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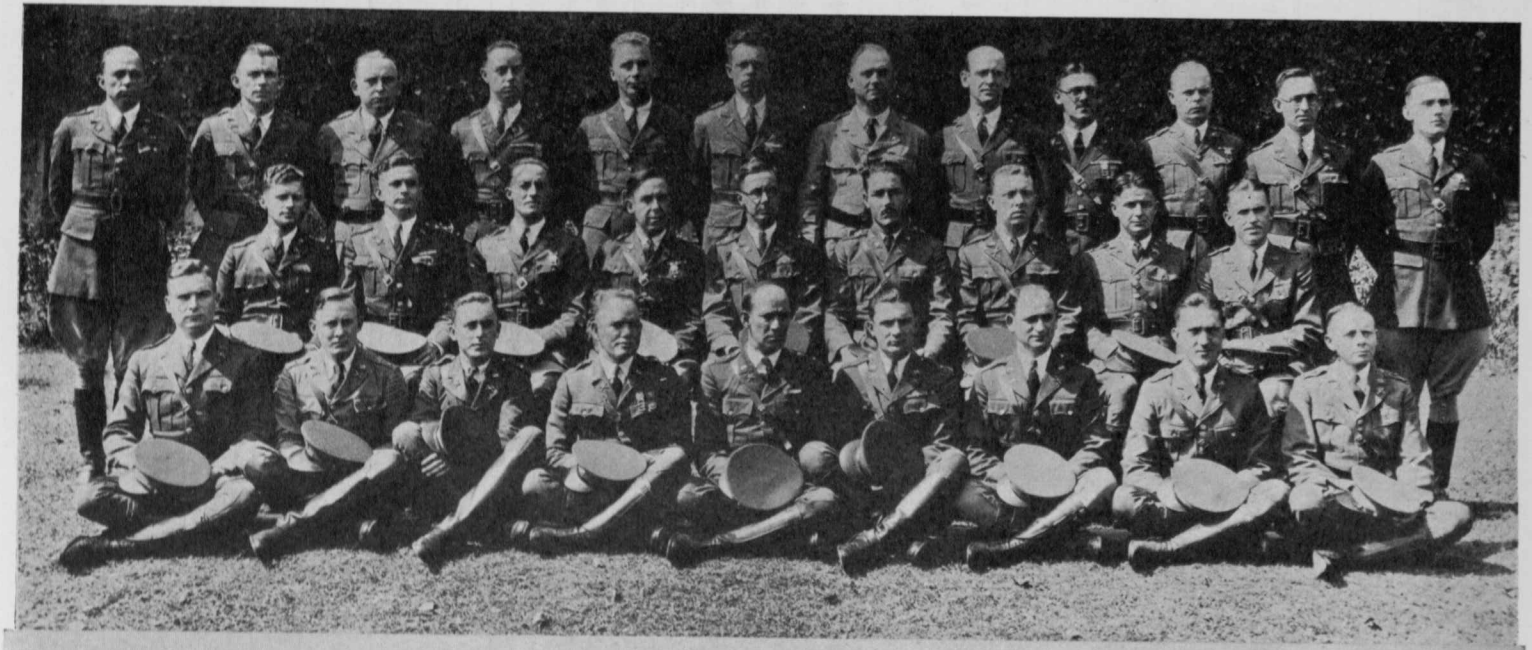

THE COAST ARTILLERY SCHOOL

NATIONAL GUARD AND RESERVE CLASSES, 1929-1930.

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THE COAST ARTILLERY JOURNAL

Volume 71 December, 1929 Number 6

Trans-Continental Movement of a 14-inch Railway Gun

By CAPT. A. L. PARMELEE, C. A. C.

TO the accompaniment of the rain, thunder, and lightning of a typical eastern summer storm the second 14-inch railroad gun for defense of the Pacific Coast moved slowly over the post railroad of Aberdeen Proving Ground to the main line of the Pennsylvania Railroad. Little, if any, encouragement and optimism for a pleasant transcontinental journey could be gleaned from the faces of those who saw us off. It suddenly came to mind that we had disregarded the advice of the sagest militaires by volunteering for this experience. What was to be our lot and luck, then, with such an unauspicious beginning? We wondered.

No post on the Pacific wanted such a desirable and interesting piece of ordnance as 14-inch Gun No. 10, Model 1920, it appeared, for the orders to the convoying personnel directing them to report at Aberdeen Proving Ground on June 10 were suspended until a home for Big Bertha could be found. When Benicia Arsenal was selected as the gun's destination the convoying personnel was hastily assembled. The officers, Capt. A. L. Parmelee and 1st Lieut H. C. Reuter, arrived four days before the gun's departure and had the opportunity of not only receiving some instruction on the materiel but of witnessing the placing of the mount in traveling position from its proof firing emplacement. Proof Assistant Ralph C. Gerdom of Aberdeen Proving Ground, who was designated as ordnance mechanic or the trip, had been working on the gun for about three weeks and was intimately connected with the preparations. The enlisted personnel, consisting of Sergeant Brockie and Privates Hamlett, Hancock and Lam, of the 52nd Coast Artillery (Ry.), did not arrive at the Proving Ground until three hours before the trip began and consequently had no instruction on the mount.

The most vital part of the preparations had to do with the conditioning of journal bearings and the packing of journal boxes, for on these the success of the movement largely depended. Under the supervision of a car inspector of the Pennsylvania Railroad the bearings were examined and the boxes repacked with the long fiber wool packing and Galena Oil recommended as best suited to the requirements of this gun by the officer in charge of the movement of the first gun of this type to Fort MacArthur, California, in 1925. Accessories to the gun and maintenance material for the trip were loaded in two gondolas, which in the train makeup were placed next in front and in rear of the gun. This disposition of the gon-

dolas permitted the muzzle of the gun and the rear outriggers of the mount to overhang with safety in movement. Preparations of the materiel for the trip were made by the Proving Ground personnel with the Coast Artillery officers observing the work.

Having in mind the unsatisfactory accommodations of a fitted-up ammunition car for the personnel which accompanied Gun No. 7 in 1925, there was much interest displayed in the arrival of a tourist sleeper, with porter, at the Proving Ground the day before the trip began. The thought of a real sleeper all to themselves for a journey, which the War Department had estimated would require about twenty-five days, was most comforting to the members of the convoy.

Since the sleeper contained no provision for food preparation, and the convoying personnel (according to the letter of instructions) would have to eat when and where they could, it was deemed expedient to take along a supply of foodstuffs for use when suitable eating places along the route were not available. With the loading of the emergency rations and the procurement of blank forms and stationery, a medicine chest, and the inevitable transportation request, the Coast Artillery was set for the journey.

The contract with the railroads provided for the transport of the gun and accessory cars as a freight shipment to be made in an uninterrupted movement, so far as possible, with the following routing: Aberdeen to Chicago via the Pennsylvania Lines, Chicago to Council Bluffs via the Chicago and Northwestern Railroad, Council Bluffs to Ogden via the Union Pacific System, and Ogden to Benicia via the Southern Pacific Lines. The nature of the movement, then, was such as to preclude demonstration of the gun along the route as was done during the movement of Gun No. 7 in 1925.

The letter of instructions to the officer in charge of the movement

FIG. 1. PREPARING GUN FOR DEMONSTRATION AT BENICIA ARSENAL.

directed the convoying personnel to make observations enroute to determine:

1. The performance of the gun on such a long journey and over a variety of trackage;
2. The manner in which the railroads handle such an enormous load on the road and in their classification yards;
3. Tunnel clearances and bridge strength;
4. The effect of the mount on the track, particularly around curves; and
5. The effect of the weather as an impairment to the proper functioning of the gun and mount.

To insure success of the movement the officer in charge was directed:

1. To advise the trainmaster of the prescribed limitations on speed for straightaway running, on curves, and on grades;
2. To have journals inspected at every stop of any duration and to have a qualified member of the convoying party present during such inspection;
3. To permit only authorized materials to be used in journal boxes;
4. To see that parts of the mount were secured and that the gun and mount were properly maintained; and
5. To make accurate record of damages to railroad property caused by the mount, of replacements made enroute, and of supplies consumed.

Progress of the movement was kept in the form of a log book, in which was recorded principally the duration of all runs and stops. In the compilation given hereafter the stations shown coincide generally with railroad division points, or include portions of trackage where the topography or trackage features have bearing on the speed or performance of the mount. The only other record kept was a detailed diary which proved useful in the preparation of the report on the movement.

FIG. 2. BENICIA ARSENAL—GUN IN TRAVELING POSITION.
Taken on day of completion of movement.

From	*To*	*Trip mileage*	*Average speed while running M. P. H.*	*Route features*
Aberdeen, Md. (June 28)	Perryvile, Md. (June 28)	6	6.5	Curves Trestle
Perryville, Md. (June 28)	Enola, Pa. (June 29)	84	9.3	Curves Mountains
Enola, Pa. (June 29)	Huntingdon, Pa. (June 29)	99	8.0	Curves Mountains
Huntingdon, Pa. (June 29)	Altoona, Pa. (June 30)	37	8.4	Curves
Altoona, Pa. (June 30)	Gallitzin, Pa. (June 30)	12	6.0	Sharp curves Upgrade
Gallitzin, Pa. (June 30)	Pittsburgh, Pa. (June 30)	101	9.0	Curves Mountains
Pittsburgh, Pa. (July 2)	Canton, O. (July 2)	100	10.2	Curves Level
Canton, O. (July 2)	Crestline, O. (July 2)	92	12.2	Level Straightaway
Crestline, O. (July 2)	Dola, O. (July 3)	51	17.0	Level Straightaway
Dola, O. (July 3)	Fort Wayne, Ind. (July 3)	81	15.2	Level Straightaway
Fort Wayne, Ind. (July 3)	Colehour (Chicago) (July 4)	139	14.4	Level Straightaway
Colehour (Chicago) (July 4)	Kedzie (Chicago) (July 4)	17	6.2	Curves Through City
Kedzie (Chicago) (July 4)	Clinton, Ia. (July 5)	138	13.8	Level Straightaway
Clinton, Ia. (July 5)	Cedar Rapids, Ia. (July 5)	81	13.0	Level Straightaway
Cedar Rapids, Ia. (July 5)	Boone, Ia. (July 6)	121	10.8	Level Straightaway
Boone, Ia. (July 6)	Council Bluffs, Ia. (July 6)	145	13.3	Level Straightaway
Council Bluffs, Ia. (July 7)	Omaha, Neb. (July 7)	3	16.4	R. R. Yards Bridge
Omaha, Neb. (July 7)	North Platte, Neb. (July 8)	281	14.7	Level Straightaway
North Platte, Neb. (July 8)	Sidney, Neb. (July 9)	124	15.4	Level Straightaway
Sidney, Neb. (July 9)	Cheyenne, Wyo. (July 9)	102	14.4	Level Straightaway
Cheyenne, Wyo. (July 9)	Rawlins, Wyo. (July 10)	173	14.7	Curves Mountains
Rawlins, Wyo. (July 10)	Green River, Wyo. (July 10)	134	13.2	Curves
Green River, Wyo. (July 11)	Evanston, Wyo. (July 11)	100	13.8	Curves
Evanston, Wyo. (July 11)	Ogden, Utah (July 11)	76	13.0	Curves Downgrade
Ogden, Utah (July 12)	Carlin, Nev. (July 13)	249	14.3	Straightaway Great Salt Lake
Carlin, Nev. (July 13)	Imlay, Nev. (July 14)	130	16.3	Level Straightaway
Imlay, Nev. (July 14)	Sparks, Nev. (July 14)	138	15.7	Level Straightaway
Sparks, Nev. (July 15)	Norden, Cal. (July 15)	54	13.1	Curves Upgrade
Norden, Cal. (July 15)	Roseville, Cal. (July 15)	85	14.5	Curves Downgrade
Roseville, Cal. (July 15)	Sacramento, Cal. (July 15)	18	13.3	Level Straightaway
Sacramento, Cal. (July 15)	Benicia, Cal. (July 16)	56	12.9	Level Straightaway

The importance attached to the movement by the railroads and the limitations on speed prescribed by the War Department caused the gun and accompanying cars to be handled as a special train, known throughout the trip in railroad circles as the "Coast Defense Gun Special." The train left Aberdeen, Maryland, with the following makeup: two idler cars for braking effort, gondola with gun accessories and lubricants, gun gondola with gun accessories, sleeper, idler car, and the caboose. The placing of the idler cars between the locomotive and the gun served also to better distribute the train's weight and to place the inflammable oils and gasoline for operation of the gun's power plant a safe distance from the locomotive. In addition to the regular train crew the "Special" began its movement with a trainmaster and a car inspector as added members, a practice followed by the other railroads concerned in the movement.

Due to the fact that the gun had traveled prior to this movement only from Watertown Arsenal, where it was assembled, to Aberdeen Proving Ground, the twenty-eight journal bearings were but little worn in to their journals, thereby creating a condition in which each square inch of actual bearing surface would have to bear an enormous pressure. Were all of the bearings (6" x 11") fully worn in, each would have to withstand a pressure of approximately four hundred pounds to the square inch, one much greater than that imposed on the bearings of commercial rolling stock, with the exception of wreckers. The Ordnance officers directly concerned with preparation of the gun for the trip advised, on account of the condition of the bearings, that a speed of ten miles an hour be not exceeded for the first four hundred miles, at least. Accordingly, the speed prescribed at the start was from eight to ten miles an hour. It was expected that the prescribed speed would not be maintained within from three to five miles an hour due to the difficulty of holding down the modern locomotive to low speeds, and this assumption was always taken into consideration when prescribing the speed.

At 3:00 p. m., June 28, the train began its westward trek on the main line of the Pennsylvania with the hope of making Harrisburg, Pa., in the morning. As the bridge over the Susquehanna River into Havre de Grace was being traversed, whistles calling out the wrecking crew could be heard. Leaving the main line at Perryville on the freight tracks into Enola (across the river from Harrisburg), but a short distance had been traversed when it was learned that the tracks ahead were blocked by an earthslide. The wrecking train was let by and it was not until four hours later that the tracks were opened and the eastbound passenger trains, held up at the slide, were cleared to permit resumption of the movement. The opportunity to make a roadside eating place for supper was gone so the emergency rations had to be tapped. Private Hamlett demonstrated that he was a resourceful soldier by preparing an appetizing meal on the caboose stove.

Enola, Pa., was reached in the morning in time for breakfast and the

trainmaster very obligingly led us to the best restaurant afforded by the town, a division point of the railroad. While the trip thus far had been quite uneventful so far as adverse performance of the gun was concerned, the sinuous trackage and hilly country passed over had caused some journals to heat far more than others. Then began the never ending quest for information as to what constituted running heat, a matter discussed with railroad men all along the route, but never answered to the satisfaction of our efficient and conscientious Ordnance mechanic.

Between Enola and Huntingdon a test run at fifteen miles an hour had been contemplated to determine whether or not the bearings would withstand increased speed but the excessive heating of some journals at ten miles an hour was convincing that a higher rate of speed would have to be foregone for some distance to come. At Huntingdon, a division point, a large assemblage was on hand to inspect the gun, information of its expected arrival having been spread apparently over the back fence. While the instructions to the officer in charge directed him to notify mayors and recruiting officers in advance of the gun's arrival, it was found that the time of arrival, the duration of a stop, and the place that the gun could be viewed, could not be foreseen. Being a freight movement the gun train was kept on freight tracks and away from railroad stations and congested terminals whenever possible. Before leaving Huntingdon the sleeper was iced and watered and the commissary augmented by a supply of foodstuffs ordered in advance from Enola by an accommodating trainmaster.

Picturesque Pennsylvania and the novelty of the trip kept all in buoyant spirits but it was beginning to dawn on the longlegged members of the convoy that the berths were at least a foot too short. The absence of much straightaway trackage up to this point was a good test of the gun's mobility and confidence in its steadiness was slowly being gained. When Altoona was reached, then, there was no anticipation of trouble on the famous Horseshoe Curve, to be traversed on leaving the city which boasts of the largest railroad shops in the world.

An operating delay of three hours at Altoona gave the journals ample opportunity to cool before Horseshoe Curve was encountered. This scenic stretch of trackage is upgrade for about twelve miles and contains curves varying between five and nine degrees. The opportunity presented itself for gathering data required and satisfying ourselves that the mount was flexible on curves, that the enormous weight of the gun (three hundred and sixty-five tons) had no adverse effect on the tracks, and that the gun could be passed simultaneously by trains either side with plenty of clearance between. The activity of the car inspector in getting around the gun to observe journal boxes on these curves was interesting to observe.

Aside from the suggestion of a track foreman that we "go rabbit huntin" with the gun and the taking of pictures by the official

photographer of the railroad, nothing of particular interest happened until Pittsburgh was reached.

Then the need for more special journal box lubricant, Galena Oil, became imperative with the near exhaustion of the initial supply. Before leaving Aberdeen it was understood that additional oil would be ordered from there for Pittsburgh delivery but its failure to be on hand is explained by the receipt of a telegram two hours east of Pittsburgh authorizing the officer in charge to purchase such oil as was considered necessary. A layover was then made mandatory until the oil could be obtained from the Galena Refinery at Franklin, Pa. Upon notification that the oil would be dispatched immediately to Union Station, in the heart of Pittsburgh, by Railway Express, it became necessary to find a means of getting it to the train at the Sharpsburg freight yards, some three miles up the Allegheny River and on the opposite bank from Pittsburgh proper, at night. To avoid traffic at railway terminals in the Pittsburgh district the gun train was parked in the Sharpsburg yards. A visit to the offices of the Railway Express for the purpose of arranging for delivery of the oil resulted in no success, despite a presentation of the need for night delivery so that the movement could be resumed. Then, if ever, there was a need for an expense account so that a truck could be procured. The recruiting officer could furnish a truck in the morning but nothing could be done at the time by any of the army agencies since the personnel had scattered to the four winds, for the night. Cooperation of the Pennsylvania Railroad was then solicited with the result that upon arrival of the oil at Union Station it was immediately put aboard a train bound across the river and it was picked up as the gun train resumed its westward movement. The time spent in Pittsburgh was not lost, however, for the opportunity was given to thoroughly inspect the gun, to have the batteries of the sleeper recharged, to permit the convoying personnel recreation and a bath, and to exhibit the gun to several thousand citizens of a great industrial section.

The prevalence of straightaway track between Pittsburgh and the Chicago district caused the journals to give less concern than heretofore. The non-availability of a light locomotive between Pittsburgh and Fort Wayne caused some engineers to complain about the difficulty of keeping to the fifteen miles an hour maximum speed prescribed with the powerful M-1 type freight locomotive assigned to the train. In several instances it was clearly indicated that "pulling the cannon" was not relished by enginemen and trainmen alike because of the low speed and long hours imposed on them. This feeling can be appreciated when one realizes that most of the freight and passenger runs take considerably less than eight hours to make but carry with them full pay for eight hours' work, and that overtime does not begin until ten hours have been put in.

At one Ohio stop the officer in charge, thrilled with the consciousness

that he had authority to use the telegraph in the interest of publicity, presented an official telegram to the Western Union. The attendant shied off the transaction on the grounds that he "had to pay fer one once," at the same time producing the Western Union bible anent Government telegrams, which provided for payment in advance and reimbursement later. When the Comptroller General hazard was called to his attention he readily agreed to take a chance.

An operating delay of two hours at Fort Wayne permitted a thorough inspection of the gun to be made and a few minor parts, which had become insecure, to be given attention.

A lighter engine took the train out of Fort Wayne and into the freight yards of the Pennsylvania at Colehour (Indiana-Illinois state line), some fourteen miles out of Chicago, where the gun arrived early in the morning of July 4. After a hearty breakfast at the Swedish Cafe, recommended by railroad men, a hasty return to the train was made so that Sambo, the porter, could be given several articles of wearing apparel which he had agreed to take up to the Loop for pressing. During the morning the gun was given the necessary maintenance attention and lubrication for the trip to the Chicago and Northwestern yards at Kedzie, and engineers of the Pennsylvania measured the gun to determine whether the street tunnels around Union Station could be passed through with sufficient clearance. Taking Sambo at his word that he had arranged to have the sleeper serviced and the batteries recharged there appeared to be nothing to do but relax until the early afternoon when the trip through Chicago was scheduled to begin. When this time arrived the sleeper had not been touched and Sambo had not returned from the Loop, a matter of serious moment for he had in his possession some vital wearing apparel. Nothing to be done, however, but to get going.

Due to the doubtful strength of a bridge on the Chicago Belt Line Railroad over the Drainage Canal the route through the city was decided upon. Three hours were required to make the seventeen miles to Kedzie but some poor trackage (drainage water) had to be taken, and curves of fifteen and sixteen degrees passed over.

On arriving at Kedzie the officer in charge was asked to call the Pennsylvania freight station on the Southside and upon doing so was informed that Sambo was there in an exceedingly unserviceable condition but with a bundle under his arm. The geographical discrepancy between Sambo and Kedzie made it necessary to recruit another porter hastily for the Chicago and Northwestern officials were eager to get going and escape the evening passenger train departure. The sleeper was detached long enough to be reserviced, including a change of batteries, and upon reporting of the new porter the train resumed its journey with the superintendent of the Chicago-Clinton division in charge. This official was quite confident that the bearings could withstand a speed of thirty-five miles an hour but

the temperature of the journals at the prescribed speed of from fifteen-eighteen miles an hour convinced him otherwise.

The Chicago and Northwestern has few curves and level trackage, both conducive to good time. At Cedar Rapids, the railroad officials assented to a request of Col. C. B. Robbins, formerly Assistant Secretary of War, for a stopover of two hours at that place, and he with a party of friends inspected the gun with considerable display of interest.

The appearance of the gun in the Middle West attracted large crowds of interested citizens all along the route and many mentioned the trip of the first gun of this type in 1925. Arrival at one Iowa town found the fire

FIG. 3. DEMONSTRATION OF THE GUN AT BENICIA ARSENAL AT ITS STORAGE POSITION.

engine dashing up a road adjacent to the railroad tracks. Inquiry from a civilian who had boarded the sleeper when the train arrived revealed the information that he, as captain of the local National Guard Field Artillery battery and as such interested in recruiting his organization up to strength for an approaching encampment, had had the town fire siren sounded to attract the populace, a measure which he admitted might cause him to be reproved but which he hoped would yield some recruits.

Due to the fact that the gun was in Chicago on July 4 it was impossible to procure a second drum of Galena Oil on that day and since it appeared that the supply obtained at Pittsburgh might not last out the trip, a second drum was ordered from the Kansas City agency for delivery at Omaha. Reported washouts on railroads between Kansas City and Omaha made it uncertain that the oil would be at the designated place when the gun arrived so the officer in charge arranged for a stopover at Council Bluffs to await the shipment. It was also time for a periodic inspection of the gun

and the weekly bath for the personnel. Incidentally a convenient bath was always to be had in the yard showers at railroad division points.

