

THE COAST ARTILLERY JOURNAL

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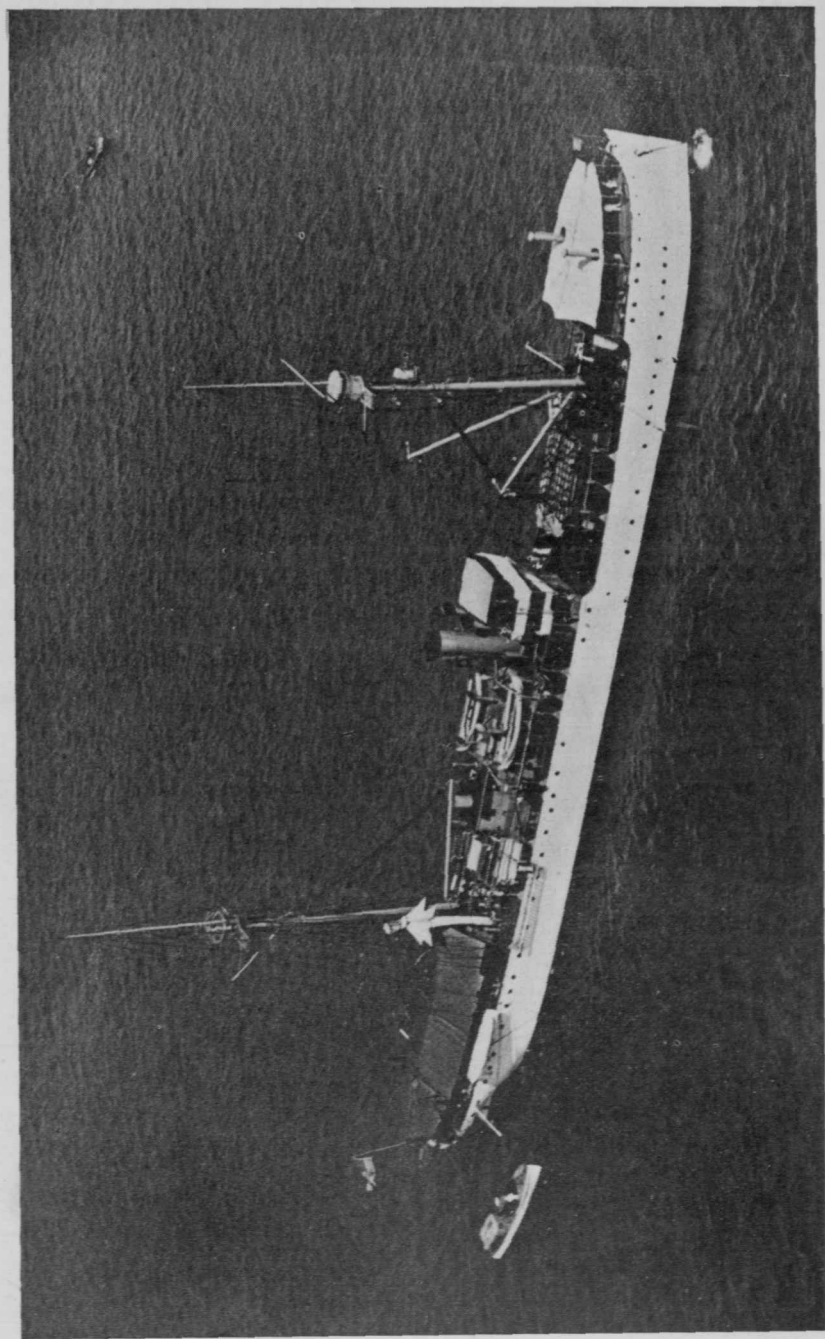
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The Power Industry in Defense Plans*

By COLONEL DWIGHT F. DAVIS

* * * * *

IN considering all war plans, we must always remember that there are two kinds of preparedness: one offensive, the other defensive. Failure to distinguish between these two classes, which are directly opposite in character, is the cause of much of the confusion of thought in relation to preparedness. Offensive preparation indicates aggression and is provocative of war by the destruction of international confidence. Defensive preparation discourages aggression and so is a factor towards the maintenance of international stabilization. For example, an aggressive nation, encouraged by its leaders to attain its ends by force, which maintained a large professional standing army, thoroughly equipped and trained for war, would illustrate offensive preparedness, and by forcing other nations to arm for their own security would tend to provoke war.

On the other hand, the defensive preparation of a peaceful nation looks only to the safeguarding of its own soil by a small permanent force, backed by a citizen soldiery which prepares for active military service only when danger is imminent. Defensive preparedness is unsuited to aggression and hence is not, in any sense, a threat against any other nation, while it is at the same time a warning that the nation is prepared to defend itself against invasion with all the resources at its command. Such a defensive preparedness is preparation against war and is an assurance of peace. American preparedness under the National Defense Act is entirely defensive in character and is our best insurance against war. If we had had a reasonable defense preparedness in the past it would unquestionably have saved us thousands of valuable lives and billions of dollars. We must not make this unnecessary sacrifice again.

A good illustration of defensive preparedness is our plan for the utilization of our entire industrial strength in case we are ever attacked.

*An address by the Secretary of War at the Annual Convention of the National Electric Light Association at Atlantic City. New Jersey.

This industrial plan cannot possibly be used aggressively, but it stands as a warning that if we are ever forced into war, we are prepared to use every factory, every citizen, every material resource in our defense. Today, I am going to speak to you briefly about the part which the power industry plays in our industrial defense plans.

Under the National Defense Act, the responsibility for mobilization of industry is directly upon the Assistant Secretary of War, Mr. MacNider. This is the task of making plans for the procurement of adequate supplies for the Army in case of war. The magnitude of this task is stupendous. In the World War, the War Department expended some fourteen billion dollars from June, 1917, up to April 30, 1919. Of this, approximately twelve billion dollars was for supplies necessary for the prosecution of the war. When we consider that in 1919 the total value of the finished products manufactured in the United States was only sixty-two billions, we can visualize the task placed upon the shoulders of the War Department. It is the greatest and most complex business problem that can ever confront a country.

What, then, is the business-like way of preparing to meet this problem? It is to study out carefully each detail in advance. When you of the Control Station Industry are planning for the expansion of your power plants or your transmission system, you move cautiously. Your engineers investigate all of the factors bearing upon the project. You study past history. You look up your customer and load curves over a series of years. You study the trends in population, in business, and in the use of labor-saving devices and their effect upon your railway, industrial, lighting, and commercial loads. Finally, you decide that it is economically possible and advantageous to make the new installations.

All of that requires time. Time is what we lack at the outbreak of a war. Almost instantly the demands of our fighting forces are multiplied two or three hundred times, and must be fulfilled. We are planning now, when we have time, so that, should we ever again be forced into an armed conflict, we will be able to set the wheels of industry turning out munitions of war. To obtain the enormous amounts of supplies necessary in a modern war and to obtain them economically and rapidly is truly a stupendous task.

Prior to the World War the country was without an adequate plan for national defense. Our General Staff, which had been organized in 1903, was small and restricted in its activities. The World War found the nation unprepared. As a result of the chaotic conditions and the sad experiences of 1917 and 1918, Congress, in 1920, passed the National Defense Act, and provided adequate authority for studying the problems connected with national defense. The purely military prob-

lems are the responsibility of the General Staff, which is now an efficient body of carefully trained officers. The civilian problem, that of mobilizing the industries of the country, is the particular responsibility of the Assistant Secretary of War, under the Secretary of War, both of whom are civilians. The Assistant Secretary is charged directly with the assurance of adequate provision for the mobilization of materiel and industrial organizations essential to war-time needs. This is one of our greatest problems. The National Defense Act provides for seven supply branches. The coordination of their efforts is now part of the duty of the Assistant Secretary of War. His greater problem, however, concerns the relations of the War Department with industry itself. The problem resolves itself into one of mass procurement. The materiel per soldier required in a war program of today is many times greater than at the time of the Civil War. A war effort on a major scale involves the supplying of 35,000 articles, made up of some 700,000 different items, of every conceivable kind, and in quantities running into many millions.

Each of our supply branches will have its peculiar problems. In general, the articles supplied by the Quartermaster Corps are standard commercial articles, but their problem is no less important or difficult. Their articles are required by the millions—some twenty million pairs of shoes, for example—and are required immediately upon the calling of soldiers to the colors. The articles furnished by the Ordnance Department are non-commercial. New facilities, new manufacturing processes, and the application of mass production principles are required. The problem of the Air Corps is difficult because of the lack of manufacturing capacity. In time, perhaps, commercial aviation will ameliorate this condition. So with all the seven supply branches, each has its peculiar problem, and each is important.

Before any of the Branches can lay their plans for procurement they must know what will be required in case of an emergency. To determine this requires a military decision, a decision based upon the best information available as to any possible contingency. The amount, not only of finished products, but also the raw materials involved in those finished products, must be determined. A general Mobilization Plan has been drawn up which serves as the basis for these computations. After some six years of work these requirements are fairly complete and form a good working basis for procurement plans.

In the World War we had the Government Departments bidding against each other. Orders were placed with manufacturers by four or five Government agents, each demanding priority for his work. This could have been avoided by previous planning. We hope to do it by

allocating certain facilities to certain agencies of the Government, by surveying these facilities as to their capacity to meet our needs, and then asking them to accept Schedules of Production in case of need. In this manner we hope to avoid much of the confusion of the last war. However, there are many factors which cannot be so easily controlled.

Modern wars are not mere engagements between armed forces. Entire nations are involved. Recent advices from one of the European powers indicate the drafting both of men and women for war endeavor. We have not yet come to that state; but a major emergency is one that would demand the maximum effort by the whole nation. In time of emergency individual rights and privileges are subordinated to the benefit of the whole. No class can consider itself exempt. In war we must accustom ourselves to rigid control by the Government. Almost complete control must be in the hands of one man. This is quite the opposite of our peacetime conception. It should be. Large intangible forces which vitally affect our ability to win a war must be coordinated and directed toward accomplishing the desired end.

Capital must play its part. The financing of a war is an intricate and delicate operation. As in the past, our Federal Reserve System will play an important rôle. We cannot literally *draft* capital but we can direct its use for war endeavor. Prices must be controlled, for undue inflation tends to reduce production of supplies by decreasing the efficiency of labor. On the other hand, a moderate rise in prices will always increase production and will therefore be necessary in stimulating our war endeavor. With capital controlled by the limitation of capital issues, and with non-essential construction programs curtailed, money, labor, power, and transportation will be released for the war endeavor. Prices will not rise unduly, so as to necessitate greatly increased wages, and the country will be free to exert itself to the maximum war effort. We must not expect to follow the slogan, "Business as usual." We must direct our efforts toward winning the war.

However, a war program is dependent upon raw materials. We are blest with a great independence of foreign nations for most of our essential items. Coal, iron ore, copper, petroleum, zinc, and lead are ours in great abundance. On the other hand, we lack rubber, tin, tungsten, manganese, and many others in adequate amounts to meet an emergency. What are you doing to provide for mica, shellac, tin, nickel, and rubber, which are so important in your industry? Have you sufficient stocks on hand to carry you through a two-year engagement if our sea lanes are cut? Can you substitute any of our domestic products for these strategic articles? These are but examples of the many problems which you can study to assist us.

War is a matter of transportation; war is movement; without adequate transportation our military endeavors fail at the front and our industrial program fails at home. Our lines of traffic must be kept open, and the orderly flow of raw materials, including fuel, into our factories must be assured.

Two years ago I presented to the railroad men of the country a tentative plan for operating the railroads in war. This plan had been worked up through the hearty cooperation of the railroads with the War Department and had received the approval of the President. Of course, he intended in no way to tie the hands of future administrations, but put the plan forth as the best thought of the present incumbents. That plan provided that the railroads would not be taken over by the Government unless the emergency was such that in the opinion of the President that step was necessary in order to insure the efficient prosecution of the war. It gave the principles upon which the plan of operation should be based in case it was necessary for the Government to take possession and assume control. It provided for an Executive Assistant, appointed by the President, to be assisted by a committee of railroad presidents nominated by the Association of Railroad Executives. This plan was considered by the railroad executives of the country and received their formal approval in 1925. It stands as a tentative plan, assuring the nation of adequate transportation in case of war. In addition to this plan, continuous contact is maintained by the War Department with the American Railway Association with a view to understanding each other's problems and each other's duties in case of an emergency.

In the past war we had other troubles besides transportation. The power industry caused some of the worry. In certain localized areas there were serious power shortages. Soon after we began to place orders for supplies a threatened shortage of power occurred in the Niagara district. This was followed by shortages in other districts. A Power Committee was formed by the Council of National Defense to investigate the power situation. Later, this committee became the Power Section of the War Industries Board. Mr. Frederick Darlington, of New York, and General Charles Keller, of the Corps of Engineers of the Army, were largely responsible for the successful handling of the many difficult problems which arose. The power industry cooperated wholeheartedly in their efforts, but in certain localities it was unable to meet all the demands placed upon it. The power capacity had to be increased, the distribution made more equitable, and certain non-essential uses had to be curtailed in order to meet the requirements of our essential war industries. It became a question of continuing the use of power

for advertising and making non-essential goods, or manufacturing shells and chemicals for our fighting forces at the front. The decision, of course, was in favor of the boys at the front. The decisions were finally made by one man, but the operation and technical management of the plants remained with those best able to manage them, namely, the Central Station Industry itself.

In time of war the national energies must not be taken out of the hands of the private agencies, experienced in their use, and put into the hands of a gigantic official machine. Such a machine could not manage them as effectively. Private initiative, energy, and resourcefulness must not be thrown aside and the vital and complicated processes of production and transportation lowered. Yet the energies of all must be directed to their effective use for the good of the Government. Certain controls are essential to accomplish that purpose.

In order to perpetuate the lessons learned during the war, a plan was devised whereby the Chief of Engineers of the Army, in conjunction with the National Electric Light Association, was to keep an up-to-date survey of the power facilities in the United States, so that complete information on the power situation would be available in case of an emergency. With the hearty cooperation of your association this survey has been carried on, and the War Department is now in possession of almost invaluable information which would enable a power director to act promptly and efficiently in case of war. We know where surplus power is located and can put our fingers on the points where shortages are apt to occur. We are attempting so to distribute our load that our demand will not exceed your productive capacity.

The marvelous expansion of your industry, your consolidation of systems, your vast expansion programs, and the inter-connection of your systems are, in fact, steps in industrial mobilization, and are helping to place the nation in a position to meet any war demand placed upon it.

In 1917 the railroads believed themselves able to carry any amount of traffic. They pledged themselves to do so, five days after the outbreak of war, and yet the demands of the Army and the peculiar conditions existing at the time made it necessary for very rigid control to be exercised. The power industry is in a situation today where it can almost assure adequate supplies of power for any reasonable emergency. Local shortages may occur. In spite of our best efforts to distribute equitably our load in proportion to the capacity of the manufacturing districts to handle it, certain localities may become overloaded. A plan should be on hand to cover any such emergency.

For the last six months we have been working, in connection with your Association, on such a plan. I understand it has met with the

approval of your Policy Committee. It is my desire to present this plan briefly and to ask you to give it consideration as representing the best thought of the time as to how adequate supplies of power can be assured in case of a major emergency.

The plans are based on five general principles or considerations. They are:

(1) The Government should not take over any plant or power system unless necessary to insure the efficient prosecution of the war.

(2) No additional control should be exercised in regions where power is adequate for present and immediate future needs, both civil and military.

(3) When shortage of power for essential needs exists or is threatened, the Government should take over the entire output of the plant or plants in the locality and apportion the power output to users in the best interests of the United States. This action should set aside all existing contracts for the supply of power with which such action conflicts.

(4) If the preceding methods fail to obtain sufficient amounts of power the Government should undertake actual operation of such plant or plants.

(5) The existing organizations of any companies taken over should be utilized in their operation, in order to make full use of the experience, training, and skill of their personnel.

With these principles in mind the plan calls for the selection by the President of an Executive Assistant, to be known as "The Emergency Power Director," who would be responsible for the effective utilization of the power facilities of the country. The Emergency Power Director would be assisted by an Executive Committee, the majority of the members of which would be nominated by the National Electric Light Association, and approved by the Emergency Power Director. These men would serve in a civilian or military capacity. The Committee would serve under the direction of the Emergency Power Director and would be the medium through which the mobilization and coordination of the power systems would be carried out and effective cooperation secured.

The functions of the Emergency Power Director would be carried out through the Executive Committee and a small field force in the several power zones into which the country would be divided. At present, the country, for the purposes of carrying on the power survey which I mentioned above, has been divided into eleven power zones. These zones might be used as the basis for the power control zones in case of

an emergency. Each zone director, under the direction of the Emergency Power Director, would be responsible within his zone for the better utilization of existing sources of electrical and mechanical power, the inter-connection of existing systems, and the development of new sources of power, particularly for shipyards, munition plants, and industrial facilities engaged in the manufacture of commodities necessary and essential in the prosecution of the war, and for the ascertaining by inspections that priority policies formulated by proper authority were obeyed.

The plan further provides that the Emergency Power Director, or his duly authorized representative, would normally leave the management of the plants in the hands of the Executive Staff or organizations of the companies, even in case the output has been taken over. In this case the compensation to the companies will be at rates established for similar services by the Utility Commission of the State or District in which the plant is located, or in the absence of such fixed rates, at the same rate as paid by private consumers for similar services.

The plan further states that no physical property of the power companies will be taken over unless absolutely necessary. In those rare cases where this action is taken, the property will be all property used in the generation, transmission, and distribution of power, the materials and supplies on hand at the time possession is assumed, all balances in the ~~account~~ or accounts representing the total or accounts receivable as of that time, and a working fund, if in the treasury of the company, not in excess of an amount necessary ordinarily to cover one month's operating expenses. All these would be credited to the company. The United States would pay out of the funds coming into its hands from the operation of the plants, or otherwise, the expenses of operation of the company unpaid at the time the possession was assumed, and charge same to the company. It would likewise pay just compensation for the use of the property during Federal control, as provided later, and would also pay all taxes accruing during Federal control, except such additional war taxes as might be levied in connection with the then existing war. All revenues from operation during Federal control would belong to the United States, and all expenses of operation during ~~Federal~~ control would be paid by the United States.

Compensation to be paid the company would be a sum equivalent to the average net ~~operating~~ income of that particular company during the preceding three fiscal years, ~~except~~ that if exceptional or abnormal conditions were found by the President to exist during all or a substantial portion of such period of three years, which would justify a larger or smaller compensation, provision would be made for such

larger or smaller compensation as might be found to be just and equitable. Due allowance in the compensation would be made for the use of additions, improvements, or equipment, the use of which was not fully reflected in the operating income of the said three years, or a substantial portion thereof. Compensation would be paid to each company in quarter-annual payments. In taking over the company a contract would be entered into, stating and defining the rights and obligations of the parties.

With you gentlemen in full knowledge of this plan, and with the hearty cooperation that you have always given the War Department in its endeavors to prepare for that future emergency—which we pray may never come—we feel that as regards electric power, we are on the threshold of success in carrying to completion the mandate of Congress which charges the Assistant Secretary of War with the assurance of adequate provision for the mobilization of material and industrial organizations essential to wartime needs. The power industry in adopting this plan has placed itself in a “position of readiness” for rapid and effective action.

APHORISME XVII

Plinie reports of a Getulian Captive that escaped the danger of devouring by many Lyons through her humble gesture and faire language; hee being the noblest beast of the forrest never commits violence but where he finds resistance: So is the true Souldier the most honourable of all possessions, who holds it as great glory to releere the oppressed captive, as to conquer the enemy.—Ward's Animadversions of War (London, 1639).

Changes Contemplated in Coast Artillery

Memorandum No. 7 for 1928

By GUNNERY SECTION, OFFICE OF THE CHIEF OF
COAST ARTILLERY

THIS article is written in order to invite discussion and criticism of Coast Artillery target practice in general and of Coast Artillery Memorandum No. 7 in particular. When this text was issued it was expected that there would be many criticisms thereof, but practically all received have been from officers to whom letters were sent requesting that they study it and submit their recommendations for changes.

Before going into detail as to the features of this memorandum which pertain to seacoast artillery, there will be pointed out the few changes now contemplated for conducting submarine mine and anti-aircraft practices. They are as follows:

In submarine mine practice, there will be planted fourteen sand-weighted mines in addition to the five loaded mines heretofore used, as it is believed that the officers and personnel of mine batteries should become familiar with the difficulties involved in the successful planting and taking up of nineteen-mine groups.

As regards the antiaircraft service, the Office of the Chief of Coast Artillery desires to obtain information as to the effect of altitude on percentage of hits. In order to get this information at least one record gun practice and one record machine-gun practice are to be fired at angular elevations greater than 45 degrees.

In order to obtain more accurate data on percentage of hits, one record practice by antiaircraft gun batteries is to be conducted by a four-gun battery, firing but one gun at a time.

The number of machine-gun day practices is to be reduced from three to two, the additional ammunition thus made available being used in preliminary firings, many reports having been received that the ammunition for preliminary training is at present inadequate.

It is believed that the angle of approach has a direct bearing on the hitting by antiaircraft machine guns. In order to place batteries on an equal basis two methods of compensating for different approach angles were considered—first, to give different score values for different angles of approach, and second, to prescribe the angles of approach to be used in record practices. Due to the difficulty of applying a just value for

each course, the latter method is to be adopted, requiring that two of the record practices be fired at angles of approach of 90 degrees, one at an angle of approach of 45 degrees, and one at an angle of approach of zero degrees. The angle of approach of 90 degrees is with the plane flying across the field of fire, and that of zero degrees with the plane flying directly at or away from the battery.

The maximum limit of 5000 yards slant range heretofore specified for 3-inch antiaircraft batteries is to be eliminated, thus permitting battery commanders to increase their scores considerably by increasing their slant range.

In the score for searchlight batteries, one recommendation was received to the effect that additional points be given to those batteries which illuminated planes having altitudes greater than 6000 feet. On the face of it this looked reasonable but was finally rejected as it is believed that, while all batteries can be placed on the same basis as to scoring with an altitude of 6000 feet, this would not be true if additional points were given for altitude greater than this. In localities such as Hawaii, where visibility is extremely good, searchlight batteries might have a great advantage over those not so fortunately situated as to climatic conditions. On the whole, the score for searchlight batteries is not believed to be satisfactory, but until more practices have been received and a thorough study of the entire situation is possible, no change is contemplated. It may be necessary for the years 1927 and 1928 to adopt a multiplier in order to bring the score to the proper value on the basis of 100 points.

With respect to seacoast artillery there are several matters concerning Coast Artillery Memorandum No. 7 which, if known to the service, would be of interest and of material benefit to the people in the field. The criticisms received during the past year have been both for and against certain features of the memorandum, but most of the criticisms have been in regard to the scoring feature, one praising highly and the next adversely criticising the same thing. The score has been lauded to the skies and, on the other hand, has been damned. Due to the conflicting views, and because anything that is new is strange and not fully understood, it has been decided by the Chief of Coast Artillery that Coast Artillery Memorandum No. 7 will be continued practically unchanged in this respect for another year. Some amendments, of course, are necessary, especially for clearing up questionable points. The most important changes will be discussed herein.

One recommendation was received that the definition of an excessive deviation in direction be specifically prescribed. One is loath to do this inasmuch as the deviation which might be excessive for one type of

armament or at a particular range would not be excessive with a different type of armament or at a different range. But still more important is the advisability of leaving some judgment to local personnel. A single wild or erratic shot should not be considered as calling for a graphical analysis in deflection. It is contemplated adding to Paragraph 21 of Coast Artillery Memorandum No. 7 a sentence which will make the group commander responsible for determining whether or not deviations in deflection are excessive enough to require a graphical analysis in deflection.

In order to reduce further the time necessary to make out target practice reports it is contemplated, for succeeding years, not to require the forwarding of a plot of the shots with respect to the hypothetical target, as it is believed that the group commander's certificate to the effect that target practice reports are correct will mean that there have been no excessive deviations which would require constructing and submitting a graphical analysis in deflection.

A report has been received to the effect that the time necessary to compile target practice records has been increased by approximately 25%; another, that the time has been decreased approximately 25%; and still another, that there is neither an increase nor a decrease. One report stated that it took from two and one-half to three hours to make the graphical analysis. It is well known that after a little experience such a length of time is not necessary because all target practice reports for 1926 were graphically analyzed in the Office of the Chief of Coast Artillery and, after the data are at hand, a graph can be made, and be made fairly artistically, in about one-half an hour. The Office of the Chief of Coast Artillery does not require that graphs be made in ink, graphs made with colored pencils being acceptable. However, it is easily seen why battery commanders desire to make them in ink and most of the graphs received this year bear testimony of having much labor and time spent on them. This is, of course, creditable, more benefit being derived from the labor and time spent on creating a picture of a shoot than can be derived from pounding out figures on a typewriter.

Recently a recommendation was submitted to the War Department that Chapter XIII, of T. R. 435-280, Gunnery for Heavy Artillery, be amended by abolishing, for fire at moving targets, that phase of fire known as "improvement fire," and having but two phases—the trial fire phase and the fire-for-effect phase. While it is perfectly clear to a careful reader of Chapter XIII of this training regulation that the time of a practice should not be curtailed to make an adjustment correction, nevertheless, many battery commanders have misinterpreted the text

and, during "improvement fire," have taken an undesirable amount of time to make and apply corrections. Therefore, in order to be consistent, Coast Artillery Memorandum No. 7 is to be amended, deleting the words "improvement fire" wherever they occur. In this connection it is noted from a target practice report just received that the battery commander of a rapid-fire battery took two and one-half minutes to apply his first correction, thereby reducing his rating from "excellent" to "good."

Recommendations have been received that for 155-mm. gun batteries firing at long ranges, a transport target be adopted. It is contemplated inserting in this year's revision of C. A. M. No. 7 a drawing of a transport target of approximately the dimensions of the U. S. Transport *Henderson*, and requiring 155-mm. batteries to fire one of their record practices at this target beyond a range of 14,000 yards. Based upon numerous recommendations received, minimum ranges are to be prescribed for each caliber of weapon for day record service practices. There will be no minimum range for practices conducted at night, and to stimulate interest in night firing, additional points will, as stated in Paragraph 42 of C. A. M. No. 8, 1927, be added, by the Office of the Chief of Coast Artillery, to the scores of those batteries that conduct this type of practice.

All summaries of practices, Sheets No. 2, intended for the Chief of Ordnance, are to be forwarded hereafter through Ordnance channels, viz., through the Harbor Defense Ordnance Officer, Corps Area Ordnance Officer, etc.

With reference to mortar firing, it is noted that in almost every case, battery commanders, while complying with the instructions to fire in more than one zone, almost invariably fired trial shots in all the zones in which they were going to conduct record fire. This may have been, and probably was, in many cases, due to different lots of powder being on hand for the several zones, but as the zone-to-zone problem must undertake corrections in all zones as the results of trial shots fired in but one zone, it is contemplated requiring that trial shots for mortars be fired, for any record practice, in but one zone. A further requirement as to mortar firing will be that approximately the same number of shots be fired in each zone. The present inclination of battery commanders is to fire but two or three shots in the first zone, and then complete the practice in another. This inclination is but natural and to be expected as long as the scoring feature is in vogue and as long as

all mortar batteries are in competition with each other. However, it does not solve one of the most difficult problems before the Coast Artillery at the present time, and that problem is the making of a proper zone-to-zone correction. With the new restrictions, all batteries will be on the same footing as to ratings, and it is hoped that the mortar target practice reports of 1928 will give sufficiently reliable data to permit of intelligent approach to the solution of this problem.

Recently there was submitted to the War Department a recommendation, in connection with the revision of A. R. 775-15, Coast Artillery Ammunition Allowances, that ammunition be made available for battle practices in our foreign possessions and in the Harbor Defenses of Long Island Sound, Sandy Hook, Chesapeake Bay, and San Francisco. The increase in ammunition recommended pertained to primary armament only. If this increase be approved, the revision of Coast Artillery Memorandum No. 7 will include instructions for the conduct of battle practices, it being contemplated that the maximum number of batteries and the maximum number of targets be used, and that both primary and secondary armament be manned. The present allowances of 3-inch, 6-inch, and 155-mm. gun ammunition are adequate for firing the three types of service practices—battery preliminary, battery record, and battle record. Harbor defenses conducting battle practices would be rated and the scores would be computed by taking the average scores of the batteries.

The normal method of firing 155-mm. guns is by Case III, and, although some regiments conduct record firing by this method, it is not universal and should be stimulated. To do so, gun batteries of this caliber will in future be required to fire at least one of their record practices by Case III.

There has been a great difference between the various harbor defenses as to the accuracy with which scores have been computed. One large harbor defense had practically no errors and another harbor defense had practically no correct computations. One of the most frequently occurring miscalculations was in computing the time required to fire one round of record fire. In the revision of Coast Artillery Memorandum No. 7 this will be shown as $\frac{60gt}{S}$, where g is the number of guns, t the corrected time of record fire in minutes, and S the number of shots. There will be prescribed the number of decimal places to which each computation should be made and a method of computing the number of guns and the developed probable armament errors for mortars. There are several methods of computing the number of guns but, in order to have a standard, the following procedure will apply:

155-mm. battery starts with four guns but, because of accidents to materiel, finishes with but two guns.

4 guns fired 4 salvos (16 shots)—product will be 64 (guns times shots)

3 guns fired 3 salvos (9 shots)—product will be 27

2 guns fired 2 salvos (4 shots)—product will be 8.

