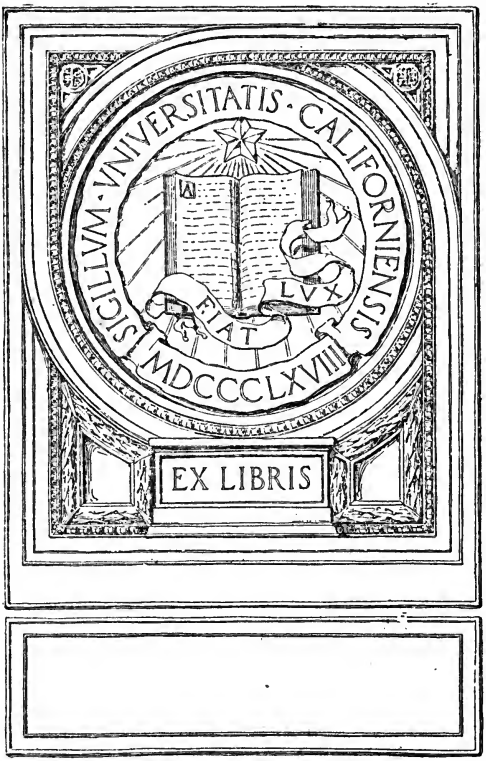
THE NAVAL RESERVE

FRANK HUNTER POTTER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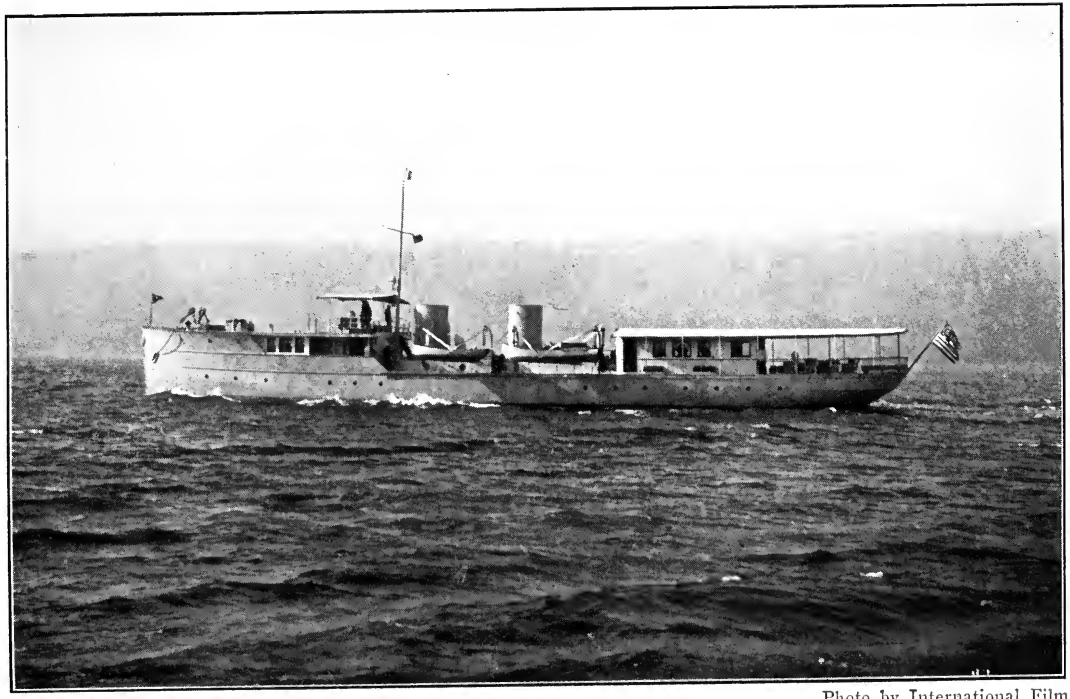

Photo by International Film

TYPE OF YACHT CONVERTED INTO PATROL BOAT (BEFORE CONVERSION)

THE NAVAL RESERVE

BY

FRANK HUNTER POTTER

ILLUSTRATED FROM PHOTOGRAPHS

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TO THE MOTHERS
WHO HAVE SO NOBLY GIVEN THEIR SONS
TO SERVE THE COUNTRY IN
THE NAVAL RESERVE
THIS BOOK
IS
DEDICATED

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THE NAVAL RESERVE

CHAPTER I

A STORY OF ENTHUSIASM

In 1916 a body known as the Naval Training Association was organized by certain far-sighted naval militiamen, retired naval officers and others, to supplement the work of the Naval Militia, and to provide men more or less trained for the use of the navy when this country should get into the war which was then seen to be probable. This organization was taken over by the Government in the winter of 1916-17 and renamed the Naval Reserve. It comprises four classes, the first of which contains former officers and men of the navy who enlist to serve with the fleet, and is called the Fleet Naval Reserve. In the second the men enlist to serve in any capacity on naval vessels which are not of the fleet, and it consists of the former naval militia and certain other categories. The third class is called the Naval Auxiliary Reserve, and serves on transports, supply ships, colliers, cargo ships, etc. The fourth class formerly consisted of a coast patrol,

the men of which were to serve on submarine chasers, scout-patrol boats, and the like, but were not to go outside of territorial waters, nor could they be made to serve outside of the district in which they enlisted, except with their own consent. It was this old fourth class, the original coast patrol, which brought out such a large enlistment of college men and boys from high schools and private schools, and which did much to establish the very high character of the membership of the Naval Reserve, since educated boys naturally prefer to go where there are others like themselves. The class attracted them because it was the one which apparently offered the best field for adventure. The visit of the U-boat to Newport in the summer of 1916 had served fair warning on this country that when we went to war with Germany we could expect to see hostile submarines on our coast, and it was the hope of chasing these submarines in the little patrol boats which were stationed at Newport and other harbors which induced such numbers of youngsters, clamorous for excitement, to enlist in the N.R.

This class has now been entirely done away with, the men enlisting for general service in the navy or going into some other branch, such as aviation, the army, or the marines, large liberty of choice being

given in this respect. At present the fourth class, which is termed the Naval Coast Defense Reserve, is made up of "specialists, technical men, and female employees."

This new fourth class is valuable not only for the technical experts and other people of the sort who are enrolled in it, but because it gives opportunities for service to numbers of men who are unable to pass the physical examination for active service. I can think of one man, a very high-class golfer, a near-champion, able to do his 72 holes a day, who was turned down for active service because of a leaky heart, and also of a semi-professional baseball player who was turned down because of flat feet. Both of these men, and hundreds like them, are doing valuable service, generally clerical, but service that has to be done, so that they are releasing other men for the active service for which they themselves long, but which is denied them. How much work of this sort there is to be done it is hard to imagine, till one thinks of all the Intelligence Bureaus and press, letter, and cable censorships, and all the clerical work in the offices which are in every station, no matter how small, or on every ship, no matter how tiny, and men with flat feet or bad hearts are just as good for it as anyone else. So while the old fourth class apparently opened the door to

adventure, the present class gives a chance to those patriotic boys who longed to serve their country, but failed physically. I know one boy who comes of fighting stock, and who has one aviator brother, while the other is in the tanks. He has an injured arm, and he was refused by the army, the navy, and the Marines. Now he is doing most useful clerical work in the Intelligence Department of the Naval Reserve, having secured a waiver of his physical examination. Thanks to this class, no boy who really wants to serve his country need ever despair of a chance to do so.

There are two institutions which are in a sense auxiliary to the N.R., the hydro-airplane service and the prison at Portsmouth Navy Yard. It would be difficult to overestimate the importance of these, because in the one case the air service is going to be one of the deciding factors of the war, and in the other because under Lieut.-Com. Thomas Mott Osborne an institution which was a nucleus of disaffection has been changed into one of the most patriotic spots in the country, and is every month sending back into the service a lot of men who under former conditions would have been lost to it, but who are now being returned better equipped than they were when they went to Portsmouth.

In the early days, even before we got into the war,

when it only loomed on the horizon, there was a great rush to enlist in the N.R. and a magnificent exhibition of loyalty and enthusiasm. One young Jacky came up to his officer one day, touched his cap, and asked if he might go home to see his sick baby.

"You're married?" asked the officer.

"Yes, sir; wife and two children."

"How do you come to be in the navy with such responsibilities as those?"

"Well, I'll tell you, sir. My father fought in the Civil War. I have two younger brothers who are not married and have no responsibilities at all, but they have developed a yellow streak and will not enlist, so I had to come in to save the honor of the family. And my wife approves of what I've done, too."

There were other motives. There was the captain of a big Standard Oil tanker whose ship had been sunk by a submarine in the Mediterranean. He was mad all through, and hurried home to enlist. The recruiting officer said, "Why don't you go and get another ship? Such men as you are needed; besides, you'll get big money, and your life will be insured."

"To h—l with the big money," replied the still boiling skipper; "what I want is to get a crack at those d——d baby killers." And he persisted in enlisting.

Then there was the retired navy boatswain. When

he came in to enlist, the officer asked him also why he came.

"It's this way, sir. The people in my town don't understand about this war, and I had to enlist to set them an example."

Of course, such men as these were desperately needed, and no doubt one is now commanding a ship, while the other is training the men of the Naval Reserve, as only his years of naval experience could enable him to train them. But they enlisted with quite different expectations.

Sometimes the devotion of the younger men has been very beautiful. Here is the story of one who, like the widow in the Bible, gave all that he had. He is the son of a man who is at the head of what is, perhaps, the largest bookstore in New York City. Someone asked the father whether it was true that his son had enlisted as a stoker in the Naval Reserve.

"Yes," said the elder B——. "You see, his eyes are not very good, and he was afraid that he would not be able to serve his country at all, so he took this job, where eyes are not needed." To serve in the bottom of a ship, with no chance to fight back—except by keeping the ship moving—with no opportunity to see what is going on, and with every prospect of being drowned like a rat if the ship goes down, is one of

the finest jobs in the service, and such men as young B—— "deserve to have a poem written about them," as one appreciative admirer said.

In fact, one of the things which is most impressive right straight through the whole Naval Reserve service, from the men in the crow's-nest aloft to the stokers in the bottom of the ship, is their perfect disregard of danger. They are not in the least ignorant of it; they know perfectly well what the danger is in which they are, and it is often very great and very close, but they simply do not think of it at all, or if they do, it is to dismiss it with a characteristic Yankee joke and the half-humorous reflection, "What does it matter, if we get the Hun, too?"

When the men enlisted in the N.R. in the early days their enthusiasm was put to a very severe test. Nothing was ready for them—no barracks, no boats, no airplanes, or almost none. One group of twenty-eight men encamped on the end of a dock at Bridgeport, in a deserted coal-shed, and the sentry stood guard with a broomstick. At New Haven the men raised some eight thousand dollars to equip themselves—they did not wait for a paternal government to do it—and they were better off than most of their compeers in that they secured the Yale boathouse as a barracks and drill-hall. But the Government could no nothing for them.

The same story was true all along the line. At Newport the men were scattered all over the town, in such lodgings as they were able to pay for. At other stations they were in all sorts of places—armories, Y.M.C.A. buildings, tents, sheds, anything. At Bayshore the aviation section, over one hundred strong, had only one plane to learn with for the first month and over, which gave each man a chance to go up once in ten days or so; therefore, to keep them busy, they were put to building roads, and very good roads they made. At New London they were set to making nets with which to close our harbors at night—most useful work, but hardly that for which they had enlisted. Everywhere there was a shortage of boats, submarine chasers, guns, small arms; the war had caught us utterly unprepared. It was no fault of the War and Navy Departments; they had begged for these things, but Congress had seen no reason for providing them.

It was the splendid constancy of the Reserve in these trying circumstances which makes its history truly a story of enthusiasm. What their hands found to do they did with their might. They drilled, they learned their jobs as well as they could, with never a sign of discouragement, though thousands of those who had enlisted had never been called to the colors for lack of a

place to put them. And the spirit which was shown in those early days has never failed from that time to this.

Moreover, these men have had their reward. Some of us who remember certain boys when they went to camp and who saw them two or three months later were amazed at the change which had been wrought in them. They had been made over mentally and physically. Boys who had been pale, anemic, stooping, shrinking, came home on leave strapping, upstanding chaps, with clear eye and fine color, with self-reliance and dependableness showing in every word and gesture. The selective draft has made this a commonplace now, but it was something new then; the value of universal service had not been recognized.

It has been said that the camps of this selective service are melting-pots where the young soldiers are transmuted into Americans—than which there could be nothing more useful. But with the N.R. there was no need for this process. The men were one hundred per cent Americans when they enlisted, and they were in deadly earnest. They were, and are, of every sort, and, like the above-mentioned camps, their training stations have been marvelous schools in democracy. Everybody is equal, and as promotion comes to the man who makes good, utterly and entirely regardless

of money and "pull," the man who is really a man comes to the front even before he gets on active service. Thus these stations are schools for officers, of which more in the next chapter. Wealth is purely an incident, and gives men no especial value, except that it sometimes implies self-sacrifice and generally implies education. But there is often greater self-sacrifice on the part of the man who gives up a job in a machine shop than is shown in the case of a rich man's son who enlists—certainly there is great self-sacrifice on the part of the mother whom he may be helping to support—and many of the best educated men have no wealth but their salaries, yet prove among the most valuable in the service. Two instructors at Columbia, one a Harvard, the other a Yale graduate, enlisted as ship's cooks because, although they were deep-water yachtsmen, they modestly doubted whether they were qualified for anything better. It is needless to say that something better was found for them to do, and they are now instructors at Pelham Bay, helping to turn out the officers whom the navy so sorely needs. Another man who enlisted as a ship's cook was a well-known sculptor, who thought himself too old for anything else. He, too, has a better job, which he earned by hard work, and he is prouder of the whistle which he carries as a boatswain's mate, and which is the out-

ward and visible sign of his promotion, than ever he was of a prize at the Beaux Arts in Paris.

One night a particularly studious N.R. boy was going down to the naval base at Bensonhurst, and in the subway was wrestling with algebra, for he did not intend to stop work while in the service. He struck a puzzling problem, and must have shown it in his manner—perhaps he stopped to scratch his head, or something. An elderly naval cook leaned over and said to him:—

"Stuck, son? Perhaps I can fix it up for you."

The boy looked up in amazement, but handed over his book. The cook took a bit of paper, worked out the problem, and handed it back. The boy gasped. "How do you come to be able to do that?"

"Oh!" replied the cook, "I am a graduate of ———, and I have been employed for some years in making the astronomical calculations in the ——— Observatory. I'm too old to be anything but a cook, so I'm doing that."

Some of the experiences of rich men's sons are amusing. There was the case of the stoker who went to a smart hotel in Paris, with two comrades as grimy as himself, and asked for rooms. That particular house was not in the habit of entertaining guests of that quality, but the manager thought it would never

do to turn away the first representatives of their new allies who had come to his door, so he took them in. After they had cleaned up a little, but were still grimy, they ordered the best possible dinner, which one of them paid for with a 1,000-franc note. The manager became interested, asked a question or two, and the whole story came out. One of them had hastened to enlist at the beginning of the war, and something like the following conversation ensued.

"What can you do?" asked the recruiting officer.

"Don't know, sir."

"Ever been to sea?"

"Yes, sir. Made several trips to Europe as a passenger."

"Know how to row?"

"Yes, sir, in a shell. College crew."

"No other experience?"

"No, sir."

"Well, you look like a good, husky chap. I'll enlist you as a stoker. We need 'em."

The boy took kindly to his job, and made friends with his fellows, two in particular. "When we get to France," he said to them, "if we can get leave together we'll go up to Paris and I'll show you the town." When he got to Paris he went to his bankers and made himself known, obtained what money he needed—he

had a large letter of credit, for his father was a multi-millionaire—and proceeded to the hotel aforesaid.

The rush of college and school boys to the N.R. brought in a great number of such fellows as this. Many of them enlisted at Newport because their friends spent the summer there. It was a standing joke, in the early days, before the Government had provided quarters for them, and they were living all over the town, that many of them drove down to the boats in their own cars in the morning and their chauffeurs drove down for them in the afternoon. Over at the Brooklyn Navy Yard an officer was starting one day for Pelham Bay, when his chauffeur cut his hand badly and announced that he could not drive. "Can any of you men drive a Ford?" asked the officer, turning to a group of N.R. men standing by. "I can, sir," said one of them, touching his cap. "But have you far to go?" "Pelham Bay." "If you don't mind waiting a few minutes, sir, I'll get my own car, and we'll make better time." He disappeared through the Navy Yard gate, and in a few minutes reappeared with a Rolls-Royce.

One N.R. Jacky subscribed for $90,000 of Liberty Bonds, and a group subscribed for $76,000. But the N.R. is no rich man's club. As has been said, it is the best possible school for learning democracy. When

the boy from Groton, the clerk from Wanamaker's, the apprentice from a machine shop, and the hand from a Rhode Island cotton-mill have pulled an oar in the same boat, have played on the same ball-team, have served on the same submarine chaser in the North Sea, there is sure to be a clearer comprehension of each other's point of view, a more lively realization of the fact that "a man's a man for a' that."

Then there are other advantages which are gained by the training. Has your boy no sense of order? A few weeks in a training camp will change all this, and it will stay changed. It is made too uncomfortable for him if he "leaves things around," because that makes other people uncomfortable. Is he slovenly? He will be "brought up with a short turn," and without improvement he certainly has no chance of advancement. Is he a bit of a snob? That will go in short order. And it effaces the color line. I have seen colored men serving as first-class seamen in Pelham, and nobody dreamed of looking down on them because they were of a different color from most of their comrades.

Previous training counts enormously. One young man, for instance, had made a study of "efficiency," with the idea of becoming an efficiency expert in an industrial career. He went into the N.R. as a second-class seaman, and among the jobs to which he was

assigned was that of washing down the deck. It almost reminds one of the lines in "Pinafore,"

> "He polished up that handle so carefullee,
> That now he is the ruler of the Queen's Navee."

Our young gob * washed the deck so efficiently that he attracted the attention of his officers, and was put in charge of a deck-washing squad. As he was intelligent and ambitious, he quickly passed the examination for first-class seaman, became a petty officer, and was one of the first to gain a commission. It was the efficiency which he had learned before coming into the navy which started him on his upward career, and which will probably land him in a much higher rank than he new holds.

It is because boys can profit, as did this young man, by what is learned before going into the navy that so many examination papers and so much detail of what is required have been given in the following pages. An ambitious and studious boy can prepare himself by their help for rapid advancement in the service when he reaches the age when he can enter it.

There are certain definite advantages to be gained

* "Gob" is the name with which our sailors have christened themselves in this war, as the English soldiers are "Tommies," and the French "Poilus." The origin of the word is unknown.

in the N.R. by boys and young men who are planning for their lives after the war. The principal of these, of course, is the prospect of permanent service in the American merchant marine. Before the Civil War a great number of young Americans found an outlet for their naturally adventurous dispositions in the merchant marine, from away back before the Revolutionary War down through the great period of the American clipper ships. The vast fleet which is now being built by the Shipping Board is going to continue to exist after the present war is over, and it will have to be officered by Americans. What better outlet for that spirit of adventure which had so much to do with the conquest of the Great West can be found than in the merchant marine under the Stars and Stripes? After our shipping largely disappeared after the Civil War this spirit often brought men into the navy. I once fell into conversation on a train with a petty officer (a gunner's mate, if I recollect correctly) who was remarkable for the very cultivated character of his speech. After some talk it came out that his father had been a clergyman, and his brother was pastor of a prominent church in a large city. I ventured, with due apologies, to ask how it was that he, a man of such obvious cultivation, came to be an enlisted man in the navy. It was clearly not habitual

dissipation which drove him to it; his rank precluded that. He was evidently intelligent enough to have made his way ashore; what was it?

"I'll tell you," he said, with a smile. "I love to travel and see the world. I could never be rich enough to have a yacht and go about, so I get it in the navy. I have been all over the East and in the Philippines, and around the Mediterranean. When my last enlistment expired we were in Beirut, Syria. I meant to reenlist, of course, but not there. The regulations compel the Government to send us back to the place of our last enlistment, and mine was the Brooklyn Navy Yard. They had to send me back by way of Constantinople, and I was there just after the Armenian massacres. It was very interesting."

There is, of course, the chance to see the world which this man embraced, but there is the much more substantial opportunity for permanent service in our new merchant marine. Not only are there schools for the instruction of merchant marine officers, but there will be room for many of the young men who will be commanding patrol boats and mine-sweepers and such like auxiliary craft, which will be rendered unnecessary by the peace for which we are looking.

Another great asset which is to be gained by rising to command in the N.R. is the ability to handle men.

With the end of the war the millions of men who are engaged in it are going to return to peaceful occupations. The men who are going to be fit to manage them are those who have learned their lesson in the army and navy, and there is no service where adaptability and resource are so cultivated as in the navy. At the end of the Spanish War the two men who rose to the highest command in the traction service in one of our large cities were men who had learned to handle men in the navy.

In addition to all these advantages is the high quality of the young men who have enlisted in the N.R. As has been said, the prospect of immediate service on patrol boats and submarine chasers brought a large number of high-class boys into the N.R. at the beginning of the war. It was natural that these young men should attract others of the same sort, for a boy will go into a branch of the service where there are other fellows of his own sort, just as he will prefer to go to a college or join a club which is composed of them. Consequently, the character of the personnel of the N.R. has remained remarkably high, so that when a boy joins it he will find that he is associating, in the main, with fellows of the right sort, and will find congenial companionship.

To mothers, this will mean everything. No boy

can go out into the world without running into temptation, but the character of the temptation, and the strength of its appeal, will depend very largely on the character of that boy's associates. Decent associates, with clean minds, will do as much as can be done, outside of the influence of the home, to keep a boy straight. It has been the writer's fate to associate a great deal with boys—he has run a boys' camp, has taught in a boys' school, and it is one of his greatest pleasures to revisit this school, where he has the privilege of the friendship of many of the older boys. He has had, too, the opportunity of associating closely with the N.R. boys, not only in the camps and on the stations, but in the enforced intimacy which comes with life in the narrow quarters of patrol boats and minesweepers. As a result he can say that never anywhere has he been brought in contact with a cleaner, more wholesome, decenter lot than he has found among the enlisted men of the Naval Reserve.

Peace has come, but that does not mean that the Naval Reserve will cease its activities. Mr. Daniels has announced that the growth of the navy will not stop, and there will be as many duties for it in peace as in war. It will have to remove fixed mines and find and explode floating ones. It will have to seek and destroy derelicts, the number of which has greatly

increased through the work of the U-boats. It will have to police many ports in countries disturbed by revolutions, and its men are likely to be often employed on landing parties. There will be plenty of excitement in it for red-blooded young Americans, and they will have almost as great a chance as ever to help in making this world safe for democracy.

CHAPTER II

A TRAINING STATION

When a young man has joined the Reserve what next concerns his friends is the sort of treatment which he is going to receive. What will he learn? How is he lodged and fed? Has he any amusements? How are his morals looked after? Is he, who very likely has never left home before, going to be exposed to all the temptations of the neighboring great cities? Is he kindly treated? Are his officers "officers *and gentlemen*" in the true sense of the word? How is he looked after when he gets ill? These are the questions which will interest his father and mother, his brothers and sisters and his sweetheart, and the easiest way to answer them is by telling about the life at one of the great training stations, Pelham Bay. I take Pelham because it is the nearest to New York, and so the least difficult to learn about, for one reason, but still more because it has the reputation of being the best of them all. Not long ago a Congressman went to one of the highest officials in the navy, told him that his sons wanted to enter that service, and asked him

where they had better go. "To Pelham, of course," replied the high official. A former Assistant Secretary of the Navy, learning that a friend was going to Pelham, said, "I'm glad you are going there; it is the model camp of the whole world." And when the new part of the camp was opened on the Fourth of July, 1918, by the Secretary of the Navy, he turned to Commander Franklin and said, "The whole country owes a debt of gratitude to Captain Franklin for having built this wonderful training station. There is no parallel to the wise, quick, and economic way in which it has been constructed."

