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Mine Defense—Today and Tomorrow

By MAJOR FRANK S. CLARK, C. A. C.

THE one surviving tar who related in the jingling "Yarn of the Nancy Bell" how he omnivorously came to be—

"At once a cook, and a captain bold,
And the mate of the Nancy brig,
And a bo'sun tight, and a midshipmite,
And the crew of the captain's gig"—

had nothing on the modern Coast Artilleryman. In diversity of weapons and missions, the Coast Artilleryman must be gunner, sailor, chauffeur, mechanic, and electrician. He is as amphibian as his brother in arms, the Leatherneck Marine, and at one time or another in his career he demonstrates the assimilated talents of a whole crew. The targets assigned to him are in the air, on land and water, and under the sea.

In the halcyon days beyond recall—pre-war and pre-prohibition—controlled mine defense was well recognized as one of the most important missions of the Coast Artillery Corps. Out of a total of one hundred and eighty active companies in the Corps, forty-eight were mine companies. Furthermore, as the old-timer regretfully remembers, each of these mine companies had at least one hundred and nine soldiers, while certain companies on foreign service had an even greater number. In those happy days, when officers were assigned by the War Department direct to organizations, the assignment to a mine company was a hall-mark of distinction, and to be a mine planter commander was to be recognized as one of the fair-haired boys of fortune. The mine planters themselves operated directly under the orders of the Chief of Coast Artillery, and their normal condition was expected to be and was such that at any moment they could pass a critical Admiral's Inspection.

Following the war, the enormous expansion of Coast Artillery missions to include, besides fixed guns and mines, the new railway, tractor, and antiaircraft artillery, coupled with the subsequent drastic decrease in the strength of the Coast Artillery Corps, spread us out so thin that each element of our mission had practically to be skeletonized. In the drastic process, mines suffered perhaps more than anything else. This fact may properly be ascribed to the personal enthusiasms engendered by recent war

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experience for the newer railway, tractor, and antiaircraft weapons. There is now little to be gained by recounting in detail the damaging effects on mine defense brought about by the extreme swing of the pendulum of Coast Artillery thought. One symptomatic note was the fact that the Department of the Coast Artillery School which was known before the war as "The Department of Engineering and Mine Defense," was designated after the war merely as "The Department of Engineering." Today, the actual number of active mine batteries assigned to mine defense, including two batteries of Philippine Scouts, is nine, and the pitiful inadequacy of the authorized strength of these mine batteries for the work they have to do is too well known to require painful elaboration in cold print. The practical effect of the subordinated status of mine defense since the war is that, in the present-day Coast Artillery, only a small proportion of captains and lieutenants have had or can have immediate contact and experience with the unique problems of mine defense, and the pre-war body of trained mine soldiers has gradually been shrinking to an inadequate nucleus for the key positions in the expanded mine organization which would be necessary to put down mine projects on the imminence of war.

However, it is both trite and true that the more violently the pendulum of military opinion swings away from normal, the more quickly and surely will the swing come back to (if not through) the norm of sound common sense. In the case of the attitude toward mine defense, this returning swing occurred several years ago. The history thereof is significant and interesting, but the details are out of place in a paper of this sort, which presumes to nothing more than a personal and wholly unofficial summary of observations concerning the recent trends and developments in submarine mine defense. This much may be said: As the result of a thorough official survey, which has taken into consideration every relevant military and naval problem and policy, the status of mine defense among other Coast Artillery missions has been redefined precisely and logically, and in such a manner that the individual Coast Artillery officer can and should visualize his personal participation in an assignment to mine defense as being in that of a major mission of the Coast Artillery Corps.

Coincident with the restoration of submarine mine defense to its proper place in Coast Artillery policy, there have occurred significant developments in submarine mine methods and matériel. The hope that a brief sketch of some of these developments may be of present interest to Coast Artillery officers constitutes the only justification for the present invasion of space in the COAST ARTILLERY JOURNAL.

The first development to record is the progressive rehabilitation of mine instruction at the Coast Artillery School. This salutary process has been under way for two years, and with the fruition during the coming year of the plans resulting from the untiring efforts of the Director and instructors of the Department of Engineering, a course in submarine mining

for battery officers will be provided which will enable a battery officer to step into a subsequent mine assignment with assurance and which will be commensurate in allocation of time with the relative importance of the subject in the curriculum. Also, in the Department of Enlisted Specialists, for the first time in many years, an adequate course in operation and care of electrical mine equipment will be included in the curriculum for electrician sergeants.

The recent emphasis on mine instruction for the battery officers has been accompanied by a certain amount of mental distress on the part of some of the officers subject to the process of reorientation. Witness the following reaction of one of the officers concerned:

'Tis well I know how guns are tripped, and mortar grease-cups shined;
With care in sweeping dust from drains my weary brow is lined.
But now there rise before my eyes wonders I have not seen:
I hear the loud alarm of bells, and see red lamps and green!
One drops a mine into the drink; 'tis fastened to a string;
The string runs out beneath the bay so you can find the thing;
A millimeter is hitched to th' end of this frail cord,
And the sergeant says you can tell by that how the damn thing is,
b'Gord.
I don't suppose I'll ever know why you ground the A. C. switch,
And if I know why the red lamp glows, I'll be a — — — .

During the last few years there has been a notable development in new submarine mine matériel. Passing over the items that are still in the experimental stage or that are for one reason or another confidential, the developments of greater or less importance are the Standard Single Conductor Mine System, the mooring swivel, the endfitting for marline-covered mooring rope, and the circuit closer, model 1926.

Unquestionably, the most important as well as the most necessary improvement in controlled mines in many years is that embodied in the Standard Single Conductor Mine System. Until its adoption in 1927, the standard control system was that with which all the older officers of the Corps, at least, were familiar, which depended upon the use of a 19-conductor rubber-insulated armored cable to connect the distribution box of each group of mines to the shore. This 19-conductor cable was the weak link of the system, not only because it was heavy and laboriously difficult to handle, but especially because, within the size and weight limitations, it was essentially short-lived in storage. This fact, coupled with the two others that 19-conductor cable was costly to manufacture and that since the war appropriations have not been forth-coming to replace the deteriorated stock of cable on hand, resulted in the progressive breakdown of all mine defense projects for the simple lack of multiple cable. Consequently, the necessary alternative was to get away from 19-conductor cable, and the logical step was to develop a simple control system which would permit the selective control and firing of the mines in a group by the use

of a single-conductor cable from shore. Such a solution was particularly indicated by the known facts that single-conductor mine cable was relatively cheap, light, and long-lived, and so simple to manufacture that, in case of necessity, adequate production from a number of sources could be made available in a short time.

The problem had already been recognized before the war, and effort started to secure a solution. Experiment was first directed to adopt the principle of the automatic telephone. This project presently headed into practically insurmountable difficulties and was followed successively by two other developments along different lines which initially promised some possibility of success but proved impracticable. After the breakdown of the third attempt, the present successful single conductor system of mine control was conceived by Master Sergeant Paul R. Nelson, C. A. C., technical assistant at the Submarine Mine Depot, and by him elaborated to its present perfected and simple form. The fundamental patents covering the essential elements of the system have been gratuitously assigned by Master Sergeant Nelson to the War Department.

The prosecution of this experimental project was not wholly free from set-backs and worries, as not all of the kinks and difficulties encountered could have been foreseen. These were successively brought out in the shop tests at the Submarine Mine Depot, the service tests at Fort Hancock, New Jersey, and Fort Sherman, Canal Zone, and in experiments conducted at the Coast Artillery School. Too much credit for the final result cannot be given to Captain Leon C. Dennis, 7th Coast Artillery, and Captain Percy C. Hamilton, 2d Coast Artillery, who respectively conducted the service tests at Fort Hancock and Fort Sherman, nor to Major Fred M. Green, C. A. C., and Major Kenneth McCatty, C. A. C., who put through the important tests at the Coast Artillery School and who, from the early days of the development, have been in continual and helpful step with it.

The new system adds but three units to existing mine equipment: first, the interrupter panel, illustrated by Figure 1; second, the control panel, shown in Figure 2 mounted on the operating board after the removal of master block, mine blocks, and bus bars; and third, the selector box, shown open with cover inverted in Figure 3, and closed, mounted in the regular 19-conductor distribution box, in Figure 4. Of these units, one interrupter panel is required per casemate, and one control panel and one selector box per group of mines.

The system is essentially simple in operation and, so far as observation firing and contact firing are concerned, functions like the old system. The equipment for the individual mines is unchanged. The single conductor cable from each mine in the group is connected to one contact of the selector in the selector box (see Figure 3). By means of the revolving contact arm of the selector, the mine is put in circuit with the shore cable to the casemate once in three seconds. If the mine is struck by a hostile

vessel, the resulting increase of current, as in the old system, actuates a contact firing relay on the control panel in the casemate, which in turn actuates the switching relay, disconnecting the operating circuit from the line (thereby stopping the selector contact arm on the contact of the mine struck) and at the same time throwing the firing circuit on the line.

Provision is also made for observation firing from the casemate. This

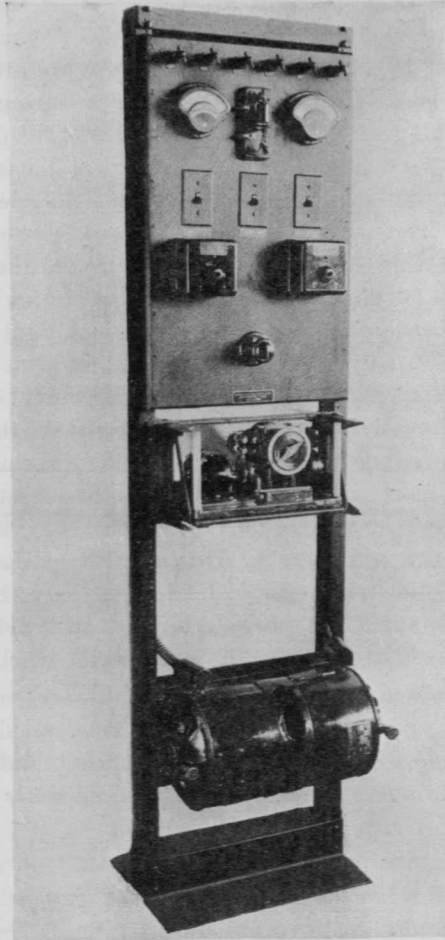


FIG. 1. INTERRUPTER PANEL, STANDARD
SINGLE CONDUCTOR MINE SYSTEM

is accomplished by pressing the mine key on the control panel of the mine which it is desired to fire and holding it in until the selector stops on this mine, which is announced by the ringing of the bell and glowing of the red lamp, whereupon at the proper time the firing switch is closed.

A necessary feature of such a selective system is that the casemate

electrician should be able to know at any time upon what mine-contact the selector contact arm rests, and also that he should have continual visual evidence that the selector is operating properly. This need is met by the related employment of three ingenious expedients. In the first place a second selector (called the casemate selector) is mounted at the upper left hand side of the control panel and operated in parallel, and thus in synchronism, with the minefield selector. By the position of its contact arm, the casemate selector thus indicates at every instant the position of the minefield selector, provided the two selectors are in synchronism. In the second place, in order to assure that the two selectors are in synchronism as well as to provide the indication necessary to bring them into synchronism after planting or otherwise, each selector is provided with 20 contacts, 19 for the several mines of the group and one "synchronizing contact." The synchronizing contact of the minefield selector is connected to ground through a resistance of thrice the average resistance of a mine circuit, so that with this resistance alone in circuit, the current flow is about one-third of the current flow through a mine circuit to ground. However, connected between No. 20 contact of the casemate selector and ground is a resistance of such a value that when the contact arms of both selectors are on No. 20, the joint resistance, and hence the current flow, is the same as that of a normal mine circuit to ground. Now then, the third little expedient which ties together the other two, making them effective, is the introduction in the operating circuit, before it divides to go to the two selectors, of a small milliammeter. This instrument may be seen at the center of the control panel in Figure 2. During selector operation, a steady position of the milliammeter needle indicates not only that the minefield selector is running, but that the two selectors are in synchronism, whereas a violent throw shows that the selectors are out of synchronism.

For testing mine circuits, it is possible to shift from "machine" selector operation at tactical speed to "manual" operation as slowly as may be desired. The condition of the several mine circuits is indicated by noting the milliammeter reading as the selectors are successively stepped to each mine contact.

An essential provision is that for the independent operation of the casemate selector, as a means of bringing the two selectors into step initially. Other accessory features are testing circuits for the delivery of the firing circuit to the operating board; means for clearing the ground which occurs after the firing of a mine or if a mine or its cable fails; a compensating circuit which may be thrown in after each mine is fired and cleared, so as to prevent a throw of the needle each time the selector contact arm sweeps over the contact of the fired mine, and a locking circuit superimposed on the firing circuit to prevent the advancing of a selector by the transient voltage conditions incident to the firing, grounding, and clearing of a mine.

So far, no indication has been given as to *how* the selector revolves its contact arm over the several contacts. By referring to Figure 3, which shows the selector, and by the use of a fertile imagination, the following explanation may serve. The contact arm is mounted on the shaft of an escapement mechanism, which is stepped around by the alternate right and

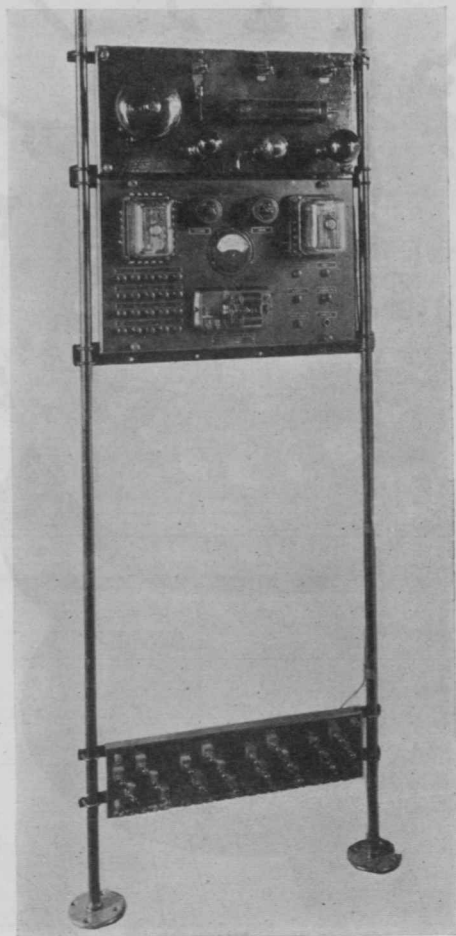


FIG. 2. OPERATING BOARD, MODIFIED FOR
THE STANDARD SINGLE CONDUCTOR MINE
SYSTEM

left motion of the (invisible) operating arm attached to the armature which may be seen just below the pole pieces of the magnet coils. This armature is pivoted at its center, and is alternately brought into contact with one of the two pole pieces by the interrupted operating current of reversing polarity. This operating current is carried by the single conductor cable, and goes to ground by parallel paths, one through the selector

coils, and the other through the mine transformer of whichever mine is in circuit at the moment.

Thus, like the sacred oozlefinch, which flies tail foremost to keep the dust out of its eyes, we have worked backward to the interrupter panel,

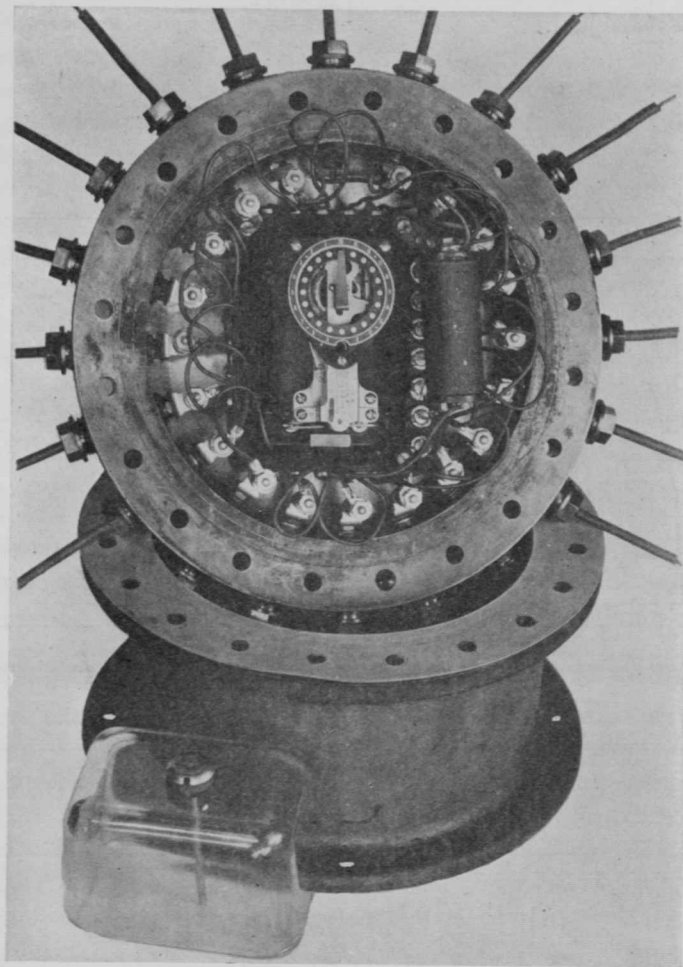


FIG. 3. SELECTOR BOX, WITH COVER INVERTED, SHOWING MOUNTING OF SELECTOR AND ACCESSORIES

which would have been talked about at the beginning of the story by any self-respecting logician. For it is the interrupter panel which supplies the particular kind of juice that stimulates and sustains all these various activities that we have been considering. Referring to Figure 1, and reducing the matter to its lowest terms, the interrupter panel embodies three elements, seen in order from bottom to top; first the motor-generator, second the interrupter, and third the switch-board that controls the other two and indicates voltage and amperage.

The motor-generator consists of an 80-volt D. C. motor driving a 150-volt D. C. generator, flat compounded at one hundred and twenty volts between minimum and full operating loads. The reason for this combination is that the selectors, which are adapted from a standard commercial product, require one hundred and twenty volts for efficient operation, and it is cheaper to supply a motor-generator than to install new

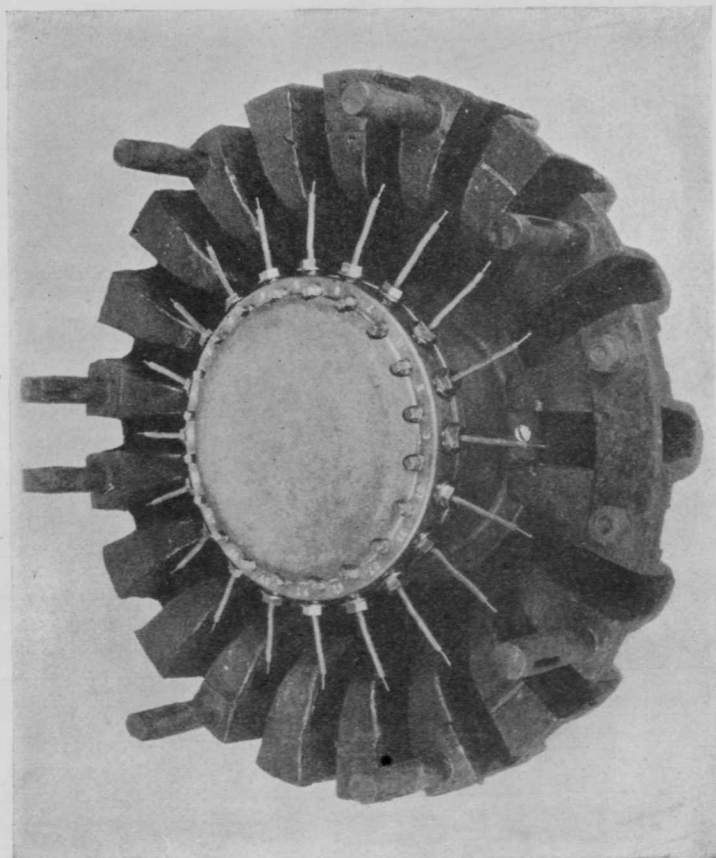


FIG. 4. SELECTOR BOX, MOUNTED IN DISTRIBUTION BOX

casemate generating sets and storage batteries to replace the 80-volt equipment now supplied.

The interrupter is in essence nothing but a motor-driven pole changer, designed to operate at four hundred cycles per minute. It is provided with adjustable governor speed control and embodies several niceties in design that were of profound interest and concern during the process of perfecting the system, but which would hardly be equally exciting to the Coast Artillery officer who expects only to use the equipment as issued. From

the interrupter panel, this interrupted operating current of reversing polarity is carried by casemate wiring to each of the mine group operating boards in parallel.

For more intimate details concerning the Standard Single Conductor Mine System the ardent reader is referred to the new Manual for Sub-

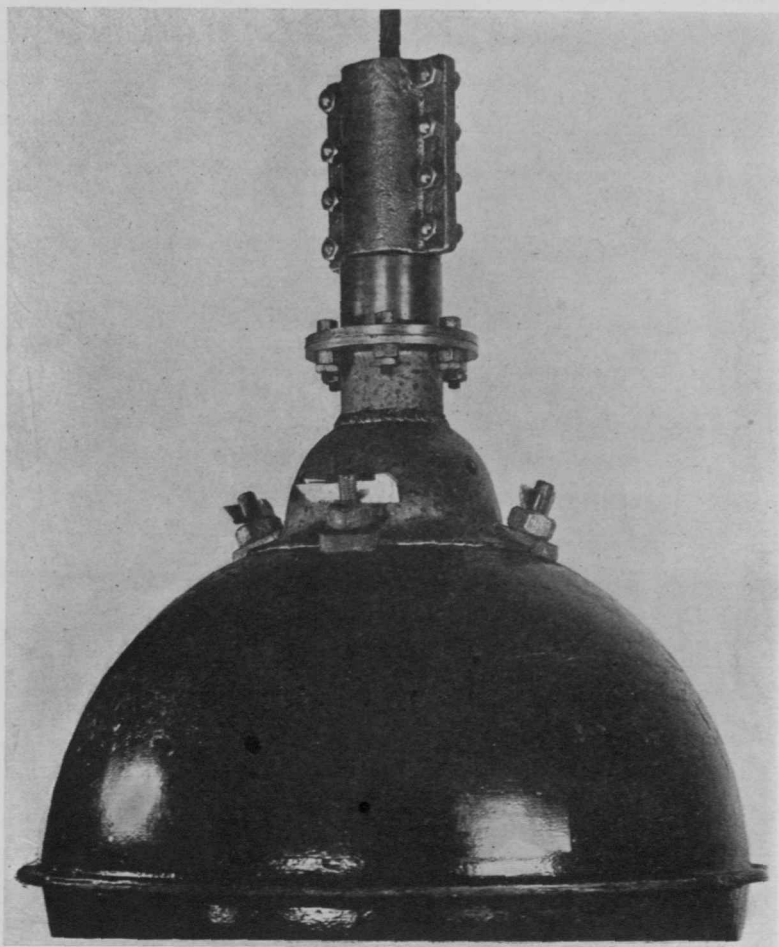


FIG. 5. MOORING SWIVEL

marine Mining, which will be spoken of again in this paper, and which it is to be hoped will be issued in printed form within the next few months.