Total shots will be 29 and this divided into the total product (99) gives 3.41 guns. In computing the developed probable armament error for a mortar service practice a similar method will be followed, substituting "developed probable armament errors" for "guns" and multiplying by the number of shots in each zone. For example:

<i>Zone</i>	<i>D. P. A. E.</i>	<i>Shots</i>	<i>Product</i>
VI	50	8	200
VII	40	6	240
		14	640
	$\frac{640}{14} = 46 \text{ D. P. A. E.}$		

The above method as to guns has been followed in checking the scores for 1927 and naturally in almost every instance it has increased the value of the score.

A maximum penalty is to be prescribed for not properly applying the rules of adjustment. This maximum penalty is to be 5. Although it might be argued that the battery commander who makes but one mistake should not be penalized as much as the one who makes several, nevertheless, both batteries suffer in adjustment and in hitting, through the balance of the practice.

The following criticism of the adjustment component has been received:

A battery commander correctly computes a correction and applies it without delaying his fire. The correction arrives on the last shot of the practice and this shot for some unknown reason, does not respond, whereas had there been enough ammunition to have permitted firing three or more shots with the correction the final center of impact might have, and probably would have, been adjusted.

Battery commanders need not be concerned in cases of this kind, as all target practice reports are very carefully scrutinized in the Gunnery Section of the Office of the Chief of Coast Artillery and matters of this kind are taken into consideration. As a fact, before this criticism was received, a case of the kind occurred and the battery commander was given full credit for obtaining adjustment.

There seems to have been some confusion as to computing the penalty based on the average of personnel errors in deflection. The example given on page 24 of Coast Artillery Memorandum No. 7 is for range

only and is shown as taking the total of the personnel errors, exclusive of those shots to which a penalty had previously been applied, dividing this total by the total number of shots (exclusive of those to which a penalty has been attached) to obtain the average and then dividing this by 20. No example is shown for computing the penalty based on the average of personnel errors for deflection. This was not shown as it was assumed that battery commanders would, without question, follow the method for range, substituting, in the example, .10 of a degree for the figure "20." Inasmuch as it has been questioned, this point will be clarified in the revision of Coast Artillery Memorandum No. 7.

In order that the Office of the Chief of Coast Artillery may have sufficient data for making a study of powders to be published to the service, Sheet No. 2 of the Summary of Practice will be changed slightly to show the average actual range of the trial shots as well as of the record shots, to show the normal muzzle velocity, the muzzle velocity used for record shots, and the muzzle velocity assumed for trial shots. Also, the average azimuth of the course of the target (for broken courses, the average azimuth of the parts to be given), the azimuth of the wind, and the velocity of the wind will be required, in order that powder studies may be made.

The most general criticism of the scoring feature is that too much weight is given to the "A" factor, that too much depends upon luck, and that battery commanders will try for hits at all costs, jockeying for shorter ranges, waiting for the splash of one shot or salvo before preparing the data for the next, regardless of the effect on P and *t*. The new minimum range limits to be prescribed will place all batteries on a like footing as to ranges and will, with adjustment, permit of sufficient hits to make an excellent rating, provided par time is attained and provided penalties are not too numerous. In drawing up the score, every attempt was made to eliminate all effects over which the battery commander had no control. This was possible in practically all parts of the score except the hitting feature. It is evident that, with the small amount of ammunition authorized for gun batteries of the primary armament, some battery commanders will get no hits regardless of how excellent their practices are. The number of batteries obtaining no hits, however, is remarkably small, and it is contemplated to make no change in the present score for the year 1928. Our Navy has been using a very similar score for years, giving 50 points to the hitting component and it is understood that when the score was first adopted much criticism was received but that now such criticism has ceased and hits have increased. In action, it is hits that count and not only hits per gun per minute but hits per gun per minute delivered while the enemy is still at extreme

ranges. "Hits per gun per minute," while a fine slogan, reflects little credit if the range is practically point blank. Hits per gun per minute and range must always be considered together. While the Navy has adopted the method of awarding 50% of the score to the hitting component for large-caliber guns, it has gone still further in the case of antiaircraft guns where a percentage of 100 is given as a maximum and a score of zero for no hits. We do not think the amount allotted for hitting in our score to be excessive. It seems to be generally overlooked that practically 35% of the score is given gratis, as the calibration component of 10 points can be attained by any battery commander who makes intelligent attempt to adjust the guns of his battery, and the "D" component of 25 points is given provided there are no penalties, and penalties with well-conducted practices are extremely few. As one battery commander so aptly expressed it: "It is impossible to make a perfect formula that eliminates all element of luck so why try at all to eliminate the sporting element? As a rule it is the best team that gets the lucky breaks anyway."

Another recommendation in regard to the "A" component of the score is that the maximum limit of 50 points be removed because it seemed only consistent to give a battery commander a bonus when he gets more than the laws of probability entitle him to inasmuch as we penalize him when he has been unfortunate enough not to attain the expected probability. While this recommendation undoubtedly has some merit, nevertheless, its adoption has not been favorably considered as it would be manifestly unfair to a battery commander who attained par on hits, par on time, who obtained adjustment, whose battery was calibrated, and who had no errors. He would be outranked by a battery commander who was fortunate enough to obtain more hits than the laws of probability entitle him to, who time was par or greater, who was calibrated but who had many personnel errors.

In one harbor defense, battery commanders commented unfavorably upon that feature of the score which uses the developed probable armament error, believing that a premium was placed on a large probable error. That part of T. R. 435-280 which reads as follows was quoted: "It is not advisable to place dependence upon a value of the probable error determined from a series of less than fifteen rounds."

It is believed that these battery commanders overlooked the fact that we are not striving to obtain from a small number of shots an exact probable error for each type of weapon. It is well known that this cannot be done. What we do try to do, in so far as is possible, is to place the battery commander having a poor-shooting battery on an equal footing with one who has a good-shooting battery. For example, two bat-

teries, A and B, are fired at the same range, with the same rapidity, with the same number of guns, and both keep the center of impact on the center of the same sized target. If we assume both to fire 30 record shots the probability of Battery A, whose D. P. A. E. is 250 yards and with a danger space of 100 yards, will be .10 and the number of hits expected would be three. Battery B, with the same danger space and a D. P. A. E. of 500 yards would have a probability of .05 and could expect $1\frac{1}{2}$ hits. If we adopted a standard P, as has been recommended (a standard P was one of the great faults of the old "figure of merit"), the only fair way to arrive at such a standard probably would be to take the average of the probable errors. In the above example, taking the average, the standard P would be .075 and would require the battery commander with the poor shooting battery to get $2\frac{1}{4}$ hits, while his actual probability is $1\frac{1}{2}$ hits. On the other hand, the battery commander with the good shooting battery would have an unearned increase of 33%. A careful study of past practices shows the probable errors developed by the same batteries and manned by the same personnel to be extremely varied when fired on different days.

Of course a battery commander could direct his gun crew to ram one or two shots poorly during the practice in order to increase the amount of his D. P. A. E. To do so, however, would not be legitimate and might reduce his chances of getting hits to such an extent as to be prohibitive. Along this same line of argument the proposition was advanced that a battery commander who is careful in his preparations and has well-trained gun crews, may approximate the range table probable error (a probable error of questionable value) and have a less score with the same number of hits as a careless battery commander with poorly-trained gun crews and that the careless battery commander may take more time and still get as good a score as the careful one. The weakness of this argument lies in the words "the same number of hits." While this is possible, the chances are against the careless battery commander getting the same number of hits.

Another reason why the range table probable error or a standard probable error would, at some time or other, be to the disadvantage of practically every battery commander is shown by the following.

A study of the graphs of target practice for 1927 and of those received to date this year shows, in many cases, that the general trend of stripped impacts is decidedly toward or away from the line AB. In such cases, adjustment is more difficult for the battery commander than it is when the general trend of the stripped impacts follows the line AB. This oblique trend is due to unknown causes, probably atmospheric, over which the battery commander has no control. The developed

probable armament error now used in the score is that derived from the distances of these impacts from the line AB. Suppose we draw a line which we will designate as CD as an axis, whose general direction follows that of the stripped impacts, and compute our probable error from CD rather than from AB. This probable error will be nearer the true than the one now used and will almost invariably be smaller. In brief, the probable error of the score equals the true (?) probable error (for the few shots fired) plus an error from unknown causes. To use the smaller CD probable error would work a hardship on a battery commander who already is handicapped by having to fight this creeping effect.

As for those who favor the range table probable error it will be of interest for them to know that the Ballistic Section at the Ordnance Proving Ground, Aberdeen, Maryland, confirms the use of the probable error developed during the practice as the only fair one to use in scoring. They state that the Ordnance Department has not sufficient funds with which to purchase ammunition for accurate determination of probable errors. In obtaining the range table probable errors but few shots could be fired in small groups at different points along the trajectory.

Another recommendation was to change completely the method of scoring as laid down in Coast Artillery Memorandum No. 7 and adopt another method which was submitted, one of the reasons given being that the present method, in fact, gives the rules of a game to be played by battery commanders, in which they will try to make the most points, rather than to simulate service conditions. The object of the score in Coast Artillery Memorandum No. 7 was to give a game to be played by battery commanders and make them try to get the most points in the game thereby stimulating an interest in practical gunnery. An added stimulus in this game is that the Knox trophy heretofore awarded to the Coast Artillery for excellence in target practice will again be awarded by the Sons of the Revolution of Massachusetts to the battery which is the superior in target practice during the year. As to service conditions, just how we can simulate them is not clear. We are now designing a high speed Coast Artillery target and hope to be successful in having it towed by a destroyer or other fast-moving vessel, but when it comes to a great number of targets, low visibility conditions, smoke screens, and bombardment by the enemy, it is out of the question to get them all.

It has been noted that some battery commanders have penalized themselves for not properly applying the rules of adjustment, whereas they should not have been penalized. What they actually did was not to follow exactly the rules of the various methods of adjustment as laid

down in T. R. 435-280. It might be well to invite attention to Paragraph 119 of this regulation which states in part as follows:

This is a matter therefore which may frequently call for the exercise of trained judgment rather than arbitrary rule of thumb. Nevertheless, certain recognized methods should be thoroughly understood and every battery commander should be trained in their use until he recognizes fully their values and will not lightly abandon them in practice or action.

If he computes the correction and applies it in the wrong direction or if he erroneously computes the correction and applies it, he should be penalized. There are influences, however, affecting a practice over which the battery commander has no control. One of these is the unknown "atmospherics" referred to above and which is readily seen from graphs of those practices where the curve of the stripped impacts makes a decided angle with the line AB. The battery commander, noting such creeping effects on his fire adjustment board, will be perfectly correct in deviating from an arbitrary rule to make an additional correction which will compensate for this unknown effect.

I have tried to give in some detail the reasons why the score for seacoast batteries should not be materially changed at present. However, the primary reasons for not changing them are: That general confusion results from making changes too often. A method which is similar to one which has been used successfully for years by our Navy, and one which was given a complete study in the Office of the Chief of Coast Artillery, by the Coast Artillery Board, by the Coast Artillery School, and by the best gunnery officers in the Coast Artillery, should not be abandoned or radically changed before it has been given a thorough test. Approximately 60% of the target practice reports have been received for the year 1927, and to make a radical change until at least one year's reports have been received and thoroughly studied would not be reasonable. If we were to adopt another method before battery commanders are thoroughly familiar with one, it would confuse and add to the labor involved in making out target practice reports. Changes are desirable and necessary from time to time, but too many changes or changes made too frequently or without adequate study are detrimental. The Office of the Chief of Coast Artillery is desirous of reducing work on target practice reports to the minimum which is consistent with efficiency and is equally desirous of increasing that efficiency to the maximum. There is no doubt that when this year's target practice reports are compared with those of previous years a great stride towards improvement will be evident. The Gunnery Section of the Office of the Chief of Coast Artillery desires comments on the

subject. All will be studied and considered when Coast Artillery Memorandum No. 7 is amended next year. Comments may be made officially, unofficially, personally, or in any manner desired. Recommendations are desired also on the solution of the following problems which are now being studied by the Coast Artillery Board:

Standardize the fire control system for major-caliber guns for both Case II and Case III firing, including the method of routing all fire control and position finding data among instruments and devices within the battery.

Standardize the fire control system for rapid-fire batteries for short, mid, and extreme ranges, including the method of routing all fire control and position finding data among instruments and devices within the battery.

How to decrease the relay time in firing by Case III.

What system of long-range fire control should be adopted?

What is the best manner of reporting and converting, for use in the plotting room, deviation of splashes by air observation?

What method should be used for combining spotting deviations (target to splash) with the inherent errors of the plotter, due to changing course of target, and make such combinations on the fire adjustment board or other suitable device?

What is the best method of making zone-to-zone corrections in Case III firing by mortars?

APHORISME XXI

No actions of men are more subject to suddain and unexpected events than those of War; and in Warre, nothing so soon snatcheth victorie out of our hands, as untimely falling to the spoil: upon such disorder Fortune alwaies turneth her wheel, and maketh victors of them which before were vanquished.—Ward's Animadversions of War (London, 1639).

Training of Coast Artillery

By SMOOTHBORE

THE editorial under the above title in the COAST ARTILLERY JOURNAL for May opens for discussion a broad subject—in fact, it suggests many subjects each worthy of our best thought. In the June issue the subject was discussed further and a letter in reply was published.

That the matter has been brought up indicates the existence of a certain confusion of thought, due, in my opinion, largely to a failure to visualize the simplicity of our tactical problems. A story is told of a Confederate general who was famous both for leadership and for lack of education. One of his subordinates sent in a report on the situation in the area covered by his command. He gave the location of Union forces and his estimate of their strength. He stated that, in his opinion, various courses were open to the enemy and described them. He concluded by requesting the instructions or the advice of his general as to the proper action to be taken in each of the probable contingencies. The general endorsed the letter with the following order:

“FITUM.”

Let us remember, in our studies of organization and tactics, that our mission is to “fight ’em.” Anything that complicates this is wrong; anything that simplifies it cannot be wrong. On reading reports and on considering certain problems and their solutions I am inclined to the belief that much of our thought has as a background, not a visualization of coast artillery in action, but a statement that will be satisfactory to the faculty of a school or that will follow in form some principle enunciated by the General Staff.

As an example of the former I recall a solution in which a regulating station was established for the service of a single reinforced brigade. As an example of the latter let me take one question propounded by our editor. “When does the harbor defense pass from the Z of I to the T of O?” As a harbor defense commander I cannot see what difference this would make. It would have no effect upon the action of the enemy and our response to his effort is the same whether the next higher commander is an Artillery District or a Sector Commander.

There is no doubt that Coast Artillery training as we know it in pre-war days is now confined to the garrisons of our overseas possessions. There, alone, is there sufficient personnel, and there, alone, is the garrison free to concentrate upon its own development.

In the continental United States very few garrisons are maintained at even one-third the strength that obtained before the war. This reduction in strength means a smaller unit for each battery still in service and an added burden of caretaking duties due to the increased number of batteries out of service. Having filled the fire control section, there are very few units able to man more than one gun without assistance from other batteries. The turnover of personnel is probably double that to which our older officers were accustomed when they were battery commanders. Furthermore, practically all active units have duties in connection with the training of National Guard, Organized Reserve, and R. O. T. C. Units, and with the C. M. T. C. Considering all factors, there is much cause for pride that our editor is able to say, "We are prepared to take up practice under battle conditions."

Our editor then asks, "What are those conditions to be?"

In the first place it is not seen how any of the experiences of the World War have affected profoundly the battle tactics of coast defense. The development of aviation has introduced two factors; first, the possibility of fire control at much greater ranges; second, bombing operations against both ships and shore batteries. Except as modified by these factors, the same operations by the fleet are necessary for the occupation of a defended harbor or for the support of a landing outside fortified areas, and the same operations are necessary in the defense against these attacks. Air superiority on either side will greatly increase the chance of success. The enemy expeditionary force, having the initiative in selection of the objective, has a certain advantage in securing a temporary local air control. The speed with which aircraft can concentrate from land bases should enable the defense to overcome this initial advantage in a very short time, and an overseas expedition, to be successful, must secure and consolidate its base very promptly. In all, the development of aviation, while subjecting the entire coast line to the danger of sporadic air raids and bombardments, has strengthened the defense against major operations.

The problem of coast defense, therefore, is exactly what it was in pre-war days, with the added difficulty of "carrying on" during that period when the attack has air superiority. This means that some of the batteries must be manned and fought while the long-range fire from ships may be directed with greater facility than our return fire and while bombing by the enemy and attacks by low-flying planes can be met only by antiaircraft fire.

Since it is highly improbable that a fleet commander in future will risk his vessels within range of our powerful batteries without reasonable assurance of at least a temporary air control, it appears that our

most pressing problem is some effective means of fire control and direction, other than by aircraft, at the longer ranges. This is in way of solution for those harbors the hydrographic approaches to which are favorable to subaqueous installations. No dependable solution has yet appeared for the others. But since the harbor cannot be captured by long-range action, since complete destruction of the batteries by ship's fire is highly improbable, since we are developing a very effective system of antiaircraft fire, and since the attacking fleet will be limited as to time due to the fact that our own air forces will be expected to intervene promptly, the actual occupation of the harbor today, as in the past, must be accomplished by the "run past" and its repulse depends upon the "guts" of the defenders. If these can accept the preliminary pounding from long range and the attacks by aircraft, and then man their guns when the fleet closes in, we have the old-time fort-ship fight again governed by the same old tactical principles. Under proper leadership our men have always stood. I remember a footnote in a history of the United States which read something as follows:

At this time an effort was made to capture Ft. Sumter. The fort, now reduced by bombardment to a pile of rubble, was heavily shelled and then the assaulting forces attempted to land. But the garrison, emerging from their shelters, repulsed the attack.

Our editor feels that our pre-war system of coast defense has "gone by the board." But has it? He probably has in mind the "Positive System of Coast Defense," and the division of the coastal frontiers into sectors and subsectors; in brief, that coast defense is a function of the combined arms and not of the Coast Artillery. But those who served in the Eastern Department from 1915 to 1917 (and it is believed a fourth of our older officers did so) find nothing new in this idea. Nor is it believed that any thoughtful officer ever credited the Coast Artillery with more than the *most important rôle* in the defense of fortified harbors, *a rôle it still has*.

General Wood discarded the system of close defense of our harbor forts by stockade and field works. He had the coast line studied to determine possible landing places. Local boards drew up plans for the defense of these. Then he had surveys made to ascertain the best lines in rear and for the defense of important harbors in event of a landing between these harbors. These positions and lines were laid out on large scale maps. The personnel, the tools, and the materials for construction of entrenchments were all computed and the places where these personnel, tools, and material could be obtained promptly were ascertained and recorded, *with costs*. The estimates for military personnel

by arm of the service, as made by local boards, were reviewed by a board formed in each engineer district. These latter took into consideration the degree to which the force demanded by local boards could be reduced by reason of possibility of prompt reinforcement from centrally located supports. In a similar manner the reports of the district boards were reviewed at department headquarters where the road net and the railroad systems were studied to determine the best locations for strategic reserves.

The net result was a plan for a beach cordon varying in density, with small supports each within a short distance of a certain number of probable landing places. Somewhat retired and centrally located for definite sectors of the coast line were local reserves able to move to any portion of their line within a few hours. Back to these were strategic reserves—twenty-four hours was the limit of time for these to begin to intervene in any area. The plans had progressed to the point where camp sites had been selected and supply and hospitalization provided for.

The object was to furnish a commander, charged with the defense of any area, with complete data as to landing places and their defense, as to defensive lines in rear, as to switch lines, and as to the strongest natural line to hold an enemy beyond long-range bombardment of any important harbor. In addition to these, he was to be furnished an estimate of numbers and organization desirable, and also the locations for supports and reserves from which the road and railroad nets offered greatest advantages. Finally, he was to be furnished full data as to the labor and materiel markets in case he desired to dig in, and with working drawings for the use of hired civilian construction gangs.

These plans were worked out in great detail from Maine to include New Jersey. They were in progress for the South Atlantic coast when we entered the war and the Eastern Department was divided. They are the "Positive System of Coast Defense," and, as far as I know, are the only examples we have of the practical application of that theory to the ground. They are the result of two years' constant work by selected officers aided in the outdoor seasons by such troops as could be made available. They are still of record. While at the time no thought was in mind of any analogy between coast defense and the stabilized battle lines of Europe, I do not think a student of these plans will find anything lost by the lack of such analogy.

In these studies the artillery in the defense was considered, and General Wood had studies made of tractor-drawn heavy artillery and the suitable roads, and of railroad artillery and the railroads that

would carry it. It was generally in mind that, if this heavy artillery could reach a position from which it could fire on naval vessels and transports, coast artillery methods would be employed—otherwise the field artillery system would be used.

So much for the “new” ideas as to coast defense.

As to the tactics of our present mobile Coast Artillery units in the defense of the coast between fortified harbors it appears that four distinct cases may arise:

First, the enemy’s intelligence service may be faulty and he may attempt landing operations at a position where our railroad and tractor drawn armament are already in position.

Second, the enemy may have intelligence of the presence of our mobile heavy artillery but may decide to force the issue by engaging the shore batteries with his battleships and by landing under cover of the attack.

Third, the landing may be attempted at a position which our batteries can reach during the operation and before a beach head is established.

Fourth, the landing may have been accomplished and a beach head established sufficient to hold our artillery beyond the range of vessels landing reinforcements and supplies, before our artillery arrives on the ground.

In the first and second situations there would normally be opportunity for the senior line officer present to decide upon the artillery action. In the first case it is unlikely that the important elements of the battle fleet would close in with the transports; these would probably be accompanied by small warships and service vessels, the battleships standing off to prevent the approach of our own warships. The objective of the defense should be not only to defeat the present attempt, but also to inflict such damages as would serve to decrease the strength of the expedition. The communications system would be installed and a centralized control of the defense possible, as long as the communications continued in operation. The landing would probably be attempted during darkness with a view to getting the first waves ashore and established by daylight. Fire should be withheld until the enemy is entirely committed to the operation, and then each battery should open upon an assigned transport—destruction fire, shifting to some unengaged transport as soon as the target initially engaged had been crippled. For illumination we should have our searchlights and star shell; it is believed the latter preferable, as a *general* illumination of the area is desired. This would leave the searchlights occulted until required for

operations against the accompanying warships. Fire on these, however, should be undertaken only in case their counterbattery became seriously effective, our object being to destroy as many of the transports as possible. The heavily armored ships of the enemy might close in on discovering that the surprise element of the attack had failed. But effective fire by these would be dependent upon observation; this in turn would depend upon their aircraft which would have to illuminate the shore defense before this would be possible. It is believed the defense should be able to inflict such injuries on the transports and to cause such casualties before the battle fleet could intervene, that the enemy would abandon the attempt, especially as reinforcements to our own air forces should be arriving.

In the second case the attack would be made in daylight, the enemy having confidence in his own air and artillery superiority, and needing daylight for his adjustment. Our artillery action would depend upon the effectiveness of his fire. If it became evident, in spite of our anti-aircraft defense, that he could adjust his fire and destroy the heavy shore batteries no choice would be left the heavy artillery of the defense save to accept the duel and endeavor to defeat the naval attack, leaving to other forces the repulse of the landing. To this end the concentration of all batteries upon a single enemy vessel would offer greater probability of success than a dispersion of fire. The sinking or the serious crippling of one battleship would be more effective in causing the attempt to be abandoned than slighter damages (which would not be generally known to other craft) to a larger number of the attacking ships. Such concentration of fire renders more difficult corrections by observation and accentuates the necessity for calibration and the determination of muzzle velocities for each lot of powder when the position is occupied. On the other hand, if the enemy's bombardment is not very effective, if it becomes evident that the majority of the shore batteries can escape serious damage, and if it be known that reinforcement of our air forces can be expected, it might be well to reply by only those batteries that have been located by the enemy, holding the balance for use as a surprise when the transports close in. Such a course, while offering the defense a chance for a more decisive repulse, is open to the objection that the enemy *may* have located all batteries but is engaging them a few at a time. If this were the fact we should be subjected to the danger of having our batteries destroyed in detail without utilizing our full power in a concentrated return fire. The decision must be made by the commander of the defending forces.

In the third case the establishing of artillery lines of communication for coordinated control will be impracticable. Here again the

attempt will probably be made between midnight and dawn. Searchlights may or may not be available; each battery should have some star shell. Normally, artillery regimental and battalion commanders will precede the batteries and be prepared to indicate positions (unless these have already been selected in the plans) and give initial instructions. Their further control will depend somewhat upon their ability to get around; there is always the possibility of their becoming casualties. The situation demands that the transports be forced to discontinue discharging. To this end each battery, as soon as it is in position, should be assigned a transport and should fire on that transport until it ceases debarking troops, using star shell when necessary. If no assignment is made each battery commander should select his own target. When the transport under fire gives evidence of discontinuing operations, fire should be shifted to some other target, preferably *one not under fire*.

As soon as all transports have been forced to discontinue discharging a decision must be reached, and in my opinion it is a decision that will probably be required of the battalion commanders, and may devolve upon battery commanders. Three courses are open. First, to continue to fire upon transports with a view to sinking them; second, to fire upon such enemy troops as have landed; third, to fire upon warships, probably cruisers and destroyers, supporting the landed forces. It is believed the third is the logical decision. Under the conditions assumed, repulse of the present attack is the immediate demand, and lessening the enemy's means for some future effort is secondary; this indicates the fire should not be continued on the transports. Considering the comparative ineffectiveness of Coast Artillery ammunition against personnel, especially on soft ground, firing on enemy troops had better be left to Field Artillery units. For fire on the supporting warships, concentration of fire is desirable.

If searchlights have arrived and battalion commanders can each take station at one of these, concentrations can be controlled by this means. Lacking searchlights and command lines of communication, considering the uncertainty of runners reaching their destinations and also the value of every minute, I suggest the following:

Each battalion commander takes position at one of his batteries (preferably that of the senior captain) and notifies his other battery commanders that the battery selected will be the *pilot battery* and that they shall concentrate upon the target of that battery, if possible. It is likely that the other batteries of a battalion, where several battalions are engaged, will not know which of the several ships under fire was selected by their battalion commander, but if all respond and accept

as a target *some* ship already under fire it is certain our fire will be concentrated on a number of ships no greater than the number of battalions. And, if two or more battalion commanders select the same target (as is feasible and probable if they follow the plan of opening on some ship already engaged) the concentration will be increased. As soon as any warship is put out of action or withdrawn, the battalion commander (or commanders) should direct the fire to some new target and all batteries respond promptly to the change. In event of a battalion commander becoming a casualty the next senior at the pilot battery should assume direction of the fire.

The fire on warships depending upon star shell for illuminating targets will be more difficult than firing on transports, which must be still to discharge troops and equipment while the warships will be maneuvering. But the supporting fire of the warships will be even more hampered by lack of illumination and, should the attack continue until visibility permits accurate direction of ship's fire, the pilot battery system of control should operate to advantage. Some means for concentration are necessary; the situation demands that our full fire power be developed and that no battery remain idle awaiting orders that may never come. It is believed this character of action is one deserving of careful study and is hoped that other suggestions for conduct of the fire will be forthcoming. We should and can be able, if we accept our training regulations as a general guide and then exercise initiative and common sense, be prepared to give a good account of ourselves, even if we receive no more detailed orders than: "FITUM."

In the fourth case (where the beach head has already been established) the operations are those of land warfare. Coast Artillery units will operate as does corps or army artillery.

Turning to harbor defense, where it is believed the principal mission (to prevent the occupation of the harbor) can be accomplished today by the same means and methods as in pre-war days, I am inclined to view with suspicion the opinions of those who believe the systems of administration and tactical control should be radically changed. Looking back on our leaders in the days of our most rapid development—Randolph, Story, Mills, and Murray—and considering the ability of their assistants and closest advisors (most of whom have risen to high positions and responsibilities) I believe we should be chary of giving weight to the opinions of those who believe our former leaders were "all wrong." With one of those leaders (General Story) I was intimately associated. He was the personification of hard, common sense; he possessed the keenest faculties of analysis. I remember his contempt for those theorists he termed "rainbow chasers."

All of those leaders fully appreciated that the major problems of harbor defense are solved *before the engagement*, first, by the skillful location of batteries and accessory installations for the maximum fire effect and, second, by the careful training of personnel in the conduct of fire under each possible form of enemy attack.

What are these forms of attack? Disregarding submarine operations and air raids I should list the following:

First, the run-past, with or without simultaneous landing raids against the more exposed batteries and stations. This is the decisive engagement and may be undertaken either by day or night. In general it is favored by a visibility sufficient to enable ships to maneuver at high speed in formation but limiting the use of shore observing stations to comparatively short range. Surprise is an asset. This form of attack was executed successfully during our Civil War. It has not been seriously attempted on a large scale since.

Second, the reduction of batteries by long-range fire with the fleet gradually closing in to decisive ranges with a view to dashing through when this can be attempted with justifiable risks. Success is doubtful especially if the defense is disposed in depth. It was tried at the Dardanelles, was partially successful, and then broke down.

Third, the long-range bombardment of batteries and of the harbor defended. This can result in nothing of a decisive nature.

Fourth, naval operations in conjunction with a major land operation for the capture of the harbor.

