NAVAL HEROES OF TO-DAY

BY

FRANCIS A. COLLINS

Author of "The Fighting Engineers," "The Air Man," etc.

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PART I

GUARDING THE SEA LANES

NAVAL HEROES OF TO-DAY

I

THE AMERICAN SPIRIT

IT is difficult to define the American spirit. We know it to be fearless, unselfish, and dependable in emergency. The best definition is an example. There is a wealth of material to choose from in every service of the American Navy.

The peril of the submarine has brought a new situation. Its missiles strike unexpectedly and with deadly effect, and often the blow falls far from assistance.

The exploit of Osmond K. Ingram, chosen almost at random from the submarine reports, will serve the purpose. Ingram was a gunner's mate of the first class aboard the *Cassin* on submarine patrol duty. A U-boat was sighted, one day, running on the surface

at a distance of five miles. The alarm brought the men quickly to their battle stations, and the *Cassin* was headed for the enemy full speed. The submarine had time to submerge before the *Cassin* came up. She cruised about for some time without picking the submarine up, steaming in a series of violent zigzags to confuse the enemy.

At the end of half an hour Commander W. N. Vernon of the *Cassin* suddenly sighted a torpedo only four hundred yards off. It was aimed to strike the *Cassin* amidships. The Captain rang for the emergency speed for both engines. Men who have watched the approach of a modern torpedo describe the experience as one of the most terrifying in a sailor's experience. Even those who have been repeatedly under fire find the moment very trying. One does not see a shell that strikes. The torpedo, on the other hand, moves slowly in comparison. Many seconds must elapse after it is sighted before the blow falls; and the victim must face them as calmly as he may.

The crew of the *Cassin* saw the wake of

the torpedo whiten and run out, drawing a line on the water directly toward them. Ingram, forgetting his own safety, rose to one of those acts of supreme sacrifice that render the American spirit traditional. As it became clear that the torpedo would miss the middle part of the ship and strike somewhere astern, Ingram realized that the ship was endangered by some boxes of explosives on the after-deck. If the torpedo struck near them they would destroy the ship.

It would have been a simple matter to run forward with the rest of the crew and save himself; but Ingram deliberately turned and ran aft. He was racing with the torpedo. It was a question of seconds. The torpedo was only a few feet away when Ingram succeeded in picking up and throwing over the last of the boxes of explosives. His presence of mind had saved the ship. When the torpedo struck, Ingram was the only member of the crew in the vicinity. He was thrown into the water and drowned before assistance could reach him, being the only man on board to lose his life.

The torpedo struck a glancing blow which

disabled one engine but struck no vital part. As her crew hurried to repair the damage the *Cassin* pluckily turned about, and, despite her handicap, gave battle to the submarine. She remained for hours on the scene, and when the U-boat finally lifted, the *Cassin* greeted her with four well placed shots which forced her to disappear with what damages it could only be guessed.

Acting with instant decision, Ingram gave his life to save others and safeguard his ship. In the ready intelligence of his action, and in his unselfish devotion, Ingram has set a very high standard for the achievement of the American spirit. As a special mark of respect, one of the new destroyers has been named for him. So great an authority as Admiral Sims, in commenting on the affair, said:

"The behavior was admirable. There was no excitement, and afterwards the men remained quietly at their battle stations throughout the night."

The following letter, written by Secretary Daniels, was read aloud to the crew of the U. S. S. *Cassin:*

"The Department has received the report of the action between the U. S. S. *Cassin* and a German submarine on October 15, 1917, and notes with gratification the highly commendable conduct of yourself, the other officers, and the crew of the *Cassin*. The manner in which the *Cassin* kept under way with her steering-gear disabled and practically at the mercy of the submarine, and opened fire on her when she appeared, is well worthy of the best traditions of the Navy."

In another letter to Lieutenant McClaran and Saunders, Secretary Daniels especially praised them for their "highly commendable conduct in going down into the smoking hold adjacent to the magazines to ascertain the extent of the damage done to the *Cassin* after that vessel had been struck by the torpedo."

II

WITH THE DESTROYERS

EVERY man of the crews of our destroyers on submarine duty is something of a hero. Many of them will probably be distinguished by official recognition, but the list of fearless men who have faced death at this post of duty may be counted by thousands.

Every one knows the speedy-looking craft that are driving the submarines from the sea. With their rows of funnels, they might be mistaken at a distance for fast Atlantic liners. They are the greyhounds of the Navy. The beam of a destroyer is about one twelfth her length. There is a great gain for speed in this proportion, and it is upon their speed that we depend to-day for the safety of the seas. But for their crews this narrow hull means indescribable discomfort.

No ship afloat, probably, is less stable in rough weather. A destroyer rolls through an arc of sixty degrees in six seconds. Only a sailor knows what this means. Such a motion will often roll an old sailor overboard before he can grasp a support. One of these boats has been known to roll through an arc of seventy-three degrees. As their speed increases up to thirty knots an hour or better, such craft roll and pitch, and combine the two motions in a very terrifying manner.

The men below decks must be strapped into their berths in rough weather. Many suffer from broken arms and legs. And a storm may continue for days without relief. The wireless man of a destroyer was once held a voluntary prisoner in his cabin for more than forty hours without food, rather than face the sea that constantly swept the decks. There may be hours at a time when it is impossible to walk the length of the boat. A steel rope is often rigged up several feet above the deck to serve as a trolley. A sailor passes a rope over this, and, fastening it about his shoulders, waits until the

boat has pitched steeply enough, when he slides down in comparative safety.

Aboard this frail craft must be carried considerable supplies of explosives, which a chance blow may set off. The boat's weapons include a number of depth bombs, for instance, each of which contains about three hundred pounds of T N T. The explosion of one of these bombs deep in the water wrecks everything in the vicinity. It is not necessary that they strike the U-boat or explode very near them. Some idea of their power and the danger of handling them may be gained from the fact that a destroyer must be going twenty-five knots an hour when they are dropped astern. If the speed be slower than this, the boats are likely to be injured. There have been cases of destroyers dropping depth bombs while traveling at half this speed, when the explosion has all but wrecked them. To save weight and gain speed, which is so essential, parts of the hulls of the destroyers are made only three sixteenths of an inch thick—little enough protection, it would seem, against the storms of the Atlantic.

WITH THE DESTROYERS

No other service is so trying to men's nerves as that aboard the destroyers in active service. It has been found necessary to give the crews a rest after each cruise equal to about two thirds the time spent at sea. The watchers on board are limited to eight hours in every twenty-four. Day after day the crew are unable to take off their clothes, and must grab their food while holding for their lives to a convenient stanchion.

The officers are worked to the limit of their endurance. For instance, in convoying a ship, a destroyer must zigzag about the ship at top speed to keep every part of the sea under observation. It frequently happens that the officer of the deck must change the ship's course two hundred times in an hour. On every destroyer one of the watch officers does the additional work of acting as chief engineer. The officers may also be called upon to serve in the crow's-nest as lookout, or to go aboard a torpedoed ship, all in addition to his regular eight-hour watch. The executive officer also acts at times as navigator—and the work of naviga-

tion on these little crafts is very arduous. The commanding officer frequently averages nearly twenty hours of duty a day throughout a cruise.

The destroyers start out to cover a regular course, but they are at the beck and call of everything that floats. A wireless S O S may draw them hundreds of miles off their course. The life of a destroyer's crew is just one submarine chase after another.

Another perilous service that has come to be looked upon as commonplace routine work is that of the mine-sweeper. To free the ocean lanes of dangerous mines, great nets are drawn through the water and the "catch" carefully removed. The operation is much like that of fishing, but with the danger that the mines encountered may be set off with disastrous results. When such a mine is caught in the net, it must be drawn up, passed over the ship's side, and placed on deck with the most anxious precaution. The slightest jar may set off its delicate mechanism, and such mines are loaded with the design of destroying great ships at a single blow. In rough weather, with the

boat rolling and pitching, the work is exceedingly precarious. But familiarity breeds contempt even for these floating mines, and the sailors go about their perilous work with light hearts.

One of the surprises of the present war is the youthfulness of many of the men who have gained high honors. Although twenty-one years has been fixed for the selective draft, and eighteen for enlistment, the age limit is often dodged, so anxious and so fit are American boys to enter the service. It has frequently been remarked abroad that the American troops are surprisingly youthful. One of the first boys to be invalided home was a San Francisco school lad who had enlisted, undergone the necessary period of training, journeyed to France, fought and been wounded before his eighteenth year.

In this connection it is interesting to quote briefly from a letter written to the Captain of the U. S. S. *Georgia* by the mother of a second-class seaman serving aboard his ship. It reads in part as follows:

I am writing to thank you for the good care you gave my boy.

He was a boy just eighteen and delicate, but he came back to me a strong, healthy, robust, a fine looking lad of nineteen, a boy any mother may feel proud of; and my prayer is that he will come back again, and that we may be prouder than before. May the Lord watch between him and me and all on the U. S. S. *Georgia* until we meet again.

III

RETURNING GOOD FOR EVIL

OUR pride in the capture of the first German submarine crew is far greater than any satisfaction over its mere military advantage. The American crew showed themselves fearless and gallant fighters. There are many kinds of courage. In the encounter between the American destroyer and the U-boat no one held back in the actual physical encounter. It remained for Americans, however, to face death willingly a second time in a very terrifying form, to save the men who had just sought their lives. Many painful records of the inhuman treatment of prisoners by the Germans might be cited in contrast.

The engagement was one of the shortest and most decisive in the history of the war. While escorting a large convoy, the U. S. destroyer *Fanning* sighted a submarine that had crept close in unobserved. Her peri-

scope appeared above the water for but a few seconds—long enough, however, for Coxswain Loomis of the *Fanning* to give the alarm. Only the most alert lookout could have observed the little tube with its wake of bubbles. The alarm found every one at his post. In such an encounter a few seconds' advantage spells victory or disaster. Without a moment's hesitation, Lieutenant S. C. Carpenter, the commander of the *Fanning,* headed for the U-boat's position. As she swept over the spot, first one and then another depth charge was dropped.

Every eye was strained upon the surrounding waters for some sign of the enemy. The next shot, delivered at such short range, might decide the battle. Several anxious moments followed. It began to be feared that the submarine had moved nearer the cónvoy and might deliver a fatal blow.

The strain was beginning to tell on all hands, when the water broke at a point between the *Fanning* and her convoy, and the periscope bobbed above the surface. A third depth charge was loosened. The submarine continued to rise rapidly until her

conning-tower appeared above the surface. She was greeted by three shots from the *Nicholson,* another American ship close by.

The *Fanning* then opened with her bow gun, served by picked gunners. Each shot told, and on the third discharge the hatches of the submarine flew open and the crew rushed upon deck. They crowded along the narrow ledge facing the *Fanning* and held up their hands in token of surrender. The battle had been fought and won in less than eighteen minutes from the time the U-boat's periscope was first sighted.

Keeping her batteries trained on the submarine, the *Fanning* cautiously approached. The prize was a rich one, and the suddenness of the surrender appeared suspicious. It was not until the *Fanning* was alongside that the nature of the trick was discovered. Before coming on deck, the crew of the U-boat had scuttled their ship, thus literally burning their bridges with a vengeance. The submarine, as the men of the *Fanning* were to learn, had been struck in a vital part and could make no further defense: if she were captured, however, the secrets of her con-

struction would fall into the hands of the enemy.

The submarine was already well down when the *Fanning* came alongside. A line was thrown to the men; but, before they could escape, the boat made her last plunge, and the crew were forced to leap into the sea. The stories of the treatment of the vanquished by the crew of U-boats must have been in the minds of these American sailors. It was one of these submarines, it will be remembered, that enticed the crew of a torpedoed ship to come aboard, and, after taking their life-preservers from them, submerged, leaving them to face certain death.

A high sea was running about the American destroyer, and the water—for it was midwinter—was cruelly cold. Without awaiting orders, two of the crew of the *Fanning* jumped overboard. The men who showed this fine sense of the ethics of the sea were Chief Pharmacist A. E. Harwell and Coxswain F. G. Connor. The first German brought aboard died from exposure, which shows how severe a test of courage was called for. One by one, the rest of the

crew, ten in all, were brought aboard. They were found to be so weak that lines were fastened about them to pull them aboard.

Nor did the gallantry of the American sailors end here. The German who had died was buried with full military honors by the men whom they had sought to destroy. The crew were served hot coffee, and our sailors shared their food and clothing with the prisoners. Several of the men took off their overcoats in the biting wind, handing them to the Germans. The Germans received these attentions with amazement, and the captain, lining up his men on the *Fanning's* deck, called for three cheers for the American sailors.

The men who jumped into the winter sea have been commended and promoted for their services. It is significant that the first man on the list is an old honor boy in the New York City schools, who enlisted at the outbreak of the war, giving up a position of salesman in a department store.

IV

THE INSPIRATION OF NAMES

IT has been a very happy idea on the part of the United States Government to give to ships of the Navy the names of heroic officers lost in the service. From the present war, even in its early stages, a wealth of material is supplied. Should America build the greatest navy in the world, ships could not be found to bear the names of all these heroes.

In christening one of the latest destroyers, the *Kalk*, the Government preserved the memory of one of the most heroic actions in the history of the Navy. Lieutenant Stanton Frederick Kalk was the officer of the deck of the U. S. destroyer *Jacob Jones*, lost in action December 6, 1917. The destroyer, when attacked, was proceeding to port after target practice. The blow came without warning, and but for the vigilance of her officers, all would have been lost. Lieuten-

ant Kalk was the first to observe the approach of the German torpedo while it was still about half a mile distant from his ship.

Under the most favorable conditions the torpedo is an exceedingly elusive missile. Its rapid progress through the water is marked, even in calm weather, only by a wake of tiny waves and bubbles, indiscernible even at a short distance. On this particular December afternoon the sea was covered with floating ice and the weather rather thick, which of course acted in favor of the enemy. These torpedo attacks force our men to face a situation new in warfare. The training and discipline of years and the highest skill in gunnery count for little. There is no opportunity to match skill and fearlessness against the enemy, as in an ordinary engagement. The safety of the ship and the lives of all on board may depend upon a single command, and the skill with which it is carried out.

In the few terrifying seconds of life left to the destroyer as the torpedo approached, there was little time for preparation. The manœuver ordered by Lieutenant Kalk could

not be carried out before the torpedo struck fairly amidships. The wireless apparatus and mainmast were carried away by the impact, and the ship rapidly foundered. The shock of the explosion killed many of the crew, and threw others into the icy water. There was little time to lower the boats. Most of the men who were not killed by the first blow succeeded in getting clear of the ship, and reached the boats, rafts, or pieces of wreckage. Of the crew of seven officers and 103 men, two officers and 67 men were lost.