The next development in matériel calling for brief mention is the mooring swivel, illustrated by Figure 5. The necessity for this device arises from the swift and turbulent currents in certain of our harbor waters, which set the mines to whirling, and by the twisting of mooring ropes and cables, soon destroy them. The problem was to permit the mine

to revolve freely, independently of the mooring rope, and at the same time to maintain an insulated, watertight electrical connection to the mine. The crux of the problem lay in the fact that no ordinary form of packing to exclude water from the electrical connection could be used, as the friction of a packing would prevent free swiveling action. The solution of the problem lay in the employment of a heavy oil seal surrounding the electrical contact surfaces and the ball bearing swivel. The oil seal is imprisoned and made effective by the hydrostatic pressure of the surrounding sea water. This idea and the general design of the swivel, including the scheme of using a modified mine cap as a means of attaching the swivel to

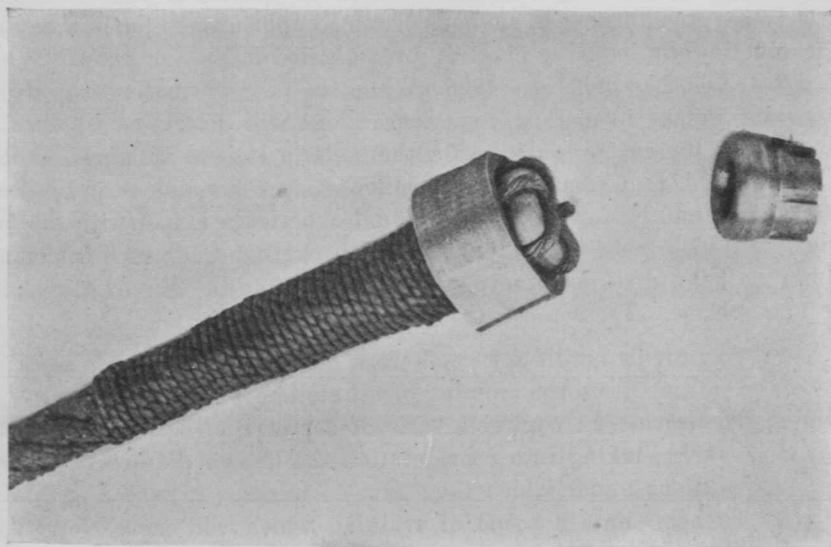


FIG. 6. END-FITTING FOR MARLINE-COVERED MOORING ROPE

the mine, constitute the sole inventive contribution of the writer to the development of the mine matériel. Fortunately, by a long service test conducted by Capt. Joseph F. Stiley, C. A. C., in Puget Sound, the mooring swivel was found to be successful in operation.

A smaller and simpler gadget is that illustrated by Figure 6. This is the end-fitting for marline-covered steel-wire mooring rope, and was conceived and then experimentally developed through the construction, test, and rejection of many samples, by Master Sergeant Nelson. It is intended as a simple and convenient means for attaching the mooring rope to the reel of the automatic anchor. The wedging principle of assembly and operation is evident from the photograph, and the actual operation is equally simple. The marline seizing over the ends of the strands is for the purpose only of facilitating entry in the reel recess, and has no function in sustaining the strain on the end-fitting.

Still another device invented by Master Sergeant Nelson, of which no photograph is available, is the circuit-closer, Model 1926. However, this device is already familiar to mine personnel, as considerable numbers have already been issued to replace the distance rings and fragile and refractory spring plates which the new circuit closer has rendered obsolete. The virtue of the new circuit closer lies in its simplicity and ruggedness. It consists of four parts, assembled in manufacture: the inverted cup, which fits inside the mine transformer cap, a helical contact spring supporting at its center point a silver plated contact plate retained in position but otherwise free to move when touched by the steel ball, by a distance ring fastened inside the cup.

A recent development in methods of some importance is the new method of conducting service mine practice, promulgated in paragraphs 20-23 and 35, TR 435-55, November 15, 1928. While the new scheme is certainly an important change in method, experience alone will determine whether all the features thereof are changes for the better. It is to be hoped, as it is to be expected, that comments from mine group commanders and battery commanders will be forthcoming as actual experience is had with the new scheme. With a view to illuminating the background for such comments, it may be helpful to note the purposes intended to be served in evolving the new scheme. These were:

- (1) To provide credit for good work and to penalize poor work resulting from the training of *all* sections of a mine battery.
- (2) To provide an equitable basis of comparison between mine batteries, taking into consideration the known differences in conditions under which they have to work.
- (3) To necessitate a scope of training which will more closely approximate service conditions than has universally prevailed hitherto.
- (4) To reduce to the lowest terms paper work, plotting for the score, and record keeping, which are foreign to service conditions, in connection with service mine practice.

Of these purposes, none has been fully met by any previous method for the conduct of service mine practice, and it is not claimed that the present method fully provides a measure of teamwork within the mine battery. This ideal cannot be attained for two reasons; first, because the mine battery team is also part of a larger team which includes the mine planter crew, and second, because of wide variations in local conditions as to equipment and hydrography. Consequently, the provisions concerning the score are necessarily lenient, so that it is possible for a battery to obtain a perfect score and still not have a perfect practice.

A development of the last few years, which has been quite necessary but which has been accomplished by unavoidable worry and some grief

on the part of mine property officers, has been the stiffening of requirements for the care, repair, and test of submarine mine cable. In carrying out this responsibility, the Submarine Mine Depot has tried to visualize the practical difficulties under which all mine work is now carried on. As Mr. Ripley would say, "Believe it or not," but we have never forgotten the pertinent lesson in the story of a lieutenant of the 7th Cavalry, who participated with that regiment in the expedition for the pursuit of Villa in 1916. When the regiment was remote from supplies, struggling through a desert torrid by day and frigid by night, horseflesh had to be conserved at all costs, so that officers and men marched on foot, leading their horses. In spite of this, casualties in horses, from fatigue, injuries, and inadequate forage were enormous. Consequently, a colonel of cavalry, as veterinary inspector, arrived by airplane from north of the border, to investigate and correct conditions. Alighting from his plane near the cavalry lieutenant, who, dusty, ragged, and almost barefooted, was trudging beside his horse, the colonel shook off his flying clothes and strode over to the cavalry column in immaculate uniform and shiny boots. The first thing that caught his eye was a dirty and blood-soaked rag tied around a fetlock of the lieutenant's horse. Whereupon he exploded in true cavalry fashion, "What do you mean by using a filthy bandage like that on your horse? What kind of a cavalryman do you think you are to treat your horse like that?" The lieutenant straightened up to a salute, cracked the alkali off his lips, and replied: "I'm sorry sir, that bandage is all I have. It is my face-towel!"

It is hoped that the publication of Technical Regulations No. 1160-15, Repair and Test of Submarine Mine Cable, has served to help those charged with the care of cable, as a simple and explicit guide for the technical and administrative work involved.

For more than a year the Submarine Mine Depot has been engaged in preparing the Manual for Submarine Mining, 1929. The new Manual will replace—

Manual for Submarine Mining, 1912.

TR 435-315, The Mine Group.

TR 435-316, The Battery, Submarine Mine.

TR 435-317, The Army Mine Planter.

As submitted to the Chief of Coast Artillery in June, 1929, the manuscript combined all of the pertinent information included in the publications enumerated above, adapted to the employment of the Standard Single Conductor Mine System, and in addition a full treatment of tactical principles, organization, command, administration, fire control, and position finding, compiled from the results of the practical experience that has been had in mine work since the publication of the Manual for Submarine Mining, 1912.

The general scope and arrangement of the new Manual are indicated by the chapter headings:

- I. General Principles of Submarine Mine Defense.
- II. Organization, Command, and Administration.
- III. Summary of Duties of Units and Individuals.
- IV. Description and Operation of Casemate and Electrical Equipment.
- V. Submarine Mine Matériel (except Casemate, Electrical, and Fire Control).
- VI. Shore Duties.
- VII. Duties on the Water.
- VIII. Fire Control and Position Finding.
- IX. Training.
- X. Inspections.
- XI. References, Forms, and Index.

As submitted by the Submarine Mine Depot, the new manual embodies numerous innovations in treatment of non-controversial matters, as well as in tactical and administrative procedure. While these features are believed to be of sufficient importance to warrant detailed illumination and discussion, specific reference thereto is properly omitted from this paper, for the reason that it is not known whether all of them will receive official sanction and thus appear in the book when finally printed. This much may be said: That the underlying purpose of the new manual is to provide between two covers all that any officer or soldier in the mine service needs to know about the identification, care, and operation of all mine equipment, and the tactical and organizational principles covering mine work. At the same time, by several expedients which have been resorted to, it is equally made possible for any individual to turn readily to only those portions of the book with which his assigned duty is immediately concerned.

So much for mine defense as it stands today. Before concluding this paper, it is desired to offer a few personal observations looking ahead to the progress which should mark the mine defense of tomorrow.

Perhaps the first definite step to insure future progress in mine defense is the mental reorientation from top to bottom of our harbor defense organizations which will assure a continuously dependable even break for existing mine batteries as compared with gun batteries. These words have been carefully chosen so as to avoid the charge of a general criticism on this point, which of course could not be sustained and is not intended. However, the observation and experience of numerous officers will certainly corroborate the statement that at one time or another since the war, during the continuance of one or more of the successive régimes of harbor defense command, some of our active mine batteries have not had an even break with gun batteries in the same regiment. The following statements are

illustrative if not typical. At one time in an important overseas harbor defense, the training program provided for the conduct of all gun practices so that they would conclude before the advent of the extreme hot season, while mine training and mine practice were deferred until they came at the worst part of the year. Furthermore, all battery officers, including mine battery officers, were required to attend all gun practices and critiques. Later when mine practice was held, not an officer was present except those assigned to the mine group. Furthermore, as soon as gun practices were completed, there was a general exodus of gun battery officers on leave to escape the hot season. Automatically, such leave was impossible for mine battery officers, and in addition to their mine training, they had to assume the burden of frequent O. D. tours and the administrative duties of their more fortunate gun battery brethren. In this same situation occurred also the condition which frequently exists elsewhere, that until the gun practices were completed, the mine group was denied the use of mine planter and D. B. boat, which were employed in towing targets and observing for the guns. Such use of these vessels is, of course, quite necessary, but too often the net result is that the mine battery has to jump into service mine practice with inadequate prior time in training with the mine planter.

Under present-day conditions of inadequate manning strength, it frequently occurs that mine batteries are required to lend men temporarily to gun batteries for training and gun practice. It may be that a reciprocal loan of gun battery men to mine batteries is common, but only one instance of this sort is known to the writer, and several specific cases have been known when the mine battery did not so benefit. The relative injustice is the more striking when the well recognized fact is taken into consideration that the amount of physical labor involved in the conduct of mine training and service practice and in the care of mine matériel is vastly greater than required in a gun battery.

Instances are known of a mine battery being required to furnish the post guard on one of the few days that the mine planter is available for mine service practice, thus practically losing the day.

In the conduct of camps for the civilian components, so far as is known, no distinction is made between the demands on personnel of mine batteries and of gun batteries, notwithstanding the fact that the very presence of the civilian component personnel assists in the upkeep of guns and emplacements, whereas during this period upkeep of mine matériel has to be suspended and the arrears made up after the camp by members of the mine battery alone.

Finally, credit or consideration is seldom given to the mine battery for the fact that it mans and fires a rapid-fire battery, in addition to its normal duty of mine training and maintaining mine matériel, demands from which gun batteries are exempt.

The upshot of the matter is that wherever and whenever conditions may exist comparable to the admittedly isolated instances here set forth, the brake is set on the progress possible in mine defense. Not only generally, but always, the mine battery in a harbor defense should get an even break. More could not be asked; less prevents any cumulative gain in progress, directly because of inadequate time and means, indirectly because of the damper on zeal always inherent in injustice.

Another desirable step toward future progress in mine defense is to increase the opportunities for the younger Coast Artillery officers to become familiar with the practical details of mine work. The Coast Artillery School will do its share, but other means may be sought and found. One such scheme which deserves broadcasting is the idea put in effect by Col. James B. Mitchell, Coast Artillery Corps who, during the last mine training season in the harbor defenses of Balboa, temporarily attached to the mine battery all lieutenants in the regiment who had not had previous service with mines.

A third quite necessary step is to increase the teamwork and combined efficiency of all mine-planting vessels. One measure to this end, that can readily be taken without any modification of law or regulations, is to combine for training and operating purposes the mine planter, D. B. boat, and mine yawls into a single operating unit, which may be designated the Mine Planting Flotilla, and put this flotilla under the responsible direction of the mine planter commander. Generally speaking, that officer is the one best qualified to conduct the training of small boat crews, to coordinate their work, and to insure the economical maintenance and efficient operation of these vessels. Certainly he is in the best position of any officer in the mine group to see and to control the daily work of the D. B. boat and mine yawls. In waterwork pertaining to mine defense, teamwork is essential to efficiency. With control divided as at present, the breakdown or misjudgment on the part of one element reacts on the successful performance of the others and opens the door for recriminations and alibis. Unified control would shut this door.

Still another necessary step toward progress and efficiency is to assign an electrician sergeant to a mine group, with the same responsibility for the condition and maintenance of submarine mine electrical and power equipment that electrician sergeants now hold with regard to fortification power and communication equipment. Indeed, this progressive step merely harks back to the original purpose for which the idea was conceived of having such a person as an electrician sergeant. In the early days, when the Coast Artillery took over from the Engineers at Fort Totten the control and subsequent development of submarine mines, the need for fully qualified enlisted electricians was soon seen, and the first legislation which provided for the several grades of electrical specialists made it clear that these grades were created to take care of submarine mine equip-

ment. Furthermore, all the early training of electrician sergeants was carried on at the School of Submarine Mine Defense at Fort Totten, and so continued until this school was consolidated with the Coast Artillery School and moved to Fort Monroe. If the need for electrician sergeants to care for electrical mine equipment existed in those days, it exists even more emphatically today. The greater diversity of duties required today of all officers precludes such intimate supervision of the care of his electrical equipment by a mine battery officer as would have been possible twenty to thirty years ago. Furthermore, partly for this same reason, it is not always possible today to train a casemate electrician adequately in the organization. It is only too true to say that since the war many casemate electricians have been electricians in name only. Indeed, due to the recognized increasing tendency of high ranking inspectors to form judgments as to the condition of the mine casemate by superficial appearance only, there has tended to develop the type of casemate electrician of whom the current saying is warranted—"As a casemate electrician he is a good painter." In consequence, there are probably few mine casemates today in which a thorough technical inspection would not reveal deficiencies in mechanical and electrical condition of the equipment which are avoidable and remediable if subject to the skilled, responsible supervision of an electrician sergeant. This change in policy is believed to be necessary to progress, and therefore profoundly important, but the suggestion should not be understood to mean the elimination of the present casemate electrician and the substitution in his place of an electrician sergeant. Note that an electrician sergeant supervises, but does not replace, the operator of the post telephone switchboard. Neither does the suggestion envisage the elevation by local promotion of the present casemate electrician to staff sergeant or higher grade. What is needed in this important niche in our citadel is the duly qualified and certified product of the Department of Enlisted Specialists of the Coast Artillery School.

All the steps toward future progress in mine defense so far suggested are well within the province and control of the Coast Artillery Corps itself. There is still another step which the progress of mine defense requires, which must be taken by authority higher than the Corps, and which a Coast Artilleryman conversant with existing conditions would be recreant not to mention. This step, most important of all, is to increase the number of active mine batteries. Actually, almost half of our authorized mine projects, for which the equipment is installed and stored, have no mine battery at all. And for several of the mine projects which do have one active battery, as well as for several with no battery at all, before the war two of the old 109-men mine companies were found necessary to care for the mine equipment properly. The condition of maintenance and readiness today of some of our solid investment in mine equipment can be imagined but had best not be described. After all, this

phase of the matter is but a small part of the story. What is even more important to remember in connection with the responsibility charged to the Coast Artillery by the War Department and the nation, is that we are perforce unready to put into effect what might probably be demanded as the first measure of defense on the threat of war. This potential time factor stares us always in the face, and there is literally no short-cut to speed and efficiency in mine work. The skill of the key-position men and the teamwork of all can be developed only through training. They cannot be improvised overnight. The pitiful aspect of the matter is that our present depleted mine units do not even permit the development of enough key-position men for the nuclei of the expanded war organization. So to the attainment of an adequate organization for mine defense, the concurring understanding of every Coast Artilleryman is at least essential.

Our ex-service officers and men will not always be with us, so that provision must be made to replace them. Accordingly, we maintain Reserve Officers' Training Corps units in various schools, and colleges, and Citizens' Military Training Camps of one month's duration during each summer. We thus prepare the young men who may be called upon to serve in the future, with selected leadership, than which nothing is more necessary to the proper conduct of a successful campaign. Furthermore, through this agency, we shall be able to transmit to coming generations, the results of our experience and not leave them a legacy of neglect and indifference.—Gen. John J. Pershing, Speech at Chicago.

The New Christie Model 1940

Tank and Armored Car Combined

By MAJ. C. C. BENSON, Cavalry

“**W**ALTER CHRISTIE, inventor, for exceptionally meritorious work in inventing, perfecting, and constructing at his own expense, a fighting machine for the armed forces of the United States. Mr. Christie, a private citizen, devoted five years of continuous effort and all of his personal means to perfecting a superior weapon. Despite financial hardships, he steadfastly refused to sell his invention abroad, and resolutely faced discouragements and delays incident to its acceptance by the United States. He has shown extraordinary patriotism and has rendered conspicuous service to the cause of national defense.”

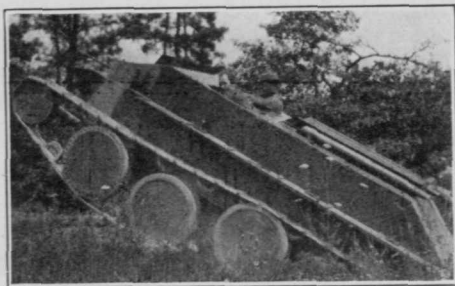
Although the above citation is fictitious and consequently is not recorded in the War Department archives, it may serve as an unofficial appreciation of what Mr. Christie has done. The five years of effort spent on his latest model is by no means the full measure of this inventor's work along similar lines. He had previously built a series of tanks and gun carriers for the War and Navy Departments, and before that had produced a number of successful commercial vehicles.

Twenty-five years ago he built a front-wheel-drive car which he raced with variable success against Barney Oldfield. His ideas were apparently too far ahead of the time, for the front-wheel-drive car, represented in the last New York Show by a dozen foreign models, is just now beginning to pay its way commercially. He also built fire engines which refused to wear out, and heavy duty trucks for many unusual purposes. One of his latest commercial products is a chassis suitable for mounting a yard crane. An automotive job that presents unusual difficulties appeals to Christie and keeps his fertile mind engaged until he can work out a solution.

When the World War focused attention on our need for tanks and gun carriers, Christie interested himself in their construction. He had much to learn, for the problem was not merely to transport a given load, but also to provide for the effective use of the “pay load” in combat. From the start he was impressed with the need for a machine that could travel on either wheels or tracks, and he stuck doggedly to that idea through all of the development work that he carried out under the supervision of the Ordnance Department. They represent the expenditure of approximately a million dollars—a sum which indicates that the Ordnance Department backed Christie's ideas rather heavily. Each of the machines built during this series of experiments had many good points, but always there was some feature that baffled the designer. These machines cannot be classed as failures, and yet no one of them was an outstanding success.

They are interesting now as showing steps in the evolution of the superior fighting machine which Christie has now produced.

Christie went on his own in 1923 with a check for one hundred thousand dollars from the Ordnance Department in his pocket. He was then nearly sixty years old and might well have sat down to rest awhile. However, he did not choose to sit. The tank problem had beaten him in the first campaign, but he refused to accept defeat. He went to work in his own shop with a few skillful helpers and the backing of his own private means. His hundred thousand melted away, and nearly double that sum besides, during the five years that he worked on the new model. Financial folly, perhaps, but Christie was more interested in solving his problem than he was in making money. His confidence in himself was justified,



UP AND OVER

for he has solved the problem and now offers us the new Christie, Model 1940.

Model 1940 is a suitable designation for this machine because it is easily ten years ahead of its time. In building it, Christie applied all the knowledge he had gained in previous work to a new set of basic specifications which he drew up for himself. He saw the need for reserve power in the engine, greater elasticity in the running gear, more speed, and more responsive controls; and set himself the task of building these features into his new machine. He retained the best feature of his old machines—their ability to use wheels on the road and caterpillar tracks across country. Tactically and mechanically his ideas show keen appreciation of what the fighting man needs. In the new design he placed the fighting compartment in front where the driver can see and the gunner can shoot; the power plant he put in rear where it can work efficiently without obstructing the driver's vision or the gunner's aim. His power plant—at present a 338-horsepower Liberty engine—supplies ample reserve power for hard pulls. Instead of having to creep up a slope in low gear, as all our other machines do, the new Christie draws on its reserve and charges uphill in high. This feature is vitally important because modern anti-tank defense relies heavily on the inability of present machines to ascend slopes rapidly

enough to avoid destructive fire from antitank weapons. These weapons have been greatly improved since the World War, but the best of them will have difficulty in hitting a machine that travels across country at forty miles an hour.

To attain such speed it was necessary for Christie to develop and perfect a new type of running gear. Light weight, strength, long life, and extreme flexibility are its outstanding features. By a clever arrangement of powerful springs and strong levers, this new running gear reduces the unsprung weight of the machine to a minimum and enables it to traverse uneven ground rapidly without excessive vibration. At twenty-five miles an hour the machine goes over a twelve-inch log with scarcely a ripple. The elimination of vibration and shocks saves the driving mechanism from rapid deterioration and permits members of the crew to devote more attention to combat missions. The strength and endurance of the track have been proven repeatedly in tests and demonstrations. Last November this machine made a trip on hard surfaced roads from Fort George G. Meade to Gettysburg and return—one hundred and forty-four miles—between breakfast and lunch. On wheels, going to Gettysburg, with only such delays as were incident to traffic, the running time was a little over two hours. On caterpillar tracks, returning from Gettysburg, the running time was two hours and thirty-five minutes—an *average* of nearly twenty-eight miles an hour. To make this average, which is respectable going even for a pleasure car, the machine had to move along at the rate of forty-five miles an hour or better whenever traffic permitted. Running gear that can stand such punishment shows championship quality.

The power and speed of this machine would be of comparatively little use without responsive controls. Here again Christie has scored a distinct success. The driver can operate his steering levers with the pressure of a single finger; he can turn the machine about in half its length going either backwards or forwards, and can cut figure eights at a speed that would shame an international polo pony. The physical effort required to guide this machine, either on wheels or tracks, is so slight that the driver can give most of his attention to what is happening out in front. When he has to change pace or direction he can do so easily, in a flash. Under skillful hands like those of Christie's helper, Leo Anderson, this machine has the agility of a wildcat.