No sooner had the train come to a stop at Council Bluffs than the chief special agent of the Union Pacific reported with one of his men for instructions regarding guarding of the gun in the yards. He stated that during movement on their lines the train would have a traveling special agent, a personage who always accompanied important freights. The train was immediately moved to the Union Pacific freight yards at Council Bluffs for parking during the stopover and inspectors began their survey of the train. It was discovered during this inspection that the draft gear on the gondola next in front of the gun was broken so the car was taken to the shops for repairs, which required a half-day. The expected arrival of the gun had been announced in one of the Omaha newspapers and a crowd of about five hundred had gathered at the station in Omaha only to be disappointed when the gun remained across the river. However, the layover was on a Sunday and several hundred persons journeyed to the freight yards to view it. Why anybody should want to climb underneath the gun was beyond comprehension but when a few youngsters did so a procession of men, women, and dogs followed until halted by the railroad police.

A search of Omaha failed to reveal the whereabouts of the Galena Oil ordered from Kansas City and not desiring to delay the movement longer the trip was resumed late in the afternoon of the next day. Three hundred miles west of Omaha the needed oil was put aboard the Gun Special, it having been transported gratis by the railroad, in keeping with the excellent service and cooperation rendered at all times by the Union Pacific. The train left Council Bluffs with a box car added, this car having been equipped with wrecking tools and one hundred gallons of Galena Oil procured from another railroad. During the movement of Gun No. 7 in 1925, both the Union Pacific and Chicago and Northwestern Railroads were using Galena Oil for journal box lubrication but discontinued it soon afterwards, a fact not known until Chicago was reached. The oil provided by the Union Pacific appeared to be of lower standard than that of Government specifications and so was not used on the gun.

Unexpected progress was made between Omaha and Cheyenne due to high-grade roadbed, straightaway route, and few operating delays. The even pace set by the locomotive engineers on this stretch provided as good, if not the best, engineering received on the entire trip.

A short stopover was made at Cheyenne to pep up the batteries on the sleeper and to let the railroad electrician attempt to adjust matters so that charging of the batteries would take place at fifteen miles an hour speed. To insure some illumination in the sleeper it was necessary to use the minimum of lights. Several members of the garrison at Fort D. A. Russell took advantage of the stopover to see the latest in railroad artillery.

The gun met its equal in size in the giant locomotive that took the train

out of Cheyenne for the journey over the mountains. The gradual ascent of two days travel from Omaha to Cheyenne was now to be undone in a few hours by a rapid downhill run to Rawlins. Careful engineering brought about a descent with no journal bearing trouble developing. Anyone who has traversed the length of Wyoming by rail can appreciate the monotony of a trip through such desolate country at fifteen miles an hour. Nothing to do except to bask in the sunlight on one of the gondolas. The conductor, observing the freights shooting by us, bemoaned his fate in having drawn the "cannon" when a faster train would have yielded him more time off and eventually more money.

At Green River the train was held for four hours because of train congestion on the road but compensating for this delay was the extension of courtesies of the trainmen's club and showers, by the stationmaster.

West of Evanston began one of the steep descents of the trip and while the sharp curves caused the journals to attain temperatures above normal nothing happened to delay the movement. Uncomfortably warm weather was encountered in the scenic Weber Canyon, and Ogden, reached at dusk, was undergoing a hot spell. The superintendent of Union Station at Ogden designated a private car spur adjacent to the station for the sleeper and gave the gun and accessory cars the track in rear of the depot where the sister gun had been spotted four years before. It was a long jump to Benicia so it was deemed advisable to lay over in Ogden sufficient time to enable the sleeper to be serviced and the gun gone over.

The next night the last leg of the journey was embarked upon and the Great Salt Lake was soon upon us. The railroad trestle across the lake, twenty-seven miles in length, some of which is filled in, is very sturdy and fifteen miles an hour was the speed prescribed. It was interesting to learn that through the action of the highly saline water the piling today is much stronger than when it was driven.

In the East the glooms had predicted slow progress over the single track Southern Pacific but their information proved not to hold true. While sidings had to be taken occasionally the train moved along with the usual daily mileage hung up. The increasingly heavy shipments of California produce and oriental silk to the eastern markets will soon create a traffic problem on this line, however, so the Southern Pacific expects to have the entire stretch between Ogden and San Francisco doubletracked inside of three years.

Crawling along through the great open spaces our thoughts began to dwell on the nearing completion of the journey, for two weeks on the road with its irregular hours of eating and sleeping was beginning to produce ennui. An incident for rejoicing was the arrival at Carlin, Nevada, of a westbound passenger train bearing our clothes, entrusted to the porter at Chicago. Every city from Omaha to Carlin had brought reassuring news anent the clothing from a worried Pullman representative.

When it became apparent that Sparks, Nevada, a division point three miles east of Reno, could not be reached until late in the afternoon, the officer in charge requested a stopover at Sparks for the night so that the most hazardous portion of the movement, that over the Sierra Nevadas, might be made in the daytime. It was quite important, also, that the performance of the gun be observed closely over these mountains in order to be able to answer accurately the questions contained in the letter of instructions to the officer in charge. When the train arrived the ubiquitous photographer was waiting to do his stuff and he obtained several excellent views of the gun for use in the official magazine of the railroad and for release to the newspapers of the San Francisco Bay region.

The train inspection completed and the addition of fifteen reefers (refrigeration cars) having been accomplished, the train moved out to begin shortly its climb up the eastern slope of the mountains. Enroute the gun was greatly admired at Reno by a bevy of likely looking divorcees (expectant or accomplished, who knew?) who might have been favored by an exhibition stop had not the Quartermaster General been so solicitous about a speedy trip so that the per diem charge on the sleeper could cease.

From Sparks to Summit there is a rise of two thousand five hundred and thirty-nine feet in fifty-three miles and from Summit to Towle a three thousand two hundred and sixty-six feet drop in thirty-six miles, with long sharp curves, surely a section of railroad designed to put a railway gun to the test. Behind one of the huge locomotives, that pull a hundred-car train over these mountains, the gun train climbed and winded at the prescribed speed of fifteen miles an hour. Everything was progressing so favorably that it was not considered necessary to make a stop for journal inspection but at Boca, eight miles from Truckee (a favorite rendezvous for devotees of winter sports) signs of smoke from a journal box demanded a halt. It was evident that the numerous curves were causing excessive heating of the journals and that a reduction of speed to ten miles an hour was advisable.

At Norden, west of Truckee on the downgrade, the train paused in a snowshed to permit the crew and convoying personnel to partake of the noon-day meal. This was had in an old-style dining car lodged in the side of the mountains. Due to doubtful strength of the siding in this snowshed the gun train was permitted to occupy the main line track while the crack westbound Gold Coast Limited was made to pass on the siding.

Descent of the western slope was marked by frequent stops for inspection of journals and by low speed, necessities of movement, but ones which gave better opportunity for enjoying the incomparable scenery and bracing air of this picturesque country. As the train wended its way over the mountains and plunged through the numerous tunnels and snowsheds, Donner Lake, set in the valley like a jewel, recalled to mind the tragedy of the family, whose name it bears, during the gold rush of '49. Truly this lake and setting provided the scenic high spot of the entire trip.

The steel wheel shoes and airbrake systems proved their efficacy in the splendid performance of the gun during the steep descent. As a matter of professional interest, Trucks A and D, the front and rear trucks of the four on the gun, are provided with independent air brake system and cylinders, reservoirs, triple valves, and other necessary parts to form an independent unit.

With the Sierra Nevadas behind us the movement was just the same as "in," as the modern expreses it, and there could not be other than a feeling of exultation in the realization that the most difficult part of the entire trip had been completed without the bearings acting up. We were fortunate, perhaps, in having had as trainmaster the same official who accompanied the first gun over these mountains four years previously.

At Roseville, California, railroad officials proposed a night's stopover as an alternative to pushing onward to Benicia, but the apparent good condition of the bearings, and a desire to reach our destination as soon as possible, led to a decision to continue the movement.

Of some concern was the discovery at Sacramento of a small piece of babbitt metal in one of the journal boxes. It was no time to lose confidence in the gun now, so after observing the apparent good condition of the bearing concerned and getting the expert advice of car inspectors, who thought it safe to continue without changing the bearing, the journey was resumed at slow speed and with inspection stops scheduled for each ten miles.

Adversity failed to appear and at 4:30 a. m., July 16, the gun train arrived in the yards at Benicia (and the mosquitoes, of which Jersey might well be proud, became active). Four hours later the gun was delivered to the Commanding Officer of Benicia Arsenal, none the worse for the seventeen and one-half days' journey over three thousand forty-seven miles of varied trackage. For the second time in four years the railroads linked in the direct route across the country had transported with safety, care, and comparative dispatch, seven hundred thousand pounds of railway artillery.

After the convoying personel had had opportunity to rest up from the pleasant, although fatiguing, trip a thorough inspection of the gun was undertaken to determine condition of bearings, security of parts, and evidence of adverse action due to travel and weather. Journal bearings were found to be worn in on the average between sixty and sixty-five per cent and to be in good condition with the exception of one, which was slightly pitted in places and which gave evidence of waste-grab. This was replaced by one of the spare bearings taken along on the trip. General condition of the gun was found to be excellent.

As soon as the convoying personnel had completed the work of inspection, preparation of the gun for demonstration to the arsenal employees, who were to be charged with its use and maintenance, was begun. On the fourth day after arrival, the initial demonstration was given before a large assemblage of persons on duty at Benicia Arsenal and citizens of the vicinity.

A reflection on the events and experiences of this trip recalls to mind a willing cooperation of the officers concerned in the movement at Aberdeen Proving Ground and Benicia Arsenal, personal solicitude of railroad officials and crews for the comfort and welfare of the convoying personnel, and general public interest wherever the gun appeared.

The trip justified the following conclusions:

1. The route traversed contains no trackage or structures that will not accommodate this gun.
2. The mount as designed insures steadiness and flexibility in movement and security of parts, with minor exceptions which can be easily eliminated.
3. The maximum speed of twenty-five miles an hour prescribed by the Ordnance Department is excessive unless journal bearings are fully worn in.
4. The railroads deem such a movement to be highly important and could be expected to handle future movements with care, dispatch, and with the bestowal of their best service.

Having had this unique and interesting experience it is believed that most, if not all, of those who made this trip would readily volunteer for another. How comforting it would be, however, to have sufficient officers in the party to not only receive valuable instruction in the movement of railway artillery but to provide a bridge quorum out in No Man's Land.

War Department
Office of Chief of Coast Artillery
Washington, D. C.
September 25, 1929.

Subject: Commendation

To: Staff Sgt. Marton Rothenberg, C. A. C.
52d C. A. (Ry.) Fort Eustis, Va.
(Through Commanding Officer 52nd C. A.)

My attention has been directed to your efforts in connection with the development of a new type of telephone for Coast Artillery use and I desire to take this means of expressing to you my appreciation for the initiative, professional zeal, and devotion to duty which your work has evidenced. It is work such as you have been doing that enables me to take great pride in the accomplishments of that fine body of loyal men who constitute the enlisted specialists of the Coast Artillery Corps.

It gives me great pleasure to add my personal thanks to this official letter.

Andrew Hero, Jr.,
Major General,
Chief of Coast Artillery

That Reserve Job

By MAJ. REUBEN NOEL PERLEY, C. A. C.

EDITOR'S NOTE: *Major Perley is now with Coast Artillery Organized Reserves in the Fourth Corps Area with station at New Orleans. The majority of Regular officers know very little of reserve duty and yet in time of war more than fifty per cent of the commissioned strength of Coast Artillery would be Reserve officers. Many Regular officers imagine that a detail with the Reserves is four years of leave. It can be so. But most of us have higher ambitions than this. The detail is educational in that it enables us to appraise our associates of the civilian component with more fairness and justness. Association brings mutual understanding and appreciation. It should be remembered that the Regular Army never fights any wars—it only runs them. It is our friends of the Reserve upon whom the greatest burden falls. When M day comes again let us be prepared to put a better team on the field than we did the last time.*

SINCE but forty-three Coast Artillery officers are on Organized Reserve duty, years will elapse before familiarity with the character of this class of duty will become general. An interchange of views through the columns of the COAST ARTILLERY JOURNAL by officers on duty with the Reserves offers the promise of a manual of duty or at least a school of thought on the subject. The writer would welcome a recount of the professional methods of others, and submits the following paragraphs as a sort of line of departure in the hope that each method and activity will become the topic of later articles by other unit instructors.

The newly detailed instructor will find it of everlasting value to visit Coast Artillery District headquarters, and the office (a going concern) of the nearest Coast Artillery unit instructor. These orientation visits will result in a knowledge of the office routine, the records and reports, the pertinent regulations and orders, and the atmosphere of the job. On the same occasion the new incumbent should provide himself with sample copies of a myriad of form letters which will prove time savers during the year.

A probable further reaction from this visit of inquiry will be the realization that clerks are scarce and wholly insufficient in numbers. Regulations provide one for each reserve regiment. The wisdom of the man who wrote the regulation will soon be apparent, for indeed this number is essential if the maximum utility is to be obtained from the time of the officer. Appropriations are never adequate for a ratio of one clerk to three regiments. The unit instructor therefore is obliged to dissipate much valuable time in clerical details. As a further consequence, innumerable friendly, personal, contact-letters are never written to Reserve officers, and the abominable form letter floods the mails.

It might be stated in passing, that a suitable clerk is one qualified to be a Reserve officer. If he is one, he is persona grata at all officer meetings in many useful ways. A clerk with junior officer capacity, and properly instructed, will be able to conduct by himself, routine correspondence and clerical detail, leaving the officer free for business trips, the preparation

and conduct of classes, the correction of correspondence lesson sheets, and contact work. No lower type of clerk is suitable on reserve duty.

Upon arrival at new station, office space is usually found in a federal building, though occasionally in rented space. While adequate for an office, frequently the rooms are suitable only for the small instruction classes, making recourse to hotels and clubs advisable for larger assemblies.

Some unit instructors recommend luncheons and suppers to foster class attendance. Actually local conditions will govern, and the advice of leading Reserve officers should be obtained. Moving pictures of military and training subjects have universal appeal and the supply maintained at Corps Area headquarters should be utilized. Talks by selected Reserve and Regular officers on specialized subjects occasionally can be incorporated in the Winter's training program and the attendance thereby boosted.

During the day Reserve officers will drop in at the office in considerable numbers, thus affording excellent opportunity for developing friendships. The resultant interference with office routine can be alleviated in a degree, by encouraging the practice of lunching regularly at a selected restaurant, where the unit instructor can discuss current business informally, and further his acquaintance. For wholesale extension of acquaintance, however, the contact camp remains the masterpiece as an effective medium.

While discussing Reserve friendships, a word might be said about the social aspect of Reserve duty. The idea prevails with some that Regular officers and their families believe themselves of a superior social fabric. Such an attitude will quickly nullify much hard work in the office and the class room. On the other hand, night suppers at the instructor's home, following the smaller classes, are social events which take well. In this the officer's wife finds her opportunity to help make the tour of duty successful. Inasmuch as the great majority of Reserve officers are college graduates, their social standards compare with that of the average Army post, and far from losing social caste, the officer's family is benefited by a broadened outlook on life. Valuable contacts are made.

The purely professional duties of the officer divide themselves into two parts. First, there are the officers of whom he is instructor and which are spread all over the countryside, and second, the officers of all branches residing within the community in which he is stationed.

Reserve officers resent formality. They dislike the official letter. Each officer of the units, residing at a distance, must be won over by a continuing personal and informal correspondence, by which he concludes that the instructor is quite human (this is a pleasant shock to him), and deeply interested in the welfare of the individual Reserve officer. Advice must be given on a wide range of professional subjects. If these contact letters are properly toned they are the means of securing enrollments in correspondence school courses, in local branch, or troop schools, and for active duty training. In towns having no Regular officer, they may even be the means

of inducing Reserve officers to organize classes to be conducted by one of their number.

Also with the officers residing at a distance, there will be a continuous round of communications on subjects of appointment, reappointment, discharge, promotion, and on active and inactive duty training. The clerk should be competent to handle these and see that all routine letters are in the mail as called for by the tickler. The same applies to communications regarding the Reserve enlisted personnel, who come in for considerable attention. They have to be enlisted and discharged. Most of them are C. M. T. C. graduates and correspondence school students preparing for commissions.

But a small percentage of eligibles take correspondence school courses. Even so, a hundred or more lessons in a wide variety of subjects will frequently be on the desk awaiting correction. The instructor must know his stuff to correct these lesson sheets accurately and expeditiously. It is even possible that he will join his children in the daily grind of "home work," much to their delight.

In dealing with the community in which the instructor resides, one cannot afford to be unduly partial to the favored branch. Officers of branches other than Coast Artillery predominate, and classes should be provided for all. The writer conducts five classes, one day class and four at night, as follows: two troop schools, one branch school, one combined branch school, and one General Staff class.

The day class is in methods of conducting pistol and rifle practice. The class meets during the noon hour on an indoor range constructed for the purpose in a warehouse located in the heart of the business district. Although this is a Coast Artillery regiment, unit school officers of other branches and units predominate and are welcome.

Incidentally, the National Guard uses the same range, and sixty policeman per day go through a prescribed course of shooting at hours not in conflict with the Reserves. It may be argued that coaching policemen is not in line of duty for the unit instructor. However, the policemen are our first line of defense in internal disorder, and the assistance of the Regular officer is appreciated.

The evening troop school is unique and popular. The number of officers attending the class increases regularly. It consists in practical work in the exercise of command, imparting instructions, in the use of the voice, and in disciplinary drills and ceremonies. The writer has found it expedient to organize a volunteer drill company of young men of C. M. T. C. age, drawn partly from college and partly from high schools. About eighty boys have enrolled for this class. The number could easily be doubled if the space in the local armory permitted. There is a move on foot to make the drill company a permanent institution. It is now in its second year.

The Coast Artillery branch school and the Command and General Staff

school, covering as they do, correspondence school material, need no special mention, but the method used in the combined branch school may be of interest. In this large class, which solves a continuing problem featuring organization, mobilization, troop movement, and minor tactics, all instruction is given by Reserve officers. This feature of prepared talks by several Reserve officers at each session results in added interest, and in considerable voluntary research, and preliminary group sessions of instructors. There is no doubt that a thorough knowledge of the subject ensues. At the close of each session a problem or questionnaire on the technique of the subject matter is issued. Extra time credit is awarded for satisfactory replies.

While this article pertains primarily to the inactive duty status of Reserve officers, it may not be inopportune to recite that during the recent active duty periods of two regiments, Reserve officers conducted the training. They gave all lectures, of which there were four daily, they conducted artillery and machine gun firing, and all drills, wrote all orders and reports and analyzed both practices. In short, the camp was operated in its entirety by Reserve officers. Regular officers functioned as critique officers only. The results were most gratifying. The volume of voluntary work gotten from Reserve officers was surprising.

Sitting on the bank and observing the swimming instructor is one way to learn to swim. A better way is for the student to enter the water and progress by actual experience, supervised and coached and encouraged by the instructor. The same principle applied to Reserve training uncovers and tests the talent of the Reserve officer, and by removing him from the class of student officer, with the inferiority complex which characterizes the student, develops him rapidly as an officer of the Army of the United States. There is no doubt in the mind of the writer, that adoption of the principle of supervised self-instruction, increases tenfold the effectiveness of the Regular officer.

The average Reserve officer has had World War experience, or is a graduate of an R. O. T. C. unit. He is educated, intelligent, and capable. He is grounded in the fundamentals. What he needs is refresher work in fundamentals and technique. This is best accomplished by placing at his disposal the necessary facilities, texts, and manpower. The unrestricted exercise of command in C. M. T. Camps is ideal, and if the duties assigned the individual officer are sufficiently specialized, and *are announced to him at the beginning of the indoor season,* thus giving him a fair opportunity to prepare himself, invariably he will turn in a creditable performance at camp. The same logic applies to his work with volunteer drill companies.

The interest of the Reserve officer cannot be sustained by a review of fundamental instruction alone. He is keen to obtain information of the latest weapons, methods, and tactics. The annual assembly of instructors at Aberdeen Proving Grounds on Ordnance Day and to witness a week of test firing of the latest antiaircraft equipment would enable the instructor

to satisfy this desire, as would regular reading of the COAST ARTILLERY JOURNAL. In imparting instruction to Reserve officers, there are two characteristic viewpoints to contend with—the inferiority complex of some toward all things military and the self-satisfied attitude of some having but a superficial knowledge but speaking the language. Both can be met by the system of self-instruction referred to above. Its success is contingent upon the element of human interest, and the problem of class attendance becomes one of master-salesmanship and personality. However, even these considerations do not alter the fact that many Reserve officers are travelling men, and no small number subject to change of station. It is well if the Regular Army instructor be blessed with patience, perseverance, tact, imagination, and optimism.

Only a minority of Reserve officers are interested in any form of training. The majority attained their military goal when they accepted an original commission. This viewpoint may be expected to prevail until R. O. T. C., Organized Reserve, and C. M. T. C. activities are headed up in a single reserve bureau or section of the War Department. Meanwhile, if the R. O. T. C. student and the C. M. T. C. trainee can be taught that the second lieutenant's commission is the beginning, and not the goal, and if the Reserve Officers' Association will successfully solicit members from the graduating classes, the instructor of Reserve units will expend less time in selling reserve training to Reserve officers. As it is he will find an outlet for all his energy and a test of his wits.

Reserve officers desire to be promoted. In this respect they are not unlike Regular officers. They are willing, however, to meet prescribed requirements. Promotion need not be a delicate subject. Frank support of all aspirations for promotion is an asset in building up interest in classes. Regulations, and limited vacancies, amply protect the Government against undue promotion.

By the same token, active support of the Reserve Officers' Association not only promotes National Defense but is reflected directly in added interest in all forms of training. Combined branch classes should be coupled with Chapter meetings. The local State Department quadrupled its membership during the past year, partly through the organized support of Regular officers. A general increase in class attendance resulted. The secret of this unusual membership increment, was the promulgation and execution of a program of departmental activities which appealed to prospective members as worth while.

The personal relationship between Regular and Reserve officer resembles that between members of a select club. Each deals with the other on a basis of gentlemanly courtesy. The Reserve officer studies the military profession much as one would prepare a part in amateur dramatics, that is, not too seriously, but with a desire to use correct technique. Army discipline and customs of the service in particular, are creations for play-actors and the Regular Army. Actually, Reserve officers are well disci-

plined, but there is no thought of compulsion associated with the word. Discipline in its highest form is perfect team work. This kind of discipline appeals to Reserve officers.

The professional qualities exhibited by the Regular officer have a direct bearing on his usefulness. He habitually wears the uniform. It should be immaculate, a visible standard set for Reserve officers to instil respect for the service. The same applies to punctilious attendance at classes and to thorough preparation of conferences. Reserve officers quickly note that a conference is poorly prepared. They approve of Regular officers who participate in appropriate community activities. As these could easily take the entire time of an officer, some discretion is required. Membership in the most progressive civic organization is a practical necessity. Other alignments may suit the taste of the individual.