To gain the decision, therefore, the fleet must run past the forts. To do this they must close the range and approach certain definite entrances under observation which, at its worst, is always more favorable to the fire control and direction of the shore batteries. And, on reaching these entrances, in practically all cases, the courses that can be followed are limited by definite channels. So well was this recognized in our old tactics that the ranges to the center of channels for appropriate azimuths were habitually marked on gun platforms so that, by applying ballistic corrections, an accurate fire by piece could be carried on at the shorter ranges without using any position finding or plotting system. And there was a complete appreciation of the fact that the possible courses open to the enemy were so few in number that each could be practiced upon in combined drill; that, as the attack developed, the harbor defense or battle (groupment) commander could determine its probable course and by a single command start the defense along lines with which subordinate echelons were entirely familiar. While it was possible that the course of the attack might vary some-

what from that anticipated it was felt certain that a defense more logical and better conducted would result if the command were started upon the fire action suitable for the type of attack nearest the actual attempt than if the commander endeavored to send appropriate orders, indicating the action in detail, throughout the chain of command. The system left him free to observe the progress of the action and to issue instructions tending to secure the maximum of advantage and to provide for unanticipated incidents.

Our editor asks, "Do we concentrate our fire?" This is a problem to be decided for each form of attack. For the long-range bombardment, where accurate reply demands adjustment by observation of fire, I should say "No; it is better to assign one battery to one target unless (as is improbable) two batteries have been calibrated for approximately the range used." Here destruction, while desirable, is doubtful; the most the defense can reasonably hope for is to deliver a fire of such accuracy as to make the enemy withdraw. For a close engagement I should say in the general case concentrations are necessary—I refer of course to those ranges where the probability of hitting, using ballistic fire, is good.

"If so, where?" (referring to the point of concentration).

This brings to mind a war game once witnessed. Colonel R was umpire; Major H commanded the Coast Artillery. Step by step the fleet moved in toward one of the two harbor entrances. But, though the umpire reported the forts heavily engaged and began to rule guns out of action, Major H refused to open fire. Suddenly, after one intermission, prior to which the leading elements of the fleet were approaching the outer mine field, it was seen that the fleet was turning to withdraw. Then Major H put all batteries on the craft leading the withdrawal, shifting to next in column until the fleet scattered, when he directed "Battery Commanders' Action." Though the result, as determined by war game rules, was most disastrous to the fleet, I doubt if the defense would have been so conducted. I say doubt because, knowing Major H, I am by no means certain.

Under the assumption that a fleet might venture into mid-ranges at times of visibility sufficient for terrestrial observation, I believe that our plans and our drills should assign definite ships (according to formation) to definite batteries, which would open and adjust the fire on those ships, under direction of the group commander. I believe that a range should be established in our plans where concentration upon the leading ship in each channel (or each sector in the approaches to the harbor) should be undertaken. This range should be determined by a study of probability—it should be that range where more hits can be

delivered by using rapid fire and applying ballistic corrections (including the last % adjustment) than by attempting to continue the adjustment by observation. I believe this observation is impracticable for concentrations and that concentrations are necessary in any serious engagement.

When the leading ship is out of action the mortars should shift to the last ship leaving the guns to take the second ship in column. This the guns can do *without change of range* for a few shots while the fire control section is making the change, since the second ship cannot avoid running into the danger space and normal range dispersion for that range and, if followed in deflection by each gun, is certain to come under effective fire regardless of how she maneuvers. The shift to the rear ship of the mortars is to be on that ship in case of an attempt to withdraw. With the first ship out of action the fire of the guns should be sufficient to complete the demoralization of the head of the column if the attack persists. Attention is invited to the fact that this type of defense can be arranged and drilled upon during peace so as to be automatic in an actual engagement.

Personally I doubt the probability of a fleet risking anything except a long-range bombardment against a well-defended harbor in weather permitting visibility greater than about 6000 yards. This is ample in most cases for the ships to follow courses by bearings and in formation at high speed. It is approximately our expectancy for searchlight illumination under average conditions. At such ranges concentrations are advisable and the ships in turn from front to rear the logical target. Where the batteries are dispersed and those on one flank cannot follow the ships in a channel on the other flank the old system of salvo points is applicable if channels are well defined. Where greater freedom of course is practicable to the enemy some means of sending data to these distant batteries should be adopted. This is necessary also in cases where certain stations are blanketed by smoke screens. And it can be done *if arranged for and drilled upon in time of peace*. If we try it in action without such prior arrangement it will fail. Let us remember the time element, which is so much more vital in harbor defense than in any other combat of large forces.

From all considerations the tactics of harbor defense have two outstanding requirements—immediate decision and immediate response. And there is the further requirement of immediate decentralization of command without material effect upon the execution of the commander's plan—this last because of the probability of failure of communications. This makes prearranged plans of fire and consistent drills under each a necessity.

I have recently seen a study made by a committee in one of our schools in which effort was made to liken the harbor defense artillery to the artillery of a corps or army in sector defense of land warfare; this analogy falls down under analysis.

The most outstanding difference is the fact that in a decisive engagement the corps or army artillery has a supporting mission while the harbor defense artillery in a decisive engagement has the principal mission and must be prepared to fight the engagement alone.

Another is the time element. Land battles continue for days; a decisive engagement for the capture of a harbor is a matter of hours and possibly of minutes. In the former there is opportunity, and in fact there is frequently the necessity, for army or corps commanders to direct changes in objective and volume of fire; in harbor defense, unless his command post is established within the harbor, the sector or subsector commander cannot know of the progress of the action in detail sufficient to intervene—it is even possible that the action may be over within a few minutes of the time he has information of the attack.

The coordination between harbor defense artillery and any other defensive elements engaged (navy and air forces) must be direct and immediate; in land warfare there is time and frequently necessity for such coordination to be through a higher common command.

Changes of position of corps and army artillery may be required during an engagement due to foreseen or unforeseen developments of the action; such changes are generally impracticable even for the smaller mobile elements in a harbor engagement. The batteries are (or should be) so disposed as to meet any possible form of naval attack, and the estimate of the situation, the decision, and the orders for the artillery action in each can and should be prepared and drilled upon habitually in peace.

There is also the difference in targets and in the character of fire. For the heavy artillery in land warfare, supporting fire, interdiction, counterbattery, or destruction fire may be the important fire mission—in a harbor engagement destruction fire practically absorbs all other fire missions.

The foregoing leads to the conclusion that there is a difference between the relation of the harbor defense commander to the sector or subsector commander and the relation of an artillery commander in a corps or army to the corps or army commander. The latter will usually operate under definite and detailed instructions which may and probably will be changed as the action progresses; the former can be given only general instructions and must be left complete freedom of action during the engagement. While the Chief of Coast Artillery has recom-

mended that the term "independent rôle" in training regulations shall be changed to "special mission" so as to make it plain that the harbor defense command is a subordinate in the sector or subsector command, it is not seen that this change of words can affect in any way the ship-fort battle. It would seem that the responsibilities of the harbor defense commander and the freedom of action accorded him are more comparable to those of an advance or flank guard commander in land warfare than to those of a corps or army artillery commander.

Finally the corps or army artillery normally operates from retired positions covered by strong detachments of other arms while harbor defense artillery is largely in the front line. This brings up the question, recently raised, of the wisdom of our regulations making harbor and fort commanders responsible for the local defense of their commands against landing attacks. The opinion has been advanced that this responsibility should rest upon a local infantry commander and be conducted through the normal sector chain or command. Now it is highly improbable that sufficient infantry will be present in the beach cordon to repulse a surprise landing against installations located on the beach—in many cases our forts are on islands and cannot be promptly reinforced by counterattack groups. The normal command post for the infantry battalion or higher commander is with his counter-attack units, and not on the front line. It is not seen how the senior line officer present (normally a coast artilleryman) can escape the responsibility for repulse of a surprise landing. It has been stated that the artillery should have no obligation that would deflect it from its purely artillery mission (again the analogy to corps artillery) but a practical consideration of the problem leads to the conclusion that the local commander, be he infantryman or coast artilleryman, *is going to use all means available to repulse an attack* regardless of any peacetime definition of responsibility. Let us remember that Grant once armed his teamsters and fought them as infantry. Let us remember also that in the repulse of the attack on Fort Sumter referred to it was the *garrison* that repulsed the attack—that the artillery was not exempted.

Recently a solution of a coast defense problem was submitted which provided for the destruction of batteries threatened with capture *but did not provide for the coast artillery to aid the infantry in repulsing a landing attack threatening a battery*. It was another of those solutions that make me feel our officers are in danger of thinking more of school forms than of the actual problems of warfare. The officer who wrote the solution would certainly not destroy a battery until he had used all possible means to repulse a landing.

Doubtless it is this practical point of view of the defense against landing raids that has led the Chief of Coast Artillery to hold to the rifle for harbor defense units while recommending the pistol as the personal arm for mobile units. With the latter the care and transportation of the rifle would be troublesome, while harbor defense artillery can keep their personal arms at the battery without trouble. The mobile units will normally fight behind a comparatively strong protecting screen of infantry; the harbor defense artillery in many cases is on the front line, and should be able, in case of need, to meet rifle with rifle and bayonet with bayonet. A prompt reinforcement of the beach cordon near a battery by a hundred huskies armed with rifle and bayonet is an asset not to be discarded.

And certainly in a single fort there should be one commander only. To have one officer responsible for defense under certain conditions and another under other conditions, with the ever present possibility that these conditions may overlap is unthinkable. It would require an expert juggler of Army and Training Regulations to draw up understandable rules defining their duties.

In all of the foregoing the naval phase of the attack has been under discussion. When the enemy has landed in force and the attack from the land is the more serious threat to the harbor, the fire of harbor artillery in support of the land defense will of course be governed just as is that of other heavy artillery of the defense. Even here, however, common sense seems to dictate that the harbor defense commander be authorized, at any time a naval attack threatens, to deflect any battery or batteries from landward mission in order to repulse the naval attack.

We have also the problem of supporting the debouchment of our fleet from the harbor. In pre-war tactics this was arranged by harbor and naval commanders. If, as I believe, control of the air by a blockading fleet is essential to enable that fleet to operate close enough to prevent a debouchment, then the army's preparations for the debouchment becomes a problem for a commander able to concentrate an air force to overcome this preponderance. Furthermore, this is a case where the navy has "paramount interest" and, under present ruling, the army forces, both air and artillery, will operate under missions given by the naval commander.

Another practical point which appears to have been overlooked in some discussions is the fact that the sector coast defense system for the continental United States is not in operation in peace and that even after plans are drawn and approved it will require time to make them effective. But the harbor defense is a continuing activity in peace, and

the Regular and National Guard organizations assigned are ready, with a varying degree of effectiveness, to undertake their primary mission at all times. There seems no possible doubt who commands the harbor and is responsible for all activities therein *before the other sector troops are mobilized*, move to their assigned war stations, and complete their organization. If the next war starts as suddenly as have those of the recent past it is not inconceivable that some harbor defense may be engaged before the initial concentration of our mobile forces is fairly under way.

The permanence of the harbor defenses, the installations and equipment provided in peace for supply, hospitalization, and movement, lead to the conclusion that peace-time control of supply and administration should be continued, at least during the early stages of a war, by the harbor defense commander. Although he becomes a subordinate and his command a subordinate echelon in the sector when established, we have in the harbor defense a going concern capable not only of carrying on its combat mission but also of caring for itself. This going concern should not be abruptly disrupted at a critical period for the sake of conforming to a system of sector supply and administration which itself is in the organization stage. It is simpler and easier for all concerned to let these features continue, to free the sector staff of responsibility for an element able to care for itself and to concentrate on those that are not. The incorporation of the harbor defense administration and supply into the general system can be made if (and when) it becomes necessary.

There is finally the matter of the antiaircraft defense of fixed installations. The characteristics of antiaircraft fire are such that rarely will it be possible to locate at a fort antiaircraft batteries advantageously placed for the defense of that fort. It is difficult therefore for a local artillery commander to control the antiaircraft defense, which, incidentally should be disposed to protect not only the forts but the anchorage and other important areas in the vicinity. Until an antiaircraft defense of the area is established, however, it appears that there is no choice save for the harbor defense commander to assume for the time being the direction of the antiaircraft defense by such batteries as may be located within his defenses.

For the preparation of plans for resisting naval attack, for fire of harbor defense batteries landward, for defense against local landing attacks, and for antiaircraft defense of the forts and harbor, it appears that the harbor defense commander is the one logically to be charged

therewith. By reason of the permanence of his position and the means at hand he is best conditioned for this work. If the sector plan is furnished him, his own plans conform. But he should not sit idle in the absence of directive. His plans can be modified to conform to directives issued later and may be of material assistance to the sector staff if carefully prepared in advance of the general plan.

For the training of our reduced garrisons consideration should be given the fact that a certain period will be necessary for the echelons above the battery in our National Guard units to "find themselves" in their duties. In most cases the batteries are well trained for battery action, but the higher echelons have few opportunities to man their war stations and conduct drills of their commands. During this early period it is probable that the regular garrison must assist in the higher command stations and must operate the bulk of the installations such as searchlights, power plants, and communication centrals. The establishment of the mine defense must be under the regular units. The preparation of the regular garrison for these duties offers a broad and interesting field for training on the principle of the terrain exercise. Junior officers and selected noncommissioned officers may be assigned posts of command with the necessary communications personnel. Personnel may be trained so that all searchlights and power plants may be run simultaneously. The various possible forms of naval attack can then be drilled upon and tested almost as well as if the batteries were manned. In this way the command can be prepared to receive the National Guard reinforcement and to place the harbor defense in the best condition for such effective work as the strength of the assigned garrison, Regular and National Guard, permits. Where this system of training has been used the increased interest and morale of the command has been marked.

I am in general accord with the categorical answers to the questions as quoted in the June issue of our JOURNAL. I have endeavored to go somewhat further as to questions 4 to 7. I have attempted to discuss some other matters on which there appears to be confusion of thought. My own opinions have been frankly exposed. In many of them I may be wrong. I hope those who differ will be as willing to express themselves and will be equally definite. We shall all profit by a clarifying of our ideas.*

* The editor has been authorized to give the name of the writer to any officer who agrees not to divulge it for six months. It is believed there will be greater freedom of expression if names are not known. Any junior officer may take a fall out of "Smoothbore" without risk of seeming "BJ"; some might hesitate to do so if the article were signed "Major A., Lieut. Col. B." or "Colonel C."

Coast Artillery in Coast Defense

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

To the Editor, COAST ARTILLERY JOURNAL:

THERE is much to agree with, and little to disagree with, in the letter from the unknown correspondent quoted in your editorial on "Coast Artillery in Coast Defense," in the June, 1927, issue of the COAST ARTILLERY JOURNAL. However, if your statement is correct that there is nothing in this letter "which is not in full accord with the doctrines now being taught the Corps," I regret the fact, but cannot nevertheless conscientiously avoid the possible rôle of a lone voice "crying in the wilderness."

In general, I agree heartily with what your correspondent has to say, and I would not have taken occasion to disagree with any of his statements, except for his very last paragraph. This paragraph reads:

Forget the concrete, to which so many Coast Artillery officers are still bolted, and the shore line, which does not differ far from the M. L. R. of a battle position in land warfare. Ours is an artillery arm; why not plan its use and fight it as artillery?

Now this paragraph is worth considering, not so much from what it *says*, which isn't a great deal, but from what it *implies*, which turns out to be the point of view underlying all the previous discourse. Furthermore, it is just this matter of the *point of view*, which it is important that both Coast Artillery officers and all other officers should get straight, and then hold to, as the fundamental basis of all tactical doctrine, and all the relations in peace and in war, between the Coast Artillery and other branches of the Army.

Now then, precisely what did your correspondent mean in that last paragraph of his? I shall attempt to paraphrase it to express my interpretation of what he had in mind. If my interpretation of his underlying thought is incorrect, the fault is not mine, but his, in that he obviously employed figurative language to express an idea, rather than reduce to an exact and unmistakable statement the implications he had in mind. But here it is:

The Coast Artillery should get away from its attitude of isolation and immobility, and should consider that its exclusive rôle is that of supporting artillery in the tactical team of all arms, and that this rôle in Coast Defense is not markedly different from the rôle of supporting artillery in land warfare.

If the writer of the original paragraph will agree to the correctness of my paraphrase, we are ready to analyze the original statement in the light of its paraphrased version.

Let us frankly admit that to an undersirable degree the Coast Artillery Corps formerly was firmly ensconced in a "Chinese Wall" of its own building. Let us also be frank enough to admit that the Coast Artillery Corps did not generally discover the undersirability of this Chinese Wall until it became apparent that the barrier not only served to retain to the Coast Artillery the special advantages which it had secured, but also to exclude the Coast Artillery from many of the greater advantages which bade fair to accrue to the rest of the Army. When this discovery was made, the Chinese Wall was battered down by the Coast Artillery itself, and fortunately so. Now then, in this battering down process, the Coast Artillery has often leaned over backward, like the man who, in his anxiety to put himself right after a hasty statement, said, "I apologize for everything I said, and more, too." We are right in recognizing the supremacy of the Infantry among all arms. We are right in recognizing that under modern conditions, the Coast Artillery has no independent rôle. But this is vastly different from protesting that the Coast Artillery may never play the predominant rôle. And to assert or even to agree that there is little that is distinctive in the rôle of Coast Artillery in Coast Defense, in other words that the Coast Artillery's problem in Coast Defense is closely assimilated to the problem of supporting artillery in the defensive of land warfare, is an unwarranted degree of self-effacement, and furthermore is a doctrine whose incorporation in the general body of strategical and tactical doctrine, might well prove disastrous in time of war.

The passage which I have taken such pains to question, implies just such a wholesale renunciation of any claim to distinction in the rôle, the problem, or the training of the Coast Artillery. Let us examine it in detail. "Forget the concrete!" I hesitate to stress my objection here, lest some JOURNAL reader with a long memory may confront me with certain animadversions against concrete which I introduced into the pages of the JOURNAL in years gone by. To the extent that the writer had in mind that we should reject isolation and mental and physical immobility, I heartily agree with him. But the phrase, to my ear, carries a further, lurking slur. It seems to say, "Forget that we are Coast Artillerymen, or if you can't do that, at least hide anything that might permit anyone to recognize us as Coast Artillerymen." In very truth,

if symbolism is to be indulged in at all, concrete is a symbol to be proud of, for it is concrete that makes possible the power of our heaviest guns, and it is just this dependable power which is the *raison d'être* and the distinctive contribution of the Coast Artillery.

"Forget . . . the shore line, which does not differ far from the M. L. R. of a battle position in land warfare!" Is the difference so slight? What other battle position is at the very boundary between leagues of the two elements, land and water? If this fact seems of small moment, consider that the water which laps this shore line is the supporting medium by means of which hostile artillery of the maximum range and power can be maneuvered with a swiftness and concentration against any selected portion of this shore-line battle position, that would be wholly impossible in any operation against a battle position in land warfare. Where, except on the shore line, is supporting artillery of the range and power of Coast Artillery guns emplaced in the very M. L. R. of the battle position, and subjected to every hazard that the Infantry may meet? Where, except on the shore line, is the supporting artillery expected to maintain its communications on the very ground the infantry occupies and fights over? What battle position, other than the shore line, may expect occasions when its principal mission is not to resist assault, but to prevent the bombardment of harbors and utilities far in its own rear? There are other differences, but here is a question which ~~should never~~ be lost sight of, and often is: what other battle position other than the shore line may require to be held effectively in the confused and transitory period before mobilization is complete, and while the full resources for defense are not yet available?

Our doctrine is complete and sound. It has never been stated more ably than by Major Rodney H. Smith, C. A. C., in his article entitled "The Combined Arms in Coast Defense," published in the March, 1927, COAST ARTILLERY JOURNAL. On Page 204 he lists the ten recognized forms of attack against seacoasts. On Page 205 he states:

It will be noted that the first nine forms of hostile attack involve operations by enemy aircraft and war vessels *only*. The Army means of defense against these nine forms may be classified as "Air" and "Artillery," as the Army employs *only* the Air Corps and the Coast Artillery Corps to meet them.

On Page 206 he says:

The Air Corps and the Coast Artillery Corps in cooperation can therefore successfully perform the missions of the Army in coast defense *so long as no landing attacks are involved*, but when landing attacks are made, each of the above arms plays a subordinate rôle in supporting the *Infantry* which then as in all warfare becomes the back-bone of the body military.

The doctrine is sound, as already stated. What we are likely to lack is the right *emphasis and perspective*. The reason "I have taken my pen in hand" is because the statement of my unknown Coast Artillery *confrère* is of the sort that tends to impair the establishment of the right emphasis and perspective. Let us stand up on our hind legs and never forget that we share with the Air Corps the *predominant rôle* in nine out of ten possible forms of hostile attack against our seacoast. In executing this part of our mission, it is in very strictness a misnomer, or at best only a polite aphorism, to refer to the Coast Artillery as *supporting artillery*. Furthermore, we should insist on the recognition by all hands, that if the Air Corps and the Coast Artillery are provided with an adequate personnel trained in peace, and fully equipped, there is the smallest chance of the tenth form of hostile attack—a landing in force, ever being accomplished in a strategically vital area. The real weakness of the "Positive System of Coast Defense" lies in its assumption that the enemy is going to get ashore anyhow. The proper attitude to take is that the enemy must not be allowed to cross the shore line. Given the adequate means, the Air Corps and Coast Artillery Corps could jointly assume this responsibility. Any lesser conception is not "positive" but passive, and may yet prove to be temporizing with fate. The best "support" the Coast Artillery can give the Infantry is to arrest an enemy before he can shed our Infantry's blood.

Therefore, would that we metamorphose the pronouncement that stirred up this fuss into something like the following:

The Coast Artillery is the Arm of Power. We are trained and organized and think as a part of the tactical team. In the defense of the coast line we must be prepared to save the lives of the Infantry by sharing with the Air Corps the predominant rôle of resisting hostile attack. If and when the enemy gets ashore, we yield the predominant rôle to the Infantry and play our part as supporting artillery.

Yours for a sound combination of tactical cooperation and a proper pride,

F. S. CLARK
Major, Coast Artillery Corps.

Changing Zones With Mortars

By LIEUT. B. C. DAILEY, 14TH C. A.

SINCE the War comparatively few mortar practices have been held involving the zone-to-zone change, but a step has been made in the right direction. Paragraph 46, Coast Artillery Memorandum Number 7, requires that all mortar practices be conducted in two or more zones. This makes the Battery Commander's problem more difficult. The difficulty is not in the changing of the powder or the projectile but in keeping the center of impact in the same relative position with relation to the target when the change of zones is made, which must be accomplished if the adjustment is to be continuous.

On March 10, 1927, Battery Brannan fired its preliminary service practice. This battery is equipped with up-to-date mortar fire-control equipment, including the range percentage corrector, wind component indicator, Pratt range board with percentage range correction chart of 1926, and new drift and cross wind charts on the deflection board. Base increment powder carefully blended was used. Four trial shots were fired in Zone 9, the range correction being applied ballistically on the Pratt range board, while the deflection correction was applied as a flat correction on the deflection board. The muzzle velocity for Zone 8B was determined from the Pratt range board using the zone-to-zone lines on the chart. The change of zones from Zone 9 to Zone 8B was made between shots 4 and 5. The center of impact, if there had been no personnel errors and no corrections ordered, was for range $+ 46$ yards in Zone 9 and $+ 107$ yards in Zone 8B, and for deflection $+ 1.61^\circ$ in Zone 9 and $+ .46^\circ$ in Zone 8B. The center of impact had moved up 61 yards and left 1.15° when the change of zones was made. The muzzle velocity actually developed in Zone 8B was 8 f. s. more than that which would have been given by applying the zone-to-zone change on the chart based on what was actually developed in Zone 9. From adjustment within one probable armament error in range and deflection based on the first four shots, we had completely lost the adjustment when we changed zones. That was the situation at the end of the first phase. An estimate of the situation was certainly required.

What caused the break in the continuity of adjustment?

Let us first consider the problem of range.

(1) The muzzle-velocity zone-to-zone change on the charts is based on the assumption that the muzzle velocities in each zone are proportional to the normal muzzle velocities of the respective zones. It can be seen that this is a mere approximation and it is probably as close as we can come to the correct muzzle velocity of the second zone if approximations must be resorted to.

(2) Our ballistic wind data for mortars are of little value. True, we use the best we can obtain but the best is not good enough. We are fortunate if we can obtain correct ballistic wind data at 9,000 feet in most of our harbor defense meteorological stations. Then we boldly assume that the ballistic wind is the same at 14,000 feet, which is the maximum ordinate of the firing in Zone 8B, and at 21,000 feet, which is the maximum ordinate in Zone 9. The error is apparent.

(3) Our present method of correcting for the erroneous ballistic wind used is to fire trial shots and throw the necessary correction into muzzle velocity. This again introduces an error for the reason that the curves on the mortar percentage range correction chart for muzzle velocity converge as the range decreases and the curves of the atmosphere and ballistic wind reference numbers diverge as the range decreases. We then actually create another source of error which is accumulative, not compensating, as the range varies from the range of the trial shot point, by correcting for ballistic wind and atmosphere in muzzle velocity.

Let us now consider the problem of deflection.

The same remarks apply to the ballistic wind in deflection as have been given for range. But our method of correction is different. We apply corrections from trial shots not ballistically but as a flat correction, and pass from one zone to another using this same flat correction trusting the chart to take care of all the changes relating to the change of zones. But the same correction cannot be used in both zones because the ballistic wind most certainly changes in direction and velocity, with the change of zones.

The decision was therefore made that the charts did not properly take care of the zone-to-zone change with the present method of application. It was decided to fire trial shots in each zone at the same trial shot point in the overlap between zones, where the actual zone-to-zone change would take place, and apply the correction determined from trial shots independently for each zone. This would eliminate almost

entirely the effect of the application of erroneous ballistic wind data, except the error created by correcting for the error in ballistic wind and atmosphere in muzzle velocity which could not be eliminated.

On March 18, 1927, Battery Brannan fired its record practice. The same lot of blended powder was fired as in the preliminary practice. Trial shots were fired in each zone in the overlap. The muzzle velocity and deflection correction were computed independently and applied independently for each zone. The change from zone to zone occurred between the 4 and 5 shots as before and without a relay. The center of impact for range, had there been no personnel errors and no corrections ordered, was -8 yards in Zone 9 and -7 yards in Zone 8B. The center of impact in deflection, had there been no personnel errors and no corrections ordered, was $+ .58^\circ$ in Zone 9 and $+ .08^\circ$ in Zone 8B. But a deflection correction had been ordered based on the trial shots of $-.47^\circ$ for Zone 9 and $-.04^\circ$ in Zone 8B. The center of impact with the correction but without personnel errors was then $+ .11^\circ$ in Zone 9 and $+ .04^\circ$ in Zone 8B. The center of impact had moved up 1 yard and left $.07^\circ$ when the change of zones was made. The problem had been satisfactorily solved and the center of impact had been kept almost exactly in the same relative position with relation to the target.

What would have happened if the zone-to-zone change on the charts had been used as in the first practice? In this firing the muzzle velocity actually developed in Zone 8B was 28 f. s. more than that which would have been given by applying the zone-to-zone change on the chart based on what was actually developed in Zone 9. The center of impact would have moved up 232 yards and left $.50^\circ$ and the adjustment would have again been lost in the change of zones.

From the theory and facts given I feel that I am justified in drawing two conclusions:

(1) That under our present system a continuous adjustment is practically impossible if the zone-to-zone corrections of the charts are used.

(2) That a solution of this problem is to determine the zone-to-zone change in both range and deflection by firing trial shots in each zone, as near as possible to the point in the field of fire where the actual zone-to-zone change will take place, and apply these corrections determined independently for each zone.

If this article helps to prevent the mortar battery losing its adjustment when the change of zones is made, as Battery Brannan did in its preliminary practice, it will have fulfilled its mission.

General Officers of the Regular Army

1775-1927

(Continued from July Journal)

ERROR'S NOTE.—The following lists include only commissions issued in the Regular Army; they do not include brevet commissions nor commissions in the Volunteers or the National Army. The following symbols are used: * indicates a graduate of the United States Military Academy; † indicates service during the Revolutionary War; ‡ service during the War of 1812; § service during the War with Mexico; ¶ service during the Civil War; ¤ service during the War with Spain; * service during the World War. These lists are not elsewhere available, except in part in Heilman's *Historical Register of Officers of the Continental Army and Historical Register and Dictionary of the United States Army*, and Powell's *List of Officers of the Army of the United States*.

GENERAL OFFICERS

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BRIGADIER GENERALS

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
180	Rochester, William B. § 4	17 Feb 1882	15 Feb 90	Retired	11 Nov 09	PM Gen.
181	*Ingalls, Rufus § 4	23 Feb 1882	1 Jul 83	Retired	15 Jan 93	QM Gen; Bvt MG, 1865.
182	Crane, Charles H. § 4	3 Jul 1882	10 Oct 83	Died	10 Oct 83	Sur Gen; Bvt MG, 1865.
183	*Mackenzie, R. S. § 4	26 Oct 1882	24 Mar 84	Retired	19 Jan 89	Bvt BG, 1865.
184	*Holabird, Samuel B. § 4	1 Jul 1883	16 Jun 90	Retired	3 Feb 07	QM Gen; Bvt BG, 1865.
185	Murray, Robert § 4	23 Nov 1883	6 Aug 86	Retired	1 Jan 13	Sur Gen.
186	*Newton, John § 4	6 Mar 1884	27 Aug 86	Retired	1 May 95	C of Engrs; Bvt MG, 1865.
187	*Stanley, David S. § 4	24 Mar 1884	1 Jun 92	Retired	13 Mar 02	Bvt MG, 1865; MH.
188	*Davis, Nelson H. § 4	11 Mar 1885	20 Sep 85	Retired	15 May 90	Insp Gen; Bvt BG, 1865.
189	*Gibbon, John § 4	10 Jul 1885	20 Apr 91	Retired	6 Feb 96	Bvt MG, 1865.
190	*Bard, Absalom § 4	22 Sep 1885	20 Aug 88	Retired	16 Sep 05	Insp Gen; Bvt MG, 1865; MH.
191	*Ruger, Thomas H. § 4	19 Mar 1886	8 Feb 95	Promoted	3 Jun 07	Bvt BG, 1867.
192	*Potter, Joseph H. § 4	1 Apr 1886	12 Oct 86	Retired	1 Dec 92	Bvt BG, 1865.
193	*Duane, James C. § 4	11 Oct 1886	30 Jun 88	Retired	8 Nov 97	C of Engrs; Bvt BG, 1865.
194	*Willcox, O. B. § 4	13 Oct 1886	16 Apr 87	Retired	10 May 07	Bvt MG, 1867; MH.