The new Christie is now undergoing thorough tests to determine definitely its powers and limitations. As the main features of these tests have already been published on the screen, in Sunday pictorial sections, and in the daily papers, there seems to be no reason for withholding this information from the Army. The hastily assembled machine that was used in the initial demonstrations at Fort Myer and Fort George G. Meade during October and November of last year, has since been practically rebuilt. Its present appearance is shown in the accompanying photographs. We may

disregard the details of the fighting compartment because they can be changed to meet the particular needs of those who adopt the machine. As it stands, the machine weighs seventeen thousand two hundred pounds. The addition of a turret and heavier guns, if desired, would increase this weight considerably, but the machine has plenty of reserve power and is strong enough to carry anything up to twelve tons without serious alteration. It can be arranged to accommodate several machine guns, a 4-inch

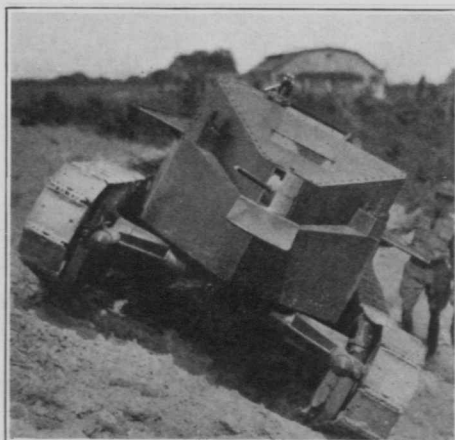


A STIFF CLIMB

mortar, or a 75-mm. gun; and a crew of three men. Its average cruising speed across country is about twenty miles an hour. In speed tests conducted recently under the supervision of American Automobile Association officials, the Christie made forty-two and fifty-five hundredths miles an hour on tracks, and sixty-nine and twenty-three hundredths miles an hour on wheels. The distances were accurately measured and the time was recorded automatically by electrical timing devices. The test runs on tracks were made on a level field of sandy loam; the road tests on a straight-away stretch of concrete highway. We cannot expect to utilize these high rates of speed except in emergency, and then only momentarily; that the machine can attain such speeds without mishap indicates sound principles of construction, and stamina.

In a demonstration given at Fort Meade on July 19th, the Christie showed surprising ability to negotiate a swamp. With cleats (growers)

bolted to the track plates, it waded into muck and water that appeared to be quite impassable, and moved about at will. Unfortunately, the muck was only four feet deep at the worst part of the swamp; consequently, the machine could not fully demonstrate its powers. It crossed the swamp several times with apparent ease, pushing a mass of mud and vegetation ahead of its bow, and leaving a clean cut canal in its wake. With a machine of this kind, landing on an enemy's shore will be less of a gamble than heretofore. Instead of using landing beaches that are protected by underwater barbed wire and machine guns, the attacker may plow his way ashore at some unprotected point and take the enemy in flank or rear.



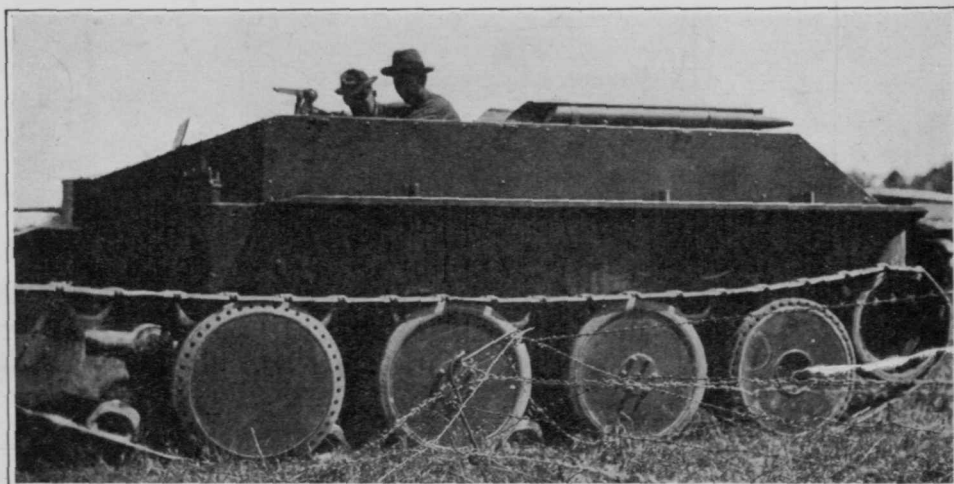
SIDE-HILL WORK

It would be interesting to see what effect a hundred Christie machines, as a part of the attacking force in maneuvers, would have on our plans for defending the Panama canal. Without similar machines at their disposal, the defenders would be seriously handicapped; with them, the plan of defense would be strengthened.

Other tests justify the conclusion that this machine can serve the Army in many ways. It can cross a seven-foot trench, climb a forty-five degree slope, surmount a three-foot vertical wall, crush barbed wire entanglements, and crash through underbrush. It would go roughshod over mesquite and cactus. In bad weather it can operate more effectively than any other combat agency. It can be made impervious to gas attacks. It endows the members of its crew with a sense of power; instead of being isolated individuals subject to the manifold terrors of the battlefield, they become a team in which each man raises the morale of his companions. They have confidence in the ability of their machine to surmount great obstacles, and in their own ability to carry the fight to the enemy. In estimating the combat value of this machine, we should consider fully its

effect upon morale—the human element is still supreme. If we consider the Christie simply as a power plant, with highly efficient running gear and certain space that can be utilized for the “pay load,” its possible uses are more easily understood. It becomes a powerful tractor, a cross-country cargo carrier, or a front-line fighting machine, according to details of superstructure determined by the branches concerned. A single type of standard chassis can be made to serve all branches.

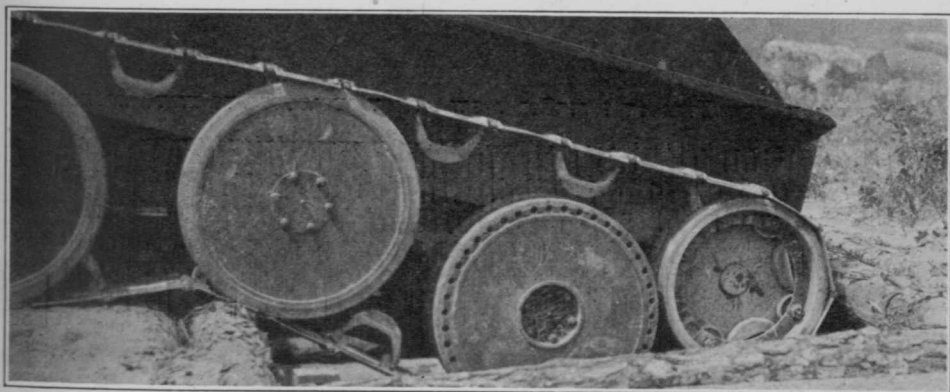
First let us consider some of the combat uses. These will naturally depend upon the chief characteristics of the weapon—mobility, partial protection for the crew, fire power, and shock action. The most obvious pur-



THROUGH THE WIRE

pose of this weapon is to destroy the enemy's tanks; for until our troops have reasonable security against tank attacks, they cannot operate freely. We oppose the enemy's aircraft primarily with aircraft of our own; his cavalry with cavalry; and similarly, his tanks with tanks. With its speed, power, and all-around fighting ability, the Christie would fill admirably the rôle of tank-destroyer. When used in this capacity, it would lend valuable assistance to all branches. Cavalry, with its tactical doctrine built on mobility, fire power, and shock, is naturally akin to the Christie. The cavalry needs armored cars for security and reconnaissance work, and tanks that are fast enough to accompany the maneuvering mass, or even extend its operations in combat. For exploitation, pursuit, and raids, the Christie would be invaluable to cavalry. It could help materially to protect cavalry, on the march or in bivouac, from the enemy's tanks and aircraft. Infantry needs similar protection on the march and in camp; in combat, it needs tanks to precede the foot troops, to work in the closest cooperation with them, and to exploit their successes. A fast machine like

the Christie can cover much ground laterally, and can do work for the Infantry far more thoroughly than can a slow one. Under modern conditions, the fast machine will be operating long after the slow one has been destroyed by anti-tank fire. The smaller Coast Artillery antiaircraft weapons, and searchlights, if mounted on the Christie chassis, would acquire strategical and tactical mobility that would double their usefulness. The heaviest artillery pieces could be moved about and supplied with ammunition far more rapidly than is possible with present means. The new Chemical Warfare mortar, a remarkable weapon of great power, would find many new uses if given the cross-country mobility that the Christie can provide. This machine could be used with terrible effect to carry tons of casualty-producing chemical agents into the enemy's lines. One hundred

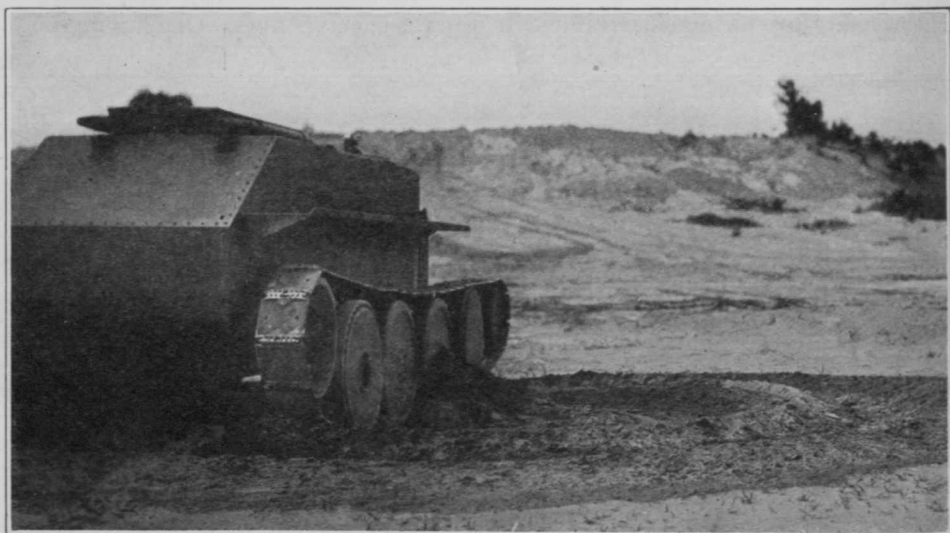


REAL FLEXIBILITY OVER BUMPS

men with fifty Christie machines could put over a gas attack that would dwarf the most powerful concentrations used during the World War, and there would be no laborious preparations to warn the enemy of his danger. Driving by compass, they could operate at night, in fog or smoke, in sleet or rain; and whether our chemically equipped air forces were available or not, the enemy would get no rest. The Field Artillery could mount a 75-mm. gun on this chassis, and thus solve the vexing problem of providing a self-propelled gun for special purposes. By standardizing the bulk of the automotive combat vehicles in any mechanized force that may be created, the Christie chassis would greatly simplify all matters connected with procurement, supply, replacement, repair, maintenance, control, and operations of the force as a whole. Standardization of the fighting machine chassis is a vitally important factor in the efficiency of a mechanized force. This fact bears directly upon the selection of automotive equipment for units of all branches that will participate in the formation of our future mechanized divisions.

Suitable superstructure would convert the Christie into a useful cargo

carrier. Men, machine guns, ammunition, rations, gasoline, oil, grease, and supplies of all kinds, could be transported rapidly on the road and across country. Supply dumps could be farther to the rear without jeopardizing efficient service, the road net restrictions would be less binding, reloading would be minimized, and carrying parties would be less in demand. A man with fifty pounds on his back, or a pack mule with two hundred, can go through woods and over rocks where no machine could operate. In the open, a single Christie could deliver more supplies in one trip than could be loaded on a whole pack train. In swampy ground where a mule or man would bog down, the Christie would pull through. With fleets of cross-



A QUICK TURN

country supply vehicles of this type, the Germans in their drive of March, 1918, could have smashed through the Allied lines. Our own operations in the Argonne, where roads were simply obliterated, could have retained much of their initial impetus had it been possible to hasten supplies forward on cross-country cargo carriers. The Engineers, Signal Corps, Medical Corps, and all supply agencies whose activities carry them well forward into the combat zone, could find many uses for a machine of this type.

Tactical application should accompany technical progress in the development of new weapons. We now have an opportunity to secure a fast cross-country fighting machine which I believe is the best in the world—the Model 1940 Christie. To fit a weapon of this type into the combat team, for either close cooperation or independent action, will require drastic changes in our present combat tactics. What changes will be necessary cannot be fully determined until war tests our theories. In the meantime, the subject deserves serious study. The Infantry School has begun to study

problems that involve the employment of a mechanized brigade, and despite serious handicaps, has made considerable progress in its efforts to stimulate thought on this subject. The Infantry is vitally concerned not only in the offensive uses of the new weapon, but also with defense against it. The introduction of this fighting machine will affect all combat branches and supply agencies. No one branch or service can solve all phases of the problems it presents. Christie has given us in his new machine more technical progress than Great Britain has secured during the past ten years from the expenditure of some sixty-five million dollars. However, in tactical methods and practical experience with fast fighting machines, the British army is far ahead of us. Technical excellence will avail us little until tactical thought in our service as a whole catches up with the procession.

*To avoid the military consequences of militarism and to prepare the country to meet a state of war, particularly at its commencement, with honor and safety, much must depend upon the organization of our military peace establishments. * * * To give such an organization, the leading principles in its organization ought to be, that at the commencement of hostilities there should be nothing either new to model or to create. The only difference, consequently, between the peace and the war formation of the army, ought to be in the increased magnitude of the latter, and the only change in passing from the former to the latter, should consist in giving to it the augmentation which will then be necessary.—James C. Calhoun, December, 1820.*



FRONT ROW, LEFT TO RIGHT: MAJORS WINSLOW, PITZ, HORSFALL, GLASSBURN, AND CHAPIN. BACK ROW: LIEUTENANTS HALL AND COLE; CAPTAINS SCOTT AND HALL; LIEUTENANTS MCCARTHY AND ANDERSON

The Coast Artillery Advanced R. O. T. C. at Fort Monroe, Virginia, 1929

By MAJ. R. P. GLASSBURN, C. A. C.

THE 1929 camp at Fort Monroe was almost precisely twice the size of that of 1928. The increase was due to the augmented delegations from the University of Delaware and from Fordham University, and to the return of the 1st Corps Area, after a lapse of a year, to its previous practice of sending its Coast Artillery units to Fort Monroe, instead of conducting a camp of its own. Considering the superior facilities for training at Fort Monroe, this custom should be encouraged. Consequently, the camp was composed of units from the Universities of Delaware, Kansas, New Hampshire, and Pittsburgh, Fordham University, Massachusetts Institute of Technology, and Virginia Polytechnic Institute. The Kansas component consisted of two men who, preferring Fort Monroe to the camp conducted in their own corps area, paid the difference in cost of transportation. The average strength throughout camp approximated two hundred students.

Most of the officers detailed to the camp were on hand by June 10th, none too soon to complete the preliminary dispositions necessary for reception of the students, their equipping, their organization into batteries, and the preparation of the training schedule. Although the students were not due to arrive until the 14th, about eight arrived two days early, and more on the 13th. Fortunately, previous experience with R. O. T. C. camps had taught the officers on hand to be prepared for such an eventuality, so no student had to spend the night sitting on a curbstone. The first two days of the official camp period were spent in organization, the issue of equipment, vaccinations, physical examinations, swimming tests, and the cleaning of equipment. Some of this preliminary work, due to late arrivals, overflowed into the first few days of the instruction period proper.

Of course, Camp No. 2 was occupied, as in previous years. To those unfamiliar with Fort Monroe it may be said that the camp is composed of war barracks situated on the beach, with the view over the bay pleasingly interrupted, in the foreground, by a gun shed. On the side opposite from the beach runs the moat of the old fort. Since the beginning of R. O. T. C. camps the moat has served the students as an instrument for their own student brand of summary, unofficial discipline. From behind the gun shed, during camp, peeped the moribund Model T Fords, owned by students which, by their running at all, revived faith in miracles. Incidentally, these same students' cars present a growing problem. On the one hand they are pregnant with possible trouble. When a student goes collegiate in one it usually means that some tired officer must get out of bed to rescue him—for the fair name of R. O. T. C.—from the clutches of the lay. On the other hand, instructive trips are a part of the camp program each year. But our poverty-stricken government cannot afford, as a rule,

to furnish all the motor transport needed for the trips. So appeal must be made to student car-owners to come to their country's aid. An effective curb on reckless driving was accomplished by impounding the offending car, for a week or more, on a lonely sand plot, close under the watchful eye of the adjutant.

Getting back to organization, the students were grouped into two batteries. All the Virginia Polytechnic and Pittsburgh men went into "A"; the rest into "B." The camp was administered by the following personnel:

Maj. Lloyd P. Horsfall, C. A. C. (D. O. L.), University of Pittsburgh, Camp Commander.

Maj. Robert P. Glassburn, C. A. C. (D. O. L.), University of Delaware, Executive Officer and Publicity Officer.

Maj. Hugo E. Pitz, C. A. C. (D. O. L.), University of New Hampshire, Camp Inspector, and Athletic and Recreation Officer.

Maj. S. S. Winslow, C. A. C. (D. O. L.), Massachusetts Institute of Technology, Senior Instructor.

Maj. Willis M. Chapin, C. A. C. (D. O. L.), Virginia Polytechnic Institute, Adjutant.

Capt. John L. Scott, C. A. C. (D. O. L.), Virginia Polytechnic Institute, Commanding Officer, Battery "A."

Capt. Vernon W. Hall, C. A. C. (D. O. L.), Massachusetts Institute of Technology, Commanding Officer, Battery "B."

*Chap. James L. McBride, U. S. A., Chaplain.

1st Lieut. William J. McCarthy, C. A. C. (D. O. L.), University of Pittsburgh, Battery "A."

1st Lieut. Paul W. Cole, C. A. C. (D. O. L.), University of Pittsburgh, Battery "B."

1st Lieut. G. B. Anderson, C. A. C. (D. O. L.), University of New Hampshire, Battery "B."

*1st Lieut. Harry L. Calvin, Q. M. C., Camp Supply Officer.

*1st Lieut. Charles M. Wolff, 12th C. A., Camp Mess Officer.

Tech. Sergt. Dan T. Higgins, D. E. M. L., University of Pittsburgh, Battery "A."

Staff Sergt. Patrick Hodge, D. E. M. L., University of New Hampshire, Battery "A."

Sergt. Fred H. Brown, D. E. M. L., University of New Hampshire, Battery "B."

Sergt. John B. Fitzgerald, D. E. M. L., Massachusetts Institute of Technology, Battery "B."

Sergt. Frank Moore, D. E. M. L., Virginia Polytechnic Institute, Battery "A."

Sergt. Walter J. Watters, D. E. M. L., University of Delaware, Battery "B."

Of the above, those marked with an asterisk were members of the permanent garrison performing, at the same time, duties not pertinent to the camp. The following-named Reserve officers each served two weeks with Battery "A."

2nd Lieut. G. V. Hall, C. A. Res.

2nd Lieut. F. A. Hines, C. A. Res.

2nd Lieut. W. A. Matthews, C. A. Res.

Each battery occupied three sets of barracks, with a sergeant, D. E. M. L., in charge of each set. So far as possible men from the same institution were placed in the same squad-room, and to a set of barracks presided over by a sergeant from their school. Noncommissioned officers in charge of quarters were detailed, by roster, from the students, as were, also, table waiters for the two battery messes. Cooks and mess sergeants were supplied by the organizations stationed at Fort Monroe. Until the last two weeks of camp, kitchen police were civilians, hired locally. When funds ran low students did the scullery-maiding. This year the innovation of having one mess officer for all the various camps at the fort was tried. The results did not recommend it. The mess compared very unfavorably with that of last year, which was operated by an officer of the camp staff.

A camp supply officer was detailed from post personnel, as previously indicated. As he insisted upon all property issued being signed for by the camp adjutant, he seemed an unnecessary complication. Equally satisfactory results could have been obtained by transferring all the camp property, including that in the camp store-room, at the very start to an officer of the camp staff.

Camp headquarters were manned by a staff sergeant, three clerks, and two musicians furnished from post personnel. On completion of camp all records were turned in to the 61st Coast Artillery. Last year's records, so turned over, were a valuable source of information to officers new to the camp. The importance of preserving complete and accurate records cannot be over-emphasized.

Sick call was held at the Camp Infirmary which was manned by a sergeant and one man from the post hospital. Beds were provided there for emergency cases, or for cases of temporary indisposition. All cases requiring hospitalization were transferred to the post hospital. Health was excellent throughout camp.

Publicity occupies a great deal of attention at camps. It helps to acquaint the home folks with the doings of their sons, and the purposes of the camp. A camp paper, *The Spotter*, printed at the Coast Artillery School press, was issued weekly. The staff was composed of students, under the supervision of the publicity officer. The theory was that the paper was to be all-student. Actually, the publicity officer had to write a gen-

erous share of it, and to plan most of the rest. The six copies were bound, at the close of camp, so that each student would have a more-or-less permanent record of the camp. Contact with the local press was maintained daily through their local representatives. In addition, over one hundred and forty home town newspapers were kept in contact by means of mimeographed releases.

Recreation was a problem. It is hard to maintain an even balance between spontaneous diversion, and the "Be-joyful-damn-you-or-I'll-break-your-neck" system. In other words, recreation can be over-organized. During the presence of the first class from West Point, at Camp No. 1, the dances held for the cadets were open to the R. O. T. C. students. After the departure of the West Pointers weekly dances were held at the school for the students. Of course, there had to be a rigid system of chaperonage, a system which is not found at the college dances to which the students are accustomed. Less than half the students attended. It may be a low suspicion, but the idea was prevalent that this was because chances for a bit of petting were greater elsewhere. The same old conflict between training and athletics occurred. In the Army we beat the drum of athletics, athletics, the big morale-maker; but we content ourselves with sound, and fury. Some zealous G-3 always steps onto the scene with training requirements that make impossible an effective athletic schedule. Students who have spent from 7:30 a. m. to 4:00 p. m. daily, on a strenuous training program are in neither the mental mood, nor the physical state, to leap joyfully into athletics. So the baseball series died a-borning; and the tennis tournament ended in a stalemate of indifference. A track and field meet was held the last Monday of camp, battery against battery, with honors going to Battery "A." Very little preparatory training was evident in the results. Riding, and swimming, were the most popular local diversions with the students. Wednesday afternoons, and week-ends, they were left, mainly, to their own devices, and there is little doubt that many of those devices were charged with interest, for it does not take a lot of young collegians long to develop the possibilities of such a happy hunting ground as Tidewater Virginia. One fishing trip was carried through with no great grief to the fish. The students were taken to witness the launching of the motor-ship "Pennsylvania," at the yard of the Newport News Shipbuilding Company. Prizes for the track and field meet, small arms firing, and military efficiency, came from donations by business men of the Peninsula, and from funds derived from the branch Post Exchange established in camp. *The Spotter* also contributed a small profit.

Training, the principal purpose of the camp, covered close order infantry drill, ceremonies, hygiene and first aid, tent pitching, seacoast armament, antiaircraft artillery, and small arms target practice. The intention was to fire the 12-inch mortars. After several days' instruction on them a change had to be made, due to shortage in target practice am-

munition for that armament. Battery "B" was transferred to the 12-inch rifles, and "A" to the 155-mm. G. P. F. guns.

The first week was devoted to infantry, sea-coast armament, lectures on sex hygiene and first aid, and observation of the practices by the West Point cadets on the 10-inch rifles, and 3-inch antiaircraft guns. The second week was similar, in its beginnings, to the first, but ending in service practice, for both batteries, with their respective armament assignments. No records were endangered, yet the results were highly creditable, considering the short time the students had had on the matériel.