The men who reached land brought stories of bravery and self-sacrifice scarcely equaled in the history of the seas. Scores of men struggled for hours in the icy water. All were under the shadow of death, and many died in the water from shock and exposure. At such a time the self-sacrifice of the officers and their men was above all praise.

The heroism of Lieutenant Kalk has been described by many witnesses. Although weakened by the shock of the explosion, Kalk continued to swim from one raft to another to encourage his men and lend them all the

assistance in his power. His cheering words reached most of his men, whom he urged to hold on until help should arrive.

His supreme self-sacrifice, however, was in voluntarily relinquishing his place on the life-rafts when it was found that his weight endangered them. He swam from one raft to another, searching for a place, until his strength failed him and he disappeared. One of the sailors who saw him disappear said of him that "he was game to the last."

In singling out men for conspicuous bravery in this wreck, Secretary Daniels has also mentioned the work of Lieutenant Norman Scott, one of the executive officers. In the few seconds that intervened between the first observation of the torpedo and the explosion, Scott found time to have the steam turned off, thus guarding against scalding the men if the pipes were broken. At his orders, guns were fired up to the moment the ship was struck. One of the officers, Lieutenant David W. Bagley, was picked up by a motor-boat, and succeeded in steering a course by the stars and the direction of the wind until he came into the shipping lanes

and was rescued by a small patrol boat. The raft was commanded by Lieutenant J. K. Richards, whose coolness and cheerfulness in the face of almost certain death revived the spirit of his men and brought them to safety. Praise was also bestowed on Charles Worth, a boatswain's mate, who removed most of his clothes in the bitter cold to warm a seaman more thinly clad than himself. One of the seamen stuck to the ship after he had been thrown overboard, in a desperate effort to clear a boat. He was finally drawn under, but was rescued on coming to the surface. When next the U. S. destroyer *Kalk* is heard of, it will be well to recall the story of the men whose death she commemorates.

V

THROUGH SMOKE AND FLAMES

WERE the exploits of J. R. Ridgely to be reënacted for a moving picture thriller, it would be considered impossible melodrama. Even a hardened "movie" audience would smile incredulously.

The crew had been called to quarters by an alarm of fire. A hasty investigation showed that the trouble lay deep down in the engine-room, in a particularly inaccessible part of the ship. With the celerity demanded at such times, the entire crew rushed to their stations, the pumps were manned, and the hose run out. Even on deck it was soon clear that the fire was serious. Clouds of black smoke began to pour from the ventilators, indicating that the fire was being fed by oil and was rapidly gaining headway.

When a ship's ventilators begin to smoke the situation is serious. The fire may have

spread to the vital parts of the ship. An oil fire is especially difficult to handle. Its heat is intense, often driving back the most daring crew; and water may cause the burning oil to spread.

It had been the work of only a few minutes for the crew to scale the perpendicular iron ladder leading to the engine-room, dragging the heavy hose with them; but they arrived too late. Working blindly in the intense heat, tons of water were quickly thrown into the dark hold, but the thick smoke continued to pour up. At these lower levels the air soon became suffocating. There was no thought of retreat. The pumps were run at top pressure. The crew still clung to the steep ladders, directing the hose into the darkness.

The black smoke still continued to pour from the ventilators. Desperate attempts were made to reach the seat of the fire from other quarters. Men descended to the holds and tried to work their way by other entrances, only to be driven back by the suffocating heat and smoke. It was soon found that enough water had been poured

into the ship to drown the fire, had it reached the right place.

One passage leading to the heart of the fire still remained open, but the road was an exceedingly perilous one. Since the black smoke, despite the water poured into the ship, still rose from the funnel, it was obvious that the fire was at its base, or very near it. A hose had been carried to the top of the ventilator and a continuous stream of water poured down, but without apparent effect. There remained only the extremely hazardous passage down the ventilator through the smoke and flame. If a man could survive such a trip, he would doubtless find himself face to face with the fire.

The seaman Ridgely volunteered to make the trip. A rope was fastened beneath his arms, leaving his arms free, and his clothes were thoroughly saturated with water, as was the rope. Then the sailor climbed into the funnel, feet first. In one hand he carried a hose, in the other a fire grenade. Several of the crew grasped the rope and at a signal began slowly to lower him. His body slipped downward; for a

moment his face remained above the opening of the funnel, and then disappeared.

If the rope were not burnt through or cut by some sharp edge or projection in the next few seconds, it would be possible to raise the sailor once more to the level of the deck; but no one dared picture to himself the condition of the man after such a trip. There was the double danger of suffocating from the smoke and of being burnt by contact with the heated metal of the lower parts of the ship. No one could tell into what an inferno he might be descending.

A ship's ventilator, no matter what its length, acts as a speaking-tube, carrying any sound from its base to the deck with remarkable clearness. At a signal, a shout of warning, or a knock on the metal sides of the funnel, the crew would instantly begin to haul up.

The rope was steadily paid out, foot after foot, indicating that the man was still descending; but no sound reached the deck. Every eye watched the taut rope. Should it slacken suddenly before he reached the floor of the engine-room far below, there would

be little hope of again seeing him alive.

The descent lasted but a few minutes—long as it seemed to the watchers on deck—when a reassuring shout from below told the watchers that he had made the journey through the smoke and fire in safety. Once on his feet, he directed the hose so successfully that in a few minutes the fire was flooded out and he could make his way to the deck. In commending this hero for his act Secretary Daniels praised him for "conspicuous bravery"; but even these glowing adjectives scarcely suffice.

VI

"ABANDON SHIP"

WITH the order, "Abandon ship," comes a supreme test of discipline. As long as a ship floats, no matter what her injuries, there is always hope of victory. She may be outclassed and outfought, but the tide of battle may always change. A lucky shot or a well executed manœuver may turn the tables against the enemy. To desert the ship ends every hope of success. The crew throw away their weapons.

A war-ship is at once a fort and a fighting machine. No matter how severe the attack, the crew fight behind protection, the most formidable of its kind science has been able to devise. The moment they step from behind these steel walls they are completely at the mercy of the smallest gun the enemy may bring to bear on them. In clearing the decks of a battle-ship for action, the life-boats are removed, and if the ship goes down

suddenly there is little or no time for bringing out and launching the small boats.

The safety of the steel walls and the comfort of the cabins are exchanged for the exposure of an open boat or raft; perhaps even this chance of escape is gone. If the battle occurs far from land and assistance, the order to abandon ship is a death threat. Many great ships flying the Stars and Stripes have gone down in storm or battle, and the famous order has been heard repeatedly; but the discipline of the Navy has always stood the test. In the present war the new methods of the submarines has made the sinking of ships a commonplace, but the records contain no story of panic in such a crisis.

Early in the war a converted yacht acting as a despatch boat was sunk by a submarine under peculiar conditions. The craft had been built for grace and comfort, and its hull offered little protection from attack. From the first moment she was hopelessly outclassed by the U-boat. When the torpedo designed to sink great battle-ships struck the frail craft, her hull was literally torn to pieces and she sank almost immediately.

So sudden was the blow that many of the crew, who were asleep at the time, scarcely had time to tumble on deck before the water swept over her. A chief yeoman, who was sleeping below deck at the moment the torpedo struck, was one of those awakened by the impact. To be roused from a deep sleep in the middle of the night and find the water rushing into the cabin is certainly a terrifying experience. Without the iron discipline of the Navy, such a crew would doubtless be thrown into hopeless panic.

The first impulse in such an accident is, of course, to make a rush for the decks, since that way lies the only hope of escape. While the rest of the crew, catching up their clothes, ran to the companionways, the chief yeoman deliberately remained below-decks. The lights had gone out, leaving the cabins in darkness. He must therefore feel his way through the cabins, not knowing which plunge of the boat might be its last.

Arriving finally at the Captain's room, he found it empty. The Captain had been on deck at the moment of the explosion, and had thought it foolhardy to try to reach his cabin.

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Signal Drill

The chief yeoman wasted several priceless minutes in searching about the dark room, but finally secured the ship's papers and the captain's war diary. There was barely time for him to reach the deck before the boat made her last plunge. No life-boats were in sight. Wrapping the papers in his handkerchief and thrusting them into his shirt, the chief yeoman jumped overboard, clearing the ship as she sank.

No boat or raft of wreckage of any kind was in sight. He swam about the spot where his boat had gone down for some time, and finally chanced upon a piece of the ship's air-tank, to which a sailor was clinging. His strength was almost gone from the long swim and the exposure, but his mate succeeded in holding him on the tank. The two floated about in this precarious support for hours before they were both rescued and the ship's papers preserved.

VII

A CLOSE CALL

WITHOUT the aid of wireless electricity, the tables probably could not have been turned on the submarine. The great fleets of scouting craft of every type that are constantly sweeping above the submarine-infested waters are linked together by these invisible waves. Without the wireless they would work separately, each keeping guard only over its own prescribed area. At a touch of the key the widely scattered fleets become parts of an organized machine. Let the famous S O S flash over the seas, and instantly many prows are speeding toward the ship in distress.

In October, 1917, a Luckenbach craft flying the American flag, bound for a French port, was attacked by a German submarine. An alert lookout on the steamer sighted the enemy craft close in on the port bow. Before he could report the danger the U-boat

opened fire. The first shot barely missed the bow. Although she carried an armed guard, the plight of the steamer was desperate. The submarine's guns were the larger and put the American at a disadvantage.

The shot was the first announcement to the gun crew of the presence of the enemy. It found them at their stations, and the reverberations had scarcely died away before a reply rang out. The gunners on both the submarine and the steamship maintained a rapid fire. The U-boat, being the faster and more mobile craft, so manœuvered that she presented a very elusive target.

The American Captain had lost no time in directing the wireless operator to send out the S O S with the full force of his apparatus. The call for help was thrown out for hundreds of miles in all directions. Again and again the wireless man pressed the key, but he listened in vain for any reply.

The steamship was well within the war zone, where a number of scouting craft of various types were known to be on duty. Such a call for assistance is usually answered

within a few seconds. Even if the craft that responds be too far away to be of assistance, the steamer in distress usually has the encouragement of receiving some reply. The Captain visited the wireless room, and with the operator waited anxiously for a reply; but minute after minute passed and the air remained silent.

The steamship was struck repeatedly. Any shot now might finish her. The conflict could be drawn out for some anxious minutes, but, unless speedy assistance came to the steamer, the submarine's victory was certain.

Preparations were made to abandon ship. The boats were swung overboard, and the crew and passengers took their boat stations, prepared to face the inevitable. As a final manœuver, the steamship's course was suddenly altered, and she was sent full speed ahead in a direction that carried her away from her destination. The submarine continued to keep within range, sending shot after shot.

Meanwhile, the S O S had been picked up by an American destroyer only a few

miles away, and the speedy craft was running at forced draught to her relief. The destroyer had answered the call for help, but the receiving apparatus aboard the steamship had been deranged by the firing, and her wireless man had no word of her. At frequent intervals the destroyer sent out encouraging messages, such as "Hold on" and "Stick—we are coming"; but the steamship knew nothing about it.

At such a time the moral support of a wireless message may be more useful than a battery. The American not only faced shipwreck but the danger of the open boats as well. She was far from land, and once the men abandoned ship there was no opportunity of signaling.

The submarine had meanwhile read the wireless messages from the destroyer and redoubled her efforts to finish the steamship before help arrived. It was a question of minutes. All hope seemed at an end, when a lookout on the steamship sighted a faint line of black smoke on the horizon. It grew rapidly until the lookout could distinguish the American destroyer rushing forward at

her utmost speed. It was not toward the steamer she was pointed, however, but the submarine. The German fire suddenly ceased; the U-boat quickly submerged and was not seen again.

VIII

WIRELESS DANGERS

A GRACEFUL monument has been raised in New York to wireless telegraph operators who have died at the post of duty. In time of danger no other member of the crew is perhaps so important to the ship's safety. His skill and courage has greatly reduced the toll of life in marine disasters. So vital is his work that, by an unwritten law, the wireless man is usually the last to abandon ship before the Captain himself.

The list of wireless men who have died in service is already long. To choose almost at random, the record of Robert Ausburne of the U. S. transport *Antilles* is perhaps typical. When the *Antilles* was struck, Ausburne and a fellow electrician named MacMahon were asleep in the radio-room.

Wakened suddenly from his sleep, Ausburne, without waiting to dress, rushed to his station. His companion ran on deck, to find the ship sinking rapidly and the men running to their boat stations.

Ausburne deliberately turned his back on his chance of escape and devoted his entire attention to his apparatus. It is presumed that he received some response to his calls for help, and remained in the hope that he could direct some vessel to their position. In the few minutes of life left to the transport, he did not leave his key. MacMahon, finding that all hope was past, made his way through the confusion of the deck to the wireless-room. He found Ausburne busily engaged with his apparatus, his back turned to the deck and safety. Even then he refused to leave his key, and, with a cheery "Good-by, Mac," continued to send out the S O S. He was not seen again, and doubtless remained valiantly at his post until the ship sank.

This war has made many demands upon the wireless man. He must not only be a skilful operator in sending and receiving, but

he must elude the pitfalls that wireless men of the enemy forces are constantly laying for him: for the German operators show an amazing and quite shameless ingenuity in sending decoy messages. Under the guise of a call for help or a word of encouragement, every effort is made to trap the operator into betraying his position or the name of his ship.

So common have these wireless tricks become that no wireless message is now sent without the authority of the Captain. The wireless man "listens in" day and night, and picks up much valuable information; but he is not allowed to transmit. One of the commonest tricks is for the enemy, a submarine or perhaps a land station, to ask if the ship will kindly transmit a message for them to the shore. Under ordinary conditions, any wireless man would willingly agree to do this. Should he reply, the enemy would know at once that there was a vessel within reach and would start for it without delay.

Another plan is for an enemy operator to send out an identification code that is not to be found in the code books. If there is a

reply it will be known, of course, that a ship is within receiving distance. It is the custom for a merchant-ship, on approaching the shores of France or England, to send a message to her owners in her private code. If this ship had been so foolish as to reply to any of the decoy questions, the enemy could identify her on hearing her a second time, and would know her relative position. It is also possible to calculate from the strength of the wireless waves the relative position of a ship, and even the direction from which these waves come.