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
195	Moore, John ⁴	18 Nov 1886	16 Aug 90	Retired	18 Mar 07	Sur Gen.
196	Greely, Adolphus W. ⁴	3 Mar 1887	10 Feb 06	Promoted		C Sig O.
197	*Merritt, Wesley ⁴	16 Apr 1887	25 Apr 95	Promoted	3 Dec 10	Bvt MG, 1865.
198	Brooke, John R. ⁴	6 Apr 1888	22 May 97	Promoted	5 Sep 26	Bvt MG, 1867.
199	*Casey, Thomas L. ⁴	6 Jul 1888	10 May 95	Retired	25 Mar 96	C of Engrs.
200	*Jones, Roger ⁴	20 Aug 1888	26 Jan 89	Died	26 Jan 89	Insp Gen.
201	Breckinridge, J. C. ⁴	30 Jan 1889	11 Apr 03	Promoted	18 Aug 20	Insp Gen.
202	*Rosecrans, Wm. S. ⁴	27 Feb 1889	2 Mar 89	Retired	11 Mar 98	BG, 1861; Bvt MG, 1865.
203	*Kelton, John C. ⁴	7 Jun 1889	24 Jun 92	Retired	15 Jul 93	Adj Gen; Bvt BG, 1865.
204	Smith, William ⁴	10 Mar 1890	26 Mar 95	Retired	17 Jun 12	PM Gen.
205	Grierson, Benjamin II. ⁴	5 Apr 1890	8 Jul 90	Retired	31 Aug 11	Bvt MG, 1867.
206	Batchelder, Richard N. ⁴	26 Jun 1890	27 Jul 96	Retired	4 Jan 01	OM Gen; MH.
207	*Du Barry, Beekman ⁴	10 Jul 1890	4 Dec 92	Retired	12 Jan 03	Com Gen.
208	*McCook, Alexander M. ⁴	11 Jul 1890	9 Nov 94	Promoted	12 Jun 03	Bvt MG, 1865.
209	Baxter, Jedediah II. ⁴	16 Aug 1890	4 Dec 90	Died	4 Dec 90	Sur Gen.
210	Sutherland, Charles ⁴	23 Dec 1890	29 May 93	Retired	10 May 95	Sur Gen.
211	*Flagler, Daniel W. ⁴	23 Jan 1891	29 Mar 99	Died	29 Mar 99	C of Ord.
212	*Kaulz, August V. ⁴	20 Apr 1891	5 Jan 92	Retired	4 Sep 95	Bvt MG, 1865.
213	Wheaton, Frank ⁴	18 Apr 1892	2 Apr 97	Promoted	18 Jun 03	Bvt MG, 1865.
214	Williams, Robert ⁴	5 Jul 1892	5 Nov 93	Retired	24 Aug 01	Adj Gen; Bvt BG, 1865.
215	*Carr, Eugene A. ⁴	19 Jul 1892	15 Feb 93	Retired	2 Dec 10	Bvt MG, 1865; MH.
216	*Hawkins, John P. ⁴	22 Dec 1892	29 Sep 93	Retired	7 Feb 14	Com Gen; Bvt MG, 1865.
217	*Carlin, William P. ⁴	17 May 1893	24 Nov 93	Retired	5 Oct 03	Bvt MG, 1865.
218	Sternberg, George M. ⁴	30 May 1863	8 Jun 02	Retired	3 Nov 15	Sur Gen.
219	*Ruggles, George D. ⁴	6 Nov 1893	11 Sep 97	Retired	19 Oct 04	Adj Gen; Bvt BG, 1865.
220	Otis, Elwell S. ⁴	28 Nov 1893	16 Jun 00	Promoted	21 Oct 09	Bvt MG, 1899.
221	*Morgan, Michael R. ⁴	8 Oct 1894	18 Jan 97	Retired	16 Sep 11	Bvt BG, 1865.
222	*Forsyth, James W. ⁴	9 Nov 1894	11 May 97	Promoted	24 Oct 06	Bvt BG, 1865.
223	Lieber, Guido N. ⁴	3 Jan 1895	21 May 01	Retired	25 Apr 23	JA Gen.
224	Stanton, Thaddeus II. ⁴	27 Mar 1895	30 Jan 99	Retired	23 Jan 00	PM Gen.
225	*Bliss, Zenas R. ⁴	25 Apr 1895	14 May 97	Promoted	2 Jan 00	MH.
226	Coppinger, John J. ⁴	25 Apr 1895	11 Oct 98	Retired	4 Nov 09	

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
227	*Craighill, William P. ^{4 b}	10 May 1895	1 Feb 97	Retired	18 Jan 09	C of Engrs.
228	*Sawtelle, Charles G. ⁴	19 Aug 1896	16 Feb 97	Retired	4 Jan 13	QM Gen; Bvt BG, 1865.
229	*Sullivan, Thomas C. ⁴	18 Jan 1897	14 Nov 97	Retired	11 Mar 08	Com Gen.
230	*Wilson, John M. ^{4 b}	1 Feb 1897	30 Apr 01	Retired	1 Feb 19	C of Engrs; MH.
231	*Weeks, George H. ⁴	16 Feb 1897	3 Feb 98	Retired	13 Sep 05	QM Gen.
232	Shafter, William R. ^{4 b}	3 May 1897	16 Oct 99	Retired	12 Nov 06	MC Ret, 1901; MH.
233	Graham, William M. ^{4 b}	26 May 1897	28 Sep 98	Retired	11 Jan 16	Bvt BG, 1865.
234	*Minzer, John K. ⁴	26 May 1897	7 Jun 97	Retired	8 Sep 98	
235	Wade, James F. ^{4 b}	26 May 1897	13 Apr 03	Promoted	23 Aug 21	
236	Mills, Anson ⁴	16 Jun 1897	22 Jun 97	Retired	5 Nov 24	
237	*Carlton, Caleb H. ⁴	28 Jun 1897	30 Jun 97	Retired	21 Mar 23	
238	Merriam, Henry C. ^{4 b}	30 Jun 1897	13 Nov 01	Retired	18 Nov 12	MC Ret, 1903; MH.
239	*Breck, Samuel ⁴	11 Sep 1897	25 Feb 98	Retired	23 Feb 18	Adj Gen; Bvt BG, 1865.
240	*Bell, William H. ⁴	14 Nov 1897	23 Jan 98	Retired	17 Oct 06	Com Gen.
241	Cushing, Samuel T. ^{4 b}	28 Jan 1898	21 Apr 98	Retired	21 Jul 01	Com Gen.
242	Ludington, M. I. ^{4 b}	3 Feb 1898	12 Apr 03	Promoted	26 Jul 19	QM Gen.
243	Corbin, Henry C. ^{4 b}	25 Feb 1898	6 Jun 00	Promoted	8 Sep 09	Adj Gen.
244	Nash, William H. ^{4 b}	21 Apr 1898	2 May 98	Retired	2 Dec 02	Com Gen.
245	Pagan, Charles P. ^{4 b}	3 May 1898	6 Dec 00	Retired	1 Feb 19	Com Gen.
246	Hawkins, Ham. S. ^{4 b}	28 Sep 1898	4 Oct 98	Retired	27 Mar 10	MC Ret, 1915.
247	*Kent, Jacob F. ^{4 b}	4 Oct 1898	15 Oct 98	Retired	22 Dec 19	Bvt BG, 1890; MH.
248	*Henry, Guy V. ^{4 b}	11 Oct 1898	27 Oct 99	Died	27 Oct 99	
249	Worth, William S. ^{4 b}	29 Oct 1898	9 Nov 98	Retired	16 Oct 04	MH.
250	Wherry, William M. ^{4 b}	7 Jan 1899	18 Jan 99	Retired	3 Nov 18	MH.
251	Patterson, John H. ^{4 b}	18 Jan 1899	6 Feb 99	Retired	5 Oct 20	PM Gen.
252	*Carey, Asa B. ^{4 b}	30 Jan 1899	12 Jul 99	Retired	4 Apr 12	
253	*Sinclair, William ^{4 b}	8 Feb 1899	13 Feb 99	Retired	3 Oct 05	
254	*Miller, Marcus P. ^{4 b}	15 Feb 1899	27 Mar 99	Retired	29 Dec 06	
255	Atsaworth, Fred C. ^{4 b}	2 Mar 1899	23 Apr 04	Promoted		C Rec and Pens O.
256	Sumner, Edwin V. ^{4 b}	27 Mar 1899	30 Mar 99	Retired	23 Aug 12	
257	Anderson, Thomas M. ^{4 b}	31 Mar 1899	21 Jan 00	Retired	8 May 17	
258	*Buffington, A. R.	5 Apr 1899	22 Nov 01	Retired	10 Jul 22	C of Ord.

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
259	*Bates, Alfred E. ^{4 5}	12 Jul 1899	21 Jan 04	Promoted	13 Oct 09	PM Gen.
260	*Pennington, A. C. M. ^{4 5}	16 Oct 1899	17 Oct 99	Retired	30 Nov 17	MG Ret, 1916.
261	*Frank, Royal T. ^{4 5}	17 Oct 1899	18 Oct 99	Retired	14 Mar 08	
262	Carpenter, Louis I. ^{4 5}	18 Oct 1899	19 Oct 99	Retired	21 Jan 16	MH.
263	Overshine, Samuel ^{4 5}	19 Oct 1899	20 Oct 99	Retired		
264	Burke, Daniel W. ^{4 5}	20 Oct 1899	21 Oct 99	Retired	29 May 11	MH.
265	Carpenter, Gil. W. ^{4 5}	5 Dec 1899	26 Dec 99	Retired	12 Aug 04	
266	Kellogg, Edgar R. ^{4 5}	5 Dec 1899	16 Dec 99	Retired	7 Oct 14	
267	Young, Samuel B. M. ^{4 5}	2 Jan 1900	2 Feb 01	Promoted	1 Sep 24	
268	MacArthur, Arthur ^{4 5}	2 Jan 1900	5 Feb 01	Promoted	5 Sep 12	MH.
269	*Ludlow, William ^{4 5}	21 Jan 1900	30 Aug 01	Died	30 Aug 01	
270	Wheeler, Joseph ^{4 5}	16 Jun 1900	10 Sep 00	Retired	25 Feb 06	
271	Weston, John F. ^{4 5}	6 Dec 1900	8 Oct 05	Promoted	3 Aug 17	Com Gen; MH.
272	Freeman, Henry B. ^{4 5}	16 Jan 1901	17 Jan 01	Retired	16 Oct 15	MH.
273	Bates, John C. ^{4 5}	2 Feb 1901	15 Jul 02	Promoted	4 Feb 19	
274	Wheaton, Lloyd ^{4 5}	2 Feb 1901	30 Mar 01	Promoted	17 Sep 18	MH.
275	Davis, George W. ^{4 5}	2 Feb 1901	21 Jul 02	Promoted	12 Jul 18	MG Ret, 1916.
276	Schwab, Theodore ^{4 5}	2 Feb 1901	21 Feb 01	Retired	27 May 26	MH.
277	Sumner, Samuel S. ^{4 5}	4 Feb 1901	26 Jul 03	Promoted		
278	Wood, Leonard ^{4 5}	4 Feb 1901	8 Aug 03	Promoted		
279	*Hall, Robert H. ^{4 5}	5 Feb 1901	15 Nov 01	Retired	29 Dec 14	MH.
280	Hughes, Robert P. ^{4 5}	5 Feb 1901	1 Apr 02	Promoted	27 Oct 09	
281	Randall, George M. ^{4 5}	6 Feb 1901	19 Jun 05	Promoted	14 Jun 18	
282	Kolbée, William A. ^{4 5}	6 Feb 1901	19 Jun 04	Promoted		
283	*Wilson, James H. ^{4 5}	11 Feb 1901	11 Feb 01	Promoted	23 Feb 25	Bvt MG, 1865.
284	*Lee, Fitzhugh ^{4 5}	11 Feb 1901	2 Mar 01	Retired	28 Apr 05	(MG, CSA.)
285	Grant, Frederick D. ^{4 5}	18 Feb 1901	6 Feb 06	Promoted	11 Apr 12	
286	*Bell, James F. ^{4 5}	19 Feb 1901	3 Jan 07	Promoted	8 Jan 19	MH.
287	Daggell, Aaron S. ^{4 5}	21 Feb 1901	2 Mar 01	Retired		
288	Smith, Jacob H. ^{4 5}	30 Mar 1901	16 Jul 02	Retired	1 Mar 18	
289	Finstun, Frederick ⁵	1 Apr 1901	17 Nov 14	Promoted	19 Feb 17	MH.
290	*Robert, Henry M. ^{4 5}	30 Apr 1901	2 May 01	Retired	11 May 23	C of Engrs.

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
291	*Barlow, John W. ⁴ ⁵	2 May 1901	3 May 01	Retired	27 Feb 14	C of Engrs.
292	*Gillespie, Geo. L. ⁴ ⁵	3 May 1901	23 Jan 04	Promoted	27 Sep 13	C of Engrs; MH.
293	Barr, Thomas F. ⁴ ⁵	21 May 1901	22 May 01	Retired	15 Dec 16	JA Gen.
294	Clous, John W. ⁴ ⁵	22 May 1901	24 May 01	Retired	1 Sep 08	JA Gen.
295	*Davis, George B. ⁴ ⁵	24 May 1901	14 Feb 11	Promoted	16 Dec 14	JA Gen.
296	Bell, James M. ⁴ ⁵	17 Sep 1901	1 Oct 01	Retired	17 Sep 19	
297	Bisbee, William H. ⁴ ⁵	2 Oct 1901	1 Oct 02	Retired		
298	*Cruzier, William ⁴ ⁵	22 Nov 1901	6 Oct 17	Promoted		C of Ord.
299	*Guenther, F. L. ⁴ ⁵	13 Feb 1902	22 Feb 02	Retired	5 Dec 18	
300	De Rusey, Isaac D. ⁴ ⁵	1 Apr 1902	15 Apr 02	Retired	17 Feb 23	
301	Burt, Andrew S. ⁴ ⁵	1 Apr 1902	16 Apr 02	Retired	12 Jan 15	
302	Hooten, Mott ⁴ ⁵	15 Apr 1902	16 Apr 02	Retired	30 May 20	
303	Sheridan, M. V. ⁴ ⁵	15 Apr 1902	16 Apr 02	Retired	21 Feb 18	
304	Snyder, Simon ⁴ ⁵	16 Apr 1902	10 May 02	Retired	12 Apr 13	
305	Bird, Charles ⁴ ⁵	16 Apr 1902	17 Jun 02	Retired	22 Mar 20	
306	Auman, William ⁴ ⁵	16 Apr 1902	10 May 02	Retired	21 May 20	
307	Harbach, Abram A. ⁴ ⁵	16 May 1902	28 May 02	Retired		
308	Spurgin, William F. ⁴ ⁵	16 May 1902	29 May 02	Retired	6 Aug 04	
309	Whitide, Samuel M. ⁴ ⁵	29 May 1902	9 Jun 02	Retired	15 Dec 04	
310	Lincoln, Sumner H. ⁴ ⁵	29 May 1902	9 Jun 02	Retired		
311	Forwood, William H. ⁴ ⁵	8 Jun 1902	7 Sep 02	Retired	11 May 15	Sur Gen.
312	Baldwin, Frank D. ⁴ ⁵	9 Jun 1902	26 Jun 06	Retired	22 Apr 23	MG Ret, 1915; MH (2).
313	Wini, Theodore J. ⁴ ⁵	9 Jun 1902	21 Mar 07	Died	21 Mar 07	
314	Lee, Jesse M. ⁴ ⁵	17 Jun 1902	18 Sep 06	Promoted	26 Mar 26	
315	*Carter, William H. ⁴ ⁵	15 Jul 1902	13 Nov 09	Promoted	24 May 25	MH.
316	*Bliss, Tasker H. ⁴ ⁵	21 Jul 1902	20 Nov 15	Promoted		
317	Ward, Thomas ⁴ ⁵	22 Jul 1902	22 Jul 02	Retired	25 Mar 26	
318	Sanger, Joseph P. ⁴ ⁵	23 Jul 1902	20 Jan 04	Promoted	15 Mar 26	
319	O'Reilly, Robert M. ⁴ ⁵	7 Sep 1902	14 Jan 09	Promoted	3 Nov 12	Sur Gen.
320	Kimball, Amos S. ⁴ ⁵	1 Oct 1902	2 Oct 02	Retired	10 Oct 09	
321	McKibbin, Chambers ⁴ ⁵	2 Oct 1902	3 Oct 02	Retired	30 Dec 18	
322	Quinton, William ⁴ ⁵	6 Oct 1902	9 Oct 02	Retired	16 Sep 16	

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
323	*Rodgers, John I. ⁴⁸	14 Oct 1902	15 Oct 02	Retired	13 Jun 27	
324	Hood, Charles C. ⁴⁸	18 Oct 1902	25 Nov 02	Retired	17 Dec 10	
325	*Hushbruck, H. C. ⁴⁸	1 Dec 1902	5 Jan 03	Retired	— — —	
326	*Johnston, John A. ⁴⁸	14 Jan 1903	15 Jan 03	Resigned	— — —	
327	Hayes, Edward M. ⁴⁸	15 Jan 1903	26 Jan 03	Retired	15 Aug 12	
328	Davis, Charles I. ⁴⁸	26 Jan 1903	10 Feb 03	Retired	10 Nov 19	
329	*Furley, Joseph P. ⁴⁸	17 Feb 1903	18 Feb 03	Retired	6 Apr 12	
330	Foot, Morris C. ⁴⁸	18 Feb 1903	19 Feb 03	Retired	6 Dec 05	
331	Baird, George W. ⁴⁸	19 Feb 1903	20 Feb 03	Retired	28 Nov 06	MH.
332	*Mansfield, S. M. ⁴⁸	20 Feb 1903	21 Feb 03	Retired	5 Sep 18	
333	*McCreary, Tully B. ⁴⁸	21 Feb 1903	22 Feb 03	Retired	17 Feb 15	MH.
334	Huggins, Eli L. ⁴⁸	22 Feb 1903	23 Feb 03	Retired	17 Dec 14	
335	Gondale, G. A. ⁴⁸	23 Feb 1903	24 Feb 03	Retired		
336	Furey, John V. ⁴⁸	24 Feb 1903	25 Feb 03	Retired		
337	Moore, Francis	25 Feb 1903	6 Apr 05	Retired		
338	Randolph, W. F. ⁴⁸	27 Feb 1903	22 Jan 04	Promoted	9 Dec 10	C of Art.
339	Vroom, Peter D. ⁴⁸	11 Apr 1903	12 Apr 03	Retired	19 Mar 26	Insp Gen.
340	*Burton, George H. ⁴⁸	12 Apr 1903	30 Sep 06	Retired	20 Oct 17	Insp Gen.
341	Humphrey, Chas. F. ⁴⁸	12 Apr 1903	1 Jul 07	Promoted	4 Jun 26	QM Gen; MH.
342	Smith, Jared A. ⁴⁸	13 Apr 1903	14 Apr 03	Retired	17 Dec 10	
343	*Rawles, Jacob B. ⁴⁸	14 Apr 1903	15 Apr 03	Retired	1 Jul 19	
344	Woodson, Albert E. ⁴⁸	15 Apr 1903	16 Apr 03	Retired	7 Aug 03	
345	Crosbeck, S. W. ⁴⁸	16 Apr 1903	17 Apr 03	Retired	8 May 04	
346	Myrick, John R. ⁴⁸	17 Apr 1903	18 Apr 03	Retired	29 Aug 09	
347	Rucker, Louis H. ⁴⁸	18 Apr 1903	19 Apr 03	Retired	9 Jul 06	
348	Baldwin, Theo. A. ⁴⁸	19 Apr 1903	20 Apr 03	Retired	1 Sep 25	
349	Rogers, William P. ⁴⁸	20 Apr 1903	21 Apr 03	Retired	12 May 16	MC Ret, 1916.
350	*Hains, Peter C. ⁴⁸	21 Apr 1903	6 Jul 04	Retired	7 Nov 21	
351	Page, John H. ⁴⁸	26 Jul 1903	27 Jul 03	Retired	9 Oct 16	
352	Woodruff, Chas. A. ⁴⁸	27 Jul 1903	28 Jul 03	Retired	13 Aug 10	
353	Haskin, William L. ⁴⁸	28 Jul 1903	29 Jul 03	Retired		
354	Miner, Charles W. ⁴⁸	29 Jul 1903	30 Jul 03	Retired		

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
355	*Sanno, James M. J. ^{4 b}	30 Jul 1903	31 Jul 03	Retired	4 May 07	
356	Robe, Charles F. ^{4 b}	31 Jul 1903	1 Aug 03	Retired	2 Jul 10	
357	*Reilly, James W. ^{4 a}	1 Aug 1903	2 Aug 03	Retired	23 Jul 10	
358	Alwood, Edwin B. ^{4 b}	2 Aug 1903	3 Aug 03	Retired	8 Aug 09	
359	Smith, Frank C. ^{4 b}	3 Aug 1903	4 Aug 03	Retired	7 Oct 12	
360	Rodney, George B. ^{4 b}	4 Aug 1903	5 Aug 03	Retired	7 Sep 12	
361	Wells, Almond B. ^{4 b}	5 Aug 1903	6 Aug 03	Retired	5 Nov 14	
362	Cleury, Peter J. A. ^{4 a}	6 Aug 1903	7 Aug 03	Retired	26 Apr 09	MH.
363	Balcock, John B. ^{4 b}	7 Aug 1903	8 Aug 03	Retired	1 Jun 26	
364	Coolidge, Chas. A. ^{4 b}	8 Aug 1903	9 Aug 03	Retired	19 Mar 17	
365	Roberts, Cyrus S. ^{4 b}	8 Aug 1903	9 Aug 03	Retired	6 Apr 22	
366	Thompson, John M. ^{4 b}	9 Aug 1903	10 Aug 03	Retired	2 Sep 08	
367	DeWitt, Calvin ^{4 b}	9 Aug 1903	10 Aug 03	Retired	20 Jul 13	MH.
368	Woodruff, Carle A. ^{4 b}	10 Aug 1903	11 Aug 03	Retired	5 Jul 04	
369	Kinzie, David H. ^{4 b}	10 Aug 1903	11 Aug 03	Retired	30 Mar 10	
370	Tiernon, John L. ^{4 b}	11 Aug 1903	12 Aug 03	Retired	11 Dec 16	
371	Miller, James ^{4 b}	11 Aug 1903	12 Aug 03	Retired	14 Dec 13	
372	Craigie, David J. ^{4 a}	12 Aug 1903	13 Aug 03	Retired	10 Nov 26	
373	Bowman, Alpheus H. ^{4 b}	12 Aug 1903	13 Aug 03	Retired	20 Jul 06	MH.
374	Rice, Edmund ^{4 b}	13 Aug 1903	14 Aug 03	Retired	13 Dec 26	
375	Pennery, Charles G. ^{4 b}	13 Aug 1903	14 Aug 03	Retired	16 May 14	
376	Chance, Jesse C. ^{4 b}	14 Aug 1903	15 Aug 03	Retired	9 Mar 17	
377	Forbes, Theodore F. ^{4 b}	14 Aug 1903	15 Aug 03	Retired	27 Jul 16	MH.
378	Wheeler, Daniel D. ^{4 b}	14 Aug 1903	16 Aug 03	Retired		
379	Matile, Leon A. ^{4 b}	15 Aug 1903	16 Aug 03	Retired		
380	Kress, John A. ^{4 b}	16 Aug 1903	17 Aug 03	Retired	30 Sep 19	
381	Cooper, Charles L. ^{4 b}	16 Aug 1903	17 Aug 03	Retired	24 Jul 14	
382	Carr, Camillo G. ^{4 b}	17 Aug 1903	3 Mar 06	Retired	30 Oct 14	
383	Simpson, John ^{4 b}	17 Aug 1903	18 Aug 03	Retired	30 Dec 19	
384	*Barry, Thomas H. ^{4 b}	18 Aug 1903	29 Apr 08	Promoted	20 Jan 20	
385	*Mordue, Alfred ^{4 b}	19 Jan 1904	20 Jan 04	Retired	29 Jul 12	
386	Hathaway, F. H. ^{4 b}	20 Jan 1904	21 Jan 04	Retired		

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
387	Huskell, Harry L. ^{4 5}	20 Jan 1904	21 Jan 04	Retired	25 Oct 08	
388	Taylor, Asher C. ^{4 5}	21 Jan 1904	22 Jan 04	Retired	20 Jan 22	
389	*Butler, John C. ^{4 5}	21 Jan 1904	22 Jan 04	Retired	17 Aug 14	
390	*Story, John P. ^{4 5}	22 Jan 1904	17 Jun 05	Promoted	25 Mar 15	C of Art.
391	*Allen, Charles J. ^{4 5}	22 Jan 1904	23 Jan 04	Retired	15 Jun 15	
392	True, Theodore E. ^{4 5}	22 Jan 1904	23 Jan 04	Retired	30 Aug 05	
393	Kline, Jacob ^{4 5}	23 Jan 1904	24 Jan 04	Retired	23 Mar 08	
394	Coxe, Frank M. ^{4 5}	23 Jan 1904	24 Jan 04	Retired	15 Sep 16	
395	*Mackenzie, Alexander ^{4 5}	23 Jan 1904	25 May 08	Promoted	23 Feb 21	C of Engrs.
396	Dodge, Francis S. ^{4 5}	23 Jan 1904	11 Sep 06	Retired	19 Feb 08	PM Gen; MH.
397	McLuskey, Wm. S. ^{4 5}	24 Jan 1904	15 Apr 07	Promoted	10 Aug 14	
398	Dougherty, Wm. E. ^{4 5}	24 Jan 1904	25 Jan 04	Retired	13 Jul 15	
---	Carrington, Henry B. ⁴	23 Apr 1904	On retired list		26 Oct 12	
---	Pennypacker, Galusha ⁴	23 Apr 1904	On retired list		1 Oct 16	Bvt MG, 1867; MH.
---	Callin, Isaac ⁴	23 Apr 1904	On retired list		19 Jan 16	MH.
---	Rodenbough, Theo. F. ⁴	23 Apr 1904	On retired list		19 Dec 12	Bvt BG, 1865; MH.
---	Andrews, George L. ⁴	23 Apr 1904	On retired list		19 Jul 20	
---	*Simpson, M. D. L. ^{3 4}	23 Apr 1904	On retired list		7 Apr 09	Bvt MG, 1865.
---	Woodward, George A. ⁴	23 Apr 1904	On retired list		22 Dec 16	
---	Bradley, Luther P. ⁴	23 Apr 1904	On retired list		13 Mar 10	Bvt BG, 1867.
---	Tompkins, Chas. H. ^{3 4}	23 Apr 1904	On retired list		18 Jan 15	Bvt BG, 1865; MH.
---	*Van Vost, James ⁴	23 Apr 1904	On retired list		17 Jul 15	
---	*Saxton, Rufus ^{3 4}	23 Apr 1904	On retired list		23 Feb 08	Bvt BG, 1865.
---	*Stewart, Chas. S. ^{3 4}	23 Apr 1904	On retired list		22 Jul 04	
---	Hend, John F. ^{3 4}	23 Apr 1904	On retired list		5 Feb 08	
---	Baily, Elisha I. ^{3 4}	23 Apr 1904	On retired list		23 Mar 08	
---	*Bingham, Judson D. ⁴	23 Apr 1904	On retired list		17 Nov 09	Bvt BG, 1865.
---	*Blunt, Matthew M. ⁴	23 Apr 1904	On retired list		14 May 07	
---	*Perry, Alexander J. ^{3 4}	23 Apr 1904	On retired list		26 Mar 13	
---	*Gibson, Horatio J. ^{3 4}	23 Apr 1904	On retired list		18 Apr 24	Bvt BG, 1865.
---	Campbell, John ^{3 4}	23 Apr 1904	On retired list		25 Dec 05	
---	Summers, John E. ^{3 4}	23 Apr 1904	On retired list		1 Oct 08	