A word first about the place. It is some ten miles from the heart of New York, in Pelham Bay Park, one of the city parks, on a site which was chosen out of a number which were offered by the municipality. The site of the original camp has water on two sides, is on high, sandy soil, and is easy of access. The buildings were laid out under the direction of Commander William Buel Franklin, who had a double advantage in handling the job:—in the first place he was an Annapolis man, served twelve years in the navy, and after his retirement was for twelve more years an officer in the Naval Militia of New York, where he had to deal with much the same character of men whom he has at Pelham. In addition to this he had

Photo by Stuart Randolph Whitman

JUST ARRIVED.

been for a number of years in important commercial positions, the last being that of President of a large industrial corporation. This combination gave him the technical knowledge joined to the power of getting practical results in large affairs which enabled him to plan and put through the erection of this remarkably perfect camp. The results obtained, in the matter of sanitation, convenience, and efficiency, were such as to induce the Secretary of the Navy to enlarge the capacity of the camp from between 5,000 and 6,000 to over 15,000, with a possibility of its going to 25,000. This increase, of course, has caused the camp to extend far outside its original limits, but the same skill in adapting ways to means has been shown in the new part, and it is confidently expected that the extraordinary sanitary record of this old camp will be continued.

The recruits arrive at the camp in groups of from fifty to a hundred and fifty a day. In appearance they resemble the same number of college boys of similar ages. Look at the photograph opposite; good, healthy, wholesome boys, but slouchy. Few of them stand up straight, and there is a general tendency to put their hands in their pockets which will give them discomfort later, for there are no pockets in their navy trousers, and at first they will be at a loss what to

do with their hands, though they soon get over this.

The recruit reports at the guardhouse at the gate and is sent to the receiving building. Here he goes to the yeoman's desk, (" yeoman " is navy talk for clerk,) where his orders are taken up and he has a set of cards made out about him. These cards contain all sorts of particulars necessary for the camp records, such as the recruit's name and rating, his number, which is now given him, whether he comes from civil life or from the service, and he receives his assignment, either to the Probation Camp, or, in very rare cases, where he has some special aptitude, to other work.

The boy then strips, his clothes are taken away to be sent home, he bathes and is examined by the surgeon, is inoculated against typhoid and paratyphoid, is vaccinated, and his finger prints are taken. Then he goes to the clothing store and gets his outfit.

This outfit consists of a peacoat, a jersey, a flat hat, two white hats, a dress jumper, a working jumper, blue dress trousers, blue working trousers, two white suits, a neckerchief, a watch-cap, two suits of heavy and two suits of light underwear, socks, towels, etc. Jack has a clothing allowance from the Government, and these articles are charged up against

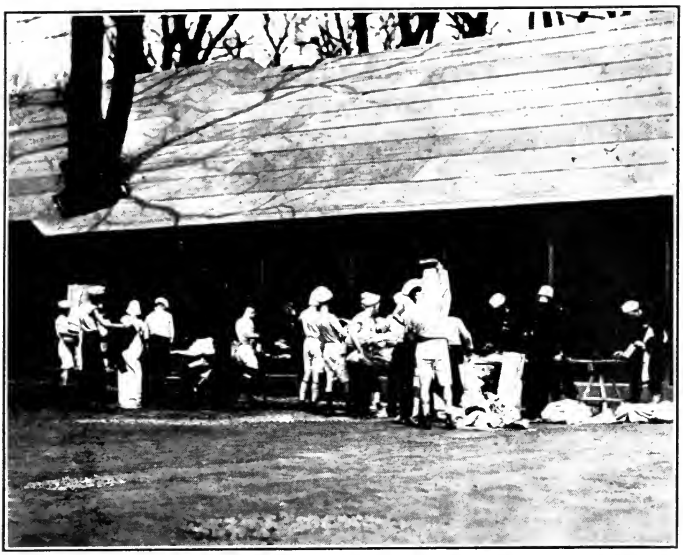


Photo by Stuart Randolph Whitman

BEING OUTFITTED

Photo by Stuart Randolph Whitman

OUTFITTED

it. If he takes care of them, he can save part of his allowance, which he can spend as he chooses. On the other hand, if he is careless and spoils his outfit faster than the allowance comes in, he will have to pay for it out of his pay, which will cut down his amusements.

In addition to the individual outfit of clothes, he will have issued to him a hammock, blankets, a mattress and two mattress covers, and a sea-bag and a ditty-box in which he can lock his personal treasures.

That part of his outfit which he does not put on his back he puts into his sea-bag, and a petty officer from the Probation Regiment, and the company to which he has been assigned, brings him to regimental headquarters, where he is recorded, quarters are assigned to him, and he is taken to them and leaves his belongings there. He makes the necessary allotment, takes out his insurance if he so desires—and he is urged to do it, for the sake of his family,—is sent to the hospital to have his throat cultures taken against danger of developing meningitis or diphtheria, he marks his clothing, and this being done, he is all ship-shape, and ready to begin his training.

This training consists of an elementary course in the things which Jack will have to learn more thoroughly later; all that can be done is to give him a

good start. First, he has to study the regulations of the navy. Then he is instructed in the care of his clothing and the ship's gear. He gets a start in squad drill and the manual of arms, of which more later. Then he must be proficient in general orders to sentries, and this is a matter of the greatest importance, for he is put almost immediately to standing guard, when the safety of the post may very well lie in his hands. Suppose some German sympathizer came along and tried to set fire to it? It might depend on his vigilance whether the attempt succeeded or not. Next comes instruction in "marlinspike seamanship," the making of knots, splices, bends, hitches, and the like. Then he begins to learn semaphore and wigwag signaling, and gets his first instruction in boats, possibly by pulling a "dry oar" in a boat which is up in the middle of the camp, several hundred yards from the water. Then there are platforms on the top of some of the barracks, from which he is taught to heave the lead right- and left-handed, and a miniature wharf, also up in the middle of the camp, where he finds cleats and bitts to which he learns to attach hawsers. It all reminds one of the remark of a witty woman who, on hearing of "ground officers" in aviation, remarked, "The next thing we know, we shall be hearing of dehydrated admirals." He learns rating marks and the insignia

of rank, for every man in camp carries his rank written on his arm, as plainly as though in print.

He has to learn to box the compass and to read the log. He learns "bearings"—that is, how to describe the position of another vessel or of some spot on shore in relation to his own ship. Also, he has setting-up drills, familiarly known as "monkey drill." These are some of the things on which he is going to be rated when he is transferred to the main camp, and there are other things as well. These are obedience, his personal appearance, (the navy abhors slovenliness, for that means poor seamanship as well as bad health,) his physical condition, his alertness, his conduct and his aptitude. On these things, together with his punctuality and his conduct, will depend how he is reported when he goes into the main camp, and what his chances are for an ensign's commission. Oh! yes, there is also another thing into which he is expected to dip in his spare moments, namely, "The Bluejacket's Manual," a large book full of invaluable information for the sailorman, which every boy thinking of the navy should get and study. It would seem to the casual observer that the gob at Pelham would not have many spare moments for this sort of work, but he seems to find them, nevertheless.

In order to get a sea atmosphere as rapidly as pos-

sible, everything at Pelham is expressed in sea terms. If you are asked to "stand by," that means that you are to wait. When you telephone to the camp and ask for a friend, you may meet with the information that he has "gone ashore," which means that he has left the station. Sea terms and usages are in evidence on every side, so that when the N.R. man at last really gets on a ship he may not feel, or be, too much out of place. One of the ancient customs of the navy was, as readers of "Mr. Midshipman Easy" will remember, to read the "Articles of War" to the ship's company every Sunday. This is not done at Pelham, but Captain Franklin, (the commander of a ship is always an honorary captain, and Pelham is a ship,) talks every week to his rookies in a manner which is better than many articles of war. It is worth while to quote part of what he says, because here one gets the spirit of the camp expressed as it is nowhere else, and with it a lot of most practical advice to the rookie, who is as ignorant of the tone and customs of the place as any new boy could be in a boarding-school. In fact, the situations are a good deal alike, and most of the recruits are of not much more than boarding-school age.

Quoted roughly, this is the way Captain Franklin talks to his boys:—

"The most important function of this station will be the selection of suitable officer material and the development of that material as rapidly as possible by offering the opportunity for acquiring the necessary knowledge and the habit of command.

"It is not expected that any one of you is at present fully equipped to become an officer, or that all of you will ever be fitted to assume the duties and responsibilities that a command entails. What we do expect is that everyone will do his utmost. Decide right now that you are here to make good and that you are going to do so. We are all here for a common purpose—to organize, instruct, and equip a competent, well-disciplined Naval Reserve force that will be a help to the navy and a credit to the country. Every officer and petty officer on this station is here to explain and instruct. Take advantage of any instruction you receive, of any opportunities for study and advancement, conduct yourself so that you compel the respect of your associates, and you will make good.

"At any time, now or later, you decide that you are not going to give your best, get out—we don't want you among us. You are not worth wasting time or trouble over. Come to me and I will give you a discharge.

"Acquire the habit of obeying orders instantly,

zealously, and completely, without any mental process or reservation in regard to the subject-matter of the order. . . . Should you consider an order illegal or even degrading, obey it and seek redress after execution. A slow, unwilling or partial compliance with orders indicates lack of obedience.

"Next in importance to obeying orders comes the personal attitude of the individual. Be alert, snappy, quick, energetic, never loiter, answer all calls on the jump, be the first man at all formations, keep hustling and see that others do so. At the same time avoid loud calling or talking, unnecessary noise, skylarking, or rough-housing.. This country is at war, and you are here to take a man's part in that war; so stop your boyish tricks, get down to the seriousness of life."

Next comes care of the recruit's personal appearance, and Captain Franklin quotes General Pershing's order:—"Every slouchy officer or man is a reflection on the whole American army."

Take care of your physical health. "When you feel ill or out of sorts report at the dispensary. The excuse that you were ill will not go unless you have been to see the doctor. Cut down your tobacco and cut out the alcohol.

"The establishment of a correct mental attitude is equally important. Keep cheerful and contented, don't

grumble or find fault. Get the English Tommy's attitude as expressed in 'Pack up your troubles in your old kitbag, and smile, smile, smile.'

"Be punctilious in rendering all prescribed salutes and honors. There is nothing menial or degrading in the salute, which is merely the remnant of ancient chivalry and indicates membership in the profession of arms, and that you approach as a friend unarmed and have nothing concealed in your hand. When delivering a verbal report or message, deliver it clearly and distinctly, and see that it is understood. In speaking to an officer use 'Sir,' 'Yes, sir,' 'No, sir,' or 'Aye, aye, sir,' but never the 'All right, 'Very good,' or 'Very well' used by civilians.

"The commanding officers of stations are required by the articles for the government of the navy 'to be vigilant in inspecting the conduct of all persons who are placed under their command, to guard against and suppress all dissolute and immoral practices and to correct, according to the laws and regulations of the navy, all persons who are guilty of them.' As commanding officer of this station I intend to observe these instructions. You will have ample opportunity to acquaint yourselves with the various provisions of these articles, the punishments that may be inflicted for various offenses, and by what methods. It is proper here

to call your attention to the provisions that the punishment of death or such other punishment as a court-martial may adjudge may be inflicted upon any person in the Naval Service who sleeps upon his watch, or leaves his station before being regularly relieved.

"No matter how unnecessary a post or duty to which you are assigned may appear to you, remember that some definite purpose caused its establishment. Never relieve anyone or assume a post or duty until you understand thoroughly the obligations you assume. If in doubt, call the petty officer or officer of the Guard or Post for information. Having assumed the duty, remain at your post or station until regularly relieved, which means that your proper relief presents himself, that you inform him of all circumstances connected with your post or duty, and that he has signified his readiness to relieve you. Keep on your feet and keep moving, be alert, keen, alive, and take an interest in your post or duty.

"Any constructive criticism, any suggestion for the improvement or welfare of the station, or concerning the methods of training or instruction will be welcome. Place them in the form of a letter to the Commanding Officer, and forward through your company commander.

"This station will be judged by the neatness, smartness, ability, aptitude, and personal appearance of the officers and men serving here. Do your share; have the welfare of the station at heart. When you leave, speak a good word for those who have tried to help you, or if you cannot do that, keep quiet. While here, be loyal, be clean, be alert, and do your utmost to make good."

This is mighty good advice, for it contains in small compass the most important lessons which the recruit must learn. As to the opinion of the men at Pelham concerning at least one of the men "who have tried to help them," it was expressed in the words of one old sailorman concerning the C.O.: "He is as fair and square a man as you could ask for."

The etiquette of the navy is of course very strict, and properly so. Obedience must be literally instantaneous, and in order to obtain this, proper respect for the officer must be inculcated. This is one reason for the perpetual saluting in both army and navy. It is in no possible sense a servile adulation of the man because he happens to hold a commission, but a mark of respect for the authority with which he has been invested by the Government, which in the last analysis is ourselves, for we elect our authorities, who are

responsible to us just as the army and navy are responsible to Congress and the President. This is the difference between ourselves and Russia. Before the revolution there Russian officers said, "Of course you cannot have any discipline in your army, as in your country all men are equal." They could not understand an authority which was delegated by ourselves; all they could comprehend was authority imposed by a master. And that is what is the matter with Russia today: as there is no autocratic authority, there is no discipline at all, and every man does what pleases him. The army has vanished as a national body, and has either sunk back into the population like melted snow or, where bodies still cohere, these are fighting each other.

The safety of a ship will depend, in moments of crisis, on instantaneous obedience, and this can only come from habit. Consequently every man looks up to and obeys his superior. The man at the top, whether it is a ship or a camp, is of course a big man, and a person of vast importance. His word, for the time being, is law, and he, and all other officers on the ship, must be treated with due respect. Now the recruit, of course, has but the smallest idea of this, and his mistakes are often delightful in their innocence. One of these happened to the Commander of Pelham Bay. He

had had a recruit "up at the mast," which in old times meant the mizzenmast of a ship, where the Captain was wont to administer justice, as in ancient days the king administered it beneath the Royal Oak. An erring recruit was haled to the mast on one occasion and received a proper wigging from the Commandant. A day or two later the two met on the parade ground, when the recruit failed to salute the officer. The latter stopped and demanded to know why the recruit did not salute. "Why, sir, I thought you were still mad at me."

Again, the commander of the Probation Camp had been showing something to a recruit, who, when his duty had been properly explained to him, replied cheerfully, "All right, brother."

Fixed ammunition is the powder and the bullet or shell attached to each other, in one piece, as in a rifle cartridge, but a recruit on being asked to explain what it is, replied that it is "ammunition which has been monkeyed with by the Germans."

Another recruit was placed on guard at the foot of a dock. He was a little hazy as to his precise duties, but determined to carry them out somehow. Along came a lieutenant with his wife and children. He halted them, and the lieutenant came forward and gave the countersign. "Pass, lieutenant; wife and children, mark

time." This was as near the proper order to give as his limited knowledge supplied him with, and the lieutenant went on roaring with laughter.

Passengers on ocean steamships will recollect the broad canvas bands which run under lifeboats to keep them from swinging. These are "gripes," but one rookie defined the word as "pains in the stomach which come from eating too much canned food."

The lead, which is a long, heavy leaden weight, has a hole in the bottom, in which it is customary to place tallow when it is desired to get a sample of the bottom of the sea—whether mud, sand, or what not. This is known as "arming the lead," but a rookie defined that operation as "filling the lead with high explosives to use against submarines."

As most of our readers know, a "dead reckoning" is calculating a ship's position when it has not been possible to obtain an observation of the sun or of a star. One imaginative boy, however, said that it was "counting up the dead after a battle." Do not all these sound precisely like the "breaks" that a lot of college boys make in their examinations?

Indeed, the gobs have examinations, as regular as in college, and infinitely more serious. By them and by their personal record the men get an approximate grad-

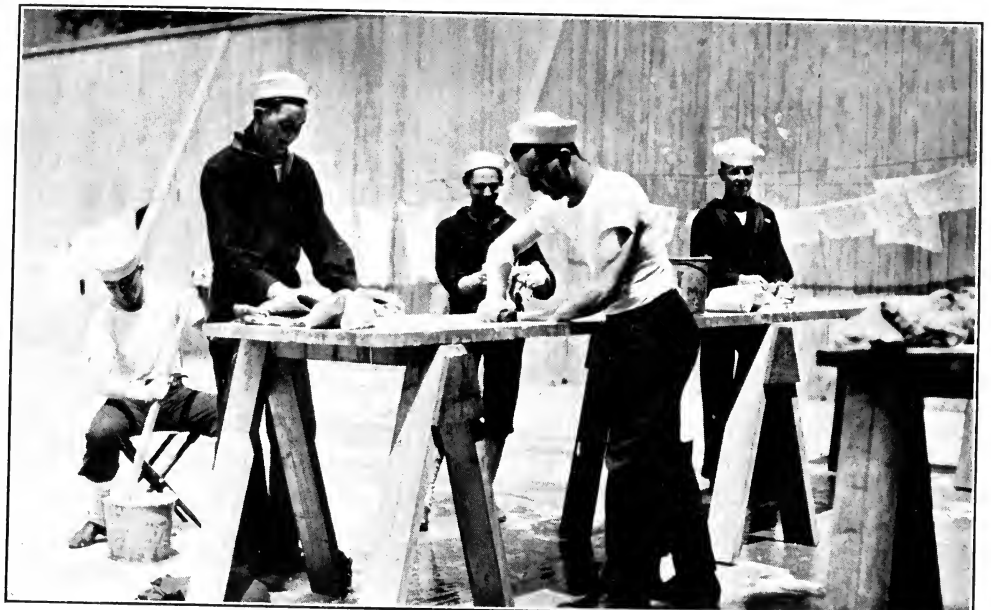


Photo by Benj. M. Schaub

NO, THEY ARE NOT PLANING BOARDS; THEY ARE WASHING THEIR "WHITES."

ing, so that by the time they are ready to leave the Probation Camp their officers can tell pretty much what they are worth. If he has not made good, the rookie is invited to leave, for there is no time at Pelham to waste on lazy, dull or bad boys—there are too many good ones who want their places, and only a given number can be taught. But if a man shows capacity in the Probation Regiment he will have worked himself up into the position of petty officer, for each company is officered, as to its lower grades, by its own men, and the man who, coming in as ignorant as his neighbor, shows superior capacity, is promptly put in authority over him, as has been the case from the days of Joseph under Pharaoh till the present day.

If a man leaves the Probation Camp after showing very superior qualities, he is energetically encouraged to work for a commission, for, as Captain Franklin said in his talk, the most important function of the camp is to provide officers for the navy. And here is where the greatest surprises occur. It does not follow that because a man has made good in business or a profession he is going to get ahead of the working-man; very often the mechanic or small clerk will show qualities more useful to the service than his apparently more fortunate compeer, and will

get the ensign's stripe while the other still remains in the ranks, or gets a petty-officer's rating. Under Napoleon every man carried a marshal's baton in his knapsack; in the Naval Reserve every man carries an ensign's commission in his ditty-box, and it is up to him to bring it out.

When the rookie is ready to pass out of the Probation Camp, it is certain that he is safe from contagious or infectious diseases. He has been sleeping in a room with only eight other men, so that if he develops something after he arrives, he and his fellows shall be as little likely to spread infection as it is possible to make them. Besides, he has been grounded in a lot of valuable things, and has shown that he is worth keeping. Now he can enter upon a much more agreeable life, for though he has had his own Y.M.C.A. and K. of C., with their entertainments, he has not been able to have "liberty," that is, leave to go ashore, and the process of shaking down has been attended by certain discomforts. Now he is a full-fledged Reserve man, and takes on a new bearing.

The first thing which impresses one in the main camp is the more soldierly—or sailorly—quality of the men, and a certain spirit of enthusiasm. I was looking across the parade ground one day when my gaze

was attracted by the appearance of a young man who was coming towards me waving his arms frantically but rhythmically in the air. Was it St. Vitus's dance? Not at all; it was a boy practising semaphore signals on his way to the "bridge," where all sorts of signaling are taught.

The bridge is an interesting structure. It is a simple platform built the whole length of the roof of the executive building, and on it is all the apparatus which is found on a real bridge aboard ship. Not only does it give opportunity for the men to learn the movements of the semaphores, lights, etc., but they can practise them in directing the fleet of boats which manoeuvres in the bay close below them. Of course the men are taught to row, and as most of them have never handled an oar, their early progress is eccentric. When to this is added an attempt to direct the movements of the flotilla of boats by a man who is not more expert in semaphoring than the men are in rowing, the result is sometimes a joy to the observers on shore. Nevertheless the same enthusiasm which caused our young friend to wave his arms furiously as he walked across the parade ground will very quickly get the signaler out of the novice class, just as this enthusiasm will make competent oarsmen in the boats in short order, and in a few weeks the same signaler and the same men

would be ready to take their place in real work if that were all they had to learn.

One meets all sorts of exhibitions of this enthusiasm. A lady asked one of the officers if she could have a glass of water. The officer touched a button by his desk, and an orderly appeared. "Will you be good enough to go over to the officers' mess and ask the steward for three or four glasses of ice-water?" "Aye, aye, sir." Another guest looked at the officer in surprise. "That's not the old-fashioned, 'bucko mate' way of speaking to a man." "Oh! we don't have to talk to them that way; look at him!" The guest looked out of the window and there was the orderly running as fast as he could to carry out the order.

A little incident which happened at Military and Naval Meet at the Madison Square Garden showed a delightful spirit in one of the boys. The regiment was being reviewed when one of the gobs in the rear of the column fell quietly to the floor. It was just by an entrance to the platform, and two or three of the bystanders ran forward, picked him up, and carried him out. It was all so smoothly done that it looked like a prearranged exhibition of hospital efficiency. But it wasn't; the boy had simply fainted from the heat. When he came to, and opened his eyes,

the first thing he said was, "Oh! I hope I didn't spoil the show!" A nice feeling, wasn't it? There was no thought of self, only of the ship's company. That sort of spirit makes sailors who are very hard to whip.

Another thing which impresses the observer is the variety of occupations which he will witness on the parade ground. Here is a squad at infantry drill. The gob is no longer exclusively a water bird; he is expected to be able to take part in landing operations, and to take with him pretty much anything which his military brother uses with the possible exception of horses. He has nice little twelve-pounder guns—see them drilling away over there—he has his Colt rapid-firers, and he will probably soon have his Brownings. In some ways he is going through much the same experience as his brothers and cousins down at Camp Upton or Camp Dix.

But there are a lot of him whom you do not see at all, shut up in those long, brown buildings, studying things for which his soldier brother would have no use.