The wireless man must be suspicious of every call, no matter how friendly it may appear to be. A message may even be received apparently warning of the presence of submarines in the neighborhood. In the middle of a sentence it may be interrupted, or some word badly garbled, in the hope of arousing the wireless man's curiosity and leading him to ask a question. The first dot or dash gives the enemy the information he is seeking. The high-powered stations also take a hand in this deception. Therefore, even when an S O S is heard from some

friendly ship in danger, the wireless operator makes absolutely sure of her identity before answering.

Sometimes a fake call for help will be sent out by the Germans over and over again for many hours in the hope of getting some reply that will betray the position of his prey. The strain of listening day and night tells on the strongest nerves. But let the wireless man make a false move—perhaps only a touch of the key—and the alert enemy will be instantly headed for him, and the ship will meet the fate of the *Antilles*.

IX

HIS LAST WORDS

THE first American officer to lose his life in the present war will be long remembered. It is not the mere accident of his being the first officer to die that distinguishes him. Like many others, he displayed a courage that is above praise. His last moments are especially remarkable because of the serenity with which he faced death.

On April 17, 1917, the American oil tanker *Vacuum* was torpedoed without warning by a German submarine, and sank in two minutes. The *Vacuum* carried an armed guard officered by Lieutenant C. C. Thomas. The day was clear but cold, and the sea had not yet moderated its winter temperature.

The blow came without warning. When the wake of the torpedo was observed, only a few seconds remained before the impact. There was no time to lower boats, much less to manœuver the ship to avoid the blow. As

our sailors have become more familiar with submarines they have naturally gained in confidence. But in this attack the American gunners faced a new peril under the most trying circumstances.

The explosion following the impact threw two men overboard, one of whom was Lieutenant Thomas. On seeing the torpedo approach, Thomas had grasped an ax and dashed toward one of the boats. He realized that there was no time for lowering it to the water—every second must be made to count. He was chopping the ropes that held the boat when the concussion threw him and most of the gun crew into the sea. His efforts had not been useless, however, and in the two minutes left before the *Vacuum* took her final plunge others of the crew succeeded in loosening the boat and getting her overside.

But for the deathly chill of the water, most of the crew would probably have been saved. The sea was very rough and a bitter wind blew from the north. The work of picking up the crew proceeded slowly. It was found very difficult to keep the boat from

being overturned by the high seas. Some time elapsed before the boat chanced upon Lieutenant Thomas. He was already too weak from exposure to help himself, and had to be lifted into the boat.

The boat continued to row about the point where the *Vacuum* had gone down. It was a dangerous position, and a wave soon struck and overturned it, throwing the crew into the icy sea. The sailors, though numb from the cold, succeeded in righting the boat, and began once more the perilous work of picking up the men. Even now the men in the boat might have saved themselves; but, despite the warning, they persisted in cruising about the scene of the wreck.

A few minutes later the boat was upset a second time, and the men were again thrown into the water. Strong and vigorous as the men were, the second icy bath proved too much for their strength. Four of them were drowned in the new accident; several others died soon after from exposure; and of the fourteen men picked up by the boat eleven, including Lieutenant Thomas, died

from the cold. Their bodies were swept overboard.

When Thomas was picked up the second time he was still conscious, but realized that his end was very near. The scene was one to daunt the strongest spirit—the open boat filled with dying men, the waters dotted with the bodies of his dead comrades. A sailor bent over the officer to shield him from the wind. Thomas thanked him, and then with an effort made a last request: "See if you can find my wife's picture. I had it in my blouse."

The next day, when a life-boat from the *Vacuum* was picked up, but three survivors were found of the eighteen men originally in the boat.

X

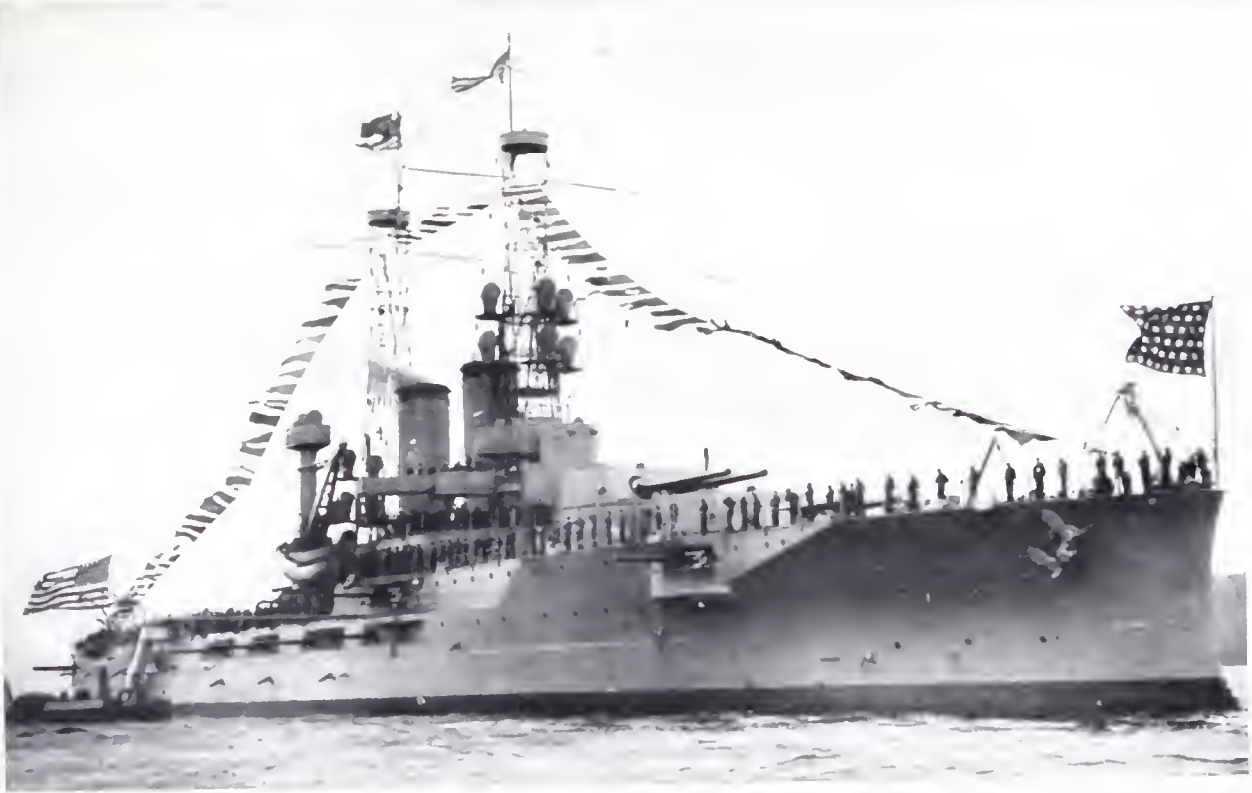
FIRE AT SEA

WHAT alarm is most feared at sea? The greatest terror of all men who go down to the sea in ships is doubtless that of fire. The boundaries of the largest ships are so confined that any blaze quickly endangers the whole ship. So much of the ship's material must be inflammable, and the arrangement of the cabins and passageways is so intricate, that the crew fight at a great disadvantage. The danger of collision comes mainly with thick weather when the sea is smooth. Fire may break out at any moment of the day or night, perhaps when the sea is roughest, leaving the crew, once the fire has gained the upper hand, without retreat.

With the passing of the wooden ships the fire menace was brought under better control. The steel hull and framework offered protection against the hottest flames, and at

(C) Brown and Dawson.

On Shore Leave in the Tropics



(C) Brown and Dawson.

A Gala Occasion

the worst gained priceless time for the crew. Many marvelous devices have been devised to assist in the fight against this ancient enemy.

An arrangement of electric signals may connect every corner of the ship with the bridge, so that a rise in temperature, measured by a delicate thermometer, spreads the alarm automatically. The holds and cabins are equipped, in some vessels, with sprinkling devices, which are turned on automatically as the temperature rises. Many ships, again, are supplied with water piping like that of a city, which may be tapped at any point while water pressure is constantly maintained.

Aboard a war-ship the danger of fire is increased. The great fabric is made almost wholly of steel, but the presence of great stores of explosives is a constant menace. Fire-alarm systems and fire-fighting machinery may be multiplied, but in time of danger the last dependency is the alert and fearless seaman. The naval authorities are especially quick to recognize and reward acts of bravery in fighting fire.

An American seaman recently fought single-handed a very stubborn fire, saving not only his own vessel, but three other ships in the vicinity. The entire credit for the exploit was given to Frank Marsh, a machinist of the second class, aboard one of our submarine-chasers. Marsh had enlisted a short time before. His feat was especially significant, since it showed the kind of material the Navy can count upon in its newly enlisted men.

The fire broke out suddenly in the engine-room, and, feeding on the oil-saturated material, spread with alarming rapidity. Before the hose could be adjusted the flames had leaped to the walls of the cabin. The engine-room force was completely routed. The call to fire quarters brought the men to their posts, but the heat and the gas fumes were unbearable. For several minutes the men continued to work blindly; then, believing the work impossible, made a rush for the upper deck.

Left to itself, the fire quickly gained headway. The engine-room of a submarine-chaser is large in proportion to its size. A

blow amidships from a torpedo or by collision of any kind is usually fatal, since a hole at this point floods the room, and the ship's bulkheads can do little to keep her afloat. With the engine-room ablaze the situation is almost hopeless.

The boats were being made ready, when Marsh volunteered to go below alone to fight the fire. As he disappeared his friends thought they saw him for the last time. Just what happened amid the flames of the engine-room Marsh alone could tell, and since he is a modest man the true story can only be guessed at. Without assistance he soon had the fire under control.

Marsh had just completed his work and had reached the deck, when dense black smoke was observed coming from the base of the starboard engine. The crew learned afterward that the oil had become ignited. The fire was extremely difficult to reach. It was found useless to get a stream of water to it through the portholes.

An attempt was made to reach it through the skylight, but without success. Recognizing the peril, Marsh returned voluntarily

to the engine-room, and, using sea water, succeeded in putting out the fire a second time. In commending Marsh for bravery Secretary Daniels said that his work was especially meritorious, since it had not only certainly saved the destroyer, but three other craft in the vicinity.

In facing such dangers, it must be remembered that the sailor is well aware of the risk he is taking. He does not rush blindly into danger, but from long experience he is enabled to measure his chances with a practised eye. The loss of the two water-tenders in a fire on the U. S. S. *Burrows* is typical.

Fire had broken out below-decks on the *Burrows* in a particularly inaccessible point. The two water-tenders, Charles Bourke and Martin Callahan, volunteered to go down to it. Knowing the ship as they did, both men fully realized their danger in remaining in such a position. Both men voluntarily abandoned all hope of escape in staying below. In the suffocating heat of the fire-room the men knew that only a few minutes

of life remained to them; but they made no effort to escape. The men were old seamen, long in service.

XI

HIS GRADUATE COURSE

MANY of our sailors have entered service directly from the schools and colleges. An interesting experiment is thus made possible in testing the efficiency of the American school-boy. General von Hindenburg has spoken disparagingly of the "untrained louts" of America, whom he prophesied would turn and run once a gun was pointed at them. There is, of course, a wealth of evidence to confute this hopeful German outlook. Every reader of this page will doubtless have some relative or friend who fails to fit this description. It is interesting to find a large proportion of the men mentioned for conspicuous bravery among the recent school-boys.

There is the case of Henry W. Robinson, the hero of submarine-chaser 121. Robinson is a graduate of the Stevens Institute,

and later took a course in the Naval School at Columbia University. He enlisted on May 2, 1917, and within a few months had seen active service on three submarine-chasers.

He rose rapidly, and was soon placed in charge of the engine-room of the chaser 121, with the rank of Chief Petty Officer. In January, 1918,—and the date shows how quickly our naval officers are turned out,—a hurry call was received for all submarine-chasers to put to sea.

The submarine-chaser 121 was well out to sea, far from any assistance, when an ugly fire broke out in the engine-room. The engine had back-fired, and some gasolene in the bilge was ignited, threatening the entire boat. A fire on so small a craft is extremely dangerous. The stores of gasolene and ammunition must necessarily lie so close that a few seconds may determine the fate of the craft and all on board. The life of the crew depends upon the quickness of her officers and men.

Robinson rushed to the engine-room, to find that the gasolene had flashed up and the

flames were licking the floor and walls. While the crew ran to safety, Robinson stood his ground. He fought against terrifying odds. The flames soon reached a can of gasolene, which went off with a roar, and a moment later spread to Robinson's clothes.

The situation might have driven the strongest man to panic. His uniform was saturated with gasolene. The heat in the narrow hold was suffocating. The only means of escape was by a steep ladder leading to the deck. To abandon the engine-room meant the loss of the ship.

Robinson stood his ground, calculating chances with a skilful eye. Making his way to a rack of hand grenades, he swung the globes with a sure aim at the burning floor and walls. Several grenades were required, but the fire on the floor and walls was finally put out. The oil-can, however, was still aflame, and Robinson's clothes were burning in several places.

First making sure that the fire in the room was out, Robinson picked up the burning oil-can and started for the deck. He was already badly burned about his neck and face.

Struggling to the deck, he hurled the blazing can overboard, and himself plunged into the sea. It was the quickest and safest method of putting out the fire on his burning clothing, and he had just enough strength left to carry it out. Some minutes later he was picked up in a semi-conscious condition by a tug-boat, and taken ashore for treatment.

When he was dismissed from the hospital, Robinson's face was still badly disfigured by burns, a part of one ear was gone, and two new eyelids had been grafted on the ones he had lost in the engine-room. From the hospital he was ordered to report to Annapolis, where he was examined for promotion to Ensign.

PART II

WITH THE MERCHANT FLEET

XII

ROUTINE WORK

IN protecting our merchant-ships throughout the Atlantic crossing, the American Navy is fighting on a battle line three thousand miles in length. The safety of our great army en route to France, and the supply of food and ammunition, depend, of course, upon the uninterrupted passage back and forth of the great merchant fleets. Should the line break or communication be seriously interrupted, the lives of our men abroad, even the issue of the war, would be seriously endangered.

Only acts of conspicuous bravery in the line of such duty come to the attention of the public. To the thousands of alert, fearless men who guard these ships the nation owes a debt of gratitude. On thousands of voyages the crews must maintain the most rigid discipline: at any moment the safety

of the ship may depend upon the alertness of the lookout. The loss of a few minutes, perhaps even of seconds, in observing the approach of a U-boat periscope or the wake of a torpedo may mean disaster. In case of an actual conflict the issue may depend upon the accuracy of a single shot.