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
—	*Tidball, John C. ^{4 5}	23 Apr 1904	On retired list		15 May 06	Bvt BG, 1865.
—	Dudley, Nathan A. M. ⁴	23 Apr 1904	On retired list		29 Apr 10	
—	Magruder, David L. ⁴	23 Apr 1904	On retired list		22 Nov 10	
—	*Abbot, Henry L. ⁴	23 Apr 1904	On retired list			Bvt BG, 1865.
—	*Townsend, Edwin F. ⁴	23 Apr 1904	On retired list		15 Aug 09	
—	Smith, Rodney ⁴	23 Apr 1904	On retired list		12 Nov 15	
—	*Whittemore, J. M. ^{4 5}	23 Apr 1904	On retired list		6 Sep 16	
—	Campton, Charles E. ^{4 5}	23 Apr 1904	On retired list		20 Jul 09	
—	Pake, Charles ⁴	23 Apr 1904	On retired list		13 Sep 06	
—	Mizner, Henry R. ⁴	23 Apr 1904	On retired list		4 Jan 15	
—	*Constock, Cyrus B. ⁴	23 Apr 1904	On retired list		29 Mar 10	Bvt BG, 1865.
—	*Closson, Henry W. ⁴	23 Apr 1904	On retired list		15 Jul 17	
—	Hough, Alfred L. ⁴	23 Apr 1904	On retired list		28 Apr 08	
—	*Hodges, Henry C. ^{3 4}	23 Apr 1904	On retired list		3 Nov 17	
—	*Langdon, Loomis L. ⁴	23 Apr 1904	On retired list		7 Jan 10	
—	*Lazelle, Henry M. ⁴	23 Apr 1904	On retired list		21 Jul 17	
—	*Tilford, Joseph G. ^{3 4}	23 Apr 1904	On retired list		24 Feb 11	
—	*Bell, George ⁴	23 Apr 1904	On retired list		2 Jan 07	Bvt BG, 1865.
—	Smith, Joseph R. ⁴	23 Apr 1904	On retired list		11 Feb 11	
—	*Vincent, Thomas M. ⁴	23 Apr 1904	On retired list		30 Nov 09	Bvt BG, 1865.
—	Irwin, Bernard J. D. ⁴	23 Apr 1904	On retired list		15 Dec 17	MH.
—	Heger, Anthony ⁴	23 Apr 1904	On retired list		25 Jan 08	
—	Biddle, James ⁴	23 Apr 1904	On retired list		9 Jun 10	
—	Alexander, Chas. T. ⁴	23 Apr 1904	On retired list		28 Feb 18	
—	*Lodur, Richard ⁴	23 Apr 1904	On retired list		9 May 17	
—	Gordon, David S. ^{4 5}	23 Apr 1904	On retired list		7 Jun 06	
—	Alden, Charles H. ⁴	23 Apr 1904	On retired list		21 Jun 15	
—	*Chandler, John G. ⁴	23 Apr 1904	On retired list		30 Aug 18	MH.
—	Wood, Henry C. ⁴	23 Apr 1904	On retired list		8 Nov 21	
—	Byrne, Charles C. ^{4 5}	23 Apr 1904	On retired list		23 May 05	
—	*Smith, Alfred T. ^{4 5}	23 Apr 1904	On retired list		31 Dec 06	Bvt BG, 1865.
—	*Barriger, John W. ⁴	23 Apr 1904	On retired list			

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
—	Parker, Dangersfield ⁴	23 Apr 1904	On retired list		24 Feb 25	
—	Moore, James M. ^{4 5}	23 Apr 1904	On retired list		21 Apr 05	
—	Terrell, Charles M. ⁴	23 Apr 1904	On retired list		22 Nov 04	
—	Greenleaf, Clas, R. ^{4 5}	23 Apr 1904	On retired list		2 Sep 11	
—	Perry, David ^{4 5}	23 Apr 1904	On retired list		18 May 08	
—	Moale, Edward ^{4 5}	23 Apr 1904	On retired list		27 Sep 13	
—	Lee, James G. C. ^{4 5}	23 Apr 1904	On retired list		26 Jul 16	
—	Cook, Henry C. ^{4 5}	23 Apr 1904	On retired list		22 Feb 16	
—	Miles, Evan ^{4 5}	23 Apr 1904	On retired list		24 May 08	
—	Benham, Daniel W. ^{4 5}	23 Apr 1904	On retired list		16 Sep 05	
—	Scully, James W. ^{4 5}	23 Apr 1904	On retired list		2 Jun 18	
—	Williston, Ed. B. ^{4 5}	23 Apr 1904	On retired list		24 Apr 20	MH.
—	*Noyes, Henry E. ^{4 5}	23 Apr 1904	On retired list		11 Jul 19	
—	Comba, Richard ^{4 5}	23 Apr 1904	On retired list		29 Mar 07	
—	McGregor, Thomas ^{4 5}	23 Apr 1904	On retired list		4 Feb 21	
—	Coates, Edwin M. ^{4 5}	23 Apr 1904	On retired list		13 Sep 13	
—	Bailey, Clarence M. ^{4 5}	23 Apr 1904	On retired list		21 May 20	
—	Carroll, Henry ^{4 5}	23 Apr 1904	On retired list		12 Feb 08	
—	Ewers, Ezra P. ^{4 5}	23 Apr 1904	On retired list		16 Jan 12	
—	Cooney, Michael ^{4 5}	23 Apr 1904	On retired list			
—	Wilson, Charles J. ^{4 5}	23 Apr 1904	On retired list		22 Sep 13	
—	Viele, Charles D. ^{4 5}	23 Apr 1904	On retired list		6 Oct 16	
—	Davis, Wirt ^{4 5}	23 Apr 1904	On retired list		11 Feb 14	
—	Hartsuff, Albert ^{4 5}	23 Apr 1904	On retired list		22 Jun 08	
—	Gilmore, John C. ^{4 5}	23 Apr 1904	On retired list		22 Dec 22	
—	Woodhull, Alfred A. ^{4 5}	23 Apr 1904	On retired list		18 Oct 21	MH.
—	Brown, Justus M. ^{4 5}	23 Apr 1904	On retired list		21 Dec 12	
—	Van Horne, Wm. M. ^{4 5}	23 Apr 1904	On retired list		18 Jan 23	
—	Corliss, Aug. W. ^{4 5}	23 Apr 1904	On retired list		4 Sep 08	
—	Wessells, Henry W. ^{4 5}	23 Apr 1904	On retired list			
—	Wheeler, James N. ^{4 5}	23 Apr 1904	On retired list		30 Nov 22	
—	Ilall, William P. ^{4 5}	23 Apr 1904	On retired list			
399			11 Jun 12 Retired			Adj Gen; MH.

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
—	Jackson, Henry ^{4 s}	23 Apr 1904	On retired list		9 Dec 08	
—	*Andruss, E. V. A. ^{4 s}	23 Apr 1904	On retired list		3 Apr 10	
—	Burbank, James B. ^{4 s}	23 Apr 1904	On retired list		30 May 13	
—	Hennisee, Arg. G. ^{4 s}	23 Apr 1904	On retired list		10 Feb 06	
—	*Vose, William F. ^{4 s}	23 Apr 1904	On retired list		15 Mar 24	
—	Praut, Richard H. ^{4 s}	23 Apr 1904	On retired list			
—	Dinnick, Eugene D. ^{4 s}	23 Apr 1904	On retired list			
400	Wilcox, Timothy E. ^{4 s}	26 Apr 1904	26 Apr 04 Retired			MH.
401	*Mills, Albert L. ^{4 s}	7 May 1904	1 Jul 16 Promoted		18 Sep 16	
402	Vodges, Anthony W. ^{4 s}	20 May 1904	20 May 04 Retired		7 Feb 23	
403	*Raymond, Chas. W. ^{4 s}	25 Jun 1904	25 Jun 04 Retired		3 May 13	
404	Jacobs, Joshua W. ^{4 s}	25 Jun 1904	25 Jun 04 Retired		13 Oct 05	
405	*Dunwoody, H. H. C. ^{4 s}	6 Jul 1904	7 Jul 04 Retired			
406	Leary, Peter ^{4 s}	7 Jul 1904	8 Jul 04 Retired		13 Feb 11	
407	Woodward, Samuel L. ^{4 s}	8 Jul 1904	9 Jul 04 Retired		16 Apr 24	
408	Hyde, John M. ^{4 s}	9 Jul 1904	10 Jul 04 Retired		25 Oct 16	MH.
409	*Long, Oscar F. ^{4 s}	10 Jul 1904	11 Jul 04 Retired			
410	*Bingham, Theodore A. ^{4 s}	11 Jul 1904	12 Jul 04 Retired			
411	Williams, Constant ^{4 s}	12 Jul 1904	25 May 07 Retired		20 Apr 22	
412	*McGinness, John R. ^{4 s}	17 Sep 1904	17 Sep 04 Retired		17 Dec 18	
413	O'Connell, John J. ^{4 s}	16 Dec 1904	16 Dec 04 Retired		4 Jan 27	
414	Smart, Charles ^{4 s}	— 1905	— 05 Retired		23 Apr 05	
415	Alexander, Wm. L. ^{4 s}	19 Jan 1905	19 Jan 05 Retired		1 Dec 15	
416	*Shaler, Charles ^{4 s}	19 Jan 1905	19 Jan 05 Retired		26 Mar 15	
417	*Heap, David P. ^{4 s}	16 Feb 1905	16 Feb 05 Retired		25 Oct 10	
—	Osterhaus, Peter J. ^{4 s}	17 Mar 1905	On retired list		2 Jan 17	MG Ret, 1916.
418	Smith, Allen ^{4 s}	18 Mar 1905	18 Mar 05 Retired			
419	Girard, Alfred C. ^{4 s}	6 Apr 1905	7 Apr 05 Retired		31 Jan 14	
420	Beck, William H. ^{4 s}	7 Apr 1905	8 Apr 05 Retired		26 Nov 11	
421	Robinson, Frank U. ^{4 s}	8 Apr 1905	9 Apr 05 Retired			
422	Taylor, Frank ^{4 s}	9 Apr 1905	10 Apr 05 Retired		20 May 20	
423	*Fountain, Samuel W. ^{4 s}	10 Apr 1905	11 Apr 05 Retired			

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
424	Adams, Henry H. ^{4 s}	11 Apr 1905	11 Apr 05	Retired	26 Jan 07	
425	*Davis, Edward ^{4 s}	11 Apr 1905	12 Apr 05	Retired	2 Aug 18	
426	Holmes, Charles W. ^{4 s}	12 Apr 1905	13 Apr 05	Retired		
427	Bullis, John L. ^{4 s}	13 Apr 1905	14 Apr 05	Retired	26 May 11	
428	Buchanan, James A. ^{4 s}	14 Apr 1905	31 May 06	Retired	18 May 26	
429	Hubbell, Henry W. ^{4 s}	20 May 1905	20 May 05	Retired	15 Dec 17	
430	Roberts, Benj. K. ^{4 s}	19 Jun 1905	20 Jun 05	Retired	16 Jul 21	C of Art.
431	*Mills, Samuel M. ^{4 s}	20 Jun 1905	30 Sep 06	Retired	8 Sep 07	C of Art.
432	Lebo, Thomas C. ^{4 s}	22 Jun 1905	23 Jun 05	Retired	23 Feb 10	
433	*Edgerly, W. S. ^{4 s}	23 Jun 1905	29 Dec 09	Retired		
434	*Jones, William A. ^{4 s}	26 Jun 1905	26 Jun 05	Retired	10 Nov 14	
435	*Sharpe, Henry C. ^{4 s}	12 Oct 1905	16 Sep 16	Promoted		Com Gen.
436	Ward, Henry C. ^{4 s}	30 Oct 1905	30 Oct 05	Retired	16 Nov 25	
437	*Ennis, William ^{4 s}	7 Nov 1905	7 Nov 05	Retired		
438	Hawley, Joseph R. ⁴	—	—	Retired	18 Mar 05	
439	Price, Buller D. ^{4 s}	26 Dec 1905	26 Dec 05	Retired	29 Aug 19	
440	Thorpe, Frank ^{4 s}	9 Feb 1906	9 Feb 06	Retired	8 Aug 24	
441	*Allen, James ^{4 s}	10 Feb 1906	13 Feb 13	Retired		
442	Birkhimer, Wm. E. ^{4 s}	15 Feb 1906	16 Feb 06	Retired		
443	Wood, Palmer G. ^{4 s}	16 Feb 1906	17 Feb 06	Retired	10 Jun 14	C Sig O.
444	*Reed, Henry A. ^{4 s}	17 Feb 1906	19 Feb 06	Retired	18 Jul 15	MH.
445	*Duvall, William P. ^{4 s}	2 Mar 1906	2 Oct 07	Promoted		
446	Stanton, William ^{4 s}	7 Mar 1906	7 Mar 06	Retired	1 Mar 20	
447	Cooke, Lorenzo W. ^{4 s}	9 Mar 1906	24 Mar 06	Retired	7 Apr 27	
448	*Merrill, Abner H. ^{4 s}	16 Mar 1906	16 Mar 06	Retired	15 Feb 15	
449	Califf, Joseph M. ^{4 s}	24 Mar 1906	28 Mar 06	Retired	25 Feb 23	
450	Turrill, Henry S. ^{4 s}	28 Mar 1906	29 Mar 06	Retired	9 Dec 14	
451	*Miller, Crosby P. ^{4 s}	30 Mar 1906	31 Mar 06	Retired	24 May 07	
452	*Powell, Charles F. ^{4 s}	31 Mar 1906	3 Apr 06	Retired	30 Mar 27	
453	Bubb, John W. ^{4 s}	3 Apr 1906	26 Apr 07	Retired	30 Jul 07	
454	*Suter, Charles R. ^{4 s}	5 May 1906	5 May 06	Retired	22 Feb 22	
455	Ray, Patrick H. ^{4 s}	8 May 1906	8 May 06	Retired	7 Aug 20	
					30 Oct 11	

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
456	*McClellan, John ^{4 a}	1 Jun 1906	9 Jun 06	Retired	11 Jun 19	
457	Whitall, Samuel R. ^{4 b}	15 Jun 1906	15 Jun 06	Retired	8 Mar 20	
458	Jocelyn, Stephen P. ^{4 b}	16 Jun 1906	1 Mar 07	Retired	25 Mar 20	
459	*Pratt, Sedgwick ^{4 b}	22 Jun 1906	22 Jun 07	Retired	2 Jan 15	
460	Duggan, Walter T. ^{4 b}	26 Jun 1906	11 Apr 07	Retired	21 Mar 26	
461	*Ernst, Oswald H. ^{4 b}	27 Jun 1906	27 Jun 06	Retired		
462	*Edwards, C. R. ^{4 b}	30 Jun 1906	5 Mar 21	Promoted		C Bu Ins Af, 1906-12.
463	Sniffen, Culver C. ^{4 b}	11 Sep 1906	1 Jan 08	Retired		PM Gen.
464	*Pershing, John J. ^{4 b}	20 Sep 1906	25 Sep 16	Promoted		
465	*Murray, Arthur ^{4 b}	1 Oct 1906	14 Mar 11	Promoted	12 May 25	C of Art.
466	*Garlington, E. A. ^{4 b}	1 Oct 1906	20 Feb 17	Retired		Insp Gen; MH.
467	Cazaire, Louis V. ^{4 b}	1 Oct 1906	1 Oct 06	Retired	4 Dec 10	
468	*Wood, Oliver E. ^{4 b}	1 Oct 1906	1 Oct 06	Retired	5 Nov 24	
469	Wallace, William M. ^{4 b}	2 Oct 1906	2 Oct 06	Retired	4 Mar 16	
470	Noble, Charles H. ^{4 b}	20 Oct 1906	20 Oct 06	Retired		
471	*Pitman, John ^{4 b}	12 Nov 1906	12 Nov 06	Retired		
472	Macklin, James E. ^{4 b}	2 Dec 1906	2 Dec 06	Retired	16 Dec 25	
473	Borden, George P. ^{4 b}	1 Jan 1907	1 Jan 07	Retired	25 Apr 25	
474	*Godfrey, Edward S. ^{4 b}	17 Jan 1907	9 Oct 07	Retired		MH.
475	Markley, Alfred C. ^{4 b}	2 Mar 1907	18 Apr 07	Retired	24 Aug 26	
476	Myer, Albert L. ^{4 b}	23 Mar 1907	14 Nov 10	Retired	16 Jul 14	
477	Anderson, Harry R. ^{4 b}	5 Apr 1907	5 Apr 07	Retired	22 Nov 18	
478	Hall, Charles B. ^{4 b}	11 Apr 1907	28 Mar 08	Promoted	11 May 14	
479	*Thomas, Earl D. ^{4 b}	18 Apr 1907	4 Jan 11	Retired	17 Feb 21	
480	*Morton, Charles L. ^{4 b}	19 Apr 1907	18 Mar 10	Retired	26 Dec 14	
481	Hodges, Charles L. ^{4 b}	30 Apr 1907	14 Jan 11	Promoted	26 Dec 11	
482	Moseley, Edward B. ^{4 b}	10 May 1907	10 May 07	Retired	4 Aug 23	
483	*Davis, John M. K. ^{4 b}	25 May 1907	31 Jan 08	Retired	20 May 20	
484	*Pond, George E. ^{4 b}	— 1907	— — —	Retired	20 Nov 07	
485	*Aleslire, James B. ^{4 b}	1 Jul 1907	24 Aug 12	Promoted	1 Jun 25	QM Gen.
486	*Phipps, Frank H. ^{4 b}	9 Aug 1907	9 Aug 07	Retired	28 Mar 25	
487	Grimes, George S. ^{4 b}	12 Aug 1907	12 Aug 07	Retired	9 Aug 20	

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
488	*Stickney, Amos ⁴⁵	27 Aug 1907	27 Aug 07	Retired	25 Oct 24	
489	Wotherspoon, W. W. ⁵	3 Oct 1907	12 May 12	Promoted	21 Oct 21	
490	*Smith, Charles S. ⁴⁵	9 Oct 1907	26 Dec 07	Retired	18 Nov 22	
491	*Osgood, Henry B. ⁴⁵	13 Oct 1907	13 Oct 07	Retired	12 Mar 09	MH.
492	*Lydecker, G. J. C. ⁴⁵	15 Nov 1907	15 Nov 07	Retired	9 Jul 14	
493	*Lockwood, Benj. C. ⁴⁵	23 Dec 1907	23 Dec 07	Retired	22 Jan 26	
494	Whipple, Benj. H. ⁵	1 Jan 1908	15 Feb 12	Retired		PM Gen.
495	*Crawford, Medorem ⁴⁵	3 Jan 1908	27 Jan 08	Retired	11 Aug 21	
496	*Davis, C. E. L. B. ⁴⁵	29 Jan 1908	16 Feb 08	Retired	1 Jun 25	
497	Potts, Ramsey D. ⁵	31 Jan 1908	30 Apr 14	Retired		
498	*Brush, Daniel H. ⁴⁵	17 Feb 1908	9 May 12	Retired	8 Mar 20	
499	Muhlenberg, John C. ⁵	7 Apr 1908	7 Apr 08	Retired	12 Mar 16	
500	*Kerr, John B. ⁵	13 Apr 1908	20 May 08	Retired		MH.
501	*Morris, Charles ⁴⁵	1 May 1908	3 May 08	Retired	27 Oct 12	
502	Reade, Philip ⁴⁵	4 May 1908	13 Oct 08	Retired	21 Oct 19	
503	*Adams, Henry M. ⁴⁵	8 May 1908	8 May 08	Retired	1 Dec 09	
504	*Sears, Clinton B. ⁴⁵	2 Jun 1908	2 Jun 08	Retired	16 Feb 12	
505	*Marshall, Wm. L. ⁴⁵	2 Jul 1908	11 Jun 10	Retired	2 Jul 20	C of Engrs.
506	*Huxie, Richard L. ⁴⁵	7 Aug 1908	7 Aug 08	Retired		
507	*Smith, Frederick A. ⁵	24 Oct 1908	15 May 13	Retired	4 Feb 22	
508	*Godwin, Edward A. ⁴⁵	15 Nov 1908	15 Nov 08	Retired	13 Jul 23	
509	*Greenough, Geo. G. ⁴⁵	8 Dec 1908	8 Dec 08	Retired	27 Jun 12	
510	*Huskins, John D. C. ⁴⁵	27 Dec 1908	27 Dec 08	Retired	27 Dec 13	Sur Gen.
511	Turney, George H. ⁵	14 Jan 1909	27 Dec 13	Died		
512	*Hickey, James B. ⁵	23 Mar 1909	23 Mar 09	Retired		
513	*Yeatman, Richard T. ⁵	22 May 1909	5 Jun 09	Retired		
514	*Maus, Marion P. ⁵	10 Jun 1909	20 Aug 13	Retired		MH.
515	*Dudley, Edgar S. ⁴⁵	14 Jun 1909	14 Jun 09	Retired	9 Jan 11	
516	Sweet, Owen J. ⁵	4 Sep 1909	4 Sep 09	Retired		
517	Pratt, Edward B. ⁵	27 Nov 1909	30 Nov 09	Retired	16 Jan 23	
518	*Knight, John C. D. ⁴⁵	30 Nov 1909	24 Jan 10	Retired	9 Jun 19	
519	*Howe, Walter ⁴⁵	11 Jan 1910	31 Dec 10	Retired	18 Nov 15	

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
520	*Chittenden, H. M. ^s	24 Jan 1910	10 Feb 10	Retired	9 Oct 17	
521	*Ward, Frederick K. ^s	11 Feb 1910	19 Mar 11	Retired		
522	*Hoyt, Ralph W. ^s	18 Mar 1910	9 Oct 13	Retired	3 Nov 20	
523	*Robinson, Wm. W. ^s	21 Apr 1910	21 Apr 10	Retired	24 Mar 17	C of Engrs.
524	*Bixby, William H. ^s	12 Jun 1910	11 Aug 13	Retired		
525	Sawyer, James E. ^s	3 Jul 1910	3 Jul 10	Retired	29 May 14	
526	*Wood, Edward E. ^s	17 Sep 1910	17 Sep 10	Retired	21 Jun 24	
527	*Mucomb, M. B. ^s	15 Nov 1910	12 Nov 16	Retired	19 Jan 24	
528	Duncan, Joseph W. ^s	4 Jan 1911	14 May 12	Died	14 May 12	
529	*Schuyler, W. S. ^s	5 Jan 1911	26 Apr 13	Retired		
530	*Evan ^s , Robert K. ^s	30 Jan 1911	19 Nov 16	Retired	31 Jul 26	JA Gen. C of CA.
531	*Crowder, Fnoch H. ^s	15 Feb 1911	6 Oct 17	Promoted		
532	*Weaver, Erasmus M. ^s	15 Mar 1911	6 Jul 16	Promoted	13 Nov 20	
533	*Anderson, George S. ^s	20 Mar 1911	16 Oct 12	Retired	7 Mar 15	PM Gen.
534	*Smith, George R. ^s	16 Feb 1912	15 Feb 13	Retired		
535	*Chase, George F. ^s	16 May 1912	29 Jul 12	Retired	13 Dec 25	
536	*Allison, James N. ^s	7 Jun 1912	7 Jun 12	Retired	2 May 18	
537	*Sleeper, Edgar Z. ^s	5 Aug 1912	22 Mar 13	Retired	19 Jan 20	
538	Andrews, George ^s	5 Aug 1912	26 Aug 14	Retired		Adj Gen. C Bu Ins Af.
539	*Melnire, Frank ^s	24 Aug 1912	6 Oct 17	Promoted		
540	*McClelland, Ed. J. ^s	27 Aug 1912	29 Dec 12	Retired	9 Feb 26	MH. MH.
541	*Parker, James ^s	12 Feb 1913	20 Feb 18	Retired		
542	*Liggett, Hunter ^s	12 Feb 1913	6 Mar 17	Promoted		
543	*Scriven, George P. ^s	14 Feb 1913	13 Feb 17	Retired		C Sig O. Ast QMG.
544	Devol, Carroll A. ^s	16 Feb 1913	31 Oct 16	Promoted		
545	*Scott, Hugh L. ^s	23 Mar 1913	30 Apr 15	Promoted		
546	*Wieser, John P. ^s	16 May 1913	19 Jul 16	Retired	19 Jan 27	
547	*Davis, Thomas F. ^s	16 May 1913	8 May 17	Retired		
548	*Russell, William T. ^s	12 Aug 1913	11 Oct 13	Retired	11 Oct 19	C of Engrs.
549	*Hoyte, Eli D. ^s	24 Sep 1913	19 Jan 15	Retired	27 Jul 21	
550	*Bailey, Charles J. ^s	10 Oct 1913	6 Oct 21	Promoted		
551	*Kingman, Dan C. ^s	12 Oct 1913	6 Mar 16	Retired	14 Nov 16	C of Engrs.

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
552	Gorgas, William C. ^{s s}	16 Jan 1914	4 Mar 15	Promoted	4 Jul 20	Sur Gen.
553	Bell, George ^s	17 Jul 1914	22 Mar 21	Promoted	28 Oct 26	Adjt Gen.
554	*McCain, Henry P. ^{s s}	27 Aug 1914	6 Oct 17	Promoted		
555	*Greene, Henry A. ^{s s}	19 Nov 1914	29 Nov 18	Retired	19 Aug 21	
556	*Mann, William A. ^{s s}	20 Jan 1915	31 Jul 18	Retired		
557	*Hodges, Harry F. ^{s s}	4 Mar 1915	21 Dec 21	Promoted		
558	*Sibert, William L. ^{s s}	4 Mar 1915	15 May 17	Promoted		
559	*Strong, Frederick S. ^{s s}	4 May 1915	17 Aug 19	Retired		
560	Clem, John L. ^{s s}	4 May 1915	13 Aug 15	Retired		MG Ret, 1916.
561	*Morrison, John F. ^{s s}	20 Nov 1915	15 May 17	Promoted		C of Engrs.
562	*Black, William M. ^{s s}	7 Mar 1916	6 Oct 17	Promoted		
563	*Adams, Granger ^s	1 Jul 1916	28 Sep 16	Retired		
564	*Dodd, George A. ^s	1 Jul 1916	26 Jul 16	Retired	28 Jan 25	
565	*Plummer, Edward H. ^{s s}	1 Jul 1916	30 Nov 18	Retired	11 Feb 27	
566	*Townsley, C. P. ^{s s}	1 Jul 1916	29 Nov 18	Retired	28 Dec 26	
567	*Morton, Charles C. ^{s s}	14 Jul 1916	15 May 17	Promoted		
568	*Ruckman, John W. ^{s s}	20 Jul 1916	7 Jun 21	Died	7 Jun 21	
569	Sibley, Frederick W. ^s	27 Jul 1916	— Oct 16	Retired	17 Feb 18	
—	*Pope, James W. ^{s s}	29 Aug 1916	On retired list		23 Aug 19	
570	*Smith, Abiel L. ^{s s}	21 Sep 1916	3 Jan 18	Retired		Ast QM Gen.
571	*Swift, Eben ^{s s}	29 Sep 1916	11 May 18	Retired		
572	*Frencl, Francis H. ^{s s}	30 Sep 1916	19 Jan 20	Retired	10 Mar 21	
573	*Grable, E. St. J. ^{s s}	13 Oct 1916	9 Sep 18	Retired		
574	*Treat, Charles C. ^{s s}	18 Oct 1916	26 Apr 22	Retired		
—	Jackson, James H. ^{s s}	— Oct 1916	On retired list		21 Oct 16	MH.
575	*Cruse, Thomas ^{s s}	9 Dec 1916	8 Jan 18	Retired		MH.
576	Kuhn, Joseph E. ^{s s}	2 Jan 1917	18 Jun 25	Promoted		
577	*Squier, George O. ^{s s}	14 Feb 1917	6 Oct 17	Promoted		C Sig O.
578	*Chamberlain, John L. ^{s s}	21 Feb 1917	6 Oct 17	Promoted		Insp Gen.
579	*Kernan, Francis J. ^{s s}	23 Mar 1917	14 Oct 19	Promoted		
580	*Glenn, Edwin F. ^{s s}	15 May 1917	31 Dec 19	Retired	5 Aug 26	
581	*Biddle, John ^{s s}	15 May 1917	1 Dec 20	Retired		

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
582	*Hodges, Henry C. ^{b o}	15 May 1917	1 Dec 20	Retired		
583	*Dickman, Joseph T. ^{b o}	15 May 1917	8 Sep 19	Promoted		MG, 1920-21.
584	*Cronkhite, Adel. ^{b o}	15 May 1917		Promoted		MG, 1920-21.
585	*Allen, Henry T. ^{b o}	15 May 1917	5 Mar 21	Promoted		MH.
586	*Sage, William H. ^{b o}	15 May 1917	4 Jun 22	Died	4 Jun 22	
587	*Kennedy, Chas. W. ^{b o}	15 May 1917	30 Nov 22	Retired		
588	*Hale, Harry C. ^{b o}	15 May 1917	2 Nov 21	Promoted		MG, 1920-21.
589	*Bundy, Omar ^{b o}	15 May 1917	22 Dec 21	Promoted		
590	Blanchford, Rich. M. ^{b o}	15 May 1917	1 Dec 22	Retired		
591	*Sturgis, Samuel D. ^{b o}	15 May 1917	7 Oct 21	Promoted		
592	*Shanks, David C. ^{b o}	15 May 1917	5 Mar 21	Promoted		MG, 1920-21.
593	Wright, William M. ^{b o}	15 May 1917	6 Mar 21	Promoted		MG, 1920-21.
594	*Barlett, George T. ^{b o}	15 May 1917	25 Sep 18	Retired		
595	*Blockson, Aug. P. ^{b o}	15 May 1917	7 Nov 18	Retired		
596	*Bullard, Robert L. ^{b o}	16 Jun 1917	27 Nov 18	Promoted		
597	*March, Peyton C. ^{b o}	17 Jun 1917	23 Sep 17	Promoted		
598	*Littell, Isaac W. ^{b o}	12 Feb 1918	19 Feb 19	Retired	1 May 24	
599	*Babbitt, Edwin B. ^{b o}	12 Feb 1918	14 Apr 23	Promoted		
600	*Barvett, John D. ^{b o}	21 Feb 1918	14 May 26	Retired		
601	Rogers, Harry L. ^{b o}	26 Feb 1918	22 Jul 18	Promoted	12 Dec 25	Ast QMG.
602	Brinard, David L. ^{b o}	25 Jul 1918	25 Jul 18	Retired		
603	Scott, William S. ^{b o}	1 Oct 1918	12 Jan 20	Retired		
604	*Reed, George W. ^{b o}	5 Nov 1918	7 Mar 21	Promoted		MG, 1920-21.
605	*Muir, Charles H. ^{b o}	6 Nov 1918	7 Mar 21	Promoted		MG, 1920-21.
606	*McNolter, Charles T. ^{b o}	7 Nov 1918	7 Mar 21	Promoted		MG, 1920-21.
607	*McAndrew, James W. ^{b o}	8 Nov 1918	30 Apr 22	Promoted	30 Apr 22	MG, 1920-21.
608	*Hearn, William G. ^{b o}	30 Nov 1918	7 Mar 21	Promoted	26 Oct 24	MG, 1920-21.
609	*Hines, John L. ^{b o}	30 Nov 1918	5 Mar 21	Promoted		MG, 1920-21.
610	Harbord, James G. ^{b o}	30 Nov 1918	8 Sep 19	Promoted		MG, 1920-21.
611	*Summerall, C. P. ^{b o}	16 Feb 1919	5 Apr 20	Promoted		
—	*Tillman, Samuel E. ^{b o}	4 Mar 1919	On retired list			
612	McCaw, Walter D. ^{b o}	5 Mar 1919	10 Feb 27	Retired		Ast Sur Gen.

