiting game was not to the liking of the fleet.

There was a partial allayment of this impatience by the German victory at Coronel, but it soon reappeared, especially when Berlin refused to resort to unlimited submarine warfare, a plan ardently desired by the entire navy, headed by Tirpitz, who, throughout the book, is glorified as the real founder of the German navy and as typical of its spirit. Great were the wailings when he was superseded in March of 1916.

The attack on Hartlepool and Scarborough is described and the receipt, while returning, of an order from the fleet commander to change course. This change, they afterwards learned, was to avoid contact with the British battle cruiser squadron, which was out searching for them. Many invectives were poured on the "pusillanimous" strategy of Berlin. It was this episode that brought forth the remark that it was "a war of lost opportunity." Comparisons

THE UNITED STATES COAST ARTILLERY ASSOCIATION

DESIRES

to include in its membership all persons eligible to join. Many former officers of Coast Artillery (emergency and resigned) are eligible for membership but can not be located from the records available. Readers of the JOURNAL having knowledge of any such would be performing a service for the Association by sending in their names and addresses.

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of this type of strategy with the campaigns of Frederick the Great were freely indulged in and one officer wanted to transfer to the army, where he could get some activity. After all there is not much difference in thought between military men, regardless of country. Doubtless a similar story from British sources would show an identical attitude toward the high command.

Then came Jutland, of which there is an excellent description, considering the inherent difficulties in giving any satisfactory pen picture of such a tremendous spectacle as a battle between modern fleets. There can be no question but that the Germans regarded the battle of Jutland as a victory, and morale rose. They had defeated the alleged invincible British fleet and the pressure for unlimited submarine warfare was at once resumed, but "the hope of the German fleet and the intense longing of all submarines that the German Naval Administration would gather manly resolutions from the thunder of the guns at Jutland proved deceitful." No initiative was taken and "the crews of the submarines atoned for this delay by extremely heavy losses," as the British defenses against them became more efficient. "But finally, when the crisis was at its worst and no other expedient was seen, unrestricted submarine warfare was declared for February 1, 1917."

There is a vivid description of a submarine passing the barrier at Dover, a barrier of mines, nets and ever-circling destroyers armed with the dreaded depth charges. "Burning magnesium lights were floating on the water, illuminating the surroundings for miles with their bluish-white rays. At starboard a gigantic searchlight played over the Channel from a position somewhere between Dover and Folkestone. Dunkirk also swept untiringly over the water with searching rays." And yet some submarines got through, among them that commanded by Commander Lorenz himself as described in this book. But also many failed and the toll of life was heavy in the under-sea service.

The author relates how, in October, 1918, when the situation on the western front was desperate, a naval attack on a large scale was planned against the Channel and the Thames, led by the High Seas Fleet, to relieve the right wing of the retreating army. But the inactivity of the fleet coupled with the stringent conditions which prevailed throughout the country, provided excellent soil for the propagation of communist doctrines in the navy, and the sailors mutinied on October 23rd, refusing to leave port. This completed the German debacle and hastened the armistice.

Then came the last voyage of the fleet, the surrender to the British. The feeling of the officers in this episode is well portrayed and can be appreciated by the members of any military service. Finally the sinking in Scapa Flow, "better honor without ships than ships without honor."

Not much praise can be given to the fiction elements of the book as the plot is old and threadbare. The best that can be said is that it forms a convenient vehicle for an intimate historical picture of the German navy, a picture valuable to students of the war. The literary merit is not great, whether this is due to the author or the translator is hard to tell, the inclination being to lay it on the latter, as the abundance of Americanisms, slang and profane, is sure evidence of an exceedingly free translation.—R. E. W.