From the 1st of July small arms practice occupied half of each day. Infantry drill continued to the end of camp, diminishing to drill every other day after the first week of July. It had been intended to fire adjustment problems with the 75-mm. guns during that same week. Again ammunition allowances were discovered to be playing out of tune with training. So the adjustment problems were fired with sub-caliber. From the viewpoint of the students this was as interesting and instructive work as any given during the camp. They felt that they had more actual direction of what was happening.

The next two weeks of camp were given over to the antiaircraft artillery, with, of course, small arms target practice continuing. One morning was devoted to that dearest of old Army hobbies, shelter-tent pitching. There must be something in the Constitution that requires it. Sometime, at my leisure, I intend to look it up.

Virginia Polytechnic Institute led the camp in musketry. With the pistol the University of Delaware and Massachusetts Institute of Technology tied for first place. Very little interest was displayed by the students in musketry. On the contrary, pistol firing was the only military duty in which they sought over-time participation. And none of them were from Chicago! There should be a moral in this. I think it is that musketry should be taken off the program. In the main the students are destined to be officers in units, the personal weapon of which will be the pistol. Why take time away from antiaircraft machine guns, for example, to teach musketry?

The final three days of camp were filled by a track and field meet, won by Battery "A," with Virginia Polytechnic Institute, furnishing most of the punch, a swimming meet, in which Battery "B" triumphed, with the University of Delaware the spear-head of the attack; visitors' day; and return of property and equipment, and paying-off. Tuesday, July 23d was visitors' day. A review was held in the morning in honor of the civic bodies and business firms which had contributed generously toward the purchase of prizes for military and athletic excellence. Following the review prizes for military merit were awarded. Then all adjourned, via the quartermaster train, to Battery Anderson, where the most prominent digestions of Tidewater Virginia, were assailed with beans, potato salad,

lemonade, and ice cream. The address of welcome was made by Col. George A. Nugent, C. A. C., commanding the Harbor Defenses of Chesapeake Bay. After luncheon prizes for athletic excellence were presented, the presentations, in each case, being made by a representative of the donor. After a little amateur vaudeville by the students the festive occasion became history.

The last meal served in camp was breakfast on Thursday, July 25th, after which a long line of battered automobiles, more horrendously pathetic than Rosinante, carried the students away from the most important six weeks of the entire R. O. T. C. course. Everyone, I believe, was benefited in health. Most were better soldiers than they were on arrival. All had demonstrated their true qualities, so that those P. M. S. & T.'s fortunate enough to be present at the camp had had full opportunity to reach correct estimates of the individuals in their respective units.

The technical training was, on the whole, a satisfactory gain. I believe that time devoted to musketry and to tent-pitching could have been spent to greater profit on pistol marksmanship, adjustment firing, and antiaircraft artillery. Discipline did not satisfy this acidulous scribe. Military courtesy was lax, partly due to camp headquarters, with its endless procession of passing officers, being too close to student barracks. I believe that students should have it made clear to them from the start that a high state of discipline would be maintained, and why it would be maintained. Guard duty was so performed as to be harmful rather than helpful, from a training point of view. There must be protection of property, if only to prevent the pilfering from barracks which has marred some previous camps. If guard duty is to be done by the students it should be done as prescribed by the Training Regulations, and in accordance with the traditions of the Service. If such a course be considered too intrusive upon technical training, then no guard duty should be done by students, and property protection should be accomplished either by increasing the number of students detailed in charge of quarters, by an enlisted guard, or by paid watchmen.

In spite of the above criticisms, all intended to be constructive, I believe that the camp fulfilled successfully its mission.

*The possibility of war, though vague and small, exists. * * * In the meantime it is foolish to behave as though we lived in a warless world.—New York Globe.*

Combined C. M. T. C.-Reserve Training

PERHAPS it is not realized, except by those directly connected with it, that the combined C. M. T. C.-Reserve training given during the month of July was an experiment which may be far reaching in its influence on the scheme for training components of the Army of the United States other than the Regular Army.

A casual reading of the National Defense Act passed shortly after the war is enough to show that training has not been conducted as contemplated in this act. It not only provided for an Officers Reserve Corps, but for an Enlisted Reserve Corps. It was intended that Reserve regiments would be organized with both commissioned and enlisted personnel and that the annual training would be conducted in a manner somewhat similar to that of the National Guard. This has never been the case in practice. Due to lack of appropriations for the purpose it has not been possible to provide training for enlisted reservists. There has been no check on enlistments in the Reserve but since no active duty training can be offered there is no incentive for enlisting other than to satisfy the C. M. T. C. requirement of one year's service in a component of the Army of the United States prior to obtaining a commission. As a result the Reserve is similar to a Mexican revolutionist army from the point of view of rank—it has ten times as many officers as privates. The Reserve regiments cannot function as organizations during active duty training and unit training has been largely a joke.

Heretofore Reserve regiments have been trained with Regular Army units as associates—making use of the enlisted personnel and matériel of the regular unit. Officers of the Regular Army unit have acted as instructors. There have been many complaints on the part of the Reserve as to this form of training. Some of them are mentioned here with no attempt made to indicate their justice. It has been said that Reserve officers receive the same training year after year, that it is becoming monotonous, and will eventually result in a loss of interest. Some say that the training given is in the form of a demonstration rather than an actual performance of the duties ordinarily associated with their grade; and there is not enough responsibility placed on the Reserve officer; that he is not made to put out and can drift through a training period actually learning little. Others say that the regular troops available for duty with the Reserve regiments are so few that it requires the greatest stretch of the imagination to visualize a regiment in training.

There are many arguments in favor of combining C. M. T. C. and Reserve training. In the first place the work of the Regular Army units and their officers is reduced thereby. The summer training period is very intensive. The greatest amount of training possible is desired for the visiting firemen who appear in June, July, August, and sometimes during Septem-

ber. During this period the West Point Cadets, the R. O. T. C., the C. M. T. C., the National Guard, and unit after unit of Reserves appear for their brief turn upon the stage and because the time is short for each it results in forcible feeding of a most intensive nature. It's not so bad for those who come to train. It means two weeks or a month for them at the most. But to the regular unit it becomes a continual grind. They see their own unit training neglected, their specialists lost without opportunity to train replacements, their equipment going to rack and ruin and the best part (the summer months) of the year for training their own unit lost so far as they are concerned. They contract brain fag and the arrival of a new Reserve unit for training does not cause any applause. By combining C. M. T. C. and Reserve training considerable overhead is saved. It is probably not more difficult for the regular officer detailed as an instructor to perform his duties instructing C. M. T. C. and Reserves in combination than to instruct each separately. An entire month has been saved by combining training at one post which comes to mind. This month might be utilized for additional training to be given the regular unit. It might permit an officer to apply for a month's leave so that he can spend it with his family and at a time of year when least expensive to take. As it is now the troop officer cannot take leave during the summer on account of the summer training and he can't take it during the winter on account of the children's school. Some consideration should be given the officer's morale. He does not do his best when he is overworked.

From the Reserve viewpoint there are many advantages. The Reserve unit is concerned with the C. M. T. C. candidates. In cross section, they are similar to the volunteers and draftees who will be ushered into the regiment on M day. They know little or nothing of Coast Artillery. They represent the raw product which must be molded into soldiers in the shortest possible time. There is a mark for the Reserve unit to shoot at! There is gradually impressed a realization that an officer has to know his stuff. In some cases ignorance of the duties which a captain is called upon to perform may be pitifully apparent. There is responsibility and some to spare.

Enlisted men (C. M. T. C.) are present in sufficient number to properly represent a regiment. There is no lack of personnel at infantry or artillery drill. There are men for all positions. A full-sized battery is present for close order drill and each officer gets his chance to function often in command of his appropriate unit. The direct contact with the men in itself is an education to the Reserve officer from the human standpoint. He learns by experience more of the workings of the human mind. His knowledge of human nature is increased. He learns from outward manifestations to recognize mental reactions which have an important bearing on the development of an efficient organization.

There is also something to be said against combined training. Some

say, and say it vociferously, that the C. M. T. C. will suffer. It is not a throw-off on the Reserve to say that this is probably true. The same degree of proficiency as an instructor cannot be expected from the Reserve as the Regular. It should not be expected in an officer who is present for only two weeks' actual training per year. However this point has been greatly exaggerated. The Regular Army assists in the training to whatever degree seems necessary. The reserve unit cannot fail with the regular officers to back it up in the pinches. Then, too, consider the two classes trained. The Reserve is a component of the Army, the C. M. T. C. candidates are civilians. They are present for one month, have no connection with the military establishment for the balance of the year and may never be seen again. From the military standpoint any training given them is bread cast upon the water. This is in no way a slur upon the C. M. T. C. or an argument for its abolishment. Its accomplishments are well known and today it attracts more popular interest and favorable comment than any other activity connected with the military establishment. C. M. T. C. training is only partially military. The Reserve should receive preference in training because it has an exact status in our defense system and its importance demands that preference.

A possible objection to combine training of C. M. T. C. and Reserve is that the Reserve officers of field rank may not be sufficiently occupied. C. M. T. C. training is mostly elemental. It is conducted by battery and platoon rather than by battalions and regiments. Field officers supervise the training but this supervision does not require all their time. It is possible to change the C. M. T. C. training schedule so as to offer senior officers more opportunity to function in command. It is possible to utilize the afternoon periods, when the C. M. T. C. is engaged in nonmilitary activities, for higher tactical training of field officers in their duties. By including periods devoted to group commander's drill in the schedule this objection could be largely overcome.

The most important objection which can be made is based on the difference in the length of the training periods of the C. M. T. C. and Reserve. Due to the two weeks' Reserve period it is not possible to have the same officers as instructors throughout the C. M. T. camp. It is even worse than that. The Reserve officer cannot take over the duties of his predecessor without observing for a few days and tuning in on the schedule. It is necessary to overlap the various reserve groups in order to preserve the continuity and to make the training smoothly progressive. The Regular Army officers on duty for the entire C. M. T. C. must be depended upon to synchronize and coordinate during these transition periods.

As a final objection it has been hinted that the Reserve will not favor continued training with the C. M. T. C. A two weeks' tour training C. M. T. C. is not a sinecure. It is two weeks at hard labor. Is it possible that the Reserve will be inclined to seek training at times other than

during the C. M. T. C. period? This question can be answered in the negative. Those reserve officers who apply for training have a serious attitude towards their obligations as Reserve officers. They are more often heard to complain that the training is not intensive enough; that two weeks is a very short period to obtain knowledge of the military profession; and that they do not like to feel that they are wasting their time. In the course of the C. M. T. C. the tangible results of their own efforts can be seen. There is no spur equal to the realization of accomplishment. The Reserve will not flunk this job.

As this is written C. M. T. Camps are in progress throughout the United States. In most of them Reserve units are conducting the training with the advice and assistance of Regular officers acting as inspector-instructors. The experiment may be successful or not. The failure in some cases may be due to lack of ability on the part of those in charge, failure to anticipate conditions which result, or absence of sympathy with the system of training. In other cases it will probably be successful because those in charge planned to make it so. But the real story is told after it is finished. It is by examining the results of each camp that the efficiency of C. M. T. C. training by Reserve units can be determined and the degree of success estimated. These results will determine whether it is worth while to continue. It is hoped that this article will induce some who participated to write upon the subject from the viewpoint of those who actually did it rather than accept the opinion of one who only hoped for its success.

Too much praise cannot be given the reserve officers who volunteer to train the raw material. They do not spare themselves in performing a duty which the war taught them must be taken up if the country is to have a dependable reinforcement for the first line of defense.—New York Times.

These Grievous Errors or The Sinking of Onagarchus

By CAPT. HOMER CASE, C. A. C.

EDITOR'S NOTE: *You remember the article by Onagarchus in the last issue of the JOURNAL. Little did we reckon that it would call forth the following learned and sufficient defense of the D. A. P. E. (whatever that is). But since Captain Case implies in the beginning of his article that we might have written it ourselves we rise to deny it. We don't know enough to have written either one. We have always gotten our kick in watching them leave and watching them come down. What happened in between was to us just like stepping through the looking glass. It is probably fortunate that there are some who are trying to find out just what happens while they are "on the way." A close friend of ours DID write it. We didn't ask him to do it. He's LIKE that. Our own views on this subject, if it is of interest, are expressed by the following lines:*

*A centipede was happy till
One day a toad in fun
Said: "Which leg moves after which?"
Which raised her doubts to such a pitch
She fell exhausted in the ditch
And could not walk nor run.*

THE naive criticisms of Training Regulations No. 435-55 by "Onagarchus" in the August columns of the COAST ARTILLERY JOURNAL lead a suspicious reader to suspect that a *very close* friend of the Editor has set up a dummy battery to draw the fire of the enemy. So any rebuttal must be with tongue in cheek and with the self conscious feeling of making a defense of the multiplication table.

JUST WHAT IS THE D. A. P. E. ANYHOW?

If several shots are fired at the same elevation they will not fall in the same hole. This very familiar phenomenon of dispersion must have some measure, and that measure can best be expressed in terms of the magnitude of the dispersion. The artillery services in our army uses the "probable error." While this term is somewhat confusing because the mean error must be multiplied by the mathematically obscure fraction, 0.845, it has the practical advantage of giving us a unit such that one-half of all shots fired may be expected to fall within one probable error on each side of the center of impact. The Navy uses two units. One is the "pattern," which is the distance in yards between the shot with the shortest range and the shot with the longest range. New regulations for our branch soon to be published will use this term. The other unit is the "mean error," which is the same as we always determine as a step in determining the probable error.

Our pseudo-Greek author sets up a false premise when he says, "That the error of a single shot is zero." The error of any shot is the distance of that shot from the *true* center of impact. The true center of impact is never known (for we can never fire an infinite number of shots), but as

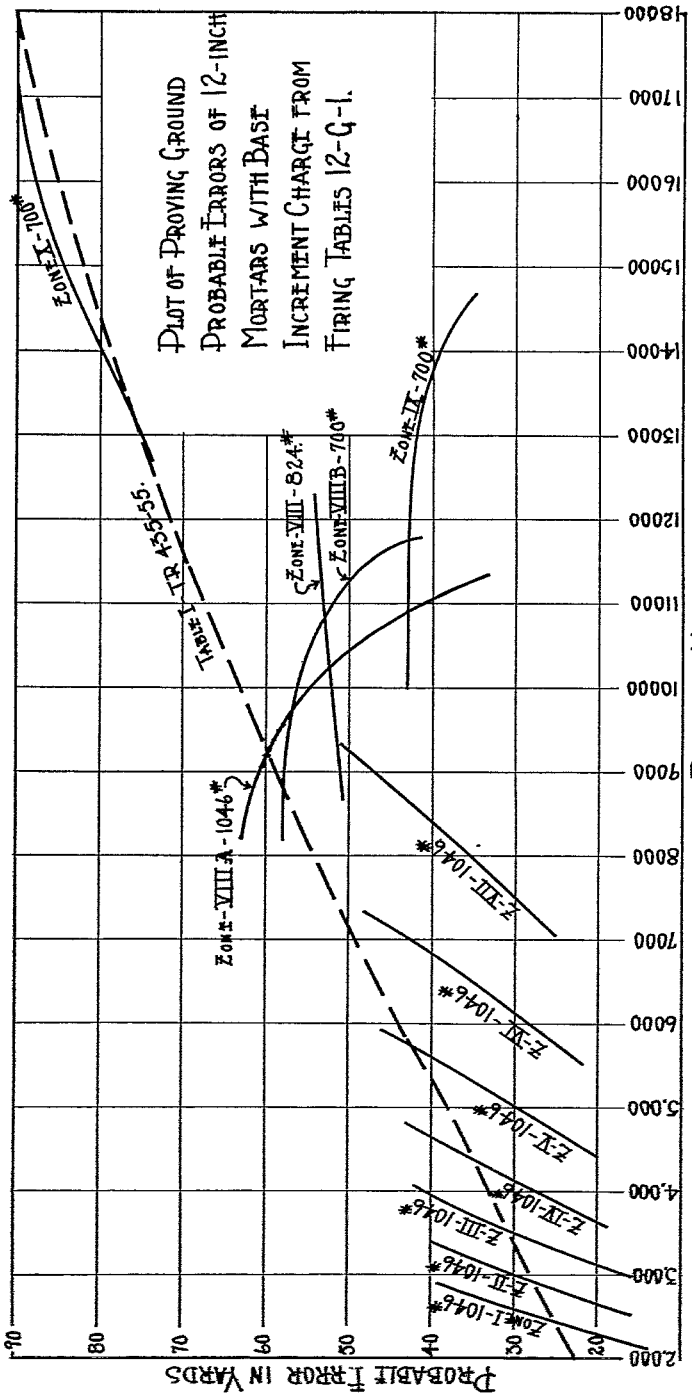


Fig. 1

the number of shots increases, its position is determined with greater and greater exactness, so that even with a relatively small number we know its position within a reasonable limit. For the first shot the position of the *true* center of impact is at a fixed, though unknown, point. The error of this shot is therefore not zero, but indeterminate. After 100 shots the *true* center of impact has only been located with such accuracy that it may be said that half the time it is no farther from the *apparent* center of impact (the mean point of fall of the one hundred shots) than D. A. P. E. $\sqrt{100}$. If the D. A. P. E. is one hundred yards the probable error of the location of the *true* center of impact is therefore ten yards. So that the error of the one hundred and first shot is also an indeterminate, though within narrower limits. Nothing is certain in gunfire.

The objection to "plotting shots fired at different elevations, different times, different azimuths as though they were fired at a single fixed point" is theoretically sound but practically hair splitting. A well conducted firing at a moving target of from three to eight minutes shows such relatively small differences in elevation and azimuth that the effect on the probable error is much smaller than the errors in the exact point of fall of the shots. And as for time, the shots are fired much faster than at the proving grounds where the most exact laboratory conditions exist. Of all the non-standard ballistic conditions that vary with time, azimuth and elevation, wind is the only important one, since all others are corrected for with reasonable exactness. In good weather wind varies little from hour to hour and less from minute to minute. The principal disturbances are the puffs of wind that vary almost from second to second. And these will affect shots fired ten seconds apart almost as much as those fired ten minutes apart. They are non-systematic in character and contribute in part to dispersion. Differences in azimuths of fire are corrected for by fire control instruments and differences in maximum ordinates by the use of ballistic winds. In both cases these corrections are only reasonable approximations, but the residual errors are not large compared to the probable error and tend to remain systematic in which case they are corrected out by adjustment of fire.

The dispersion of a target practice must be measured if it is to be scored. The D. A. P. E. is substantially correct even if the elevation, azimuth, and time, vary. No better unit (nor one that does not carry the same objections) has been suggested. If the accuracy of this unit is less for eight shots than it is for thirty-six, that is unfortunate, but only the penalty that must be paid for shooting guns that scatter.

FIELD VS. PROVING GROUND PROBABLE ERROR

Any distinction between field and proving ground probable errors is purely of definition, and represents somebody's opinion. No text book on ballistics or artillery can be found that discusses this point. Firing tables

usually give proving ground probable errors, though in the case of the 155-mm. gun the field probable error is given, being 1.5 times that obtained at the proving ground. But this ratio is not borne out by firings in the field. It is a matter of common knowledge that many target practices at moving targets show D. A. P. E.'s smaller than those obtained during proof firings. For the thirty-two 155-mm. gun practices for 1928 thirteen showed a D. A. P. E. smaller than the *proving ground* probable error, while *all but one* showed this value to be less than the *field* probable error as listed in the firing tables. This is hard to explain. In the first place four guns were used in each practice so that the computed D. A. P. E. includes the errors in calibration. The shots were fired with extreme rapidity and elevations set by four different men, both of which factors would make exact and uniform laying improbable. Ramming was probably not uniform from gun to gun. There are two probable explanations: These guns shoot better than the Ordnance think they do and the loss of accuracy in the field is much smaller than expected.

PROBABILITY TABLES ARE TOO PRECISE

This self-appointed critic says that there are too many decimal places in the tables of probability factors. From one point of view this is true, which is shown by the fact that the first table is carried to four decimal places while the second is carried to two only. These tables were lifted directly from TR 435-280; and while four decimal places is more than needed in computing target practice scores, there are many problems arising in probability where this degree of accuracy is necessary. You can always drop decimal places but you can never guess the missing ones. The form for computing the score shows the number of decimal places that should be used. And the one decimal place suggested is not enough. To use one decimal place to score a practice where deviations are measured with an accurate camera is like weighing a new born babe on hay scales.

An engineer selects the tool that will best serve his purpose. The slide rule is used to determine the output of a motor, the orientation officer must use his seven place Vega, while the astronomer has his fourteen place log table. But when in doubt, text books on "Precision of Measurements" tell the student to use the more precise methods and discard unnecessary decimals at the end of the solution.

FICKLE MORTARS

The mortar probable error situation is nothing less than a "bug-house puzzle." And the person charged with arriving at the probable errors published in Table I of TR 435-55 must have known it. There are exactly twenty-five different combinations of guns, projectiles, and powder charges for this short snouted antediluvian. To list them all would make Table I

cover several more pages. Let us look at the probable error values given in the firing tables for these different zones.

Figure I shows the proving ground probable errors for the base increment charges as taken from the firing tables. A fine set of curlicues they turn out to be. How they shatter the fine spun theories of the original iconoclast. And still these values are as determined by experimental firings at the cost of tens of thousands of dollars. In the first six zones the probable errors of the 1046-pound projectile increase directly as the range, or inversely as the elevation. The higher the elevation the smaller the probable error. And this is consistent with the theories of Ordnance ballistic experts, who state that if the wind can be eliminated the probable error for high angle fire approaches zero as a limit as the elevations approach ninety degrees. And this is quite logical. The total probable error in range is usually divided into three parts—the probable error in muzzle velocity, the probable error in angle of departure, and probable error in ballistic coefficient. The first named is the principal cause of dispersion and at ninety degrees elevation, variations in muzzle velocity do not effect range, but merely make the projectile go higher or less high into the air. The same is true for variations in the ballistic coefficient, which includes variations in shape, location of the center of gravity, and many other similar characteristics that determine the efficiency of the projectile in overcoming air resistance. This leaves the variations in angles of departure as the only thing that affects range at ninety degrees elevation. These variations are usually small and have little effect.

Having found that practice and theory coincide, we then learn that anything is liable to happen, and does. In Zone VIIIA this self same projectile shows a curve for probable error that is just the opposite in nature from those for preceding zones. The higher the elevation the larger the probable error. This occurs when the muzzle velocity increases from ten hundred and fifty to twelve hundred foot-seconds, or when it crosses the velocity of sound. This probably has nothing to do with it (for the mean velocity of the projectile in Zone VIIIA is much less than that of sound), but this is the only unusual thing that presents itself. For Zone VIII the eight hundred and twenty four pound projectile shows the probable error remaining about constant, whatever the elevation. In one zone the probable errors of the seven hundred pound projectile follow the law of the lower zones but in the other two, contrariwise. Now these are the official firing tables published by the Ordnance Department. The terrible inconsistencies in probable errors must have been known by their experts. Perhaps they have a plausible explanation, or perhaps they merely know that proving ground firings show certain results and that in the absence of other information it was the best. But the compiler of TR 435-55 cut the Gordian knot—he evidently drew a line from the mean of the first

zone to the mean of the last, saying that this solution was as fair to one as it is to another. It does not miss it much and is so much simpler.