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
613	Noble, Robert E. ^a	5 Mar 1919	8 Feb 25	Promoted		Ast Sur Gen.
614	Krauthoff, Chas. R. ^a	15 Jul 1919	7 Dec 22	Retired		Ast QMG.
615	Lord, Herbert M. ^a	15 Jul 1919	30 Jun 22	Retired		C of F, 1920; Term 4 Mar 20; Re-ap. 28 Mar 21.
616	*McRae, James H. ^a	1 Jan 1920	1 May 22	Promoted		MH.
617	*Graves, William S. ^a	7 Jan 1920	11 Jul 25	Promoted		
618	Hines, Frank T. ^a	7 Jan 1920	31 Aug 20	Resigned		
619	Brewster, André W. ^a	8 Jan 1920	1 Dec 22	Promoted		
620	*Lewis, Edward M. ^a	9 Jan 1920	2 Dec 22	Promoted		
621	*McGlachlin, Ed. F. ^a	13 Jan 1920	1 Apr 22	Promoted		
622	*MacArthur, Douglas ^a	20 Jan 1920	17 Jan 25	Promoted		
623	*Harding, Chester ^a	1 Apr 1920	1 Apr 20	Retired		
624	*Jervey, Henry ^a	30 Apr 1920	10 Apr 22	Retired		
625	*Kerr, James T. ^a	1 Jul 1920	15 Aug 22	Retired		Ast AG.
626	*Taylor, Harry ^a	1 Jul 1920	19 Jun 24	Promoted		Ast C of E.
627	*Carson, John M. ^a	1 Jul 1920	30 Nov 22	Retired		Ast QMG.
628	*Pierce, William S. ^a	1 Jul 1920	10 Jul 22	Died	10 Jul 22	Ast C of O.
629	*Fries, Amos ^a	1 Jul 1920	4 Feb 25	Promoted		C of CWS.
630	*Burr, George W. ^a	1 Jul 1920	24 Mar 23	Died	4 Mar 23	Ast C of O.
631	Mitchell, William ^a	1 Jul 1920	1 Feb 26	Terminated		Ast C of AS.
632	*Carter, Jesse M. ^a	1 Jul 1920	1 Oct 21	Promoted		(a).
633	*Duncan, George B. ^a	1 Jul 1920	6 Dec 22	Promoted		(a).
634	*Lassiter, William ^a	2 Jul 1920	30 Dec 22	Promoted		(b).
635	*Smith, William R. ^a	2 Jul 1920	23 Jul 24	Promoted		(a).
636	*Jucheson, Grole ^a	3 Jul 1920	19 Jul 24	Promoted		(a).
637	*Gordon, Walter H. ^a	3 Jul 1920	7 Nov 23	Promoted	26 Apr 24	(a).
638	*Hinds, Ernest ^a	3 Jul 1920	6 Dec 22	Promoted		(a).
639	*McAlexander, U. G. ^a	3 Jul 1920	21 Jul 24	Promoted		(a).
640	*Hersey, Mark L. ^a	3 Jul 1920	20 Sep 24	Promoted		(a).
641	*Howze, Robert L. ^a	3 Jul 1920	30 Dec 22	Promoted	19 Sep 26	MH.
642	*Sladen, Fred W. ^a	3 Jul 1920	19 Jan 24	Promoted		(a).
643	*Bandholz, H. H. ^a	3 Jul 1920	3 Nov 23	Promoted	7 May 25	(a).

NO.	NAME	APPOINTED	VACATED		DIED	REMARKS
			DATE	CAUSE		
644	*Ely, Hanson E. ^{s o}	3 Jul 1920	2 Feb 23	Promoted		(a).
645	*Aultman, Dwight E. ^{s o}	3 Jul 1920	2 Aug 25	Promoted		(b).
646	*Hagood, Johnson ^{s o}	3 Jul 1920	18 Jan 25	Promoted		(b).
647	*Nolan, Dennis E. ^{s o}	3 Jul 1920	1 Sep 25	Promoted		(b).
648	*Connor, William D. ^{s o}	3 Jul 1920	20 Oct 25	Promoted		(b).
649	*Connor, Fox ^{s o}	3 Jul 1920	24 Jul 24	Promoted		(c).
650	*Craig, Malin ^{s o}	3 Jul 1920	4 Mar 21	Terminated		MG, 1922.
651	*Davis, Robert C. ^{s o}	7 Sep 1920				(c).
652	*Todd, Henry D. ^{s o}					
(a) Recess appointment expired 4 Mar 1921, re-appointed 5 Mar 1921. (b) Recess appointment expired 4 Mar 1921, re-appointed 27 Apr 1921. (c) Recess appointment expired 4 Mar 1921, re-appointed 29 Apr 1921.						
653	*Jervey, James P. ^{s o}	21 Sep 1920	21 Sep 20	Retired	17 Mar 22	Ast QMG.
654	*Mason, Charles F. ^{s o}	28 Jan 1921	28 Jan 21	Retired		
655	*Downey, George F. ^{s o}	28 Mar 1921	7 Mar 23	Retired		
656	*Brown, Preston ^{s o}	28 Apr 1921	10 Dec 25	Promoted		
657	*Bowley, Albert J. ^{s o}	29 Apr 1921				
658	*Johnston, Wm. F. ^{s o}	30 Apr 1921	3 Nov 24	Promoted		
659	*Alexander, Robert ^{s o}	30 Apr 1921	26 Aug 27	Promoted		
660	*Caillan, Robert E. ^{s o}	9 Jun 1921				
661	*Winn, Frank L. ^{s o}	2 Oct 1921	2 Dec 22	Promoted		
662	*Martin, Charles H. ^{s o}	10 Oct 1921	16 Jan 25	Promoted		
663	*Russel, Edgar ^{s o}	11 Oct 1921	2 Dec 22	Promoted	26 Apr 25	
664	*Castner, Joseph C. ^{s o}	14 Nov 1921				
665	*Poore, Benjamin A. ^{s o}	21 Dec 1921	11 Oct 25	Promoted		
666	*Moseley, George V. H. ^{s o}	23 Dec 1921				
667	*Hay, William H. ^{s o}	11 Apr 1922	5 Nov 23	Promoted		
668	*Wittenmyer, Edmund ^{s o}	12 Apr 1922	9 Aug 23	Retired		
669	*Malone, Paul B. ^{s o}	27 Apr 1922				
670	*Smith, Harry A. ^{s o}	10 May 1922	20 Sep 26	Promoted		
671	*Faison, Samson L. ^{s o}	5 Jun 1922	1 Dec 22	Retired		

NO.	NAME	VACATED	VACATED		DIED	REMARKS
			DATE	CAUSE		
672	*Walker, Kenzie W. ^{s o}	1 Jul 1922	24 Feb 25	Promoted		C of F.
673	*Alvord, Benjamin ^{s o}	16 Aug 1922	15 May 24	Retired	13 Apr 27	Ast AG.
674	*Bellinger, John B. ^{s o}	1 Dec 1922	15 Apr 26	Retired		Ast QMG.
675	*Davis, Richmond P. ^{s o}	1 Dec 1922				
676	*Barth, Charles H. ^{s o}	2 Dec 1922	28 Dec 22	Retired	5 Dec 26	
677	*Palmer, John M. ^{s o}	2 Dec 1922	18 Jan 26	Retired		
678	*Wells, Brian H. ^{s o}	4 Dec 1922				
679	*King, Edward L. ^{s o}	4 Dec 1922				
680	*Fiske, Harold B. ^{s o}	4 Dec 1922				
681	*McCoy, Frank R. ^{s o}	4 Dec 1922				
682	*Dorey, Halstead ^{s o}	6 Dec 1922				
683	Drum, Hugh A. ^{s o}	6 Dec 1922	8 Jul 26	Retired		Ast QMG.
684	Dalton, Albert C. ^{s o}	8 Dec 1922				
685	Heinzelman, Stuart ^{s o}	29 Dec 1922				
686	*Walke, Willoughby ^{s o}	29 Dec 1922	28 Jan 23	Retired		
687	*Winans, Edwin B. ^{s o}	30 Dec 1922				
688	*McDonald, John B. ^{s o}	29 Jan 1923	8 Feb 23	Retired	15 Mar 26	
689	*Burnum, Malvern H. ^{s o}	9 Feb 1923	22 Jun 27	Promoted		
690	*Irwin, George LeR. ^{s o}	2 Mar 1923				
691	*Knight, John T. ^{s o}	8 Mar 1923	18 Apr 25	Retired		Ast QMG.
692	*Ruggles, Golden J. H. ^{s o}	28 Mar 1923				Ast C of O.
693	*Haynes, Ira A. ^{s o}	14 Apr 1923	10 Sep 23	Retired		
694	*Joyes, John W. ^{s o}	20 Jul 1923	19 Jul 27	Terminated		Ast C of O.
695	*Jenkins, John M. ^{s o}	10 Aug 1923				
696	*Slavens, Thomas H. ^{s o}	11 Sep 1923	18 Jan 27	Retired		
697	*Symmonds, Charles J. ^{s o}	3 Nov 1923				
698	*Upton, LeRoy S. ^{s o}	5 Nov 1923	1 Mar 27	Died	1 Mar 27	
699	Burnham, William P. ^{s o}	1 Jan 1924	10 Jan 24	Retired		
700	*Roekenbach, S. D. ^{s o}	11 Jan 1924				
701	Parker, Frank ^{s o}	22 Jan 1924				
702	*Wahl, Lutz	16 May 1924	1 Jul 27	Promoted		Ast AG.
	*Asliburn, Thomas Q. ^{s o}	5 Jun 1924	27 Feb 27	Promoted		Inl Water Com.

NO.	NAME	VACATED	VACATED		DIED	REMARKS
			DATE	CAUSE		
703	*Jadwin, Edgar ⁵⁰	19 Jun 1924	27 Jun 26	Promoted		Ast C of E.
704	*Etinge, LeRoy ⁵⁰	19 Jul 1924				
705	Booth, Ewing E. ⁵⁰	21 Jul 1924				
706	King, Campbell ⁵⁰	23 Jul 1924				
707	*Harris, William W. ⁵⁰	20 Sep 1924				
708	*Collins, Edgar T. ⁵⁰	3 Nov 1924				
709	*Simonds, George S. ⁵⁰	20 Nov 1924				
710	*Donaldson, T. Q. ⁵⁰	16 Jan 1925				
711	Bjornstad, Alf. W. ⁵⁰	17 Jan 1925				
712	*Calkwell, Frank M. ⁵⁰	18 Jan 1925				
713	Gleeman, James D. ⁵⁰	9 Feb 1925	2 Mar 26	Retired		Ast Sur Gen.
714	Zalinski, Moses G. ⁵⁰	19 Apr 1925	23 Jan 27	Retired		Ast QMG. Ast C of AC.
715	Fechei, James E. ⁵⁰	27 Apr 1925				
716	*Smithers, Henry C. ⁵⁰	18 Jun 1925				
717	*Wolf, Paul A. ⁵⁰	11 Jul 1925				
718	*Rhodes, Charles D. ⁵⁰	2 Aug 1925				
719	*Cruikshank, Wm. M. ⁵⁰	1 Sep 1925				
720	*Lenihan, M. J. ⁵⁰	11 Oct 1925				
721	*Holbrook, Lucius R. ⁵⁰	20 Oct 1925				
722	*Stewart, Merck B. ⁵⁰	16 Dec 1925				
723	*Leitch, Joseph D. ⁵⁰	19 Jan 1926				
724	Kennedy, James M. ⁵⁰	3 Mar 1926				Ast Sur Gen.
725	*Leannard, Henry G. ⁵⁰	21 Mar 1926				Ast QMG.
726	Belchers, Harry F. ⁵⁰	16 Apr 1926				
727	*Jackson, Wm. P. ⁵⁰	15 May 1926				Ast C of E.
728	*Deakne, Herbert ⁵⁰	27 Jun 1926	1 Aug 27	Retired		Ast QMG. Ast C of AC.
729	Yates, Arthur W. ⁵⁰	9 Jul 1926				
730	Gillmore, Wm. E. ⁵⁰	17 Jul 1926				
731	*Lahn, Frank P. ⁵⁰	17 Jul 1926				
732	*Williams, Hechert O. ⁵⁰	24 Sep 1926				
733	*Hamilton, Alston ⁵⁰	19 Jan 1927				
734	*Pope, Francis H. ⁵⁰	24 Jan 1927				Ast QMG.

NO.	NAME	VACATED	VACATED		DIED	REMARKS
			DATE	CAUSE		
735	Keefe, Frank R. ^{b o}	11 Feb 1927		On retired list		Ast Sur Gen.
736	*Wilder, Wilber E. ^{b o}	28 Feb 1927		On retired list		
737	*Beach, William D. ^{b o}	28 Feb 1927		On retired list		
738	Nicholson, William J. ^{b o}	28 Feb 1927		On retired list		
739	*Brown, William C. ^{b o}	28 Feb 1927		On retired list		
740	*Brett, Lloyd M. ^{b o}	28 Feb 1927		On retired list		
741	*Dugun, Thomas B. ^{b o}	28 Feb 1927		On retired list		
742	Glasgow, William J. ^{b o}	2 Mar 1927		On retired list		
743	*Klee, James C. ^{b o}	22 May 1927	21 May 27	Retired		
744	*Barnhardt, George C. ^{b o}	23 Jun 1927	30 Jun 27	Retired		
745	*Walker, Meriwether L. ^{b o}	1 Jul 1927				Ast AG.
746	*Bridges, Charles H. ^{b o}	2 Jul 1927				Ast QMG.
747	*Hof, Samuel ^{b o}	20 Jul 1927				Ast C of O.
748	Horton, William E. ^{b o}	2 Aug 1927				
749	*Jamerson, George H. ^{b o}	26 Aug 1927				

EDITORIAL

More on Coast Defense

THE JOURNAL desires to invite the particular attention of its readers to two articles appearing in this number: "Training of Coast Artillery," published anonymously, and "Coast Artillery in Coast Defense," a letter by Major Frank S. Clark, former editor of the JOURNAL. These two writers, whose judgment can seldom be challenged, have approached the same subject from different angles, and in their very interesting remarks they show a strong undercurrent of agreement. The subject of the relationship of the Coast Artillery to coast defense, which they discuss, is one of a great deal of importance to our branch of the service, and the JOURNAL desires to receive further discussion of the question, either in direct reply to or support of the articles presented this month or in amplification through other phases of the subject. While articles must be signed, they will be published anonymously if desired.

In this connection, it must be remembered that opinions expressed in articles published in the JOURNAL are the personal views of the authors alone. Publication of an article does not imply either editorial or official approval, unless otherwise specifically stated, as in the article "Changes Contemplated in Coast Artillery Memorandum No. 7 for 1928," also appearing in this number. For that reason, no reader need hesitate in replying to any article appearing in the JOURNAL, nor should an author consider such a reply as in any sense a rebuke. As has been often stated before, it is always the desire of the JOURNAL to present both sides of every question, with no more than the usual editorial censorship. Inappropriate matter, confidential subjects, personally controversial articles, and criticisms of other services call forth the editorial blue pencil, but otherwise the JOURNAL pages are entirely open. Let us have some more on the subject of coast defense.

Can We Keep It?

Those who believe that America should be disarmed morally as well as physically should ponder the impressive figures submitted by the National Industrial Conference Board. Never in the history of the world has any other nation amassed such wealth. What a treasure house America would be for a robber army! What rich loot for a conquering foe if our cities ~~should be~~ sacked and our citizens held for ransom!

These figures are well worth keeping in mind. The national wealth of the United States is estimated at \$355,300,000,000. Approximately three-fourths of the total wealth is in fixed assets devoted to use as dwellings, or to industrial, commercial, or transportation prizes. A ruthless enemy might destroy our improvements, but he could not carry them away. However, there is enough portable wealth to engage the attention of the most avaricious conqueror.

All merchandise and industrial products on hand are valued at \$40,000,000,000. Personal property, consisting of such objects as furniture, clothing, jewelry, and the like amount to \$44,000,000,000. Automobiles are classed with gold and silver coin and bullion as "miscellaneous." All our coin and our 24,000,000 automobiles are valued at a little less than \$10,000,000,000.

With so large a part of the world's wealth in our possession, we are rather foolhardy not to provide means for defending it. We fondly imagine that everybody will love us and continue to add to our accumulation. We refuse to take out an insurance policy in the form of an adequate army and navy. We do not care what happens to the world so long as it doesn't happen to us. Perhaps we shall wake up when an invader has landed on our shores. Then, of course, it would be too late.—*Seattle Times*.

Army Demonstrates Its Peacetime Utility

Our standing army stands ready to serve the citizenship in times of peace as well as in times of war.

San Antonio is fortunate in being the military center of the Southwest, for in case of any emergency in this territory thousands of men trained and equipped to meet emergencies are available. The army works quickly and intelligently whenever its services are required.

San Antonians remember the excellent work of the army during the flood several years ago. There are many lives that have been saved in Texas during the last twelve months by the efficient work of the army air service in carrying antiscorbutic serum to distant or isolated points.

But in a most striking manner the army demonstrated the value of its services in a time of distress; it illustrated splendidly the spirit of the man in uniform by its work in the relief of Rock Springs.

Among the first to reach the scene of destruction were members of the Fifth Cavalry stationed at Fort Clark. They took charge of the situation immediately, on their own initiative and with the consent of all.

Immediately after the reports of the disaster had been flashed to San Antonio the army, always prepared, hastened to the relief of the

stricken community. Within a few hours tents, cots, surgical supplies, army ambulances, and airplanes were speeding toward Rock Springs.

Army ambulances and ambulance planes returned from Rock Springs bringing the injured to San Antonio for medical attention. Many of the injured are now being treated at the base hospital.

By its efficient work in numerous emergencies the army is gaining more than ever the respect and admiration of the people throughout the eighth corps area.

The old idea that a standing army is a burden to be carried in time of peace only for the sake of protection in time of war, rapidly is being abandoned. We never know when fire, flood, wind, or earthquake may exact a terrible toll of death and suffering. Then it is that an organization, trained and efficient, is needed—immediately.

Furthermore, we should not overlook the fact that the army, in the course of its peacetime activities, has been responsible for the saving of hundreds of thousands of lives. Army doctors, for instance, aided by the heroism of an enlisted man, won the battle against yellow fever.

Man, in reality, never enjoys a perfect state of peace. He is continually at war with forces that would destroy him. The army, quietly and efficiently, is fighting many of man's peacetime battles.—*San Antonio Light*.

"America Won War," Declares Man Who Ought to Know

If anybody should know who won the World War, General Ludendorff should, for he lost it.

Read again what he wrote for *The Sunday Light* recently, and bear in mind the competence of his testimony:

With more than a million fresh, young, ardent Americans pressing forward into the battle the result was inevitable.

The tremendous superabundance of pent-up, untapped nervous energy which America's troops brought into the fray more than balanced the weakness of their allies, who were utterly exhausted.

It was assuredly the Americans who bore the heaviest brunt of the fighting on the whole battle front during the last few months of the war. The German field army found them ~~much~~ more aggressive in attack than either the English or the French.

Even the criticisms that he makes of ~~our~~ fighting methods are compliments in effect.

He says the Americans went ahead in scorn of risks, exposed themselves rashly, lacked the experience in warfare according to rules which might have gained results more slowly at less expense.

But it was precisely this resistless urge to get a disagreeable task soon done, so that people could turn their energies to better things, which shortened the struggle by many months.

Our high command chose deliberately to rush the fighting to a quick finish. It had pre-reckoned the cost and found it cheaper than a more leisurely dribbling of life and treasure while civilization sunk deeper into the bog.

The truth is dawning on critical Americans that the handling of our troops in France was exceptionally efficient.

Since all that we got of value of that overseas adventure was the knowledge of the incomparable quality of our fighting hosts—a gain which some of our war associates seem inclined to question—it is fitting that the expert testimony of Ludendorff should be kept for handy remembrance and citation.—*San Antonio Light*.

Security in Atlantic Flying

Commander Byrd believes that the flights of Lindbergh and Chamberlin mean that commercial flying to Europe is "not far distant." Secretary Hoover is even more optimistic: "It will be a matter of only a few years until planes will be making regular flights across the Atlantic and Pacific in commercial service." Orville Wright is less confident: "Men like Lindbergh and Chamberlin took one chance in four or five when they started. Regular commercial aviation cannot be launched until the chance for failure is one in a thousand."—*New York Times*.

APHORISME XXII

As in nature, so in Warre; where the cause faileth, there the effect also dyeth; for where men are couragious, not out of a true resolution, but out of some conceit of the enemies weaknesse or wants; when they find things contrary to those former impressions, then they lose their spirits and animosity.—Ward's Animadversions of War (London, 1639).

PROFESSIONAL NOTES

Sixtieth Coast ~~Artillery~~ (Antiaircraft)

The Coat of Arms of the 60th Coast Artillery (Antiaircraft) was approved by the War Department on May 21, 1924, and the blazonry reads as follows:

Shield: Per fess embattled *sable* (black) and *gules* (red) a pile in bend or (gold) the lower position obscured by the second tincture, in sinister chief a mullet of the third (gold).

Crest: On a wreath of the colors (gold and black) a carabao skull horned or (gold).

Motto: *Collis Imperamus* (We rule the heavens).

The design of the shield is similar to that used by the Norman knights in their many conquests and is symbolic of the success this organization will attain in combatting enemy aerial activity. The shield is divided horizontally into two parts, the dividing line being embattled to represent defense. The lower half of the shield is red for artillery, the upper half bears the colors of black and gold, so significant of the orient where the organization is having its pioneer services. A searchlight beam pierces the darkness of this position of the shield, signifying the never-ending vigilance which this organization will exercise in searching for enemy aircraft. The star has a double meaning. It is symbolic of the fact that the battle ground of the unit is in the heavens; also of the State of Texas, where in 1922 at Fort Crockett it was organized as the 60th Artillery Battalion (Antiaircraft).

The personnel of the Regiment wear the shield and motto of the coat of arms as a distinctive regimental badge on their uniform.

The history of the units of the 60th Coast Artillery is as follows:

Headquarters Battery and Service Battery, 60th Coast Artillery, were organized in 1924 with the same designation.

Headquarters Detachment and Combat Train, 1st Battalion, 60th Coast Artillery, was organized in 1907 at Fort Fremont, South Carolina, as the 127th Company, Coast Artillery Corps; designated the 2d Company, Fort Crockett, Texas, in 1916, and 2d Company, Coast Defenses of Galveston, in 1917; remained the 127th Company, Coast Artillery Corps, in 1922; and became Headquarters Detachment and Combat Train, 60th Artillery Battalion (Antiaircraft), in 1922, and Headquarters Detachment and Combat Train, 60th Coast Artillery, in 1924.

Battery A, 60th Coast Artillery, was organized in 1907 at Fort McHenry, Maryland, as the 128th Company, Coast Artillery Corps; designated the 1st Company, Fort Crockett, Texas, in 1916, and 1st Company, Coast Defenses of Galveston, in 1917; again designated the 128th Company, Coast Artillery Corps, in 1922, and later in the same year as Battery A, 60th Artillery Battalion (Antiaircraft). In 1924 it became Battery A, 60th Coast Artillery.

Battery B, 60th Coast Artillery, was organized in 1898 as Battery C, 7th Regiment of Artillery; designated 7th Company, Coast Artillery, in 1901, 3d

Company, Fort Barrancas, Florida, in 1916, and 3d Company, Coast Defenses of Pensacola, in 1917; disbanded in 1919; was reconstituted and consolidated with the 3d Company, Coast Defenses of Key West, which had been organized in 1921 with the same designation; became the 77th Company, Coast Artillery Corps, and Battery B, 60th Artillery Battalion (Antiaircraft) in 1922; was named Battery B, 60th Coast Artillery, in 1924.

Battery C, 60th Coast Artillery, was organized in 1898 as Battery K, 7th Regiment of Artillery; designated the 80th Company, Coast Artillery, in 1901, and 1st Company, Key West, in 1916; changed to 1st Company, Coast Defenses of Key West, in 1917; was again called the 80th Company, Coast Artillery Corps, in 1922; later in the same year became Battery C, 60th Artillery Battalion (Antiaircraft); and was renamed Battery C, 60th Coast Artillery, in 1924.

Batteries D, E, F, G, and H were authorized in 1924 but have never been actually organized.

Statistics on Antiaircraft Fire

Reprinted from *Revue Militaire Française*

I. STATISTICS OF THE WAR

The COAST ARTILLERY JOURNAL has published information on the number of airplanes brought down by the antiaircraft artillery in the different countries during the war.¹

<i>Nation</i>	<i>Planes brought down by antiaircraft</i>
Italy	129
Germany	1520
France	500

"(Authority Official Italian Report, '*Ministro della Guerra, Comando superiore d'aeronautica*,' G-2, No. A-S25 6 W.)"

". . . The British report the following as the average number of shots that were required by the antiaircraft artillery to bring down a plane: Prior to 1917, no record; 1917, 8000 rounds; 1918, 4550 rounds; last part of 1918, 1500 rounds.

"The American antiaircraft service, although in action only four months, and having only two skeleton artillery battalions and two machine gun battalions to get into action, has quite a remarkable record, as they are officially credited with bringing down 58 enemy planes. The official reports of the American Expeditionary Forces give 605 as the average number of shots required to bring down each plane. (Authority—Report of Chief of Artillery, A. E. F.)"

This information has been published numerous times by the COAST ARTILLERY JOURNAL itself² and by other American and foreign publications. In March, 1926, this magazine added the following information concerning ammunition consumption in France per plane brought down: "1916, 11,000 rounds; 1918, 7500 rounds."

¹COAST ARTILLERY JOURNAL, March, 1925, p. 240. Report of Colonel Barnes.

²Particularly in the COAST ARTILLERY JOURNAL, March, 1926, and July, 1926.

The figures concerning Germany conform closely to the statistics published by General von Hoeppner³ and Major Neumann:⁴

Year	Statistics of General von Hoeppner	Statistics of Major Neumann
1915	51	
1916	322	322
1917	467	467
1918	748	748
	1588	1537

General von Hoeppner adds that of the 1588 planes brought down, 51 were with the aid of searchlights.

The information concerning the French antiaircraft artillery is also conformable to that published by Colonel Pagezy⁵; but it is quite incomplete. In effect, Colonel Pagezy gives, for 1918, one airplane brought down per 7000 rounds. He adds: "If, in place of considering all material, we consider only the auto-cannon, which alone possessed its complete modern equipment, if we consider only firing executed by day with explosive projectiles, we find the attained ratio of hits to be 1:3200. The ratio of hits in day firing with explosive projectiles from the platform mount was 1:5700. The total ratio for all day firing with explosive projectiles was 1:4000."

Particularly significant statements on the subject of American statistics are found in two articles: one by Captain Harmon, and the other by Major Haw.

Capt. Harmon writes⁶: "Consider . . . the actual number of planes destroyed . . . Of all the American batteries firing, one plane was brought down for each 1050 rounds fired. Those batteries that actually brought down planes made a record of one every 604 rounds, and one battery shot down two planes with its first 120 rounds."

Major Haw writes⁷: "Our battalions in France made a splendid record, shooting down fifty-nine planes; forty-one of these were shot down by two antiaircraft machine-gun battalions (total ninety-six guns) at an expenditure of 5491 shots per plane brought down. The value of special training is shown by the fact that during the same period there were about 1500 other guns of the same type along the front; these, not being manned by specially trained personnel, brought down only two planes, as far as known. Our antiaircraft artillery brought down eighteen planes at an expenditure of 1050 shots per plane. (These statistics were furnished the author by the COAST ARTILLERY JOURNAL, and were compiled from the records of the Chief of the Antiaircraft Service of the A. E. F.)"

All this leads to the establishment of several important points:

1. The French figures come from *statistics*; they comprise the results for all materiel of the same type for a whole year. The American figures come from *records*; they comprise the particular results obtained by the unit with the best record. It is not logical to compare statistics with records. The comparison of statistics is already very hard to make, for, as Colonel Pagezy writes, "they have been established under conditions which are unscientific and which vary so from one country to another that it would be misleading to compare them."⁸

³*Deutschlands Krieg in der Luft*, General of Cavalry von Hoeppner, 1921.

⁴*Die deutschen Luftstreitkräfte im Weltkriege*, Major P. Neumann, 1920.

⁵*Revue Militaire Française*, "Tir contre avions de D. C. A.," 1 December 1924.

⁶COAST ARTILLERY JOURNAL, November, 1925, "The Past and the Future of Defense Against Aircraft."