The services of Regular officers are sought on National Defense and patriotic committees, and some local prestige can result from participation in purely community activities, such as the Boy Scout movement. There is no end to requests for public addresses. Fortunately, this offers an opportunity to sell to the community the merits of a reasonable and adequate National Defense, an important function of officers on Reserve duty. Until an officer can deliver a creditable public address he should remain for duty with troops, and practice.

A friendly helpful association with National Guard authorities will be repaid twofold in reciprocal cooperation. Reserve officers of appropriate branch gain much practical benefit from attachment to National Guard units. The unit instructor will be needed from time to time as a member of National Guard boards, to instruct an occasional class, or to give talks. The same applies to R. O. T. C. units to a limited degree. Some R. O. T. C. units accommodate as many as fifteen Reserve officers as assistant instructors, to the benefit of all concerned.

The annual C. M. T. C. procurement program proves a costly diversion to some unit instructors. The organization of voluntary drill companies may solve this problem, since bulk enrollments result. The local State quota was filled on the first day of the drive. Since no other State equalled this record, the methods must have been sound. Thirty-eight applicants were examined in one school in one day.

Indeed "that Reserve job" does not consist in four years of retirement on full pay. By the time the officer has been on Reserve work a few months, he comes to the realization that the voluminous routine of his office can be conducted by clerks, of whom he has an inadequate supply. At the same time, he finds that the organization, personal contact, and training duties are absolutely unlimited, and that a corps of officers could be kept busy on useful activities. He finds himself a counsellor and advisor and Jack-of-all-trades in all things military, and retires at night tired but happy in the thought that he is ministering to the needs of the largest component of the war-Army of the United States.

Coast-Artillery-Shy Porto Rico

As seen by a C. A. Reservist

By 1ST. LIEUT. VICTOR GONDOS, CA-RES.

IT is noticeable that most amateur writers, when commencing an article, first indulge in excuses for the writing and publication thereof. So in the present instance, unable to overcome that tendency, it may be stated that the sole excuse for this rather rambling paper lies in the probability that Porto Rico is a terra incognita to the generality of Coast Artillery officers due to the lack of representation of that branch of the service in the Island.

Lately it was my lot to spend several months in our principal Caribbean possession, having been sent there by the Federal Government as architect for the Porto Rican Hurricane Relief Commission. This body, operating under the War Department, has the mission of disposing of seven million dollars, appropriated by Congress, for the rebuilding of the Island's roads, schoolhouses and farms which had been fearfully destroyed by the San Felipe hurricane of September, 1928.

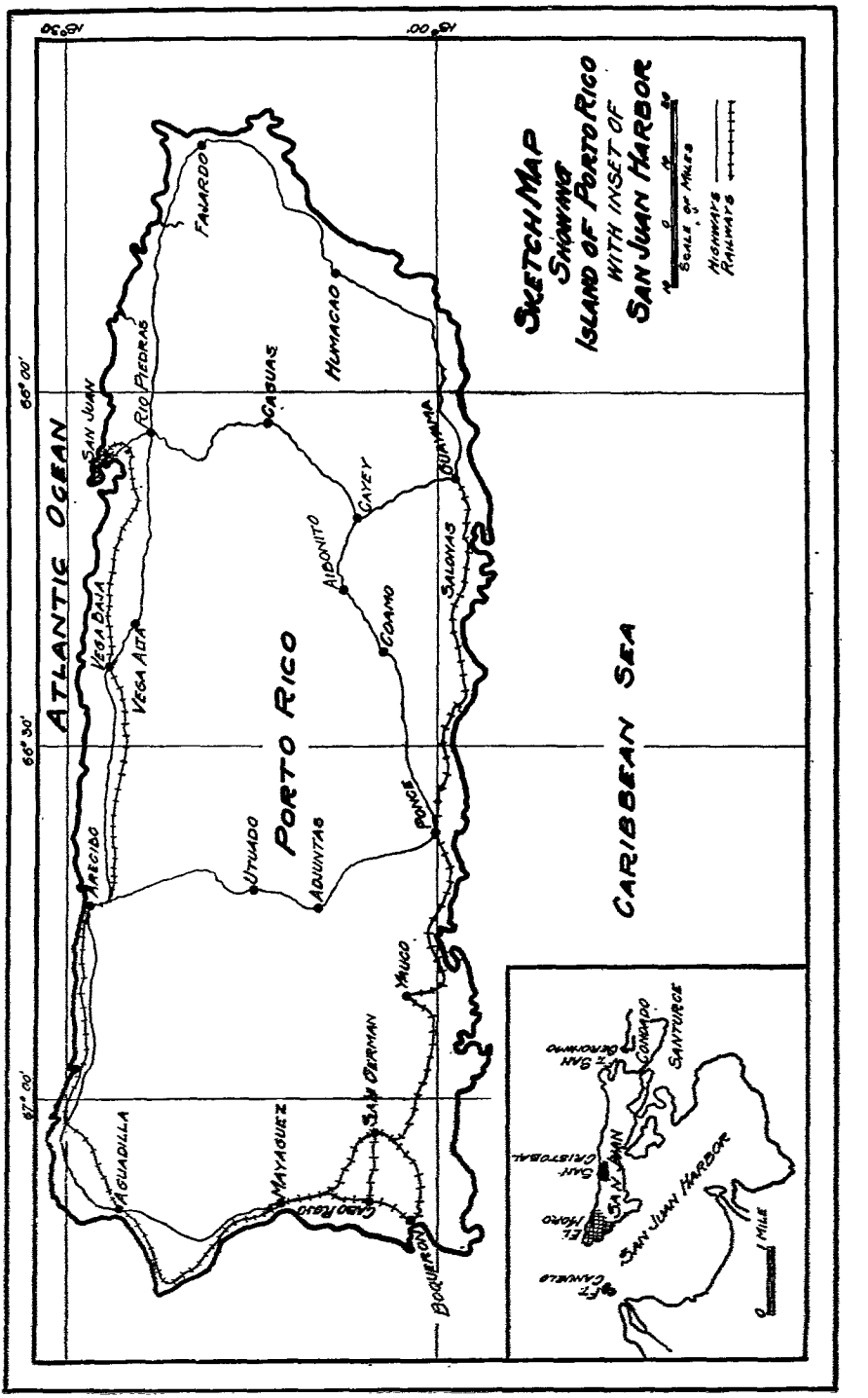
As a Coast Artillery Reserve officer, whose principal military alma mater is the school at Fort Monroe, I have always been much impressed by the redoubtable works that once functioned as Fortress Monroe. Having seen, in addition, a few of our other colonial or early republican forts the impression deepened that old Fort Monroe was probably the finest and greatest example of old time military engineering in the Western Hemisphere. But more recent observations tend to the conviction that the former impression was a narrow and provincial one. This is merely by way of leading up to the point that the old Spanish fortifications of San Juan, the capital, are rather breath-taking in their scope and extent and even though nothing of exact technical data can be adduced herein, a considerable portion of this paper is devoted to them.

The material immediately following is separated into three main divisions: The American Defenses; the Spanish Defenses; General Comment on Climate, Topography, Transportation, Population, etc.

The American Defenses

The present garrison of Porto Rico consists solely of the 65th Regiment, U. S. Infantry. It seems strange that not a single piece of coast artillery ordnance exists on the Island. In 1898 the Spaniards had a total of seven thousand two hundred and nineteen men and four hundred and seven officers and of this number seven hundred and thirty-two officers and men belonged to the artillery.

The 65th Infantry is also known as the Porto Rican Regiment, for all the enlisted personnel are native Islanders, though most of the officers are


SKETCH MAP
SHOWING
ISLAND OF PORTO RICO
WITH INSET OF
SAN JUAN HARBOR
Highways
Railways
ATLANTIC OCEAN
CARIBBEAN SEA
PORTO RICO
SAN JUAN
RIO PIEDRAS
FAJARDO
CAGUAS
HUMACAO
VEGA BAJA
VEGA ALTA
ARECIBO
UTUADO
ADJUNTAS
AIBONITO
CAYEY
GUAMO
PONCE
SALINAS
GUAYAMA
YAUCO
GUAYANILLA
MAYAGUEZ
SAN GERMAN
CABO ROJO
BOQUERON
SANTURCE
CONDADO
SAN JUAN HARBOR
MILE

Americans. The Porto Rican makes a good soldierly figure. They are a very smart looking body of men, and it must be said that the National Guard units of the Island are not far behind. Their Guard, in appearance, marching, and soldierly bearing would considerably outpoint many of our State Guard units and also some of the Regulars the writer has seen.

The existence of this military élan is at first puzzling but on perusing some data on the Island's ethnology it becomes apparent. From the earliest times of the Spanish occupation it became customary for officers and men whose service had expired while in the Island to remain and acquire residence there instead of returning to their Spanish homeland. Of the officers quite a number were of distinguished old country families. Thus this military blood was infused into Porto Rican life and it is manifested even at this late date in the carriage and demeanor of the Porto Rican soldier. And a word may be inserted here, too, of the Insular Police. They carry themselves splendidly, are a clean-cut and well-formed body of men, and if results count, one of the most efficient body of police in the world today. Undoubtedly the lonely, nocturnal pedestrian on the mountain roads of Porto Rico is safer from attack than at 42nd St. and Broadway or Woodward Avenue in Detroit. During the World War, they as well as the people in general proved their loyalty to the Old Flag by enthusiastically volunteering as well as oversubscribing their quotas to the various war loans.

It is fortunate indeed, though, that in 1917-18 we had complete command of the sea, for, despite the patriotism of our Island citizens, we were in no shape whatever to make a serious defense against an even moderately powerful naval force, not to mention aircraft. It is hardly possible that we shall be as favorably situated in any future conflict. Yet, there lies the populous island of Porto Rico, in the middle of the West Indies archipelago, directly between two sea lanes leading to the Panama Canal, and apparently no provisions whatever for stalling off a possible foe or preventing the forcing of the Mona Passage.

It would seem that even if the larger harbor defense armament cannot be afforded, at least some provisions would be made for a temporary aerial defense—not only for the sake of Porto Rico but to provide an outer defense for the Canal.

As everyone knows, the Antilles are so situated that they provide a complete Atlantic screen for the Canal, which is particularly advantageous with reference to present day and probable future warfare in the air as well as on sea. It is axiomatic that the time to pick up, destroy or turn back the bomber is not when he is upon your works but as far away from them as possible. With the greatly increased radius of action of future bombers and observers it will, no doubt, be possible to launch them from the ocean side of the Antilles for an attack on Panama. To forestall this it would seem feasible to provide an outer scouting screen by establishing an Air

Corps base in Porto Rico, and of course coincidentally antiaircraft troops to render the necessary ground defense. The present National Guard outfit in the Island could be converted to A. A. purposes by a skeleton training battalion of Regulars.

A mechanized force, such as the one suggested, would find mobility conditions rather good in Porto Rico, despite the hectic mountainous character of the country in the interior. There are very good macadam or other hard surfaced roads connecting all parts of the Island, which is some one hundred miles long and forty wide, containing three thousand square miles of territory. Level, firm ground suitable for aircraft base and A. A. positions may be found along the coastal strips and in several spots in the interior

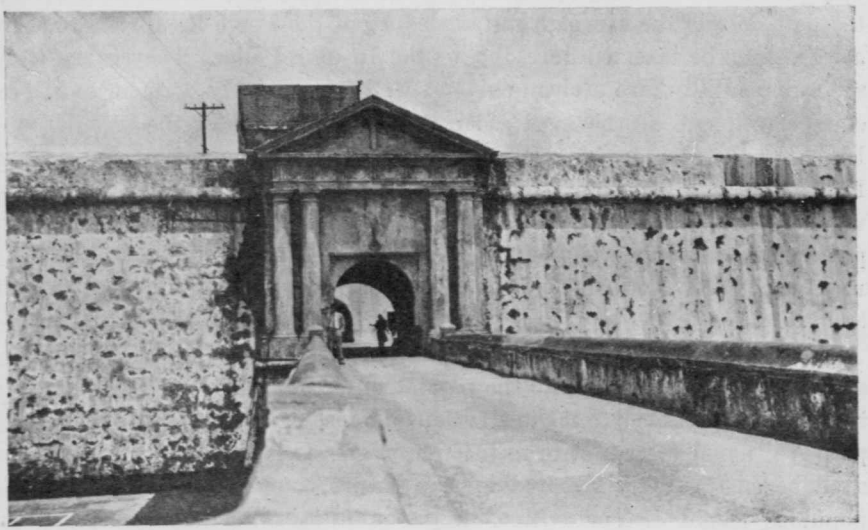


FIG. 1. A GATEWAY OF THE CENTURIES.
The sole and official entrance to ancient and battle-scarred San Felipe del Morro. 1538 A. D.

such as the plains of Caguas and Cayey, but in the main the broken character of the interior does not lend itself to landings. At Cayey, however, the U. S. Navy has one of its largest wireless posts and since it acts as an important link in relaying messages to and from Arlington and Panama to points in the South Atlantic, etc., it seems desirable to secure it with some potential means of aerial defense. At present some companies of the 65th Infantry occupy temporary barracks in the immediate neighborhood, but infantry hardly constitutes protection in tomorrow's air warfare.

The Spanish Defenses

The old fortifications of San Juan, the capital, were really extraordinary, particularly for territory of such modest economic value. The enormous expense and generations of labor were justified because of the

vital strategic rôle the Island played in the guarding of Spain's lengthy lines of communication with the Isthmus of Darien, Peru and the west coast of South America. The galleons, richly laden on their way to Spain, would stop here in case of storm or hostile pursuit, or would touch at one of the lesser ports if only in need of water and supplies.

The entire city island of San Juan was surrounded by walls of masonry, twenty or more feet thick, with a continual series of embrasures for guns and beautifully formed, circular, domed sentry boxes jutting out from the

FIG. 2. ONE OF THE MANY BEAUTIFUL SENTRY POINTS ALONG THE WALLS.

walls at all salient points, while at four critical positions particularly strong forts or citadels stood guard. These citadels are still existing but only a part of the walls are extant.

The four principal works of the San Juan defenses were named San Felipe del Morro, San Cristobal, San Geronimo, and San Juan de la Cruz.

San Felipe del Morro was commenced in 1538 and thus takes rank as one of the oldest forts in this hemisphere. However, in 1584 it was redesigned and woven in with a larger scheme which was elaborated by Juan Heli, a distinguished Spanish architect and military engineer. At that time Heli was on his way from Spain to Havana, where he had been sent by the Spanish government to design the projected new fortifications and which, by the way, are still existing in an excellent state of repair. However, it was not until 1777 that Morro was fully completed and in the interim had added much glory to its traditions by successfully standing several hard sieges.

It was attacked by the British under Hawkins and Drake in 1595, and it was here that that famed old seadog, Hawkins, met his end when a cannon ball from Morro sped through a port hole of his flagship and struck him dead. The British were beaten off and the gold-laden treasure ships in the harbor of San Juan, which were the objective of Elizabeth's admirals, were saved. During this period the fortified works consisted of seventy guns, one thousand five hundred Spanish regulars and eight thousand militia. Since King Philip had often complained of the exorbitant cost of his San Juan works, in this instance alone the fortifications proved a good investment for His Catholic Majesty of Spain.

In 1598 the English once more returned to the attack, but this time under the leadership of the Earl of Cumberland. The Earl, evidently having been forearmed by the previous futile attempts by sea, didn't waste any effort in matching ships against forts but decided to assault by land on the rear of the fortress. Landing up the coast, he crossed to the island of San Juan by capturing the bridgehead of San Angel and then the city itself, thus completely isolating El Morro by land and sea. Since Morro at that time was not sufficiently provisioned, it was compelled to capitulate for the first and last time. The Earl's forces were in occupation for five months when an epidemic broke out and the English were compelled to save themselves by withdrawal.

In 1625 the fortress was bombarded for days by the Dutch without result. Finally, harking back to the days of chivalry, the issue was decided by single combat between the two rival commanding officers: Admiral Boudewyn Hendrickz for the Dutch and Captain General Juan de Haro for the Spanish. The Admiral was worsted in the encounter, but the Dutch nevertheless sacked the city of San Juan before retiring. Since the valiant garrison was shut inside El Morro it could not prevent this act of vandalism, though it could compel the retirement of the foe by its stubborn defense. It is perhaps worthy to note that Admiral Hendrickz never fully recovered from his wounds and died a year later in New Amsterdam, now New York.

By the time the next great siege occurred, additional defenses had been constructed and the entire island of San Juan was rendered about as impregnable as probably any other place has ever been in the Western Hemisphere.

The great citadel of San Cristobal was begun in 1635 and was located on the sea side, about half-way between El Morro at one end and San Geronimo at the other end of the island. It was finished in 1771, coincidentally with the smaller fort of San Geronimo. It is interesting to mention that from the battery of El Caballero, in San Cristobal, was fired the first shot of the Spanish-American War in Porto Rico, May 10, 1898. Two days later Admiral Sampson opened, so uselessly, the bombardment of San Juan's ancient defenses.

Besides these works there was the small fort of San Juan de la Cruz,

located on the little isle of Cañuelo, directly athwart the entrance to the harbor and in effective support of El Morro in guarding the gateway. Cañuelo, as it is ordinarily referred to, dates from 1610.

These additional fortifications were built during a long period of peace for Porto Rico, lasting from the Dutch siege of 1625 to the third British attempt in 1797. The British landed again, after the manner of the Earl of Cumberland, not on the island of San Juan, but on the adjacent mainland, in what is now the modern suburb of Santurce. They planted their guns on the site of what is now the present luxurious Hotel Condado-

FIG. 3. SOME MORE OF THE WALLS, WITH THE LITTLE ISLE OF CANUELO IN THE MIDDLE BACKGROUND.

Vanderbilt, which may be of particular interest to Coast Artillerymen as this hotel is a part of the chain to which the Chamberlin-Vanderbilt at our own Fort Monroe belongs.

In this instance, however, the tactics of Cumberland were completely frustrated by the splendid defense of the tactically well-placed forts. San Geronimo tenaciously guarded the bridgehead of San Angel. The vast, brooding San Cristobal rendered both sea and land bombardment futile. El Morro, though the old daddy of them all, was more virile than ever, and assisted by Cañuelo, rendered the forcing of a passage into the inner harbar impossible. The British took counsel and deciding that again prudence was the better part of valor, beat a retreat and never again returned. It was the final British assault on Porto Rico, and indeed no other was ever again attempted by any other power until Sampson's guns opened on a May day in '98. So again for a whole century San Juan's guardian angels knew not the bark of guns in anger.

One hundred years of feast days and church holidays relieved the several generations of garrisons during their monotonous round of guard duty. Their sternest duty was to act as turnkeys for the guarding of

political prisoners who for one or another reason proved too obnoxious for the delicate sensibilities of an iron-handed Spanish military rule. As previously remarked, the blood of these garrisons was ultimately mixed with that of the regular population, imbuing the Porto Ricans with that instinctive love of the military which they seem to possess in good measure.

FIG. 4. AN INCLINED PLANE FROM ONE FIRING LEVEL TO ANOTHER IN EL MORRO.

On such steep slopes guns were dragged up.

General Comment: Climate, Topography, Transportation, etc.

Since this is intended only for light copy, it will be necessary to summarize and call finis on further impressions of Porto Rico.

The Island, then, was discovered by the indefatigable Columbus, but its first governor was Ponce de Leon, who is credited with the founding of the present capital at San Juan.

The insular population at the beginning of the nineteenth century was still only about one hundred and fifty thousand. By the time Uncle Sam took charge it had risen to nine hundred thousand and since 1898 to approximately one million two hundred and fifty thousand souls. At the time of the Spanish conquest only eight thousand aborigines are supposed

to have dwelled on the Island whose ancient Indian name was Borinquen. The Indians mostly died out, so that the predominant elements of the population today consist of sixty-five per cent whites, thirty per cent mixed and five per cent pure colored (negro). The vast majority of the mountain dwelling peasantry are illiterate, undernourished and suffering from anemic diseases, particularly a species of hookworm. The average stature of the well-nourished classes is about medium and inclined towards a stocky build and dark complexion. Among those that are literate the same average of intelligence obtains as in continental United States. The official language is bilingual, both Spanish and English being compulsory, but only the younger generation is moderately conversant with English. The people

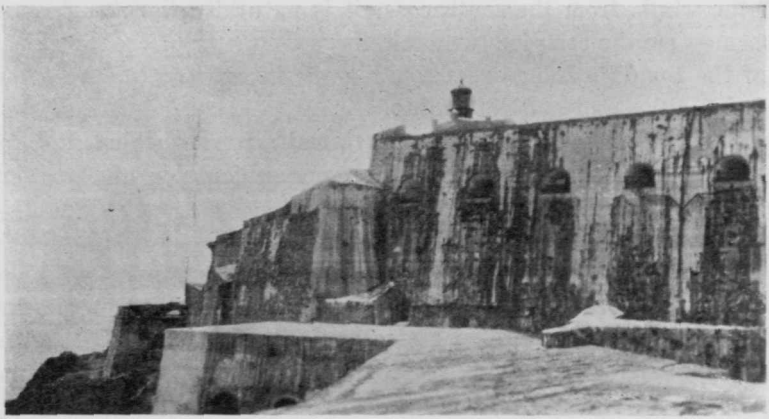


FIG. 5. ANOTHER VIEW OF THE FORTRESS, SHOWING THE MASSED AND POWERFUL WALLS, AND THEIR HEIGHT ABOVE SEA LEVEL.

are the most orderly and law abiding in Latin-America. Despite occasional, ill-considered political spell-binding the Islanders prefer to maintain their political connection with and their citizenship in the great northern republic, although there seems to be a belief abroad that we haven't extended to them as much of a helping hand as we might have had we been more sympathetically conscious of their hitherto unsolvable economic problems. Though there is also hardly a doubt that they haven't aided themselves to the extent that lay in their power, for the reason that they expend far too much energy on the absorbing and furious pursuit of politics and the forensic arts rather than on the more prosaic and hard-headed pursuits of industry, technology and commerce.

There is also a likelihood that our continental system of education has by no means answered the Islanders' needs but rather complicated their problems, as the average Porto Rican, as soon as he learns to read and write, aspires to become a lawyer, a doctor or a politician, and entirely overlooks the necessity for mechanics and merchants. Yet in the importation of

modern American mechanical appliances they are quite progressive, particularly in the use of automotive transportation which, in turn, is aided by the fortunate possession of a good system of hard-surfaced roads.

If, in the future, Coast Artillery officers are detailed to Porto Rico they need not be concerned about climatic conditions, for the writer firmly believes that it is a hundred times more pleasant, during the summer, to live in the Island than in Washington. As a rule, throughout the year the climate is salubrious, the temperature range small, varying from sixty-five to ninety degrees Fahrenheit. Sunshine is almost constant, breaking through the showers even during the short rainy season. The northern coast, from Aguadilla through Arecibo and San Juan to Fajardo is particularly helped by the daily blow of the trade winds. Since the mountains cut off the winds from the south coast it is naturally warmer there. But at the same time the completely mountainous character of the interior, with parts of the Luquillo Range rising as high as three thousand feet, renders the interior quite cool and refreshing.