WHY HAVE ZONES AT ALL?

There is no adequate defense, except to go a step further: Why have mortars at all? Donate one pit to Henry Ford for his Museum of Historical Antiquities and sell the rest in the highest market. What a relief! Gone will be the elusive "Zone-to-Zone" corrections. Gone will be the sixty-second times-of-flight that allow anything but a near-anchored target to escape. Gone will be the juggling of increments and aliquot parts that would set the ammunition detail crazy if the target should decide to travel toward the battery. Designed to be fired at a fixed target, they have never become reconciled to these new fangled "K" factors and their feeble existence is merely due to the fact that the moving targets barely move. An enlightened public conscience would put them (and their battery commanders) out of their misery.

Editors Note, again: Did you see what Captain Case said about our mortars? After we looked it up we find that "antediluvian" means "before the flood." We know the mortars don't go back that far and we know that many officers will disagree with Captain Case as to the obsolescence of this type of cannon. We also hope this old friend of our youth will find some one who will rise up to defend her, violently and valiently. To think of the time we spent learning how to get a dummy projectile out of the well and now Captain Case wants to get rid of 'em!

*Among all the floating fallacies that bewilder the modern mind, one of the most foolish is that * * * if men could only be got round a table to talk out their differences, or would create "some machinery" to adjust their quarrels, wars would no longer afflict mankind. There have been many cases, as in the American Civil War, where there was infinite debate of the cause of the quarrel before the war began, and where the debaters had ample "machinery," both legislative and judicial, to adjust their differences if one side or the other would have accepted the verdict.—The Patriot, London, England.*

The Pay Board Report

THE Interdepartmental Board composed of officers of the Army, Navy, and Marine Corps, Coast Guard, Coast and Geodetic Survey and Public Health Service which was formed to consider the modification of existing pay laws has made its report which is no doubt familiar to all readers at this time. The six services are unanimously agreed upon the recommendations contained in the report. This agreement was reached after various compromises in order that they might unite in their recommendations and present them in a form which will become the basis for a bill to modify the present pay legislation for the six services concerned. The board hopes for the support of all individuals and believes that its recommendations are sound and the best that could be made after carefully surveying the situation.

The schedule recommended by the board is given below:

COMMISSIONED OFFICERS

<i>Grade</i>	<i>Base Pay</i>	<i>Increments</i>	<i>Deduction for rental</i>
Major General..... (Notes 1 and 2)	\$14,000	None	\$1,800
Brigadier General.....	12,000	None	1,800
Colonel	10,200	\$300 after three years' service in grade.. (Note 3)	1,500
Lieut. Colonel	8,700	\$300 after each three years in grade not to exceed nine years to a maximum total of \$9,600. (Note 3).....	1,500
Major	6,000	\$300 for each three years of commissioned service, not to exceed 24 years, to a maximum total of \$8,400	1,320
Captain	5,100	\$330 for each three years of commissioned service, not to exceed 21 years, to a maximum total of \$7,200	1,080
1st Lieutenant	4,000	\$400 for each three years of commissioned service, not to exceed 15 years, to a maximum total of \$6,000	840
2nd Lieutenant	3,000	\$400 for each three years of commissioned service, not to exceed 12 years, to a maximum total of \$4,600	600

NOTE 1. Officers temporarily serving in grades corresponding to general and lieutenant general, to receive, while so serving, additional pay of \$3,000 and \$1,500, respectively, per annum.

NOTE 2. The Commandant, Coast Guard, the Director, Coast and Geodetic Survey and the Surgeon General, Public Health Service, to receive the pay of a major general.

NOTE 3. Any officer in the grade of lieutenant colonel who has completed twenty-one, twenty-four or twenty-seven years of commissioned service shall be considered for pay purposes as having served in that grade for not less than three, six or nine years, respectively, and any officer in the grade of colonel who has completed twenty-seven years of commissioned service shall be considered for pay purposes as having served in that grade for not less than three years.

NOTE 4. No service shall be counted for purposes of pay except active commissioned service under a Federal appointment and commissioned service in the National Guard when called out by order of the President.

The following general features were adhered to in considering the schedule:

All allowances are consolidated into a single item designated as "pay." Rental is deducted where Government quarters are occupied.

No consideration is given to dependents.

Pay is based fundamentally on the grade held with increases for length of commissioned service. Provision has been made to safeguard the interests of majors and lieutenant colonels who are unduly delayed in attaining promotion.

A junior, so far as practicable, does not receive more pay than his senior.

Pay should be adequate under present economic considerations. In the higher grades pay should be commensurate with the responsibility and on a parity with the remuneration received by a successful civilian.

Federal commissioned service only is used for pay purposes.

National Guard and Reserve officers are placed on the same pay basis as Regular officers with no change in existing law as to the determination of length of service.

Pay of retired officers shall be based on the pay of active officers of like grade.

It is probable that the boards report will not meet with the entire approval of all. It is realized that there may be objection on the part of some to some of the recommendations but it is believed that it would not be possible to draw a pay schedule which would entirely satisfy all individuals in all six services. Perhaps the strongest objection in the Army will come from those whose service as a cadet has been counting for purposes of pay but is not considered in the new schedule; or from those whose enlisted service has been counted previously but is also removed from consideration. The board believes that its solution is the best obtainable and it hopes for the support of all the services in order that violent differences of opinion may not be the cause of the failure of Congress to enact any legislation looking to pay increase during the next session. By the board's recommendations the pay of officers is increased about forty-four per cent over the 1922 schedule.

The board also recommended increases for Warrant officers of the Army, Navy, Marine Corps, and Coast Guard. They are to receive a base pay of \$2,550 per annum with a longevity increase of \$150 per annum for each three years up to thirty. The Army Mine Planter service is placed on a slightly different basis. The pay varies in the several warrant grades with a minimum of \$2,100 for second mate and a maximum of \$3,000 for a master. The same longevity increase as provided for all other warrant officers is recommended.

Recommendations for increases in the pay of all enlisted men are

made except for those of the lowest grade. The table shows the present base pay in each grade and the proposed pay which the board recommends.

<i>Pay Grade</i>	<i>Present Base Pay Per Month</i>	<i>Proposed Base Pay Per Month</i>	<i>Proposed Base Pay Per Year</i>
First	\$126.00	\$150.00	\$1,800
Second	84.00	99.00	1,188
Third	72.00	84.00	1,008
Fourth	54.00	66.00	792
Fifth	42.00	54.00	648
Sixth	30.00	36.00	432
Seventh	21.00	21.00	252

Longevity increases are recommended on the basis of ten per cent after four years' service and five per cent thereafter for each four years, but not to exceed twenty-five per cent. Although no increase is recommended for the lowest (seventh) grade, the board does recommend that the existing restrictions on the percentage of enlisted men in each pay grade be removed and that the distribution be made at the discretion of the respective department head. With this system in effect the private in the lowest grade could be promoted to the next higher grade, as soon as he is deemed qualified to pass beyond the recruit stage.

In considering the boards recommendations it is hoped that all members of all the services will consider the necessity for a unanimous report and the general welfare of the six services as a whole rather than the contentions of any comparatively small class which may be convinced it has received small consideration in the boards recommendations.

*When the United States was young and struggling * * * in 1812 the rivalry of Napoleon and Great Britain dragged it into European war. One hundred years later the rivalry of Germany and other nations of Europe again compelled the entrance of the Americans upon a conflict in which, at first sight, they might be thought to have been without concern. The same thing will inevitably happen again.—Christian Science Monitor.*

EDITORIAL

What Should We Pay For An Army?

THE President's directive setting up within the General Staff a commission to consider our Army costs and outlays will receive the general approval of the country at large and will not meet any resistance, either passive or otherwise, on the part of the Army. It may be facetious to remark that the most recent commission of this kind to consider the cost of our defensive establishment was the Magruder Commission. But it seems there were a number of irregularities in connection with this one—there were too few members and the order appointing it could not be produced when called for. Since the Army commission will be regularly appointed and constituted it is hoped that it will have clearer sailing than the other one. Just what will be accomplished is something which the future will decide but surveys of this nature can do no harm. The people of the country will have a clearer understanding of what the Army does with its money and no doubt a greater confidence in those who spend it will be inspired. The Army's conscience is clear, and it has nothing to hide.

Almost everyone knows that the annual Army appropriation bill contains items that are strictly nonmilitary in character and should not be charged to the military establishment or to national defense. But eliminating these it is obvious that the cost of our military establishment is increasing. So is the cost of everything else. If we consider the last fifteen years it is common knowledge that the dollar today buys about half what it did in 1914. (If the statistics show otherwise they are wrong). From this standpoint alone the rising cost of our Army can be discounted to a great extent.

Since the World War it is only natural that our expenditures should increase due to another cause. Many new weapons and methods were developed during the war which we cannot neglect if we are to remain on a parity with other nations. Before the war we did not spend much for airplanes and their development, motor transportation, tractor artillery, antiaircraft artillery, trench mortars, and numerous other items which could be mentioned. Before the war there was no indication that such a weapon as gas would ever be used. No one with any common sense will argue that we should not keep step with these developments. The nation that does not do so will not last long when it gets into a jam.

Then there is another consideration which adds indirectly to our military expenses and that is our high standard of living. We are proud of our high standard of living. If you have listened to any political speeches you know all about that. We are proud of our radios, motor cars, marble baths, sinks right in the kitchen, and permanent wave machines. Some even take pride in the integrity of our bootlegger and the excellence of his

wares. Perhaps all we have mentioned have nothing to do with our so-called high standards of living. If not technically so they are closely associated in the popular conception of what a high standard of living really means. Sometimes it is easy to confuse a high standard of living with the high cost of living. Be that as it may. In these days it is easy (for many persons) to acquire a great deal of money. Money easily acquired is easily spent. Easy come, easy go, if you will have it that way. There is no doubt that the temptation to tilt the profits when this condition exists naturally adds to the cost of everything. This increased cost is reflected in that which the Army buys and more has to be paid for 12-inch shells because of our modern tendency to spend easier. There is no question but that almost anything costs more in this country than in any other country on earth.

If we are going to be proud of our free spending and higher standards of living let us be consistent and not compare the cost of our defense establishment with that of other countries. We know that eight hundred dollars is too much to pay for firing a 14-inch shell. Perhaps ten dollars is too much for a good pair of shoes but we seem to stand for it, think nothing of it, and are even proud of it so long as the average income is proportional. Of course it doesn't cost much to hire soldiers in Japan. They receive little pay and their daily subsistence cost would hardly buy our soldiers dessert. France can maintain an army of half a million on approximately what it costs us to maintain an army of one hundred and twenty-five thousand. It is obvious that the actual cost is not a reasonable basis of comparison. At one time it was not unreasonable to pay a million marks for a ham sandwich in Germany. This proves nothing as to what we should spend on our military establishment.

It can always be said that the Army could be run cheaper if it wasn't for politics. We can go further and say that the entire cost of government would be cheaper but for politics. We have grown accustomed to politics. Politics seems to be one of those things like the pilot fish which accompanies a democracy. We can't be free of it. It may be useful. At any rate it is like the weather. Everyone is always talking about it but no one ever does anything about it.

In these days of the greatest prosperity in our national history there is much money spent for that from which no lasting benefit is derived. This is individual spending, it is true, but it is none the less true that it represents hard cash. Our spending is beyond the dreams of our grandfathers. The one-horse shay, built to last one hundred years, served for transportation in a day ridiculous for its frugality and thrift. Today we have speeded up until we feel slightly conspicuous if we drive last year's model. The money spent on the Army is in a good cause. It is an insurance against aggression and a guarantee for our continued well being. It might cost us dearly if we neglect it.

COAST ARTILLERY ACTIVITIES

EDITORS NOTE: Under this heading we shall publish each month news from all parts and places and which we believe to be of interest to the Corps. We shall begin with the Chief's Office, listing monthly the personnel on duty there. Under this subheading we shall report any news pertaining to the Coast Artillery as a whole as well as interpreting and making audible such policies as the Chief of Coast Artillery desires to become widely known. We shall not quote the Chief or anyone on duty in his office unless specifically so stated. The Coast Artillery Board and the Coast Artillery School will be included as well as the regiments throughout the States and on foreign service. It is believed that Coast Artillery officers in Hawaii may be expected to be interested in learning what the 61st has been doing all summer. In time it is hoped that all organizations will send a short resumé of their monthly activities to the Editor for publication. Considerable interest has been expressed by a number of regimental commanders even to the extent of detailing an officer as correspondent. We welcome contributions from all individuals. If an item of particular interest should be presented and should the subject appear to be sufficiently important every effort will be made to induce a qualified officer to expand it into an informative and useful article for separate publication. The cooperation of all our readers is sought in this particular effort to make the JOURNAL more interesting.

Office of Chief of Coast Artillery

Chief of Coast Artillery

MAJ. GEN. ANDREW HERO, JR.

Executive

COL. H. L. STEELE

Organization and Training Section

MAJ. S. JARMAN

MAJ. J. B. CRAWFORD

CAPT. J. H. WILSON

Personnel Section

LT. COL. H. T. BURGIN

CAPT. H. N. HERRICK

Plans, Finance, and Materiel Section

MAJ. J. H. COCHRAN

MAJ. C. H. TENNEY

CAPT. F. J. MCSHERRY

Intelligence Section

MAJ. S. S. GIFFIN

CAPT. H. N. HERRICK

Foreign Service

The foreign service roster has been thrown out of gear somewhat by the War Department policy published last March permitting volunteer foreign service. The volunteer roster has not affected the regular roster as much as might be imagined but it has introduced an element of uncertainty into the situation which should be mentioned.

The volunteer roster has had little effect up to the present time due to restrictions on the volunteers which do not permit the roster to work with full effect. These restrictions state that a volunteer for foreign service will not be ordered on such duty until he has completed his present tour

of duty or until an interval of three years has elapsed since his last foreign service. It is assumed that economy and the officers' interests were the principal considerations in making this ruling. These restrictions also prevent anyone leaving in a peeve by applying for foreign service, but we are not saying the War Department had this in mind when it announced the ground rules. Anyone who volunteers probably will go at the expiration of his present tour of duty provided three years have elapsed since his last foreign service. Those on foreign service may increase the period of such duty by application to the War Department. Four years is usually the maximum length of tour which will be approved although the regulations permit further extension provided the Corps Area Commander, the Surgeon General, the Chief of Coast Artillery and your wife approves (the regulations don't mention the wife but they might just as well have included her).

The following shows the number of officers in each grade who have volunteered for foreign service to date:

- 1 Colonel
- No Lieutenant Colonels
- 9 Majors
- 11 Captains
- 17 1st Lieutenants
- 5 2nd Lieutenants

Only two of the above are actually eligible at the present time although all will become eligible within the next three years and most of them before the expiration of that period. In the meantime some may ask to have their names removed from the volunteer list, others may volunteer. This makes it impossible to give exact information to individual officers who wish to know the date when they will be due for foreign service. Letters from individual officers to the Personnel Officer, office of Chief of Coast Artillery, will receive prompt attention and the most exact information possible furnished.

Service School Details

There has been considerable discussion, argument, growling, and even gnashing of teeth over the subject of details at the service schools. Many officers are desirous of being educated and seek every opportunity to attend one of the War Department's colleges of learning. Recently the situation has been tightening up considerably. All who complete the advanced course at the Coast Artillery School are not being sent to the Command and General Staff School and all who graduate at Leavenworth are not being detailed at the Army War College. The dope which we are passing out is for the purpose of clarifying the atmosphere and, confidentially, it comes from the highest authority.

To begin at the beginning and the heart of the question and to confine ourselves to Coast Artillery officers, consider the numbers detailed at the various schools. Officers are being detailed for the advanced course at the rate of about twenty-two annually; each year twelve to fifteen are sent to the Command and General Staff School; while the Coast Artillery's quota at the Army War College is eight. To anyone who has advanced in mathematics as far as addition and subtraction it is obvious that all who graduate from the advanced course will not be sent to Leavenworth nor will all who graduate from Leavenworth be sent to the Army War College. What you probably want to know is: "How are they selected?"

In detailing students to the advanced course, selection is not a consideration. The advanced course is not a preparatory course for Leavenworth. It is for the purpose of providing advanced instruction for Coast Artillery officers, especially on tactical subjects and the handling of larger units. The advanced course will continue on this mission. After the next class graduates there will be a very small number of field officers who have not attended this course. Senior captains will be detailed and the course continued with about the same number of students as at present. The advanced course is not voluntary nor is any officer blacklisted.

Proceeding to the C. & G. S. course it is obvious that selection is utilized in designating officers to attend this course. This selection is based on several considerations. The officer's military record including his efficiency reports, has much to do with it. In fact it has, by far, the most to do with it although the recommendation of the Commandant, Coast Artillery School, if unfavorable, is given consideration. Then there are age restrictions more or less familiar to all—fifty years being considered the limit of absorption at Leavenworth. If this appears to be a crack at officers over this age (and we know a lot of them who are very important in this man's army) we should hasten to explain that fifty years in itself is an evidence of proficiency. Also there may be very young officers qualified to attend Leavenworth but who are not sent immediately. They need not consider that their opportunity is lost to them because they may be designated several years later. Nor should any officer graduating from the advanced course and not selected to attend the C. and G. S. course consider that it is curtains for him. He may get his chance later. His failure to make the C. and G. S. may be due to his physical condition, proximity of foreign service, selection for other important duty, or other considerations (that ought to furnish enough alibis). The attendance at the C. and G. S. School is more or less voluntary—that is to say, any officer who states in writing that he does not care to take the course would probably not be sent. There is also a blacklist if you want to call it that. The individual placed himself on it because it was compiled from all his records. There are not many on this list.

Arriving at the gates of the Army War College we find the situation

rather tense. Only eight or nine Coast Artillery officers are sent each year. Unless one is a graduate of Leavenworth there isn't much use thinking about it. It is not enough to graduate from Leavenworth. The War College student must be on the general staff eligible list. He must have an efficiency rating of at least "excellent." He must be recommended by his chief of branch. If he can pass all this he may get to go when there is room for him.

It is probable that some officers have suffered embarrassment and even anguish by failure to make the General Service School. The system of selection is the fairest that can be devised and is believed to be reasonable. To be selected to attend the higher service schools is, of course, a compliment but on the other hand it is not desired to place the stigma of inefficiency on those who have not been designated to attend these higher courses.

The Puget Sound Joint Exercises

During the month of July joint Coast Artillery-Navy exercises were held in the Puget Sound Area. These are said to be the first of their kind ever held in this section and were carried out with great enthusiasm and success.

In the situation assumed the United States was at war with a European power and her Asiatic ally. Our Asiatic fleet had been destroyed; nothing had been heard from the Philippines so it was assumed that they have been taken; Hawaii had held out for six weeks but was compelled to capitulate finally; our Pacific fleet had passed through the canal or is otherwise out of the picture. With this general situation, information had been received that a hostile fleet will attempt to force the straits of San Juan De Fuca and open the way to Seattle through Admiralty Inlet.

The hostile fleet was represented by ships of our own Navy under command of Vice Adm. L. A. Bostick, U. S. N. The ships participating were:

Battleships: *Maryland, Tennessee, New Mexico, Mississippi* and *Idaho*.

Destroyers: *Dayen, Moody, Reno, Somers, Decatur, Zeiling, Farragut, William Jones*.

The defending forces, under the command of Col. Archibald H. Sunderland, C. A. C., consisted of Coast Artillery troops of all components of the Army and were located at Forts Flagler, Casey, and Worden. The following organizations were present:

Detachment 6th C. A. (H. D.) Fort Winfield Scott; 14th C. A. (H. D.) Fort Worden; 249th C. A. (H. D.) Ore. N. G.; 630th C. A. (H. D.) Org. Res.

In addition to the Coast Artillery troops present the United States Coast Guard under the command of Commander F. J. Birkett, U. S. C. G., furnished a considerable number of patrolling vessels, including the mine-sweepers, *Swallow* and *Mohopae* and eight picket boats.

July 19th saw the final phase of the exercises. At 3:55 a. m. the hostile fleet was discovered, approaching, by the shore forces. It was not until 8:30 a. m. that the *Maryland* and *Tennessee* opened fire. At this time they were about fourteen miles from Fort Casey and eleven miles from Fort Worden. The *New Mexico*, *Idaho*, and *Mississippi* had taken position approximately three miles nearer shore. The attack was directed first at Fort Casey. At the end of a half hour the second phase of the bombardment began with all five ships shelling both forts. Another half hours bombardment followed with the ships still outside the range of the forts. Finally all steamed in to shorter ranges and opened with their intermediate armament as well as the major caliber. The attack continued for two hours. Both sides claimed an advantage. In simulated hostilities it is impossible for the umpires to decide with certainty which side accomplished its mission. The destroyers put down their smoke screen and under its cover the battleships attain a position from which they can pour a devastating fire into the defenses. The Coast Artillery will claim the destroyers could not have lived to put down the smoke screen so how could the battleships arrive at such close range? And there you are. However much the award of victory to one side or the other may interest the press and the people of the country it is well recognized by the Army that the value of these exercises is not so much in discovering who won as in tactical practice and training obtained during the events leading up to the end of the final phase. After all, the umpires can only guess. The real decision can be reached only when the combat is actual.

Maj. Gen. John L. Hines, commanding the 9th Corps Area, accompanied by Lieut. Col. A. L. Singleton, G-3, 9th Corps Area, were present as observers as was Brig. Gen. F. M. Caldwell, commanding the 9th C. A. District. The chief umpires were Capt. E. T. Constein, U. S. N., and Col. L. C. Brown, C. A. C. Col. Harry L. Steele, Coast Artillery Corps, of the Chief of Coast Artillery's office, was also present and observed the exercises in all their phases. Colonel Steele, upon his return to Washington, was very enthusiastic over their success and the excellence of the training obtained. He spoke of the cooperation of the Navy. He desired particularly to mention the work of the Coast Guard forces under the command of Comdr. F. J. Birkett, U. S. C. G. As collectors of information these small vessels were on the job day and night. Every move of the hostile forces was reported while still at some distance from the defenses. The handling of the Coast Guard contingent was superb.

Joint Coast Artillery-Navy Exercises in Southern New York Harbor

The war at Fort Hancock opened with much the same situation as for the Puget Sound exercises. (What we mean is that we vote for bigger and better situations. Why not get Floyd Gibbons to write one with a kick?) As usual we were at war with all the rest of the world and the

Navy had gotten itself bottled up or sunk or something. Not only that but Battery McCook's best plotter has been taken to the hospital with writer's cramp and the battery commander's wife has just called him on the telephone to tell him the baby won't take his bottle and she doesn't know what to do. But then we never get the breaks so it doesn't surprise us to learn that :

The Black Fleet is on its way from a southern base with New York as its objective. But it has reckoned without the Coast Artillery. It first must pass Forts Tilden and Hancock. Here have been gathered all the Coast Artillery troops that can be collected in a short time. Col. J. C. Johnson, C. A. C., is in command. His troops are:

- 7th C. A. (H. D.)
- 245 C. A. (H. D.) N. G. N. Y.
- 513th C. A. (A. A.) Org. Res.
- 514th C. A. (A. A.) Org. Res.
- 619th C. A. (H. D.) Org. Res.
- 620th Bn. C. A. (H. D.) Org. Res.
- 621st C. A. (H. D.) Org. Res.