⁷COAST ARTILLERY JOURNAL, October, 1925. "Antiaircraft Defense."

⁸*Revue Militaire Française*, 1 December 1924.

It would appear from the articles of Captain Harmon and Major Haw that the American *statistics* would be 1050 rounds per plane brought down.

2. The COAST ARTILLERY JOURNAL seems to attach considerable importance to *records*, and less importance to *statistics*. The two kinds of information are of interest; but it is necessary to remember that a record of this sort may be accomplished through unusual good fortune: if the end of the war had come just after the first 120 rounds of the American battery which had had the luck to bring down two airplanes in 120 rounds, the American record would be one plane per 60 rounds. It is difficult to draw a conclusion from this figure concerning the action of the antiaircraft artillery. Statistics give the complete data, coming from all units and considering all their firing; they permit one to judge better the results to be attained, in the average, by antiaircraft fire.

3. The extraordinary differences between the American results and those of the French do not seem to surprise the contributors of the COAST ARTILLERY JOURNAL. It is, however, permissible to seek the causes of such important differences. One must consider that during the war the American antiaircraft artillery fired French weapons, with the aid of French apparatus and methods; it was, moreover, instructed by French instructors. The materiel, the apparatus, and the methods used by the American army can not be credited with this superiority, which seems to depend entirely upon the manner of establishing the statistics.

4. The establishment of records of airplanes brought down seems to be comparable in the French and German armies. In the two armies the proof of a plane brought down was established by the testimony of officers not belonging to the antiaircraft artillery. It does not appear that the official American figures are backed by as rigid guaranties.

In 1918, the French antiaircraft artillery brought down 220 enemy planes with about 800 antiaircraft guns in service. The German antiaircraft artillery brought down 748 planes with 2758 antiaircraft guns in service. The number of rounds fired in Germany to bring down one airplane has not been published; but one would be correct in comparing the statistics of the two by taking the number of guns in service in 1918 per plane brought down. The figures are the same in the two armies, two planes being brought down for each seven guns in service.

It is also necessary to note that the defense of Paris kept a considerable number of French guns in the rear areas. In the total French percentage, all shots fired in the rear areas are counted, shots of very slight efficacy and nearly always fired at night. Paris was exposed to enemy air attack during a good part of the year 1918. From this point of view, no other army had a situation comparable to that of the French, with a point of the importance of Paris within range of the enemy aviation and in immediate proximity of the front. Consequently no other army had, in the firing of 1918, so considerable a proportion of night firing.

In spite of these unfavorable circumstances which weigh heavily upon the French statistics, the French and German antiaircraft artillery can be considered as having an equivalent efficacy; the Germans had an advantage through the power of the materiel employed and through telemetry; the French employed incontestably better methods of fire. These advantages and inconveniences appear to be almost balanced.

5. Finally, one must keep in mind, from Major Haw's article, the particular importance of training, especially for the machine-gun antiaircraft firing.

II. STATISTICS OF TARGET PRACTICE

The COAST ARTILLERY JOURNAL frequently publishes information on antiaircraft target practices with targets towed by airplane. The announced results are brilliant. It is necessary, however, to note that they are obtained under conditions very different from conditions of war. At target practice with a towed target, the airplane is expected from a determined direction at an altitude which can vary only within narrow limits; the orientation is also almost known, for one can fire only on an airplane which passes by; far from attempting to defend itself, the towing plane, on the contrary, attempts to follow a straight line.

Major Haw gives the results obtained in one day practice⁹: ". . . where the target was a sleeve 20 feet long and tapering from 4 feet to 2½ feet in diameter, towed by an airplane, the antiaircraft machine gunners last year made seventeen hits in 9000 shots, or one hit for every 530 shots. On a similar target, 6 feet shorter, the artillery made two hits out of 118 shots, or one hit for every 59 shots. Of course, the conditions were more favorable than would be the case in war; but even so, the record is truly remarkable. Great things may be expected when an improved fire control system is developed."

The American antiaircraft artillery has recently held *night* practices with towed target. The sleeve is illuminated by lamps placed in the interior, and fire executed on the illuminated target. Brigadier General Ruggles indicates that in the firing at Fort Tilden the accuracy of night firing was, on the whole, greater than that of day firing.¹⁰ Captain William Braly gives details of one night practice¹¹: "The battery fired 77 rounds in 100 seconds; secured 19 theoretical hits and 302 actual shrapnel holes in the target." Captain Braly adds, confirming the opinion expressed above, on the subject of conclusions to be for time of war from results obtained from firings in time of peace: "By the conclusion of preliminary training the battery was functioning with machine-like precision; each man knew his job and knew why he did it that way. For instance, the lateral deflection setters knew that in order for the guns to lead the target their deflection must be greater than 300 when target moved from left to right and vice versa, and they knew within about what limits to expect it."—P. V.

The "Grande Misère" of the French Army

In the January 25, 1927, issue of the *Militär-Wochenblatt* General von Taysen, German Army, retired, quoting from recent issues of *France Militaire*, furnishes interesting information on certain conditions in the French army that are not usually given prominence in the press. These are set forth in extracts from Von Taysen's article, giving an outline of the conditions described in the French journal, which follow:

Deficiencies in Small Arm Target Practice. From reports submitted to the War Ministry by regional commanders, during the practice period of 1925 less than fifty per cent of the ammunition allowed was expended in target practice. In explanation the French writers state that three battalions of an infantry regiment stationed on the Eastern frontier had expended in infantry target practice, including carbines, etc., only one-half and with light machine guns only one-third

⁹COAST ARTILLERY JOURNAL, October, 1925, "Antiaircraft Defense."

¹⁰COAST ARTILLERY JOURNAL, March, 1926, "Antiaircraft Defense."

¹¹COAST ARTILLERY JOURNAL, December, 1926, "77 Rounds Fired, Sir."

of the minimum quantities of ammunition authorized and strictly directed to be used. There resulted a corresponding deficiency in results attained by the troops and good reason for the conclusion that the value of the infantry arm had been materially impaired.

The causes tending to produce these conditions are attributed to unfavorable weather conditions prevailing in the late autumn and winter months during which recently enlisted recruits are given their school training in target practice and infantry firing; the effect of exposure of individual young recruits to these disagreeable weather conditions of alternation of snow, rain, sleet, and frost, causing numerous cases of illness and incident absence from duty. Another cause given was great distance of the practice firing stands from the men's barracks and the inadequacy of the stands in regard to numbers and capacity of admitting men to fire at the same time; that in many cases the services of an unusual number of men were required by reason of location of the stands in densely settled regions for security against accidents.

The German writer is inclined, while giving due allowance to the causes mentioned, to attribute the deficiency in fire training of the French infantry to other and graver causes which he explains by further quotations from the *France Militaire* articles on "Grande Misère" in the French army, as follows:

Insufficient Training Conditions in General.

Question: How much time is required for training a man?

Answer: One year, namely, fifty service and two furlough weeks: *Provided*, that *no one*, not even the President of the Republic shall release the man for even a day from service. Under this provision the one year service would be much preferred to the one and one-half year enlistment now prevailing.

Question: How much actual training time has the soldier today under the one and one-half year enlistment?

Answer: Recruit training, four months: namely, November 11 to December 29; January 5 to March 20; April 15 to May 1. Then the recruit becomes an "old man" and the theretofore recruits are scattered in all directions for regimental and garrison service. For the "old men" time of service is one year less two months' furlough. During this period the individual has a daily round of one hour "outside" service aggregating one and one-half months for the year. (Why only one hour per day? No explanation given.) Thus the men enlisted for 18 months receive only five and one-half months actual service training and since, as the writer claims, twelve full months are needed for training the individual, these men return home after discharge with the feeling that they have wasted one year.

Question: What can one accomplish in the way of training in the above computed five and one-half months?

Answer: At the utmost group (squad) training only. The company training, coming during the early spring months, is wholly inadequate because it takes place in the time of extended furloughs (agricultural, for men to assist at home in the planting season and for other purposes), leaving the company with half strength only; later in the year these conditions become still worse and the maneuver company can be made up only from two battalions. The conditions in respect to "firing training" of the regiment were actually such that on arriving at the fire practice training fields the regiment was obliged twice to resort to

recruit school fire training before taking up the actual fire fighting practice. As corrections for these conditions the French writers recommend:

a. *Furloughs*: In France the furloughs authorized and customary for agricultural and other home conditions of the enlisted men make very material inroads upon their military service. Instead of this the writer advocates fixing three definite periods of ten days each and that this absence from duty include all officers and noncommissioned officers at the same time so that all the barracks would be vacated and closed and all would be at hand and ready for full service at the end of each period of absence.

b. Immediate release of troops from participation in the preliminary preparatory mobilization exercises and transfer of all that work to auxiliary service troops.

c. Creation of fully adequate training personnel. There is great deficiency in noncommissioned officers. Commissioned officers are leaving the service in mass and their replacement is causing much difficulty. The officer has no longer the highly respected social standing of former days. His salary is so insignificant that in order to support his family he becomes in the evening a taxi chauffeur, bundle packer, and delivery messenger in large commercial establishments. In one training battalion there were available for training service only two officers and four noncommissioned officers. The greater majority of noncommissioned officers and officers were "in circulation." Of the officers 75 per cent were usually on detached service."

d. Where are the numerous "detached" persons? 1st: With the numerous and innumerable training and educational courses, for example: at the Military University at Versailles and God only knows where else but certainly not with the recruit and troop training formations. 2d: Many are used in the citizens' preparatory military training. Of course, men are needed for all these purposes. But they should be furnished from personnel provided by a separate budget establishment and not by depriving the regular troops from their much needed training instructors. 3d: Detached commands within troop units, guards, escorts, sentry replacements, messenger service, all call for immense personnel, especially in Paris, for funeral escorts for higher officers, commanders and members of the Legion of Honor, military administration bureaus, inspectors of supplies, etc., etc. While militarily trained persons are essential for such services they should be provided from a body created for those purposes. Taken all in all, the training personnel appears to be everywhere except with the troops to be trained.

Improvement of Subsistence: Subsistence allowance is 5 francs 40 centimes per man per day (at present rate of exchange about 21 cents per day in U. S. currency). In Paris at least 25 cents per man per day is needed for bare existence. The deficiency of 4 cents per day is made up, in part, by giving numerous passes to men who absent themselves from the evening meal and provide for that elsewhere; by this means some 500 meals were saved every two weeks to meet, in part, the deficiency.

Clothing Allowance: 98 centimes (about 3.8 cents in U. S. currency) per man per day, or approximately \$15.00 per year). In Paris this would provide one fairly decent outer clothing covering, leaving a ragged outfit for the remainder.

Heating and Bedding, Laundry: Much suffering is caused by exposure to cold on account of high price of coal. There is great want of proper cleansing

of clothing and bedding. Men's bedding appliances are frequently not renewed in nine months. The situation is wretched from every point of view and "investigations" in nearly all other fields of the military situations not included in those heretofore mentioned disclose the same aspect. This "grande misère" was ruining the intelligence and vigor of the French army.

CONCLUSION

So much for the complaints and the various propositions for their reform. The conditions as here presented are no doubt overdrawn to some extent but they are given as published in reputable French journals. They have been given publicity and commented upon elsewhere, but nowhere in such comprehensive form. With respect to achievements of the troops in fight training exercises we may, for example, quote from the report of Colonel Reboul which was published in July, 1925, in the well known *Revue des Deux Mondes* in which he characterized a battalion attack as absolutely ridiculous, due to awkwardness of the participating troops.

On all this the German writer comments as follows:

"It would, in my estimation, be quite erroneous to draw, from all this, premature conclusions in regard to the ability and capacity for achievement of the army. France can well endure re-creation of its army in quiet and reserve. No danger threatens her from our side; great German journals have also taken upon themselves the task of furnishing gratuitously, to the French press, the requisite shuddering, hair raising reports, making it less expensive for them than by paying the subsidized knaves that were formerly employed for that purpose.

"It is an interesting feature for us to note the views of the French writer when he says that the one-year enlistment service is preferable to the 'pseudo one and one-half year' period, provided: *First*, every hour and minute were utilized for training only; *Second*, that the requisite training personnel was always fully at hand. Both are naturally difficult of attainment. Most of the special courses have, for example, come into being with the new weapons. To keep a middle course between the demands for special training and that for general troop training has become extraordinarily difficult in every country—and to a much greater extent in France which stands at the head in extent, number, and range of weapons.

"At any rate the system of detachment of personnel appears to be a suitable field for reform. To what extent the training of troops, which appears to languish for the time being, would be recuperated by the one-year enlistment will be of considerable interest to most military powers. But in all cases the reforms required will be very expensive if all the adverse conditions above enumerated, including those of officers serving as messengers and parcel carriers are to be abolished and vacant units are to disappear and service grades and officials increased in other directions. The abolition of the above described 'grande misère' would tend to confirm the assumption that the re-creation of the army and formation of the new French army will be found more expensive than keeping up and strengthening the old army.

"Upholding, permanently, that French army as solely predominant in Europe in strength, extent, kind of war material, and 'in preparation of the whole nation for war' after, as before the proposed re-creation of the army, may not be found possible. At some time France will stem the tide and content itself with placing its army on an equality with those of other powers."—G. R.

Citizens' Military Training Camps

Following is an extract from a special sanitary report rendered by Major W. E. Dear, Medical Corps, on July 30, 1925, to cover Citizens' Military Training Camps at Fort Eustis, Virginia, during the period July 1, 1925, to July 30, 1925:

As an illustration of the high individual morale and excellent physical condition attained, mention should be made of the march to Yorktown, Virginia, when on July 20th the entire student body, carrying rifles and light packs, marched a distance of 10 miles to Yorktown and, in the afternoon, engaged in maneuvers over a distance of another six miles. Not a boy fell out. The next morning they marched back and not a boy left his place in the ranks. The same afternoon they were weighed as a part of the physical examination and though depleted by two days of the hardest sort of work and a night in bivouac showed an average increase in weight for the month of 1.77 pounds. Perhaps the best idea of the sort of stuff some of these boys were made of can be gotten from an incident told by major Hewitt, Medical Corps, the Surgeon for the C. M. T. C. A boy applied to the dispensary for treatment, his eye closed by an extensive swelling over the whole side of his face. Inquiry developed the information that while bearing the colors and standing at attention a large bumble bee alighted on his face and proceeded to sting him unmercifully. Major Hewitt asked the boy why he had not knocked the bee off with his disengaged hand. His answer, a modesty uttered classic, "How could I? I was bearing the colors."

If the C. M. T. C. can in the period of its brief association inculcate in an average American boy such pure, simple, and fervid adherence to an ideal it, as an institution, is one in which the American nation should have a just pride.

News Items From the Foreign Press

CONDITIONS IN POLAND'S ARMY.—Major General von Wrisberg of the German Army comments, in an article published in the February 25, 1927, issue of the *Militär Wochenblatt*, on conditions which he contends prevail in the army of Poland, exercising an unwholesome influence on its morale and efficiency. He says that notwithstanding General Pilsudski's persistent efforts to attach the army to himself and overcome the unfavorable impressions aroused in some portions of it by his arbitrary actions incident to his practical overturning of the government and placing himself at its head, he has thus far failed to gain the army's full support and confidence by removal of many uncertain and hostile elements among the higher officers and replacing them with officers devoted to him. The writer cites a number of instances of manifestations of discontent merging on open insubordination.

It is undeniable that the Marshal is endeavoring to provide the army, and especially the corps of officers, with efficient equipment and training. In explanation of the increasing cost of the military establishment he asserts that no other nation has taken an initiative in reduction of its armed forces and Poland should not be left isolated. He also says that extravagance in management is characteristic of all things in Poland, public and private, and that everywhere the cost of administration is exceeding the means provided for operation and that the army administration is afflicted with the same discreditable features. That his fierce attempts to stem maladministration, inefficiency, graft, and corruption in the government generally, and in the army particularly, was certainly evidence that he was not favoring prevailing conditions and that it was also the cause of much of the opposition to him.

"I am," he says to his opponents, "in favor of thrusting these people into the very deepest water and then let them help themselves. If they cannot rescue themselves they must sink. You (members of the Assembly) prevent them by your legislation from going under and provide them with ingenious artificial belts that enable them to keep afloat. I oppose those of your laws that save incompetents from going under." The Marshal is also opposed to a shortening of the terms of military service because he believes it to be inexpedient with the illiterate and unintelligent material furnished to the army for training.

The German writer, quoting from a recent speech by representative Pancratz in the legislative assembly, gives glaring instances of graft and corruption involving the military administration of which the following are quoted as examples: the firm Posisk furnished hand grenades at double the price for which they could have been obtained abroad; the supply service of the general headquarters at Lodz purchased, through its financial agent, rye and paid three times for the same delivery; the war ministry gave the firm Arma heavy advance payments on a contract for re-conditioning 15,000 Russian carbines of which only 200 were ever delivered; maladministrations were disclosed in the supply service at Zloczowno, in the military park at Jaroslav, at the Geographical Military Institute at Posen, at the general headquarters at Lublin where the state was mulcted out of 200,000 zloty (the war value of the zloty is 19.30 cents, it is at present quoted at 11.50 cents), at the military administration bureau at Czenstochau where they mixed the oats for the horses with 30 per cent of poisonous lupine originating from the World War; the comptrol bureau estimated that up to 1926 the state had been cheated out of 150 million zloty. The representative referred to included in his address also complaints against what he characterized as "the Cossack methods of behavior" on part of officers of the army toward the civilian population and instanced the following cases: on June 30, 1926, a captain of the aviation service shot and killed, in Warsaw, without cause or provocation, a chauffeur; two days later a first sergeant of cavalry killed a hotel keeper because he had refused to supply him with alcohol; one day later an officer struck the motorman of a trolley car several blows with a saber because he would not start his car before the time set him by the schedule; a captain shot the driver of an omnibus because he refused to hold his bus after the time set by schedule; a sergeant threw a lighted hand grenade into a dance hall filled with people.

Marshal Pilsudski has unquestionably endeavored with all his might to build up the army into an efficient war instrument by training equipment and disciplinary measures. That he will succeed in this under present unfavorable circumstances is an open question. Of one thing there is no question: every available energy and means are strained to the utmost in the preparation of arms and equipment for readiness for war; *disarmament or reduction of armaments in any form is wholly out of the question.*

SUPPLY OF HORSES AND FARRIERS FOR THE MILITARY SERVICE.—It does not appear to be generally known that in spite of the increased progress in use of motor power vehicles the status of horses on hand has remained about the same in different countries. Germany, for instance, had, in 1912, 4,476,000 and in 1924, 4,465,500 in spite of losses during the war and replacement of horse drawn by motor power wagons; even in the great motor power equipped United States the number of horses has suffered but little reduction. There need, therefore, be no apprehension of difficulties in case of mobilization on account of deficiencies in horses.

But there will no doubt be apparent, in case of a call for war, a want of well-trained farrier personnel. It is stated that the United States experienced great difficulties, even during the World War, in this direction. The supply of farriers had become so reduced in consequence of the use of motor power wagons at the outbreak of the war that those remaining barely sufficed for the cavalry alone, while the artillery and infantry experienced great difficulty in obtaining farrier and farrier blacksmith service in the field. Four farrier training schools were established which turned out 1000 farriers each quarter, but their training was so inadequate that while they were able to remove and reset horseshoes they were unable to render satisfactory service in the adjustment and proper fitting of the hoof and of the shoes to same. It is imperatively necessary to provide in peace for an adequate number of thoroughly trained farriers and farrier smiths for the military service in war. The services of such men would also fill a much needed want in the domain of agriculture where many horses and mules are still used.—*Militär-Wochenblatt*, February 28, 1927.

FRANCE.—The Paris *Journal Officiel* contains the salary regulations for officers of the French army which are given as follows in French francs per annum: Marshal, 90,000; Lieutenant General, 63,095; Major General, 42,750; Colonel, 35,262; Lieutenant Colonel, 26,712; Major, 24,048; Captain, 19,764; First Lieutenant, 14,472; Lieutenant, 9,936. There is a reduction from the amounts here given on account of "pensions" (retired pay after discharge or retirement) of about six per cent of the active pay. (To obtain the equivalent in dollars U. S. Currency the figures given would have to be divided by 25 at present rates of exchange, which would bring the annual salary of the Marshal to \$3,600.00 and of the Second Lieutenant to \$397.00).—Austrian "Army Journal."

RUSSIA.—According to reliable reports of the German press the Council of People's Commissioners has decided, in secret session, to appropriate 100 million rubles for extraordinary military expenses. All men between 24 and 34 years of age have received orders to present themselves for registration. The War Commissar has, furthermore, issued instructions for the formation and thoroughly efficient training of a competent corps of noncommissioned officers. There is also, in future, to be instituted a new system of uniforms for officers that will indicate in a conspicuous and striking manner the distinction between officers and enlisted men and, as is further reported, the distinctive relations between superiors and subordinates will be given greater emphasis than has heretofore been customary.—Austrian "Army Journal."

ITALY.—An announcement of the Minister of the Interior instructs local authorities not to permit any public theatrical performance in which officers or soldiers are represented as remiss or negligent in outward appearance or characterized as unworthy and contemptible. Authors and directors of theaters must make it a point to foster the appreciation of citizens toward those who are their main supports and defenders in peace and in war and permit no defamation of them.—Austrian "Army Journal."

CASUALTIES AMONG GERMAN GENERAL OFFICERS IN THE WORLD WAR.—The *Militär-Wochenblatt* of February 11, 1927, furnishes lists, by name and grade, of all German officers of that army who were killed in action, died of wounds received in action, or died from disabilities and diseases incident to their service in the war. The generals named are classified as "active" and "inactive." This is understood to mean those who belong to the regular peace army and those who were brought

into active service into the war army from retirement and from the reserve. Tables giving a summary of casualties are as follows:

Killed in Action and Died of Wounds Received in Action:

	<i>Active</i>	<i>Inactive</i>	<i>Total</i>
Prussian and Wurtemberg	31	16	47
Bavarian	6	7	13
Saxon	2	1	3
Total	39	24	63

Died of Disabilities and Diseases Incident to Service in the War:

	<i>Active</i>	<i>Inactive</i>	<i>Total</i>
Prussian and Wurtemberg	50	30	80
Bavarian	1	9	10
Saxon	6	4	10
Total	57	43	100

By grades the summary of deaths among general officers is:

Field Marshal Generals	2
General Obersts	3
Generals	19
Lieutenant Generals	52
Major Generals	91
Total	167

The percentage of deaths of general officers to the total number listed is:

	<i>Listed</i>	<i>Killed</i>	<i>Died</i>
Active	347	20 equals 5.7%	38 equals 11%
Inactive	330	16 equals 5.0%	30 equals 9%

Average percentage of deaths to total number listed is 15.4 per cent. The average percentage of deaths of noncommissioned officers and privates to total number listed was 13.9%.

The editorial comment on this showing states in effect that it is highly creditable to the corps of officers of high grades and commands whose functions were not always necessarily exercised on the front fighting lines of man against man, and that it is also a drastic refutation of the slurs and innuendoes often expressed by ignorant and irresponsible persons upon officers of high rank, insinuating that they were largely free from or inclined to evade the risks to which common soldiers were subjected.—G. B.

A NEW MACHINE GUN.—The February, 1927, number of *Heerestechnik*, published in Berlin, contains a detailed description of a new light machine gun, brought out by the government of Tschechoslovakia, which has been submitted to exhaustive tests in actual service during the past year and found eminently satisfactory by infantry, cavalry, and artillery units to which it was supplied. Drawings and illustrations showing the gun and all its parts in minutest detail and their working relations one to another accompany the description.

The advantages claimed for the gun are: comparative light weight—8¾ to 9 kilograms (19¼ to 20 pounds); ready and rapid replacement of the barrel and exchange of all parts subjected to greatest wear in firing; simplicity, without sacrifice of solidity and durability of construction, and relative ease of replacement

of all parts; ease in taking the gun apart and putting it together even at night and in darkness without special tools; slight sensitiveness to derangement in use by dirt; slight lubrication requirements; remarkable firing accuracy due to peculiar construction and placement of the gun barrel.

The greatest advantage, however, of this gun is the fact that it is wholly a development and product of local Tschechoslovakian technical experts and relieves the government from its heretofore so burdensome dependence upon foreign manufacturing establishments for its supply of weapons of this class. Arrangements have already been made for its manufacture in quantities by local manufacturing industries and will be undertaken as soon as further practical tests of the gun in actual service in the army, which are now under way, indicate whether or not any modifications in any of its parts are advisable.—G. R.

Changes in Road Building Noteworthy

Changes in highway design due to necessity of providing adequate traffic facilities, have been as noteworthy as changes in volume and character of road-way traffic.

Greater care in finishing is noticed, and a reduction in crown until the pavement appears to be almost flat. The trend toward easy curves and grades is also very apparent. In the old days when pick and shovel were the only tools available for road building purposes, it was physically impossible to make wide highways with low grades and easy curves. Now, however, when inventive genius has supplied us with giant tractors to furnish the motive power for heavy grading machinery, the task is relatively simple and inexpensive per mile of highway.

Gravel shoulders on rural highways are being made wider. The entire width of the paved surface is needed for moving traffic, and wide shoulders afford a safe place for parking and for making repairs to cars.

The compacted gravel on these shoulders also makes an excellent base for a coat of asphaltic concrete, when it is necessary to widen the paved surface of the highway.

The Safety Habit

An accident death toll in the United States of over 80,000 persons killed each year is useless, says Lewis A. DeBlois, Director of the Safety Engineering Division of the National Bureau of Casualty and Surety Underwriters. He says accidents are caused and do not happen.

Are "accidents" what we term them? Excepting those of natural origin—earthquakes, cloudbursts, cyclones, etc.—industrial experience of recent years points clearly to the conclusion that they are not. The industrial safety movement ("safety first") has shown over and over again that accidents are preventable—not merely some sorts of industrial accidents, but all sorts. If, then, they are preventable by human agency, they are evidently not accidents at all.

While we know comparatively little of accidents outside the industrial field, it is certain that fires can be greatly reduced. We know that while some automobile drivers have many accidents, others driving under similar conditions have almost none.

Once the safety habit is established, it is not difficult to maintain. Instead of interfering with normal work, safety efforts promote production. Both quality and quantity of output are improved, as well as general efficiency and industrial harmony.

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. R. S. ABERNETHY, Colonel, Coast Artillery Corps, President Coast Artillery Board.

Projects Initiated During the Month of June

Project No. 569, The Stephens Deflection Board.—A new deflection board, designed by Technical Sergeant Thomas J. Stephens, is under construction locally and will be tested at Fort Eustis. This device promises to be superior to the Coast Artillery Board Universal Deflection Board.

Project No. 570, Antiaircraft Artillery Fire Control Telephone Unit.—The Signal Corps has constructed and provided for test a fire control telephone system for antiaircraft guns. The system is built on the plan of the Higgins Telephone Unit.

Project No. 571, Canvas Rolls for Tools or Spare Parts.—Recommendations were submitted as to material and general construction of a canvas roll to be adopted as standard for carrying tools and spare parts for motor vehicles.

Project No. 572, Instructions Governing Use of Gun Deflection Board in Case III Fire.—An inquiry was received from an officer on duty with the National Guard as to the method of operating the Deflection Board, Model of 1917, for guns, in Case III. He had found the instructions given in TR 435-221 inapplicable as no means were provided for clamping the T-square to the platen. A method of operation was devised by the Coast Artillery Board.

Project No. 573, Method of Marking Shelter Tent.—A new method of marking shelter tents suggested by the Chief of Field Artillery was sent to the Coast Artillery Board for comment and recommendations, and is under study.

Project No. 574, Test of 80-cm. Base Range Finder.—An 80-cm. Base Range Finder has been modified by the Ordnance Department for use as an anti-aircraft machine-gun range finder. The modification permits following an aerial target .

BOOK REVIEWS

The Military Genius of Abraham Lincoln. By Brigadier General Colin R. Ballard, C. B., C. M. G. Oxford University Press, London. 1926. 5¼"x 8¼". 241 pp. Maps. \$5.00.

In the American Civil War there is no doubt that Mr. Abraham Lincoln took a leading part as a carpenter and tailor. To start with he had a mere handful of men; it was chiefly due to his energy that these were re-inforced till there were more than a million well-armed men in the ranks. All historians agree in giving him credit.

But he did more than this—he took upon himself to control the broad lines of strategy, and in some cases he even issued detailed orders for movements of troops. Here the chorus of praises changes to a note of denunciation. The military critics are especially severe, and long sermons have been written about the folly of amateur strategists . . .

The following pages will show that in this case I do not agree with certain eminent critics. . . . let me enunciate my theorem . . . before attempting to prove it.

My belief is that Lincoln was solely responsible for the strategy of the North and proved himself a very capable strategist. But (a very big but) this does not mean that other politicians should try to follow his example. The general principles regarding amateur strategists and political interference in war have been proved by history—my point is that general principles do not govern a case of exceptional genius.

The reviewer takes occasion to point out here that although historians agree in giving credit to Abraham Lincoln for the carpentering and tailoring, not all by any means are in agreement as the excellence of the early workmanship. Someone was responsible for the short-term enlistments, the tardiness of conscription, and the fact that the Confederacy, although compelled to organize a government, actually "got the jump" on the Union.

General Ballard's first point is that:

Lincoln himself was quite shrewd enough to see that a passive defensive would guard his own states but would never crush the rebellion. He must therefore think out offensive measures of some kind. Here he picked out as his chief asset, Command of the Sea, and it was one which could be brought to bear on a weak point of the enemy. . . . A tight blockade would cripple finance and cut off supplies . . . Lincoln deserves credit for seeing that it could be carried out and that no expense should be grudged that would make it effective. He proclaimed the blockade on April 19th, five days after the fall of Fort Sumter. It was true strategical foresight . . .