The ultimate object of the camp being to turn him into an officer if possible, or a petty officer, or at the very least a good seaman, he learns, in addition to going on with a lot of the things which he started in the Probation Camp, navigation, seamanship, gun-

nery, signaling, the rules of the road, and all about lights and buoys. Out of doors he is taught small-boat work, rowing and sailing, and there is a converted yacht, 176 feet long, on which he is taken out into the Sound and made to practise what he has learned as sailor and officer. Then there are odds and ends of instruction going on all over the camp; one is perpetually learning of new ones. For instance, up in the bake house, where such bread is turned out as you can't easily get in New York in these Hooverized days, there is a school for cooks, whose talents are not allowed to rust. As soon as they are sufficiently skilled they are sent off, perhaps to Peekskill Camp, where the rifle ranges are, and the men are being taught to shoot, or on board ship. Then one may run across a squad busy with saber-drill; very businesslike they look, with a fine prospect of breaking each other's heads. Of course there is instruction in French; the gob is likely to need it very soon.

The gunnery instruction is very complete, so far as the limitations of the camp allow. There are real guns, completely equipped, and the men are fully instructed in handling them. Modern gunnery, even the mechanical side of it, leaving out the mathematical calculations, is highly complicated. It takes several men to train a gun on the target; one to give the

Photo by Stuart Randolph Whitman

SABRE DRILL

Photo by Stuart Randolph Whitman

MONKEY DRILL

proper elevation, one to give the direction horizontally, one to set the sights, to say nothing of the officer who controls the fire, and who is ensconced in the bowels of the ship, or the men in the fighting tops, who make the observations which they 'phone to him, and on which his calculations are based. How intricate these calculations are may be guessed from the fact that in the fight in which the *Blucher* was destroyed—the Dogger Bank battle—that ship was below the horizon, and the guns were aimed at her smoke.

Of course, there can be no actual target practice at Pelham, but the men are put through the motions with the utmost zeal, and it will readily be seen that this means a lot. Let us suppose, for instance, that the order be given, "2,000 yards, rapid fire, deflection left 10 degrees—begin firing," this would mean that the 2,000 yards indicates the distance of the enemy object, and so the elevation of the gun, the "deflection left 10 degrees," indicates 10 degrees horizontal deflection to the left, to allow for the speed of the ships, and to begin rapid fire as soon as the sights were set. This order, by the way, might very well be for firing at a periscope. Now to turn the gun in such direction that the intersection of the cross wires of the sight shall rest upon this precise spot is by no means a simple matter, since the coördinated effort of two men—

of three, in fact—is necessary to accomplish it. In point of fact, engineers and other thoroughly competent observers, say that the coördination of a gun's crew has no equal for perfection of team play in the world. The men are selected for their physical, mental, and psychological qualities. Take, for instance, the firing of a five-inch gun. The fixed ammunition weighs 110 pounds. The charge is always handled by a single man, selected for his strength, though the regulations allow two men for the purpose. This man heaves the charge up over his shoulder, and slides it into the open breech of the gun, which is then slammed shut by the man in charge of it, and if the man who handles the shell is not mighty spry he will have his fingers taken off. The gun is fired, the breech block is thrown open again, and the process is repeated. One may not print the number of times such a gun is fired in a minute, or the percentage of hits, but both are astonishingly large. From all this it will be seen that the more thoroughly trained the men are in the mere handling of the piece, even before they actually fire it, the more rapidly will they be able to master the actual firing when they ship. And they are incomparably better off than their brothers in some of the army camps were last winter, for these had for a long time no real guns, only imitations made of pine

logs. Yet the elementary training which was received with these rough makeshifts was of the utmost value, and when our boys got to France, and were given the real French 75s, they astonished their Allied instructors by the quickness with which they caught on.

In the last chapter something was said of the opportunities afforded after the war in the merchant marine. Since the enlargement of the station at Pelham Bay the school for officers in this service has taken on large proportions. The graduating class in July, 1918, numbered over 225, and the school is growing.

The Officers' Material School, U. S. Naval Auxiliary Reserve, has its headquarters at the Municipal Ferry Building, Whitehall, New York City. Most people know it as the place from which the Staten Island Ferry starts. The qualifications for entrance to this school are:

1. Candidate must be a man of ability, and officer material.

2. The age is from 21 to 40, inclusive.

3. The education of candidates must be at least equivalent to completion of the high-school course, including a good knowledge of trigonometry and logarithms.

4. Candidates must be physically qualified for line officer, standard of the regular navy.

5. They must be in the regular navy, N.N.V. or N.R.F., any class, for general service.

6. They shall have at least one month's military training or its equivalent.

The course is completed in a period of four months; two months' practical training at sea, on coastwise ships or on ships of the Great Lakes, and two months of theoretical training at the Officers' Material School, Pelham Bay Park.

Men who do not complete the course, or who at any time during the course are not considered qualified as officer material, or who do not live up to the regulations and instructions for the men assigned to the course, will be given the rating which they are deemed best qualified to fill, and transferred to the Commandant of the Third Naval District for general detail. Men who successfully complete the course will be given the rank of Ensign, U.S.N.R.F., Class 3.

When a man passes his preliminary examinations, the scope of which is clearly indicated in the conditions, he goes to sea for two months, then to Pelham. Here is a sample of the sort of examination he would pass before going to the school at Pelham.

1. Box the compass by quarter points from NE to SE.
2. Correct the following compass courses to true courses:

C.C.	*Dev.*	*Var.*	*Wind*	*Leeway*
SSW½W	7°E	4°W	SxE	12°
S32°E	½ pt E	1 pt W	W	2 pts
216°	4°E	9°E	——	1 pt on port tack

3. How would you take a sounding, using (a) a hand lead, (b) a deep sea lead, (c) a sounding machine?
4. What are the international signals (a) for a pilot, (b) for a vessel in distress?
5. (a) Receive a semaphore message at the rate of ten words per minute.
   (b) Receive a blinker message at the rate of five words per minute.
6. Quote the international "Rules of the Road" for the lights required to be carried by a steam vessel under way.
7. Define the following terms:
   (a) Net tonnage,
   (b) Truck,
   (c) Scupper,
   (d) Mizzenmast,
   (e) Strakes,
   (f) Anchor watch,
   (g) Marline,
   (h) Caulking iron,
   (i) Taffrail,
   (j) Composite ship.
8. Define by simple sketches the following forms of tackles:
   (a) Luff tackle,
   (b) Twofold purchase,
   (c) Runner.
9. (a) What should always be done with running rigging during wet weather?
   (b) How should a right-handed rope be coiled down?
10. (a) Give types and stowage of all lifeboats carried aboard the ship you were assigned to.
    (b) What are the characteristics of carvel, clinker, and diagonal built boats?
    (c) How is the carrying capacity of a lifeboat determined?
11. Give details for lowering a lifeboat in a sea-way.

12. (a) Name the parts of an old-fashioned anchor. What advantages and disadvantages has it over the patent anchor?
    (b) What is the meaning of (a) anchor at short stay, (b) anchor aweigh?
13. Discuss all preparations for letting go a patent anchor.
14. Draw a simple sketch showing the different parts of an anchor windlass, including (a) friction brake, (b) wildcat, (c) locking ring, (d) driving wheel, (e) drum. Explain the use of each part and how the machine is operated.
15. What are submarine signals?
    Describe the construction, use, and operation of the receiving apparatus for submarine signals.
16. Name ten bridge or navigating appliances.
17. (a) How would you prepare a hold to receive a general cargo?
    (b) How would you stow acids and what steps would you take if they should leak on a steel deck?
18. If you should lose your rudder at sea, what emergency gear would you rig to enable you to make port? Discuss.
19. You are in charge of a 4,000-ton right-handed screw vessel which is to be put alongside a dock, port side to. You have a head tide. Discuss the following points:
    (a) Preparations before nearing the dock,
    (b) Stationing of officers and men,
    (c) Method of approaching the dock,
    (d) Procedure in getting out lines, going ahead, backing,
    (e) Method of finally tying up.

Where a man has had six months on board overseas ships, he would have some such examination as the following, before going on directly to the shore course at Pelham. Such men are allowed to omit the two months' preliminary training on a coastwise steamer.

MATHEMATICS

1. Given right triangle ABC with sides opposite a b c, angle $C = 90°$
   (1) define $\tan A$
   (2) define $\frac{b}{c}$
   When angle $A = 42°$
   (3) determine $\log \tan B$
   When angle $B = 61°$; $a = 247.31$
   (4) determine c.
2. Find the value of t when $\sin^2 \frac{1}{2}\, t = \sec L \csc p \cos s \sin (s-h)$
   $h = 37°\ 24'\ 56''$
   $L = 14°\ 27'\ 18''$
   $p = 81°\ 80'\ 81''$
   $s = \frac{h + L + p}{2}$
3. By use of logarithms find
   (a) 379.64 x 87106.837
   100.03 x 0.001010
   (b) What is the shortest distance between two points on the earth's surface?

SEAMANSHIP

4. (a) Does the sun ever set exactly in the west at New York? Give reason.
   (b) Is your watch ahead or behind standard time in San Francisco? Give reason.
   (c) What season is the Fourth of July at the Cape of Good Hope? Give reason.
   (d) How does the Dipper point out the North Star?
5. On April 15, chronometer reading was 12h. 18m. 36s., chronometer being 5m. 18s. slow. On May 1st same chronometer read 13h. 12m. 17s., and was 9m. 20s. fast. Correct a reading of this chronometer on May 5, 16h. 14m. 17s.
6. (a) Give a general description of the sextant.
   (b) Correct a sextant reading of 63° 45′ 30″ where I.E. is 45′ 30″ off the arc.
7. Correct the following compass courses:

C.C.	*Dev.*	*Var.*	*Wind*	*Leeway*
219°	9° W	16° E	S.E	2°
N 53°W	2 pt E	½ pt E	N.E	1 pt
WSW ¾ W	4° E	15° W	——	1 pt port tack

8. Give "Rules of the road" for lights to be carried by
   (a) a steam vessel under way;
   (b) a pilot vessel in U. S. waters;
   (c) a vessel under way and not under command.
9. You are on the bridge of a steamer, course South, wind SSE; thick fog prevailing. You hear:
   (a) One blast of a fog horn two points on your starboard bow;
   (b) One prolonged blast of a whistle off the port bow;
   (c) One long blast followed by two short blasts in succession three points on your starboard bow.
   What action would you take in each case? Discuss.
10. Describe briefly the following terms:
   (a) Counter, (b) run, (c) coamings, (d) bulwarks, (e) stringer, (f) sheathed ship, (g) gross tonnage, (h) cowl, (i) manger, (j) gaff.
11. What care does a steel deck exposed to sea water require? Discuss.
12. Explain in detail how to lower a lifeboat in a sea-way.
13. (1) Explain (a) the construction, (b) the markings, and (c) the care of a navy anchor cable.
   (2) What advantage has a patent anchor over an old-fashioned anchor?
14. You are in command of a right-handed screw 4,000-ton vessel coming up a river. Flood tide. The vessel is to be put alongside a dock on the starboard bank without the use of tugs. Explain how to station your men, handle the lines, and manœuver the vessel in the process of docking her.
15. (a) How would you stow a cargo of railroad iron? How should the weight be distributed?
   (b) What steps would you take to extinguish a fire in a cargo of coal?
16. Explain with simple sketches the following tackles:

(a) Single whip, (b) Spanish burton, (c) gun tackle, (d) twofold purchase.

SIGNALS

17. Candidates must be able to meet the following requirements in signals:
(a) Receive five words per minute in blinker, (b) receive ten words per minute in semaphore, (c) have a thorough knowledge of the international alphabet flags with their secondary meanings.

MARLINSPIKE SEAMANSHIP

18. Candidates must be able to tie at least ten common knots and make all common splices.

REGULATIONS

19. What honors are rendered to the National Air and to the National Ensign, (a) on board ship, (b) at a naval training station?
20. What is a Deck Court; (a) its composition, (b) its jurisdiction, (c) the penalties it may impose, (d) the authority by which it is convened?
21. How does a boat containing a Commanding Officer answer a hail when coming alongside at night? Same, containing an Ensign only? Warrant Officer only? Enlisted men only?
22. Write in parallel columns the Army and Navy Officers of corresponding ranks.

The coming of peace will not mean the abolition of the Naval Reserve training stations, for there will continue for a long time to be a great demand for sailors in the merchant marine, and it has already been announced that a number of the stations will be continued, for the training of these men.

The gob's life is a pretty strenuous one; he is on the jump all day, if not at work, then at play. He is waked at half-past five by the call of a bugle, when he gets out of his hammock, which he takes down, (beg pardon, "unslings, lashes, carries, and stows)." At five-forty-five, having presumably washed and brushed his teeth meanwhile, he "turns to," which means he gets busy. The Company Commander reports the barracks clear, and the men scrub and wash their clothes, clean the barracks and police the grounds, of which more anon. At six-thirty in the morning comes the first drill period, which is the setting-up drill, ("monkey drill,") which includes a walk and run, or other drill as ordered. Varied duties fill the time till seven-thirty, when comes assembly for mess, which means breakfast, by which time the gob ought to have a fairly good appetite. "Colors" are at eight, when the flag is raised to the strains of "The Star-Spangled Banner," played by one of the bands. It is here that the recruit receives his first lesson in that most important of duties, respect for the flag and the national air. Whoever and wherever he may be, at the first notes of the tune, he rises, stands at attention, and salutes if an enlisted man. I happened to be sitting in an office in the Administration Building one afternoon, talking to someone, and between whiles idly watching a lot of

men on the parade ground who were practising baseball and batting "fungoes" about, when, on looking up, I saw that every man had dropped bat or ball, had turned towards the Y.M.C.A. building, and stood frozen to attention, with his hand raised in salute. For a minute I could not think what it meant, when I remembered that a concert had been going on in the building, and that at the end of a concert it is customary to play the national anthem. I pointed it out to my officer friend, he raised his window, and sure enough the strains of "The Star-Spangled Banner" came faintly floating out of the open windows of the Y. building. It is said that men in swimming have been seen to suddenly stand at attention and salute, with the water up to their chests, when they heard the sound of that tune.

Another beautiful lesson in reverence for the flag is given at parade. The battalion colors are kept sacredly in a glass case in the Commandant's office. Before parade begins, that officer and his Executive Officer appear carrying the colors, cap in hand, and hand them reverently over to the color guard. Then they put on their caps, and only salute when the colors pass in review, though civilians should uncover. When parade is over the same officers again receive the colors bareheaded, and carry them away in their

arms. Nothing seemed quite so touching as the idea that our country's colors could be handled only with uncovered head.

After Colors, Muster and Inspection, Sick Call, and more drill periods fill the time till half-past eleven, when the athletic flag is hoisted, which means that the men have what in school would be called "recess" till mess. It is during this period that the regimental Commander's "masts" are held, for requests for leave or what not, and the awful Commander's mast, when culprits are haled up for punishment or a wigging. Mess is at twelve, the lecture period from one to two-thirty, then more drill, scrub and wash clothes again, more setting-up drill, and more athletics. At five-twenty the happy members of the "liberty party," the men who have leave of absence, "go ashore." Mess is at six, at eight there is muster and roll call, and the men "stand by hammocks." At eight-forty-five is first call, at nine is "tattoo," and lights are out, and at five minutes after nine comes "taps," that bed-time call which is so pathetically associated with the end of the sailor's career, for it is always played at his funerals. He goes to sleep, and has eight hours of it. It is only fair, however, to say that his sleeping capacity seems to be boundless; anywhere and everywhere, when there is a moment of leisure, you may

find him asleep on the parade ground, or a convenient bench, or anything which affords room for him to stretch out on, and he drops off, with precisely the healthy capacity for sleep of a dog, which will lie down anywhere, curl up, and be asleep in two minutes. That sort of thing is the surest criterion of health, and the gob possesses it to perfection. In fact, if one saw men asleep in city parks in this way, one would be inclined to suspect an alcoholic sedative, but here there is no possibility of that; it is just good, healthy fatigue. By the way, this habit of dropping off to sleep is termed, in sea-language, "caulking off," and is universal. It is a fact that in a battle, when the guns on one side of a ship were engaged, sailors manning a battery on the other side have been seen asleep on a pile of shells, waiting till the ship should come about and their battery be engaged. It reminds one of Bairnsfather's caricature of the soldier putting his head out of a dugout as trench-mortars close to his head were blazing away and quite obviously making a fearful noise, whereas he is saying indignantly to a comrade who is playing a mouth organ near by, "Can't you be still? The captain is trying to go to sleep."

The camp also has its sham battles, in which all arms are represented. You can see them in the pic-

tures—lying on their faces and firing at the enemy, or charging him desperately, and dragging their field-pieces behind them. There were other phases of the last battle too harrowing to narrate—the capture and execution, for instance, of four spies, who had to be executed two or three times over until the photographers and the caricaturists of "The Broadside" were satisfied with their pictures. There is nothing in the faces of the boys in the charge to indicate that there is any truth whatever in General Sherman's description of war; as practised at Pelham Bay it is an eminently cheerful occupation.

You mothers need not worry about your boys' food; your Uncle Samuel is "a good provider," and his nephews get plenty to eat. The gob's mess-hall is on the cafeteria plan; he takes his plate and cup and goes by a steam-table where the mess-stewards stand, and these fill plate and cup for him, when he goes off and chooses his place at the long tables. If he has not had enough when he has finished what is on his plate, he can go back for more. The food is exceedingly well cooked, and there is plenty of variety; here are a couple of menus taken at random, for two successive days in the same week.

Photo by Stuart Randolph Whitman

SHAM BATTLE (1)

Photo by Stuart Randolph Whitman

SHAM BATTLE (2)

FRIDAY

BREAKFAST

Bananas, Cheese Omelet, Hashed Browned Potatoes,
Bread, Butter, Coffee.

DINNER

Clam Chowder, Fried Flounder,
Tomato Sauce, Mashed Potatoes, Lima Beans, Apple Pie,
Bread, Butter, and Coffee.

SUPPER

Sardines, Cucumber Salad, Cake, Fried Potatoes,
Bread, Butter, and Tea.

SATURDAY

BREAKFAST

Sliced Pineapple, Buckwheat Cakes,
Maple Syrup, Country Sausage, Fried Potatoes,
Bread, Butter, Coffee.

DINNER

Vegetable Soup, Roast Sirloin of Beef, Tomato Gravy,
Boiled Potatoes, Stewed Corn, Chocolate Pudding,
Bread, Butter, Coffee.

SUPPER

Cold Sliced Meat, Lyonnaise Potatoes, Pickled Beets,
Bread, Butter, Cocoa.

If there is any truth in Napoleon's dictum that an army travels on its belly, the Naval Reserve will go a long way. Students of dietetics will notice how perfectly the ration is balanced, and it is worth noticing, too, that the Government takes care of the re-

ligious convictions of its sailors. Friday's bill of fare provides Catholics with all they need, and every day there is plenty to eat which will not offend the Hebrew's prejudices. If we had a large Moslem contingent, we would certainly care for them too, just as the English do, but our Moslems in the Philippines have not, apparently, as yet flocked to the colors. On the other hand, the Filipinos of Spanish blood have come forward very well, though one sees few of them at Pelham, except in the mess-halls.

The gob's work and his pleasures rather shade into each other. Take rowing, for instance. Teaching green oarsmen to row is not a thrilling experience for teacher or pupil, but thanks to that competitive spirit which is the birthright of our boys there is much eagerness to learn, since cutter races have been instituted, and there were even shell races, for the New York Athletic Club, which has been most patriotically generous, lent the boys its shells, as it has lent them all sorts of sporting paraphernalia which they could not have afforded themselves. Then there are the stock sports, like baseball, football, etc., each in its proper season. Captain Franklin was center rush of his football team at Annapolis, and first base of his ship's baseball nine, so it can be understood how all sports are fostered by him.

In a station of some 15,000 young men of just the age—the college age—to play violent outdoor games, there must of necessity be a lot of good baseball players, many from the minor, some from the major leagues, and the rivalry between the various nines in a station, or between the nines of different stations, is intense. And so the parade ground of an afternoon is a most interesting place, quite as interesting, in a way, as the Polo Grounds. Push ball, basket ball, volley ball, fencing, and tug of war also have their devotees. There is plenty of variety all the time. Football comes in with the autumn, and there are some mighty good elevens turned out from the N.R. camps. Cupid Black's, at Newport, was perhaps the strongest in 1917, for it had a lot of college stars on it, but there were other good ones, and the matches between different stations, and stations and army posts, were as keenly played as championship games between colleges, to the immense advantage of the men's physiques.

Another sport which is very popular is sparring. This is an especially valuable study for the men, for it teaches courage, the faculty of bearing pain without noticing it, and above all the habit of quick thinking and the opportunity of taking instantaneous advantage of opportunities as they present themselves. Secretary Daniels recently said, in an

address before the National Geographic Society, that a sea-battle "is won or lost in a few minutes," and "woe to that officer who lacks initiative and coolness and courage in the one moment when all he has learned and practised is worthless unless he can summon it to his command upon the instant of decision." What is true of the officer is also true of the enlisted man; if the gun crew on a chaser or a merchantman is not quick, the submarine may get away, or the ship be torpedoed. Nothing could better teach quick decision than the necessity of taking advantage of your opponent's openings, or of stopping his blows, which mostly come in unexpected places. In fact, not only is sparring taught, but jiu-jitsu as well, to enable the gob to strangle Fritz or break his arms or neck, even without a weapon. And in view of the gob's possible rôle as a land-fighter, all this is absolutely necessary.

Besides the outdoor sports which afford amusement to the N.R. men, both in taking part in them and in watching them, there are a lot of indoor entertainments. The Y.M.C.A. and the Knights of Columbus both have houses where the boys are at home, where they write letters and read, and where cinema shows, concerts, plays, and lectures follow each other with almost bewildering rapidity. Not a little of the amusement is provided by the men themselves, for among

Photo by Stuart Randolph Whitman

THE MOST POPULAR SPORT

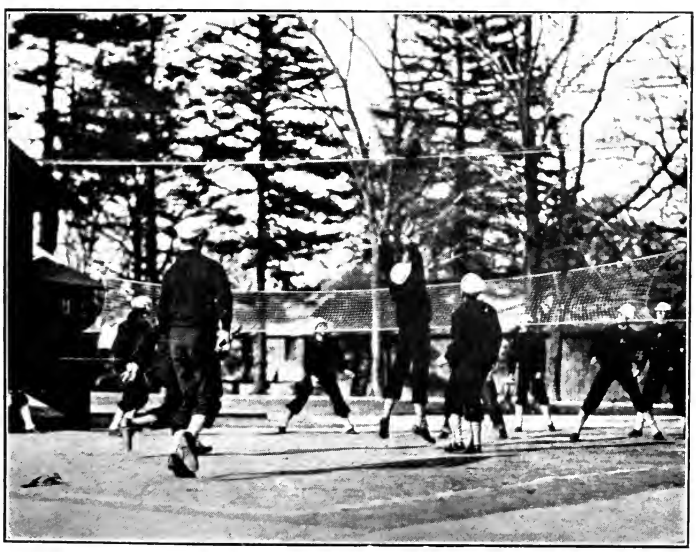


Photo by Stuart Randolph Whitman

VOLLEY BALL

them are some well-known vaudeville performers, who never fail to keep their comrades in roars of laughter. Then a dramatic company last spring gave a series of performances of a musical comedy of its own, "Biff Bang," in a New York theater, when words and music were written and all the parts were taken by the boys themselves, and it was an admirable success. Incidentally, the members of an English musical comedy company, every one of whom had lost some relative on the battle line in France, or had one still there, came out to give the boys a lesson in dancing.