Aboard merchant-ships tens of thousands of men daily acquit themselves as heroes. This routine work, as it may be called, is the severest possible test of character and training. The service is largely filled with men hastily recruited and trained. Boys taken from the school and the shop are fitted in a few weeks or months for this exacting service.

Men must be found and trained by tens of thousands to supply the armed guards. It is impossible, of course, to convoy all the ships at sea, and a great merchantman, with its valuable cargo, must be intrusted to a handful of men mounting guard upon two comparatively small guns. If a submarine be encountered, the gun crew will find themselves outnumbered and facing much heavier guns than their own. The ships may cross

a score of times in safety, but the vigilance does not relax for a moment. Hour after hour, day and night, the water on every side must be watched with the most anxious attention.

While it is known, in a general way, that great convoys of merchant-ships are constantly crossing the Atlantic, the layman knows little of the labor involved in such voyages. It is common for a fleet of as many as thirty merchant-ships to cross together. The news reports mention that they are "heavily convoyed," and their safe arrival is taken as a matter of course. To guard a fleet of this size, strung out over miles of water, necessitates guarding them on every side. A ring must be thrown about them, so to speak, and remain unbroken throughout the trip. Let a single submarine pass this guard, and it would do enormous damage to the fleet. The fact that inside of a year a million or more soldiers were safely carried to France will go down in history as one of the navy's greatest achievements.

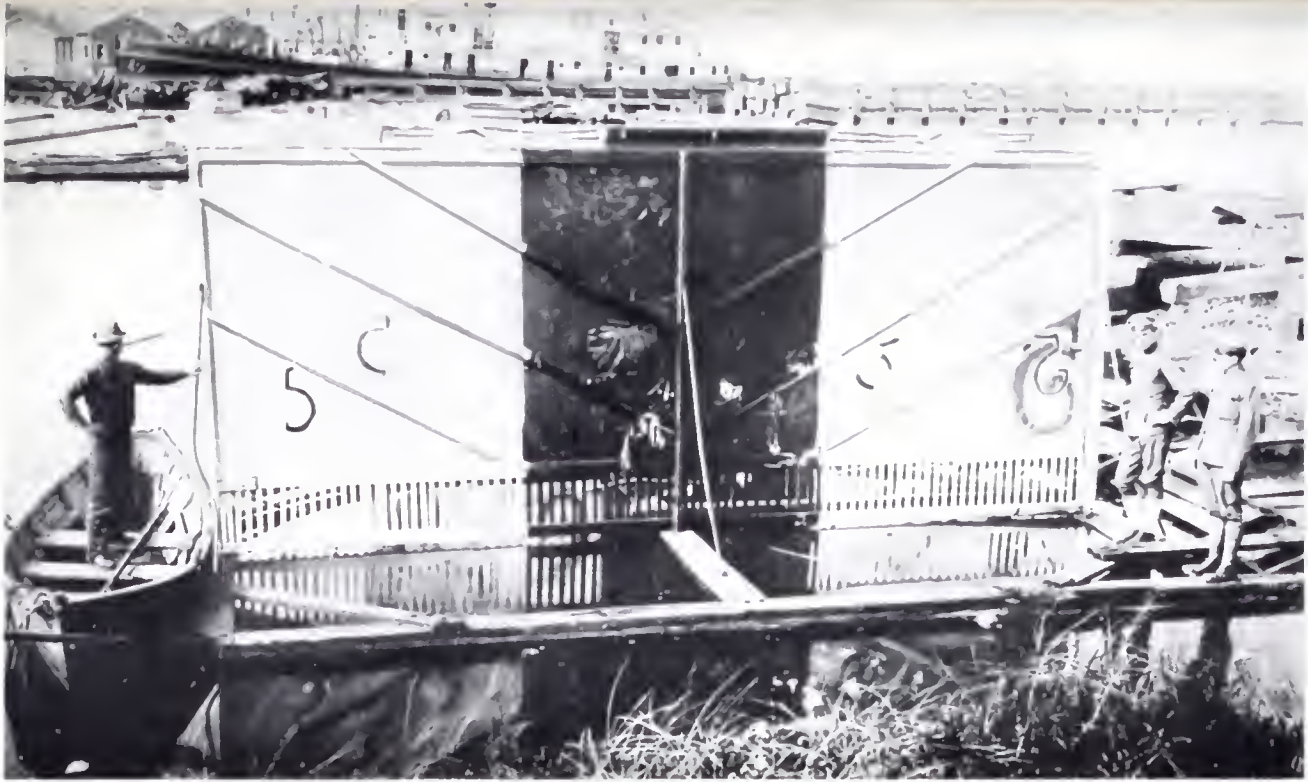
The discipline maintained on all merchant-

ships against the hour of danger is no less rigid than aboard a man of war. The frequent boat and fire drills, the instruction in the use of life-preservers, the suppression of all lights at night, and many other details of life aboard ship in these stirring times, are controlled with military strictness. In a few months the life aboard ocean liners has been completely transformed. The great floating population on a thousand ships has been mobilized.

In case of attack, the entire ship's company will be found ready to meet any situation. The most serious danger fails to throw the ship into confusion. Every one has been trained since the first day at sea, so that no time will be lost in reaching the boats. However swiftly the blow may fall, this discipline safeguards the passengers and prevents the panics common in shipwrecks of the past. A place is fixed in advance for every one on board, and, even if the ship must be abandoned, the people in the boats will still be under discipline.

) Press Illustrating Service.

A 400-lb. Charge of Powder for a 14-inch Gun



(C) Brown and Dawson.

A Floating Target

XIII

THE FIRST BLOW

THE S.S. *Columbia,* the first American ship to be deliberately destroyed by a German submarine, was sunk—and the date is significant—in November, 1916. Sailing from Boston for French and Italian ports, she carried 1500 horses and 10,000 tons of steel and copper, with a crew all told of 130, which rendered her a very tempting target. America had not yet entered the war, but the German submarine U-53 had recently made its disastrous raid off Newport, sinking five vessels. There was trouble in the air.

Carrying no armed guard, the *Columbia* was wholly defenseless and should have been safe under the international sea code. Despite this provocation, our Government refused to place naval guns and gunners aboard merchant-ships until some months later. Her story may be told here, never-

theless, for its historic importance and the inspiring spirit of the seamen of our merchant fleets.

While loading at Boston a mysterious rumor spread along the docks that the *Columbia* would be torpedoed, and several of her engineers thereupon quit the ship. Their places were quickly filled and the ship cleared without incident for St. Nazaire. The voyage over was uneventful, if the excitement of running with lights out through submarine-infested waters may be called uneventful.

On nearing the war zone, every precaution was taken. The life-boats were swung outboard and fully equipped for an emergency, while the crew were put through constant boat drills. Some miles off shore a French mine pilot came aboard and brought the *Columbia* through the mine fields to the safety of the naval dock at St. Nazaire. A part of the cargo of horses was unloaded here, a number of French soldiers assisting, while a group of German prisoners stood on the docks to lead the horses away.

The blow fell two days later, in a storm at

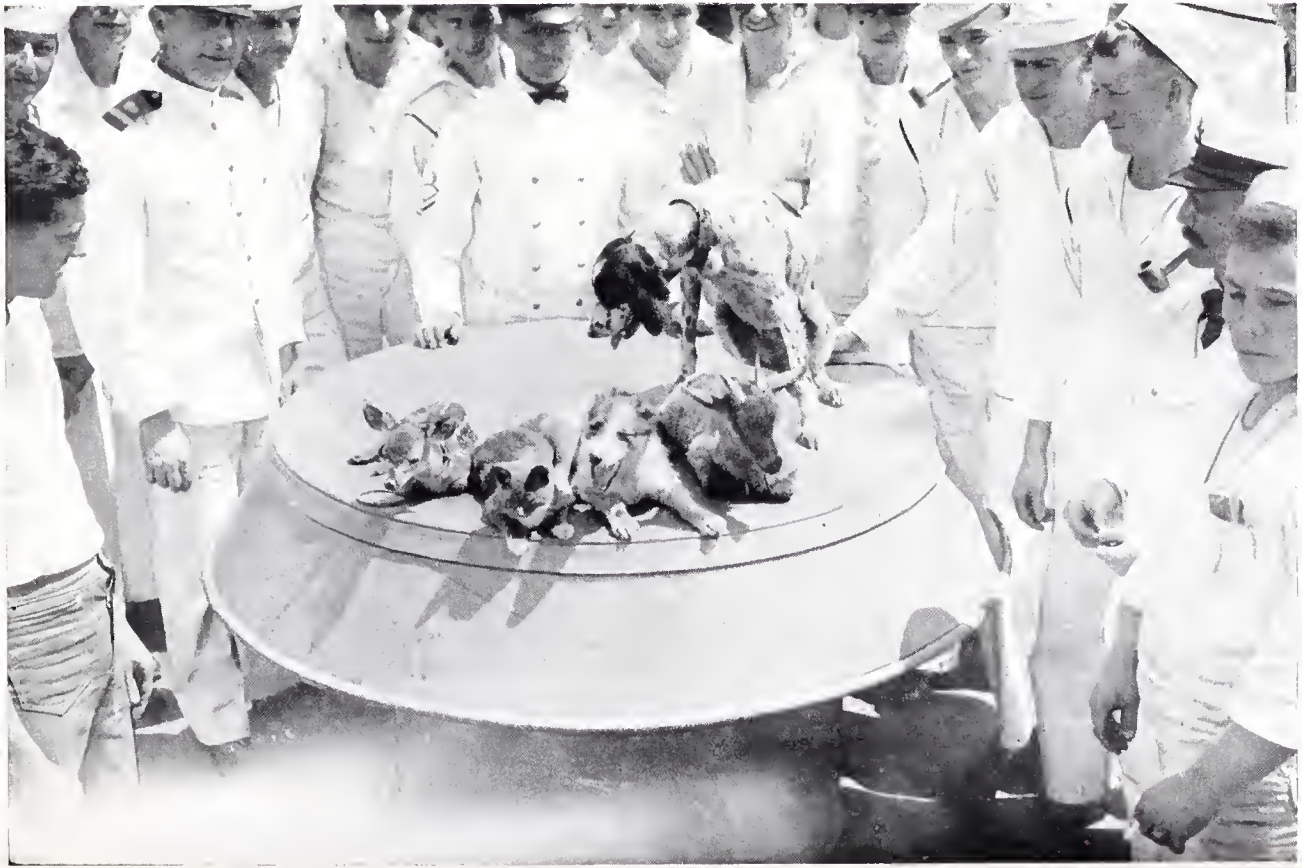
sea. The first warning was the report of a cannon, and a few minutes later a shot splashed in the water on the port bow. The ship was stopped, for she was slow and defenseless. The Captain hurried to the wireless booth and gave the operator the ship's position, but directed that it be held back for the present. The submarine was now sighted cruising about at a distance of about three miles. Some twenty minutes later a second shot rang out, when the Captain ordered that the S O S be sent out.

Having lost her seaway, the ship rolled violently. The waves swept her deck and broke many of the horse stalls and fittings. For some anxious minutes there was no response to the wireless call for help, but at last a reply came from the Spanish land station at Cape Finisterre. The *Columbia's* wireless operator replied that a submarine was cruising about and firing at them, but did not mention that she was German, for the U-boat was doubtless listening in. The Spaniards asked if there were any boats near enough to help in case the *Columbia* was torpedoed.

It was observed that the submarine was flying a string of flags, but the distance was too great for them to be read. The Captain of the *Columbia* now decided to make a dash. The wireless apparatus was shut off, and the ship, changing her course, went ahead at forced draught. Nothing was seen of the submarine for an hour, and the crew were beginning to breathe freely when the U-boat overtook them. Her guns were not effective at such long range, but her wireless order was peremptory:

"Stop your wireless; ask no questions or I will shoot."

The sending apparatus was shut off, but it was still possible to receive messages. Cape Finisterre evidently realized the situation, for she now sent a message suggesting, if the *Columbia* could not transmit a call, that she send a single long dash, and they would know what had happened and send a ship to her assistance. The Germans meanwhile sent several such messages as "Where are you bound?" "What is your cargo?" "Where bound from?" Later they ordered the *Columbia* to turn, and because she did



The Gun Crew Ready for Action

not turn quickly enough to please them she threatened: "Turn at once or I will shoot."

The night came on and the storm increased. Perhaps the most trying part of the experience was the realization that there was help near by, powerless to come to their assistance. The submarine moved up to within five hundred yards of the *Columbia,* and all wireless sending was at an end. An English vessel in the neighborhood was now heard calling Cape Finisterre. Later the Spanish yacht *Giralda* called repeatedly to know if she should lend assistance. She explained that she was at Coruna and had been sent by the Spanish Government to help the Americans. Throughout the night Cape Finisterre continued to call, fearing the worst had happened.

When day broke the submarine ordered by wireless, "Come nearer and send a boat over to us"; and later, "Send your Captain over to us." Before the Captain could leave his ship, a boat arrived from the submarine with a German lieutenant and eight sailors, who came aboard. One of them was a wireless operator.

The moment they reached the deck the aërial was lowered, while the wireless man ran aft to the wireless room. He carried two large bombs, which he explained were intended to blow up the ship. The wireless apparatus was at once dismantled, and afterward taken aboard the submarine. While the wireless room was being torn out the German lieutenant appeared in the doorway and, pointing his pistol at the operator, said gruffly:

"Don't you know you shouldn't use wireless when a submarine is around? We should have torpedoed you then. I ought to shoot you now."

The crew was lined up on deck. They were wearing life-preservers. The Germans filled a boat with provisions from the ship's ice-box and with fresh water. It was bitterly cold, and the men were obliged to stand exposed to the wind, their clothing drenched with the icy water. First the Captain was put in a boat and taken to the submarine, where he was kept prisoner for many days and finally landed in Spain.

The crew were at last put in boats and

taken to a Norwegian ship, the *Balto,* which the Germans had previously captured. From her deck they afterward watched the sinking of the *Columbia.* Two bombs were exploded, but the staunch American craft was not injured in a vital part. Her old crew watched for forty-five minutes, but she showed no signs of sinking. The submarine then launched a torpedo at her, which struck amidships. She began to go down rapidly. Her after-decks were soon awash, then her stern went down, while her bow rose high in the air. She came up once, then slowly settled and disappeared.

The American and Norwegian crews were obliged to witness several captures, and were finally allowed to row to the Spanish coast, and eventually found their way to New York.