In pointing out that the prompt proclamation of blockade was strategically an offensive measure of the highest importance, General Ballard has not gone too far. But "true strategical foresight" lies not only in making the right decisions but in making them for the right reasons. As to these reasons, official records show that the proclamation was issued almost immediately on receipt of petitions for protection of commerce from privateers fitting out in Southern waters. The proclamation itself recites the threat of assaults on lives and property of citizens "law-

fully engaged in commerce on the high seas, and in waters of the United States," and the blockade was ordered for the effectual collection of revenues and "the protection of the public peace, and the lives and property of . . . citizens pursuing their lawful occupations."

The outline of the war is excellent but presents no new phase. McClellan's campaigns are discussed at some length and the final decision to abandon the Peninsula campaign and eventually to replace that general given as evidence of sound strategy with these considerations:

1. Lincoln had arrived at the opinion that "McClellan was not fitted for the command of an army intended for offensive operations."

2. McClellan was incapable of treason.

3. Despite strong political pressure, Lincoln would have stuck to McClellan "if he had thought him a competent general."

Of the Emancipation Proclamation, General Ballard expresses the belief that there can be "no doubt about the weight of the military results. The way was barred to foreign intervention and this was perhaps a decisive feature in the war." The reader will perhaps be inclined to consider this a diplomatic rather than a military achievement.

Following the outline of the war, we find Lincoln constantly urging offensive action on his generals, and just before the battle of Gettysburg writing to Hooker: "I think Lee's army and not Richmond is your sure objective point."

Here is a point on which controversies will never end. Military critics have pointed that leaders of both the Union and the Confederacy constantly fought and maneuvered for territorial objectives. This is true but the taking of a position such as to force an enemy to offer battle disadvantageously is operation against his army, and McClellan's Peninsula Campaign must be considered from that viewpoint, as must Grant's constant movement by Lee's right flank in 1864. The strategy urged on Hooker was defensive, notwithstanding the admonition: "Fight him too when opportunity offers."

Of the first interview between Lincoln and Grant, the latter says:

. . . He stated to me that he never professed to be a military man or to know how campaigns should be conducted, and never wanted to interfere in them; but that procrastination on the part of commanders, and the pressure of the people of the North and Congress, which was always with him, forced him into issuing his series of Military Orders . . .

It would appear that President Lincoln was at least doubtful of the advisability of his issuing instructions and orders in detail on military subjects, and his subsequent dealings with General Grant indicate a resolute abstention from interference. Much of Lincoln's greatness was in his recognition of his own errors.

General Ballard draws the following conclusions:

The interesting light that is thrown backward by the Great War shows that Lincoln had a fine perception of the duties of the Higher Command.

1. From the first moment he realized the value of superior naval force and used it.

2. The strategic development fitted in with political considerations, and at the same time was well suited to the conditions of a raw army.

3. The principle of maintaining pressure all along the line was constantly urged.

4. The chief objective, the main body of the enemy, was kept in view with a true sense of perspective.

5. There were no half measures. The questions . . . were to be settled . . . by destroying completely the military forces of the enemy.

The reviewer has expressed his doubts as to the blockade. The strategic development was dictated almost entirely by political considerations, and was particularly ill-suited to raw troops because made prematurely and with little preparation. After the first battle of Bull Run, for at least two years, the chief objective appears to have been the defense of Washington, and the complete destruction of the military forces of the enemy not to have been thought essential to the termination of the rebellion, as indeed it may not have been.

The greatness of Washington and Lincoln rests on no doubtful attributes. Indeed they seem greatest when seen in true perspective as humans who learned from their mistakes and achieved great things despite human weaknesses. Lincoln recognized his own lack of "military genius" and history can but confirm his view.

General Ballard has written an interesting essay, and made a valuable contribution to history, but cannot be said to have proved his theorem.—R. S. A.

Air Service, A. E. F., 1918. By H. A. Toulmin, Jr. D. Van Nostrand Company. 1927. 5¾" x 9". 388 pages. Ill. \$6.00.

In conducting the activities of an army, the commander thereof must know with great exactness the powers and limitations of every element under his control. Without such knowledge, he is liable to the grave faults of either ordering the impossible from some or all of the elements or of failing to utilize their full power. At the entrance of the United States into the World War, our armies were almost totally lacking in aviation materiel suitable for use in war and in personnel trained in the technique of operating such materiel when it should be provided. It is small wonder then that commands and staffs in France, confronted with the necessity for creating an air force for our armies comparable with those of our Allies, should have struggled for many months before tangible results in the way of squadrons at the front began to appear. These commanders did not know, and neither did any one else, what information to send back to the scattered but growing groups of Air Service organizations, nor what to expect from these organizations when they should be available.

A very vivid and real sense of the chaotic state in which the Air Service, A. E. F., found itself in 1917 and the early days of 1918 is conveyed in the first few chapters of *Air Service, A. E. F., 1918*, by Harry A. Toulmin, Jr., formerly Lieutenant Colonel, Air Service, A. E. F., Chief of the Coordination Staff of the Air Service, Distinguished Service Medal of the United States, and one of the brilliant executives from civil life in those swiftly moving days who made possible our timely mobilization of men and materiel. Much of the subject matter of these chapters is intimately connected with the personal story of the author as he studied the problems confronting the Air Service and worked out their solutions. As a testimonial to the cordial relations existing between the French and the A. E. F. Air Service, much of which must have been due to the tactful conduct of the Coordination Staff, Colonel Toulmin has used as an impressive introduction, a letter from Jacques-Louis Dumesnil, formerly Under-Secretary of State for Aeronautics and Minister of Marine, Republic of France.

A book of this character is not written merely as an interesting story although many of its chapters can be read as such. Instead, the writer is impelled by the feeling that he has a mission to perform. Those who read will form their own

opinions as to whether or not the fundamentals of the theorems propounded are sound. In this case, the mission is stated in the foreword as follows:

The primary purpose of this book is to demonstrate the necessity of a preparedness program for our air force. The secondary purpose is to give credit, while sources of information are still available, to officers and men of our own and Allied forces for creating an American Air Service despite our lack of preparedness in 1917, and despite the relatively little assistance that part of this country charged with this duty rendered to our Air Service in France in time to be of any use.

Amplifying the primary purpose stated above, the author propounds eight "genuine lessons" which he hopes can be deduced from the subject matter of his book. Among these are the necessity for complete organization and mobilization plans for the Air Service, the necessity for maintaining manufacturing sources alive, the necessity for a separate promotion list for the Air Service, and for a continued study of the strategy and tactics of the air in schools comparable to the Command and General Staff Schools. That most of these lessons can be deduced from the facts cited cannot be questioned. The validity of others will be questioned by some according to their several experiences and judgments.

The narrative from which, as war experience, the lessons for the future are to be drawn abounds in charts and tables clearly showing the organization of the Air Service as it was worked out by the Coordination Staff down to the smallest details. The organization of this Coordination Staff was largely due to Colonel Toulmin's study of the problem of Air Service reorganization. Upon the presentation of his study to Brigadier General Mason M. Patrick, transferred from the Engineers to the Air Service in late spring of 1918, the plans outlined were approved and he was made chief of the new staff. The remainder of the book is devoted to the organization of the Coordination Staff, the problems solved, and descriptions of the various divisions and sections of the Air Service organization as worked out by that staff. Particular attention is paid to the Supply and Repair Division and to the Personnel Division. By coordinating the work of these two divisions, men and materiel were brought together. The training Division also receives careful and painstaking consideration. This reviewer was particularly interested by the latter as he came into intimate contact with one of its great schools at Tours. "Putting wings on men was the work of the Training Division."

From chaos to organization and discipline is the theme which runs through the entire book. In the beginning we read the following: "But during all of this, our greatest handicap was the confusion that reigned in the Air Service. No man seemed certain of any plan. New programs blossomed and withered day by day. Great prospects involving thousands of planes came and went." Toward the end, after organization and discipline had done their work as they always will, we read: "General Mitchell administered the St. Mihiel operations, the greatest of their kind ever attempted, without a single hitch."—G. B. W.

The Rhineland Occupation. By Major General Henry T. Allen, U. S. A. Bobbs-Merrill Co., Indianapolis. 1927. 5¾"x 8¾". 347 pp. Ill. \$5.00.

Although it has been the lot of American Forces, on a number of occasions, to occupy and administer foreign territory, no occupation has presented the variety and complexity of problems as those experienced in the American Occupation, in conjunction with the Allies, of the Rhineland. General Allen in his new volume

has discussed these problems and their solution, as worked out at the time, in a most impartial and candid manner. As representative of the State and War Departments during the greater part of the Occupation, he is especially qualified to write this historical narrative.

The first part of the volume is devoted to a brief outline of the history of the Rhineland, the advance of the Third United States Army into Germany, and the establishment of military government in the occupied area. The remainder of the book deals primarily with the Rhineland Commission, its problems, and the relations of the American Forces with it. The peculiar position of the American Forces, who, although a party with the Allies in the occupation, were, due to the refusal of the Government of the United States to sign the Versailles Treaty, not a party to the Rhineland Agreement and consequently not officially represented on the Rhineland Commission or under its jurisdiction, is well brought out. This unusual condition naturally resulted in many delicate situations requiring a high degree of tact and force in their handling.

The chapters on the Separatist Movement, Sanctions, and the Occupation of the Ruhr are very enlightening as to the policies adopted by the Americans, British, French, and Belgians toward the Germans. That the American policy of fairness and impartiality was successful, even though at times it conflicted with the interests and wishes of our Allies, or imposed just but vigorous demands on the Germans, is indicated by the universal expressions of regret voiced on the departure of the Americans by both the Allies and the Germans.

The appendices, which contain the Rhineland Occupation Agreement, the treaty between the United States and Germany, the Armistice signed by Germany, a report on the French use of black troops in the Rhineland and a report on the Smeets Case (in connection with the separatists movement) add much in making the volume a valuable reference.—C. M. T.

Report of the Indian Sandhurst Committee. His Majesty's Stationery Office, London. (The British Library of Information, 44 Whitehall St., New York.) 1927. 6"x 9 $\frac{1}{4}$ ". 59 pp. 3s.

In 1918, in recognition of the valuable service rendered by India during the World War, Indians were declared eligible on equal terms with British youths to receive commissions in the British land forces. Since then Great Britain has been experimenting with the employment of Indian officers in the regular forces of India. Eight of the 132 Indian battalions have been "Indianised," but it has not been found this separation of British and Indian officers has been entirely successful. On the other hand, no great disadvantages have been apparent in posting officers of the two races to the same regiments, even though British officers are thus called upon to serve under their Indian seniors. The limited number of Indians who have passed through Sandhurst have demonstrated ability and capacity for command.

Indian cadetships at Sandhurst being limited in number, and the artillery, engineer, tank, signal, and air services, through Woolwich or Cranwell, being closed to Indians, a committee, headed by Lieutenant General Sir Andrew Skeen, K. C. B., K. C. I. E., C. M. G., Chief of the General Staff in India, was appointed in 1925 to consider the possibility of improving the quantity and quality of Indian candidates for commission, and the desirability and practicability of establishing

in India a military college to train Indians for commissions in the Indian Army.

After visiting, through a sub-committee, England, France, the United States, and Canada, the committee recommended (a) a progressive scheme of Indianisation of the Army in India such that by 1952 one-half the total cadre of officers would be Indians; (b) that a military college, with an initial strength of 100 cadets in a three-year course, on the model of Sandhurst, should be opened in 1933; (c) that a limited number of cadetships should be maintained for Indians at the Royal Military Academy, Woolwich, and Royal Air Force College, Cranwell, as well as at Sandhurst; and (d) that the educational system in India be so improved that candidates for commission will not be handicapped by the standards required in the Indian Army. The Government has not yet formed any conclusions on the report.

Campaigns in Palestine from Alexander the Great. By Israel Abrahams, M. A. Oxford University Press. 1926. 6"x9 $\frac{1}{4}$ ". 55 pp. 5s.

This small volume is not, as its title suggests, a contribution to military history, but rather a study of the effect of the campaigns in Palestine on civilizations and religions. It has been said of Dr. Abrahams that he was the most helpful of all Jewish scholars to the student of Christian origins.

The lecturer points out that modern historical criticism is changing our estimate of values as to the decisive battles of human history, and that battles are not to be priced by their immediate results. The Crusades, omitted from Creasy's *The Fifteen Decisive Battles of the World* as indecisive politically, actually left a great impress on human affairs "illustrating as no other Palestinian campaigns have done, the romantic action and reaction of East on West."

Basing his test on Hallem's definition of a decisive event as one whose contrary "would have essentially varied the drama of the world in all its subsequent stages," Dr. Abrahams believes the campaigns in Palestine from Alexander to Allenby to have been among the most decisive in history.

Alexander's victories transferred Judea from Persian to Macedonian suzerainty, made permanent the impression of Hellenic civilization on Asia, and gave the Ptolemies the opportunity which led to the Egyptian suzerainty. There followed the struggle between Egypt and Syria for possession of Palestine during which the country suffered materially, no matter which rival was ascendant. When Antiochus the Great defeated the forces of Ptolemy Epiphanes at Paneion in 198 B. C., Palestine passed into the power of Syria there to remain until Pompey, in 63 B. C., practically reduced it to the condition of a Roman province.

During the Syrian overlordship, and because of the attempt of Antiochus IV to enforce his will that "his whole nation . . . should be one people and that each should forsake his own laws," came the Maccabean rebellions which although eventually put down, saved Hebraism, led not only the Syrians but later the Romans to conciliate Judea, and were "at least in part responsible for the fact that the world emerged into the Christian era with two masters, not with one; with God enthroned as Cæsar."

The Maccabean campaigns are followed quite sketchily, and in a subsequent lecture, the Roman campaign and destruction of Jerusalem (A. D. 70), Bar Cocha's unsuccessful revolt against the Emperor Hadrian (A. D. 114-117), the sacking of

Jerusalem by the Persians in the year 614, the Arabian conquests 636-639, and the horror of the Levantine piracy are touched even more lightly.

The causes and effects of the Crusades, and the usefulness of the Christian sea power, are treated very briefly, with sidelights on the characters of Saladin and Richard the Lion Hearted; there is brief mention of Napoleon before Acre, of the Battle of the Nile, and a bit about Allenby.

These lectures are valuable because of their new viewpoint, as an indication of the effect of modern research on recorded history, but particularly as an incentive to further study and investigation.—R. S. A.

My Army Life. By Lieutenant-General The Earl of Dundonald, K. C. B., K. C. V. O. Longmans, Green and Company. 1926. 5½"x8¾". 342 pp. Ill. \$7.50.

In this volume the Earl of Dundonald has faithfully described many interesting experiences of his varied career as an officer of the British Army. The descriptions of his personal rôle in such important events as the Sudan War for the relief of Khartoum and the South African War are both lucid and informative. The author was an indefatigable worker for the relief from hardships of the service and ex-service man.

As a member of the British Committee on Yeomanry Reorganization in 1900 the author was first to advocate arming these Cavalrymen with the rifle and training them as mounted infantry. As General Officer commanding the Canadian Militia, he was chiefly instrumental in effecting a reorganization that strengthened the bond between Canada and the Mother Country and substituted efficiency for political influence as a prime requisite for promotion in the Canadian Militia.

Upon the outbreak of the World War Lord Dundonald, at the age of sixty-two, divulged a family secret of one hundred years standing by introducing the *Smoke Screen* into the British Army.

The book is one which will be profitably read by every student of the subject, *A Full Army Life.*—J. L. W.

The Man Hunters. By Melville Davisson Post. J. H. Sears and Company, New York. 1926. 5¾"x8¾". 348 pp. \$3.00.

No, this book has nothing whatever to do with Borneo, the New Hebrides, or any other savage land. Its concern is with countries high in the scale of civilization, faced with the necessity of hunting down men for the sake of public safety. *Man Hunters* is "a book on scientific criminal investigation," very pertinent at this time when "the underworld is in revolt" and when in the United States crime of all sorts is on the increase and the criminal is too seldom apprehended and punished. It is comprehensive in its scope; and the great amount of unusual information is presented in a most entertaining and readable manner.

Mr. Post takes up in turn the methods of criminal investigation in the leading European countries, analyzing the motive principal underlying each particular system and citing numerous famous cases and incidents to illustrate its working. We learn that Scotland Yard puts emphasis on one thing only—"to find a distinguishing clue and center its whole intelligence on that one line." This might be called the direct-action, common-sense method; but in a certain class of mystery case there is no essential clue to be found, and this is the type of case that Scotland Yard fails to unravel.

France, in dealing with crime and criminals, prefers diplomacy rather than the strong-arm method. The French secret service man is facile, courteous, ingenious, and delightfully diplomatic. The Germans object that the French agent is not scientific. The English say he depends upon inspiration rather than upon judgment. "But Paris is the only romantic city remaining in the world. It is a rendezvous of all the soldiers of fortune, the adventurers, and flying squadrons of picturesque undesirables. With some knowledge of the French temperament one can understand why the department of criminal investigation in Paris could be expected to use a certain diplomacy in its romantic man hunting." And incidentally, the French agent is usually successful in landing his man.

The German system, naturally enough, is nothing if not exact and scientific; and every phase of detective work is undertaken by a specialist along a particular line. "Criminal investigation in Germany follows the national policy of extreme centralization." "The 'Murder Board' is an original German idea. A homicide mystery is investigated by one of the murder boards from the detective center. This board will consist of a photographer, a surgeon, a chemist, experts on blood-stains and fingerprints, someone having experience in taking molds of footprints, marks of burglar tools, and so forth. Each of these squads is given a criminal mystery to work out. It cannot be put on a second mystery until the first is either solved or abandoned." "Every resource of science is brought to the aid of a criminal investigation through the great laboratories in Berlin and other German cities devoted to the uses of the detective departments of the police"; and the mysteries unraveled by these highly trained men are as marvelous as those unraveled by those detectives of fiction—Dupin, Lecoq, and Holmes.

"But if the detective system of Germany possesses military efficiency, that of Austria-Hungary has the efficiency of the University. It is a system strikingly in advance of anything known to us. In English-speaking countries criminal investigation requires no established preliminary training. Before one is permitted to practice medicine or enter the courts as an attorney, he is required, with us, to take a certain university course and to demonstrate a certain efficiency tested by examinations held by the state. A similar preparation is required in Austria for admission to its criminal-investigation departments." To enter the police department of Vienna, a man must take four years of University work along the lines demanded in tracing down criminals; and to get an appointment as a commissioned officer of the police, he must take five more years of such work at the University. The result is that the men engaged in the criminal-investigation work of Austria are the most highly efficient experts in the world, and the criminal department is an important department of the State.

Italy holds a unique place in criminal investigation. Instead of dealing with the individual criminal and his accomplice, Italy has to deal with organized bands, like the Mafia, the Camorra, the Black Hand, and similar bands less known to the outside world. Naturally no dependence can be placed in local law enforcement, since many of the smaller communities are under the control of these societies; so local police authority gives place to an army police corps directly under the Crown—the famous Carabinieri, "an extraordinary organization, firmly centralized and efficient." Mr. Post's discussion of Italy and her organized criminals is most interesting and instructive.

There are chapters on the Swiss methods of preserving evidence and the old Russian police system. Particular kinds of crimes are taken up in detail—bank looting, forgery, homicide, and the like—and the layman is introduced to the

methods employed by the experts to solve the most baffling of these cases. The mysterious code writings of criminals are explained by keys and diagrams, and the ability of the highly trained Continental expert to trace a law-breaker by his foot-prints is shown to have attained a degree of efficiency that borders on the miraculous.

As to the situation in the United States, Mr. Post, after a critical survey of existing conditions, concludes that "We seem unaware of the very existence of criminal investigation as a science. Its practical results fill us with wonder as the aborigine is filled with wonder at the white man's magic . . . We must consider this science if we are to get rid of crime . . . The courts are adequate but the machinery for the detection of the criminal agent in America is not. Those who try the criminal for his crimes are carefully trained for that work and required to pass comprehensive examinations by the state, while the detection of the criminal is left to the desultory methods of the village constable. Our system is overloaded at one end and bare at the other; crude, unscientific and careless, is the continental comment on it . . . The data in this work ought to be available to every police investigator in America . . . And the general reader who thrills at a detective story will find here detective stories more incredible than any to be found in fiction."—E. L. B.

Along the Rivas of France and Italy. By Gordon Home. E. P. Dutton & Company. New York. 1927. 5½"x 7¾". 328 pp. Ill. \$3.50.

To the average American tourist, the Riviera is a short stretch of the Mediterranean coast at the base of the Maritime Alps, extending from Cannes to Monte Carlo or Mentone. The Englishman will cover a larger strip from Hyères on the west to San Remo or Alassio on the east. Both miss some of the most beautiful parts of the Riviera—or, better, the Riveras, for there are three. From Marseilles to the Italian border is the well-known Côte d'Azur; from Ventimiglia to Genoa is the little known Riviera di Ponente; and thence to the vicinity of Pisa is the less known Riviera di Levante.

"From Marseilles to Pisa" is the author's advice, and his enthusiasm is evident in both his writing and in his illustrations, prepared by himself. That the tourist with limited time should hasten to Nice is but natural. That city is not only central to some of the most beautiful and most interesting of the Mediterranean coast, but it is also the most Parisian of French cities, in which the surroundings for the tourist—probably already familiar with Paris—are less strange. However, we agree with Mr. Home that, given time, it would be a mistake to fail to visit the Italian Rivas. As to the coast strip between Marseilles and Toulon, we are not so sure that the time required here could not be more profitably spent elsewhere.

On the other hand, for the tourist who is passing from France to Italy and who expects to return by way of Venice, Milan, and Switzerland, it is a question whether a journey by way of Nice-Corsica-Livorno will not be more interesting than by way of the Italian Rivas. It will certainly be slower, and if time is limited the Riviera route by *bus* should be taken. The country is too beautiful to miss if travelling by this route—the tunnels along the railway are not—and there are many pretty and unspoiled villages along the whole coast, particularly Rapallo and Portofino.

The author starts at Marseilles and takes us to Pisa, stopping at all the cities and villages, and giving descriptive and historical details. With his artist's eye

he sees beauties that many of us may overlook, but with his facile pen he enables us to enjoy more fully the whole of the coastal strip. The present edition has been carefully revised, particularly in the chapters devoted to Monte Carlo and Mentone. The book will be equally interesting to those who contemplate a journey to Southern France, to those who have visited the Riviéras, and to those who would like to go.

On the Slope of Montmartre. By William Wallace Irwin. Frederick A. Stokes Company, New York. 1927. 5"x7½". 155 pp. Ill. \$2.00.

No American feels that he has seen Paris until he has visited Montmartre, and, once there, he senses the elusive charm of that section even though he may not penetrate beyond the highly-organized tourist routes of pleasure houses. Montmartre has always had a bohemian atmosphere which has made it popular with artists and writers, particularly since the Latin Quarter began to break up. In recent years, Parisian efforts to capitalize this popularity has made Montmartre a section of cabarets, cafés, and dance halls. Slowly the residents are being driven out by the advance of the white lights from the top of the hill and of business from below.

The author, who married and settled in Paris after the war, pictures for us life in a small section of Montmartre still unaffected by the encroachments of business and pleasure. Those of us who do not know Paris can thoroughly enjoy this series of short and humorous sketches, but those of us who are familiar with middle-class Paris can actually see the characters the author presents and can appreciate their peculiarities—the amazing and profane taxi driver, the un-vocal glazier who was never known to smile, the butcher tossing meat back and forth through the air, the pretty flower girl dodging the police because she declines to purchase a permit, the concierge, and all the rest.

Mr. Irwin has caught the atmosphere of Montmartre and in a wide variety of subjects shows us its charm. Equally interesting are the illustrations by Marcel Poncin. We can understand why one is reluctant to leave Paris after once becoming resident on the slope of Montmartre.

What About North Africa? By Hamish McLaurin. Charles Scribner's Sons. 1927. 4¾"x7½". 361 pp. Ill. \$3.00.

"Where shall we spend our vacation this year?" "What about North Africa?" "Well, what about it?"

The answer to this question is found in Hamish McLaurin's book of a winter's trip through North Africa; and the answer is so entertaining and so attractive that the reader is filled with the desire to go to North Africa at the earliest opportunity and see for himself the picturesque and unusual people in their equally picturesque and unusual setting.

The author, when planning his trip from Casablanca, "a New World metropolis in an Old World setting," eastward through Morocco, Algeria, and Tunisia, found there was practically no written information to be had in English concerning travel in this part of the world; and of the books in French "not one had seen fit to cover the entire North African trip as it is possible to make it today, or to treat any portion of it from the viewpoint of the American tourist." Again, "facilities for travelling in North Africa have been improved and extended so rapidly within the past few years that most books on the subject are out of date, in one respect or another, and do not give the reader a proper idea of the comfort

and safety in which he can visit the wonders which that fascinating region has to offer. Now that hostilities in the Riff have been brought to an end, there is nothing to deter the traveller from considering a trip through North Africa in the same light in which he would look upon a voyage to Japan or to India. Indeed, from the standpoint of accessibility and expense, the North African tour is much less of an undertaking than a trip to the countries of the Far East. There is always a certain pleasure to be derived from doing something which comparatively few people have done; and this pleasure a jaunt through the French-governed lands south of the Mediterranean will continue to offer for some time to come."

"A consideration of these circumstances led to the writing of this book. The author of it is quite aware that it is not historically, ethnologically or archæologically complete. It is neither an economic treatise nor, in the strictest sense of the term, a guide book. . . . What it does attempt to do is to give the prospective tourist, particularly the American tourist, an idea of what he is likely to see if he follows the advertised routes of travel, so that he can judge for himself to what extent he may expect to enjoy the experience."

Mr. McLaurin's book completely fills the purpose for which it was written; and the style is so delightful, the word-pictures so vivid, the touches of humor so amusing, one entirely loses sight of the fact that he is being "personally conducted" and reads for the travel interest alone. There is no monotony in the North African trip. The luxurious seacoast cities give place to the fortified mountain towns; and these in turn are replaced by the villages of the desert oases; while now and again there are amazing ruins of the Roman occupation, like the Lost Colosseum of El Djem, rivalling the Colosseum at Rome in size and beauty, sole surviving remnant of the great Roman city of Thysdrus.

For the more seriously inclined reader, there is a tabloid history at the end of each chapter, giving the essential points in the history of the region covered in that particular chapter; and there is much practical information as to hotels, routes, what to buy and where to buy it, and other things it is important to know in order to experience a thoroughly satisfactory trip.

For those who would welcome a trip away from the beaten paths Mr. McLaurin's book is invaluable. For those who must take their travel vicariously from the comfort of their own easy-chair, the book is equally valuable, for it opens up new paths to the imagination and corrects many preconceived ideas of North Africa.—E. L. B.

Travel Outlines of France. Anon. Gray's Publishing Company, New York. 1927. 5"x 7". 94 pp.

This is not a guide book. It is condensed summary of information which can very well serve as a foundation of study by travelers contemplating their first visit to France or for readers interested in France. The authors take up many subjects not to be found in the usual guide book—geography, climate, flora, fauna, agriculture, manufactures, mining, government, education, Army and Navy, art and literature, and so on. The volume endeavors to present briefly those facts which every tourist should know. It therefore belongs to the initial period of preparation and should be studied (not merely read) before the details of route, schedule, stopping places, and other matters are undertaken. So used, *Travel Outlines* will prove to be a valuable addition to the list of books which are necessary to the full enjoyment of a trip to France.

The Forms of Poetry. By Louis Untermeyer. 2nd ed. Harcourt, Brace and Company, New York. 1926. 166 pp. \$1.35.

This little book is called by the author, "A Pocket Dictionary of Verse." It is really somewhat more than this. Half of the volume is devoted to definitions, arranged alphabetically in each of two chapters: "A Handbook of Poetic Terms" and "The Forms of Poetry." The rest of the book is an interesting chapter called "A Brief Outline of English Poetry," in which the development of verse is discussed by periods—Anglo-Saxon poetry, medieval romances, Chaucer's period, Shakespeare, etc.

The foreword states: "It is in no sense an erudite or exhaustive analysis for scholars. It pretends to be nothing more than a simple compendium for beginners and readers interested in the craft of poetry." A "deeper purpose of these pages is the winning of the reader's interest in the structure as well as the spirit of poetry." No one familiar with Mr. Untermeyer's writings—and who is not?—need be told that this book fully accomplishes its purpose.

Nocturne Militaire. By Elliott White Springs. George H. Doran Company, New York. 1927. 5"x 7½". 288 pp. Ill. \$2.50.

There was a very decided impression among the ground troops in the A. E. F. that the American aviator in France played his part in the war with a joyous abandon that was not characteristic of other troops, that he spent much of his time in commuting from Paris to the front, and that he lived as hard at one end of his trip as he fought at the other. This impression is confirmed by Elliott Springs, who shows us the American aviator in England and France, as a hard-drinking, hard-living, hard-fighting young man possessed of the French philosophy of those days—*C'est la guerre*. Mr. Springs knows whereof he writes, for he was a member of the same squadron as the anonymous author of *War Birds*. His dramatic sense and his narrative ability makes this one of the most interesting of the recent books about the war.

APHORISME XXIV

From the collection of circumstances every action takes his warrant, and amongst these, that of time is of greatest moment. For a Souldier not to adventure when he should, is cowardize, not prudence; and to dare when he should not, is rashnesse, not valour. A wise Generall therefore must form his counsels, and frame his actions upon the mould of necessar^y circumstances.—Ward's Animadversions of War (London, 1639).