There are no large rivers but many small streams which flow to the ocean or the Caribbean Sea, depending upon which side of the Luquillo watershed they are located.

Porto Rico has the distinction of being the healthiest island of the tropics and free from many of the poisonous reptiles and insects of other regions. It is so densely settled, however, that all traces of jungle growth have long since been obliterated and along with that all wild life. So in that sense the Island is not truly tropical but all the stage scenery of palms, thatched huts and ragged native peasantry are there.

As to public utilities: electricity and auto bus lines cover the entire Island. There is a narrow-gauge railroad half-way around the Island, from San Juan through Arecibo, Aguadilla, Mayaguez to Ponce and Guayama, but this is used mostly for the hauling of sugar and other freight. Nearly all travelers either use the bus lines or hire private cars.

No extra precautions are necessary to keep clothing, leather and metal work in good shape, but a weekly airing in the sun is desirable. Furniture and all other woodwork, except very hard woods, are constantly subject to the destructive attacks of a species of boring ants, for which, insofar as the writer is aware, no satisfactory remedy or deterrent is available. Furniture mortality is therefore likely to be very high.

The principal products are necessarily agricultural, consisting of sugar, tobacco, coffee and bananas. And while the writer cannot adduce statistics on this score, he firmly believes that in event of a major conflict, the people of Porto Rico could also produce—for the defense of our common flag—a round one hundred thousand men of loyalty and good soldierly value.

A French Conception of Leadership

EDITOR'S NOTE: *The following extracts from an article on leadership prepared by Colonel Lucas of the French Army and published in the Revue Militaire, (1927) are reprinted in the belief that the French conception of this qualification, so important in the military profession, will be of interest to our readers. Although the original article has been considerably shorn, that which follows represents the thoughts of Colonel Lucas on the subject without benefit of editorial interjection.*

THE rôle of the leader is defined in the Provisional Field Service Regulations (French) in the following terms:

"The rôle of command is to conceive, prepare, and conduct the operations within the scope of its assigned mission."

A leader must naturally possess many qualities to carry out such a responsible and complicated task. It must be said at the beginning that these qualities do not have the same importance, depending upon the rank of the hierarchy from which they are considered; some concern more especially the officers in immediate contact with the troops, who fight with them, while others pertain to officers of higher rank. However, most of them concern all ranks, regardless of their functions.

The qualities common to all leaders are, of course, more numerous than those which pertain especially to the high or low command whatever the rank or function. They are, in fact, indispensable to the person upon whom has been bestowed the prerogative not only of commanding men but of requiring from them, in certain moments, the sacrifice of their lives—the most precious thing in the world.

The commander, therefore, must be truly a "somebody," and to make himself obeyed without afterthought, he must impress himself upon his subordinates by an unquestionable superiority in the intellectual, professional, and moral domain.

Intellectual qualities are those of the mind which serve to conceive either an operation or a maneuver. They consist mainly in the imagination and judgment.

The imagination is that faculty of the intelligence which enables a person to visualize future events, to make the most probable hypotheses, to see the most probable eventualities, in short, to conceive the picture of the struggle as near to reality as it is possible to visualize.

However, if this imagination is not complemented by judgment it will be more harmful than useful, because it would then tend to ramble. Judgment enables a person to see things as they are and not as we would like to see them, so that facts are given their relative importance and decisions are based upon evidence and realities. To possess judgment is to visualize clearly the consequences of an event, estimate quickly the reason for or against a decision, and discern the most advantageous decision to make. This quality is often called "glance" (Note: Vision?). When directly

applied on the actual field of battle it implies the idea not only of judgment but also of rapidity.

But just as the imagination must be tempered by judgment, judgment itself must be supported by cold reasoning and by a highly developed sense of realities and possibilities.

Judgment is applicable not only to things but to men. To know men, to see through them, to know their good qualities as well as their defects, is indispensable to the commander in order to utilize their abilities and to place them in their proper places.

To imagination and judgment the commander must add two qualities which, at first sight, seem to be in contradiction: prudence and audacity.

A prudent commander does not undertake a project the results of which will be out of proportion to the sacrifices that must be made or, at any rate, without having first thought of the consequences of putting all his trump cards into play.

To be audacious is to profit by the adversary's fault or to seize a favorable occasion to obtain an easy victory.

Prudence is a quality exercised every day while audacity is restorted to in exceptional circumstances only.

All these qualities are inborn in men of genius but they may be acquired and developed by study, reasoning, thinking, by frequent mental exercise which renders the mind flexible and creates thoughts which may at a given moment supply the inspiration or ability to see clearly and quickly—which is peculiar to great men of genius.

The professional qualities consist essentially in the possession of extensive military knowledge combined with the science of command and absolute professional honesty.

The training or military science of a commander varies in importance and extension according to his rank. These essentials begin with a knowledge of maneuver, the disposition and conduct of troops of the arm to which the commander belongs, extending to the combination of the different arms, and finally to the multiple combinations that can be made in the employment of large units.

Military science not only implies a knowledge of these qualities which might be called technical but it also implies a knowledge of men—"the foremost instrument of combat" (d'Ardant du Picq).

A commander must at all times know the physical and moral condition of his men. He thus acquires that sense of possibilities which is the condition, *sine qua non,* of good execution. "The leader who knows his business only asks from his troops useful efforts, never uses them prematurely or thoughtlessly risks their lives in combat." "Lack of knowledge is disastrous. The commander then becomes irresolute and his men quickly lose faith in him."

The science of command is that quality which enables the commander

who knows to apply his knowledge, that is, to pass from theory to practice. It requires most of the qualities mentioned and others to follow but this is logical because command is the main prerogative of the leader. A knowledge of men, and particularly of subordinates, plays an important rôle in the distribution of missions and the manner of issuing orders. The commander is compelled to consider the character and capabilities of each one of them.

Professional honesty or loyalty is one of the fundamental qualities. The fear of reproach may cause a weak character to hide or distort all or part of the truth. Professional honesty demands that the facts be presented to the commander in their true light and in their exact situation with absolute loyalty. This quality must characterize the relations among commanders and without it the confidence which must find them together cannot exist.

The spirit of justice causes the commander to know how to reward or punish without being influenced by suggestions or recommendations, hearing only the voice of his conscience and having in view only the good of the service. A just commander gains always the esteem and often the affection of his subordinates.

Firmness is necessary to preserve discipline and for the execution of orders. It must be known that oversights or infractions of discipline will be punished. The commander who is weak loses the respect of his subordinates and his authority rapidly; the commander who considers firmness a duty is respected by all.

Kindness ("sweetness" as Marshal Saxe calls it) is a truly French quality that a commander cannot overlook. There is no doubt as to what can be obtained by a kind word. Not only is the subordinate extremely sensitive in this respect but even the born leader experiences a true satisfaction when exercising this prerogative of command. This precious quality is not always present and when missing is very difficult of acquiring but a commander who does not possess it cannot consider himself truly complete. The hard, unkind commander is obeyed by force but he cannot depend on the devotion of his subordinates in difficult moments.

A lack of confidence of a superior in his subordinates stops the development of personality and initiative in them and finishes by creating nonchalance and disgust in the service. On the contrary, when there is confidence in the ranks from top to bottom each one feels surer of himself and does his best with zeal and interest.

Military science, like the science of command, requires, therefore, that a commander possess a vast knowledge and a large number of qualities. Technical military knowledge is acquired by work and study while the necessary qualities to command properly are acquired and developed gradually in the occupations of daily life. There are even some, such as loyalty and kindness that are inborn and cannot be attained by all.

Moral qualities are those of the heart and are based on the more or less lofty conception of the commander concerning the rôle he plays, of the mission he carries out, and therefore the responsibility he contracts with himself, his superiors, and his subordinates. These are virtues rather than qualities. Almost all of them are included in that special quality called character.

Character is that virtue which in the critical events of life increases the esteem of subordinates towards their leader and occasionally leads to admiration. The principal traits of character are will, sense of duty, honor, and willingness to assume responsibility. It is enhanced and beautified by dignity of attitude and private life as well as by kindness and generosity of heart.

Will is the basis of all decisions. It may come from energy or tenacity, and in the end depends upon perseverence. The latter is the quality that enables the commander to adhere to the methods adopted by him with that firmness and resolution which cannot be shaken by any difficulty and gives all the impression that he knows what he wants and that he has adopted the means with which to carry out his will. "On thus remaining faithful to his first conviction," writes Clausewitz, "and by giving it preference in the doubtful cases, he transmits a consistency and continuity to the action which are the index of a great strength of character."

The will is stronger when it is animated by the most ardent faith in victory. A pessimist, a non-believer, cannot carry out his mission with the same ardor as one that is absolutely convinced of success. Only the commander who believes is capable of transmitting his faith into the hearts of his subordinates.

A sense of duty and honor is dictated by the conscience and traces a line of conduct which leads to an elevated ideal. It inspires the noblest passions in the commander and is the prime mover of great actions. Sense of duty comes from love of one's country and when found in a commander serves to transform discipline into a moral obligation which the commander cannot evade without lowering himself in his own eyes. Sense of honor makes a person defy everything, even death itself, rather than disgrace himself in his own eyes and those of others. These two sentiments infallibly breed uprightness and abnegation in the person who possesses them.

Uprightness leads the commander to act without reservation or evasion, to go straight to the end without listening to any other voice but that of his conscience. Uprightness entails absolute forgetfulness of one's self, having in view the general interest of his associates or the highest interest of his country only. This quality comes from abnegation.

The love of responsibilities which suggests initative springs from will and a sense of duty. The leader who is animated by these feelings, instead of resorting to equivocal formulas to express his thoughts or protecting

himself by text books, does not hesitate to go deep into the question, does not leave to his subordinates the task of making decisions that are incumbent upon him, is always ready to defend them and claims when necessary the responsibilities that they might want to throw upon others.

Character is enhanced by dignity of attitude and of private life. Unrestraint in deportment and language, certain trivialities and familiarities are never found in a leader. Any one can be correct, unpretending and dignified, without keeping his subordinates at a distance and without doing away with good humor and gayety. Similarly, the private life of the commander must be beyond any criticism. Suspicious relations and bad company hurt his reputation in the eyes of those to whom he must set an example.

These are the principal moral qualities which form or embellish character. Napoleon in his citation of Davout says of him: "This Marshal has shown exceptional bravery and firmness of character, the first quality of a military man." "Character is not at all acquired by just placing an order," writes Albert Sorel. It is natural, like intelligence, like genius. One must possess the gift, soil, and seed. However, culture aids it in a singular manner. It is an education that must be accomplished just like that of the body or the mind but it is an education where each one is his main teacher. The first and perhaps the only precept is this: "Know thyself, thy weaknesses, thy resources. Train thyself to have a will."

It can be said that nearly all the qualities mentioned are not only necessary to the High Command but even assume a special importance in the higher echelons of rank. It would be superfluous to accent the highly important part which qualities of the intellect play in the exercise of high command.

In time of peace the high commander needs a most active imagination to adapt the methods of combat to improvements in armament and materiel as well as to foresee the application of scientific discoveries to matters of war. The last war has shown that he needs a high degree of clearness and of versatility of intellect to determine quickly the results of the use of some new weapon, to discover the way to lessen its effect, and to change as a result, his method of fighting. In the higher grades of rank imagination is characterized by the activity, the clearness, the versatility of the intellect, united to a great power of calculation and the faculty of making innovations.

As to judgment, it is easy to determine that every error entails consequences the more serious, the higher he who committed it is placed in rank. For the high command judgment of men consists above all in appreciating the value of the leaders in the different grades of rank and of the officers who come closest to it. Napoleon knew his generals to a marvelous degree. It is he who called Bernadotte an "arguer" and who said of Murat and Ney, "It was impossible for them not to be brave but it was impossible to

have less head, the first especially." This habit of knowing how to discern the qualities and faults of each one should cause the leader to know how to choose assistants and aids worthy of his confidence and capable of freeing him of a part of his so heavy task. Generals of high rank who consider officers of the general staff as interchangeable numbers run the greatest risks in the sense that they are sometimes the victims of errors or mistakes which their own assistants caused him to commit. This truth appeared so clearly during the war that a general always obtained the Chief of Staff or the officer whom he requested. It is not to be doubted that the mighty men of war have possessed this quality to the highest degree and it has even happened that some generals of an average value have passed for great men, thanks to the choice of their advisers which they have known how to make. This faculty is a consequence of judgment.

Prudence, with the high command, assumes that special form which is called good sense and which causes one to know how to wait patiently for the proper hour for action, to leave to executives the time necessary for preparation, and to be always ready to guard against a repulse. "One should, in fact," said Marshal Marmont, "greet the possible as the probable; one should protect himself even against chance risks. It is thus on the day of a reverse one prevents great catastrophies."

Boldness was formerly characterized by impetuosity, that is to say, by promptness of decision and startling rapidity of execution. Gaston de Foix, Conde, and Napoleon possessed this quality to the highest point. But present conditions of warfare no longer permit the high command to show its boldness in this way. Nevertheless it is always necessary to know how to take a risk at a given moment. "War is always a matter of chance," writes Prince Hohenlohe, "and it is necessary, once one has weighed the pro and con, to risk everything to gain success. If one has previously reflected well it is no mistake to take a risk in order to win a great victory."

At first glance when one runs through the records of military history he is tempted to believe that the mighty men of war have won their battles through a sudden inspiration, through a stroke of genius of which they alone had the secret. In reality, it is not at all so. Napoleon, himself, admits: "It is not genius which reveals to me all at once what I have to do at a given moment; it is reflection, it is meditation." And he adds: "Nothing succeeds in war which is not deeply studied."

The necessity of military knowledge to a great leader is obvious. Generals of all ages have made themselves by the study of the campaigns of their predecessors. But today, more than in former times, warfare affects so many questions and so many interests that the high command should possess extra-military knowledge on all sorts of subjects classed as international, economic, financial, social, etc.

The leader should know how to submit to proof and how to bend in the

presence of realities. In that, he gives proof of intelligence and judgment. From the tactical point of view especially, there are some absolute impossibilities. One does not fight with men against materiel; one does not cause the same infantry to reattack several times when it has already been repulsed and when the material means at its disposal have not changed. "Tactical conceptions require of the command an exact idea of the possibilities, applicable to each moment and to each unit."

In connection with the science of command it will suffice to add that from this point of view the high command is greatly aided by its general staff; that it is understood that it will conserve the full possession of its faculties to make its decisions. "That is why," writes Marshal Saxe, "that it is necessary that on the day of an engagement the general of an army do nothing. He will do better, he will keep his judgment freer, and will be more in a condition to profit by the situations in which the enemy is found during the progress of the combat." So in the high grades it is necessary that a leader not allow himself to be absorbed by details and he should hand them over to his Chief of Staff with the duty of presenting to him only those questions demanding an immediate decision on his part. As for him he should, especially in moments of crisis, withdraw himself, raise himself above events in order to seek to penetrate them and to understand them.

The character of the higher commander has an immediate influence over that of his subordinates. From no point of view has the old adage, "Example should come from above," more truth than from the moral point of view. How, in fact, can the subordinate leaders make any display of will, of coolness, of self denial, of faith in success, if he who commands them does not himself furnish the example? But the application of these virtues is more difficult the greater the stake in battle, the more numerous are the risks to be taken, and the more important are the consequences to be foreseen. It is no longer simply through the will, through energy, that it is necessary to order an operation. It is truly through strength of mind. According to the expression of Napoleon, "One forms an altogether incorrect idea of the strength of mind necessary to deliver, with a full consideration of its consequences, one of those great battles on which depends the fate of an army, of a country. So one rarely finds generals in a hurry to give battle. They take up their position, establish themselves, think over their combinations. But there begins their indecision, and nothing is more difficult, and yet nothing is more valuable to know than how to make a decision." "It is at this moment that responsibility appears, with its imposing cortege, with all the interests with which one is charged, and which, above all, one preserves at the bottom of his heart; responsibility to one's self, to one's conscience, responsibility immense, the more terrible the more deeply one is permeated by his sense of duty. There is only one way to carry this burden; it is necessary to have enough force, and enough reso-

lution to put one's self above all the consequences, sure of finding in his conscience and in his purpose a generous approval of what he has done, after, however, he has employed all his faculties, all his intelligence." (Marmont.) But there are indeed few men capable of raising themselves to this height. This necessity of making a decision is at once so important and of such great difficulty for the command, that when the decision made is of such a nature as to admit of no change, and when the cannon roar, when the battle is joined, when each has been told the part he must play, the supreme leader is tranquil, he has regained his confidence and his repose of spirit, of which he had been deprived the previous day.

For the subordinate command by reason of its duties and of its closeness to the troops professional and moral qualities are more necessary. Imagination brightened by judgment is necessary to the subaltern leader to conceive and prepare his maneuver in the more or less small unit fixed by his mission. The faculty of judging men is still more useful to him, to appreciate the value of each man and to obtain the better part of his individual capacity. In addition, the subaltern leader, being on the terrain of action, and seeing his unit fight, has need, much more than the high command, of the ability to make his decision at a single glance and to see clearly in the midst of the sudden changes of the struggle. Prudent he must also be so as not to engage his troops by chance and bold also for even in his restricted sphere he must be inspired by a taste for risk.

But among the intellectual qualities the most important for the subaltern leader is assuredly initiative. Initiative does not consist, as is some times thought, of the right to change an order received, because it is thought that it is better to do so, or because it is hoped to obtain better results. On the contrary, intelligent and really productive initiative should be used to complete and develop an order when, intentionally perhaps, the Chief who has given it remains silent on certain points of detail which he intends to leave to the judgment of his subordinate; to make up for lack of an order, when for any reason whatever it has not arrived, and it is urgent to make a decision; to meet an unexpected situation or one which has changed between the time the order was written and the time of its arrival. In all these cases the subordinate leader should make decisions conformable to his mission, to the intentions of his superiors and without hesitating before the fear of responsibility.

Thus understood initiative will be most often successful, especially if it is coupled with the faculty of decision at a glance. In combat it is not only a right but a duty. The superior should refrain from any remark if an act of initiative is not crowned with success through fear of destroying this quality so precious in his subordinates and he should remember that "the only faults of command which always mean reproof are forgetting the mission received, inaction, and fear of responsibility."

In each echelon of subordinate command the leader ought, above every-

thing else, to know his profession, to possess the technical military knowledge necessary to exercise the functions of his grade. But to this knowledge he ought to add qualities which are entirely special to him; these are the qualities of an instructor, indispensable to every officer with troops. They consist of the art of knowing how to teach others what one knows one's self, in theoretical and practical exercises, where demonstration by example plays the highest part.

The profound knowledge of men is of prime importance for him who has to handle them. This knowledge is not acquired so much from schools or from books as by the daily practice of the profession. The subordinate leader must consequently devote himself to studying and to understanding the temperament of his men, their character, their state of feeling, "the passions which rule them and the secret desires of their hearts which affect so many causes in war."

Thanks to these qualities, he will acquire easily the sense of possibilities which is so necessary to him to gain the confidence of his subordinates. "From the moment one's subordinates cannot do everything asked of them," says Gouvion St. Cyr, "it happens that they no longer do anything except what they wish."

Finally the subaltern leader should possess the science of command as defined above, not only in combat, but in everyday life. If he displays professional honesty, justice, firmness, kindness, and confidence in his subordinates, everyone will obey him without difficulty, without an afterthought, with that sort of consent which not only the certainty of being well commanded produces but also the esteem and respect which is felt for the leader.

It is undeniable that if there exists a place in which the influence of example should produce its fullest effect it is where the subordinate leader is found. In peace time, frequent contacts with his subordinates give him occasion to exercise over them a salutary influence. But it is in campaign especially, where life in common exists as a permanent condition and particularly in combat, that the character of the subordinate leader with the retinue of all the moral virtues which have been enumerated, has a considerable influence on the attitude of troops which he commands. It is then he must not spare himself if he wishes his subordinates to do as much. The Infantry Drill Regulation (French) states: "The leaders must be deeply impressed with the idea that their first and highest duty consists in furnishing an example. Nowhere is the soldier more devoted and more obedient than when under fire. He keeps his eyes fixed on his leaders. Their will, their bravery, and their coolness reach into his soul and render him capable of every devotion and every sacrifice."

Among all the qualities there is one which has not been mentioned because it is almost exclusively an attribute of the subordinate command. That is Courage—properly, so called Bravery. The disregard of danger

and even of death or according to Ardant du Picq, "the control of the will over the instinct." In fact the high command, mingling less and less in the struggle, has, so to speak, no longer any occasion to display its courage other than through its strength of mind.

Marshal Marmont, that great military psychologist, writes: "Bravery, especially for officers, can be classified thus: the bravery which prevents them from dishonoring themselves, which makes them do their duty religiously, is not rare. That which impels a man beyond his duty is much less common. Finally that which decides a man to unhesitatingly consider his life of less value than the success toward which he is charged with contributing is of all the most rare and as an example influences the conduct of men greatly as the especially brave often draw others along with them. One does not know how to reward this kind of bravery too much. It is upon those who depart from the general rule that the fate of battle often depends."

So the subordinate leader shall possess two qualities peculiar to him: to be a living example of all the moral virtues which constitute character, and to be brave and courageous in the face of danger. If he adds to that, also, goodness and generosity of heart; if he not only knows his men, but "is even occupied with their preservation, with interest for their well being, like the father of a family"; if he knows how "on important occasions to share their suffering and their privations" then he will truly deserve to be loved by his subordinates. In fact, in that consists the most attractive reward which could stimulate a leader, the supreme satisfaction which will reward him for all his troubles. That of which Boussuet was thinking when he said, "When one has the power to make one's self obeyed, there is glory in making one's self loved."

All the qualities which could be demanded of a leader have not been enumerated because most of those which have not been mentioned occur as consequences of the others, as, for example, experience and authority.

Experience is, in fact, the result of prolonged, intelligent, and well-considered studies, and is generally acquired with age. "Without doubt," writes General de Willisen, "war is learned only by experience. But what is meant by experience? Would I have it, on account of being present at such and such battle, without having thought about it, neither before, nor after, nor even during the event? Or would you not have it, you who perhaps have never been present at any battle but who have studied a number of campaigns, looking everywhere for the causes of success, you who have proven that the same causes always produce the same effects, you who have come to form your opinions in this way, by drawing them from the truths of great general rules? Would not this study teach you to know war, while I, in person, would have learned nothing at all?"

As to authority, ascendancy, it is a quality which adheres to the leader

from the impression of superiority which his intellectual, professional, and moral worth produces on his subordinates—it is a consequence of this last.