Moreover, there is a corps of gracious ladies who act as hostesses in the Y. and K. of C. houses, and they bring their pretty daughters and sisters and nieces out to help Jack, and he values it all as he should. Never, since the station opened, has there been a rude or impertinent word on the part of one of the boys, although they come from every walk in life, and sometimes have the roughest of antecedents. Is not this an exhibition of chivalry and of innate politeness of which to be very proud? And can you imagine this of German soldiers? I trow not!

Another feature of the camp is its music; it has several bands of very unusual excellence, and a most creditable orchestra. Then, of course, there is the singing under the song-leader, Mr. Percy Hemus, and

it is pretty certain that this will have another result than merely amusing the boys; it is likely to implant in them a love for community singing which they will take home with them after the war, that singing which provides our shy and self-conscious people with an outlet for their artistic instincts. Anyone who has seen Harry Barnhart's Community Chorus in New York, where cook and mistress sing side by side, and where they give vent to emotions which they had always heretofore carefully suppressed or hidden, will realize the value of that by-product of the war.

So many disquieting reports have been floating about in regard to the hygienic condition of this or that camp, that though they have doubtless been in many cases greatly exaggerated, it is a joy to turn to the health record at Pelham. The most serious cause of trouble everywhere has been pneumonia. Between October, 1917, and June, 1918, there were between 5,000 and 6,000 men continuously at the camp, and some 35,000 passed through it, nearly all from civil life, and most of them untrained and soft. In spite of the exceptionally severe winter, there were only about forty cases of pneumonia, and three deaths, one of which was directly from the disease, and the other two indirect consequences of it. The record shows less than two per cent in hospital at any time, and this includes

surgical cases, of which there are always a number, caused by unfamiliar sport and exercises, and there is an appreciable percentage from the men's falling out of their hammocks. The deaths number only five out of 900 cases admitted to hospital, one death to 7,000 men in camp. Further, there has not been one epidemic of any kind.

The surgeons call this luck, but to anyone who studies the situation carefully there seems to be less luck than good management. First of all there is the selection of the site of the camp, which is a sandy soil, well drained, and the credit of this goes to the men who selected it, not to luck. Next is the system by which the men are segregated in small groups at night in the Probation Camp, so that when anything contagious or infectious does break out, as few as possible shall have been exposed to it. This also is part of the planning, and the credit goes to the man who planned it. Next is the care with which cultures are taken of the men's throats so that if a positive culture appears the man is hastily put in quarantine, and kept there till three negative cultures have been shown. Another cause of prevention is the simple but efficacious system of ventilation of the barracks, which insures an enormous supply of fresh air for the sleeping men, properly warmed in cold weather, none of which

is used twice. After coming up through the floor, heated by a very uncomplex system, it passes out through self-trimming ventilators in the roof. Overcrowding is never permitted, and cleanliness is rigidly enforced through scrubbing of clothes, sleeping gear, and buildings. "Cooties" and bedbugs are absolutely unknown. The diet, as has been said, is carefully balanced, palatable, well cooked, and served regularly. From what has been said, it will be seen that there is plenty of varied exercise, and the men turn in healthily tired and ready for sleep. Finally, there are the inspections by the regimental and medical officers daily, and the Commanding Officer weekly. These are absolutely thorough; the officers go over the camp with a fine-toothed comb and the nose of a sleuth hound. The latrines are as free from odor as your bathroom, no matter who you may be, and the same thing is true of the barracks—the sleeping quarters. All of these things are in the line of prevention, and the record shows that they do prevent.

The hospital is as well managed as the rest of the camp. It is commanded, of course, by a Medical Inspector of the U. S. Navy, but it is manned by the surgeons and physicians belonging to a unit which is presented to the camp by the Montclair, N. J., Hospital. The low death rate testifies to the efficiency of

the treatment, but it is a pity that all mothers cannot see the intelligence, the devotion, and the sweetness of the nurses to the boys. And the gratitude of the boys is in proportion,—and characteristic. One young Hebrew, whose life had been saved only by the most careful nursing, looked up at his nurse with a smile and said, "Vell, you haf been so fery goot to me, I gif fife dollars to the Red Cross for *you*." And the hospital is a great place for bringing out a democratic feeling. A young and very blue-blooded Virginian found himself in a ward with a colored boy whose standing in the camp was just as good as his own, yet he felt moved to say, "Before I came heah, I rated a man by his position in society, but now I judge him by what beats under his coat."

One boy was hit by a baseball and his skull fractured. A skilful operation by one of the doctors saved the boy's life, and the grateful father seized the opportunity to write to the Montclair papers, not only to thank the staff of the hospital in general and the doctor who performed the operation in particular, for what had been done for his boy, but also to point out the patriotism of the latter gentleman, who, as the father said, "had with self-abnegation given up a large and lucrative practice to serve his country from the standpoint of chivalry and patriotism."

The father was happy in having an excuse for calling attention to this self-sacrifice, and it is a pity that one cannot go through the staff of officers at Pelham Bay, and point out what each one has given up to serve his country. There is probably not a single one who has not sacrificed something—larger salary, prospects of advancement, or what not, with no earthly likelihood of even such promotion as will come to the very ensigns whom they educate. And this does not apply, either, to the men who are beyond the age for active service, if there are any such at the camp. Certainly, to look at the officers on parade, such men seem conspicuous by their absence.

You mothers must not imagine that your sons are a guileless lot of little angels; it would be a very bad thing if they were, for they would pretty certainly lack the "pep" which they are going to need when they come in contact with the Hun. They overstay leave and break various naval commandments, hence the "commander's mast" and the "brig"—in shore language, the prison. Hence, also the "coal-pile" and "policing the grounds." The former means that as a punishment men are sent to shoveling coal, a most unpleasant occupation. Second to it in unpopularity is policing. As may be seen from the picture, it works for the marvelous neatness of the grounds, and so for

Photo by Stuart Randolph Whitman

CHOW

EN ROUTE TO MADISON SQUARE GARDEN

Photo by Stuart Randolph Whitman

PUNISHMENT, POLICING THE GROUNDS

THESE "GOBS" CLEARLY DO NOT INTEND TO BE RECOGNIZED

the health of the camp, but this fails to make it loved. Fortunately, none of the offenses for which the gobs are punished are very serious; they are such things as overstaying leave, smoking in barracks, washing clothes at the wrong time,—this is to economize time for liberty,—or such like. If anything more serious happened the boy would be court-martialed, and might be "dishonorably dismissed" from the service, a dreadful punishment because it practically brands a man for life, or he might be sent to Portsmouth Prison to serve a sentence. This last is by no means so bad as it sounds, for in time of war offenses which in peace-time would be overlooked, or very slightly punished, have to be more stringently dealt with, like unintentional desertion—overstaying leave, for instance, so long that it becomes in effect desertion, though the boy may have been quite innocent of any intention of deserting.

One would like to go on, too, and tell about the amazing talents which are discovered among the men. Every sort of trade is represented, the most remarkable case being that of a man who made a thoroughly good sextant out of a piece of brass which he picked up on the beach. But this would carry us too far afield. It may be said, however, that it would be

hard to break anything in the camp without being able to find someone who could mend it.

There is one other institution at Pelham which holds a large place in the life of the camp, and that is an interesting magazine called "The Broadside." In a big force like this there are naturally a lot of clever men, and they are of all sorts. There are artists, and one of them has made a set of covers for the magazine which would do credit to any publication in the country. There are caricaturists, and here is how one interprets the rookie. As to the reading matter, the paper is very diversified, and often very witty. Here is an ode to the great American dish which is likely to appeal to a lot of people outside the camp, in these days, as well as in it. And good as the paper is, it is young yet, and is improving with every number.

MORE TRUTH THAN POETRY

When Hoover's conservating pen
  Cut down our steak and sausage ration
With one accord we cried "AMEN,"
  And meatlessness became the fashion.
"We'll curb our appetites," said we,
  With calm and placid resignation,
"Because we feel that this decree
  Is going to help to save the nation."

When Hoover bade us eat less meat
  We never made a row about it;
Without a single moan or bleat
  We found a way to do without it.

From "The Broadside"

A Recruit

We ate gray bread instead of white,
And never even quoted Sherman,
But told ourselves with every bite
That thus we'd help to lick the German.

But pie is something else again—
It has a rare benignant power
To elevate the spirits when
They falter in a trying hour.
At breakfast, luncheon, dinner time,
Its spicy tang and matchless savor
Uplift the downcast hearts of men,
And make them steadier and braver.

Cut down our chops, cut down our ham,
Reduce our roasts, dilute our gravy.
We know it helps old Uncle Sam
To feed the Army and the Navy.
But if you take away our pie,
Which is our rock and our foundation,
You'll leave us stranded high and dry
Upon the shores of desolation.

—Donkey Matt.

The question which will, of course, be of the most serious import in the minds of true friends of the boys will be: "How are they behaving? Has separation from home and its influences lowered their moral tone and made them thoughtless as to standards of right and wrong? In other words, has life at Pelham caused deterioration, and made them forget what they learned at home?"

When one asks these questions at the camp, there is no trouble in getting a prompt answer, and happily

it is altogether encouraging. Clergy, Y. M. C. A., and K. of C. men say emphatically that there is no lowering of moral standards, that the percentage of boys who take an interest in religious matters is larger than in civilian life, and finally that the devotion of the boys to their families is very great and has a most steadying influence on them.

The camp is thoroughly organized in a religious way. First, there are two official chaplains, a Protestant and a Catholic, and besides these there are three regularly ordained Protestant clergy, volunteer chaplains. Besides these there are the Knights of Columbus and the Y.M.C.A., who both have buildings, and there is a Jewish Welfare Worker who labors among the men of his faith.

The ministrations of these men are not confined to Sunday, but are given every day and all day. Of course they work in the hospitals, and they are always ready to help men who come to them, but that is the smallest part. They are perpetually going about among the men, and trying to find out ways of helping them. When the recruits arrive, feeling like cats in a strange garret and looking the loneliness which they feel, the clergy and the workers are there too, with a pat on the shoulder and a warm handclasp. They remind the recruit of the new responsibilities

Photo by Stuart Randolph Whitman

HAMMOCKS AIRING

which he has undertaken. "You are in the service now, and whatever you do will be either an honor or a disgrace to the flag. Won't you try, with God's help, to be a credit to it?" And ninety times out of a hundred the boy will look the speaker squarely in the eye and say, "Yes, sir; I will!"

But it must not be imagined that the chaplains are perpetually pursuing the men with tracts, or that there is anything of the Sunday-school atmosphere about the Y.M.C.A. and K. of C. houses. The Christianity of this camp is ninety-nine per cent applied, that is, it is a matter of service. It is perfectly true that there are religious services, and that everybody is invited to them. But nobody is nagged. If the boys ask help and advice they get them in generous measure, but they are not thrust on anyone.

As for the Y.M.C.A. and K. of C. houses, they are simply the men's clubs, where they can loaf or write letters or play games or sing, as they choose. The pianos seem to be going all the time. And every night there are entertainments of one sort or another—the most popular are the boxing matches—and the entertainers are often very distinguished artists, who give their services to the boys, but who would receive very large fees for the same work elsewhere. If the boys want counsel or encouragement the secretaries are

ready with it, but it must be asked for. No one has it thrust down his throat.

The Christianity of the station is, as has been said, chiefly of the applied sort; the clergy conduct the altruistic work, just as the doctors do the medical work, and they meddle just as little. They often help in most unexpected ways. One day one of them found a young man of some five and twenty years of age sobbing bitterly. "What's the matter?" "I expected to be here for six weeks, sir, but now I have been ordered to ship right away, and I shall not be able to see my mother." "Where does she live?" "137th Street, sir." Now, 137th Street is less than ten miles from that station and the clergyman told the boy not to worry. He got into his car, drove to 137th Street, brought back the mother, put her in his office, went and brought the boy, and closed the door, leaving them together for a couple of hours. Mother and boy parted happy, but just think how both would have felt if it had not been for the chaplain who brought them together for that last good-by!

All sorts of odds and ends of service are in the chaplains' hands. For instance, when a boy "ships," that is, leaves the station for sea, he receives a comfort outfit from the Red Cross, and it is the chaplains who have charge of this distribution. The outfit includes

a "comfort kit," containing razors, pencils, pads, pipe, tobacco, toothbrush, or similar articles, and besides the kit there are a woolen sweater, muffler, helmet and socks, with a copy of the President's war message, the pamphlet "What We Are Fighting For," Judge Rockwood Hoar's letter to his son, a New Testament or, for the Hebrews, selections from the Hebrew scriptures, and a cardboard checker and chess board which is quite a marvel of ingenuity.

Besides this, the chaplains administer a fund which was given by some patriotically inclined person who also had a vision of the needs of these boys. It is loaned to them when they are in need, in small sums which are returned after pay day, and are then loaned to someone else. Another charity—for that is what it is, in the best sense of the word—which they administer is an excursion for convalescents in the hospital thrice a week. A number of ladies in the neighborhood lend their motor cars, frequently driving themselves, as they are often good chauffeurs, and they take out fifty convalescents, not infrequently stopping at some roadside inn for afternoon tea. This, by the way, comes through the Red Cross.

Great pains have been taken to provide all soldiers and sailors who visit New York with innocent amusements, and the chaplains see that when the boys from

Pelham " go ashore " they are directed to these. There are delightful canteens, conducted by the most charming girls in the city, to which they are most welcome, for they are conducted for their especial benefit. All the churches of every denomination, have opened the doors—not only of their church buildings, but of their parish houses, with all the amusements which a healthy boy can ask for. If mothers or daughters want to come on to see their sons or brothers or sweethearts, there are hostess houses where they will be lodged and chaperoned and be as safe as if at home. Special entertainments are given for the boys, to which the uniform is a pass. The Metropolitan Museum, for instance, not only admits the boys free at all times, but sends an attendant around with them to explain the things of greatest interest. The list of such entertainments is endless, and as it is almost impossible for a man in uniform to get a drink in New York, there is every inducement for the boys to take advantage of them. Without drink there is little danger of dissipation.

In addition to the activities which have been described above, the clergy conduct the usual church services. The secretaries of the K. of C. and the Y. M. C. A. do a work which is heardly less important than that of the clergy. It is an incontestible fact that they can get closer to many men than the clergy can.

Perhaps it is because the ordinary man has, through generations of ancestors who have regarded the ordained minister, whether Protestant or Catholic, as a superior being, come to be rather afraid of the parson. This certainly does not extend to the secretaries, who have been engaging in all sorts of sports with the men. You very probably have a respect for the man who has recently blacked your eye or bloodied your nose in a boxing bout, but since you have punched him, too, your respect is not quite of the same sort as that with which you regard the clergyman. On the contrary, this participation in sport enables the secretaries to get close to the men, and to understand their frame of mind in a way which is impossible to the regular clergyman, and nobody in the station is so well able to tell what the moral atmosphere is. It is infinitely worth while to repeat what some of them say.

The Catholic secretary, in the K. of C. building, when asked what he thought of the moral standard of the camp, repeated what he had said in a recent report to the K. of C. "I told them that not only are the boys as well taken care of spiritually as in any parish in New York City, but that the standard of behavior is higher than in a great many of those parishes.

"Then," he went on, "the class of young men is exceedingly high. There are a great many college graduates, lawyers, and other professional men among them, and high-school graduates, which makes for a high standard of conduct. I can say that in all the months that I have worked here I have never heard a word uttered by the boys which I should be ashamed to have repeated in my own drawing-room.

"Another good sign is the fact that when I am standing at the desk, so many of the boys come up to me and want to talk about their mothers and sisters, and they write them regularly. Of course we urge them to do this—do you see that sign over there, on the wall, 'Write to mother today'?—but it is really hardly necessary.

"There is one most inspiring fact. I have had a lot of experience in army work, but I never saw anything like these boys. As a rule the men in a post ask, 'Where are we going?' It isn't that way here. What they ask is, '*When* are we going to get a crack at the Huns?' That's a spirit the like of which I never saw anywhere else."

The testimony of the other workers is the same. The chief "Y" secretary says that the percentage of men who come to church and Sunday-school and Bible class is higher than in civil life. Some of the

men undoubtedly go to pass the time, but young men in civil life have been known to go to church because their best girl went, not from any religious urge. Consequently the "Y" secretary aforesaid thinks it about a stand-off.

What he is positive about is the active interest many of the men take in Bible study. That is a phenomenon which has been recognized for some years, and it has been found in all the colleges. But most valuable of all is the way in which these secretaries are able to help the boys who come to them with all sorts of troubles. One story will have to suffice.

One evening when the "Y" hut was pretty empty, and there were few about, a young man came shyly to the secretary and asked if he might have a word with him in private. They went into the secretary's room, and the boy began to tell his troubles. He had been a bad boy, he said, and had robbed his grandmother of a considerable sum of money, and run away. After various experiences he enlisted in the N.R., and here he was. But he was not happy; he had begun to suffer from shame and remorse, and he did not know what to do. The secretary suggested that they pray together, and they knelt down. After the prayer was ended the boy remained several minutes on his knees, and when he got up his face was shining. "It's all right,"

he said. "I know what to do now." He went out, wrote to his grandmother, made a clean breast of it, begged her forgiveness, and sent her as much money as he could. Since then he has been shipped to sea, where he is gradually paying his grandmother off, and is making good in every possible sense of the word.

With all these influences for good about the boys, it does not seem as though anyone need worry about their moral welfare. There is little which the best mother could do for her boy which is not done for him, both by precept and example, and with the strict regulations regarding the sale of liquor to men in uniform, and the care which is taken to provide them with amusements when on shore leave in New York, it is not surprising that the statement was made to me both by the chaplains and the lay workers that they had never seen a drunken man on the post and that the smell of liquor is practically unknown.

There is just one more light in which we have to regard the Pelham Station before leaving it, and that is the immense amount of use to which it has been put in every patriotic undertaking in which New York has been engaged since it was opened. The battalion has been the chief, as it has been the most popular, feature, of every parade—Liberty Loan, Red Cross, or what not—which has been held in the city,

and it was the principal attraction at a Military and Naval Meet at Madison Garden. Besides these, the Glee Club has gone about and sold a great number of Liberty Bonds, and individual speakers helped greatly in those and in the Red Cross campaigns. The men of Pelham Bay have made a splendid record when they have gone across, but even if they had never gone to the other side they would already have a record of patriotic achievement of which they themselves and everyone connected with them has reason to be proud.

CHAPTER III

A GROUP

Our great educational institutions have made a splendid contribution to this war, not only in the number of men, graduates or students, whom they have sent to the service of the country, but in the work which they have done in training these men or others for commissions or for special occupations. All the great universities—Harvard, Yale, Columbia, Princeton, Virginia, Chicago, Michigan, all the way from Maine to Texas and out to California and Oregon and Washington—have placed their resources at the disposal of the Government and have worked with unflagging zeal in supplying the manifold needs of the army and navy, some of them new, created by the new conditions of this war in which we find ourselves. There is probably not a college in the land which is not "doing its bit," and the contributions of some of the smaller ones are not the least valuable of them all.

The variety of this work is too great to be enumerated, even. There are officers' schools and schools for aviators, radio operators, gas-engine men, engineers,

machine-gun men, and many another. Every young man who wants to serve his country can find precisely the occupation for which his taste and capacity best suit him. If he has ability above the common, it will be quickly discovered and utilized, for the Naval Reserve makes a specialty of finding out what each man in it can do, and putting him at it.

Among all these institutions, there is one group of special interest, that in Boston,—and to describe it will do for all the others, for it is typical. This is the group at Harvard University and the Massachusetts Institute of Technology. At Harvard there are a Radio School and an Officer Material School, and at "Tech.," as it is affectionately known through a large part of this and many foreign countries, there are ground schools for army and navy aviators.

Harvard has been most generous to the Radio and Officer Material School; it has given up a number of large buildings, including the beautiful Memorial Hall, which is used as "Commons," or the college dining-hall in ordinary times, and now serves as the men's mess. Besides these, great stretches of the "Yard" are in use, either as parade grounds or for temporary buildings. Even the historic Cambridge Common has been given over to the use of the schools,—that Common of which it was provided in the original grant

that it was to be used for the training of General Washington's Continental troops, the men in blue and buff, who first fought, as their descendants are fighting now, some in blue and some in buff, "to make the world safe for democracy."

In the Radio School there were in June, 1918, some 3,600 men, taking a course of sixteen weeks, which would fit them to be efficient radio operators. They are of all sorts, and come from all over the country, so that it is one of the most effective melting-pots of the service. Each large station is expected to send a fixed quota weekly, Great Lakes so many, Philadelphia so many, etc., but it must not be imagined that these stations can detail men offhand to this work, as it would detail them to digging trenches or to boat-drill. The men who are to do radio work must in the first place volunteer specifically for the purpose, for otherwise, as the work is exceedingly exacting, they would get tired in a little while and want to pull out, and there is too great a need for radio men to make it possible to waste time on anybody like that. Then the candidates for the school are most carefully examined, first physically, then psychologically, by the Binet and other tests, to prove their fitness. Their hearing, obviously, must be perfect, and their other faculties must be normal, for they are going to live aboard ship in more or less

Photo by Benj. M. Schaub

WHERE WASHINGTON TRAINED HIS TROOPS.

dangerous surroundings, and will need to use all the resources at their command. The life of the station telegrapher in your home town, my young friend, is about as different from that of the radio operator on a submarine-infested sea as the life of the man who cares for the furnace in your house is from that of the chief of a company of firemen. So of course the radio man must be perfect physically, and still more mentally. He must react perfectly, or he will not be able to " send " rapidly, and some day his own life and the lives of his shipmates may depend upon the speed and accuracy with which he works. In fact, before he is allowed to come to the school the candidate must have shown the ability to send at least ten words a minute. Here, as elsewhere, the Naval Reserve is willing to take only picked men.

In June, 1918, there were already 3,600 men, but, as I have said, a large number of new barracks were building, so there are probably many more of them now. They came at the rate of 200 a week, and were graduated at the rate of 150, which would seem to show that twenty-five per cent of the men who enter the school fail to make good. This is a large percentage when it is considered that every man is selected after careful tests and a preliminary trial, and it would at first sight seem to indicate that there is an unusual amount of

laziness or stupidity among the men. But this is not true, in reality. It means that the course, rather, is of extraordinary difficulty. A man is tried out in aviation before he ever goes near an aviation field, but nobody can tell what sort of flier he is going to make till he has had weeks of instruction; perhaps he may never be able to be a flier at all. So with these radio students; they may be neither lazy nor stupid, but the work makes demands on them which they are not able to satisfy.