A detachment of the 9th C. A. (H. D.) has been hurried down from Boston to man the guns at Fort Tilden and everyone is on his toes and ready.

Finally on July 19th the Black Fleet was seen approaching. In spite of his disguise we recognize Rear Admiral William C. Cole, U. S. N., in command. His fleet consists of:

- Two battleships—
The *New York* and the *Wyoming*.
- Three Cruisers—
Richmond, *Cincinnati*, *Milwaukee*.
- Two submarines—
S-2 and *S-4*.
- Twelve destroyers.

It is another war game. The smoke cleared away with both sides claiming the victory as usual, but to those who took part it was a valuable experience and an opportunity which does not present itself often enough.

Maj. Gen. H. E. Ely, commanding the Second Corps Area was an interested observer as was Col. Frank K. Fergusson, Coast Artillery Corps, commanding the Second Coast Artillery District. Maj. Gen. Andrew Hero, Jr., the Chief of Coast Artillery, accompanied by Maj. Sanderford Jarman, C. A. C., made a special trip from Washington to be present at the exercises. General Hero made the following comments:

"The joint Army-Navy exercises at Fort Hancock were the best conducted and the most instructive of any that I have witnessed in the continental United States since the World War. The personnel of all ranks

had an opportunity to actually analyze the tactics of an enemy fleet in attacking fortifications. Such exercises as these are particularly beneficial in giving senior officers and their staffs needed training in functioning as in war. The whole-hearted cooperation on the part of the Navy contributed greatly to the successful results attained."

Army Ordnance Day

The eleventh annual meeting of the Army Ordnance Association will be held at the Aberdeen Proving Ground, Maryland, on Thursday, October 10, 1929. This annual meeting of the Army Ordnance Association is to be held on the day perhaps known to some as Army Ordnance Day. There is more of interest to report concerning Army Ordnance Day than will appear in the bare announcement.

On Army Ordnance Day a demonstration of equipment and matériel is held which is of the greatest interest to all branches of the service. There is nothing like it to be seen in any other part of the country. Visitors will be present from the entire eastern half of the United States including sections as far west as St. Louis and Chicago. The estimated number of visitors present has been about ten thousand. With the increased interest shown in this demonstration it is probable that the number present this year will be larger.

In previous years the Coast Artillery has furnished a large share of the spectacular part of the program. Intense interest was manifested in the firing of the large caliber seacoast and railway guns. There were thrills a plenty in the antiaircraft practice on towed targets—especially during the night firing with searchlights combing the sky and the ear-splitting crack of the antiaircraft guns spitting out a hail of bursting shell at the target as it tried to escape from the beams of the searchlights. This part of the show belongs to the 61st C. A. (A. A.) who will participate again this year. One of the trick firings put on by the 61st was a practical representation of the curve of the trajectory. This was accomplished by firing in rapid succession a sufficient number of rounds with fuzes cut at times equally spaced and bursting from a point near the guns to a point near the level point. Upon completion the trajectory, outlined by puffs of smoke from the bursts, hung suspended in the air within the sight of thousands.

Of recent years the Air Corps, seeing the opportunity of demonstrating their own branch of the service before so many well known and influential persons, has been increasing its part of the show until its part is now equal to the Coast Artillery's in interest. You may see them bomb targets with large bombs. You may witness parachute jumps or mock combat in the air between pursuit planes. The attack planes stage a very realistic attack on ground troops represented by targets.

Not the least part of the show is the demonstration of all that is newest

in motor equipment, including tanks, trucks, and tractors. The newest tank capable of making a speed of sixty miles per hour will cavort over the roughest of ground until one wonders how it holds itself together. The Field Artillery (horse) comes in for its part of the program. The Chemical Warfare shows its gas bombs and smoke screens.

Anyone who is within easy reach of Aberdeen should not miss this show. It is one means of keeping in touch with the latest developments in all kinds of war matériel. The trip is easily made by automobile or train. Due to the crowd and comparatively limited traffic circulation an automobile within the reservation is more of a nuisance than a convenience. The Proving Ground train furnishes ample transportation. Both hot meals and box lunches will be served on the ground. Hot meals at \$2.25 for dinner, \$1.75 for supper. Box lunches may be had for \$1.00. Experience has proven that it is probably more convenient to carry a lunch. Further information concerning any details not covered may be obtained from the Commanding Officer, Aberdeen Proving Ground, Maryland, or from Capt. L. A. Codd, 806 Mills Building, Washington, D. C.

Movement of 14-Inch Railway Gun to West Coast

The movement of the 14-inch gun No. 10, Model 1920, MII, on railway mount from Aberdeen Proving Ground, Maryland, to Benicia Arsenal, California, was accomplished during the period June 28, 1929-July 16, 1929. Capt. Archibald L. Parmelee, C. A. C., was in charge of this movement. He was assisted by 1st Lieut. Herbert C. Reuter, C. A. C. and Proof Asst. Ralph C. Gerdorf of Aberdeen Proving Ground. A detail of enlisted men from the 52d C. A. (Ry.) Fort Eustis, Virginia, also accompanied the gun on the journey. Captain Parmelee has submitted a very complete report on the trip to the Chief of Coast Artillery's office. It is hoped that he will also submit an article in the near future for publication in the JOURNAL.

The Coast Artillery School

The Coast Artillery School will reopen this year on September 14. The school term has been increased by three days to permit more time to be devoted to the course in submarine mining. Interest has been renewed recently in submarine mining and it has been decided to devote slightly more time to study and instruction in this subject. The introduction and adoption of the single conductor cable has found many officers lacking in knowledge of the most recent changes in the technique of submarine mining. Not only will the officers receive additional instruction but a new course in this subject has been added for electrician sergeants. The time allotted to the Battery Officers course for the subject is two and one-half weeks.

A reduction has been made in the time devoted to instruction in the

operation of steam plants. Since there are now only two of these plants in operation at Coast Artillery posts, the need for instruction in steam engineering has fallen off considerably.

The time devoted to radio and wire communication has been increased.

During the coming school year the organization of the school will be as below.

MAJOR GENERAL H. D. TODD, JR., *Commandant*

COLONEL EDWARD KIMMEL, C. A. C., *Assistant Commandant*

MAJOR R. M. PERKINS, C. A. C.,
Secretary

MAJOR C. E. HOCKER, C. A. C.,
Librarian

Department of Engineering

Maj. S. S. Winslow, C. A. C., *Director*
Capt. R. C. Snidow, C. A. C.
Capt. S. R. Mickelsen, C. A. C.
Capt. C. G. Walker, C. A. C.
Capt. A. V. Winton, C. A. C.
Capt. H. H. Blackwell, C. A. C.

Department of Tactics

Lieut. Col. M. A. Cross, C. A. C., *Director*
Maj. T. C. Cook, C. A. C.
Maj. W. K. Richards, C. A. C.
Maj. H. M. Estes, Cavalry
Maj. R. T. Pendleton, C. A. C.
Maj. B. S. DuBois, C. A. C.
Maj. W. H. Walker, Infantry
Maj. R. H. VanVolkenburgh, C. A. C.
Maj. H. F. Loomis, C. A. C.
Maj. D. D. Hinman, C. A. C.
Capt. C. W. Walton, C. W. S.

Department of Artillery

Maj. F. A. Mountford, C. A. C., *Director*
Capt. F. E. Edgecomb, C. A. C.
Capt. J. T. Lewis, C. A. C.
Capt. G. W. Ricker, C. A. C.
Capt. H. F. E. Bultman, C. A. C.
Capt. H. Case, C. A. C.
Capt. B. F. Harmon, C. A. C.

Department of Correspondence Courses

Maj. T. H. Jones, C. A. C., *Director*
Maj. R. L. Tilton, C. A. C.
Capt. W. H. Warren, C. A. C.

Department of Enlisted Specialists

Maj. C. W. Bundy, C. A. C., *Director*
Capt. C. W. Higgins, C. A. C.
Capt. G. M. O'Connell, C. A. C.

Officers who have been designated to attend the Coast Artillery School during the school year 1929-30 are:

ADVANCED COURSE

Maj. D. S. Lenzner, C. A. C.
Maj. R. Melberg, C. A. C.
Maj. G. P. Anderson, C. A. C.
Maj. W. M. Chapin, C. A. C.
Maj. F. F. Gallagher, C. A. C.
Maj. B. L. Flanigen, C. A. C.
Maj. J. B. Martin, C. A. C.
Maj. J. D. MacMullen, C. A. C.
Maj. C. D. Y. Ostrom, C. A. C.
Maj. D. M. Cole, C. A. C.
Maj. K. McCatty, C. A. C.

Capt. W. G. Hanna, C. A. C.
Capt. B. Vogel, C. A. C.
Capt. E. C. Seeds, C. A. C.
Capt. A. H. Campbell, C. A. C.
Capt. N. Dingley, C. A. C.
Capt. P. P. Lowry, C. A. C.
Capt. W. D. Evans, C. A. C.
Capt. R. M. Mackin, C. A. C.
Capt. G. W. Whybark, C. A. C.
Capt. E. H. Taliaferro, C. A. C.
Capt. W. C. Braly, C. A. C.

BATTERY OFFICERS' COURSE

Maj. A. D. Chipman, C. A. C.	1st Lieut. A. M. Wilson, C. A. C.
Capt. C. H. Armstrong, C. A. C.	1st Lieut. W. I. Allen, C. A. C.
Capt. K. Rountree, C. A. C.	1st Lieut. G. R. Burgess, C. A. C.
Capt. C. R. Adams, C. A. C.	1st Lieut. C. F. Wilson, C. A. C.
Capt. H. B. Bliss, C. A. C.	1st Lieut. C. Schabacker, C. A. C.
Capt. A. D. Fisk, C. A. C.	1st Lieut. E. M. Gregory, C. A. C.
Capt. T. R. Bartlett, C. A. C.	1st Lieut. D. B. Latimer, C. A. C.
Capt. E. B. McCarthy, C. A. C.	1st Lieut. E. R. Guild, C. A. C.
Capt. H. E. Pendleton, C. A. C.	1st Lieut. W. C. Rutter, C. A. C.
Capt. E. L. Barr, C. A. C.	1st Lieut. D. B. Herron, C. A. C.
Capt. E. T. Conway, C. A. C.	1st Lieut. M. C. Casey, C. A. C.
Capt. J. R. Townsend, C. A. C.	1st Lieut. C. W. West, C. A. C.
Capt. M. H. Parson, C. A. C.	1st Lieut. F. C. McConnell, C. A. C.
Capt. W. R. Carlson, C. A. C.	1st Lieut. W. S. Lawton, C. A. C.
Capt. R. T. Barrett, C. A. C.	1st Lieut. P. McC. Smith, C. A. C.
Capt. W. H. Steward, C. A. C.	1st Lieut. K. C. Frank, C. A. C.
Capt. P. W. Lewis, C. A. C.	1st Lieut. L. Shepard, C. A. C.
Capt. W. J. Burke, C. A. C.	1st Lieut. R. E. Bates, C. A. C.
Capt. J. B. Hafer, C. A. C.	1st Lieut. J. H. Pitzer, C. A. C.
Capt. L. L. Davis, C. A. C.	1st Lieut. H. E. C. Breitung, C. A. C.
Capt. P. S. Lowe, C. A. C.	1st Lieut. D. C. Tredennick, C. A. C.
Capt. F. Richards, C. A. C.	1st Lieut. G. L. Field, C. A. C.
Capt. C. A. Gillette, C. A. C.	1st Lieut. E. C. Wallace, C. A. C.
1st Lieut. J. D. Moss, C. A. C.	1st Lieut. R. B. Pape, C. A. C.
1st Lieut. G. F. Nichols, C. A. C.	2nd Lieut. B. M. Alba, P. S.
1st Lieut. N. E. Hartman, C. A. C.	2nd Lieut. D. D. Martin, C. A. C.
1st Lieut. F. A. Hollingshead, C. A. C.	2nd Lieut. R. J. Heinlein, C. of E.

ADVANCED ENGINEERING COURSE

1st Lieut. W. R. Ellis, C. A. C.	1st Lieut. J. F. Simmons, C. A. C.
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ADVANCED GUNNERY COURSE

Capt. D. M. Griggs, C. A. C.	1st Lieut. I. H. Ritchie, C. A. C.
1st Lieut. H. Hewett, C. A. C.	

ADVANCED MOTOR TRANSPORT COURSE

Capt. R. E. McGarraugh, C. A. C.	1st Lieut. W. L. McCormick, C. A. C.
1st Lieut. P. C. Howe, C. A. C.	1st Lieut. G. H. Stubbs, C. A. C.

The 13th Coast Artillery (HD) Fort Barrancas

The summer training camps conducted by the regiment during the past summer were the largest in its history, the number present being more than double the number here in 1928. The trainees represented all components of the Army. To give an idea as to their make up the following list is given:

- 888 C. M. T. C. students
- 48 R. O. T. C. students
- 43 officers 535th C. A. (A. A.) Org. Res.
- 42 officers 504th C. A. (A. A.) Org. Res.
- 647 203d C. A. (A. A.) Mo. N. G.
- 87 officers 524th C. A. (A. A.), 545th C. A. (A. A.) 548th C. A. (A. A.), 623d (H. D.) all organized reserve.
- 400 265th C. A. (Fla. N. G.)

These camps were conducted during June, July, and August and the training was received with the greatest interest and enthusiasm on the part of all who participated. Practices were fired with a variety of armament including .30 caliber A. A. machine gun, 3-inch A. A. gun, 155-mm. G. P. F. and 10-inch D. C. The 504th and 534th were particularly pleased, having had several opportunities to experience that grand and glorious feeling when you see the towed A. A. target fluttering down to earth. The R. O. T. C. ruined the material target with a direct hit.

All conferences in the Reserve periods were given by Reserve officers. This is a step forward in placing more responsibility on the Reserve officers. The Reserve officers themselves manned the 3-inch A. A. gun and range sections during drill and practice. The R. O. T. C. were given some training in the movement of mobile artillery in the form of a field problem during which an overnight bivouac was established. The C. M. T. C. field exercises and practice marches stressed advance and rear guard actions as well as defense against attack planes. To make the air attack more realistic the planes were provided with paper sacks filled with flour which were dropped on the column while under way. This added to the amusement of the trainees as well as the realism of the attack not to mention its value as a farm relief measure.

The 61st A (AA) Fort Monroe

The 61st has had a rather busy summer although probably not so intensive a training period as last summer. Beginning on June 14th the first class from West Point was present, finishing on July 3d. From July 8-19 the R. O. T. C. were instructed in antiaircraft. The R. O. T. C. units from the University of Pittsburgh, University of Delaware, Massachusetts Institute of Technology, Virginia Polytechnic Institute, and Fordham University were with the regiment. Then came the 260th C. A. (A. A.) D. C. N. G. on July 28, who were with us until August 11. The 503 C. A. (A. A.) Org. Res. began their instruction period on August 11 and completed their training on August 29. Approximately sixty reserve officers were present.

Due to the reputation which Monroe is acquiring as a summer resort we find that trainees from all components of the Army are anxious to return each year. Two students from the University of Kansas paid the additional mileage necessary to enable them to attend the Monroe R. O. T. C. camp. The beaches at Grand View, Buckroe, and Fort Monroe, as well as Ocean View and Virginia Beach, all add to the enjoyment of the visitors. The new Hotel Chamberlin also adds to the attractions of the post. Golf courses are convenient for those who like the game while many prefer to investigate the numerous places of historical interest on the Peninsula. If this reads like a summer resort folder it is intentional. The more attractive the surroundings the easier to persuade the Reserves and

other part-time military trainees to take their training at Monroe and bring the family with them. There is a place for them to stay and something for them to do. Solve the vacation problem by coming to camp and gaining some military knowledge at the same time. We miss our old friends of the 213th C. A. (A. A.) Pa. N. G. Here's hoping they will get oriented on Monroe and be with us next summer.

Since the close of the 503d camp the 61st has been getting set to move to Aberdeen Proving Ground in early September. The regiment will be engaged in firing tests there during the period September 16-October 31. This year the move will be made overland by motor and will give all motor equipment a good work out.

The 252nd CA (HD) (NCNG)

The following account of the annual encampment of the 252d Coast Artillery, submitted by Lieut. Col. Royce S. McClelland, the regimental commander, is indicative of the interest displayed by the National Guard in military training, cordial relations between the National Guard and Regular Army, and the esprit and pride in tradition which exists in this organization.

On July 11, 1929, the advance detachment, consisting of five officers and thirty-three enlisted men left their various home stations for the purpose of composing an advance detail to the annual encampment to be held at Fort Moultrie, July 14.

About noon on Sunday, July 14, information was received that the troops were arriving at Charleston, S. C., the point at which the troops were taken from the trains and placed on transports to Sullivan Island, which is situated behind the jetties in the open Charleston Harbor facing the Atlantic Ocean.

The 252nd Regiment composed of organizations comprising the Coast Artillery troops from the State of North Carolina was somewhat smaller than it has been in previous years, due to reduction in strength by orders received from higher authorities, but upon arrival upon the post at no time in the history of the organization has the movement of troops been more smoothly handled and the handling of the situation less difficult. Approximately thirty officers and four hundred and fifty enlisted men arrived on the post between the hours of noon and 4:00 p. m. There was not the slightest bit of confusion, or visible effort, beyond the normal expectancy for such an occasion. In comparatively short time all troops had been assigned to their tents and the camp covered by regimental and battery administration.

On Monday morning, July 15, the regular schedule was brought into effect and the troops placed on a full war-time basis, so far as training was concerned. In fact at this time they had been absorbed into the regular scheme of training and to the outsider there was hardly any per-

ceptible difference between the position taken by the Guardsmen and those forming the regular garrison. Fortunately the feeling between the regular garrison at Fort Moultrie and the officers and men of the 252nd Coast Artillery (H. D.) was far above the average. The splendid attitude displayed by the officers and men of the 8th Infantry and the 13th C. A. detachment was far above the average, and through the efforts of those in command everything has been done to make this encampment the most pleasant and beneficial thus far held by this organization, which was Federally recognized on June 9, 1924.

While the regiment is comparatively young, the organizations making up this command have enjoyed the distinction of unbroken service to their Government.

Headquarters Battery of Wilmington, N. C., better known as the Cape Fear Artillery was formed from the nucleus of men transferred from Battery "A," 252nd Coast Artillery and former service men enlisting for this purpose.

Battery "A," the oldest active organization of this kind in the State of North Carolina, was authorized for organization by an act of Legislature February 22, 1853, and has enjoyed the distinction of seventy-six years of unbroken service. This organization has participated in the war between the States, Spanish American War and the World War, and in addition to this a number of uprisings, riots and other local disturbances. At all times this organization has acquitted itself most favorably in the eyes of the authorities.

Battery "B" at Lumberton, N. C., while enjoying an active service dating only from 1924, has served its community and the Government on a number of occasions by furnishing men to nearby cities. This battery is made up of men whose descendants served in the Revolution, Civil, Spanish American and World Wars.

Battery "C" and "D" Greensboro, N. C., perhaps better known as the Guilford Grays, were organized as an official part of 252nd Coast Artillery (H. D.) in 1924. The Guilford Grays are direct descendants of the Greensborough Guards, which organization was formed in 1839.

Battery "E" High Point, N. C., served valiantly in the 1st North Carolina Infantry and participated in the War between the States, the Spanish American War and the World War, in addition to border service in 1916.

The 252nd Coast Artillery (H. D.) has just been authorized to wear their distinctive regimental insignia, which device was drawn by Capt. Andrew H. Harriss, Jr., Adjutant, who in addition to this has compiled the history of the 252nd Coast Artillery (H. D.) This history has been approved and is now on file in the War Department.

Battery "F" of Raeford, N. C., came into the regiment in December, 1927, having been redesignated from Battery "G" 200th Antiaircraft

C. A. C. Previous to this date and during the World War this organization served as Company "G" 119th Infantry, 30th Division, and assisted in breaking the Hindenburg line in 1918. This organization, like Battery "B" at Lumberton, while not officially enjoying the history of the older organization, has participated through its individual ancestors in all wars and uprisings since the Revolutionary War.

Harbor Defenses of Cristobal

1st CA (HD), 2d CA (HD), 2d Bn. 65th CA (AR)

IN this harbor defense there are: the skeletonized 1st C. A. (H. D.), consisting of only three organizations; the 2d C. A. (H. D.), consisting of four organizations; and the 2d Battalion of the 65th C. A. (A. A.) The distribution of these organizations among the three posts comprising the harbor defense is:

1st C. A. (H. D.)—Fort DeLesseps and Randolph
 2d C. A. (H. D.)—Fort Sherman
 2d Bn. 65th C. A. (A. A.)—Fort Randolph

Training activities during July consisted of rifle marksmanship and gunners instruction with routine infantry drill, communication drill and care of matériel. Rifle marksmanship was nearly completed during the month. The percentages qualified in each organization were creditable and are given below:

1ST C. A. (H. D.)	
Headquarters Battery	100%
Battery "E"	98%
2D C. A. (H. D.)	
Headquarters Battery	100%
Battery "C"	97%
Battery "E"	99%
Battery "H"	99%
2D BATTALION, 65TH C. A. (A. A.).	
Battery "C"	97%
Battery "D"(incomplete)	95%
Battery "E"	97%

The 65th C. A. (A. A.) has completed a very satisfactory machine gun target practice season. Although the regimental records have not been prepared as yet, the indications are that the Departmental Machine Gun Trophy will again be awarded to a unit of the 2d Battalion.

Battery "D," 65th, was awarded the banner for the best mess during the second quarter.

Battery "E," 2d C. A. (H. D.) held its submarine mine practice on July 22 with a figure of merit of 100%.

In athletics basket ball and swimming were the principal sports.

On July 24 the Department swimming meet was held on the Atlantic side in the Hotel Washington pool. The management of the meet was well done and the affair was conducted with such precision and dispatch as to call forth the commendation of both the senior officer, Atlantic Side, and the Department Commander. A large crowd was present, about six hundred from the Pacific Side coming over on a special train in addition to those attending from the Atlantic Side. Troops from the Pacific Side were given lunch at Headquarters Battery, Fort De Lesseps. This was no small undertaking for a mess personnel accustomed to feeding one hundred and thirty. The 14th Infantry won the meet, the Harbor Defense team taking third place. Our point winners were mostly new men and with more experience should be able to give a better account of themselves at meets held in the future.

Our basket ball team is not so good. No alibis. It has won no games but half the games lost have been lost by only a few points.

Plans are now underway in the 1st C. A. (H. D.) for the celebration of Regimental Day. This celebration will take place on August 20 and will commemorate the valient part taken by the regiment in the Battle of Churubusco (1847).

7th Coast Artillery (HD) Fort Hancock

During the month of July the regiment and the post has been occupied with the training of Reserve and National Guard components of the Army. During the period July 1-14 one hundred and fifty Quartermaster Reserve officers were given their two weeks' training.

On July 9 Battery "D," 7th C. A. (H. D.) held its submarine mine practice with a score of 100 per cent.

During the period July 27-31 Battery "A," 261st Bn. C. A., (Del. N. G.) were present for their annual training.