From all the preceding it might be concluded that the leader who possesses the intellect to conceive, the knowledge to prepare, and the character to dare and to execute is absolutely complete and capable of the greatest things. This is not exactly correct for it is still necessary that there be a certain equilibrium between these qualities. If intelligence is indispensable for conception, knowledge for preparation, and character for execution, all these qualities are necessary in the decisions relative to each of these operations. "To decide," said General Lewal, "it is necessary to will, but to will, it is necessary to know." It is in this way that the thought of Napoleon must be interpreted when he said, speaking of conception, "The important thing is that the intellect or the talent be in equilibrium with the character or courage. For if courage carries him away, the general easily attempts something bad. On the contrary, he does not dare to undertake anything if his intellect prevails over his character or his courage." This explains the fact that the great men of war, that is to say, those who have known how to put these qualities to work in the priority which circumstances demand, have been very few; and their victories, far from being the triumph of blind and brutal force, are due, on the contrary, to the meeting in the same man of the highest qualities of mind and of heart.

"If a man is not born with a talent for war," writes Marshal de Saxe, "and if this talent is not perfected, he will never be more than a mediocre general." It is thus that creative imagination, sagacity, a taste for risk, extra-military knowledge, and strength of mind are specialties of the high command, and that judgment at a glance, initiative, the qualities of an instructor, personal courage and the obligation of setting an example, are peculiar to the subordinate command.

Matters have greatly changed since the time of Marshal de Saxe. However, officers called to a brilliant future have to undergo serious studies which permit their capacities to be judged. In the Ecole Superiere de Guerre as well as the Centre des Hautes Etudes Militaire it is very difficult to estimate correctly the moral value of an officer. There are many decisions which one would make in a map exercise before which he would recoil in reality, and conversely. In fact, the atmosphere of war paralyzes, in some, certain qualities of character, while it makes them come to light in others. So in spite of all that can be established in time of peace there will always remain an unknown quantity in the correct estimation of the value of a leader, the way he will react when confronted with the realities of war. Some reveal themselves superior and others inferior to what is expected of them, and it will always be so because the effect of these realities on the morale of each cannot be foreseen. Intelligence and knowledge then remain

the two sole elements on which can be based with any certainty the estimation of an officer in time of peace.

If, formerly, the valor of troops could compensate in some measure for the inefficiency of the command such a thing is no longer possible today. Individual bravery remains powerless in the face of modern armament if the knowledge and skill of command are at fault. With the rôle of the command constantly increasing, it follows that the qualities demanded of the leader should be more numerous and more developed than formerly—more numerous because of the complexity of the knowledge which finds its application in war, more developed because of the constantly greater influence which they exercise on the struggle.

Today it is no longer permitted that a leader, be who he may, remain in mediocrity. So he must, after the example of great captains, improve himself constantly by personal studies, of which the military authors of all time proclaim the necessity. "Do not disdain then to learn," Montluc has said, "and however wise and well experienced you may be, it can not hurt you to listen to and to read the words of the old captains." Napoleon, more expert still in the matter, made the recommendation: "Read and reread the campaigns of Alexander, of Hannibal, Caesar, Gustavus or Turenne, Eugene or Frederick. Model yourself on them for that is the only way to become a great captain and to catch the secrets of the art."

But it is especially by reflection, by meditation, by the education of his will that the leader will cultivate those moral virtues without which the most beautiful qualities of mind and the widest knowledge remain sterile. He will guard against the most prevailing faults, above all, against pride and egotism, which are so contrary to the development of a beautiful character, and which singularly diminish its value. Finally, sustained by the thought that every fault, every negligence, every forgetfulness, every lack of foresight will be paid for at the close of the account in human lives, he will not hesitate before every effort, intellectual or moral, to become the complete and perfect leader which the necessities of modern war demand.

GERMAN OFFICER TO BE ATTACHED TO ANTIAIRCRAFT UNIT

The Secretary of War has authorized the attachment of Capt. Helm Speidel, German Army, to the 62nd Coast Artillery (Antiaircraft), Fort Totten, New York, for the period of October 15, 1929, to December 20, 1929.

Let's Get Acquainted

By MAJ. S. T. STEWART, U. S. A.

SHORTLY after the war the COAST ARTILLERY JOURNAL published a story about an officer who believed prior to 1917 that the Coast Artillery had stagnated, that it was "tied to the concrete" and had no future. He therefore transferred to the Cavalry and later, when the war came had to become a Field Artilleryman to see action. The point is that at the time the story was published we were realizing we had our hands full with tractor and railroad artillery, antiaircraft guns and equipment, and a few other things which had developed during the war and carried with them many unsolved problems sufficient to interest any man and challenge the best of us.

I am inclined to believe that many people in and out of the Army—but particularly those out—even now think the Coast Artillery is on its last legs. This is evidenced by the "Flash" which went over the country announcing that the Coast Artillery was to be discontinued as a result of the President's "Retrenchment Study."

Again we see in *Liberty Magazine* a partisan of the "Sky Army" stating that the coast defenders might just as well begin to look for other jobs.

Lord save us! If these people only knew what we know they would know we have plenty of jobs right now and that the Air Corps, far from wanting us thrown out, realize we are their best friends; that we are not rival branches but complementary-auxiliary arms both respecting and needing the other, both seeing greater possibilities in the future. The tactics—or why and wherefore of this is another story (known [?] to graduates of Leavenworth at any rate) and too long for this one, but if the general public were better acquainted with us, they would not be so apt to write such things—or believe them, either.

The Air Corps has grown in the last decade and its possibilities are tremendous—so much so that any man's guess for the future is as good as another's. But so have *we* grown. The reason air forces are so much talked about is that aviation is being carried forward in civil life as well as military. It is new and it appeals to the public.

The work of the Coast Artillery is almost purely a military science and its promotion is the result of hard, intensive study by the Corps on remote posts, by Ordnance and Signal Corps in proving ground or in laboratory, or by staff studies or otherwise—in ways not known to the civilian, without blaring of trumpets or flashing across the sky.

The people simply do not realize what is going on. One personal example was when a lady in Honolulu informed me that Diamond Head contained the greatest guns in the world; that twelve-inch mortars were there shooting ten miles—"and wasn't it wonderful." The day before I had

seen a sixteen-inch gun seventy-five feet long shoot a projectile, weighing almost as much as the mortar over forty thousand yards, and it wasn't in Diamond Head, either. I had seen Captain Braly's battery of antiaircraft guns, old model, cut the towline of an antiaircraft target at night at the ceiling. And she didn't know *that.*

Many people still think of us as immobile troops, living a life of ease in pleasant houses on the water front, ready to point obsolete guns at obsolete battleships when they get too close to shore.

What does the general public know of subaqueous range finding, of railway artillery, of remote and electrically controlled antiaircraft equipment, of automatic belt-fed antiaircraft machine guns—four in one, or the use of these weapons to make a safe rendezvous for the Navy or to cover a division, corps, or army area? What does it know of beach defense against an overseas expedition? If not, why not? It is easy to say "Let's get acquainted," but another story to carry this out in these days of "No leave in the summer time."

Much of our stuff *is* scientific and dry. Antiaircraft target practice cannot be carried out over New York City and aviators are not voluntarily expendable, but there is much that can be made of interest, much that can be done if there is the will and *if a thing has to be done, it can be done.*

There is the old story of the two frogs who fell into the pail of milk. One said, "The sides are high, there is no footing to let me jump out, so there is nothing for me to do but die"—and he did. The other one said, "I can swim. I'm alive. Something may turn up." He kept paddling, churned a cake of butter and jumped over the side of the pail. If, therefore, we think that the work of gaining public contact is hard, or if various ways suggested seem puerile or foolish, just keep paddling and butter may form under our feet. We never know what will happen until we try.

Several ways of keeping in touch with the people suggest themselves; first, the Reserve and the National Guard officer. He is, in everyday life, a civilian but he is interested in the Coast Artillery (or some other branch) or he would not hold the commission. Although a part of the "One Big Army" he is also a part of the general public, with contacts and influence not open to the Regular establishment. Why not make him feel at home at the nearest post? On some posts there may be an officer particularly fitted for making these contacts, one who could bear the brunt of this work. But if not, it would be a good thing for every officer to know that the "old man" wanted every Reserve officer or R. O. T. C. student to know that he was welcome on the post as a member of the Army, welcome at the mess or club, welcome to watch drills, at target practice, or to poke around the supply room or battery and see and feel army equipment, to know what is going on. I believe the average Reserve officer would pay his own way—that is, not expect any expenditure by way of entertainment, or, if he received it, would pay back in enlarged measure. That has been my experience over a good many years in various kinds of work. The col-

lege man may need some education along this line due to youth and inexperience, but many of them would be glad to eat in the battery mess, and pay for it, just to get into the atmosphere. Many officers and candidates would like to watch the preparation of a mess in an army kitchen, watch an inspection, or view the daily drill.

There are a hundred thrills in a harbor defense for the average civilian. Why not invite the public to partake of an army meal on the day of a big shoot or a special review? Make provision only for those who drop a line or telephone saying they will be there and pay their fifty cents. Some other day have the Legion and Veterans of Foreign Wars as a select group.

The officer on Organized Reserve or National Guard duty can let it be known that he will always be glad to see those interested in military affairs, that he has the latest army directory, latest army regulations, or training regulations. Lots of ways he can find to make himself known and to make friends if he keeps paddling.

Then comes the general public. When I was at Jefferson Barracks a few years ago twenty-three thousand people responded to the invitation of the Commanding Officer to come out for a Memorial Day celebration. He made a speech which was reported in the newspapers and reached thousands of others. Coast Artillery posts near large cities have an unusual opportunity to stage events of this sort and in these days of the automobile and good roads anything up to one hundred miles is neighborly. But the general public must be made to feel welcome, to know that they are not going to be stopped or embarrassed by a sentry, that they may dare go inside the gate without something unpleasant happening. Put up a sign board at the entrance, "Visitors welcome," in big letters and under it, "For information apply at Bldg. No. 10." If there are spots which they should not visit, a neat, well-painted notice (not a worn-out dingy one which looks like a war relic) ought to steer them right. Automobilists today are accustomed to watching signs and have learned that it pays to observe them. Allow them near the batteries and on special days have the gun commanders and plotters around to explain things.

Last but not least are the newspapers and news reels. If I were a post commander of Fort "Sixteen-Inch" or Fort "Room 21, Federal Building" I would make it a point to know at least one reporter or city editor on each paper in my neighborhood (Remember that one hundred miles) and I would see to it that every time something happened or was going to happen, that they knew about it. I would see to it that they felt at home in my headquarters, free to drop in whenever they felt like it, and glad to see me if I called at theirs. And that if on any particular occasion I had on my hardboiled face, they would know that behind it was the possibility of a grin and a human point of view. I would have a feature writer ride the tug at mine practice, correspondents ride a plane at an antiaircraft shoot, stand beside the group of battery commanders and see them sweat and swear, later telling them what it was all about. Human interest is

what they are after and they could find it. This goes for the photographers, too.

Some one in every organization should be on the lookout for stories with news value. Some one person should collect these, if on a large post, edit them and see that they got out while hot, even if the editing suffered. That is another thing all papers want and appreciate. If I didn't know news value I would get some military intelligence Reserve man to put me wise. That is a "can do." Item: As a major of the Reserve has, to my knowledge, in the past several years, guided the publicity of a whole corps area just because, being a mighty decent, busy sort of a chap, he appreciated a little interest and "Welcome, glad to see you" at the right time.

We have many things in the Coast Artillery which are, in spite of the technical aspect of some of them, of great potential news value, particularly for newspaper feature sections. Some of them need the point of view of the trained writer to translate them for the general public. Some of them will interest technical men and some the military "bug." The October JOURNAL contains two such stories: "What We Have Done with the 155 GPF" and "What Captain Braly did with his 'B' Battery." "The Sound Locating Horn, What It Is, and How It Came About," is another one. Possibly the editor of the JOURNAL ought to add this work to his list of duties.

Talks on the more technical subjects should be of interest to engineering societies. We have many able men in the corps and it should not be difficult to obtain recognition for them. Bodies of insurance men would be interested in a talk on the "Coast Artillery as Insurance." The Kiwanis, Rotary, City Clubs, and business men's organizations of many kinds would welcome officers as speakers at their luncheons or dinners with carefully thought out and prepared papers discussing any one of a dozen topics with which we are familiar. "What the Coast Artillery Is Doing," "How to Hit an Airplane by Day or Night," "Controlled Mines and How They Are Handled," "The Antiaircraft Regiment in Attack and Defense" are suggestions.

If I were a post commander, I would have the name of every officer, past or future, Regular or Reserve, in my neighborhood, and at least once a year I would have an open house of some kind, and see that a personal invitation went to every one of them to come and get acquainted. Every officer on the post would be a member of the reception committee and do his part to make every one happy.

I would do likewise with city and government officials and see that any friends they sent out at any time with a card of introduction were shown every courtesy possible. It would not be difficult to lead conversation into interesting channels. Let the public into our confidence, whether just curious, whether after news, or just plain "bug" and see what happens. Out of little things big ones grow. *We* know what we have, let the others find out. Let's get acquainted.

Thoughts of a Soldier—A Book Review

By Col. George Ruhlen, U. S. A.

THERE appeared in the Summer of 1928 a book in German by General von Seeckt, former commander of the present German Army (Reichswehr) under the title "Thoughts of a Soldier," that has attracted the attention of military as well as of non-military readers. The book is not, like the works of writers on military subjects that have recently appeared, a recount of the writers' own military activities, achievements and experiences, but an expression of reflections based on observations made during a long course of military service in peace and in war and in the after-war period and of the influence and bearing of these observations on the future, which the writer considers of greater importance than are meditations on the past. He writes in a serious mood and touches on many questions that have been the subject of discussion. His language is clear, free from embarrassing technicalities and controversial arguments, and lightened up now and then by a touch of humor not usually found in the writings of military authors. The book is so compactly written that only copious quotations of the writer's words could convey an adequate conception of the scope and spirit of what he has to say. One of the writer's purposes is to relieve the military service from the weight of many hoary traditions that have encumbered it in the past. This purpose is manifested by the wording of the beginning of the introductory chapter when he writes:

> There are three things against which the spirit of man struggles in vain: stupidity, bureaucracy, and the catchword. I will leave the hopeless struggle against stupidity to my wiser contemporaries, will declare myself to be unequivocally routed in a contest against military bureaucracy, and will take up here only the fight against a number of catchwords that come within the scope of our local military domain. The sole purpose of my remarks is to urge one or another of my comrades to ask the catchword when he encounters it: *Are you the truth?*

The author then takes up in succession a number of military catchwords in order to test their merits. Among the first is: *Pacifism.* Of which he says: "He who has a clear perception of the realities of war, of its necessities, its demands and consequences, is *the soldier.* He will give much more earnest thought to war possibilities than does the politician or businessman who weighs its advantages or disadvantages only. In its final analysis it is probably not so serious a matter to give up one's own life as to put in jeopardy the lives of others for professional reasons. That places a heavy burden on the conscience. He who has gazed deeply into War's bloodshot eyes, who has surveyed the battlefields of a World War from a favorable lookout, who has been compelled to be an eye witness of the sufferings of the population, whose hair has become gray from the ashes

of many burned homesteads, who has borne the responsibility for the life and death of multitudes—the experienced and knowing soldier—fears war much more than can the fantastic visionary."

Imperialism is another catchword. It may be said that usually imperialism prevails only with "the other one" against whose secret designs of conquest it is alleged to be necessary to defend oneself. We next come to *Militarism.* This has almost ceased to be a catchword and is recognized rather as a word of abuse. I might say that "militarism" has made Germany and Prussia a great and strong nation. France takes pride in training her people for a national army. Is that militarism? And America, which self-consciously unfurls the flag of peace, permits lectures to be delivered at its universities by its general staff officers on war and the science of war, assembles its intellectual youths at officers' training camps, combines mobilization with its industries. Is that militarism? I prefer to call it patriotism.

War is a Continuation of Political with Other Means. The danger of this quotation from Clausewitz, which has become a catchword, lies in its senseless interpretation and application and the possibility that it may be made the issue to most erroneous conclusions. Clausewitz, of whom it may be well said that he should be *reverenced less but read more,* after a lengthy explanation of this clause, reaches the conclusion that the more powerful and self-conscious is the policy of a nation, the more powerful will be its conduct of a war in which it may engage. Clausewitz also becomes a catchword when one parrots his sayings instead of studying them.

Aggressive War—another catchword. Whether a war is aggressive is a political question or, if you will, a question of international law. The political conception of an aggressive war is fundamentally different from that of the military. *War Aims.* The danger of this much used and misused catchword lies in its exchange with "consequences of war." Our opponents had established in definite outlines the demands that each would make and insist upon in case of a successful outcome. With us there were, to my knowledge, no such agreements. France's aim was not Alsace-Lorraine; the recovery of that territory was the self-evident result of a successful war. France's aim was the prostration and the greatest possible weakening of a dangerous enemy. Russia's aim was not Constantinople but unrestricted dominion over Eastern and Southeastern Europe which it considered to be menaced by Germany and Austria. Our war aim was maintenance of the empire and the integrity of its boundaries. All these were *war aims,* not war consequences. Many specters in the form of catchwords are still stalking along in this world. The best charm against them is clear thinking. Before passing from "Catchwords" to "Problems", which is in fact the main object of his work, the author takes occasion to give expression to an eloquent tribute to his former commander, Field Marshal von Hindenburg, of whom he says: "When we observe today the personality of the *man* standing among us still powerful and animated

and unbent by eighty years of strenuous service, it appears more important and more appropriate to seek his significance in the life of our people rather than to look for details of character to praise his deeds. We took upon him as a symbol of his time, the symbol of devotion to service, to duty, and to the State. He has not changed in any essential and was not obliged to change, even though the problems changed but not the fundamentals from which he proceeded to their solution. Age gives to Hindenburg its maturity, repose and serenity. He becomes to us the symbol of the permanent in the midst of ever changing time."

The "Problems" are treated under the separate headings of: The Statesman and the Army Commander; the Attainable End or Purpose; Modern Armies; The Army in the State; Modern Cavalry; the Chief of the General Staff; all concluding with remarks on "Essentials."

The Statesman and Army Commander. (Staatsmann und Feldherr). The former is the leading authority and leader of the political policy of the state whether under the designation of an absolute or constitutionally restrained monarch, dictator, president, or a more or less anonymous government or cabinet. It is essential only that all threads of the nation's life enter by and emerge from this authority and that they have for their aim control of all its activities, resources, finances, foreign relations and defensive forces. He recognizes the commander of the military establishment as the trained expert organizer, upbuilder, and leader of the Army in peace and war and its commander in the field in war.

The next problem is *The End or Purpose to Be Attained.* The search for everlasting peace tends readily toward the illimitable. The sceptic points to the war history of thousands of years and doubts that the epilogue was written at Versailles; the idealist, on the other hand, asks why should he despair while this new light dawns. One sees the development of a continuation of ups and downs, the other the elevation of humanity to greater heights. Proof to substantiate either conception is wanting.

The author introdudes the chapter on *Modern Armies* with the remark that in this he endeavors to give only his own personal views and that he restricts himself to land armies only. He raises the question: What is the direction of development and where does it lead? Are armies still necessary? What will they look like? What will be their attitude?

The author opens his treatment of the problem of *Modern Cavalry* with the remark that among catchwords frequently uttered since the close of the World War is: Cavalry can be dispensed with; development of modern fire arms has rendered it useless; the flyer has replaced it as a reconnoitering agency; it has ceased to be a deciding factor on the battlefield, and is no longer needed as a fighting unit. The reply to all this is that when we recognize the significance of the progressive movement toward increased efficiency of all military branches we find mechanization —motorization—engaging conspicuous attention everywhere. And why? Because it means increased mobility, which has always been the very es-

sence of the cavalry arm and one of the principal reasons for its existence and retention in the service of armies. Abolition of the cavalry would, in consequence, be a retrogression. It is admitted that close order fighting in mass of large bodies of cavalry is a thing of the past. This was well known long before the World War to every experienced and clear-thinking soldier and especially to the experienced cavalry man but was unfortunately not known or at least not observed, in many cases, by our leadership. Disappointment in the achievements of our cavalry in the earlier part of the World War was due in part to faults and deficiencies in early training for the work that it was called upon to do and in part to its inefficient and inappropriate armament and equipment but more than all else to its improper use, application and distribution and a part of the unfavorable reaction against cavalry among the people generally, and even in some Army circles, is one of the results.

The argument that the flyer has replaced the cavalry in the service of patrol and reconnaisance is erroneous. The work of the flyer is along with and not a substitute or replacement of that of the cavalryman. In that branch of the military service there is work enough for both, work that neither the one nor the other can do efficiently alone, but which both working together can accomplish.

In his opening treatment of the problem, *The Chief of the General Staff*, the author makes brief mention of some of the positions he occupied in the World War, from all of which it is quite evident that he had ample opportunity to acquire experience that would qualify him to pass judgment on the functions and duties of a chief of the General Staff but what he has to say on the subject can be appreciated and understood only by a reading of the chapter as it appears in the text.

General von Seeckt gives the following statement of the positions and capacities in which he rendered service in the World War:

At the beginning of the War: Chief of Staff of the General commanding a Prussian Army Corps; then Chief of Staff of the Commanding General of an Army composed of German and Austro-Hungarian troops; later, on another sector of the Army front, Chief of Staff of the Commander of an Army group made up of Austro-Hungarian, German, and Bulgarian Armies; then Chief of Staff of an Austro-Hungarian Army on an Austrian-Hungarian Army front; and finally, Chief of Staff of the Turkish Field Army.

After the War he released the German National Army (which was to become the future Reichswehr) from its mob environment of the revolutionary Bolshevik Soldiers' and Labor Council, eliminated from it its radical communistic and social elements, officered it with specially selected men (officers and non-commissioned officers of the former German Army) and built it up into one of the best organized, disciplined, and equipped armies of today. He was in command of that Army until the Summer of 1926.

EDITORIAL

About the Journal

SEVERAL months have passed since we sat down in the editorial chair of the COAST ARTILLERY JOURNAL. The ways of editors were unknown to us then and still are. Without stopping to acquire any editorial technique we set about trying out some ideas of our own with the hope that gradually we would find out what it's all about including what our readers really wanted. We have had numerous comments which have been an assistance and which we appreciate. A few of these comments have been published.

We discovered early that all our readers do not like the same kind of articles. Heretofore the JOURNAL has been a highly technical magazine. We can see no good reason why it should be altogether that. We are convinced that it is not a crime (yet) to be human. We can see no objection to an article if it makes you smile. We think it might be a good idea to mention some of those things which are being accomplished in the Coast Artillery and which reflect credit on some of its members. Esprit pertains to humans, leads to accomplishments, and cannot be expressed by a mathematical formula.

So it happened that we have made the contents of the JOURNAL as varied as we could. We probably sacrificed some dignity for the sake of interest. Above all we wished to appeal to the younger element not only because they are in the majority, but because it will fall to them to carry on in the years to come. We apologize to the serious-minded and assure them that the JOURNAL will continue to publish "heavy" articles. We wish to assure those who like to be amused with lighter stuff that we will attempt to furnish some vaudeville and only hope that they will not grow tired of the act. We apologize to our Japanese readers for the perpetration of the article describing that wonderful instrument "The Snicker's True and False Solver."