Graduating men at the rate of 150 a week would mean not far from 8,000 men a year. What work can be found for so many? Surely we have not enough ships building for them all! Oh! yes, we have, or will have. In the first place, there is the mercantile marine; we are promised over 3,000,000 of new tonnage this year, and will probably get 4,000,000, which will mean somewhere about 1,000 new ships. Then there are ships which are bought or chartered, as with the Dutch, Japanese, and Danish ships which we have taken over. Next, there are all the new ships of our navy; not only the great battleships and cruisers, but down to the smallest submarine chaser or mine-sweeper, every one must have its quota of radio operators, two at the very least, while some ships carry six or seven. Add to that the wastage from death, disease, and wounds,

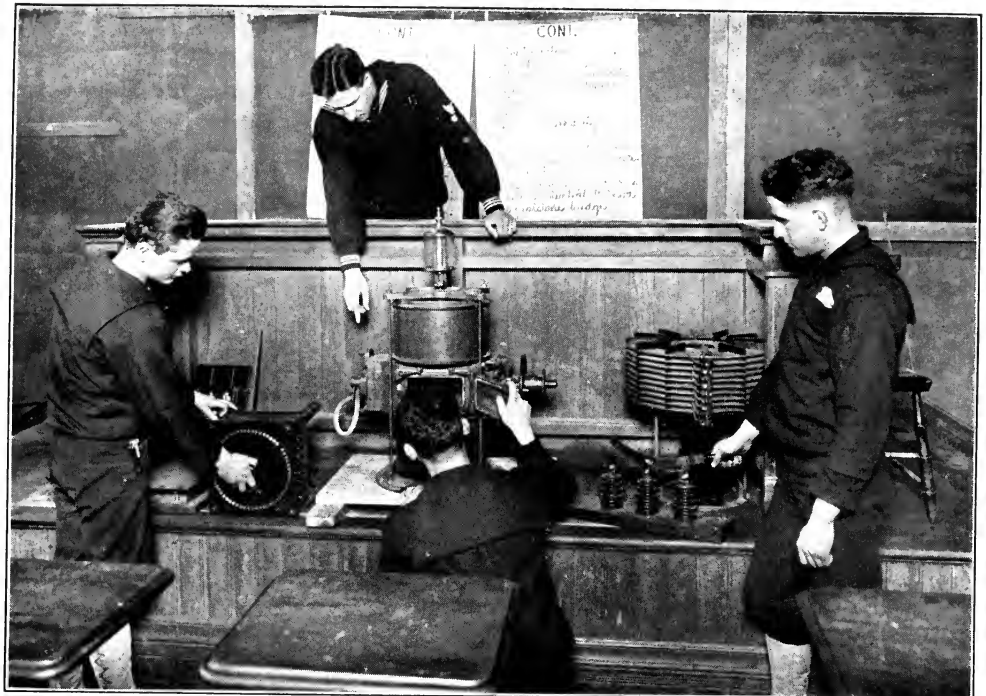


Photo by Edward Levick

PRACTICAL WORK ON RHEOSTAT, HELIX, ETC.

and all the men required for shore stations, of which there are a great number and shortly will be many more, and it is easy to see that the 8,000 per annum will be far from supplying the demands of the service.

The radio work as taught at Harvard is practically the same as that taught in all other radio schools—the elementary principles of radiography and the application of these principles. In other words a man must not only be taught what to do, but why he does it. He is taught, too, a lot of mechanical work; there are rooms full of boys filing and fitting brass and steel and learning how to handle tools. It would be too much to say that any graduate of the school would be able to construct all the radio apparatus for a ship, in case his own were shot away, but he could certainly make any reasonable amount of repairs. And, by the way, he is provided with certain emergency apparatus for just such cases as this, anyhow.

As in all N.R. camps, there are men who came from a great variety of occupations, but here, more than anything else, they run to mechanical professions and trades, such as mechanical engineers and draughtsmen. As a consequence, the place is very largely self-sustaining. They make all their own blue prints, for instance, and as there are a lot of practical printers, they are not only able to issue the customary paper, and print

it themselves, which is not so customary, but they are printing a text-book for use in the school, one written by their own instructors. These instructors are very generally graduates of the school itself, and sometimes they are not even petty officers, only just plain second-class seamen. It reminds one of Percy Grainger, the distinguished pianist, who, when he enlisted in an army band, declined a commission, preferring to be simply, as he said with a smile, "a second-class musician." It is nice to see that spirit running all through the service.

The paper of which I have spoken, "The Oscillator," is a very bright production, full of matters of interest to the casual reader as well as to the specialist of the post, and as there are in the camp a lot of clever artists and caricaturists, it is excellently illustrated. Indeed, it is astonishing how high is the level of the service papers, beginning with "The Stars and Stripes," published by the Expeditionary Force in France, which is one of the most amusing papers in the world.

The men at the radio school at Harvard live in the buildings which the college has loaned or others which the Government has leased, and sleep in the ordinary two-story cots of everyday camps, but towards the end of their career they are taken to the

gymnasium, which is fitted up like a ship, and there are made to sleep in hammocks, and otherwise to grow accustomed to the conditions in which they will find themselves when at sea. A man who is strange to his surroundings is inevitably a butt for his comrades, and it would not be agreeable for a young N.R. man to find himself of the innocence of that boy suddenly transported to a farm, who asked his boss to come and show him how to put the suspenders on the mule. Moreover, to be entirely strange to his conditions at sea would make a man very uncomfortable physically, especially in the matter of sleeping. It is a good deal of an art to sleep in a hammock anyhow, and there is nothing easier than to fall out of one. To climb into one in a heavy sea would be a practical impossibility for a novice.

As the men go about the buildings from class to class, one is struck with their likeness to college boys. There is the same eager chatter, as they go from recitation to recitation, and a certain amount of horseplay and skylarking, but back of it one can see a seriousness which never was in college boys. These men, who are mostly of college age, have a subconscious knowledge, perhaps an active consciousness, of the fact that they are engaged in an occupation of deadly importance, that it is going to be for themselves and

for others literally a matter of life and death, for as they learn it well or ill so some day the lives of a whole ship's company may be lost or saved. Nothing could be more sobering than such a consciousness as this, and the effect of it shows in their faces. Superficially they are like a lot of college boys; at bottom, they are a set of grim warriors who have taken the oath to serve their Government, who are in the battle against the Hun to the bitter end, and who are now learning to wield their arms as truly as ever did knight in tilt-yard in the days of chivalry. And they are as truly Christian knights, sworn to defend the innocent and oppressed, and to avenge cruelty and lust and murder, as ever were Lancelot and Galahad, though their weapon be only the telegrapher's key, instead of sword and blazoned shield.

The seriousness which marks their looks does not prevent their having a very good time. They row—the Weld boat-club has lent them its house; they swim—learning to swim is obligatory. A life-preserver is all very well in its way, but a submarine may get you when you are not wearing your life-preserver, and then, if you are sending out S.O.S. messages, there is no time to hunt it up or put it on. In such a case swimming a dozen strokes to a life-raft may mean the difference between life and drowning, and

Photo by Edward Levick

SENDING AND RECEIVING

as it takes an awful lot of time, trouble, and money to make a radio operator, the Government wisely insists that every man shall learn to swim, and he does. Then, as they have learned to row, the station has a crack cutter crew, which is eager to row races with all and sundry. Of course there are the usual baseball and football, and there are entertainments, and very good ones, at the Y.M.C.A. hut, but the glory of the week is the "Happy Hour," which the men have in the gymnasium on Saturday night. Here they entertain themselves, and what with singing and recitations, sparring and wrestling, they have as good a time as anybody can give them.

The school is very young, but it has its heroes, first of whom is Robert H. Gibbs, radio electrician, third class.

There was nothing in the world about Gibbs to indicate that he was of the stuff that heroes are made of. He sailed from New London in the latter part of February, 1918, in the ocean tug *Cherokee*. Off the coast of Maryland, on February 26th, the *Cherokee* encountered a terrible storm and finally foundered. As soon as the ship got into trouble Gibbs began sending wireless calls for help, and continued until she went down. It is a tradition, as old as the sea, that in case of disaster the captain must be the last to leave the ship;

it has become no less sacred a tradition in this, the newest of sea duties, that the wireless operator shall stick to his post so long as there is any chance of his calls being heard and answered, no matter what happens to him. Gibbs lived up to this tradition and a little beyond it, for according to the report issued by the Navy Department his calls were heard by several ships and shore stations, and it seems certain that he stuck to his post long after there was any need for it, in the hope of summoning extra assistance. The *Cherokee* foundered very suddenly, and there was no chance for escape, so Gibbs went with her.

A woman who had lost a very gallant son fighting with the Marines in France remarked, "What a pity it is that we cannot know in advance that they have it in them to do these things!" And that is what one feels in the case of such a man as Gibbs; the hero was there, but we never realized it till too late.

But there are heroes in the force who are still with us, happily. Edward C. Landwehr is one of these. He was radio operator on the U. S. Destroyer *Manley,* to which he went after graduating from the Harvard school. They sailed for European waters, and while patrolling the submarine-infested sea off the coast of Ireland, the *Manley* was accidentally rammed by an English ship, which exploded one of the depth bombs

on the *Manley's* deck. Only a couple of minutes before the explosion Landwehr was standing where it occurred, and had he not moved far enough away, would have been severely wounded. Probably the only thing which saved his life was his life-preserver, which he was wearing at the time, and which caught much of the débris. At last accounts Landwehr was lying in the Royal Naval Hospital at Queenstown, with a broken leg, a wounded arm, half of his scalp torn off, and a few minor injuries. But was he cast down? Not in the least; he was on the road to recovery, and wrote home that he would be here in six months or so, and ready for any work which the Government would give him. All he wants is to get back to work. That is the spirit of the Naval Reserve.

The examinations are stiff, as they ought to be, for they cover the ground very thoroughly. Here is a sample paper:—

1. (a) Describe and show by sketch the construction of a closed and open core transformer. (b) State why a laminated iron core is used.

2. Primary circuit of a transformer is O.K., but no spark occurs at the gap when key is closed: secondary becomes hot. (a) What is wrong? and (b) How locate and remedy trouble?

3. The ratio of turns between primary and secondary winding of a transformer is 80 to 1, primary voltage 220, primary impedance 10 ohms. (a) What current flows in primary circuit? (b) What is voltage across secondary if transformer is 90 per cent efficient?

4. If trouble occurs in transformer, while sending a message on board a battleship, what would you do?

1. Draw sketch of radio primary circuit, including all instruments and protective devices.
2. Describe and show sketch of a relay transmitting key.
3. While sending a message on low power, you are told to send the message on full power. State in detail operations necessary to put set on high power.
4. (a) Why is it important that the primary circuit should be in resonance with secondary circuit? (b) How is this accomplished?

1. Generator field circuit open while sending. How would this be noticed, located, and remedied?
2. (a) What determines the frequency of a generator; and what means has operator for changing frequency? (b) How is frequency meter connected in circuit?
3. Explain in detail how you would take care of a motor-generator, daily, weekly, monthly, and semi-annually.
4. (a) Show by sketch and explain principles of the different types of motors that are used in the navy for driving A.C. generators. (b) State why each particular motor is used.

The Officer Material School at Harvard is, in a sense, the father of all the others which are scattered about the country. Two years before we entered the war, certain clear-sighted members of the Massachusetts Naval Militia foresaw the need which the navy would experience for trained officers and set quietly about providing for this need. They established a school for giving this training, and turned out over thirty thoroughly equipped officers before our declaration of war, which, in view of the small number of

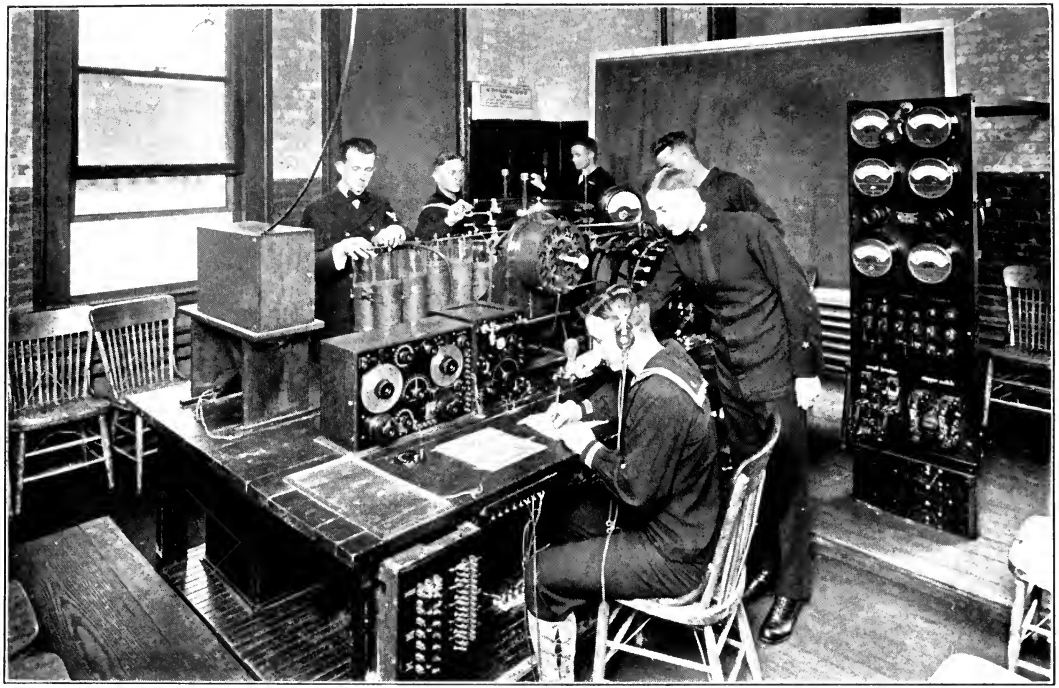


Photo by Edward Levick

RECEIVING APPARATUS

naval militia in Massachusetts and the limited interest which the public took in naval affairs, was no mean achievement. This school expired automatically when we went to war, and its place was taken two months later by the present school, which originally was at the Institute of Technology, whence it was moved to Harvard.

The University placed at its service a number of buildings, just as it did with the radio school. Among these are Holyoke and Matthews, Emerson and Standish, names which of themselves would be enough to inspire the embryo officers to do their best. In these buildings are the offices, dormitories, and mess hall. Each one is treated as a ship, and the different floors are "decks."

The cadets are carefully selected by their officers from various training stations, and when they belong to other districts and wish to join this school, they must first be transferred to the First District. The entrance examinations are very stiff, for only first-class material is desired. In fact, no one but a very first-class man has much chance of assimilating the instruction which is offered to the three hundred cadets in their short course of four months.

It has been said that the predecessor of this school was in a way the parent of all the other Officer Ma-

terial Schools in the country. Furthermore, the rules and regulations formulated by Capt. James P. Parker, the first superintendent of that school, and the first superintendent of the present one at Harvard, were supplied to all these other schools, and form the basis of the training at them.

It will be of interest to the young men who join the N.R. with the intention of becoming officers—and what N.R. man does not at least intend to try for that?—to get a general idea of what they have to accomplish. There is no sense in "going it blind," and the entrance qualifications give little idea of what is in store later. In fact, the course is a severe one, but it is not beyond the capacity of any bright young man of reasonable education. But he will have to work like fury; the school is no place for idlers.

The superintendent of the school says that the men are instructed in five branches: gunnery, navigation, naval regulations, seamanship, and discipline, and the greatest of these is discipline. If a man is not disciplined himself, he cannot command other men. Therefore, Captain Parker's regulations are drawn up with an exhaustive comprehension of what discipline means. A young man who has religiously obeyed them for four months must have himself well in hand, and we know that everything in this war, from artillery fire to

Photo by Edward Levick

FIELD RADIO

adjusting gas-masks, depends on discipline—that is, on being drilled to do a thing over and over and over, till it becomes as absolutely automatic as breathing.

The Navy Department, in General Order No. 153, has set forth its instructions for the examination of ensigns, (line duties only,) and has generously given some sample questions from examination papers, as is done in ordinary college examinations. To the layman it seems impossible that perfectly green boys, which practically all N.R. recruits are, should master all this mass of detail in four months, but it is clear that they do it, for more than fifty per cent of the class which graduated in April, 1918, were promoted within three months.

Here is the sample paper which the government gives:

Q. What are the duties of a divisional officer in regard to enlisted men's clothing and equipment?

Q. When shall the sides be piped?

Q. What is the signal to close water-tight doors, valves, and traps?

Q. As officer of the deck, what must you do between 7.55 and 8.00 A.M. in port?

Q. What lights are shown by a pilot vessel on station, but at anchor?

Q. Describe the lights and day marks shown by a vessel not under command.

Q. Which vessel has the right of way in the case of a sailing vessel overtaking a steam vessel?

Q. Describe how to navigate in a fog.

Q. How would you run a line against the tide, or in a strong current?

Q. What should the officer of the deck do when stores or supplies come alongside for the ship?

Q. Name all the gear which is included in the name "ground tackle."

Q. Name the principal parts of a U. S. Government rifle.

Q. Command the exercises of a section of infantry.

Q. What are the requirements in regard to the care and test of ammunition?

Q. What is deflection? How is it caused and how used? What is drift?

Q. What are the duties of a gun-pointer as distinguished from those of a trainer?

The subjects dealt with in this paper have been only "gunnery, navigation, seamanship, and naval regulations," as the superintendent said. Now comes the more important part—discipline—without which all that has gone before would be of no avail.

In the first place, order, which is Heaven's first law, aboard ship especially, is insisted on from the ground up, literally. For instance, lockers must be stowed, starting at the bottom, in this way, and no other:—

Sea-bag folded.

Shoes.

Peacoat rolled and stopped.

Blue clothes rolled, stopped, and turned up.

White clothes ditto.

Underclothes ditto.

Blouses and overcoats.

Toilet articles and incidentals may be stowed on shelves.

Damp towel or flat hats may be hung on hooks.

When the cadet gets out of bed in the morning his every gesture, almost, is prescribed for him. He makes his own bed, and the sheets must be tucked in, even with the injunction "no wrinkles." His wash-stand must be kept with the

Bowl, empty, in socket.

Pitcher, full, in bowl.

Bucket, empty, on stand under basin.

When he goes to mess and the order "Attention" is given, he must stop eating, sit erect, and fix his attention on the officer giving the command. And he may not leave the table till permission is given. His dress, blue or white, service or working, is of course prescribed for him. It is so throughout the whole day. And this observance of order is something which ought to be taught in every household, as it is beginning to be taught already in some important private schools. The amount of discomfort which careless children cause is inconceivable; the annoyance which one careless man can cause on a small yacht, especially with an amateur crew, is intoler-

able. What would it be with 1,100 men on a battleship?

This discipline is enforced by a series of demerits which determine a cadet's standing, and which, if they are numerous enough, prevent his receiving a commission. For frequent delinquencies, or the continued repetition of the same or a kindred offense, indicate that the offender is indifferent to the spirit of the system of discipline, and if there is no improvement after admonition he will be promptly sent away. And it must be particularly observed that the object of recording the irregularities of cadets is to indicate to each one his habitual faults, so that he may remedy them. In other words, the assessing of demerits is a system of marking in conduct and aptitude, and not a punishment. The cadets are aspirants for commissions, and Captain Parker, who framed these regulations, had formation of character in mind, not punishment for delinquencies.

It is interesting to see what, in the view of the navy, are the relative degrees of obliquity. Intentional falsehood, intoxication, assault, immoral conduct, insolence, disobedience, and the like involve dismissals. Absence without leave, gross carelessness, a challenge to fight or fighting, gambling on station, irreverence at divine service, are among the things

which bring a maximum of ten demerits. By the way, Catholic, Episcopal, and an undenominational service are provided for the cadets, and they are obliged to attend one of them. If a cadet expresses to the superintendent his conscientious scruples against attending the services provided, an effort will be made to find some form of service not offensive to his religious beliefs. If that fails, "he will be addressed, during the absence of the others at church, by a selected officer or instructor on some topic relating to the moral and social virtues as applied to military life and character without reference to their religious aspects." This last regulation would seem to hint that the cadets are still human to the extent of wanting to "cut chapel," and that Captain Parker has a sense of humor.

In the second class, (eight demerits,) is a group of offenses which would be characterized, in ordinary life, as bad manners, such as shouting out of windows, or throwing things out of them, making rude remarks or being discourteous to civilians, offensive conduct at mess, and the like. The third class, (six demerits,) deals with routine discipline, such as lateness, improper bearing in transacting business with an officer, improper stowing of bags or lockers, incomplete equipment at class or formation, a pipe or cigarette in the

mouth when speaking to an officer. The fourth class, (four demerits,) deals with smaller personal offenses, such as buttons missing from uniform, throwing cigar stumps, ashes, etc., carelessly about, face improperly shaved, soiled gloves, neglected condition of clothing, even down to helping oneself at mess to more food than one can eat, so that some of it is wasted. The "two demerit" class comprises even slighter delinquencies, such as unfastened buttons, caps worn improperly and—oh! if we could all enforce this rule!—"interpolating unnecessary remarks in conversation with superior officer."

Now, many of these things seem unimportant at first sight, but not a single one is. In the intensive process of turning a green boy into an officer AND a gentleman,—and he may be cashiered if he is not both—no consideration is small enough to be neglected. And it is no wonder that Captain Parker's regulations, minute and precise and exhaustive as they are, (they fill a pamphlet of thirty pages,) serve as a model to all the O. M. Schools.

The record of the men whom the school has turned out has been admirable. They do not talk much about what they have done, but one gets glimpses of their work in private letters. Here is an experience of a young ensign who went straight to sea when he got his

commission, and had been at sea only two days when his ship caught fire. Here is what he says about the experience:

"We pumped water on the fire and took every other precaution we could think of without any good results. Of course the danger was from the magazines exploding, but the most immediate danger was from the list and the amount she was down by the head. She was down so deep that her head was eight feet below the ordinary level and with a list of sixteen to seventeen degrees. Passengers were transferred to another ship with almost no confusion and afterwards a couple hundred of the crew were also transferred. Fog and wind settled on us, and what sleeping we did was not in any coop of a stateroom but was out on deck with our heads on the upper part of the incline." He makes the interesting comment that never did he think he would be in a place where a torpedo would not amount to much, but, as he explains it, a torpedo would have been a cinch, as they would have been immediately transferred, but the skipper, who was a wonder for coolness, insisted upon trying to beach the ship. Suddenly a wave turned the vessel and she started to roll and rolled over the other side about twenty-five degrees, held that for some time, and finally settled on a seventeen-degree list on the other side.

He says he would have liked to have "movies" of the way "we people trying to sleep on deck beat it across the deck to the other side, intending if she rolled over to run around the bottom of the boat." But the rolling really proved a godsend, as it finally put out the fire. "You will wonder how we Reserves came through it all; well, we were not heroes, but we did all we could and looked for opportunities to help others and were much commended by our commanding officer."

The Massachusetts Institute of Technology, one of the foremost institutions of its kind in this country, opened wide its doors to the Government when we went to war in 1917. In fact, it has since then devoted itself almost exclusively to teaching the men with highly specialized training who are needed in the Government service. Particularly is this in the direction of maritime work. The Institute many years ago undertook the training of all the naval constructors required by the country's needs, taking a group of selected graduates from Annapolis for post-graduate instruction for a period of three years. It used to be the custom, by the way, to send these young men later to schools of naval construction abroad, and it is not generally known that one foreign country withdrew this privilege because the three Americans to whom it was accorded annually so often graduated

one, two, and three in rank that it discouraged their own men.

It is natural that with this tradition the Institute should continue to work along maritime lines, and since we got into the war it has maintained intensive courses for ship designers, and has acted as agent for the Shipping Board in organizing two important groups of schools, one for training naval officers, the other for training engineers for the new merchant marine now in process of construction. It has also maintained a school for aeronautics, both military and naval, with the latter of which we are concerned.

A distinguished British "ace of aces" has described flying as the simplest sort of process. The aviator has only to sit in his seat with his feet on the rudder-bar, holding the "joy-stick," the single lever which tips the machine up or down, with his right hand, and with his left he controls the engine. To fire the gun he has only to move his thumb slightly along the joy-stick to press the trigger. It is all as simple as that! But in practice an aviator has to undergo a long and careful training in a "ground school" before he can even think of flying, and such a school is that at the Institute of Technology.