The most important part of the month's training was during July 13-27 when Joint Army-Navy exercises were held. The harbor defenses were manned by the 7th C. A. (H. D.), the 245th C. A. (N. Y. N. G.) (fifty officers and eight hundred enlisted men), a detachment of the 8th, 9th, and 11th C. A. (eight officers and two hundred enlisted men), an attachment of the 62d C. A. (six officers and one hundred enlisted men) and seventy-five Reserve officers from the 513th C. A., the 619th C. A., 620th C. A., and 621st C. A. The exercises with the Navy were held during the war period on July 23, 24 and 25.

YOU TELL 'EM

We Hear You, Colonel, But How Are You Going to Know When It Is Getting Good?

The EDITOR, the COAST ARTILLERY JOURNAL

* * * * in regard to the COAST ARTILLERY JOURNAL. You know just as well as I do why I am not a subscriber to the COAST ARTILLERY JOURNAL. There have been for several years too (leaving out profanity) much history and too many school boy essays published. I am interested in neither of these. I know that many other officers are not interested. The majority of COAST ARTILLERY officers are interested in how to shoot guns, in fire control systems for A. A. and heavy artillery, and in what other units than their own are doing. Also the officers of this regiment are much interested in authoritative interpretations of TR 435-55.

Prize essay competitions are generally a bore. I believe some more interesting subjects could be prescribed, if this feature is to be continued; subjects relating to the marches of the various mobile C. A. units and the methods of overcoming the difficulties encountered; fire control methods; communications; transportation; supplies, equipment, and methods of carrying it; observation of fire and adjustment in action. Something like these might bring forth some efforts from the practical men which would give some valuable information to others, also some subjects which will give instructors of National Guard and Organized Reserve units a chance to tell how they carry on.

As soon as I see a couple of good numbers I will urge the officers of this regiment to subscribe.

Regimental Commander.

We Don't Like to Get the Money That Way

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

I have no serious criticism of the JOURNAL as at present operated. I did have some years ago when the JOURNAL was operated on a "strictly business" basis, for it cannot be so operated. Many of us subscribe primarily as a matter of esprit, and incidentally for what we get out of it, because there rarely is more than one article in a number which is of interest to me personally. Might it not be advisable to go back to publishing it every other month? You might get better articles and be less compelled to pay in order to fill up the space. Before the war the editor had difficulty in getting material so what must it be now with a monthly publication?

Another Regimental Commander.

Trick Photography. We Are Removing All Our Cage Masts

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

At an early date I shall bring the COAST ARTILLERY JOURNAL to the attention of all officers of the regiment with, I hope, the effect of securing some additional subscribers.

I shall be glad to see that a monthly resumé of our activities is sent to you.

As to criticizing the JOURNAL, it seems to me that, for a considerable time, it has contained many articles of no vital interest, articles on colonial forts for example. Also the magazine has shown some of our battleships with cage masts after all the world knew that these same vessels had had these masts replaced by masts of other types. In one instance, a picture, supposedly of an existing United States battleship, was shown. I did not recall her name, so looked into the matter. There was no such vessel.

What is needed is up-to-date matter of importance presented in a clear, interesting, and accurate manner.

All good wishes to you and the JOURNAL.

Very sincerely,

LEWIS TURTLE,

Lieut. Col. 15th C. A., Commanding.

Take It Up With the Handicapping Committee

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Some people accuse the high ranking graduates of West Point of giving preference to its graduates. Let a "greyleg" call attention to a discrimination against reserve officers who happen to be graduates of West Point.

The regulations governing promotion of reserve second lieutenants to the status of first lieutenant require that a shavetail must have acquired three hundred credit-hours of training. However, if the officer be an R. O. T. C. graduate, 200 credit-hours are deemed sufficient. Under this regulation a West Pointer has to put in one hundred hours more than the R. O. T. C. graduate, in order to be promoted from second to first lieutenant.

Now I do not argue that a West Pointer is better trained than the R. O. T. C. man, but I do think it is safe to say that his training is at least the equal of the latter's. Then why do the regulations require an additional one hundred hours from the Pointer?

Further, in computing eligibility for promotion no recognition is made of Regular Army service. Take my own case. Eight months as a regular

second lieutenant are worthless so far as promotion is concerned, and yet I venture to say that this service is the equal of two years of Reserve service in the same rank. Yes, at least two years. Some people may think that second lieutenants, and especially Reserve second lieutenants, have no rights. But I leave it to the reader if such a condition is fair.

Greyleg griper.

Stop That Mumbling in the Rear Rank. Besides They Work Hard.

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

I am writing to ask if you'll explain something that's been on my mind. I am not making any kick but I wish somebody would explain to me about this here Academic leave. I am on duty with a regiment at Fort Monroe. For several summers I have been sweating with the Reserves and C. M. T. C. They tell me I can't have any summer leave because we have to carry on the training. But, Major, it certainly does burn me up to be putting in about eighteen hours a day with those d——, I mean those C. M. T. C. boys—and along about three o'clock watch the birds who are instructors at the school go breezing by on the way to the beach. Major, honest, I know those birds. Maybe some of them in some departments work right hard but they tell me that the first year is the hardest and after that it is like shooting fish. I'm just a poor dodo trying to get along and probably not very bright, but it seems to me I work twice as hard as some of these birds. All the leave I take counts against me and I can't get it at that. Can't something be done about this? I wish you would not publish my name because I am trying to get a job as instructor at the school and I think it might spoil my chances.

DODO.

The Song of the Shirt

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Does ten years' service entitle one to a complaint about the trials and tribulations of a young soldier who is trying to get along in this man's army?

My pet aversions are wrapleggings, choke collars, cheap war-time issues of OD cotton and wool, and shirts. Shirts are my loudest wail and require a paragraph in any magazine.

For instance, I draw a size fifteen shirt. I send it to the laundry—Presto! Size fourteen. Second time to the laundry. Bingo! Size thirteen. And the third trip of the shirt chalks up a complete victory for the laundry queens. So you become generous and send the remains to your kid brother who happens to be a Boy Scout. After two washings he passes it on to the kid sister for the purpose of adorning her rag soldier doll.

I can just hear your readers chirping, "Why doesn't that sap draw shirts two sizes too large and let them shrink to his size?"

Well, friends of my invisible audience, it's a funny thing about size seventeens. I've drawn several seventeens and like a stubborn Army mule, they refuse to shrink.

This complaint committee also rises to remark that if our legs fitted our woolen drawers, or they fitted us, we would be discharged for physical deformity. A man with a form that would fill those long-may-they-wave tails on the old issue blouses has no business anywhere except in the Navy.

As a final growl, why not relieve the recruiters who do their recruiting in the freight-yards, speakeasies, and the zoo?

Regardless of the above, I am still very fond of the Army.

Yours for reform,

SONNY.

Once a Mine Officer Always a Mine Officer

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

In these days when we hear so much about specialists and observe the regularity with which those in authority keep detailing one to a specialist assignment I am alarmed no end. If time out should be taken long enough to listen to certain far-off cries one would possibly hear a faint wailing from the wilderness calling for relief. That wailing would be coming from me.

It's about this mine business and to get down to my particular complaint I want to give vent to a long pent-up indignation at the lot that seems to befall me whenever I receive an assignment to a new post. No matter how carefully I try to conceal the fact that I served in a mine command at my last post it seems that it takes only about four minutes after I report for the old man to find it out and back to the mines I go again. Now I haven't anything against the amphibian boys. In fact I once rather liked it but I want to hear the caissons go rolling along sometime and learn something about these antiaircraft guns that make such pretty smoke balls up in the air. Why should it be: Once a mine officer, always a mine officer?

Many years back when I first came into the Coast Artillery I found myself the harassed commanding officer of three skeleton units, including a mine organization. Various were the assignments and duties of that mine outfit most conspicuous and important of which was the hauling of ice to the post from a neighboring town with the L boat. I learned for myself that an engineer for an L boat is a godsend and a skipper about as important as a fourth wheel on a wagon. I struggled along as best I could with no officer to help me and finally learned the difference between a boat hook and a 500-pound anchor. I learned most of this by calling

aside a noncom and asking questions. I didn't know what his job was. I finally learned he was the chief planter. I never went near the casemate. That was too much. There was no one on hand to tell me anything and I didn't learn much. Fortunately no one conceived the idea of planting any mines and I was thereby saved embarrassment. The mine command continued to haul ice and coal.

I didn't know anything about mine work but I didn't know that.

Sometime later I found myself on foreign service and eager and set for learning something about artillery. Unfortunately they needed a lieutenant in the mine command and I give you one guess as to where I was assigned. That was all right too. This mine command had some guns used for officers' firing problems and I got lots of training in gun firing. I also learned as much in three years as could be expected about mines—actually planting and firing them. That was very fine indeed but what annoyed me is why I was not allowed to learn something more about artillery. It seemed that all other junior officers were rotated around—guns, mortars, antiaircraft—but change a mine officer—never! And when I came back to the States and arrived at a new post did I escape the mine company? Don't be foolish. I was then an experienced mine officer. Knew all the property and everything. I had no more chance than Babe Ruth has of being a truck driver.

Now my idea is this. Let some of the other junior officers get acquainted with this mine business. I've served my sentence and I want a chance to learn about some other weapons. Teach them the nomenclature in the troop schools so they can take over mine property.

I expect that when I report at my next station I will again make an effort to be assigned to a gun or mortar battery and just as I get comfortably settled into believing everything will be lovely, a report will arrive that this officer is familiar with mines. Incidentally, the mine battery commander or one of his officers will be about to be relieved. The colonel will be somewhat apprehensive about trying out anyone inexperienced just as mine practice is approaching. The adjutant will cheerily comment that the new officer is a mine man. "Fine" says the K. O. and once more I am hooked. Something really should be done about this. What we need is more and better mine officers and I am in favor of it.

WEBFOOT.

*Military training is much more than preparation for war. It is preparation for peace. * * * And, most important of military training, is the great factor that instills patriotism in the whole nation.—San Francisco Chronicle.*

PROFESSIONAL NOTES

The Trial Shot Solution for Antiaircraft

A recent bulletin issued by the office of the Chief of Coast Artillery has for its subject "Trial Shot Solution for Antiaircraft Artillery." The bulletin includes more than the Trial Shot Solution, however. We find a part of it is devoted to calibration fire and burst firings. Two methods of correction are described under the Trial Shot section: one method for use with a ballistic computer or a semiballistic computer, where corrections in muzzle velocity are possible; the other for data computers where corrections can be made only by applying the difference in altitude as a percentage on the height finder. Both methods are graphic and require the construction of charts.

The correction of antiaircraft fire has been a question which has received considerable study in the Coast Artillery. It is generally conceded that trial shot fire is a necessity and several methods of obtaining corrections from trial shots have been advanced. The methods contained in this bulletin are referred to as "standard." The careful preparation of fire prior to the appearance of the target is of particular importance to antiaircraft artillery due to the high speed of the target. While fire adjustment upon the target itself is desirable when it can be accomplished there are many officers who believe that the means suitable for a quick adjustment are yet to be developed and that our main dependence is to be placed on corrections made prior to the appearance of the target. All officers of Coast Artillery should be familiar with this bulletin—especially those who cannot define Case 1½.

A Field Day in the Polish Army

On July 14th the 1st Horse Artillery Group of the 2nd Cavalry Division held the first annual competition for the yearly prize established by Lieut. Col. Richard I. McKenney, C. A. C., U. S. Military Attache at Poland from 1925 to 1929. The competition was held at the summer training camp of the Group near Sniadowo, about one hundred kilometers north of Warsaw. The prize of fifty dollars (four hundred and forty-five Polish zloty) was divided among fifteen individuals; eight prizes for horsemanship and seven for gunnery. The first prize in each competition was one hundred zloty.

Only soldiers of the 1906 and 1907 classes who had excellent records were eligible to compete. There were fifteen entries in the horsemanship contest and twelve for the gun laying. The first prize for horsemanship was won by Corporal Chorzewski of the 1st Battery and that for the gunners by Corporal Rakowski.

The horsemanship contest consisted of a test in management of the horse at command, followed by a cross-country ride of seven kilometers with a time limit of twenty-eight minutes, and an obstacle ride three kilometers in length with six jumps. Condition of the horse and rider, loss of equipment, time and performance counted in the final score. The contest was with full field equipment.

The gun laying contest was for accuracy and speed and was similar to the corresponding part of the gunners' examination in the U. S. service, but included also laying of the piece while wearing the gas mask.

Following the competitions was a jumping contest, participated in by twenty soldiers of the Group. The course consisted of twelve jumps of different characters. The showing made was most creditable for the ordinary service mount as was used. This was followed by an exhibition of cossack riding by a selected

group of soldiers, which aroused much enthusiasm among the villagers and peasants who assembled to watch the exercises.

The prize winners were all given certificates, which were presented by Mrs. Marya Durski Trzasko, while Maj. Emer Yeager, the present U. S. Military Attache, presented the money prizes. One of the conditions is that the winner of the horsemanship prize must clean the loving cup which Colonel McKenney presented to the commander and officers of the Group before his departure in March, 1929, once each week.

Col. Antoni Durski Trzasko, the former commander of the Group and now chief of staff of the 1st Corps Area, drove out from Warsaw for the day with his wife and Maj. Emer Yeager, the present U. S. Military Attache. Several well known Artillery officers from other units were present, among whom were Colonel Schally, Commander of the 1st Artillery Group; Colonel Kunstler, Commander of the 1st Heavy Artillery Regiment, Col. Dunin Wolski and Major Stachowicz, Commander of the 12th Horse Artillery Group, which is situated at Ostrow, nearby.

After the exercises the officers of the Group entertained their guests for dinner at the Officers' Mess, where Col. Durski Trzasko presided. He expressed the appreciation of the Group to Colonel McKenney, the donor of the prize, to whom the regimental toast was drunk. Maj. Emer Yeager responded for Colonel McKenney.

The Panama Canal

So long as the Panama Canal exists it will be a colossal monument to American achievement. General Goethals headed another American Expeditionary Force (after everyone failed) and his accomplishment in carrying this project to a successful completion is not only evidence of the reality of American punch and energy but will forever add luster to the brilliant record of our sister branch of the service—the Corps of Engineers.

During the construction of the canal the Coast Artillery was in constant touch with its builders. As it began to assume shape and form it was only natural that the means for its defense should develop with it. The very material removed from Culebra Cut was dumped as a fill upon which to build a Coast Artillery fort and establish battery positions for its defense. Those Coast Artillerymen who are serving in Panama cannot fail to have a conscious or subconscious feeling of pride and responsibility that it is the Coast Artillery which has been made the principal Guardian of the Gates. You will pardon our sentimentality (perhaps) but when we have listened to the great shells screaming overhead and out to sea beyond Taboga they seemed to be saying something more than "They shall not pass." It was the eagle's scream of defiance and warning to all who might come to take what is ours.

The commercial and strategic importance of the Panama Canal is too well understood to mention here. Its strategic importance can hardly be calculated. Some rate the Panama Canal as equal in value to another navy of the strength of our present navy. Recently the press has published much concerning the approaching carrying capacity of the canal. It has been urged that work should be started on the Nicaraguan Canal in anticipation of this approaching date. From the strategic standpoint the additional canal through Nicaragua is desirable and will be strongly favored by all authorities on Naval strategy. There are also certain advantages from the commercial viewpoint. But the limit of the present canal in carrying capacity will probably not be reached for a number of years.

Gov. Harry Burgess of the Canal Zone is the authority for the figures which

we give. He states that the canal is now operating at about half capacity. The rate of increase in traffic has been carefully considered and the year 1960 has been fixed upon as the date when the present canal will function at its limit.

Not considering an additional canal the capacity of the present canal can be increased about two-thirds by the construction of a third set of locks alongside the present locks. The plans for these locks have been drawn and the cost of the additional construction estimated at between \$75,000,000.00 and \$100,000,000.00. The new lock chambers would be longer and wider than the present ones so that ships of greater length and beam could be accommodated. The airplane carriers *Lexington* and *Saratoga* can pass (the Navy can be depended upon to see to that) through the present locks, but there is little room to spare. It is probable that additional water storage would be needed to operate additional locks. This can easily be provided by the construction of a dam and reservoir near the headwaters of the Chagres River. Work on this project has begun at Alhajuela. The cost of the dam project will be comparatively small.

The year 1960 is some distance in the future. Perhaps changes as great as in the past thirty years may come about and water traffic lose some of its importance. But we can trust the ubiquitous engineers always to have the jump on the situation. And whatever the Engineers build the Coast Artillery will protect with its guns—whether the marauders approach by water or air.

The *Ersatz Preussen*

It appears that the new German battleship *Ersatz Preussen* has been getting the goat of all naval designers the world over. She has been hailed as a ship of magic and the work of wizards in the art of naval designing. There is no question but that German technicians stand right near the head of the class. Perhaps there is some tendency to overestimate their wizardry and accomplishments. About the time we have reached this conclusion they crash out a home run and we have to admit they are good. Capt. H. C. Dinger of our Navy makes a very reasonable comment in the *Naval Institute* on the German accomplishment in constructing this ship and at the same time he defends the home team of naval designers and technicians. Since the Coast Artillery is interested in anything that floats we translate Captain Dinger's comments from the English and set them down for your information.

Above we called the *Ersatz Preussen* a battleship. It is a kind of bloomin' hermaphrodite—a flivver battleship. It has a displacement of ten thousand tons—about that of our newest cruisers. But it mounts six 11-inch guns, eight 6-inch guns, has considerable side armor protection, and a protective deck or decks. It has a speed of twenty-six knots compared to thirty-five knots for the cruiser. It has only half the horsepower of the high speed cruiser. Here is a battleship of only ten thousand tons that seems to have nearly everything that a first line battleship has. How do they do it?

Captain Dinger says they have done it in several ways. In the first place great dependence has been placed on welding in lieu of riveting. The weight saved is more than an amateur would suppose—something like eight hundred tons. Then the ship is powered with Diesel engines cutting down weight per horsepower and increasing the cruising radius. Then, too, there has probably been a substitution of aluminum and magnesium alloys for steel and iron. These are lighter even if more expensive. Those who have hailed the *Ersatz Preussen* as a cheap ship are due to be disappointed for the cost is about twice what the same weight cruiser would cost.

There is nothing mysterious in all this. Our engineers have known all these

weight-saving devices for some time. The Diesel engine is lighter per horsepower, but its reliability is still under question. We are not yet ready to drop steam and put all our dependence on the Diesel engine. We might have to do so in our submarines, but we have no other choice there. Nor are we willing to reduce our factors of safety to the dangerous point simply to save weight. Certain alloys are lighter than steel of the same strength. But alloys are greatly affected by corrosion. Corrosion may be lessened by a protective plating of zinc or other noncorrosive metals. Considerable progress has been made along these lines. It is possible that the Germans are utilizing a newly developed process.

There is nothing about this ship which cannot be done by our own experts. Our designers are bound by certain specifications and weight reduction is not a paramount consideration. We could reduce weight by taking chances with welded joints and gambling with the factor of safety or putting all our eggs in the Diesel engine basket.

And besides we don't have to build a 10,000-ton battleship and Germany does. She is hampered in her building by certain restrictions imposed by the Allies. She is not *permitted* to build a battleship of more than ten thousand tons. To overcome this handicap she has called all her technical skill and knowledge into play to beat the game. The opinion of the naval experts is that she hasn't quite made the grade with the *Ersatz Preussen*. It is neither a cruiser nor a battleship. "It is not quite possible to have a greyhound and a bulldog in one unit." Each has its part to play in naval warfare and a combination of the two is a noble experiment which has not proven itself and probably won't until there is another battle of Jutland.

EDITOR'S NOTE: All of us old shell backs, including Joan Lowell, are apt to lose all sense of time and direction with one whiff of the old salt air of the sea. We're funny that way. If you don't like our treatment of professional notes just write and tell us about it. Probably nothing can be done about it, but it will relieve your mind.

The United States would not use its weapons of preparedness for purposes of aggression. This nation has never sought to make war. It avoids war whenever honor and security can be maintained otherwise. But it will not shrink from war when necessary to preserve its honor, its people's rights, or its independence.—Washington Post.

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. W. E. COLE, Colonel Coast Artillery Corps, President.

Project No. 719, Confidential.

Project No. 720, Installation of Data Receivers on 3-Inch A. A. Mount, M1917.—The Coast Artillery Board has recommended that:

- a. Brackets and gears for Case III be installed on M1917 guns.
- b. Sighting systems for Case 1½ fire be removed.
- c. A quadrant elevation and an azimuth scale be provided.
- d. The trigger and shaft firing assembly be removed.
- e. The 3-inch A. A. M1917 guns be provided with a method of firing by lanyard similar to that used on the 3-inch A. A. Mounts M1 and M1917MI.

Project No. 721, Flents Sound Absorbers (for protection of ear drums from concussion).—The Board is making a study and test as to the desirability of adopting the Flents Sound Absorbers as standard ear protectors for antiaircraft artillery gun crews.

Project No. 722, Tow Chains for Tractor Artillery.—There is need for a much larger and stronger tow chain for use with ten-ton tractor. The Ordnance Department has been requested to furnish tow chains and cables for service test.

Project No. 723, Study of the Causes of Misfires.—The Coast Artillery Board is making a study of the causes of misfires, to include types of primers, firing mechanisms, electric circuits, on all types of Coast Artillery armament.

Project No. 724, Modification of Tractor Trailer M1918 for Antiaircraft Artillery.—The Coast Artillery Board has recommended that the Tractor Trailer M-1918 for 3-inch A. A. guns be withdrawn as a "limited standard" and that no more be manufactured or issued to 3-inch A. A. gun batteries; that a new tractor trailer be designed and issued which will contain the following features:

- (1) Strong tubular steel draw bar that will not buckle under load.
- (2) Five-ton capacity and strong enough in rear assembly to carry load.
- (3) Bendix brakes, or equivalent.
- (4) Ordnance T-1 towing pintle, or equivalent, on rear.
- (5) Pneumatic tires. Wheels and tires interchangeable with those on M-1 mobile 3-inch A. A. gun and on Instrument Trailer M-1.
- (6) Ramp attachment so designed as not to weaken the ramp at point of attachment, and the ramp flush with floor or trailer if practicable.
- (7) Suitable ramp, possibly Z-bar and channel type be provided.
- (8) Suitable tail light.

Project No. 725, Ordnance Towing Pintle, T-1.—The towing pintle now installed is unsatisfactory. On several recent occasions the towing vehicle has lost the tow. It is believed the Ordnance Towing Pintle, T-1, will overcome objections to the present pintle.

Project No. 726, Dummy Projectile for 3-Inch Antiaircraft Artillery.—The Coast Artillery Board is of opinion that the antiaircraft artillery dummy projectile as at present supplied should be made more durable, and has recommended that a new dummy drill cartridge be designed for test, and that Tobin Bronze base, as well as other types, be considered.

**MILITARY CARNIVAL TO BE HELD IN
WASHINGTON**

The Military Carnival and Exhibition will be held at the Army War College, Washington Barracks, Washington, on October 3, 4, and 5, 1929. This affair is now an annual happening and has been attracting more and more interest and popular approval. This year the Coast Artillery will play a conspicuous part in contributing to its success. The 61st Coast Artillery (Antiaircraft) now at Aberdeen Proving Ground will furnish a detachment with two guns which will give a realistic imitation of antiaircraft firing. All the various types of Antiaircraft instruments will be on view. In addition, Battery "A," 61st, will be present with its searchlights to light up the sky and add to the brilliance of the spectacle. All branches will participate. If the carnival of last year is a precedent this show will be well worth seeing. Proceeds go to the Army Relief.