The sinking of the *Columbia* deserves a place in our sea history, if only for the spirit of its Captain in fighting against hopeless odds. When forced to abandon his ship, and not knowing what fate awaited him on the German submarine, he found words of encouragement for his crew. As the boat

carried him away from his ship he stood up, and, waving his hand to his old crew, shouted cheerily: "Good-by, boys. I hope to see you again. Obey orders."

XIV

WITHOUT WARNING

THE first armed merchant-ship to leave New York, the S.S. *Aztec,* sailed on March 18, 1917. She was soon followed by the *Manchuria,* at that time the largest of American-built ships, and by the famous *St. Louis.* It was realized that the first armed American ship to venture into the war zone would be the target for submarine attack. The German government had made very clear what they purposed doing to any ship flying the Stars and Stripes that was so presumptuous as to attempt to defend herself.

The naval gunners faced a new situation. Their experience in fighting had been gained in the open, facing an enemy who stood up to fight. No one doubted the ability of the gunners to give a good account of themselves under any conditions, but they had not then

gained confidence in combatting this new sea menace. Every one realized the great disadvantage under which they must fight in this first encounter, and the country waited anxiously for word of her.

One March morning at about six o'clock a gunner on lookout sighted a submarine following the ship at a considerable distance. The guns were manned and trained on the enemy; but, observing these preparations, the U-boat quickly submerged, and no more was seen of her. On the evening of the same day the *Aztec* sighted another submarine. She was running at full speed with lights out when the blow fell.

The work of darkening ship and blinding every possible gleam of light aboard is more difficult than it appears. The great hull is likely to leak light at a hundred different points. With the best intention in the world, some one may move the curtain from a port-hole, perhaps only for an instant, or a door may be opened that will give the Germans the clue they are watching for. A great ship was once lost because a ship's printer, working very late at night, opened

his port near the water for a breath of fresh air. The Germans afterward explained that this gleam of light enabled them to aim their torpedo.

At about nine-thirty in the evening the Chief Engineer of the *Aztec* had noticed that some light escaped from the port of the wireless cabin, and went aft to warn the operator. The wireless man was at work at his station at the time, and, putting down his receiver, went outside to examine it. It was raining hard and a gusty wind lashed the deck. The light was darkened, and the wireless operator, noticing the chief gunner standing at the rail, crossed the deck to join him. Both men stood looking down into the water for a moment, when the wireless man made a cup of his hand and, raising his voice above the wind, asked the gunner if he saw anything.

Before there was time for an answer, a torpedo struck the ship's side directly below them. The force of the explosion threw the gunner overboard, and nothing was again seen of him. Another man standing near by had his head completely severed from his

body by the explosion. The wireless man was struck by a piece of flying wreckage, which tore away the leg of his trousers, inflicted a wound of fourteen inches in length, and hurled him a distance of twenty-five feet down the deck.

The wireless operator, who brought the story ashore, probably lay unconscious for several minutes. When he regained consciousness he ran to the wireless room, only to find it completely wrecked. The last chance of calling for help was gone. The ship's deck was quite dark, and the driving rain made it impossible to see an object a few feet away. On running out on the deck, the wireless man found the Naval Lieutenant and the Captain calmly giving orders. Only a minute or two of life remained for the ship, but they were used to the best advantage.

A life-boat was lowered, but before it could reach the water a great wave broke it against the ship's side, and the seven men who manned her were thrown into the sea. A second boat was filled, successfully lowered, and disappeared in the darkness.

The skill and fearlessness of a boatswain's mate, John Eopolucci, was later especially commended. Eopolucci had stood by his gun until it was out of commission, when he was ordered to assist with the life-boats. He worked desperately helping to lower the boats and get them away, standing calmly at his station while others escaped. While struggling with one of the life-boats he was thrown into the water and lost. Eopolucci was the first enlisted man of the Navy to lose his life. He had served with credit for eight years, and reënlisted in 1915.

The *Aztec* sank with terrifying rapidity. A few seconds more threatened to bring the last plunge. The gunners' boat was now made ready. The naval officer remained on deck, directing the lowering of the boat. No one was left on board except the Captain, the Naval Lieutenant, and the wireless man.

The ship's discipline was observed until the end. The Captain finally ordered the operator to abandon ship, and when he had succeeded in leaping from the swinging deck to the boat the Captain and then the Naval Lieutenant followed him. The boat had

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The ship's discipline was observed until the end. The Captain finally ordered the operator to abandon ship, and when he had succeeded in leaping from the swinging deck to the boat the Captain and then the Naval Lieutenant followed him. The boat had

only succeeded in gaining a hundred yards from the ship when she slid beneath the surface. The top of her funnel disappeared in less than seven minutes after she was struck.

In the intense darkness of the storm no lights were visible, and the boat floundered about in the heavy sea for five hours, when a French boat was sighted. The crew fired their pistols to attract its attention, but the sound failed to carry against the wind. The Lieutenant then lighted a Coston distress signal, which in his foresight he had found time to save from the ship, and the boat at last turned toward them. She proved to be a French patrol boat very happily named the *Jeanne d'Arc*. The French officers helped our men aboard and made them welcome, sharing their clothing and warm quarters.

Of the *Aztec's* crew of thirty-six men, but six were rescued.

As an especial mark of respect, Secretary and Mrs. Daniels called upon Mrs. Eopolucci, the widowed mother of the sailor, to express their sympathy. The interest they would naturally take in the first member of America's fighting forces to die in the war

was heightened by the fact that Eopolucci was for two years one of the crew of the *Dolphin,* on which the Secretary and his wife had made frequent trips.

Mrs. Daniels' visit was the second she had paid to this home. The previous Saturday afternoon she and Mrs. William D. Leahy, wife of the commander of the U. S. S. *Dolphin,* had called on Mrs. Eopolucci; and later Mrs. Leahy sent a bouquet of Easter lilies.

XV

THE "SILVER SHELL"

FROM the first, no one doubted the ability of the American sailor to down the German submarine. The stirring victory of the *Silver Shell* on May 30, 1917, closely following America's entrance into the war, reassured us. The *Silver Shell* was only a tanker—the last ship in the world, it would seem, to be pitted successfully against a German super-submarine. But she carried two four-inch guns and an armed guard, lent for the occasion by the United States Navy.

The voyage from an American port to Marseilles promised at that time to be uneventful. It was not thought that the southern ship lanes were seriously threatened. Even in mid-Atlantic, however, the lookout was not allowed to relax its vigilance.

The bulky tanker was, of course, at a great disadvantage in this game of hide-and-seek with the submarines, since she offered

a distinct target. At three o'clock one morning, a thousand miles off shore, a submarine was sighted so close in that the throb of her engines could be distinctly heard. A moment later the *Silver Shell* swept past within one hundred feet of the enemy.

The submarine was moving on the surface of the water, while her crew were seen to be busied charging her batteries, probably for the day's run. Clearly the German lookout had been caught napping, although the advantage for observation had been all on his side. The submarine made no attempt to give chase. Before the after gun of the *Silver Shell* could be trained on the submarine, she was swallowed up in the darkness.

Farther on, another grim reminder of the danger of the U-boats was encountered. A wooden ship was sighted floating bottom up. A gaping wound in her side, obviously the work of a torpedo, told her story—or all, at least, that the world was ever to learn. Floating about the wreck was an empty lifeboat and a few life-preservers with other wreckage.

On the voyage across sixteen warnings of

the presence of submarines were picked up by the ship's wireless, of which twelve reported submarines in the Mediterranean. As the *Silver Shell* approached these historic waters, the nervous tension increased. A flotilla of undersea craft doubtless awaited her coming. The tanker had reached a point a day and a half steaming from Marseilles, when on May 30—and the date is historic—she was sighted by an enemy craft. Evidently the submarine had news of her approach and had lain in wait for her.

When the alarm was sounded, the submarine was observed off the *Silver Shell's* starboard bow. She was one of the largest types of her class, measuring more than three hundred feet in length. The long awaited moment had arrived. Working at top speed, but without confusion, the crew went through their life-boat drill made familiar by constant practice. The boats were made ready to lower into the water, and the entire ship's company buckled on their life-belts.

So quickly had the drill been carried out that the bundles containing the valuables

were being tumbled into the life-boats by the time the first shot was fired by the German. It exploded about a hundred yards short of the ship. A second shot fired a moment later did better, just missing the wireless cabin, and, passing over the ship, struck the water just ahead.

A string of code flags fluttering from the German ship had meanwhile been deciphered. It ordered the *Silver Shell* to haul down the American flag and wait until the Germans came aboard. By way of reply, the Chief of Turret, W. J. Clark, opened on the submarine with the four-inch aft gun.

For the first few shots the range was wide; but this was quickly observed and the extreme elevation pin of the gun was knocked out, giving the gun about forty degrees. The American shells were seen to drop about the submarine with terrifying accuracy.

Against the tanker's battery of four-inch guns the Germans brought to bear two five-inch guns. By all the rules of the game the Germans had the advantage, and for a time they clearly outshot the *Silver Shell.* Several shells burst about the tanker. One

missed the cabin by a short two feet. The roar of the guns and the explosions were deafening. The range was now under 3000 yards.

Not the least difficult post, meanwhile, was that of the wireless operator. Throughout the engagement he never left his key. His assistant buckled a life-belt about him as he worked. Every explosion now knocked the delicate radio apparatus out of adjustment. A call for help had been thrown broadcast over the waters of the Mediterranean. A vessel asked in Spanish, "What vessel is that asking for help?" and repeated the query until it seemed that she was deliberately interfering. Finally the station at Algiers answered. Her message read, "Help thirty-five miles northwest, gunboat FQ."

A few moments later the *Silver Shell* succeeded in picking up the gunboat FQ, and received the welcome message, "Coming as fast as possible."

Under normal conditions the *Silver Shell* had never been able to make more than eleven knots an hour. In response to a desperate demand for speed, she now crept up

to a perilous fourteen. Her safety-valve had been screwed down. It soon became clear, however, that the enemy held resources of speed in reserve, for the stretch of sea that separated them was steadily narrowed. The submarine could be clearly seen in the wake. She made very heavy weather of it. Her decks were constantly swept by the head seas, so that her gun crews were buried in water to their waists. But between the intervals of every plunge she fired, and the shells came with amazing regularity every ten seconds.

It was a very daunting business to watch the firing of the gun that might be hurling death and destruction. There would be a flash, and then for ten breathless seconds the crew must wait for the arrival of the shell and its explosion. When the submarine had crept up to a 2300-yard range, she used shrapnel to sweep the decks. Any one of the shots might be the end. It was estimated that fifteen minutes more of this firing would destroy all above-decks, while the lifeboats would be at the mercy of the guns if the crew should try to escape.

The attack ended as suddenly as it had begun. Throughout the engagement the men had served their guns with skill and courage above praise. While facing a superior battery which fired in all thirty-five shots, the Americans had delivered twenty-five shots, but their superior gunnery won the day. At the critical moment a shot struck the submarine just aft of her conning-tower. Her bow rose high in the water, and she slowly sank stern first, her crew clinging to the deck.

The engagement had lasted less than half an hour. No member of the *Silver Shell's* crew was seriously injured. A last word, however, was heard from the Germans. The wireless operator soon after picked up an unsigned message reading, "If possible, steer south. I will meet you in an hour." Evidently the message was a decoy sent out by some submarine in the neighborhood. All messages sent out by ships that are not authorized or confirmed by land stations, however, are disregarded.

In giving credit for this valiant sea fight, the Government especially commended Chief

of Turret W. J. Clark, an enlisted man who had served twelve years in the Navy. It was due to his excellent judgment that the guns and gunners had been handled so efficiently.

A few minutes later the gunboat FQ asked by wireless for the *Silver Shell's* new position, and on receiving news of the fight flashed back, "Good work."

Three hours later the gunboat approached so close that messages were exchanged by Morse lamp signals. The next day the *Silver Shell* triumphantly entered the harbor of Marseilles, to find that she was the first American ship to reach that port since the United States had declared war on Germany.

XVI

A RECORD PERFORMANCE

FOR more than a year the victory of the *Borinquen* has been unsurpassed for fast and decisive fighting. Taken unawares in the middle of the night, her crew responded so vigorously to a submarine attack that her third shot sent the enemy craft down stern first.

Every factor favored the U-boat. She had sighted the *Borinquen* from a distance, when the low-lying submarine was naturally invisible, and had managed to creep up to within eighty yards of the steamer before firing her first shot. There was therefore ample time to make every preparation. The men were at their stations; the guns were trained on the most vital part of the merchantman. In night attacks it is impossible to equalize the terms on which two such antagonists meet. The great bulk of the

steamers offer a conspicuous target, while the U-boat's diminutive size and greater speed lend her an overwhelming advantage.

To balance this handicap, the merchantship must rely on the vigilance of her crew and the accuracy of her gunners. The alarm was sounded within a few minutes of midnight on an unusually dark night. The commander of the guard, Gunner's Mate Thomas J. Beerman, was in his quarters at the time, working on his log. It is essential on these cruises that it be known at every moment of the day or night just where the ship lies. The *Borinquen* was on a very dangerous sea lane approaching a French port. The strain on the men is very trying at such times. The officers are on duty about twenty hours out of every twenty-four.

There was a shout of warning from one of the men at the guns, and at almost the same instant a shot rang out. By the time the crew could rush across the narrow deck to their stations, a second shot was fired. Through the misty darkness the outlines of the submarine could barely be defined. She

lay off the port bow, a mere shadow on the water some eighty yards away. So close in was the enemy that the sparks of her wireless could be clearly seen. She was evidently in communication with some other German boat. It was impossible to guess whether her reinforcements were far or near.

But the wireless served the Americans for the moment at least, and this sufficed. The faint sparks gave the Americans a clue in the inky blackness. Although the submarine went into action with all her crew at their quarters, and the Americans might naturally at such an hour have been off their guard, the reply of the *Borinquen* came before the German could fire a third time. The shot grazed the conning-tower of the submarine.

Both ships were now firing point-blank. There was little chance of missing at this short range, although the advantage was still greatly in favor of the Germans. All realized that a few seconds must decide the issue of the battle, one way or the other.

The third shot from the American gun-

ners on the *Borinquen* struck the U-boat's conning-tower fairly, and exploded. It proved to be the decisive shot of the engagement. A fourth shot was not needed. The submarine slowly lifted. Her prow rose high in the water, and she sank rapidly, bow first. Within a few seconds the water had closed over her.