In the first place, the student has to learn all about his engine, for one reason in order that if it goes

wrong, and he is obliged to land in enemy territory or on the sea, he may be able to repair the defect and get away safely. Some of the most exciting escapes of aviators during the war have been made under such circumstances, when the aviator had landed on enemy soil, and the number of times when the aviator has pulled himself out of trouble when he has had to land on the sea, if one may use the expression, is beyond computation. Moreover, it is of the last importance that the flier should be able to tell for himself whether his engine is right; it will not do to depend on even the most trusted mechanician, and the most successful fliers have been those who went over their machines the most carefully themselves before a flight.

Gunnery, too, is vital, and they have a range in the building at "Tech." where certain elementary principles and practices can be taught, such as remedying jams and the like, though of course only practice at an aerial target when flying can perfect the aviator. But it is surprising what can be learned in this way, just as the shooting of our sailors with the big guns is improved by sub-caliber practice. Another branch of gunnery here is bomb-sighting and bomb-dropping; this has become one of the most important parts of an aviator's work, whether he operates from shore or from the sea. Sometimes he flies inland and bombs

harbors, like Zeebrugge and Ostend, or fortifications or munition factories, or what not. Again, there is their possible use in a naval battle, in dropping bombs on hostile warships. But their most important work is bombing the submarines which they discover, and although in this, as in shooting with the gun, they can learn thoroughly only by actual practice in planes, still a very good start is made on the ground.

Electricity and radio are most important, of course. The radio is the aviator's means of communication with the ground or his fellow-fliers, and not only does he give and receive information, as for instance of the sailing of a hostile fleet or airplane squadron when he is patrolling, but in case of disaster he can call for help when without it he would probably have lost his life. And on occasion he can serve as an artillery spotter. When it is remembered that the *Blucher,* for instance, was destroyed by the English fire when she was hull-down, and the gun-pointers were firing at her smoke, the value of aviators who could tell just where the shots were dropping can readily be seen. These are only a few of the uses to which the airman puts his radio, but it is easy to think of others.

The student must learn something of meteorology, also, for the weather largely governs flight conditions. Bombing expeditions, for instance, are often for great

distances, as has been the case with all the Allies' bombing expeditions, such as those against the munition plants at Essen. They should not be undertaken in the face of impending weather conditions which would nullify their prospects of success, and that is where a knowledge of meteorology is of service.

So far the courses for army and navy are pretty much the same. There is one more in which they are identical, one of the most important of all, though at first sight it would seem useless for the navy, and that is drill and military tactics.

In the early days of the great war military flying was largely a matter of individual gallantry and skill, each man for himself, just as it used to be in Indian fights in our frontier warfare, where although men set out in companies, when they met the foe each man took to his own tree and the fight became a series of individual contests. In the same way, too, knights fought single-handed in the days of chivalry. But before long it became evident that in aviation co-operation was the thing which would bring success, and the first person to prove it was the German, Baron von Richthofen, who was killed in 1918, and buried with military honors by the British. Richthofen's method was to attack with a squadron which was known as his "Flying Circus," which waited until it

could fall on enemy planes or small groups that would have no chance against the more numerous "circus." This was easy to do, for the English, French, and Americans were sportsmen before anything else, and despised the commercial method of co-operation. But the loss of the Allied airmen was so great that they were driven to follow the German method, and to fight in squadrons, as the Germans do. It is partly for this reason that military drill and tactics are of so much value. They accustom the airmen to working and moving together, so that they learn, till they become second nature, military manœuvers which later they will have to reproduce, or something like them, in the air. And they could never learn them except on the ground.

The hydro-airplane man, moreover, must have a certain amount of sea training, since he is to operate from the sea and on the sea, and often live aboard ship. Therefore he is taught something about navigation, a little about knots and bends and splices, and a certain amount of elementary seamanship. He is intimately introduced, too, to the hydro-airplanes which are to be his future home. He learns the construction of these, and knows them as thoroughly as his army brother knows his machine. It is in these particulars that the education of the navy man at the ground school dif-

fers from that of the army man, and when he has mastered that education he goes off to Bayshore or Pensacola or one of the other flying stations, to learn to fly and to become a complete airman.

Between the school proper at "Tech." and the receiving ship, where the recruits are quartered for the first four weeks, there are some 1,100 men in all, all volunteers. They have been subjected to practically the same tests as are applied to their army brothers, and a word should be said, by the way, about these tests. A lot of untruthful reports have been spread abroad about them, perhaps with a malicious motive, to discourage enlistment, perhaps by men who have failed to enter the aviation service, in an attempt to excuse their failure. Some of the old non-coms employed about the place where the tests are given have not been blameless, either, for when candidates asked when they would be put through the "mallet test" and the "needle and pistol test," of which stories had been circulated, their love of a practical joke was stronger than their common sense, and they regaled the would-be aviators with tales of horror till a good many fairly took to their heels, and were seen no more.

Both "mallet test" and "needle and pistol test" are purely imaginary. They are described in this way: A boy is led into a room where there are two exam-

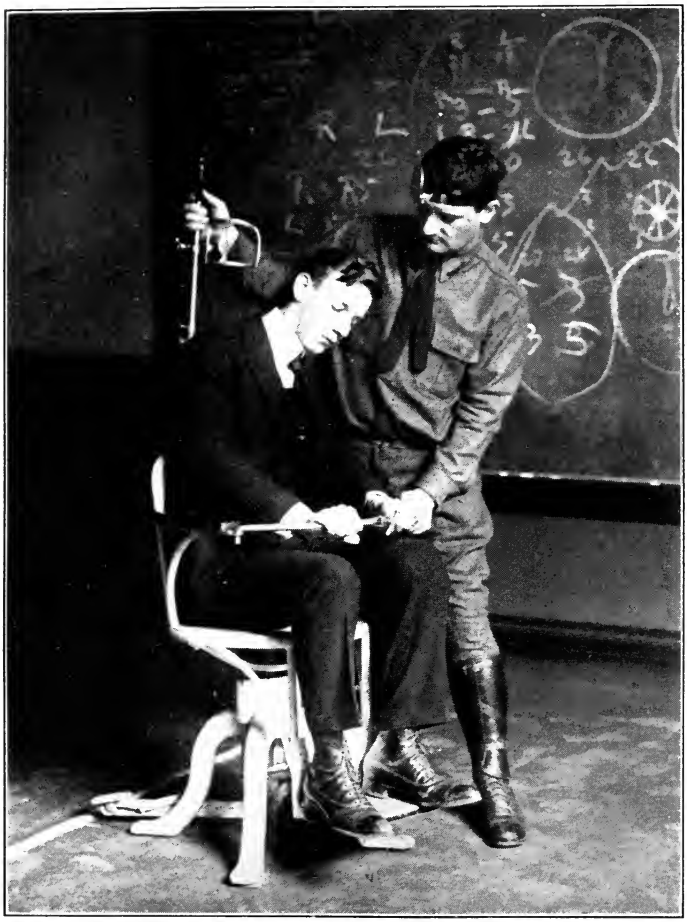


Photo by Underwood & Underwood

Testing Aviation Recruits (1)

iners. He is seated in a comfortable chair while one examiner, holding a stop-watch, engages him in conversation. The second examiner stands behind the candidate, where he cannot be seen by him, and at the proper moment—that is, when the latter is relaxed by the conversation—sharply taps the sitting boy on the head with a mallet, at a non-vital spot, and renders him unconscious. If the victim recovers consciousness within twenty seconds he is accepted; if he remains unconscious more than twenty seconds, he is rejected.

The needle and pistol test is the same sort of moonshine. The candidate is led into the same room and seated in the same way, but this time a needle is placed between his index finger and thumb. Then the hidden examiner fires a pistol, and if the candidate starts so as to cause the needle to penetrate the skin and draw blood, he is rejected.

There is, of course, not a word of truth in these stories; no such tests exist. One would imagine that they had been invented by some college boy to frighten freshmen. The real tests are sufficiently exacting to make the invention of these fictitious ones unnecessary. Not that there is anything terrifying or painful about them, but they show whether candidates are absolutely normal, and the percentage of normal human beings is by no means so large as one would

imagine. Some abnormality of sight or hearing or balance—to use the words loosely—shows in many men who never dreamed that they had any peculiarity.

The sense of balance is the subject of several tests which are perhaps the most interesting of the lot. The inner ear contains three ducts, filled with liquid, which act, in a sort of way, as spirit levels. When the subject is rotated in a revolving chair with his head at different angles, the rotation will have certain reactions if he is normal. If, for instance, he is revolved ten times in twenty seconds, with head erect, the reaction will be a curious oscillation of the eyeball. When the rotation is stopped the subject is told to fix his eye on a certain point. It will then be seen that his eyeball will not remain stationary but will turn slowly towards one side and then more rapidly back in the other direction, and repeat the operation. This oscillation is seen in absolutely all normal subjects, should not continue for less than sixteen seconds nor more than thirty-six, and is called "nystagmus."

In other tests the candidate is revolved with his head in different positions—inclined at different angles. In each case the reaction is different. At one angle, when the chair is stopped he will fall over to one side, and if he does not fall in this way he is not normal. In another test he will be unable blindfold to

such the same object twice, though neither he nor the object has at all changed position. He is made, too, to walk a "chalk-line" blindfold, and then to walk back again, to determine his sense of direction.

Then there is a test for capacity to judge the relative distances of objects, and still another is to see whether the muscles which control the coördinate movement of the eyes are in the necessary delicate balance. If they are not, there may be a tendency to what we call "cross eyes" or "wall eyes," though no such tendency is visible without the test, and if these exist the sight must be imperfect.

The necessity for proper "reactions" is obvious. Reactions are defined by the Standard Dictionary as "the partial or total response made in the first instance to any kind of stimulation." Winking is a good example. Light strikes the optic nerve, which conveys the stimulation to the brain, and the reaction causes one to close the eyelids unconsciously. If the reaction were slow or abnormal, the aviator would not be able to handle his "ship" quickly enough, which would result in disaster to himself and to his machine. Those who have extremely rapid and accurate reactions make the fighters. Those whose reactions are less perfect, within certain limits, may still make useful bombers, photographers, and the like. But young

men who want to go into aviation will please remember that there are no such things as the "mallet test" and the "needle and pistol test," and set down anyone who talks about them as a fool or a pro-German propagandist.

Not a great deal is known about the work abroad of the graduates of the school, for it is not the policy of our Government to talk too much about what is being done to the submarines, but it is a feather in "Tech.'s" cap that the first officer officially credited with a submarine was one of them. This was Lieut. H. T. Stanley.

Photo by Underwood & Underwood

TESTING AVIATION RECRUITS (2)

CHAPTER IV

BAYSHORE

SOMETHING was said in the last chapter about the importance of the naval airman in this war, but in order to understand it better it will be worth while to tell just what has been the work of the fliers of the Royal Navy, so far as it has been revealed. It will give an idea of the ways in which our own men must be making themselves useful though our Government tells very little about it. Here are some of the duties which the Englishmen have performed.

They locate submarines and mine-fields, drop bombs on the former and notify destroyers and mine-sweepers of the location of each. In this work they accompany convoys.

They coöperate with the army, flying far behind the enemy's lines, taking account of his numbers, noting his positions, dropping bombs on his stores and ammunition dumps, bombing railroads and bridges, and stirring up his airdromes and the places where his fledglings, whom they call "quirks," are taking to themselves wings and learning to fly.

They "spot" for the fire of warships on the coast or in battle.

They have bombed Ostend and Zeebrugge at frequent intervals.

They take the place of scout-cruisers.

They attack Zeppelins, which are far less daring in their movements than of old.

In Constantinople they bombed the *Goeben* and other enemy warships, as well as the Turkish War Office.

They fight the enemy airships wherever they find them.

Taken altogether, it is a fairly comprehensive program.

When a Naval Reserve man has been graduated from "Tech." or from any other of the ground schools, he is sent to one of the stations where men are taught to fly. Bayshore, on the south side of Long Island, just behind Fire Island, and some forty miles from New York, is one of them. Life there may be considered typical of all flying stations, for they are necessarily much alike.

It is situated on the shore of Fire Island Inlet, a sheet of water large enough to allow the manœuvering of hydro-airplanes, yet not so large that a very heavy sea can ever get up there. On the shore are great hangars, filled with planes, workshops, barracks, mess-

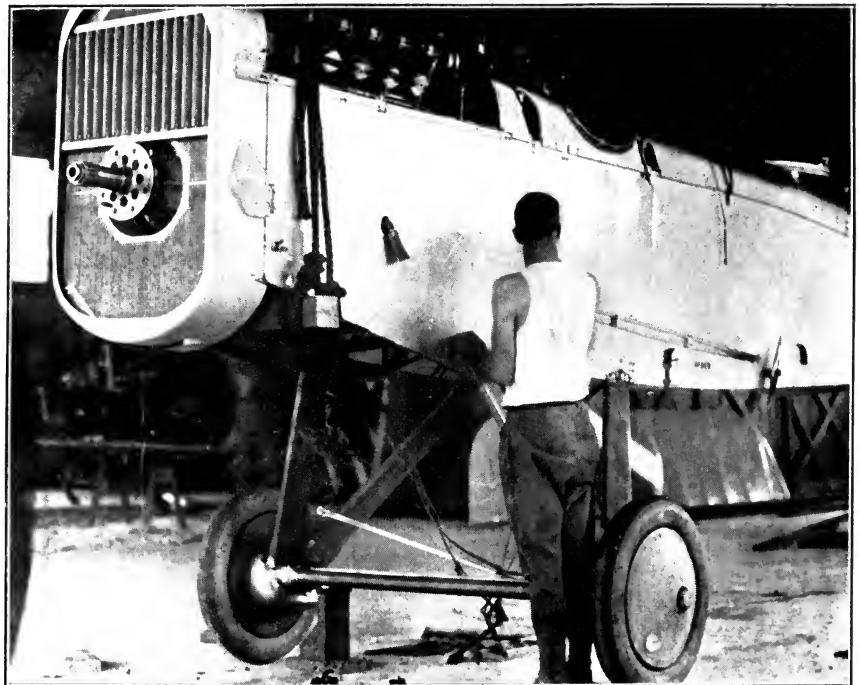


Photo by International Film

ASSEMBLING THE BIG DE HAVILAND

halls,—acres of buildings, for the life of the flier depends on the planes being kept in absolutely perfect condition, and for this many men are needed. At Bayshore, for instance, there are two squadrons, in each of which are twenty-five machines, a hundred mechanics, fifty student aviators, six instructors and six other officers. These, with the guard and the general force of workmen and mechanics, who run the electric light plants, keep the place in order, etc., bring the total number of men on the station up to some 750.

When a young aviator arrives at Bayshore he goes through the usual formalities of reporting, being assigned to his squadron, and so on, and then is taken out on a "pay hop." "Hop," be it known, is Bayshore slang for a flight, and the "pay" means this: when a student has actually begun his training in flying his pay is increased 50% over the ordinary pay of his rank, and so his first flight is called a "pay hop."

At first the student aviator is taken up in a two-seated machine with an instructor. He is allowed to hold his hands on the controls, but the steering is done by the instructor. After the student gets some sense of balance he is permitted by degrees to steer himself. This continues for several days, the student being allowed to increase his control of the machine every

day till the instructor considers him able to begin "solo" work, that is, flying by himself. The length of time which this first stage lasts will depend, naturally, on the adaptability of each pupil. In rare cases a man has been promoted to solo after only a couple of flights, but in most cases it means six to eight times of such flying, with half an hour or more to each flight.

When the instructor thinks that his pupil is fit to fly alone the boy is turned over to a second instructor who goes up with him in a two-seated machine, and who decides whether he shows sufficient proficiency to be promoted. After promotion begins the solo flying, in a single-seater, which generally lasts from thirty to forty hours, by which time the young aviator should be proficient in ordinary, plain flying, which is all that is taught at Bayshore. When this proficiency has been attained, the student is graduated from Bayshore and sent on to Pensacola, where the "stunts" are taught—tail spins, vrille, looping-the-loop, and all the other manœuvers which he will need when he comes to fight the Hun.

The student's flying takes up only a relatively small part of his time, but there are so many other things he has to do that he has little leisure. His work at Bayshore is, in fact, a continuation of what he has

Photo by International Film

STARTING FOR A FLIGHT

begun to learn at the ground school,—radio, Morse code, photography, the mechanical part of his machine gunnery, bombing,—all the things which make him effective, for a mere flyer, without these, would be useless as an observer and helpless as a fighter.

Nothing could be more picturesque than the shore at the station. Above, over the station or over the bay, half a dozen machines will be flying at once, their huge black shadows racing along the ground or the water, the hum of their engines sounding like a swarm of gigantic bees. Each one of these machines is carefully watched through a glass by an observer on a tower by the waterside, so that aid may be sent to him in case of accident. A small fleet of very swift motor boats lies ready to speed to the rescue of any unlucky aviator who may have fallen into the water, and they need to be swift, for the life of a man in such cases is usually a matter of minutes, sometimes of seconds. If the propeller of a plane is seen to stop, even, a boat is instantly despatched to the rescue, though ultimately the plane may succeed in landing in perfect safety. The rescuers do not wait till an accident has happened; they get to work as soon as the possibility of one is seen, and that helps to account for the very small number of fatal accidents at the station.

A row of sloping board inclines runs down into

the water, and when a plane has ended its flight, landed on the water and "taxied," (run on the surface of the water under its own power,) up to the shore, a squad of young amphibians, scant of clothing and magnificently browned of skin, rush into the water to bring it ashore. They manœuver it into a cradle on wheels and then proceed to haul it to its home under one of the great sheds—"hangars" is the technical name. They bring out another machine, launch it, haul the cradle out of the way, and off it goes with its one or two aviators.

Off to one side are heard the rattle of machine guns and the roar of motors. The latter are being tested in a shed and nearby is a shooting gallery where the men are taught the use of the machine guns with which the planes are equipped, how to fix them in case they jam, and what to do in any ordinary accident. Ingenious targets teach them the rudiments of shooting, and over on Fire Island they have a range where they can practise their gunnery and bomb-dropping while in actual flight. Moreover, there is a platform just behind the motors which are being tested, on which the students can practise sighting their guns in the powerful stream of air which comes from the propellers, and which in a measure reproduces the actual air conditions in which they will find themselves when

Photo by International Film

NEW GUN MOUNT

flying. And there are machine guns mounted as they are on fighting planes, so that the gunners can practise the changes of position which will enable them to fire in any direction.

The aviators at Bayshore have a slang—it may almost be called a distinct language—of their own, as aviators have everywhere, and unless one knows it their conversation is unintelligible. "Hop," as has been said, means a flight. To "porpoise" means to make a poor landing on the water, so that the plane rebounds several times, much as a porpoise comes to the surface and then goes down again. A "boiler" is a term of disgust for one's machine when it has been misbehaving itself. Out in the bay a boat bearing a flag is anchored. In practising landings the novice must come down within two hundred feet of this boat, and the operation is called "shooting the boat." The "flippers" are the wings placed near the rudder, which control the elevation of the plane. The "stick" is the propeller, and a "dead stick" means a motionless propeller. It is when the stick is seen to be dead that the watchers on the tower hustle a boat out to the helpless plane. "Cutting the gun" is turning off the engine. "Nosing in" is an accident, and the term is expressive of what usually happens.

Apropos of accidents, there have been singularly

few fatalities at Bayshore, but minor accidents are common enough. One man fell 1,000 feet in one accident without injury, and then within a week fell again, this time 4,000 feet. When the boat got out to him—he fell in the water—those on board expected to find him dead, but he was very much alive, and unhurt, though badly shaken up, and as he was being taken to the hospital for a rest he wept, not because he was hurt, but because he had ruined two planes, valued at $25,000 apiece. Rather a good spirit!

They are turning out aviators at Bayshore at the rate of two a day, and when a boy leaves he knows how to handle the four types of machine at the station. Two of these are two-seaters, used for training novices, one a twin-float, the other a single float with aero-marine pontoons. The third type is the F boat with no pontoons, for solo flying, and the fourth is the big H.S.L. No. 2, with a span of 74 feet, driven by a Liberty motor, and carrying three men with big bombs. It is on this machine that the flyer completes his solo training.

The routine of life at the station is pretty much what it is at any other training station, with reveille, the different messes, liberty, the mast, colors, etc., at approximately the same hours. The only differences are in the details of the work, flying, training in gun-

nery, etc., taking the place of the studies or drills elsewhere, all work being done at about the same hours in different stations. A glimpse of some of the examinations will be interesting. For instance,

LEWIS MACHINE GUN

1. State the rules for the use of the ring sight.
2. Show by diagram how the compensating fore-sight allows for shooting at a stationary object over the front of the machine.
3. What is the procedure before flight?
4. What is the procedure during flight?
5. What is the procedure after flight?
6. How do you remove nickeling from the barrel, and how do you remove burrs?
7. What parts of the gun should be oiled? (Specific parts.)
8. What are the points for inspecting magazines and ammunition?
9. What are the tools and spares to be taken up?
10. What are the likely jams and stoppages to occur in the air and how can you tell whether they are jams or stoppages?

BOMBS

1. Explain the action of the Clark Bomb Depth Fuse Mark IV type.
2. How would you remove a bomb from its rack on the machine?
3. Explain the R. N. A. S. Low Altitude Sight.
4. Diagram the nose fuse in the land bomb and explain its safety device and what it is used for.
5. Diagram the tail fuse in the land bomb and explain its safety device and what it is used for.
6. Explain the C. F. S. High Altitude Sight.
7. Describe in detail the action of the arming and firing mechanism in the Mark IV Bomb, from the time it is released until explosion occurs.
8. Explain the position of the primer cylinder in relation

to the firing pins before and after arming the Mark IV Bomb and how this operation is performed.

9. To release the Mark IV Bomb, what points must be borne in mind? Why?

10. Does the Mark IV Bomb become armed immediately on being released? If not, why?

11. What is the function of the central pin in the Mark IV Bomb?

Liberty Motor

1. What are the four points to be noticed in starting a Liberty Engine, before getting off and in the air?

2. What is the charging rate of the battery and how regulated?

3. Explain the oiling system.

4. Diagram the ignition system.

5. From what tank in the H-*16* would you draw your gasoline first, if all six were full? What is the fuel consumption per hour and what is the total capacity?

6. Why can't the Liberty Motor run backward? Diagram.

Navigation

1. Explain the setting of the Battenberg Disk for direction, wind speed, and compass course. How is it analogous to the triangle of forces?

2. How do you swing a compass, and what are the points to be noted?

3. What is the CC given TC 187 deg. Var. 5 W; Deviation at 180 1 deg. E; at 225 9 deg. W?

4. What is the CC given TC 340 deg. Var. 10 E. Deviation at 360 5 W at 315 4 E.

5. Explain the map-squaring system for naval work.

Seamanship

1. What is the speed of a battleship, a cruiser, a destroyer, an ocean liner?

2. What are the characteristics of English, U.S., and German destroyers?

3. Sketch and name four different types of sailing ships.

4. Draw and explain the use of three types of knots.

Before leaving the subject it may be worth while to give a couple of letters from an American flying on the other side. The first gives a notion of how it feels to fly over the North Sea in winter.

"I've been lucky flying, haven't even broken a wire yet, and I've had over a hundred hours now. Flying in fog and clouds by your instruments alone, when you can't see sky or water, is the hardest thing there is to learn. I'm pretty confident of myself now—we have to do that for hours sometimes.