This editorial stuff has a more serious side. We sit here entirely dependent on the generosity and sacrifice of our voluntary contributors for copy which is worth while. There is no Coast Artillery news service nor are we able to hire reporters and correspondents. The Editor can and does nose out some material believed to be of interest but the COAST ARTILLERY JOURNAL was never intended to express the thought and opinion of any one person. We wish to place before you for your perusal the thoughts, opinions, and beliefs of those officers of the Corps who by study, experience, and accomplishment are considered outstanding in our branch of the service. As one of our You-Tell-Em reservists says "There must be some great men in the Coast Artillery—why can't we read about some of their deeds?"

Along this line we must confess that we have not been as successful as

we hoped. Perhaps it is because those who have done things have never had time to learn how to express themselves easily on paper. Perhaps it is due to a timidity at appearing "in print." Perhaps it is a natural modesty and disinclination to set themselves up as an authority. In some cases it is a lack of courage to express what they believe. Yet the principal mission of the COAST ARTILLERY JOURNAL is to make the best thought on various subjects available to all in order that those with less experience and less knowledge may improve themselves professionally.

Nor are we excluding the younger officers in our reference to experience and knowledge. In some respects the knowledge and experience of the younger officers is greater than that of some many years older. We have only to mention antiaircraft artillery to prove this statement. Younger officers should not be discouraged because some one may ask what a lieutenant can know about a certain subject. The only comment we care to make is that junior officers, in general, are more competent to discuss matters of technique and seniors those of policy and doctrine. Even at that we may be mistaken and do not wish to discourage any precocious talent. Napoleon was only—but you know that story.

Some bitterness has been engendered in the past when some of our contributors were "stepped on" because of something of theirs published in the JOURNAL. While we are in no position to promise immunity, we can state that present policy does not favor a recurrence of these unfortunate happenings. Our contributors are free to express their own opinions and if they happen to be half-baked or asinine the mere publicity will carry its own punishment. Honest difference of opinion is one of the most fruitful sources of copy. Of course we cannot countenance vituperation or mud-slinging and there are several words in the dictionary which should never be used in the JOURNAL. While the Editor will stand by to pinch out any copy of this nature it would appear that the exercise of good common horse sense should take care of this situation.

If this editorial accomplishes its purpose it will increase the amount of copy sent in and enable us to increase the professional value of the JOURNAL. The Editor cannot accomplish this result directly. It requires the cooperation of all who are interested in the welfare of the Corps' periodical and are in sympathy with its purpose.

This is not a question of aggression. It is a matter of efficient defense.—**Chicago Tribune.**

COAST ARTILLERY ACTIVITIES

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

Office of Chief of Coast Artillery

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Intelligence Section
MAJ. S. S. GIFFIN
CAPT. H. N. HERRICK

The 4th Coast Artillery (H. D.) Fort Amador, C. Z.

A recent letter from Col. J. B. Mitchell, commanding the 4th C. A. (H. D.) and the Harbor Defenses of Balboa informs us that the month of October was a very busy one for his command. Preparations for target practices to be fired later were intensive and thorough. Colonel Mitchell mentions some of the most important phases of these preparations. They may be an old story to most of us but they can not be emphasized too much.

The first mentioned is team work which is obtained mostly by practice or drill. Drill can be monotonous drudgery or it can be a game in which

all are interested. One can look at a battery drilling for five minutes and write the efficiency report of the battery commander even if he never comes out of the BC station. A good battery commander has the gift of making the dumbest drill interesting. It is not altogether a gift. By planning, anticipation, and a good imagination the faculty of making "home ram" an interesting pastime can be developed.

Colonel Mitchell speaks of the effort which is being made to perfect the spotting sections. They are allowed a maximum of seven seconds to deliver the deviations. How many of us have said, "Well, it would have been a good practice if that (cursing) spotting section had come through." Who's fault is it when the spotting section falls down on the job? The perfection of the spotting sections is not all the perfecting to be done, but it frequently receives less attention than it should because of the absence of splashes during drill. Nor does subcaliber practice provide an altogether satisfactory method for drilling spotting sections. The splashes don't look the same and the target doesn't act the same as in a service practice.

If it is important to drill the gun section, the plotting section, and the spotting section it is no less important to drill the record-keeping section. Records should be kept at all drills for several reasons. In the first place, they are needed for the analysis of practice and the battery personnel should not be confused on the day of practice by being handed a pencil and paper, for the first time, and told to put down some data. Other duties will suffer if this system is followed. Then, too, how are you to discover the error makers if no records are kept at drill? Finally, you need a well-kept set of records in order to simplify the analysis of practice. We have known battery commanders to fire what appeared to be an excellent practice but the records were so poor they couldn't prove that it was good and got no credit.

Formerly materiel failures were unfortunate happenings which the battery commander put down as hard luck and blamed on the ordnance officer. More responsibility will be placed on the battery commander hereafter. The most common failures occur in electrical equipment—telephones, firing circuits, primers, etc. There is no place where Coast Artillery is stationed that is more unfavorable to electrical equipment than Panama. It is not only the heat but it's the humidity, too. This humidity hangs around ninety per cent. It may be an exaggeration to state that each telephone operator drains the headpiece before he puts it on but it is a fact that nearly all batteries keep their headsets in a dry closet when not in use. The 4th Coast Artillery are baking their primers to eliminate moisture. Where unusual conditions exist unusual remedies are required.

A battery commander in the Coast Artillery is probably our most important tactical commander. When the communications with the group commander are shot away or go blooey he becomes an independent com-

mander and fights his battery according to the intentions of his superiors and his mission. Functions of command should not be limited in their action by the performance of technical operations which can be done by a subordinate. The battery commander who insists on making his own corrections and sometimes actually setting them has lost sight of his principal duty. He should be available for consultation, if necessary, but his time should be spent in supervision and in meeting such unlooked for situations as may arise. Perhaps he might be able to correct his own fire during target practice but it can't be done in action. This is the idea in the harbor defenses of Balboa which is being carried into effect under Colonel Mitchell's direction.

Just one more good point gleaned from Panama. Many of the target practice details are made from organizations other than the firing battery: the tug director, the tug officer, the range rake detail, and perhaps others required on the day of practice. The battery commander should not be burdened with supervision over these details. They, too, require drill and practice in the performance of their duties if the battery is to get a fair break when it fires. We recall one officer who came from "the other side" to help us when we fired. He was to obtain the azimuth of the target at the instant of splash as well as the deflection of each shot. Since he was outside our jurisdiction we didn't pay much attention to him except to see that he didn't set up his instrument in front of the guns. After the practice he turned in his report. We knew the target hadn't been towed in Gatun Lake but that is the way his azimuths read. Then we discovered that he had set up his instrument and taken it down without orienting it. After that practice we took our own azimuths.

The 13th Coast Artillery (H. D.) Fort Barrancas

During the month of September a series of test firings were conducted at Fort Barrancas for the purpose of training Air Corps personnel in methods of seacoast firing and improving aerial observation methods. Approximately one hundred and fifty rounds of ten-inch ammunition were authorized for the tests.

Specifically two types of test firings were prescribed: In the first case the target was assumed to be invisible from the ground position finding service and the observation plane invisible at target distance. In the second type of test the target was assumed to be invisible from the ground position finding service but the observation plane could be observed at target distance and beyond. In short, the tests were for the purpose of determining the efficiency of aerial position finding for seacoast batteries.

The firing was conducted by Battery "A," 13th Coast Artillery, Capt. John J. Maher, Commanding, at Battery Sevier, 10-inch rifles. Preliminary and intensive drill and exercises were conducted by the battery commander prior to the firings. Due to the reduced strength of this battery and the

increased manning table necessary to procure the data and information required, it was necessary to utilize practically every available man in the Harbor Defenses of Pensacola.

The Air Corps troops participating were from the 22nd Observation Group, Maxwell Field, Alabama, under the command of Capt. Alfred F. King, Jr., A. C.

Briefly, the system of position finding used was the "lay on me" system in which the direction to the target from the battery is obtained by sighting on the observation plane and the range to the target is obtained either by observation on the plane itself or is furnished by the aerial observer by estimation. In all cases the speed of the target was furnished by the aerial observer. The airplane flies on a course which it is hoped, coincides with the gun-target line. It may fly in the direction G-T or it may fly in the direction T-G. It may fly between the points G and T or it may fly along the line G-T beyond the range to the target. Due to the difficulty of maintaining a course along the line G-T from G towards T it was decided to send the plane along its course from a point beyond the target towards the battery. Previous tests had determined that in flying along the outgoing course errors in direction varying from ten to twenty degrees were caused by the drift or crabbing of the plane due to the wind. Obviously, the same drift occurs on an incoming course but the pilot is better able to maintain a rectilinear course.

It is natural that in exercises of this nature a very high degree of training of both ground and air personnel is required in order to form a tentative opinion as to the efficiency of this method of position firing. The battery personnel must be in a high state of training and qualified in methods of data determination which are not used in the normal battery target practice. It is almost axiomatic that no position finding service can function satisfactorily unless it includes an accurate and rapid observation system. In the tests conducted the position finding became a function of the Air Corps. In order to become an efficient aerial observer practice and training are necessary. Just as in range estimation on the ground it is found that some individuals have a natural aptitude for judging distance so varying degrees of accuracy are found in aerial observers. The aerial observer is confronted with a much more difficult task because he must not only estimate ranges of considerable magnitude but must have a highly developed sense of direction and of ground speed. Since all data for firing is obtained directly or indirectly through the plane, it follows that an efficient system of communication must be maintained. Finally, all the elements connected with the firing must be highly coordinated so that the complete system functions as an entirety without lost motion or confusion. The usefulness of these exercises lies in the fact that only through actual firings can such a system be developed and its practical value estimated.

The battery commander's report brings out many of the difficulties encountered. Without going into the details it is noted that four firings were held on September 10, 11, 13, and 18. The first practice (September 10) disclosed many of the difficulties.

In this practice the trial shot method (fixed point) was used. Four trial shots were fired giving deviations.

No. 1	Over	400	Left	.27 degrees
No. 2	Over	340	Left	.31 degrees
No. 3	Over	400	Left	.27 degrees
No. 4	Shoot	370	Right	.27 degrees

The fourth shot was disregarded (wild) both for longitudinal and lateral corrections. Record shot number one was also disregarded, being reported as both plus and minus and no verification from the plane being obtained. Record shot number two was reported as short four hundred. No correction of data was applied but the course was shifted under the assumption that it was in error. Corrections of minus sixty yards and left forty were applied as a result of the third and fourth record shots. Upon application of this correction the safety officer reported that the predicted point was dangerously near the tug and an arbitrary deflection correction of right forty-five was applied and the course shifted. Shots five and six were then fired. Number five was reported as a line shot and number six as left two hundred yards. Both shots had reported range deviations of minus two hundred yards. Shots number seven and eight were reported as plus ten and hit in range but with lateral deviations of right two hundred and left two hundred. (Afterwards it was discovered that both were left two hundred and that an error in sensing had been made by the observer.) Errors in sensing by observers were made in three cases for range and the same number for deflection. The course was determined from the plotted points given by observer's signal while over the target and differed from the true course by twenty-three degrees. Radio communication was very slow.

Other practices were fired using the successive approximation method. Corrections were applied: by shifting the course, by altering travel, and by the method normal to seacoast batteries. Observer's errors were frequent and many times in sensing which leads the battery commander to recommend that the use of the clock be made mandatory. The course plotted during the practice of September 13 differed from the true course by only four degrees. The results obtained in the last practice (September 18) were more satisfactory, according to the battery commander's report, although a considerable error in course was made.

During the preliminary drills it was found necessary to design a prediction scale capable of transforming the speed of the target in miles per hour (as given by the air observer) into travel in yards per minute. A

satisfactory prediction rule was constructed by Sgt. Henry Bergfeld, Battery "A," 13th C. A. (H. D.)

Some of the high points noted in the battery commander's report were: the failure to furnish data promptly due to failure of radio communication, the time required for transmission of data by the plane was too great, the necessity for the perfection of methods which will enable the pilot to maintain a course along the gun-target line, the necessity for routine drill and training with Air Corps troops prior to firing.

Demonstration Shoot by the 52nd C. A. (Ry.) Fort Eustis, Va., For Coast Artillery School Students, October 8, 1929

By MAJ. OSCAR C. WARNER, 52nd C. A. (Ry.)

EDITOR'S NOTE: *Major Warner is a very methodical person. He keeps a diary. It is a good idea to keep a diary. Perhaps we have gone too far. We should have said, "It is a good idea to keep an official diary." In this diary Major Warner has set down faithfully all that occurred in the regiment in preparation for a target practice. Some of you may have forgotten some details of the procedure and some of the incidents which occur unexpectedly if not ruinously. We publish this to give a picture of the conditions under which target practices are being fired today.*

Plan—Early in September, 1929, it was planned to hold ten drills in the firing positions preceding the service practice. Five of these drills were to be sub-caliber shoots, simulating the demonstration, with officials taking deviations. You who read the diary will see how nearly the plan developed in reality. Barring post guard duty, post fatigue details, and details for the entire period of the Army Relief Carnival at Washington, nothing was allowed to interfere with preparation for the practice. Batteries "C" and "D" were consolidated to form a four-mortar battery and Batteries "E" and "F" were formed into a four-gun battery.

The diary follows:

Drill	*Date*	
	Sept. 13.	Friday. Lieutenant Stennis made up the train at 9:00 a. m. It was ready to move to the firing position during the afternoon.
	Sept. 16.	Monday. Armament train with personnel moved out at 8:00 for the firing position. Arrived at 8:30 and all cars were spotted by 9:30 a. m. Gun sections began emplacing. One gun of Battery "F" came from the Ordnance at 10:30 a.m. All batteries received subcaliber ammunition from regimental supply officer near firing positions. Mortar ammunition was taken to firing spurs on push car, unloaded from truck to push cars near road. Battery "C-D" due for post guard left early. Ten officers for duty in the regiment.

Drill	*Date*	
1st "E-F"	Sept. 17.	Tuesday. Battery "C-D" on guard. "E-F" drilled with dummy projectile. Analysis of drill.
	Sept. 18.	Wednesday. Rain.
1st "C-D" 2nd "E-F"	Sept. 19.	Thursday. Battery "C-D" fired thirty-six rounds subcaliber, simulated service shoot and analyzed practice. Battery "E-F" drilled with dummy projectile and analyzed drill.
3rd "E-F"	Sept. 20.	Friday. Battery "C-D" on guard. Battery "E-F" fired thirty-six rounds subcaliber simulating shoot. All officials took necessary data. Analysis was held in p. m. At 11:30 a. m., officers' call, Captain Slicer gave narrative report on yesterday's shoot and turned in full analysis with records.
4th "E-F"	Sept. 21.	Saturday. Battery "C-D" on guard. Battery "E-F" held a thirty-six-round subcaliber shoot at 10:30 a. m. It went well. Officials were there except Lieutenant Stennis, tug officer on guard. At officers' call it was planned to have "C-D" drill on Monday, Tuesday and Wednesday next week and "E-F" drill on Friday and Saturday. Lieutenant Smith, O. D. on Monday, will change guard with Lieutenant Stennis for a. m. period. At officers' call Monday Captain Gower will give narrative report of Friday's shoot and on Tuesday narrative report of today's shoot.
	Sept. 23.	Monday. Rainy and windy. Tug in Skiff's creek; too rough to go out. Drill called off. "C-D" lost a drill thus. "E-F" on guard. At 11:30 a. m. officers' call, Captain Gower gave a narrative of Friday's subcaliber shoot.
2nd "C-D" 3rd "C-D"	Sept. 24.	Tuesday. "E-F" on guard. "C-D" drill a. m. and p. m. "C-D" held two subcaliber shoots—one at 10:30 a. m. and the other at 2:00 p. m. Both shoots consisted of four trial shots and seven salvos. One primer on one gun did not fire, but placed in gun later it fired ok. Analysis of these shoots set for Friday 11:30 and Saturday 11:30 a. m.—a. m. cloudy, p. m. clear.
4th "C-D"	Sept. 25.	Wednesday. "E-F" on guard. "C-D" held subcaliber shoot at 9:00 a. m.
	Sept. 26.	Thursday. Regimental Day—General Roberts addressed the regiment at 9:00 a. m. Captain Gower read the regimental history, Major Warner gave a short talk, and the band played. Invocation by Chaplain Dignan. Benediction by Chaplain Boyd. Dinner at 12:00 noon. Enlisted men's dance at 8:00 p. m. at the post recreation hall.

Drill	*Date*	
5th "E-F"	Sept. 27.	Friday. "C-D" on guard. "E-F" drilled with hypothetical data; only two guns ready. Number one gun dummy projectile being repaired. Number four carriage torn down by Ordnance to repair the traversing mechanism. Sent radio about mortar service ammunition. No moving target today because 34th Infantry is firing machine guns and rifles at sleeve towed by airplane.
	Sept. 28.	Saturday. Post review at 9:00 a. m. Battery inspections by battery commanders. Lieutenant Colonel Taylor back for duty.
	Sept. 30.	Monday. Pay day. "C-D" coming off guard. "E-F" going on guard.
	Oct. 1.	Tuesday. "E-F" on guard. Rain and wind—no drill.
5th "C-D" 6th "E-F"	Oct. 2.	Wednesday. "E-F" held a 36-round subcaliber shoot. To be analyzed. A good practice with no interruptions. "C-D" held a seven-salvo subcaliber shoot which was very good. To be analyzed. This was preceded by a six-salvo shoot which was interrupted by a relay on one gun and a misfire of subcaliber ammunition.
7th "E-F"	Oct. 3.	Thursday. Drill on service course for both batteries. "C-D" is short thirty-nine men. They obtained six men from Headquarters Battery and eight from Service Battery, leaving them twenty-five still short. Headquarters Battery will supply seven men tomorrow and daily hereafter till the 8th. Service Battery will furnish twenty-four men, leaving eight men to come from "E-F" for powder detail on day of shoot.
8th "E-F" 7th "C-D"	Oct. 4.	Friday. Both batteries drilled a. m. only. Drills ok. but "C-D" a bit slow on elevating the mortars. Target on course at 8:30 a. m. for mortars. On service course for guns at 9:30. Back on service course for mortars at 10:30 a. m. "C-D" held three drills, firing twenty-one salvos. Too hard a work-out for the elevating details. Mortar ammunition arrived by rail at 10:30 a. m. —p. m., work on ammunition.
9th "E-F"	Oct. 5.	Saturday. Both batteries drilled. Target out at 8:30, "C-D." Very slow on number two piece. Seven salvos were fired o. k., however, in drill. Mortar projectiles weigh just one thousand pounds (one thousand seventy-pound A. P. Shot without bursting charge and cap).
10th "E-F" 9th "C-D"	Oct. 7.	Monday. Both batteries drilled. Tug arrived late with service target on course at 9:15. Airship came over at 9:30 and drilled with radio section, sending spotting data. "C-D" drilled in splendid shape and was ready in fifty seconds or less for all rounds. Both batteries policed in p. m. and drew powder. Sunny and warm day.

Oct. 8. Tuesday. Both batteries fired service practice. Student officers arrived at 10:00 a. m. "C-D" fired first trial shot at 10:21 and at one and one-half-minute intervals, took fourteen minutes to fire eight shots.

"C-D" fired record shots, beginning at 10:46 and ended with eighth salvo at 10:56. Total corrected time was eight minutes. After the fifth salvo the battery commander directed a change to one and one-half minute intervals. This change was unnecessary as shown by the story of the interruptions below.

Mortar No. 1. Fired nine shots, two trial and seven record. Primer failed on first trial shot. On second salvo the ammunition section sent up zone five powder—a relay. They were then in zone four; an inexcusable delay.

Mortar No. 2. Fired seven shots, two trial and five record. On salvo number three, number one breech detail lost the cotter pin holding on the translating roller. It took a couple of minutes to get another, causing two relays. Not allowable time out. Inexcusable.

Mortar No. 3. Fired five shots, two trial and three record. After third salvo, the primer seat and vent became clogged with a piece of the powder bag. It required several minutes to get it out and practice was over when piece was in order.

Mortar No. 4. Fired nine shots, two trial and seven record. On salvo number five the gun relayed because number one breech detail did not get the breech open quickly enough. He failed to translate the block while the piece was being depressed so that the breech failed to trip the tray latch until the mortar was fully depressed when it required two men to trip the breech tray latch and open the breech. This delay was inexcusable and was not allowable as time out. It is suggested that lubrication of the moving parts with graphite might have reduced the friction, made the task of number one easier and prevented the delay.

The 8-inch guns (Battery "E-F") fired four trial shots commencing at 11:57 a. m.—two shots from number two gun and two from number three. The observers at "B" could not see the white screen target. Firing was suspended for three hours and nine minutes while a red cloth was tacked on the side of the target and the observers moved into the towers. These changes together with the moving of the sun rendered the target visible at 3:00 p. m. and record salvos were ordered.

Gun No. 1. Fired eight shots, all record. First salvo, primer failed, causing relay. Eighth salvo, relayed—powder bag was not fully inserted. The corner of the bag stuck out and jammed the breech block. This last charge was an odd lot of reworked powder. Time out not allowed.

Gun No. 2. Fired ten shots, two trial and eight record. Number two trial shot had a relay due to lanyard fouling on floor plate.

Gun No. 3. Fired ten shots, two trial and eight record. No relays. One

fired primer stuck in vent and had to be removed with pliers. Nearly caused a relay.

Gun No. 4. Fired eight shots. Relay on last salvo due to number five on davit fouling the chain of the block in the shell tray. This man was just out of the hospital and had a sore finger.

Lateral Deviation Observer. This officer stationed himself at an elevation of about ten feet on the beach on the gun-target line. He had been at this location for subcaliber practice and did not remember that the curvature of the earth at nine thousand five hundred yards is about twenty feet and that a ten-foot high target at nine thousand five hundred yards cannot be seen at an elevation of only ten feet. An iron tower giving about forty feet elevation was used for the red streamer and was available for the lateral deviation observer. The visibility was excellent. His record for the gun practice was very poor.

Target. The target used was a simple screen target, ten feet square. The background for the target in the locality is alternately a forest and light clay (banks). The white target stands out against the forest green, but shows up indifferently against the light clay river bank. The target cloth was all white. A strip of red down the middle of the target was added during the target practice and assisted materially in making the target visible.

Use of the observation towers. For some reason, observation towers at the secondary observation and spotting station were not manned by the observers and spotters at the beginning of the practice. They set up on the ground below the towers. This worked very well for subcaliber practice, but again the curvature of the earth at nine thousand five hundred yards made the target practically invisible and the target could not be tracked. After a three-hour delay the difficulty was remedied, the towers manned, and the practice was pulled off at once. Spotting stations were to take the azimuth of the target at the instant of splash, but the four ranging shots from the 8-inch were fired before the spotters elevated themselves and old man curvature interfered. Spotting data was secured on which to base a correction for fire.