In the official comment on this victory, especial stress was laid upon the alertness of the crew in responding to the alarm. Every waking hour is a constant strain for all on board, and there is little rest for the gun crews. A delay of a few seconds in responding to the call to quarters would probably have lost the ship. The alarm, besides, came after several days spent in the danger zone, when the strain might be expected to tell on all the men engaged. To down a powerful submarine with three shots is even more than the most sanguine gunner might reasonably expect.

XVII

ONE OF THE FIRST TESTS

"IT remains to be seen if the lightning Americans can cope with the Germans who have been trained from their youth up." So said the Kaiser when America entered the war. The question has been quickly answered. Within a few weeks after the declaration of war, the armed guards aboard American ships had given an excellent account of themselves.

The work of the armed guards is extremely exacting. Like trench warfare, such fighting requires a highly trained personnel. It is high praise for the discipline and training of our sailors that they should have acquitted themselves so brilliantly upon such slight experience in this new warfare.

One of the earliest of our victories came with the encounter, in the first weeks of the war, between the transport *Nyanza* and a

submarine. Our men were new to the difficulties and dangers of warfare in these submarine-infested waters. A periscope is an exceedingly elusive object at sea. They are very small, and project only a few inches above the surface of the water. To make the work of the submarine observer more difficult, they are painted a silvery gray to blend with the color of the sea. Their surfaces are, besides, treated so that they will not reflect the rays of the sun. Although the American sailors aboard the *Nyanza* had never seen a German U-boat, they had been trained in an excellent school. It is a matter of official record that the lookout on the American transport in her first engagement sighted the silvered periscope of the German submarine at a thousand yards.

The range is short enough for torpedo work, and gives a ship little time for manœuvering. A moment after the periscope was sighted, the German loosed a torpedo. It was reported, and by skilful seamanship the *Nyanza* dodged the blow. Her helm was put hard to port and the vessel's stern swung clear. At the same time, her gunners

opened fire on the undersea craft. The German fell astern, rose to the surface, and gave chase. The transport, which was filled with American soldiers, made a tempting target.

The battle began at rather short range. The German used two guns, firing shrapnel. Her manœuver was new to the Americans. She darted about at a high speed, zigzagging from side to side to make it possible to use both her guns at once, and at the same time helping to confuse the American's aim. The submarine fired, in all, about two hundred shots. The *Nyanza* was hit five times. One shell passed completely through the ship; another destroyed the guard mess-room; still another wrecked the gun platform. None of the shells, however, hit any of the gunners or interrupted the fire. So close did one of the shots come that a cadet engineer was wounded, his clothing being literally torn from his body.

The fire of the American gunners was very fast. They sent, in all, ninety-two rounds, less than half the number of German shells. The Germans had a much

larger target to hit. The submarine was not only low in the water, but her rapid zig-zag manœuver rendered it extremely difficult to strike. The *Nyanza* gunners finally found the range, however, and sent four shells into the German. The submarine turned broadside, keeled over, and disappeared. The battle had lasted two and a half hours. The Germans had been outmanœuvered and outfought at every turn.

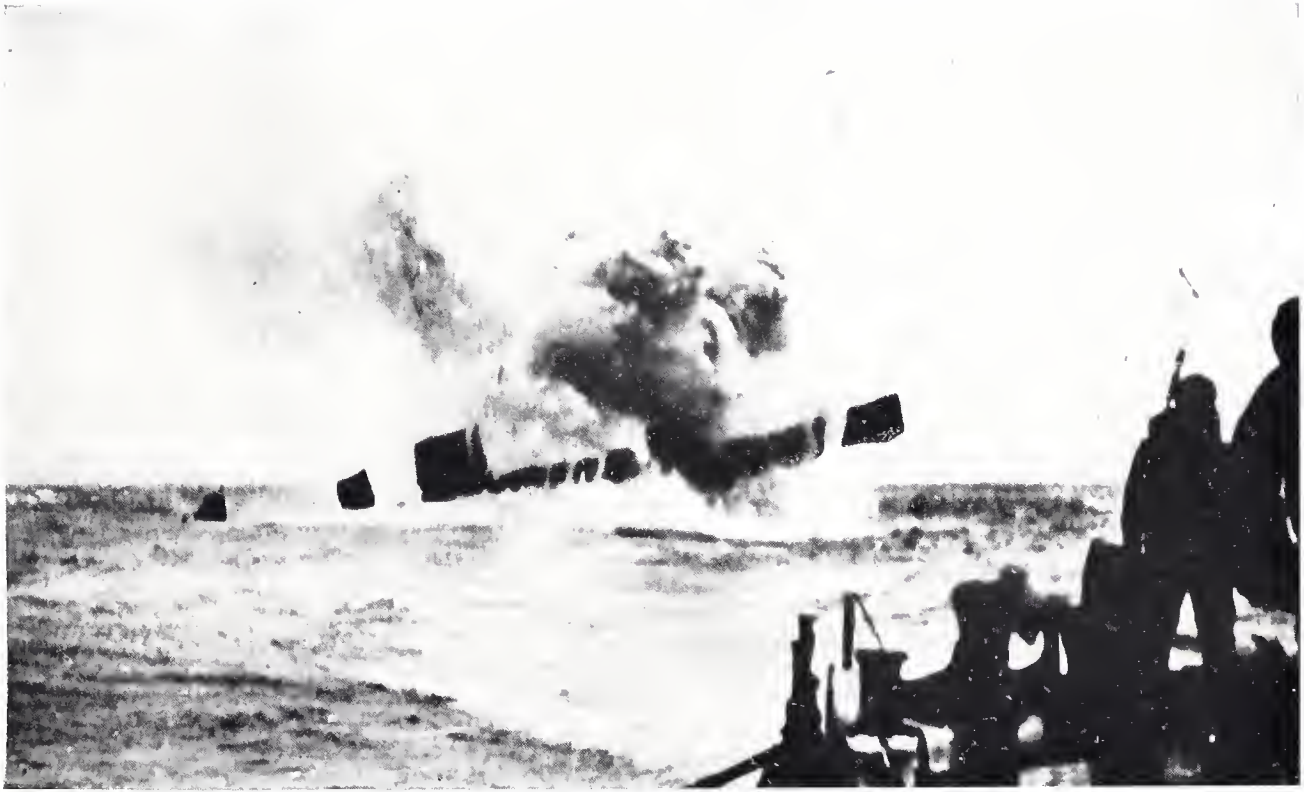
In the officer's report of the engagement, he closes with the hopeful remark: "Our gunners gained experience which I think will be manifested in the next attack."

XVIII

BEFORE AND AFTER THE WRECK

NO mere landsman can appreciate the work of the men far below decks in a sea fight. In the open air, or near it, a sailor may be said to face his antagonist. Even if he be shut in behind armored walls, there is still an encouraging sense of freedom. If the worst comes, a step brings him to the open deck or the boats. A man can endure much who knows that his retreat is kept open.

Few landsmen have visited the engine-rooms of ocean liners or war-ships. It is a terrifying experience under the most favorable conditions. The holds set apart for the machinery lie at the foot of deep shafts far below the surface of the sea. The visitor is led through intricate passageways until it seems a hopeless task to find his way back to daylight. At the opening of these shafts the ordinary staircases come to an end, and



Courtesy of U. S. Navy.

German Submarine Destroyed by an American Depth Bomb

Courtesy of U. S. Navy.

The First American Fighting Men to Reach France

a steep descent must be made down perpendicular iron ladders.

Here one leaves the comfort of the ship's cabins behind. Everything is built of metal, which becomes hot and grimy. The heat increases as one descends, until in the neighborhood of the engines it becomes suffocating. A few dim electric lights partially reveal the unfamiliar scene. The great shapes of the engines and boilers, the dark shadows in every corner, the flare of the fires, strike terror to the landlubber. Let this crowded hold swing violently as the ship rolls and pitches, and the place becomes a nightmare.

In a sea fight the engine-room is a place of imminent danger to all. The crew, working in semi-darkness, know little of what is going on high above them. The electric signals that keep these remote regions in instant communication with the bridge tell almost nothing. The crew, receiving calls for increased speed or a sudden stoppage of the engines, can only guess at what is happening.

In a fight with a submarine the danger is, of course, greatly increased. The torpedo strikes below the belt. The heaviest arma-

ment above the water-line offers no protection to the crew in the engine-room. Without a moment's warning, the ship's side may be shattered by an explosion from a well-directed torpedo, and the inrush of water may drown the men like rats in a trap. Even when escape is not shut off, the perpendicular ladders leading from the engine-room to safety offer a precarious footing. A slip, as the boat swings violently from side to side, may mean a fatal fall. To carry the injured to the deck above, even in a smooth sea, is difficult work.

From this glimpse of these lower regions, one may gain some idea of the courage that keeps the crew at their stations in the engine-rooms throughout a submarine battle. When the decisive blow falls and the ship begins to fill and sink, it is often a terrifying race with death to reach the decks and such safety as they afford.

In the engagement between the *Alcedo* and a submarine, the crew, as usual, stood manfully at their posts. They had worked for hours without news from above, when a terrifying explosion shook the ship. A por-

tion of the hull had been torn away by the impact, and the water rushed in. The crew ran to the ladders.

A member of the engine-room force, of his own will, remained behind. The lights had been extinguished, and the water rapidly mounting soon reached to his knees. Knowing the engine-room by heart, even in the darkness and confusion, he made his way to the safety-valve. The machinery was so disjointed by the shock that the power could not be turned on, and it was necessary to raise the safety-valve slowly, laboriously, by hand. The water rose above the man's knees before the work was completed. To operate the machinery required a cool head and a steady hand.

Later, when the *Alcedo* was sunk by a submarine, her crew displayed unusual gallantry. The ship sank in a winter sea, when the icy water might have terrified the bravest men. A member of the *Alcedo's* crew, after swimming about for some time, found a raft and succeeded in climbing on it. It was soon found that the raft was overcrowded and the lives of all were imperiled unless some

one freed it of his weight. There were no other boats or rafts in sight at the time. No drawing of lots was needed to select the one who should face the new danger. No argument was necessary, much less any force. A second-class seaman quietly volunteered. With a hasty good-by, he stood up and quite calmly jumped into the water. The unselfish sailor of the *Alcedo* who willingly gave up his place on the life-raft should be counted in any estimate of our gallantry as a nation. He was picked up by a boat after long exposure and brought safely ashore.

XIX

ABOARD THE LARGEST TRANSPORT

ONE of the most significant victories of the war, destined to live long in the history of the Navy, was won on the bridge and in the engine-room of a merchant-ship. Unlike most naval engagements, which last but a few hours, this victory was won by skill and vigilance that was never relaxed for more than a week. The heroes of the battle are two young men, the American captain and engineer of the steamship *Leviathan* (formerly the *Vaterland*).

The *Leviathan,* as all the world knows, is the largest ship in commission. Her great length of nearly 1000 feet, her width of more than 100 feet, and her tonnage of more than 50,000, are, of course, familiar figures. So complicated is the navigation of the great liner that her German owners considered it necessary for her to carry five ranking captains. The chief, with the title of Commo-

dore, exercised general supervision, while four captains devoted their entire attention to special departments. One was an expert in navigation, a second in machinery, a third in signals.

The work of the men in the great engine-room was also highly specialized. To drive this enormous bulk through the water, the most powerful marine engines ever constructed were installed. The complication of this vast network of machinery was bewildering. Eight engineers presided over the engines, each busied with a special department of his own. All Germany took immense pride in this largest of steamships and in the skill and efficiency of its crew.

When the United States was drawn into the Great War, it was, of course, realized that the German ships might be seized, including the greatest prize of the fleet, the *Vaterland;* and plans long matured were at once carried out to disable the ships scientifically, beyond hope of repair, by Americans, at least. Certain vital parts of the machinery of the ships were destroyed or impaired.

On the day that this havoc was wrought,

orders were sent to Germany to manufacture these parts from the original ships' drawings, and to hold them in readiness to ship to America. The German reasoning was conclusive. It was impossible, they believed, for these parts to be made in America. The ships must therefore lie useless until the end of the war, when new parts would be hurried from Germany, installed by German workmen, and the ships would be as good as new.

The Germans made no allowance for American ingenuity. When the fleet was taken over by our government, the havoc inflicted by the German engineers was found to be appalling. The delicate machinery had been attacked with sledge-hammers in the most vital parts. To reproduce the injured parts would have been the work of months, perhaps years. But, with characteristic ingenuity, the naval officers sought a short cut, and found one. The broken parts were welded together by means of acetylene flame and electric devices, and the parts on being tested were found to be stronger than ever. Within a few weeks the fleet was ready for the sea under its new flag.

Here was a triumph for American engineering, but the work was not at an end. The Germans had made the fatal mistake of grossly underrating the despised Americans. They had scoffed at the idea that Americans could master the intricacies of their machinery. The instruments used by the navigation officers, for instance, are extremely complicated. The *Vaterland* had been equipped with a gyroscopic compass that served as the mother compass for a secondary set. The great hull, again, was divided by steel bulkheads into upward of fifty water-tight compartments, which rendered her practically unsinkable. This elaborate precaution was taken to guard against danger in case of collision or other accident at sea. All this machinery the American officers put in order, and the equipment now serves admirably in case of torpedo attack. There are, besides, elaborate devices for indicating the outbreak of fire in any part of the ship, and systems of electric communication which keep every part of the enormous hull in instant touch with the bridge.

The *Leviathan* has made many trips carry-

ing 11,000 American soldiers—by far the greatest number ever accommodated on a single ship. The writer has seen Germans greatly amused at the suggestion that a mere American could preside over so vast and complicated a fabric as the largest of steamships; but still another surprise awaited the Germans. A single officer, aged twenty-eight years, borrowed from the United States Navy, took complete charge of the engines of the *Leviathan,* replacing eight highly specialized German experts. In place of the five captains, a single American officer, aged thirty-two years, directed the great ship from the bridge. And, with her patched machinery and reduced staff of executive officers, the largest of ships lowered her own best previous record by nearly a knot an hour throughout the Atlantic crossing.

XX

VIA WIRELESS

ALTHOUGH countless changes have transformed its fleets and new perils tested the bravery of its men, the spirit of the Navy is unalterable. A century after Perry's stirring command, "Don't give up the ship," the same fearless spirit found expression in almost identical words. Modern equipment, which would have seemed magical to Perry and his men, make it possible to flash the message by wireless across the open sea. Whether our men be attacked from the sky, from the sea, or by the dangers lurking beneath it, the spirit of the Navy remains the same.