"The weather, the North Sea, and the size of these machines are far worse enemies than the Huns—I know, for we have them both here. It is considered the hardest air service over here; I'm proud of that. Huns are things you can see and understand and fight against, but when you are out alone on the sea drifting up and down six and ten foot waves in an eggshell—and so seasick you can't fight decently to begin with—or when you are flying through clouds and rain and can't see a thing but your wings, and you don't know whether you are above land or water, and you don't dare to come down to see because your altimeter may be off one or two hundred feet, and you would maybe dive into it when your instrument said you were still well up—— That's the sort of thing which really 'puts the wind up you.' It's not old Fritz Hun; Huns would seem almost like old friends some days out here—but if you have to come down over Holland or Germany you are captured or interned for 'the duration.'

"A Zep was reported late this afternoon just off the Dutch coast. I dream at night about getting one of them. It was nearly dark, so nobody went after him."

Anybody who knows the North Sea in winter will have a profound sympathy for these young aviators. But is not their spirit splendid?

The other letter, from the same young aviator,

refers to the death of Lieut. Stephen Potter, the first American naval flier to be killed in action on the other side. It has an especial interest as showing the attitude of young soldiers and sailors towards death, an attitude so general as to have attracted attention everywhere. It is shared, apparently, by French, English, and Americans alike.

"He died well, fighting against heavy odds, and that's about the size of it. Seven Huns shot his machine down in flames last Thursday, April 25th, way out on the North Sea. There were two of our machines out together, and the other got back. Three more of our machines searched the approximate spot till dark that night, but found no trace of them. It happened some fifty miles out. There were four in the machine—Steve was second pilot with a fine Canadian two-striper named Magor. Steve was a first pilot himself, but there weren't enough second pilots to go around. The other two were gunners—the engineer and the wireless operator. What helps most with me is that Steve had already shot down a Hun two-seater by himself, in flames. He had been in several other scraps, in one of which he passed right over a German U-boat, but had already dropped his bombs in the fight, so that his machine would handle better. He was about the best second pilot here, and this is the biggest station over here. He stood very high in the esteem and affection of all the Englishmen over here, and with Scheffelin and me it was like losing a brother, for we had been together since we left college, over a year now.

"You see, our job is hunting U-boats, and it's long odds when you run into a bunch of Hun scouts, although they have brought down four Huns since I've been here.

"Steve didn't mind going; we got used to that idea long ago, and although we lost a true, simple-hearted, lovable friend we have gained in many ways. It has made us feel older and stronger, and kinder towards the other fellow, and this war means absolutely everything to us now."

CHAPTER V

"GOOD HUNTING"

One day a young N.R. man came to an officer in charge of assigning men to duty and asked for a transfer. "What's the matter?" asked the officer. "Well, sir, I've been going across on merchant ships and I've been torpedoed three times. I'd like to get on a destroyer or a submarine-chaser, where I can see a little action."

For most of us, being torpedoed three times might very well constitute "action," but viewpoints vary. At any rate, there are certain activities in which the men of the N.R. are engaged which do supply all the action which anyone could ask. One of these, of course, is service on a destroyer, which, however, is rather a large boat, almost of the dignity of a battleship. There is another kind of service, on smaller boats, which combines the spice of danger with the delights of yachting, and has the added stimulus of the pleasures of the chase. If any red-blooded young American can ask for a better combination than this, he is hard to please indeed.

This particular service takes four forms—patrolling, mine-laying, mine-sweeping, and submarine chasing—and any one of them is interesting enough.

The patrol boats are, in a sense, the eyes of the naval base to which they belong. In size they vary from tiny steam or gasoline launches to the largest and most luxurious yachts. Even J. Pierpont Morgan's famous *Corsair,* now the *Gloucester,* of glorious record—for she distinguished herself when Cervera's fleet made its sortie at Santiago—is engaged in the work. At every naval base there is a fleet of them, and there is hardly a harbor, no matter how small, where the initials "S.P." (Scout Patrol) are not to be seen on the bows of one or more boats. The services which they perform are multifarious, and there can never be too many of them. By the way, in the early days the residents of Newport and suchlike places, who saw only the service on the bright, sunlit seas thereabouts, contemptuously interpreted the S.P. as meaning "Slackers' Paradise." The men who lived on these little boats, however, through the wintry gales off these same coasts, gales which the summer visitor never sees, came to the conclusion that the initials really stood for "Suicide Packet."

The most important of their duties are connected

with outgoing and incoming convoys. They go out ahead of the merchant ships or transports, to see that there are no floating mines or lurking submarines about, and they are provided with a number of devices for detecting the presence of the latter. It is an anxious job. Some of you, perhaps, have witnessed the concern of the captain of a liner in a fog, how he will stay on the bridge of his ship for days, never even leaving it for meals, and sleeping on it in a deck chair. He is responsible for the lives of all the people on his ship, many hundreds in number, and he leaves nothing to chance. Eternal vigilance, literally, is the price of safety. But how much greater must be the strain on the captain of a patrol boat on the lookout for submarines! On the vigilance of himself, his officers, and his men may depend the lives of shipload after shipload of the soldiers so sorely needed in France, or of supplies for our men and our allies scarcely less precious than the soldiers themselves. Sometimes the captain of a patrol boat will go absolutely without sleep for three or four days at a time. So great is the strain that no boat is on duty for more than a few days without being relieved. Sometimes they bring up the rear of the convoys, shepherding the ships along, to keep them in their assigned places, and if one lags behind because of defective steering gear

or engine trouble, one of the S.P. bustles up to see what is the matter. They meet and escort incoming ships, whether single or in convoy. They police the harbors. They examine outgoing neutrals, when there is anything suspicious about them, and they have sometimes brought to light cargoes of rubber or some other contraband which would have been of the utmost value to the Huns if it could have been smuggled past the Allies. They stand guard about the entrance to every harbor; they watch and weigh the movements of the vessels in that harbor, and investigate if anything seems suspicious.

For the most part, they are officered and manned by the Naval Reserve. Life on them varies, of course, with the size of the boat and the kind of service. Take, for instance, the S.P. 225, a former yacht, 140 feet long, with a crew of four officers and thirty-four men. The day on her, under ordinary conditions, is spent as follows:—

At 4 A.M. watch is relieved. At five the "wheel" and lookouts are relieved. At all times there are two lookouts forward, on the upper deck, and they must report everything they see, from a strange sail down to every piece of floating wood, that it may be carefully examined, for the camouflaged periscopes of hostile submarines may not impossibly be encountered. At

5.45 the boatswain's mate and cook are called, and at 6 the wheel and lookouts are relieved, and the B.M. takes all of the watch on deck except the Quartermaster and forward lookouts and "turns to" for scrubbing down. At 7 the wheel and lookouts are again relieved, all hands are called, and at 7.15 first mess, (breakfast.) It is as well to say here as anywhere that the food is excellent, and is precisely the same which the officers get, except for such luxuries as the latter choose to furnish out of their own pockets, a privilege which is not denied to the men, either. And it may be added that whereas the men are fed by the Government, the officers have to pay the Government for their food, although it is identically the same as the men's, issued by the same steward and cooked by the same cook.

Moreover, lest mothers may have doubts about the nourishing quality of the food, let me give some figures about one boy who enlisted in the summer of 1917, figures which are not exceptional by any means. He was 17 years old and under weight, 116 pounds, but as he was not under weight for age the surgeon passed him. He lived for a year on the particular boat about which we have been talking. At the end of that time he had achieved a weight of 148 pounds, to say nothing of a coxswain's rating. Certainly it must be a

pretty healthy life to produce such results, mentally and physically.

At 7.30 the officers are called, (one or more of them has of course been on deck, standing watch, all the time,) and at 8 watch is again relieved, and the relieved watch get their breakfast, (second mess.) Also, the coxswain of the watch cleans and fills all lamps. At 8.30 the whole crew "turn to" for their day's work, painting and polishing brass work and what not. At 9 there are "quarters" and setting up and gun drill. More work of various sorts till 11.30, when one watch gets its dinner, the other messing at 12. More work till 3, when there is more drill—signals, first aid, boat drill, seamanship, (knots, splices, etc.) At 3.30 the coxswain of the watch sweeps down the deck, and supper is at 5.30 and 6 for the two watches. At 9 comes "lights out" and "pipe down,"—bed.

A pretty full day for everybody, isn't it? And yet it leaves a lot of time for study for those who wish to advance themselves, and it is surprising how many there are who show ambition. Perhaps it would be fairer to say that it is a matter of surprise when a man is met who does not want to advance himself. They do not always succeed, but they appear invariably, almost, to try. I remember the case of a man who had formerly been in the regular navy, and who,

having been discharged after his term of service, had enlisted in the N.R. An officer, remarking that he did not care to try for promotion, expressed surprise, as though a man of that sort was something of a curiosity.

On the particular ship whose routine has just been given there is, as has been said, a complement of thirty-four men and four officers. Since she went into commission, a little more than a year before this was written, 94 men had been regularly attached to her. Thirty three of these have been promoted, six to officer's rank or to higher rank as officers, the rest to warrant rank or petty officer's ratings, or at the least to first-class seamen, better than thirty-three per cent of the whole. And there is nothing exceptional about this; it is the natural desire to advance himself which is seen in the boys who go to make up the N.R. The enlisted men are as eager to learn and the officers are as zealous in teaching them as they are in training stations, only the teaching and learning go on all the time in the midst of a very busy life. They are voluntarily made part of the day's work.

The examinations are stiff. If a man can answer the questions on a 1st Class Seaman paper, (everyone is a second-class seaman, landsman, or apprentice when he enlists,) he has a pretty intimate acquaintance with

the "Bluejacket's Manual," and a lot more, too, for in addition to being examined in that *vade-mecum* of the sailor, he will be asked a lot of questions about his individual ship, to show whether he has observed it intelligently. Here are a few questions, taken at random from an examination paper made out by an officer of one of the patrol boats.

Q. Navy regulations in regard to unauthorized absence. In general, what excuses are valid and what are not? If you find you have overstayed your leave, what ought you to do?

Q. What is the National Salute? When is it given?

Q. What are the regulations in regard to saluting officers on board ship?

Q. What are the regulations in regard to precedence in embarking and leaving boats?

Q. How is a ship divided lengthwise? What are the parts?

Q. How are clothes scrubbed?

Q. How are bags scrubbed?

Q. What is your first duty on receipt of your crew number?

Q. Give the duties assigned to you at every general drill held on this ship.

Q. How would you proceed to rususcitate a man who is apparently drowned?

Q. What precautions would you take in treating cuts? In treating eyes and ears?

Q. Give the seven precautionary rules given in the "Bluejacket's Manual" for painting.

Q. What are the naval regulations regarding instruction in swimming?

Q. What is a jigger? How do you clap it on a rope?

Q. What are the Blackwell Hitch, Cat's Paw, and Sheep Shank used for? Make these knots, and also a short and a long splice,

Q. What is meant by "clamp down," "Flemish coil,"

"granny," to swamp, to scuttle, to veer, to trim, to yaw? What is a strap, a truck?

Q. What is "catting" an anchor? What is "fishing" an anchor? Would either be done on this vessel? If so, when?

Q. Give the semaphore and Morse code alphabets with secondary meanings of any letters having same.

Q. What substances are electric wires made of, and why? What are safety fuses, an insulator, an electro-magnet?

Q. Name all positions in the manual of arms.

Q. Name all the parts in a Colt automatic gun. How many men in an artillery section?

Q. Write out semaphore code and international flag alphabet.

Examination for Coxswain

Q. What boat's gear do regulations require to be carried by pulling boats? Give contents of a boat box. Give the six commands used for single-banked boats, and tell what is done at each. How should you come alongside a vessel in a sea-way? How about coming alongside a vessel which is going astern? What would you do if caught in a gale in an open boat? Give details of any device you might resort to.

Q. What is "gybing"? "wearing"? What is the meaning of the rule, "Never belay a sheet"?

Q. Tell exactly what you would do in order to drop one of our anchors and then heave it in again.

Q. What are your duties as petty officer of a division?

Q. How many men and officers are there in a section handling a 3-in. field-piece?

Examination for Quartermaster

Q. Describe a ship's log. What are your duties in connection therewith?

Q. For what parts of the ship and the equipment are you responsible?

Q. Give storm signals for both day and night and their meaning. Give distress signals for both day and night.

Q. Give meaning of all signals in International code made with one flag and without code flag. Give two methods of send-

ing numerals in the International. Give two methods of spelling names in the International.

Q. If this vessel meets a merchant service ship, give routine signals which should be exchanged both day and night in time of war.

Q. What general instruction would you give a new man at the wheel?

QQ. What are variation and deviation?

Given Magnetic Co. 178° Dev. 9° E. Var. 10° W.

Find the true course.

Given Mag. Co. 19° Dev. 4° W. Var. 11° W.

Find the true course.

Such examination papers as these ought to indicate to boys who are not yet old enough to enlist how they can put in a lot of useful time in the meanwhile. The more they know before they go to Pelham or some other station, the sooner will they win the promotion which every healthy boy longs for. And there is always room at the top.

They are good shots, too, on these boats. There is a lot of target practice—sub-caliber—and when it comes to hitting a target less than a yard square a couple of hundred feet off, the target bobbing up and down in a short, choppy sea, and the ship herself rolling, it takes skill. Once in so often the boats are taken to a range, where the shooting is with full charge. It is there that the sub-caliber practice shows. When Fritz shows up they will be ready for him.

All work and no play would have its proverbial effect, but Jack is by no means a dull boy, and he has plenty of play. In the first place, he makes it for himself. On the particular boat of which we have been talking there was one boy who sang delightfully, and he had shipmates who accompanied him on mandolin, guitar, and banjo. And not only did he sing, but he danced unusually well. Then there were others who wrote cleverly, and a good caricaturist, so that the little ship was a fairly self-contained world.

But what especially appeals to one is the character of the boys themselves. They are such a clean, sweet, wholesome lot. There is not a mother of you, no matter how particular, who would not be glad to have her son living with that crew. They are of all sorts, high school, college, private school, public school, some well-to-do, most of them of modest means, a sort of cross-section of the whole community. Nobody is any better than anyone else, except as he shows superior qualities, and they have a keen interest in all sorts of subjects, and an intelligent general knowledge of subjects connected with the war. It is refreshing to be in touch with them.

There is no bravado in their talk; they know the danger of their work, but they never allude to it. In fact, they say that they simply don't think of it at all,

as a rule. It is just part of the day's work, and they let it go at that. Before the Hun submarines began their regular visits to our shores the boys were often bored by the monotony of their lives; it seemed so uninteresting to be always looking out for U-boats which never came. But now they know that if they do not keep a careful lookout not only may they come down on the horns of a mine themselves, when the appropriate quotation would be "The boy—oh, where was he?" but the lives of soldiers on transports would be sacrificed, or cargoes lost which would be of inestimable value to those other boys in France. Consequently their life has taken on a new meaning, and their duty has become almost holy.

Like a patrol boat, the mine-sweeper has various functions. Normally, she sweeps the sea clear of mines, as her name implies. In fact, there is no sort of odd job which she may not be called upon to perform—rescuing crews from wrecked ships, hauling vessels off the coasts on which they have grounded, towing in disabled ships, acting as patrol boats, putting out fires—she is the "girl of all work" of the naval base to which she belongs.

The duty which she usually performs is supremely important, and in certain places, like the North Sea, is extremely dangerous. Since the beginning of the

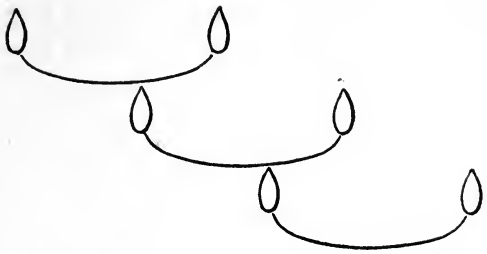
war the custom of the Germans has been to sow floating mines broadcast wherever they thought they would do the most good, or harm, quite regardless of the fact that mines floating loose are forbidden by the rules of civilized warfare. As the Hun never obeys the rules of civilized warfare on shore, so he does not obey them at sea. As a consequence the mine-sweepers in the North Sea, where these drifting mines have been set at liberty in great numbers, are surpassed for heroism by no other body of men in the whole war. They go out together fastened in pairs, these little ships, usually steam-trawlers, though sometimes they have been converted yachts, and plow their way through waters where at any minute they are liable to come down on the horns of a mine and to be blown into small pieces. The sea there is always heavy in winter, and thick fogs prevail a large part of the time, so that it is impossible to see the mines until the ship is practically on top of them, and casualties have been very numerous. But the Scotch and English skippers and their crews of fishermen have stuck to their work with a gallantry which has aroused the admiration of seafaring men the world over.

The visit of the German U-boat to Newport in the summer of 1916 gave fair notice to the United States that we might expect to find our own home waters

strewn with mines in case we should brave the German anger, so when we declared war a mine-sweeping system was at once organized at every Atlantic port. For the most part the boats were of the ocean tug type, of which we had a fair supply, and they were manned and officered by members of the Naval Reserve. The officers were real sailors, of course, but most of the men were quite free from any sea training whatever. The early days must have been filled with curious experiences, but the crews got shaken together with surprising speed, and it was no infrequent thing for officers to say that they preferred these crews to professional sailors, because of their adaptability, intelligence, and enthusiasm.

The routine work is simple. Two tugs, 600 feet apart, are connected by a 13/16-inch wire cable some 900 feet long, so that when they are in motion this cable drags behind them in a long curve. It is held at a certain depth by a device called a "kite," so named on the principle of contraries, in that it does not soar but dives to a certain distance, limited by the length of the cable which controls it, just as a kite can soar only so far as its string permits.

These pairs of boats cruise one behind the other, but somewhat to one side, what is called in military parlance "en échelon," thus:—



as many pairs as are necessary to cover the whole width of the passage to be swept. This passage may be the course of an outgoing convoy, in particular, or a large sheet of water where the enemy submarines are believed or known to have strewn mines. It may have been a mine of this sort which sank the *San Diego,* for several more were discovered and sunk or exploded by mine-sweepers within twenty-four hours after that ship went down. It is needless to say that the waters near where she was sunk were gone over as with a fine-tooth comb.

The sweeping itself does not sound very exciting, and much of it is dull, of course, just as the long days in the trenches are dull when there is no "going over the top," but there is plenty of interest when sweeping has to be done in a midwinter gale, when ice is forming on deck, and the little tug seems likely "to roll her funnel under," and once in a while there comes "a day of glorious life," which compensates for a lifetime

of dullness. Such an experience came to S.P. 366 in the summer of 1918, and might be termed "the end of a perfect day."

There was nothing in prospect to differentiate it from any other day. Hun U-boats had already visited the Atlantic coast, and had done a certain amount of damage, but they had not been heard of for several weeks, and the mine-sweeping fleet started out in the morning for just another day of routine work. Perhaps a convoy was going out that day, perhaps not; they did not know. It was simply their job to keep a certain course clear for a good many miles out to sea. So the little fleet covered its appointed distance, cast loose its cables, hoisted its "kites" on board and started back in single file, the commander's tug leading. It was a drowsy, sunny afternoon, and everyone settled down to a lazy time on the run home. They would get back in time for supper. Suddenly the commander's tug swung round and headed back over the course, and as it passed the others wigwagged to them the order to return to the spot where they had discontinued their sweeping. "I suppose they want us to sweep farther along the same course," surmised the captain of S.P. 366. It was six o'clock before the little fleet reached the rendezvous. On their way a destroyer or two passed them, on the horizon could be

seen a string of "chasers," and pretty soon a hydro-airplane buzzed overhead like an irritated dragonfly, but planes and destroyers and chasers are common sights, going about their business, and nobody paid any attention to them. The little fleet coupled up and went on with its work, sweeping to the eastward.

It was such a beautiful evening, with the sun setting in a blaze of glory and a three-quarter moon in the sky, that it was like a painting or a scene on the stage. The little sweeper fleet went quietly on till ordered to swing about, when an amazing sight appeared. A few miles to the westward was a collection of vessels which reminded one of the start of an international yacht race. A little off at one side a lightship was lazily swinging at anchor, and from it extended a curving line of craft—destroyers, some black, some gray, some camouflaged, converted yachts towing captive balloons, ("elephants,") chasers, and despatch boats, while overhead was a silver "fish," (dirigible balloon,) and hydro-airplanes swarmed, some high against the red sun, some low, swooping down over the water like fish-hawks. Only the tall, white sails of the contesting yachts were missing. Suddenly things began to happen. A darting plane swept down and dropped into the water a depth bomb which exploded with a crash, then another plane dropped an-

other bomb. A third plane came squattering down on the water like a wounded duck, just under the bows of S.P. 366. It was engine trouble. A chaser came up like an inquisitive terrier, and stood by, to see if help would be needed. Next a destroyer circled about a bit, like a ranging setter, then shot across the bombed area, and dropped a couple of depth bombs of its own, 250 pounds of TNT, sending up great columns of water and black smoke, two hundred feet high. S.P. 366, a mile away, shook all over with the vibration. At last the men on the sweepers realized that they were witnessing a sure-enough attack on an enemy submarine. In the distance sounded another explosion; it was a floating mine, loosed by the U-boat, and exploded by the cable between two mine-sweepers. More bombs from the planes and destroyers, and then the little fleet of sweepers moved calmly across the bombed area. What would they catch? Would they have the luck to pick up the U-boat? If they did, she would probably send a last torpedo into them, when "exit mine-sweeper" would be the stage direction in this theatrical setting. But what would that matter, if they got the Hun? That was the way the men in the pilot house of S.P. 366 felt, and it was the way they talked, though with a more nautical emphasis.

"Tooooot, tooooot—toot, toot—toot, toot," "four points to port," went the commander's whistle, again and again, and the little fleet swung round in a circle. Meanwhile, more depth bombs were dropped, and red flashes came from the bow gun of a destroyer. Little by little darkness came down, the bombs and the firing ceased, the chasers and the destroyers went off unable to see any longer, and the sweeper fleet kept monotonously on in its duty of "making the sea safe for democracy."

It was a perfect end for a day.

But the real joy of the chase comes to the man aboard a submarine chaser. One may not tell too much about the operations of these little ships, or of the tactics which they employ, but there are certain things which can be published.

There is a good-sized fleet of them already in existence, and more and larger ones are constantly being added. The first type was 120 feet in length, but these boats, while excellent for use near shore,—in protecting our coastwise commerce in summer, for instance,—were unduly short for service in the heavy Atlantic seas in winter, or for work in the North Sea. The new ones, Henry Ford's "Eagle" boats, are 200 feet long, and can keep the sea in any weather. Moreover, they can carry enough fuel to convoy ships en-

tirely across the ocean, whereas the radius of action of the 120-foot boats was confined to one side.

All of these boats are specially equipped, and they cruise in fleets. Of course they have radio, and can communicate with each other, and when one of them discovers a submarine she notifies the others and they start after the game as joyfully as a pack of hounds after a fox. How successful are they? That is one of the things which our Government, like the British, prefers not to talk about. But has it never occurred to you as singular that the German submarine raid in June, 1918, bagged only *three* American steamers and a few schooners, and that then the Hun ships vanished? Perhaps the little submarine chasers had something to do with it. You know as much about it as the Government will tell, but the inference is pretty obvious.