COAST ARTILLERY ORDERS

EDITOR'S NOTE: We are including in this issue the War Department orders issued pertaining to Coast Artillery officers. The orders given cover (approximately) the period July 1-August 7. Considering the fact that the JOURNAL is compelled to lag behind about a month due to the length of time required for printing, our subscribers may not be particularly interested in reading them in the JOURNAL. On the other hand, they have been considerably condensed and some may desire to look them over rapidly to observe changes in personnel which have been directed. Most permanent movement orders do not become effective until several months after publication. The publication of Coast Artillery Orders will be continued if the reaction is favorable. How about it?

Maj. Gen. Johnson Hagood, U. S. A., from command 2nd C. A. District, Fort Totten, N. Y.; to command 7th Corps Area, Omaha, Neb.

Brig. Gen. H. J. Hatch, U. S. A., from Philippines; to command 1st C. A. District, Boston, Mass.

Brig Gen. W. P. Jackson, U. S. A., from command 1st C. A. District, Boston, Mass.; to command 2d Brigade, Madison Barracks, N. Y., November 12.

Brig. Gen. C. E. Kilbourne, U. S. A., from command 2nd Brigade, Madison Barracks, N. Y., to Philippines; sail New York, November 13.

Col. J. P. Hains, leave extended one month.

Lieut. Col. A. L. Fuller, detailed member Army Retiring Board, Presidio of San Francisco.

Lieut. Col. J. P. Hopkins, leave extended one month.

Lieut. Col. R. I. McKenney, leave three days.

Maj. Moses Goodman, name changed to William Moses Goodman.

Maj. C. B. Lindner, from 61st Fort Monroe, Virginia, to student C. & G. S. School, Fort Leavenworth.

Maj. J. B. Martin, leave twenty days, August 12.

Maj. C. D. Pierce, from R. O. T. C. Kansas A. and M. College, to graduate School of Business, Harvard University; sail San Francisco, July 26.

Maj. L. R. Watrous, Jr., transferred to Finance Department, July 10 and to Madison Barracks, N. Y.

Capt. G. W. Brent, leave extended one month, sick.

Capt. Mario Cordero, leave two months, August 2.

Capt. C. S. Denny, to Panama; sail New York, February 28.

Capt. A. F. Gilmore, from R. O. T. C. University of New Hampshire, transferred to Q. M. C. and to Holabird Q. M. Depot.

Capt. D. B. Greenwood, from 52nd Fort Eustis, to Panama; sail New York, July 11.

Capt. E. A. Manthey, from Fort MacArthur, to Philippines.

Capt. E. G. Riggs, from Fort Monroe, to Hawaii; sail San Francisco, October 19.

Capt. William Sackville, orders to sail for Philippines, August 20, revoked.

Capt. W. H. Sweet, placed on flying duty September 15, two months.

1st Lieut. Edward Barber, from Headquarters First Corps Area, to student C. A. S., Fort Monroe.

1st Lieut. N. A. Burnell, from 2nd C. A., Fort Sherman, to 52nd C. A., Fort Eustis.

1st Lieut. H. C. Fowler, leave one month, August 10.

1st Lieut. A. L. Haggart, promoted Captain, July 2.

- 1st Lieut. J. C. Kilbourne, placed on flying duty two months, September 15.
1st Lieut. R. H. Kreuter, leave twenty days.
1st Lieut. J. M. Moore, from 52nd C. A., Fort Eustis, to U. S. M. A., as instructor, August 20.
1st Lieut. B. C. Snow, transferred to C. of E., July 12.
1st Lieut. A. M. Wilson, Jr., from 52nd C. A., Fort Eustis, to student C. A. S., September 7.
2nd Lieut. B. M. Alba, P. S., from 92nd C. A., Fort Mills, to Student C. A. S., September 13.
2nd Lieut. R. L. Anderson, graduate U. S. M. A., to Philippines; sail New York, November 13.
2nd Lieut. J. T. Barber, graduate U. S. M. A., to 14th C. A., Fort Worden.
2nd Lieut. K. M. Briggs, graduate U. S. M. A., to Philippines; sail New York, November 13.
2nd Lieut. L. H. Brownlee, graduate U. S. M. A., to 62nd C. A., Fort Totten.
2nd Lieut. C. G. Calloway, detailed in Air Corps, September 12.
2nd Lieut. G. R. Carey, graduate U. S. M. A., to Hawaii, expiration of leave.
2nd Lieut. N. A. Congdon, graduate U. S. M. A., to Panama; sail New York, November 22.
2nd Lieut. H. H. DeKaye, detailed in Air Corps, September 12.
2nd Lieut. E. A. Dodson, detailed in Air Corps, September 12.
2nd Lieut. D. C. Doubleday, detailed in Air Corps, September 12.
2nd Lieut. P. Elias, graduate U. S. M. A., to Philippines; sail San Francisco, December.
2nd Lieut. R. Fink, detailed in Air Corps, September 12.
2nd Lieut. W. H. Francis, graduate U. S. M. A., to 61st C. A., Fort Monroe.
2nd Lieut. O. H. Gilbert, graduate U. S. M. A., to 3d C. A., Fort MacArthur.
2nd Lieut. E. G. Griffith, detailed in Air Corps, September 12.
2nd Lieut. L. M. Guyer, graduate U. S. M. A., to 13th C. A., Fort Barrancas.
2nd Lieut. E. F. Heidland, graduate U. S. M. A., to 51st C. A., Fort Eustis.
2nd Lieut. E. B. Hempstead, graduate U. S. M. A., to Panama; sail San Francisco, October 15.
2nd Lieut. J. E. Harridge, graduate U. S. M. A., to Panama; sail San Francisco, October 15.
2nd Lieut. G. E. Keeler, Jr., graduate U. S. M. A., to 62nd C. A., Fort Totten.
2nd Lieut. D. D. Martin, promoted 1st Lieut., July 22.
2nd Lieut. W. L. McCulla, graduate U. S. M. A., to Philippine; sail San Francisco, December.
2nd Lieut. T. Be. McDonald, detailed Air Corps, September 12.
2nd Lieut. J. E. McGraw, promoted 1st Lieut., July 10.
2nd Lieut. W. F. McKee, graduate U. S. M. A., to 13th C. A., Fort Barrancas.
2nd Lieut. H. R. McKenzie, graduate U. S. M. A., to 63d C. A., Fort Winfield Scott.
2nd Lieut. A. D. Miller, promoted 1st Lieut., July 10.
2nd Lieut. H. C. Parks, detailed Air Corps, September 12.
2nd Lieut. W. H. Parr, detailed Air Corps, September 12.
2nd Lieut. C. L. Partin, detailed Air Corps, September 12.
2nd Lieut. H. O. Paxson, transferred to C. of E., July 3.

2nd Lieut. H. E. Pearson, graduate U. S. M. A., to 7th C. A., Fort Hancock.

2nd Lieut. E. D. Peddicord, from Fort Hancock, to Panama; sail New York, February 28.

2nd Lieut. K. E. Rasmussen, graduate U. S. M. A., to 62nd C. A., Fort Totten.

2nd Lieut. J. G. Reynolds, graduate U. S. M. A., to 3d C. A., Fort MacArthur.

2nd Lieut. A. Samuels, Jr., graduate U. S. M. A., to 6th C. A., Fort Winfield Scott.

2nd Lieut. J. R. Seward, graduate U. S. M. A., to 11th C. A., Fort H. G. Wright.

2nd Lieut. P. W. Steinbeck, graduate U. S. M. A., to Panama; sail New York, November 22.

2nd Lieut. S. V. Stephenson, detailed Air Corps, September 12.

2nd Lieut. W. M. Talbot, graduate U. S. M. A., to 51st C. A., Fort Eustis.

2nd Lieut. M. R. Thompson, graduate U. S. M. A., to Hawaii; sail San Francisco, November 6.

2nd Lieut. G. A. Tucker, promoted 1st Lieut. July 23.

2nd Lieut. W. M. Vestal, graduate U. S. M. A., to 63d C. A., Fort Winfield Scott; sail New York, October 15.

2nd Lieut. W. A. Weddell, leave twenty-five days, December 3.

2nd Lieut. K. J. Woodbury, graduate U. S. M. A., to 9th C. A., Fort Banks.

*Among civilized nations, war is never waged for its own sake. It is always due to some antecedent cause, or to extraneous motive. This is universally recognized. All are substantially agreed that wars are just due to more or less specific causes. * * * Instead of simply crying "No More War!" then, we should like to see the pacifists address themselves to studying and searching out the causes of war, and then to abating them. Let them strive to improve economic conditions, so that there will be no war-engendering discontents. Let them correct the teachings of history and the current comments upon international affairs, so as to get rid of the misunderstandings, jealousies, and what not, which too often lead to wars. In such efforts we should cry to them God speed! For so long as causes for war exist, men will fight, even if they are without arms and armies; while if there are no causes for war, they will not fight, even though every nation be armed to the teeth. When the causes of war are abolished, and not until then, there will be "no more war."—Boston Transcript.*



"We have just ceased firing from four of our latest model anti-aircraft guns. During the past few years there has been marked improvement both in the guns and the instruments used for determining firing data with the airplane targets. It is necessary, of course, that we should develop an anti-aircraft gun along with the development of the airplane. These two great developments should go hand in hand. We cannot have airplanes everywhere to protect troops, peoples, and various military establishments. The speed with which planes may approach troops and magazines is such that we could not hope to have planes in the air. We plan to have anti-aircraft guns always ready with skilled troops to meet airplanes should the enemy be able to bring his formations to our organizations. There has been great progress in the skill of our troops, in the development of guns and in the designing of range-finding equipment."—From an address by General Charles P. Summerall, Chief of Staff, U. S. Army, at Fort Story, Va., April 19, 1929.

—Army Ordnance.

BOOK REVIEWS

All Quiet on the Western Front. By Erich Maria Remarque. Translated by A. W. Whelen. Boston: Little, Brown and Company. 1929. 5" x 7½". 291 p. \$2.50.

The German original of this remarkable book, *Im Westen Nichtes Neues*, was published in January and was an immediate success. The translation, published more recently, has been equally well received in England and in America.

The author entered the Army at eighteen and served in the war on the western front. Seeing war at a most impressionable age, he, like countless others on both sides, was profoundly affected. Again like the others, he was particularly struck by the senselessness of war and by the denial to himself and the young men of his generation of a normal youth. Boys one day, they became men the next, and those who survived never had the experience of developing from boyhood through youth to manhood. Having learned how unimportant is the life of an individual, having been thrilled to the utmost until soul and body refused longer to respond to thrills, having drained life to the dregs even before youth had passed, to what, they asked themselves, could they look forward? What could life possibly hold for them that was worth while. The more highly sensitive the individual, the more acute did such questions become.

The book may be called an emotional study of the war, drawn from the experiences of the author and of his friends on the western front. It is not a narrative of the war; its episodes do not possess the continuity of a narrative. It is more the picture of the life of a soldier in the war. Introspectively, the author queries the fate of his generation, and it is perhaps this, as much as anything else, that has popularized the volume.

The author writes movingly and realistically in picturing the tragedy of war. His language is, at times, shockingly crude, but less so than was common among soldiers at the front. Directly and simply he achieves a most remarkable book.

The Official History of the Gallipoli Campaign. By Brig. Gen. C. F. Aspinwall-Oglander. London: William Heinemann, Ltd. 1929. 5½" x 8½". 380 + 77 p. 1 l. Maps 4s. 6d.

The British official history of the World War, which is being prepared under the direction of the Historical Section, Committee of Imperial Defense, has made excellent progress in recent months. Each theater of operations is being treated separately, and the work pertaining to some of the theaters of lesser importance, as Palestine and Egypt, has been completed. Of greatest interest to the Coast Artilleryman will be the record of operations in the Gallipoli campaign, of which the first volume has just appeared.

The Dardanelles and Gallipoli campaigns have been the subjects of so much controversy that the British official account will be welcomed. In the first project for the preparation of the history of the operations against the Turks, it was planned to treat of the Dardanelles and Gallipoli campaigns separately, but when it came to the point of actual writing it was found that combined military-naval operations do not readily lend themselves to separate discussion from the naval and military viewpoints. Thus, in Volumes II and III of the *Naval History of the War*, wherein the naval operations at the Dardanelles are

treated at length, there is much of the military operations on land, and in the present account of the Gallipoli campaign the author has included an extended outline of the naval record. The Coast Artillery student will therefore find it desirable to use both accounts to secure the fullest details of the whole series of operations at Gallipoli and the Dardanelles.

The history of the Gallipoli campaign will be complete in two volumes. This first volume carries the record of events from the outbreak of war to the middle of May, 1915. The account begins with a survey of the influence of Turkey on European politics for the past hundred years, the Turkish situation in 1914, and the military situation of the Balkan states at the outbreak of the World War. This is followed by a short account of the naval attack and the further preparations on both sides. The central part of the book is devoted to the landings of April 25, 1915, at Anzac, Y Beach, and Helles. The final chapters deal with the struggle for Achi Baba, and the operations of the New Zealand and Australian troops to include the second battle of Krithia. Appendices to the volume and a set of maps are bound in a separate case.

So far, the author has not attempted to state whether or not success at Gallipoli would have produced the results expected, and it is not probable that he will be able to secure enough evidence to justify him in making any such statement. However, he does go so far as to say that "there can be little doubt that a combined naval and military attack, carefully planned in every detail before the troops embarked, and carried out in April with all the essential advantages of surprise, could scarcely have failed to succeed." Volume II will be awaited with interest.

Contract Bridge For All. By Milton Work. Philadelphia: J. C. Winston. 1929. 7¼"x5". 243 p. \$2.00.

Another thrill many of us are having these days is changing from Auction to Contract Bridge. Fortunately for us, Mr. Work has written a new book, "Contract Bridge For All," which should help the game to become more uniform among all players. Get a copy of this book as soon as you can, and I predict that you will soon become a Contract enthusiast. If you already are an addict it will serve to study your game and clear up any vagueness you may have about the correct manner in which to bid your hand.

Mr. Work goes on the supposition that any one learning to play Contract has already played Auction, so he does not discuss the play of the hands of the leads as these are, naturally, the same in both games. I have read several books on Contract, but, to me, Mr. Work is always clearer and more concise than other bridge experts. For that reason and because he does not believe in a lot of cut and dried conventions, I have always preferred his works on the subject. People who play "conventions" are likely to run into trouble when they play with comparative strangers who may or may not use the same rules of play. He gives us a logical bidding for all normal hands and for many freak hands. Slam bidding is discussed in detail as is also the difficult art of effectively bidding a two-suiter. After that—"let your conscience be your guide."

The latest laws of the New York Whist Club are included and a concise table of these laws together with the various counts is conveniently placed just inside the front cover. Altogether, you will find this book a very reliable work, and I hope that when we have studied it carefully, we may have many a hard-fought game together.

Peter the Czar—Reformer. By Nais Veastnaya. Hollywood: David Graham Fischer. 1929. 6¼"x9¾." 384 p. Il. \$6.00.

Every generation produces some men born ahead of their time. Outstanding among these was Peter the Great. Raised among the people, he ever retained the plebeian characteristics acquired during childhood. He delighted in physical labor and throughout his life his greatest ambition was to stir the Russian people to productive labor. He realized that labor, to be productive, requires knowledge and he therefore ever thirsted for knowledge—more, perhaps, for the benefit of his people than for the sake of knowledge alone. There being little knowledge to be acquired in Russia, he went abroad to learn the things he desired to know. He even learned warfare from his enemies.

Fortunate it was that his was a docile people, for he changed their lives completely. His contacts with Central and Western Europe opened his eyes to the advantages of education and work, and he forced the Russians to adopt the manners of neighboring countries—to advance in civilization. He became a reformer. He reformed everything—the army, the church, the government. He forced the Russians to adopt modern dress. He made the men shave or pay a tax on beards, if they were too orthodox to remove their beards. He sent young men abroad to study, and he imported professional and business men from other countries. In every possible way, he stirred the great, unawakened mass of Russia, and, with ruthless hand, prevented protest.

Peter's habit of quick decision is illustrated in an anecdote of the wars in the northwest, not long after the foundation of St. Petersburg. Visiting his troops in Livonia, the Czar stopped in a small village for luncheon.

Near him a tall, red-cheeked, strong young girl was putting upon a table a soldier's frugal lunch, with a flask of wine. When it was ready she also glanced at the terrible Muscovite Czar. Two pairs of black eyes met. The girl dropped an obeisance, but her brilliant eyes were not cast down. She smilingly looked at the tall man who, whatever he might have been to others, was kindly smiling at her.

"Who is she?" Peter asked when the girl had left the room.

"A war prisoner, your Majesty, a poor peasant child, Martha Scavronska by name," replied Menshikoff. "She was captured with the family of Pastor Gluck."

"A poor peasant girl," Peter echoed meditatively. "Well," he said after a silence, "from this day she is my prisoner."

Rechristened Katinka, Martha became the Czarina Catherine.

Miss Veastnaya is a Russian noblewoman, the daughter of an admiral of the old Russian navy. She has lived in America for twenty years and is an American citizen, but she brings to this study of Peter the Great a knowledge of Russian history and an understanding of Russian temperament which enables her to picture Peter as something more than the monster he has been painted. Her account is simple and straightforward and endeavors to secure for Peter the place in history that is rightfully his. Her efforts are ably seconded by the publisher, who gives us an unusually good example of the art of making books. Thirty-four fine illustrations amplify the text.

Peter the Great has been overlooked in the biographical output of recent years, and it is perhaps just as well. No other biographer could have written with greater sympathy or understanding, and, in waiting for Miss Veastnaya's study, we have only gained.

Field Marshal Earl Haig. By Brig. Gen. John Charteris. New York: Charles Scribner's Sons. 1929. 6"x9". 407 p. Il. \$6.00.

In this book the theme of the author is found in a single sentence. "Haig," he says, "will stand out alone and without rival as the greatest of the great soldiers who led the armies of their country to battle in the gigantic conflict waged in France and Belgium."

General Charteris writes with authority. He had served with Haig in India in the days before the war, and he was on Haig's staff through all the action in France until late in the war, when he accepted a command. It is probable that no other man was closer to the British commander-in-chief or achieved a fuller understanding of him. In consequence, the book is written from Haig's point of view, and much of it is in Haig's own language, as quoted from conversations and verbal communications. Because of his long and intimate acquaintance with his chief, the author may be unduly biased, but his devotion, his enthusiasm, his knowledge of military art, and his accuracy in facts enable him to make a strong case.

As a boy, Haig showed no particular talent and no special leaning toward a military life. He was not companionable, and even at Oxford he took no great part in university life. Not until he reached Sandhurst, at a more advanced age than was usual, did he begin to stand out from among his companions. Here his talent began to show, and his success in his future career was confidently predicted by one of the professors.

A soldier first, last, and all the time, Haig's rise in the army was rapid. Politics, in so far as he himself was concerned, played no part; in fact, he was somewhat contemptuous of politicians. Friendship, also, was a factor of little importance, for Haig was unable to inspire the unquestioning love of his fellow men, particularly of his subordinates, which most great military leaders inspired. Respect and confidence he did gain, together with a certain amount of affection, but, on the whole, his following was one of the head rather than of the heart. Lord Northcliffe, after a first meeting, called him "the one indispensable man in Britain today," and thereafter supported him strongly.

Haig's conduct of operations on the western front and his career during the war and afterward leave no doubt that he was a great man. Whether he deserves foremost rank, such as General Charteris seeks to give him, must still remain open to doubt. Not yet are we ready to concede to Earl Haig the brilliancy which is characteristic of all great military leaders, although we cannot deny the brilliancy of General Charteris' volume. We may not be able to acquire the author's personal convictions, but we cannot afford to overlook them. —R. A.

The Man in the Queue. By Gordon Daviot. New York: E. P. Dutton. 1929. 246 p. \$2.00.

For a hot afternoon or an evening at home a good detective story surely takes one's mind off of one's troubles. Try "The Man in the Queue" the next time you feel bored with yourself and your surroundings.

The author, Gordon Daviot, gives us all the thrills of a murder and all the clues, true and false, in the first dozen pages if you can see them. From then on, we follow the workings of the Master Mind of Scotland Yard. The crime is, seemingly, without a single clue. No one claims the body of the murdered man or can give any definite information to the police. It is interesting, especially

to the detective-story fan, to see how the case is built up, bit by bit, to all appearance, out of thin air.

The book, the winner of the E. P. Dutton Mystery Prize for the month, seems to vindicate its selection.

Further Aspects of Mechanization. By Brig. Gen. H. Rowan-Robinson, C. M. G., D. S. O., P. A. C. England: William Clowes & Sons. 1929. 8¾" x 5½". 116 p. 6 shillings.

The distinguished author of "Further Aspects of Mechanization" has, in this new book, revised and elaborated many of the thoughts presented in his "Artillery: Today and Tomorrow" and "Some Aspects of Mechanization." Concerning these books, which appeared in 1927, the author says that he had, at that time, "never been in personal contact with the armored force, and he had, therefore, to draw largely on his imagination."

Perusal of the two previous books, particularly the one on artillery, reveals the imaginative quality of this author's work, and though imagination is essential to progress in mechanization, a modicum of control is desirable. Since 1927, the author has "had the opportunity, previously denied him, of studying the subject of mechanization at close quarters," while acting as chief umpire for the 3d Division, of which the Experimental Armored Force formed part in the British maneuvers of 1928. The results of his observations, further study and thought on the subject, appear in his new book. He naturally considers mechanization from the viewpoint of British imperial interests and commitments under the Locarno Pacts. Strategic considerations that affect British and American mechanization plans undoubtedly differ; however, appreciation of the British problems may help us to clarify our own, and study of their tactical ideas may be helpful.

"Further Aspects of Mechanization" discusses the author's present views on both general and specific phases of mechanization problems. Four of the twelve chapters are revised editions of articles that originally appeared in the *British Army, Navy and Air Force Gazette*. These four chapters deal with the work of the Experimental Armored Force in 1928, future policy, strategy, and tactics. The first chapter that presents new material is called "The Passing of Great Armies." This title indicates its trend, and the following passage makes clear the author's conclusions: "There will, indeed, always be a large place for cavalry and infantry in the scheme of things in the British Empire, but it will be a special place, in special terrain and against special opponents, and neither of these arms will play any great part in the modern type of European warfare." The remaining chapters discuss specific mechanization problems of infantry, artillery, cavalry, engineers, supply agencies, and air forces. Referring to co-operation between mechanized forces in the air and on the ground, the author asks a question that has received some consideration in our own service: "Working together in such an intimate relationship, interdependent in so many ways, is it venturesome to suggest that these two services be made one?"

This book is interesting because it shows that personal experience with mechanized units, even through superficial contacts, has served to modify the author's previous views. Mobility has risen in his scale of values, and fire power has somewhat decreased. As yet, the author apparently has not begun to appreciate the value of shock action. His ideas on design, organization, and tactics consequently lack a fundamental element that is essential to a well-balanced presentation of the subject. Despite this fault, the book has value. It raises questions that deserve discussion, and stimulates timely thought on an important subject.

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