Early in the war, before American seamen had gained the familiarity with submarines and their methods which was to breed contempt, a vicious attack was made upon the steamship *Luckenbach*. The steamer carried an armed guard in charge of

two guns mounted fore and aft. The undersea craft was sighted at seven-thirty one bright morning, moving rapidly on the surface at some distance. Without the slightest warning, she trained her guns on the *Luckenbach* and opened fire. From the first the steamer was clearly outclassed.

A terrific bombardment followed. In less than two hours the German fired 225 shots from her several guns. With her towering sides, superstructure, and funnels, the American was as easy to hit as the proverbial barn door. As a matter of record, however, the submarine gunners made only nine clean hits. The armed guard replied with 202 rounds.

The first well directed shell from the German set the *Luckenbach* on fire, injuring several of her crew. Hopeless as the engagement seemed the discipline on the *Luckenbach* never relaxed. The fire alarm brought the crew to their stations and the situation was soon well in hand. A torpedo from the submarine might send the steamer to the bottom at any moment, but the crew fought one problem at a time. The fire-fighters

rushed below, and left the hold only when that particular danger was over.

Although the hits were few and far between, the Germans made several very lucky shots. The next effective shell pierced the engine-room, wounding the engineers and putting the engines out of commission. The submarine rapidly approached the helpless vessel, increasing her fire. From the *Luckenbach* a steady fire was still directed at the U-boat, while her wireless flashed a call for help in all directions.

Still another shot burst an important steam-pipe, wounding a mess-boy and a fireman, and still further crippling the steamer. As the U-boat closed in, she improved her aim and one of her shells struck the after gun of the *Luckenbach*, completely disabling it. The defense was continued by the one remaining gun. At this critical moment the *Luckenbach's* wireless succeeded in picking up a destroyer in the neighborhood, which was instantly headed full speed to her assistance.

In the exchange of wireless messages between the *Luckenbach* and the destroyer, we

find the ancient spirit of the Navy, which would have delighted Perry or Farragut.

"How quickly can you get here?" was flashed from the *Luckenbach.*

"Two hours," was the destroyer's answer.

A world of meaning was compressed in the *Luckenbach's* laconic reply:

"Too late. Look for boats."

The destroyer, rushing forward at forced draught, seemed helpless to avert the tragedy. Knowing that any shot from the German might put the *Luckenbach* out of commission, the destroyer sent a brief message of encouragement. Doubtless some memory of Perry's famous order was in her Captain's mind when he despatched the words:

"Don't surrender."

The *Luckenbach's* reply was almost instantaneous:

"Never."

With her single gun the *Luckenbach* still continued to keep the submarine at bay. Of the 202 shots fired by the *Luckenbach,* the forward gun sent 167. At the end of an hour the crew of the steamship began to

strain their eyes for some sight of the destroyer. Minute by minute passed as the submarine, now rapidly closing in, shortened her range. Half of the second hour had passed when the lookout reported a faint trail of smoke on the horizon, which gradually darkened and spread out. It was the destroyer, coming up at better than thirty knots an hour. She arrived alongside punctually at two-thirty, on time to the minute of her two-hour schedule. The submarine had disappeared. A few hours later, with her engines repaired, the *Luckenbach* under convoy of the destroyer reached port safely.

XXI

A SUCCESS AND A FAILURE

IT would be interesting to know whether Chief Boatswain's Mate John Mackenzie of the Naval Reserve ever read Victor Hugo's description of the loosened cannon that threatened the French corvette *Claymore* in his famous novel, "Ninety-Three." In all fiction there are few scenes so dramatic, and the bravery of the French gunner who risks his life to keep the bronze gun from wrecking the ship has been universally admired. The parallel between the feats of the French gunner and of the American sailor mentioned is remarkable. In both cases a storm was raging, and the ships and their crews were endangered; but, while the Frenchman struggled with a cannon, the American wrestled with a heavy bomb which might explode at any moment. If the

American boy was trying to imitate the French hero, his act was an extremely dangerous form of plagiarism.

The bomb was loosened by a curious accident. The United States steamship *Remlik* was making heavy weather in a severe gale, when her plunging caused the breaking of a box or crate holding a depth bomb. The bomb had been lashed on the after part of the deck in what was considered an out-of-the-way spot. The plunge that broke the box tossed the broken wood overboard, while the bomb was rolled in the opposite direction. To the consternation of the crew, it went bouncing about the deck, threatening to blow the ship to pieces.

There have been many cases of men at such a moment rushing forward, picking up explosives, and throwing them overboard, at imminent peril to their lives. This depth bomb, however, weighed several hundred pounds. No one could lift it, and the rolling of the ship made it impossible for the men to lay hold of it. To increase the excitement, some one noticed that the pin had come out, and shouted out this terrifying

On the High Seas

With All Flags Set

news. The crew, though realizing that the next moment might be their last, failed to form any concerted plan of action.

At this highly critical moment Mackenzie rushed forward and grappled with the bomb. He flung his body against it, exerting all his strength to stop its plunge; but the bomb was much too heavy for him. He repeated the attempt again and a third time. Each time he almost succeeded in getting his arms around it, but it tore itself away from him. On the third attempt the weight of the metal almost crushed him in its plunge. He realized that the hundreds of pounds of explosives in his arms might go off at any moment, and that the charge had been calculated to destroy an entire ship at a blow.

At the fourth attempt Mackenzie made a supreme effort, secured a firm grip on the bomb, and heaved it upright till it stood on its flattened end. Having won this advantage, he calmly sat on the bomb and held it down until assistance came. The members of the crew, who had apparently been fascinated by the danger of the moment, now rushed forward. Ropes were hastily brought, and the

depth bomb was safely lashed in place. All danger was at an end.

In recognition of this unique feat, Secretary of the Navy Daniels has awarded a Medal of Honor to Mackenzie and a gratuity of $100.

The commanding officer of the *Remlik,* in his report recommending that the Medal of Honor be conferred on Mackenzie, says:

"Mackenzie, in acting as he did, exposed his life, and prevented a serious accident to the ship and probable loss of the ship and entire crew. Had this depth charge exploded on the quarter-deck, with the sea and wind that existed at the time, there is no doubt that the ship would have been lost."

Less fortunate was a member of a gun crew on a merchant-ship who found himself in a similar situation. The batteries aboard these ships are, as a rule, hastily installed, and occupy very exposed positions. The ships were not constructed with any idea of mounting guns on their decks, much less the five- or six-inch guns necessary to pierce the armor of the modern super-submarine. It is only when some unusual strain is brought

to bear on the guns that their inherent weakness is discovered.

In this instance the vessel had encountered a full gale at sea, which tested every joint of her frame. A great wave breaking over her deck had snapped off a stanchion. The lifeboats were smashed or swept away, as were all movable objects above-decks. Everything that foresight could do to secure the guns had been done, and an alert watch observed them anxiously. After several hours of this terrific bombardment, the lashings of one of the guns suddenly snapped, and the great mass of steel was loosened.

As long as the ship continued to roll moderately, the weight of the gun kept it in place; but a violent swing might at any moment cause it to shift its position. In such a case, anything might happen in the twinkling of an eye. If the gun were overturned, its delicate mechanism would be broken beyond hope of repair, at sea at least, while the high waves might easily roll it overboard. For several anxious moments the gun slipped from side to side, covered with a smother of sea-foam.

In a momentary lull, one of the gun crew caught up a rope and, watching for his chance, sprang upon the gun. He was obliged to contend with two dangers that made his position particularly perilous. The gun might roll upon him, crushing him before he could dodge it, or the waves might sweep him from his position. There was a desperate struggle for several anxious minutes. The gunner had succeeded in fastening one end of the rope about the cannon, when a surge of water loosened his hold and swept him overboard. No life-boat could live in such a sea, and from the ship's sides nothing could be seen of the unfortunate gunner; but, undeterred by the tragedy, other seamen rushed forward, and the gun was finally secured and rode out the storm in safety.

XXII

STANDING BY THE SHIP

MANY torpedoed ships have been saved from sinking, against all the probabilities, by the alertness of their crews. According to the laws of gravitation the *Armenia* should have gone down within a few minutes after being struck. The attack occurred at 12.40 A. M., February 19, 1918, an hour when the guard might be found somewhat relaxed.

The torpedo struck the *Armenia* at an angle on the starboard quarter. The submarine was completely hidden in the darkness, and the first warning came from the lookout, E. M. Wright, a seaman of the second class connected with the armed guard. The torpedo was but forty yards off when sighted, and a few seconds intervened before she struck. There was, of course, no time to

alter the course of the vessel or to manœuver to avoid the blow.

The wreckage was appalling. The torpedo passed completely through the ship's side, bending it far in, and leaving a hole through which the sea poured at a terrifying rate. So great was the force of the impact that the steel deck was buckled up to a height of three feet. The wooden bulkheads were set on fire.

Chief Boatswain Mate S. Hamiab, commanding the gun crew, and the lookout, who sighted the torpedo, were thrown into the air by the explosion, and all of the men were badly knocked about. When the crew got to their feet and ran to their stations, they found the gun platform a mass of wreckage. No defense could be made, so complete was the demolition, and all hands were mustered to save the ship.

The ship's discipline proved all that could be desired. Although in imminent danger, since the ship might take her final plunge at any moment, the seamen, responding willingly to orders, rushed below-decks. The collision mats were brought out, and, work-

ing coolly, the men succeeded in placing them in position and stopping the inrush of water. Standing up to their waists in water, which was rapidly rising, the work was completed.

Meanwhile, the ship was afire in several places. So disorganized was the ship's piping that it was found impossible to make use of the regular fire hose. There was not a moment to lose, and the seamen descended to the burning hold and put out the fire with their hands.

Three American seamen, enlisted men, had an even closer call aboard a British merchant-ship, and later were commended by our naval authorities for their part in saving her. The merchantman was struck by a torpedo, September 1, 1917, and filled rapidly. All hope seemed at an end, and the ship's company was ordered to take to the boats. Two of the American seamen, Stephan J. Downy and F. Kellard Goulach, got away safely in separate boats. A third American, Alfred Allard, stayed on the ship, with her Captain.

As long as the ship remained afloat the Captain refused to leave her. The crew,

meanwhile, rowed away to a safe distance. The last plunge of a large ship, as every seaman knows, is likely to carry down all on board. The suction caused by the sinking hull draws down all objects in this terrifying vortex, and the strongest swimmer is powerless against it.

Left alone on the ship, the Captain and Allard watched the ship slowly settle. The crew, having retreated to a safe distance, rested on the oars and waited for the final plunge. The three American seamen meanwhile proved invaluable in keeping the boats in touch with the merchant-ship by signaling. Allard, standing on the bridge beside the Captain, directed Downy and Goulach, by wigwagging, the distance they were to keep from the ship, and kept them informed of her condition.

Several hours later the Captain began to hope that his ship might still be saved. An examination of the water in the hold decided him to make the effort. Allard was directed to call in the boats and the crew by his signals, and once aboard all hands set to work. The ship was finally beached in safety.

XXIII

WHEN THE S.S. "LINCOLN" SANK

THE crucial test of the naval drills and preparations for a surprise attack came with the sinking of the transport *Lincoln.* There were 715 men all told aboard the *Lincoln,* while her great size, and the height of her boat-decks above the water, made it difficult to execute quickly the final orders. She had been struck almost simultaneously by two torpedoes, sinking within a few minutes. The noise of escaping steam made it impossible to give verbal order throughout the length of the great vessel, and the complicated work of abandoning ship had to be carried out by signals.

Working under the most trying conditions, the crew went about its duties coolly and intelligently. Several men had been killed and many wounded by the explosions, and there were a number of sick and

wounded returning from France, including two paralyzed men. Nevertheless the entire ship's company, with provisions, was transferred to life-boats and life-rafts, and the flotilla kept under perfect discipline for hours until picked up. Three officers and twenty-three men lost their lives.

The scenes on board the *Lincoln* and in the boats have been admirably described in the official report prepared by Commander Percy W. Foote, the commanding officer of the transport. The matter-of-fact way in which the most thrilling acts are recorded illustrates the attitude of the men of the Navy toward their own exploits.

"Three torpedoes were sighted approaching the ship on the port side at a distance of from three to four hundred yards away," says Commander Foote's report. "Efforts were made to turn the ship to avoid the torpedoes, but there was not sufficient time to do so, and two torpedoes struck together practically in the same place, about 120 feet from the bow, and one torpedo struck about 120 feet from the stern. The call to battle stations was instantly sounded when the tor-

pedoes were sighted, and every one went quickly, but quietly, to his proper post.

"Preparations were made for launching the boats and life-rafts, and the guns were manned and made ready for fire. Inspections were made below-decks, and it was found that the bulkheads were holding the water in the forward hold, but aft the engine-room bulkhead was ruptured, and the water entered the engine-room. There was plenty of time, however, for the men to escape from the engine- and fire-rooms, and no casualties occurred therein. Seven men at work in the forward end of the ship were killed by the force of the explosion or the inrush of the water.

"Fifteen minutes after the ship was struck, it appeared quite evident that she would sink. The boats and rafts were placed in the water, and the order was given all hands to abandon ship."

Several of the officers and the gun crews, however, still remained on the sinking ship. It was found later that two men stayed too long, and were lost when the ship went down. The danger was obvious to all, but the men

stood calmly at their posts, awaiting orders. A few minutes later fire was opened from the bow gun in the general direction in which it was thought the submarine might lie, on the chance of preventing another attack and to cover the retreat of the open boats. The personal narrative continues:

"Four or five minutes before the ship finally sank, half the vessel being then under water, the chief master-at-arms reported that his inspection below-decks showed all hands to be out of the ship. The order was then given for every one, including the gun crews, to leave the ship; and the master-at-arms and I then went into the water and swam to a life-raft.

"Due to the difficulties which generally exist when boats are filled with people and lowered quickly in emergency, it had been previously arranged for every one to go in the water and get on the rafts. Only five men and an officer were assigned to the boats to lower them; the boats then to go among the life-rafts and pick up the people. This proved to be a very satisfactory arrangement, as the boats were lowered and got clear

of the ship without difficulty. One boat, however, was loaded with the sick before lowering; and all the sick, including the two paralyzed soldiers, were saved."

The scene is probably unique in the history of the Navy. There survived over seven hundred men, some five hundred in the open boats and two hundred on the life-rafts, crowding these frail crafts to their capacity. The sea was rough, and the nearest land remote. The report continues:

"After the ship sank the work of loading the boats to their capacity and securing the rafts together was begun, and while this work was under way, about half an hour after the ship sank, the submarine appeared, and came near the boats and rafts. The submarine first took one of the sailors, Seaman Anderson, on board, and then a little later took one of the officers, Lieutenant Isaaca, after which it returned the seaman to the boat.