Hits. "C-D"—four, broadside; seven, bow-on. "E-F"—four broadside; eight, bow-on.

Conclusion. This is a bully regiment and excellent detail. I am sorry for you majors who are struggling along on other jobs. Come to Eustis, taste the country air and learn how to fight the battles of the railway artillery.

The 55th Coast Artillery (T. D.) Fort Kamehameha, T. H.

Assuming that we are at war and that the control of the sea has been lost temporarily (or permanently) what next can we expect? It might be a number of things including a squadron of amphibian tanks under command of Lon Chaney but in the Coast Artillery we have grown accustomed

to the idea that the enemy will then proceed to solve that old Leavenworth problem and attempt a "landing on a hostile shore." How will they come? Will they land at the mine dock with a shore patrol to direct traffic? Not if we know it. They will probably pick out some nice sandy beach away from the fixed defenses, anchor their transports, and send their troops and equipment ashore in small boats or in those barges which the Navy calls motor sailors for no good reason. What do we do? We send our tractor-drawn artillery (railway, too, if we have time) out to this selected landing point—if it isn't already there—and try to drive them off before they get to the beach and the Doughboys and Marines get all the credit. It may be that the transports will keep beyond the range of our GPFs. All we can do then is to pop off the motor sailors as they come within range.

In the harbor defenses of Pearl Harbor tests have recently been conducted to determine the best use of tractor artillery in this situation. What is the best method of attack on a flotilla of small boats? Shrapnel seems to be a likely answer. A board consisting of

Brig. Gen. R. E. Callan, U. S. A.
Brig. Gen. Alston Hamilton, U. S. A.
Col. R. S. Abernethy, C. A. C.

observed these tests and will make recommendations as to the suitability of shrapnel against personnel crowded into small boats and headed for shore. Sixty rounds of ammunition were authorized which were fired at improvised targets representing small motor sailors. The ranges fired were between six thousand and ten thousand yards. Every effort was made to determine hits not only by the shrapnel holes in the material targets but by observation of bursts from various angles, making use of improvised scales and charts. Various methods of observation were used including aerial, axial, bilateral, etc.

The tests were conducted by the 55th Coast Artillery, Battery "C" (Capt. Sam W. Anderson) doing the actual firing under the supervision of Maj. H. H. Acheson, commanding the 1st Battalion. The details and results of this test should be interesting. If permitted to do so, the JOURNAL will publish further information when received.

The 61st Coast Artillery (A. A.) Fort Monroe, Va.

The month of October at Aberdeen Proving Ground was a full one, with regular firing schedules keeping all hands busy morning and evening five days a week, and special tests occupying the afternoons.

Undoubtedly the high lights of the period were the District Day and Ordnance Day performances, October 9th and 10th. The District Day shoot was productive of a real thrill for the spectators when a target was shot down. On Ordnance Day the regiment fired both afternoon and evening, and while not shooting down any targets, made a most favorable impression.

A considerable stream of visitors, both officers and civilians came to Aberdeen during the tour of the 61st, many of them for the sole purpose of seeing the antiaircraft firing. In addition to five Reserve officers who were attached for their annual active duty period, thirteen Regular officers, instructors of Guard and Reserve units, were given a week's intensive course of instruction, and one of the Coast Artillery instructors at Leavenworth, Major Pratt, spent a week here with the special object of coordinating the tactics being taught at Leavenworth with the actual power and limitations of antiaircraft materiel as developed at Aberdeen. Several parties of naval officers have witnessed the firings, and General Moses, Colonels McManus and Behr, who are taking the refresher course at Fort Monroe, were here for two days.

Special demonstrations were held for the War College class and for the National Guard and Field officers classes from the C. A. School, who during their two days' stay actually fired as well as observed.

The Chief of Coast Artillery and the Corps Area Commander have both visited Aberdeen and witnessed the work of the regiment, the former several times.

The firing produced some noteworthy performances. Twice in one day the guns shot down their target. On another occasion a gun target was brought to earth from nearly fifteen thousand feet altitude. The machine guns have added two "sleeves" as their share of the bag (the gun total stands at seven since the tests began). One gun practice netted two hundred and six shrapnel and two fuze holes in the target. When plotted this practice gave all hits in thirty-four shots, with eight hits on consecutive shots, which is believed to be a record for our A. A. guns. Especially remarkable was a situation brought about by high wind during one night firing. The towing plane, a DH with supercharger, could not overcome the eighty-mile gale aloft, and although a course was flown that permitted firing, the target actually dragged the plane backwards a noticeable distance, a novel situation for all those present. Incidentally, another aviator sent up the morning of this shoot encountered the same high gale above the clouds, became lost, and finally landed in a New Jersey cornfield eighty miles away, after first finding himself over the Atlantic Ocean, out of sight of land when he broke through the clouds.

The ability of the regimental mess to keep up with the constant and sudden demands on it reflects much credit on the mess officer and Mess Sergeant Curtis, and his assistants. Eighty extras on Ordnance Day, one hundred and twenty War College visitors and numerous smaller parties have been handled at short notice, and always so well that the guests have gone away well pleased. Distinguished visitors to the mess have included the Chief of Coast Artillery, the Corps Area Commander, the Commandant of the War College and the Post Commander, Colonel Shinkle, who has helped in every possible way to make the tour of duty of the 61st at Aberdeen instructive and agreeable.

PROFESSIONAL NOTES

Aviation Development and Air Defense

At frequent intervals some news article in the press reminds us of the steady progress which is taking place in aviation. While the limitations of air travel are numerous and obvious there is no doubt that many of them are being eliminated and that air forces will exercise a great influence in the next war, particularly since we believe no immediate outbreak of hostilities is to be anticipated.

Contrary to what appears to be the popular belief, those who are high in authority in both the Army and Navy are alive to the possibilities of this new weapon both as a supporting arm for the "Queen of Battles" or for an independent rôle in "imposing our will on the enemy." Since those who have been placed in the positions of highest authority in our military hierarchy were selected because of their proven attainments, because they have previously made decisions based on calm judgment and through logical reasoning it is not surprising that we fail to observe any headlong rush to scrap everything which has been previously used successfully in practicing the art of war. While the value of the airplane is appreciated its failings are many and even its most wild-eyed devotees have as yet gone little farther than to reiterate their extravagant claims as to its possibilities and to call upon a somewhat lukewarm public to become "airminded." Too little thought has been given to the tactics which will make it an efficient weapon for the prosecution of war. Many unsolved problems still exist—especially those relating to command, communication, and coordination.

So it is that the best policy seems to be one of calm observation coupled with a gradual but sure development and improvement in the use of air forces.

That this improvement is constant no one can deny. Lindbergh's flight to Paris, although not the first trans-Atlantic flight, caught the popular fancy and initiated an era of personal idolatry which, coupled with the good sense of the recipient, will endure over a number of years. Trans-Atlantic air travel seems an approaching actuality even if not common today.

Great technical strides in aviation have been made as everyone knows. A few months ago Lieutenant Doolittle, under the auspices of the "Guggenheim Fund for the Promotion of Aeronautics," performed a test of blind flying which is of undoubted importance to commercial aviation and no doubt will have an application in military flying. It is not exactly correct to call it a test of blind flying because it also was a test of blind landing. He took off from Mitchel Field, flew a distance of fourteen miles, and returned to the landing field without once looking at the ground. The instruments used consisted of an artificial horizon for indicating the longitudinal and lateral altitude of the plane, a new type of directional gyroscope, and a barometer sensitive enough to measure altitude within an accuracy of only a few feet. The Mitchel Field radio beacon served to keep the plane on its course. Lieutenant Doolittle states that the landing was accomplished by the use of the instruments alone and without difficulty.

In the early stages of airplane development the possibilities of gyroscopic control for planes was visualized and much effort was expended in an attempt to utilize the gyroscopic principal. The Sperry Company, as in antiaircraft fire-control developments, has been outstanding in the development of the gyroscopic control. Only recently a model was completed and tested by an Army Air Corps

pilot at Dayton which seems to accomplish nearly all that was hoped for it. This model weighs only fifty pounds and occupies a space of 10 x 10 x 14 inches. The gyroscopes are two—one mounted horizontally and one vertically. The well-known peculiarity of a gyroscope is to maintain a definite position regardless of the position of any other part to which it may be connected, such as an airplane. Being placed in rotation at a speed of about fifteen thousand r. p. m., alterations of the course of the plane, up or down, right or left, cause electrical contacts to be made which through an electro-magnetic arrangement actuates clutches connected to the controls. The controls react against the alteration in course and tend to bring the plane back to its original line of travel. The three major controls affected are the rudder for direction, the elevator for upward and downward movement, and the aileron for maintaining lateral balance.

It is claimed for this device that the pilot is relieved of much of the mental and physical strain which results from piloting a large plane, especially in unfavorable weather. It keeps the plane (wind being taken into consideration) on a much straighter course than can be steered by the pilot with map and compass. It favors flying at night or in fog.

It is more sensitive than the human to changes in elevation or horizontality and reacts quicker in case of undesired changes. It permits the pilot more time for the examination of maps and the observation of terrain or the dispositions of ground troops or establishments. It will not land a plane mechanically, of course, but the control can be switched off by the pilot and the landing made by hand.

Some time back someone objected to the professional notes in the JOURNAL saying that they were not what they purported to be—neither "notes" nor "professional." In order to avoid a recurrence of this criticism it is now necessary to attempt to draw this screed back into the professional note section—assuming that our natural inclination to ramble has not led us too far astray. During the war one of the most potent allies of air defense forces was the weather. Conversely the great bugbear of the hostile air forces were fog, rain, or any kind of weather which clouded the atmosphere. Even darkness, while it served to screen the hostile bombers from antiaircraft fire and disclosure to hostile fighters, created a difficulty in locating both the bombing target and such outstanding features of the terrain as enabled them to select their course to the objective or to the home airdrome. Ground forces were able to judge of the probability of air raids by the weather reports and maintained a degree of alertness corresponding to this probability. Since many of the more recent improvements in air navigation have been to reduce the effects of bad weather on flying it follows that the defense will be at a greater disadvantage and that it will be necessary to develop additional means to increase its power. If the imagination is permitted to function we might visualize the bombing attacks of future wars delivered during a fog or rain which makes the ordinary kind of vision impossible. However, there are methods by which we may see through fogs which searchlights will not penetrate. Our developments along these lines are keeping pace with the developments in aviation. While our rôle does not permit us to be spectacular much is being accomplished in the laboratory which is of the highest importance in our system of air defense. These defensive measures by their nature do not inspire the same popular applause as does each new development in aviation but we believe they are of equal importance and will prove sufficient.

Coaching a Girls' Rifle Team

By LIEUT. HARRY F. MEYERS, C. A. C.

EDITOR'S NOTE: *There is considerable doubt in our mind as to the proper section for this article. One can never tell when he may be called on to coach a girls' rifle team so we place it under professional notes. It is probable that many of our readers do not know that there is a girls' rifle team coached by a Coast Artillery officer. There are others coached by officers on duty at R. O. T. C. units but it is believed Lieutenant Meyers holds the lone distinction for the Coast Artillery. He is on duty at the University of Kansas, Lawrence, Kansas. The girls' rifle team at Kansas University is one of the top-notch girls' teams in the country. It comes out well towards the top in all its competitions.*

Having had a girls' rifle team wished on me, and having withstood the wise-cracks and innuendos of my supposed friends (and wife) for a period of more than four fours, ye editor has now called on me for an article which he admits "should be amusing" on the subject "Coaching a Girls' Rifle Team."

In order to produce a team of any kind, one must have a large number from which to choose the squad. This might appear to the uninitiated to present quite a problem, but it resolves itself into a fight for self-preservation. When the call goes out that the Girls' Rifle Team is to be organized at a certain time, the girls start flocking, and by the time shooting gets started there are always at least two hundred aspirants.

As the work is handled here, there is a sergeant of the Engineer Corps, who is detailed for the small arms range, working directly under me. Before the season opens, we outline the plan of procedure, which means allocating hours and ammunition to fit our class schedules and the ammunition allowances.

Each girl is assessed one dollar when she first appears which pays for ammunition and for sweaters for the high shooters. The first week on the range is devoted to aiming and position exercises ending with each girl making at least one triangle. This of course is tedious work and our first elimination is entirely voluntary as a number of the girls become discouraged. The next week or two is devoted to firing groups of five or ten shots with no regard to score. This is the next step in self-elimination, as only those who pay close attention to the instruction are willing to shoot, say an inch from the bull's-eye, and think that they are doing good work. We try to encourage all the girls when they become downhearted. However, it must be admitted that with so many to choose from, if fifteen or twenty allow themselves to become discouraged because their shooting seems to be poor, and desire to discontinue shooting, we very seldom go out of our way to keep them, regardless of their looks or social prestige.

The final elimination comes at the end of six weeks of firing. The captain and manager of the Girls' Rifle Team and myself, form a committee of three to drop the ax. I always have the other two-thirds of the benzine board work first and then I cast the deciding ballot. Girls who have fired other years are no better than the new girls and the ax falls entirely on the girls' merits (this always elicits a wise-crack or two) as a shooter.

Now the real battle commences. If you think there is competition among men shooters, try coaching a girls' rifle team. With seemingly so little at stake, I have discovered case after case of trickery and plain cheating in order to make good scores. There have been cases of men shooting on the girl's target when the girl in the case was having an off day. This of course is easily eliminated by allowing only girls to be on the range at certain hours. There are times when competition becomes too stiff for the girls and they will "blow up," stop shooting, sometimes cry, and generally tear up their target and pretend that they had

not started their record firing. These cases require delicate handling (translate as your conscience guides) and sometimes mean the loss of a good shooter.

The average girl can shoot from five to ten points better than the average boy in either the prone or sitting positions. I have studied this fact very carefully, as our boys' team needs all the points it can make, and can only say at the end of four and one-half seasons of observation that a pancake is flatter than an orange.

I am sometimes asked what the girls wear while shooting. When I first came here, the costume was the regular girls' gymnasium suit. The difficulty in this arrangement was the fact that a number of the girls did not have gymnasium suits. As the dresses became shorter, our gallery grew larger. To stop this, I merely ordered no shooting unless attired in G. I. denims.

The handling of the matches, which are all telegraphic, or by the exchange of marked targets, is something of a problem. I generally use the manager of the girls' team for the paper work but this takes constant checking to see that it is properly handled.

From my observation, girls try out for rifle shooting here for the following reasons:

1. For the newspaper publicity.
2. For the reward of the sweaters.
3. Sorority pledges forced to go out by their sisters.
4. To gain W. A. A. points.
5. To learn to shoot.

Although some of the girls receive letters every year from pacifist fanatics quoting the bible and upbraiding the girls for carrying on the use of firearms, the popularity of rifle shooting is increasing and competition is growing keener. In the spring a joint picnic of the men's and women's rifle teams is held at the National Guard rifle range. All the girls who so desire fire the .30 caliber rifle and automatic pistol.

Not long ago I received a letter from the manager of the girls' team of last year in which she said that after teaching school all week, she certainly enjoyed getting out on Saturday and shooting.

Thus you see, that although the rifle team is my prize gripe, there evidently is some gain for those who like it.

The Last Eight Hundred Yards

By BRIG. J. F. C. FULLER, C. B. E., D. S. O., P. S. C.

Today we possess, in spite of all the lessons of the last war, an infantry army thinking of mechanisation, which is slowly but surely being forced upon it, but in what terms? Obviously those of infantry, hence our present tactical muddle, a muddle doubly confounded because the infantry idea still held is itself no less than seventy years out of date. What then is this idea? The answer to this question, strange as it may seem, depends upon cavalry.

If there is no cavalry, as was the case in ancient Sparta, the infantry idea is the assault. Introduce cavalry, for example, as used by Alexander the Great, and the idea is no longer the assault, but, by threatening to assault, to fix the enemy's infantry, and hold them so that the cavalry may maneuvre, charge them in flank, or attack them in rear. This is a totally different idea; for the main object of the infantry is not to assault but to pin down.

From 1760 to 1860 the power of cavalry diminished so rapidly that the assault quite rightly once again became the pivotal idea. Then came the rifle,

and in the American Civil War seven out of every eight assaults failed, and the slaughter was appalling. In the Franco-Prussian War no single frontal attack, by French or Prussians, succeeded. The assault was dead, and as it was no longer possible to develop cavalry pressure from the holding power of infantry, attempts were made to protect the assault by artillery fire, and in the last war they either failed or proved themselves to be so costly as to be of little value.

Today it may be truthfully said that there is not only no assault, but no mobile attack within eight hundred yards of the enemy's rifles and machine-guns. In open country, at eight hundred yards distance the attack is halted by the bullet, and there is no further advance until hundreds of guns have been brought up and thousands of tons and shells accumulated. Because of the bullet, and particularly the machine-gun bullet, the crucial infantry problem today is that of the last eight hundred yards.

To attempt to solve this problem by increased artillery fire is fantastic. It is fantastic not only because it failed in 1914-18, but because bullet-proof armour offers a far better solution. Suppose now, and it is not asking much, that a score of light tanks, costing one thousand pounds each, was allotted to each infantry battalion; then these machines could operate decisively against an unarmoured antagonist; in fact, they could assault him and run him down. Against one equipped with anti-tank weapons, though they could not act so effectively, they can still hunt out the enemy's machine-guns, terrorise them, and so assist their supporting infantry forward.

By armouring a few men, for this is really what we have done, we have anyhow begun to solve the problem of the last eight hundred yards, and by armouring many we have certainly solved it so far as the bullet is concerned, for, having cut the bullet out, we can once again assault. But why do so, for there may be antitank weapons waiting for this assault? Why not instead use our armoured infantry as a holding force; that is, a force which will threaten to assault whatever is in front of it, and hinge on to the flank, or flanks, of this holding force, one, or two, armoured forces, composed of fast-moving medium tanks, supported by pro-tank weapons—small calibre high velocity guns on mechanised mountings, which will assist the medium tanks forward. If we do so, surely the results will be far more economical; for whilst our semi-armoured front holds the enemy to his position by worrying him, and threatening to assault, these armoured forces will move away from his defensive front, and strike him in flank, or if this flank is protected by anti-tank weapons they will move toward his rear, striking at weakness and not at strength. Then shall we see not only the problem of the last eight hundred yards really solved, but the art of war once again reinstated, for when both sides have killed the bullet, skill in maneuvre will decide the battle.—*From the Army, Navy, and Air Force Gazette.*

Rifles and Machine Guns

Rifles: The development of a suitable semi-automatic shoulder rifle, ultimately to replace the Springfield magazine rifle, model of 1903, as the arm of the individual soldier, is rapidly approaching completion. The design of a suitable semi-automatic rifle within a practicable limit of weight, that is, to be no heavier than the present service rifle, resulted in the development of a weapon of that type of a caliber smaller than that now used. The reduced-caliber weapon proved so satisfactory that twenty rifles of this type was manufactured for test by the Infantry and the Cavalry.

This test was completed, with favorable results, in 1928, and a board of

officers was appointed by the War Department to consider the subject of a suitable caliber for the new service rifle, and to submit recommendations for a change, should one be found advisable. This board concluded its considerations during the summer of 1928, and recommended that a caliber of 0.276-inch be adopted for the future development of a service rifle of semi-automatic type, to replace the present service rifle. This recommendation was approved by the War Department, and July, 1929, was set as the date for a competitive test of semi-automatic rifles submitted by interested designers. This test was conducted by the board of officers who previously decided upon the caliber. It is hoped that as a result of this test a semi-automatic rifle suitable for adoption may be selected.

Aircraft Machine Guns: A new aircraft machine gun, caliber .30, has been completed and tested by the Ordnance Department and the Air Corps, with satisfactory results. The new weapon is much lighter than the caliber .30 aircraft machine gun of synchronized type now in use, and will replace both the synchronized and flexible guns at present standard for the Air Corps. The new weapon was developed and manufactured by a commercial concern under contract with the Ordnance Department. A contract has been placed for the manufacture of three hundred and twenty-five of these guns for the Army and for the Navy.

Antiaircraft Machine Gun Mounts: A new type of tripod for the caliber .50 antiaircraft machine gun, recently standardized, has been supplied to antiaircraft units.

A wheeled gun mount, designed to carry the caliber .30 infantry machine gun and tripod, which was developed and supplied to the Infantry for service test during the early part of 1928, has been tested by the Infantry, with satisfactory results, and this item has been standardized. It will enable the infantry machine gun to be transported in such manner as to be instantly available against aircraft at all times.

Test Board Results: The Board appointed by the Secretary of War to test various types of semi-automatic rifles completed the tests at the Anacostia Range and at Aberdeen Proving Ground. In all, nine rifles of caliber .276 semi-automatic type were tested. These tests were much more exhaustive and severe than the previous tests given the Pederson rifle by the Infantry and Cavalry Boards. The test resulted in the elimination of seven of the rifles tested leaving the Garand and Pederson, both exhibiting suitability. Further tests by troops will be made before a final decision is made.

Both these rifles are controlled by the Ordnance Department. The Garand (U. S. Model T3) and Pederson (U. S. Model T1) have minor defects which, it is believed, can be easily eliminated. The Garand excels the Pederson in simplicity (fewer parts). No money is available for the manufacture of any considerable quantity of these rifles for purposes of rearmament, regardless of which rifle is selected. Since the money will not become available until 1932 tests by troops will continue and a final selection made prior to 1932. The Pederson has already been tested by troops and found satisfactory.

Smoke Screens

The Germans have lately carried out experiments on a big scale to try to determine the value of smoke screens as defense against aerial bombardment. It is obvious that if you can smother a target in dense fumes, there can be no shooting at it, either from the air or the earth, with anything in the nature of calculated precision. But to our mind the difficulty lies in insuring the smothering business at the critical moment. A strong wind will soon dispel the densest

smoke; at any rate, sufficiently to reveal the general outline of a town or city. A complete circle of smoke-producing equipment would be essential so as always to have a windward line from which to discharge the substance. The sharp terminal edge of this windward line would make a pretty good mark for calculation to an aerial observer.

In this respect the navy is much better circumstanced for the effective employment of the smoke screen. A single warship, laying her trail as she goes, can envelop an entire fleet. That fleet will not be static, like a threatened town, but can keep pace with the smoke screen as it moves and spreads over the sea, unless, indeed, it happens to be off a lee-shore. Attacking airmen would then only have a wide cloud area into which to plump their bombs against relatively very small and moving targets.

The smoke screen was comparatively in its infancy at Jutland yet the Germans used it to much advantage. Color effects are now employed which are said to be as elusive in their way as the "dazzle" paint schemes used during the war. It may be true to say that the smoke screen can never prove more than a temporary advantage to an inferior or a slower fleet, but the ability to delay action might well mean all the difference between success or failure. The assumption that any fleet withdrawing under a smoke screen would be scattering mines as it went is not going to render the following of it up a very simple matter. Blind man's buff now has to be added to the games which the tacticians are called upon to learn.—*From the Naval and Military Record, London.*

AND BE ABLE TO FIRE ON MOVING WATER TARGETS, TOO?