One of the most delightful sports in the world in peace time, for a young man, is cruising in relatively small sailing yachts, such as can be handled by a "Corinthian," or amateur, crew. Life on a submarine chaser is a good deal like that. The boat is small and compact, the crew number only twenty-four, and while there is not the occupation which is provided by handling the sails of a yacht, the life is crowded. From the man in the crow's-nest, who scans the sea for periscopes more eagerly than ever did a whaler watching

for a "bowhead" or sperm whale to blow, down to the man in the gas-engine room, everybody is "on his toes." For this is a chase where each side is hunting the other, and in the most literal sense, eternal vigilance is the price of safety.

They are fine little boats, these submarine chasers, good seaboats for their size, and equipped to meet any emergency within reason and within their radius of action. They carry a heavy armament for their size. Aft are the depth bombs, the chaser's principal armament, for of course it is not her business to fight the submarine's four- or five- or six-inch guns. What she has to do is to locate the submarine on the surface or under it and to stick to him closer than a brother—or sister—till she can drop a depth bomb on him or summon aid, which is never far off. The submarine is a tender thing, anyway, and would not enjoy having a puncture in its hide, even from a twelve-pounder, and its effort, if it saw the submarine first, would be to submerge and get away, like the slinking brute that it is, without inviting a fight, unless it got a specially good chance to fire a torpedo, which, on account of the chaser's light draft, would be more likely to miss than not.

These depth bombs are mounted on a curious sort of Y-shaped gun, one at the extremity of each arm, and

the gun is fired from the foot of the Y, so that both bombs are simultaneously thrown overboard, one on each side, as the "minenwerfer" or trench-mortars gently lob bombs from one trench into another across No Man's Land. The chaser is supposed to be pretty close to the submarine when the bombs are dropped, and these are so constructed that they explode at a given depth, and consequently if the submarine goes and sulks on the bottom, as a salmon will sometimes do, the bomb will get him just the same. A listening apparatus tells the skipper that the sub is still there, since no vibration of his departing screw has been detected, and bombs are dropped, set to explode at varying depths, till up comes the telltale patch of oil and wreckage, announcing that another "baby killer" has gone to his reward.

The theory of the bomb is this. Water is practically incompressible, and a violent impulse imparted to it will be carried full force for a considerable distance. An impact applied at one end of a column of water is just like the force applied at one end of a piston. The submarine is practically a fixture in the water, so far as lateral resistance is concerned, and the explosion of a couple of hundred pounds of TNT, which these bombs are filled with, and which is the most powerful explosive known, will crush in the side of a submarine, even

at a distance of a hundred yards, like an egg-shell. Consequently the game of the chaser is to locate the submarine, to get as near it as possible, and to drop depth bombs on it till the submarine is "accounted for."

It was one of these depth bombs, by the way, which won Chief Boatswain's Mate John Mackenzie the Congressional Medal of Honor, the highest distinction which can be conferred by the United States Government. In a heavy gale a depth bomb on board the converted yacht *Remlik* broke loose and rolled about the deck. The safety pin came out and there was every danger of an explosion which would have blown the ship to pieces. A depth bomb stands more than two feet high, is cylindrical in form, is some two feet in diameter and weighs something over two hundred and fifty pounds. Guess what it means to try and get hold of an object of that size and weight as it charges violently up and down and across the deck of a former yacht where there is no sort of steady footing, anyhow. Mackenzie managed to throw himself upon the bomb and to hold it till help could arrive, when it was up-ended and made fast. Apart from the courage involved, it was an extraordinary exhibition of strength and skill.

We know now how far the submarine peril is from

being exorcised. The remedy is more destroyers and patrol boats, chasers and mine-sweepers, and then more still. The ocean is a big place, and the patrol must be everywhere where a ship may want to go. The submarine will not be conquered till, for instance, a cargo of coal can be sent to our allies in Italy with as little danger as it can be sent on the Erie Canal. And that will not be until the fleet of destroyers and chasers and the rest is many times as big as it is now. Meanwhile the most impressive sight I know of is the steady stream of convoys, merchant ships and transports which flows steadily from our Atlantic ports. The U-boats off our coast may pick up a victim here and there, coasters or fishermen, but the big boats go on unvexed, and it is in great measure owing to the work of these chasers and the little converted yachts and tugboats that this happens.

"Good hunting to them," as Mowgli would have said.

CHAPTER VI

AN EYRIE

SOMEWHERE off our coast there is an island which lies close to the shipping lane which leads to one of our ports. Here the American Eagle has established an eyrie from which he can watch over and guard that lane, and as the force performing this duty is mainly composed of N.R. men, it shows the work of the Reserve from another angle.

The American Eagle, at this particular spot, is almost as many-eyed as Argus. On the point which stretches farthest out into the ocean stand men who all day sweep the surface of the waves, watching for the telltale V-shaped wake which indicates the movement of a periscope through the water, even when the periscope itself cannot be seen. They watch, too, everything floating, for though mines, if they got so close in shore, would be out of the steamer track, they might nevertheless drift out again, so that when the ugly black objects are sighted a patrol boat goes out and either sinks them or fastens a rope to them and tows them ashore for examination.

Besides these watchers, the sea is being constantly scanned by observers from captive and dirigible balloons. The form of a U-boat can be seen so long as she is not more than 60 feet below the surface, and floating mines look like black pinheads. All day long these observers, like their brothers on the point, sweep the surface of the sea with powerful glasses and report by wireless anything they see which needs investigation. The patrol boats are there to do the investigating. The dirigible, (the "fish,") makes long trips out to sea, sailing to the point where an incoming convoy is to be met or over the course of an outgoing one, supplementing the work of the patrol boats which are described in Chapter IV.

Then there is a fleet of hydro-airplanes which cruises over a beat a hundred and fifty miles long, going up and down the steamer lane, out to sea when a U-boat is reported, patrolling the whole coast, and making it as unhealthy for the Hun as possible. Of course, the sea is a large place, and the U-boat is a small object, so the fish does not spot one every day, but she does discourage daytime visits to the shipping lane. She cannot prevent the Hun from running in shore under cover of darkness, and it is then that the submarine lays her eggs, the mines which are found in the tracks of outgoing and incoming ships and con-

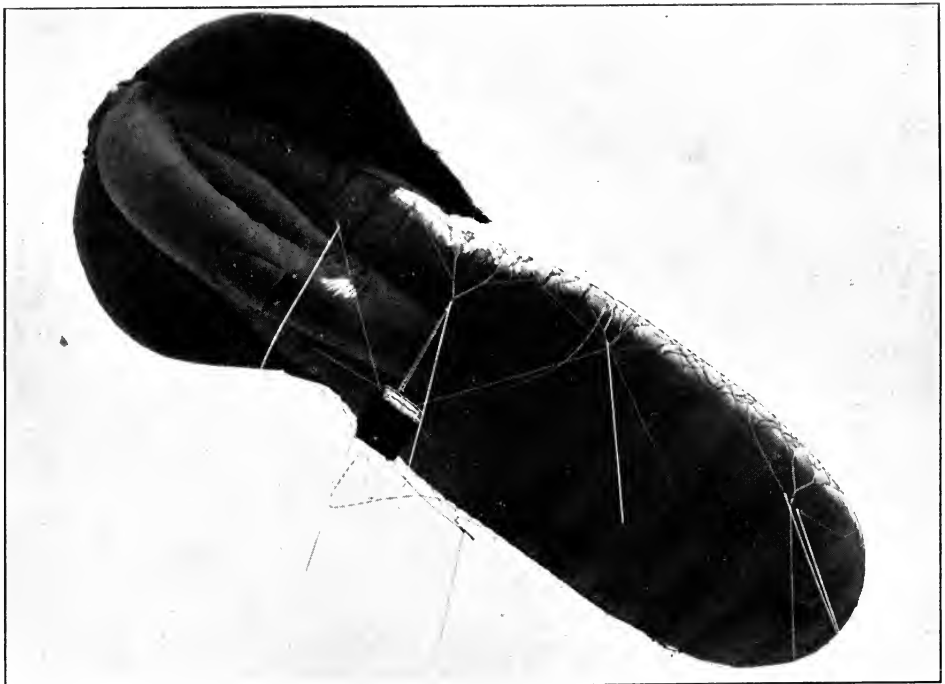


Photo by International Film

"Elephant" Captive Balloon

voys. It is one of the jobs of the planes and the "fish" to find these mines and to make them harmless.

Another task which the N.R. men perform is patrolling the beach. For sixty or seventy miles around this island they march through the heavy sand, day and night, blazing sun in summer, snow and sleet in winter, taking note of everything which is washed up by the waves and of everyone who goes down to the water, and seems to be looking out to sea with more than reasonable interest. Everybody has read stories of U-boats which have landed men from collapsible boats, or of the strange lights which blink the Morse code from the sea, and it is one of the jobs of these men on beach patrol to keep an eye out for everything of this sort.

When a mine washes up an expert goes down to examine it. If he were to explode the mine in the process he would be scattered over several acres of adjacent scenery. Why he is not so scattered, nobody understands, least of all the men who work with him. First, he will try to remove the horns, which are supposed to set the mine off when they are hit by a moving ship, as is believed to have been the case with the *San Diego*. Then he unscrews the war-head. "Ah!" he says, "this is new," pointing to a wire

which runs down into the 250 pounds of TNT with which the mine is loaded. "That other one didn't have this. I wonder what it is for." Then he proceeds to pull it out. Do you wonder that the men working with him wish they were behind the nearest sand-dune? Yet he has not been blown up so far, and his friends are praying that his luck may last. Perhaps it is not luck at all, only a superior knowledge of the habits of these infernal machines.

The fishermen have their share of the fun, too, in the queer catches they make. One day one of them hailed a passing patrol and invited him to haul on the beach something which he, (the fisherman,) had picked up floating about. On investigation it proved to be a machine supported by floats, apparently for the purpose of cutting steel nets, for it was furnished with a formidable set of teeth. Had some U-boat attempted to cut through one of the nets which protect our harbors at night? Which harbor was it? What drove him off? And why did he abandon the cutting machine? Can't you see the series of interesting questions which were raised by such a discovery?

Furthermore, the boys who patrol the beach, or those who command them, must be up on the very latest refinements of science. The Boche agents and

sympathizers are, and they take advantage of the most advanced discoveries. For instance, a boy passing along the beach on patrol sees a rusty old wire cable running into the water. It looks innocent enough. How many of you who read this would suspect anything? Probably it was attached to some old ship which has long since gone to pieces, you would say. But one of the latest discoveries in wireless telegraphy is that just such a cable, running into the water, makes the best kind of aerial, and there is a perfectly good chance that this one was placed there some dark night, in the hope that it would escape notice, by Boche agents.

Indeed, distinctly the most fascinating job which belongs to the people at this station is the running down of suspected spies. Like all the islands on our coast, this one has a large quota of summer visitors in addition to its permanent residents, and nothing is easier for such gentry as Hun agents than to take a cottage on the beach, where at night "blinker" signals can be made from seaward windows, and made in such a manner that nobody but someone out at sea could observe them. The sickening part of it is that so often these Boche agents are not poor hirelings, or even enemy aliens who have so far escaped the net of the law, but rich hyphen-Americans, who have

made their money in this country and then turn about and betray it, true Judases.

It is the joyful task of the men on this station to hunt these people down, and the finds which they make are amazing. One very wealthy man built a house by the seashore and beside it erected not only a very tall flagstaff but an unnecessarily tall water-tower. Perhaps if this individual had not "overplayed his hand" in the matter of the tower he would never have been suspected, but he probably, like Captain Boy-Ed, underestimated the intelligence of the American people. Be that as it may, one day he received a visit from a particularly courteous gentleman in the N.R. uniform, who suavely requested permission to go through the house. This gentleman had been warned beforehand that the place was guarded by armed private watchmen, so he did not go alone, but accompanied by a small force of determined looking young men in white uniforms with rifles in their hands and cartridge belts about their waists, and just praying for a scrap. In view of this, leave to inspect the premises was granted the polite gentleman in uniform, and the private watchmen melted away. During the search which followed a complete wireless outfit of great power was discovered in the house. Of course it was not connected with any aerials, and according to

the owner of the house, had never been used, but it seemed kinder not to expose the owner to temptation, so the wireless outfit was carried away and safely stored in a Government warehouse.

Sometimes it is the duty of these men to search ships for contraband, and sometimes they are sent for to investigate some person of alien birth who is suspected of making bombs, or has made himself unduly conspicuous by cursing the United States or damning Liberty Bonds. When people of this sort are discovered they may be safely turned over to the civil authorities for treatment, for there are no stauncher patriots in this country than the natives of this island. They can be counted on every time to back up the Government and its servants to the limit of their powers. When one thinks what opportunities there are in a rural district, where everybody knows everybody else, of keeping tab on strangers, the value of their coöperation can be guessed.

Life at this station is not very different from that anywhere else, except in winter. The island contains several large ponds, and when these are frozen they afford splendid ice-boating. This is about as exciting a sport as can be found; the iceboats on the Hudson River used to go sixty miles an hour, and the whole crew would have to stand on the windward

runner to keep the boat from capsizing, just as the crew used to do in the "sandbaggers" of happy memory, those open sailboats which were furnished in races with large crews, every member of which carried a bag of sand.

The crew with their bags of sand perched up on the windward gunwale, and formed a sort of "shifting ballast." When the boat came about the crew piled over on the other gunwale, and the smartness with which they performed this manœuver made a lot of difference in the result of a race. By the way, shifting ballast became such an abuse in the races of larger yachts that the yacht clubs had to seal the ballast of contestants before a race. And the huge crews carried in international races were quite as much for this purpose as for handling the sails.

Taught in such craft as these ice-boats, the boys learn a lot about sailing, and a lot more about being smart in seamanship, and they learn it at a time when the men in most stations can get no sailing. It is one of the delights of their life.

It is hard to say that any one station performs a more valuable service than any other; they all cooperate in one great work, the keeping open of the ocean highway over which our boys are carried to the battle front in France, and over which go the sup-

plies for them and for our allies. But this much may be said, that for variety of interest and occupations, no station of which I know can at all match the eyrie which the American Eagle has established on the island of our coast which commands part of that highway, and where he perches scanning the water for foes from abroad, while he keeps a watch out of the corner of his eye on the slinking traitors behind him.

CHAPTER VII

A REPAIR SHOP

It will probably strike some of you mothers that Portsmouth Prison is a painful thing to think of in connection with the boys whom you have so heroically given to the service of your country and who have so patriotically embraced that service, but it is to be hoped that before you have finished this chapter you will have changed your minds.

In the first place, it must be remembered that military law, by which the navy is governed, is extremely severe in time of war. A moment's consideration shows that this must be so. Discipline of the strictest sort must be observed for the safety of everybody in a ship's company; carelessness or slipshod methods may very well cost the lives of all those on board, as, for instance, in the case of a negligent lookout in a mine-infested sea. Lack of punctuality in returning from leave, at a time when ships are liable to be ordered off on a minute's notice, as they are, for instance, on the occasion of the submarine raids, might cause a ship to go to sea short-handed. The habit

of instantaneous, automatic obedience is vital in fighting the guns. For these, and for a dozen other reasons, as well as for the sake of the discipline of the individual man, and, by example, of the whole ship's company, it is sometimes necessary to inflict very sharp punishments for what are, in substance, very trivial offenses, not for the sake of punishment—for what is important is not the past—but to impress upon the transgressor that, being in the wrong, he must not offend again. This is for his own sake and for the sake of those who sail with him,—in other words, for the future, which is what is important.

When any breach of the regulations occurs, the offense may be dealt with by the Commanding Officer, or, if it seems to him sufficiently important, by court-martial, and the limits of a Commanding Officer's discretion are pretty well circumscribed. Hence it comes that offenses which in peace time would be entirely trivial become in war time objects of a general court-martial, and if the offender is convicted, he is sometimes subject to a term of imprisonment in the Naval Prison at the Portsmouth Navy Yard. Moreover, if he overstays his leave he may be tried for desertion, though he may have never had any idea of deserting. Desertion in time of war entails a dishonorable discharge from the service at the end of a

term of imprisonment, and this automatically prevents a man from ever after serving the United States in any capacity—for it carries with it loss of citizenship —no matter how patriotic he may be, or how valuable his services.

Now, what concerns you mothers is that your boys might quite innocently get into just such trouble as this. If one of them overslept, or missed a train, or if his watch stopped and he was a couple of hours late, (these are extreme cases, but similar ones have happened,) he technically became a deserter, or at the least was guilty of overstaying his leave. This is not peculiar to the naval service, but the same thing is true of the army. Here is an example. One day a very green boy, an apprentice in the navy, was starting off on leave, and as he left the station he turned to one of his companions and asked him, "When is our leave up?" In fact, they had only three days, but the other boy replied, "A month from tomorrow." It was meant as a joke, but the first boy, who was so green that when he entered the service he had to be shown how to use a telephone, took it seriously. He went off on his leave and appeared punctually on time —a month late. He was court-martialled and was sentenced to three years' imprisonment, with a dishonorable discharge at the end of it—a sorry result as the

end of a practical joke. Of course he was to blame for not looking into the length of his leave, but there was no intent to desert, and in civil law, as in morals, it is the intent which constitutes the essence of a crime. If I accidentally shoot my friend when we are out gunning I am not convicted of murder, but the military law is different, and there was nothing else to do in this boy's case. That is one of the sacrifices which a man makes when he goes into the service of his country, and cannot be helped. This individual boy has made good in a remarkable way while at Portsmouth, and is one of the most reliable of Commander Osborne's men. Unless a pardon can be obtained for him from the President he will be dishonorably discharged when his time is up, and it is no small testimony to his character that two or three different people have offered to take charge of his education, realizing that here is valuable material which is going to be thrown on the scrap-heap if a helping hand is not extended to him.

Here is another case, one in which the boy shares the blame with his mother. This boy went on leave, and when it expired his mother could not bear to let him go, and kept him on at home for a few days longer. In some way the police of the town in which he lived learned of this, arrested him, and kept him in

jail till they could get the reward of $50 for returning him as a deserter. It was an unspeakably dirty thing for the police to do, of course, but they were within the law. It was reported in the New York newspapers that there was a regularly organized system of trapping men and holding them till they could be returned as deserters, and that the ingenious individuals who invented the scheme are now "doing time" themselves. There is, however, no way to prevent such cases as that given above, where the police of a boy's home town practise such villainy. Nothing but the President's pardon can save that boy's life from being marked with a permanent stigma.

Sixty-five per cent of the inmates of Portsmouth Prison are of this class; they are men who have been careless or stupid, as green boys necessarily must sometimes be, and most Naval Reserve boys are green. Mr. Daniels, the Secretary of the Navy, recognized what an economic waste this was and called to his aid Mr. Thomas Mott Osborne, asking him to investigate conditions at Portsmouth. He knew Mr. Osborne's career at Auburn and Sing Sing, and what he had done in reclaiming human derelicts, and that nobody was so well fitted as he to investigate the situation at Portsmouth.

Mr. Osborne made a couple of preliminary visits to

Portsmouth—there was then no idea of his taking command there—and then he and Professor MacCormick of Bowdoin College spent a short term there as prisoners. They had their heads shaved, put on prison uniforms, and served for two weeks as prisoners, so that they might find out what was the general feeling of the men, and how they looked at their situation. There is something curious about wearing the prison uniform; so long as Mr. Osborne and Professor MacCormick wore it the men came to them and confided to them with the utmost frankness; there was nothing which they were not told. But when they returned to civilian garb there was once more a gulf fixed between them and the men. It became "Sir" again instead of "Tom," (Mr. Osborne served as Tom Brown, the name which he made famous at Auburn and Sing Sing,) and though the men knew that there was just as much interest in them on the part of Mr. Osborne as on that of Tom Brown, it was not quite the same thing.

What Mr. Osborne and Professor MacCormick found was a terrible state of bitterness against the Government throughout the whole prison. There were hundreds of young men who had enlisted in the navy with the most patriotic feelings, and here they were, condemned for faults which they only half understood,

the importance of which they did not at all realize, and, worst of all, when their terms were over they would be forbidden to serve their country again. It was a sorry outcome to their patriotic self-sacrifice, and no wonder they felt bitter.

The Secretary of the Navy did away with many of the abuses on the receipt of Mr. Osborne's report, and in August, 1917, gave him a commission in the Naval Reserve and put him in command at the Portsmouth Prison, with Professor MacCormick, now also an officer in the N.R., as his executive officer. The job which they had was to rescue several hundred boys like yours, you mothers who read this, boys who had committed military crimes through ignorance or carelessness or inadvertence, and who, through the operation of military law, were going to be lost to the service of the country, and go home to establish foci of discontent.

This is not the place to detail at length the means which Commander Osborne and Lieutenant MacCormick took to remedy the situation; the results are what concern us. The first thing Commander Osborne did was to call the men together and tell them what he wanted to do. He put it epigrammatically when he said: "The Secretary of the Navy has sent me up here to help change this place from a scrap-heap into a

repair shop." He relaxed the severity of the prison discipline so far as it could be done, sent away most of the guard of marines—when he first went to Portsmouth there were literally more marine guards than there were prisoners—and substituted the honor system so far as was possible, helping the men to help themselves. They were more than ready for this, for after he took command, they at once asked for an interview, at which they requested that he would establish the Mutual Welfare League, which has done such fine work at Auburn and at Sing Sing. He preached the doctrine of making good, and, in order to enable them to make good, got an order from the Secretary of the Navy by which he can recommend men for restoration to the service after a certain percentage of their sentence has been served, when they have demonstrated by actual achievement their fitness for restoration—somewhat, in effect, like an indeterminate sentence.

In order to accomplish this the men are trained in their work just as they would be on board ship, so that when they are restored they are more valuable for their imprisonment, instead of being lost to the service altogether. More than a thousand of them have been so returned, and their number increases month by month. What is more, the character of these men is

so high that they are actually in demand. One commander of a ship wanted some men for his crew, and applied to the commander of the receiving ship in Boston for "some men from Portsmouth." "We haven't any just now," replied this commander. "Then I will wait till you get some."

The whole tone of the prison has changed. In 1917 it was one of sullen resentment. In June, 1918, on the contrary, 2,000 men assembled to greet the "graduating class,"—120 who were returning to service,—cheered every reference to the war and to patriotism, and applauded each graduate as he came up to say good-by to Commander Osborne.

The honor system seems to work satisfactorily; at any rate, they have a camp in which there are 800 men, and for months there was not even a fence about it. The only guard consisted of five sentinels, even at night, yet there was not a single attempt to escape. Why should there be? Those boys knew that they were paying a debt to Uncle Sam incurred through their own carelessness or stupidity—at any rate, through their own fault—and that when that debt was paid they could go back to the service with a clean slate, and that was what they wanted to do. Moreover, they knew that they were getting a special individual training, with regard to their personal

weaknesses. One such man wrote back to Commander Osborne that he had not only recovered his old rating but had been promoted. "The repairs you put on me," he said, "have made the old machine better than it was in the first place." And that has already been done to more men than would be needed to man a super-dreadnaught.

"Their mothers are crying aloud for their sons' return to the uniform," wrote one man who had won his own way back. Those mothers may be comforted by the thought that if the severity of martial law brings their boys into trouble they will have kindly, sympathetic care, will be studied so that their special weaknesses may be remedied—and who of us has not some special weakness?—and will be returned to the navy with the opportunity for an honorable and useful career before them. "Not a scrap-heap, but a repair shop."