As aviation is used more and more for commercial and military purposes, the role of the antiaircraft gun, now the most effective defense against aircraft, will become more and more important. It does not seem unlikely that eventually it will be necessary that all types and classes of artillery be designed, and have their fire-control system so arranged that they can combat aircraft. If this becomes the accepted rule, then all artillery will be primarily antiaircraft artillery in type, for, while antiaircraft artillery also can successfully engage targets on the ground, field artillery weapons of the present accepted standard cannot be successfully used against aircraft.

Perhaps the new antiaircraft artillery and its electro-mechanical fire-control system, which represent radical departures from present classical standards, will lead the way toward a new period in the history of artillery.—From an article by Maj. G. M. Barnes, O. D., in Army Ordnance.

YOU TELL EM

What Do You Mean, "Antediluvian?"

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

In writing this I think of the prayer of a sinful old sailor in a terrific storm at sea who fervently offered, "Oh Lord, I ain't one of these complaining kind that comes to You morning, noon and night, but if You let me set foot on land once more I'll never bother You again as long as I live." This is my first offering to the JOURNAL, and will probably be the last. I would not venture this, but Captain Case, in looking up "Onagarchus" in the dictionary saw "antediluvian" and thought it was a nice word to use. I agree with him, but not when he uses it as descriptive of my mortars.

The mortar probable error may be a "bug house" puzzle to the ballistician, but it is only a cross that the battery must bear—*after the shoot is over.* A battery commander spends months training his personnel, days in getting his materiel into shape, and less than two minutes in adjusting his battery. After he figures his deviations and has plotted his shots, and has found out the essential thing of a practice, i. e., how many hits he has made in the allowed time, it is then that he starts his worry about the D. A. P. E. If it is too small it hurts one part of the score, if it is too large it hurts another. He knows that he is going to get another the next time he shoots, for the B. C. who takes proper care of his armament knows that the D. A. P. E. depends on the condition, age, etc., of the powder issued to him. So all he does is pray for a powder that will give him a P. E. that does not hurt too much in either place.

It is true that he is shooting at a score. He must to get among the "E"lect. He is not shooting "service conditions," for such conditions will not call for twenty odd lines of tabular analysis or a graph that is liable to be sent back because the red dots are too large or the blue ink is not of the proper shade.

It is true that the old mortar pit, an emplacement that recalls the mouth of a mine shaft, may appear "antediluvian"; the azimuth setter has to be somewhat of a contortionist to get his data set; and the supposed concealment of the enclosure merely tends to give headaches to the personnel. But when the old mortar hits something it stays hit.

The range dispersion of mortars is very small, and with anything like accurate meteorological data they respond to adjustment corrections. In six practices with railway mortars in the last year, each was adjusted and at least five hits were made. Incidentally, the railway mortar has none of the disadvantages mentioned above. They are easily laid in azimuth by

sight, and are fought in the open with none of the ill effects of a hole in the ground.

It is doubted if the mortar would even be assigned to attack any target other than capital ships, and a battleship cannot maneuver as easily as a cruiser and cannot render effective fire unless she is travelling a straight course. A trained personnel can track and plot the straight course of a target travelling at a high speed as well as the slow-moving mine planter.

One salvo that is properly spotted will permit a corrected salvo to be at the set forward point two and one-half minutes after the first is fired, and it is not believed that a dreadnought will move out of a zone in that time.

The mortar battery commander's problem is the same as that of the guns—identification of splashes and accurate spotting. If he gets these he gets on, and a mortar battery on, is one battleship "no got."

The time for mortars to be scrapped is when the nations go crazy and scrap all battleships, and only then. And I'll gamble that any prospective enemy of ours would be glad to buy all we have and present them to Henry Ford, the Smithsonian, or anyone else a thousand miles from the coast, paying a doube price for the railways.

DIPLODOCUS.

P. S. Before Captain Case pulls a wise crack, I'll tell you that a diplodocus was a saurian-footed critter about 50* feet long with a three-inch brain.

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* Note: Pittsburgh has a diplodocus eighty-four and one-half feet long.

No, We Don't Write Em

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Your request for criticisms of the COAST ARTILLERY JOURNAL from a lowly Reservist smacks, I fear, of the system *reputed* to be in use in the Army in 1917-1919, which was said to be the following:

1. Careful preparation of a personnel card for an indicated individual.
2. The careful perusal of said card.
3. The assignment of said individual to the duties for which he was most obviously unfitted.

However, "Orders is orders." Hence my brief remarks, which are as follows:

I fear that I am not progressive. Consequently, I decline to say that I consider the JOURNAL a back number, dry, out of date, uninteresting, the work of a collection of old fogies, or otherwise useless or worthless. On the contrary, I read it every month with a great deal of interest. I have found a great number of articles extremely useful, and most of them entertaining as well.

My preference runs to articles on antiaircraft, that being my assignment. Some articles have no appeal for me, such as the series on (Editor's Note: See page 465) but that happens to be my personal equation. But if I tried to dissect every type of discussion you print I'd be all night at it. I must add, however, that I consider your book reviews as good as, if not better than, any that can be found anywhere else.

Referring to your October issue, I do not believe that Lieutenant Endebrock is "just being polite." On the contrary, I strongly suspect some of the letters of opposite tone of being initiated not far from the office of the Editor of the COAST ARTILLERY JOURNAL.

With best wishes for your continued success.

Yours sincerely,

P. H. WASHBURN,
Captain, CA-RES.

P. S. I'm enclosing another check for three dollars. You've aroused my curiosity about strategy, too, so if you'll send me a copy of "The Fundamentals of Military Strategy" perhaps I can satisfy same.

Here 'Tis

The Editor, the COAST ARTILLERY JOURNAL
Dear Sir:

A page devoted to explaining in clear and concise words the meaning of numerous orders, letters, etc., would be the bait for many new subscribers. This may sound out of order but when thinking it over the logic of it will be seen.

Throughout the Army enlisted men are required to read and fully understand what they are reading as it is not always possible to get a quick explanation from their officers (They may be sick, on leave, anything). What brought this to my mind is a letter from the War Department dated September 24, 1929, subject: Promotion in the Officers' Reserve Corps.

Beginning October 1, 1930, promotions in the Officers' Reserve Corps will be based upon certificates of capacity or upon three hundred hours' training credit earned prior to that date and within five years from date of recommendation by the Corps Area Commander or the Chief of Branch concerned. Military credits earned on or after October 1, 1930, will not be credited as a qualification for promotion except as contemplated in case of Reserve officers granted certificates of capacity because of graduation from the R. O. T. C.

How many officers, not alone enlisted men, will get the real drift of that letter? Not many.

Would it not have been much clearer to say:

On and after October 1, 1930, no promotions will be made in the Officers' Reserve Corps under the system of credit-hours?

That would be clear for that is just what it says but in a way that is

positively confusing. In the umpty umpth division alone there are as many opinions as there are officers but I am going to stick to mine.

The gist of the whole thing is that after October 1, 1930, promotion will be made by written or oral examination only. Goodbye, correspondence courses, conferences and all other contact activities of the Organized Reserves. Looks like they want to bust it up.

STAFF SERGEANT, D. E. M. L.

EDITOR'S NOTE—Just to make it worse:

If you had said that promotion after October 1, 1930, would be based on the holding of a certificate of capacity, *only*, you would have been nearer correct. *However*, Reserve officers *holding no certificate of capacity* may still be promoted on the basis of credit hours *after* October 1, 1930, *if* they earned three hundred credit hours *prior* to October 1, 1930, and *if*, on the date their application reaches Corps Area Headquarters, the entire three hundred hours were earned within the five-year period prior to *the date the application reaches Corp Area Headquarters.*

Our advice to Reserve officers is to get busy and earn the three hundred credit hours *before October 1, 1930.* Then when you have served your time in grade you may apply for promotion on the credit-hour basis even after October 1, 1930—that is, provided none of your three hundred hours has begun to mortify. You can cash in on Certificates of Capacity any time—apparently the War Department believes that the credit-hour system is a washout and that the Certificate of Capacity is a better indication of the Reserve officer's proficiency. Opinions will differ on this.

This Is Not Up to His Usual Blood Pressure

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Many thanks to you for offering me a free crack at the COAST ARTILLERY JOURNAL. I knew there would be a hectic change of some kind.

This last number of the JOURNAL certainly discloses your (blah, blah). I do not know what to say about the JOURNAL except to say that year in and year out it does not interest me very much. I only subscribe when I am around Monroe, in school, or when some friend is the Editor. I agree with the first letter in the "You Tell 'Em" number September). The Colonial Fort essays always did burn me up. The activities of the Coast Artillery are most interesting. When an officer gets out on the West Coast or keeps on going to the Islands he gets little news of the Army and less of the Coast Artillery.

I suppose the old timers will snort and raise hell, but let them go to it. I think it would be very difficult to satisfy all the breeds of officers in the Coast Artillery. I would fill it up with the things of interest to the captains and lieutenants who are on duty with troops or who are on duty involving artillery instruction.

I have watched the other Service journals and I think they are all lousy. So, there must be something wrong with me.

I wish you lots of luck. Maybe the removal from Fort Monroe was what you needed.

Sincerely,

JACK.

COAST ARTILLERY ORDERS

Maj. Gen. Henry D. Todd, Jr., detailed member classification board.

Col. Frank C. Jewell, detailed member retiring board, Fort McPherson.

Col. Harry T. Matthews, from R. O. T. C., University of Washington, Seattle, retired November 3.

Col. Harry L. Steele, detailed member of retiring board, Washington.

Lieut. Col. Myron S. Crissy, detailed member court of inquiry, headquarters, Fifth Corps Area.

Maj. Richard F. Cox, from student A. W. C., to General Staff, Washington, June 30.

Maj. William M. Cravens, from Walter Reed, to Fort Leavenworth.

Maj. Edward J. Cullen, promoted Lieut. Col., October 2.

Maj. Stuart A. Hamilton, transferred to Chemical Warfare Service, October 9. Remain on present duties, Edgewood Arsenal.

Maj. Francis P. Hardaway, orders to Panama revoked. From C. A. S., Fort Monroe, to Org. Res., St. Louis.

Maj. Thomas O. Humphreys, from 7th, Fort Hancock, to R. O. T. C., Kansas State Agricultural College, Manhattan, Kansas.

Maj. William R. McCleary, promoted Lieut. Col., October 8.

Maj. Edward W. Putney, from Philippines, to 9th, Fort Banks.

Maj. Francis J. Toohey, from student C. A. S., Fort Monroe, to Org. Res., Detroit.

Capt. George W. Brent, from 63rd, Fort Winfield Scott, to Philippines; sail San Francisco, February 8.

Capt. Leon C. Dennis, from 7th, Fort Hancock, to Philippines; sail New York, May 7.

Capt. Ira B. Hill, promoted Major, October 13.

Capt. Richard C. Lowry, from 9th, Fort Banks, to Philippines; sail New York, May 7.

Capt. Byron T. Ipock, from Philippines, to 9th, Fort Banks.

Capt. Samuel L. McCroskey, leave extended four days.

Capt. Riley E. McGarraugh, from 12th, Fort Monroe, to Philippines; sail New York, May 7.

Capt. Douglas E. Morrison, from 62nd, Fort Totten, to Philippines; sail New York, May 7.

Capt. Lucas E. Schoonmaker, from 61st, Fort Monroe, to Hawaii; sail New York, December 11.

Capt. Verne C. Snell, to sail San Francisco for Philippines, February 8 instead of December 6.

1st Lieut. James B. Carroll, from Philippines, to 12th, Fort Monroe.

1st Lieut. John S. Crawford, from 6th, Fort Winfield Scott, detailed Q. M. C. to San Francisco general depot, November 15.

1st Lieut. John I. Hincke, from Philippines, to 12th, Fort Monroe.

1st Lieut. James I. Howell, Jr., from Hawaii, to 1st S. R. Battery, Fort Eustis.

1st Lieut. Joseph C. Kilbourne, from 63rd, Fort Winfield Scott, to Philippines; sail San Francisco, February 8.

1st Lieut. James E. McGraw, from Philippines, to 51st, Fort Eustis.

1st Lieut. Clarence M. Mendenhall, Jr., from 61st, Fort Monroe, to Hawaii; sail New York, February 21.

1st Lieut. Leland S. Smith, from 13th, Fort Moultrie, to Philippines; sail New York, May 7.

1st Lieut. Horace Speed, Jr., from 1st S. R. Battery, Fort Eustis, to Philippines; sail New York, May 7.

2d Lieut. Samuel E. Anderson, from student Air Corps Advanced Flying School, Kelly Field, to Mitchel Field, October 12.

2d Lieut. Joseph A. Bulger, from student Air Corps Advanced Flying School, Kelly Field, to Selfridge Field, October 12.

2d Lieut. Howard G. Bunker, from student Air Corps Advanced Flying School, Kelly Field, to Rockwell Field, October 12.

2d Lieut. Clair M. Conzelman, from Philippines, to 11th, Fort Wright.

2d Lieut. William G. Devens, from Philippines, to 52nd, Fort Eustis.

2d Lieut. Paul H. Johnston, from student Air Corps Advanced Flying School, Kelly Field, to Mitchel Field, October 12.

2d Lieut. Alfred R. Maxwell, from student Air Corps Advanced Flying School, Kelly Field, to Rockwell Field, October 12.

2d Lieut. John J. Morrow, from student Air Corps Advanced Flying School, Kelly Field, to Mitchel Field, October 12.

2d Lieut. Thayer S. Olds, from student Air Corps Advanced Flying School, Kelly Field, to Selfridge Field, October 12.

2d Lieut. Howard E. Pearson, from 7th, Fort Hancock, to Panama; sail New York, February 28.

2d Lieut. Lawrence D. Solomonson, retired.

2d Lieut. Guy E. Thrams, from 7th, Fort Hancock, to Philippines; sail New York, May 7.

2d Lieut. Lewis A. Vincent, resignation accepted November 15.

2d Lieut. William B. Walters, transferred to Field Artillery, Fort Sill.

Warrant Officer Luis R. Miranda, 1st Band, Fort DeLesseps, retired.

Warrant Officer Ralph H. Rohrbough, Fort Monroe, promoted chief engineer A. M. P. S., October 18.

Warrant Officer Herbert H. Short, from 9th Band, Fort Banks, to 14th Inf., Panama; sail New York, November 22.

Warrant Officer Manuel J. Suares A. M. P. S., Fort H. S. Wright, retired.

Master Sgt. Henry L. Wise, 14th, Fort Worden, retired.

1st Sgt. William Delahanty, 2d, Fort Sherman, retired.

1st Sgt. William Hayden, 41st, Fort Kamehameha, retired.

1st Sgt. William G. Krause, 10th, Fort Adams retired.

The Act of June 4, 1920, gave this country the first real military policy it has ever had, and made it permanent, subject only to the pleasures of Congress.—James G. Harbord.

FOREIGN PERIODICALS

The Journal of the Royal Artillery (British), October, 1929

"What Changes in Equipment and Training Are Necessary to Enable Artillery in the Field to Counter Armoured Fighting Vehicles Successfully."—By Maj. R. G. Cherry, M. C., R. A.

This is a "Duncan" Silver Medal Essay, 1928-29 and introduces a subject which should be worrying Field Artillery officers of all countries. Major Cherry covers the subject very completely. The article, while mentioning several possible solutions does not suggest that any of them have been proven entirely satisfactory. He apparently favors a system which includes the use of a rate clock. This instrument can be set for a computed rate of increase or decrease in range and deflection and is nothing more than a simplified prediction apparatus.

Antiaircraft Practice Is Peace.—By Captain V. R. Krohn, M. C., R. A.

This well-known writer on antiaircraft technique covers the methods of practice and analysis used by the British. The British fire either full charge practice or a reduced charge practice. During the reduced charge practice is fired at the actual airplane but the flying is done at an altitude exceeding the maximum vertical range of the gun for that charge. It is claimed for this type of practice that the airplane is allowed complete freedom for maneuver and for this reason the firing is a closer approach to war conditions. Naturally, hits are determined only "by line" from the firing battery.

The method of analysis in the British service consists of observations for accuracy as to line, fuze, and height. No shot is called a hit unless it satisfies all three conditions. Reference is made to the fact that the United States has adopted a British antiaircraft predictor "thus demonstrating once again that even in the newest sciences, British brains and workmanship still lead the world." To be consistent reference should be made to the fact that the efficiency of the Vickers instrument was appreciated here before it was in England.

The Fighting at Mondemont, September, 1914.—A translation from the French of Col. A. Grasset D. S. O.

It describes the operations of the 9th French Army under the command of Foch in the vicinity of Mondemont during the early part of the war.

Auto-Frettage.—By Maj. A. E. Macrae.

Relates to the manufacture of guns by the process of construction known as auto-frettage or self-hooping. A technical article well illustrated with stress diagrams. Written for the information of regimental officers.

The Royal Artillery in the First Boer War, 1880-81.—By Maj. J. F. DeF. Shaw (late) R. A.

Notes on Army Administration.—By Brig. F. D. Logan, C. M. G., D. S. O.

The author states that "the title of this article will arouse little enthusiasms in the mind of even the most ardent military student." The principle of decentralization and control is discussed. Army paper work and voluminous manuals and regulations are known to the British Army, too.

The Romance of the First Afghan War.—By Lieut. Gen. Sir George MacMunn, K. C. B., K. C. S. Y., D. S. O., Colonel Commandant, R. A.

Some Notes on Training Horses for Racing.—By Maj. J. E. T. Younger, R. A.

A Motor Journey from Cairo to Ostend.—By Equinox.

The Canadian Defense Quarterly (Canadian), October, 1929

Military Study: Notes of a lecture by Maj. Gen. The Honourable W. A. Griesbach. A very interesting article which appears to include more than the title indicates—all of it good. While study is recommended for those who would become military leaders it is obvious that the author counts heavily on the power of morale and the spirit of the command to win victories rather than on the text book.

Disarmament: A discussion of this problem in connection with the League of Nations, the Disarmament conferences from 1921-27, and the Kellogg-Briand Pact. Conclusions: Nothing tangible has been accomplished except the reduction in capital ships and aircraft carriers in 1921.

Graphic Panorama Drawing for Artillery Observation: Championing the graphic system against the mathematical. Combines map with panoramic sketch. Nothing new in this to Coast Artillerymen.

Arnold's March to Quebec: An accurate and fair account of this ill-planned if not ill-conceived expedition up to the arrival before Quebec.

Mobility: Especially that obtained through aircraft. A familiar argument by an air officer.

Revue d'Artillerie (French), July, 1929

Field Artillery Aviation (Observation) at the Battle of the Marne (1914)—Anonymous.

Certain Unilateral Observation Processes.—Maj. J. Heriard-Dubreuil.

Note on Orientation by the Vertical Alignment of Stars.—Maj. L. Camps.

The Group Commander's Reconnaissance.—Maj. E. P. Ricard.

A New Puff Board.—Lieut. J. Tayeau.

A Rapid Method for Adjustment by Unilateral Observation.—Lieut. R. Chenivesse.

The Schneider 75mm. Antiaircraft Gun—Characteristics as follows:

Caliber 75mm. length 40 calibers, weight of projectile, 6.5 kg.

Initial mv 700 meters/seconds. All round fire. No overhead dead space. Rate of fire 2 x 20—30 shots per gun per minute. Adapted for continuous pointing in connection with the Schneider Corrector.

Non-continuous fuze setter. Weight of gun, mount and field carriage.

Revue d'Artillerie (French), August, 1929

For the Understanding of the Relativist Theory—Chronometry and Geometry.—General Vouillemin.

The Revelli Automatic Rifle with Non-locking Breech Block, Model 1929.—Maj. G. Morel.

A Better Utilisation of Fuels in Light Motors.—Capt. M. Dupre.

Study of the Choice of Observation Stations for the SOM Instrument, Type 1923.—Capt. A. Krebs.

Graphs for High Burst Adjustments.—Capt. M. Tarbouriech.

A Contribution to the Study of Liaison Between Infantry and Artillery.—Capt. G. A. Chauvin.

Regulations for the Employment of Adjustment Sections in High Burst Ranging.—Lieut. A. Duvignac.

On the Employment of the Sight Extension.—Lieut. A. Chenier.

Revue d'Artillerie (French), September, 1929

For the Understanding of the Theory of Relativity—Chronometry and Geometry (continued).—General Vouillemin.

The Fourteenth Division at the Battle of Dornach—Mulhouse (19 October, 1914).—Maj. J. A. Joguet.

A Curious Property of the Ends of Trajectories (Established for the 75).—Capt. A. L. Burn.

For a Better Utilisation of Fuels in Light Motors (concluded).—Capt. M. Dupre.

An International Competition for the Detection of Mustard Gas.—Obituary of Major General Feldmann.

Rivista di Artiglieria e Genio (Italian)

Aviation, Tactical Codes and Armed Forces.—By A. Donati.

Shelters in Air Defense. Use of the Projected Subways of Rome for this Purpose.—By A. Romani and G. Stellingwerf.

Clockwork Mechanical Fuses.—By S. Costa.

The Scientific Organization of Labor Applied to the Construction of Entanglements.—By Col. Pietro De Lauso.

Psycotechnics.—By Start.

Graphical Method of Base Measurement in the Preparation of Fire.—By A. Murer.

Two Alpine Barrier Works Abandoned: Malburghetto-Predil.—By E. de Rossi.

Rivista di Artiglieria e Genio (Italian), August, 1929

The Near-Reconnaissance Nudeous: Tasks and Functions of the Cavalry and Cyclists and Their Coordination.—By C. Trezzani.

Artillery Fire Without Trial Shots.—By T. Montefinale.

Towing Vessels in Military Transports on Rivers and Lakes.—By Q. D'Amico.

On the Precision of Measurements and the Courses of Error in Self-Contained Rangefinders.—By M. Conti.

Throwing a 30-meter Herbert, Single-Span Bridge Across the Mallero Torrent.—By G. Gentile.

Form and Composition of Artillery Projectiles as Bearing on the Range and Dispersion of Fire.—By A. L.

Influence of Fire-arms on Tactics Throughout History: From the Beginning to the Middle of the 18th Century.—By E. Ronshi.

The Army of a State is the agent of the ministry of foreign affairs, enforcing, or ready to enforce, ultimata at the point of the bayonet.—America.

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JULY-DECEMBER, 1929

I. AUTHORS

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In an effort to obtain a more powerful fighting unit than the present war battalion the War Department has direced that experiments be made with various types of battalion organization utilizing additional existing automatic weapons and equipment. These experiments are now being conducted at the Infantry School, Fort Benning. It is expected that they will be completed by December 1.

In general, three types of organizations are being tried out, one having a headquarters company, four rifle companies, and one machine gun company; another having a headquarters company, two rifle companies, and two machine gun companies; and a third having a headquarters company, three rifle companies, and two machine gun companies.

The present authorized war strength battalion, as every school boy knows, consists of a headquarters company, three rifle companies, and one machine gun company.