"Another instance which illustrated the coolness of the young American boys who composed the crew of the ship occurred when the submarine was cruising among the boats.

We naturally thought of the possibility of the submarine firing on the boats, and an officer on the submarine was seen to go to the muzzle of one of the guns and, as we thought at that time, remove the covering preparatory to firing. When this was observed, one of the men in the boat said: 'Good night! Here comes the fireworks.' But the submarine did not fire, and all the survivors in the boats escaped unharmed.

"The submarine remained in the vicinity of the boats for about an hour and a half. It returned in the afternoon about two o'clock, remained near at hand for about an hour, and then left the vicinity and did not reappear.

"The work of collecting the boats and rafts together was continued, and by dark we had the rafts tied together and the boats secured to the rafts and to each other; the boats being loaded practically to their carrying capacity, there being about five hundred men in the boats and about two hundred on the rafts.

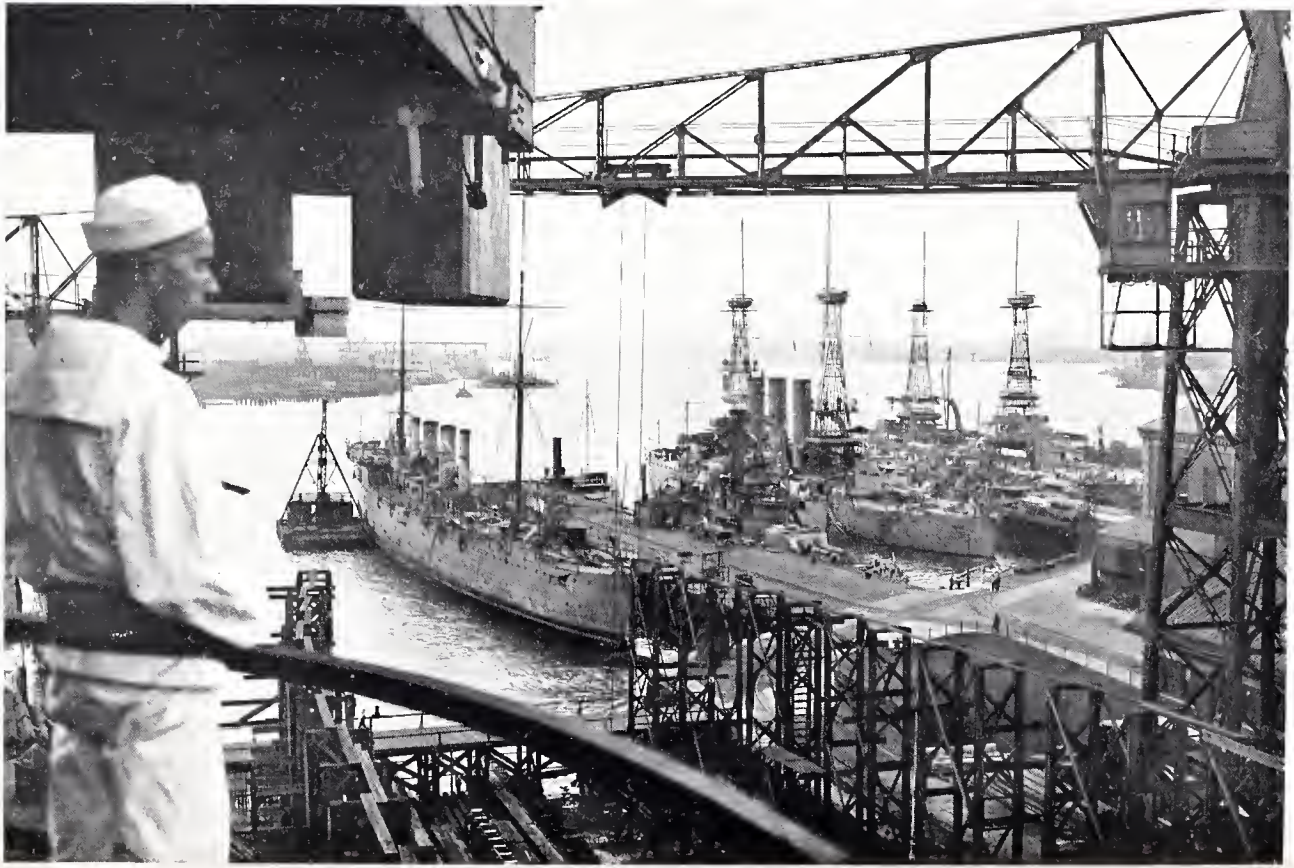
"Lighted lanterns were hoisted on the oars in the boats, and Coston flare-lights were

turned at frequent intervals. Watches were set, and those not on watch were told to go to sleep. Despite the hurry of departure, the boats and rafts had been amply provisioned with food and water. Throughout the night the stores remained untouched. It was anticipated that many days might be spent in the boats, and the supplies were saved against a time of absolute need. The spirit of the men throughout the long night was admirable. Chief Petty Officer Oulette brought ashore the following incident:

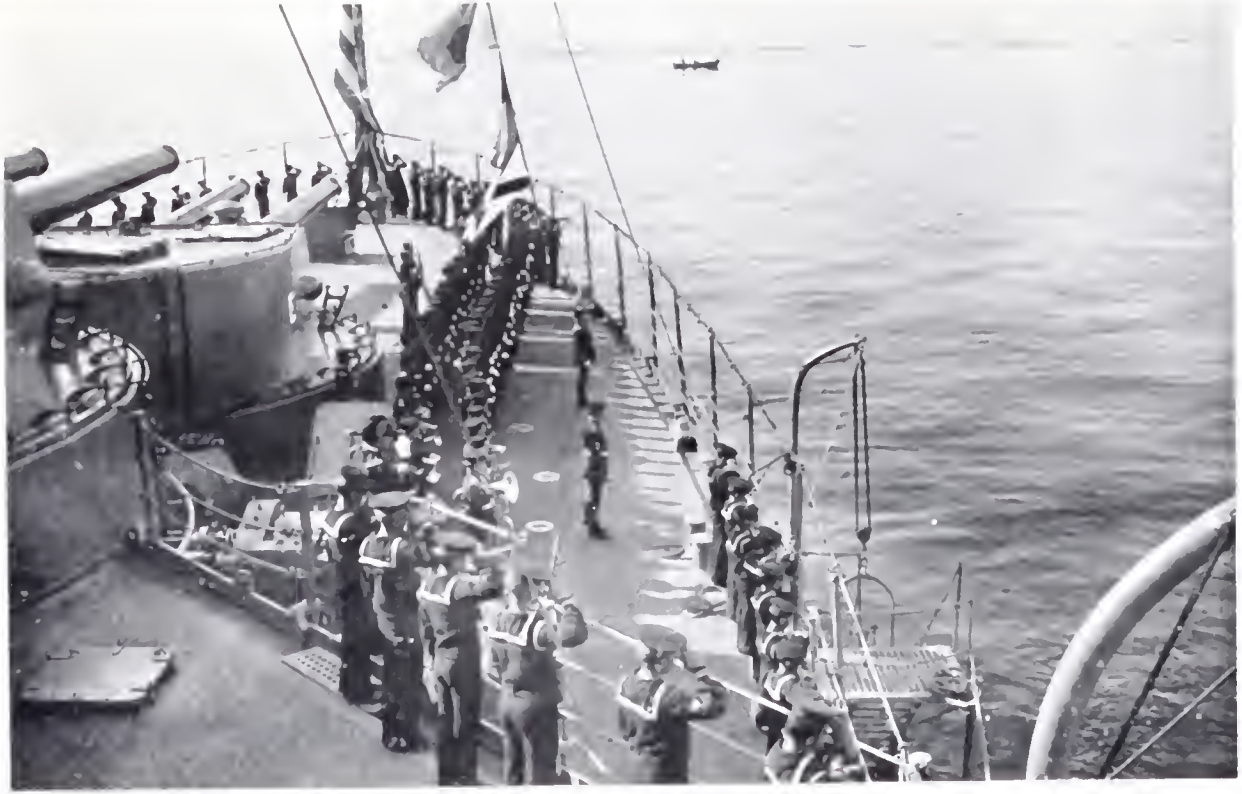
" 'There were a number of officers with the men on the raft,' he writes, 'among whom was the chaplain, and Oulette told me that the chaplain very properly said prayers for the rescue of the men. But Oulette feared the men would become somewhat despondent, so he decided to tell some jokes and sing a song, and the song he sang was, "Where Do We Go from Here?" '

"At about 11 P. M., when it was quite dark, a blinking white light was sighted, and very soon it was found that one of the American destroyers had arrived to our rescue. A rousing cheer was given by the men, and the

work of embarking on board the destroyer was begun. About an hour afterward another destroyer arrived, and by 2 A. M. all the survivors were embarked aboard the destroyers. After waiting till daylight, when a final search was made for any persons who might still be adrift, the return trip to France was begun, where we arrived in due course of time, and very shortly afterward embarked for America on another ship."



In Home Waters



Awaiting the Admiral

XXIV

GUARDING THE TRANSPORTS

THE question is often asked,—and probably nowhere oftener than in Germany,—how do the transports elude the submarines? No secret is made of the methods of defense. Either the transport depends upon its fleetness, or it is so heavily convoyed that the most determined efforts of the Germans is of no avail.

One of the most desperate attempts to "get" a heavily laden American troop-ship occurred in the Bay of Biscay, when no less than eight German submarines lay in wait for our soldiers. On the previous eastward voyages the transport had sailed without convoy, and had been met on approaching the other side by two destroyers. It was believed that she was especially signaled out for attack, however, and Rear-Admiral Wilson, in command of the destroyer flotilla of the

American Navy operating in French waters, sent out four of his destroyers as a precaution.

The transport, with thousands of American soldiers aboard, was nearing the French coast at dawn one morning, when two German submarines were sighted just ahead. A few moments later two more U-boats appeared off the starboard side; shortly after two more just ahead, and two more a little distance away on the beam. The German attack had evidently been planned in detail. The fleet, comprising eight submarines in all, now drew together on the starboard side, which was the side away from that on which the destroyers usually sailed. It was evidently their intention to sight the two destroyers and, of course, sink the transport.

Several torpedoes were soon fired at the transport, but she managed to elude them by steering at top speed in a series of rapid zigzags. The naval crew of the transport opened with a shot from the six-inch forward gun on the starboard side. The first shot hit the conning-tower of one of the U-boats. A second shot a few seconds later struck the

same submarine amidships, sinking her with all her crew. The destroyers meanwhile had reached the active side of the transport and engaged the rest of the fleet. While the U-boats were in the act of shooting torpedoes at the Americans, a destroyer with several well planted shots put another submarine quickly out of commission, finally sending her down.

By this time the commander of the fleet of submarines was aware of the fact that four destroyers instead of two were arrayed against him, and, signaling to the other boats, he at once submerged. As the last boat disappeared a shot from one of the destroyers struck her upper works and, it is believed, sank her. All four of the destroyers were above the points where the submarines had submerged, and the fight was continued by dropping a series of powerful depth bombs. Judging from the agitation of the sea following the explosion, the naval officers feel confident that they accounted for two more of the U-boats.

Of the eight submarines making the attack, two were unmistakably sunk by shell

fire from the transport and the destroyers, and three others are believed to have been sunk by depth bombs, while three got away clear. A naval officer who witnessed the battle reported that he considered it the most determined attempt the Germans had made to sink a transport on her east-bound trip. The transport—which was one of the largest and fleetest in the service—proceeded in safety to her French port of destination.

On the transport's last previous east-bound trip, two German submarines had come to the surface so near her starboard quarter that they could not find room to manœuver into position to fire their torpedoes. The distance was so short that it also served to protect the Germans, since the destroyers were afraid to drop their depth bombs for fear of injuring the hull or the propellers of the transport.

The marvelous record of our transports in safely transporting a great army through the submarine-infested waters does not depend upon chance or good luck.

PART III

ON AIR-SCOUT DUTY

XXV

FIRST TO FLY

A DETACHMENT of naval airmen were the first Americans to arrive in France and enter active service against the enemy. It is a matter of pride in the Navy that these men reached foreign soil three weeks before the first transport arrived bringing the army forces. The airmen had been trained for active service on this side of the Atlantic, and were quickly hurried to the front. Several of the men in this first detachment have since lost their lives in flight work. The first, Louis Reindardt, a seaman of the second class, enlisted at Norfolk in 1916. The second of the airmen to lose his life was George Herbert Manly.

More various uses have been found for the aircraft in connection with naval operations than any other type of fighting ma-

chine. At the opening of the war naval aëronautics was in its infancy. To-day the aircraft department is one of the main dependencies of the fleets. Their activities have been classified in some seventeen distinct divisions. The average man has little conception of the extent of their actual operations.

A variety of types of seaplanes and dirigibles are effectively employed in making direct attacks upon ships and submarines at sea, using bombs, torpedoes, and guns. The same craft are also employed in bombing the enemy's bases and stations. Naval experts of a generation since did not anticipate that naval craft would soon actually fly over great stretches of sea, and even over mountains, and inflict serious damage. To-day such raids are commonplace.

A modern armada is accompanied by a fleet of aircraft, which engages the aircraft of the enemy. It employs aëroplanes and seaplanes, with a flying radius of several hundreds of miles, which may be launched directly from the decks of ships, or may be lowered alongside and rise from the surface

of the water. Pictures of the great sea-plane carriers, with half a dozen or more large aëroplanes on their decks, are of course familiar. The aircraft, on returning, land on the surface of the water, and are retrieved by being hoisted to their stations.

A variety of aircraft serve as the eyes and scouts for the sea fleets. Trained observers go aloft to high altitudes in dirigibles, sea-planes, and kite balloons, and by means of direct telephone wires or by wireless keep their bases informed of the position of the enemy. The same types of machine are employed to protect ships at sea or in port against attacks from hostile submarines or battleships.

The defense of naval bases from both naval and aërial attacks is largely dependent at present upon aircraft. Everything that flies is used in such work. The dirigible has been superseded for raiding purposes by the aëroplane. We hear no more of Zeppelin raids, for the huge craft make too obvious a target for aëroplane attack. The dirigible still plays an important rôle, nevertheless, in patrolling coasts, searching for submarine

bases, spying upon suspicious ships, and for convoying fleets at sea.

The speed of the seaplane is also depended upon to prevent hostile aircraft from locating the positions of fleets and ascertaining the number and the nature of the ships that compose it. By keeping hostile aircraft at a distance, they also prevent the enemy from getting the range of naval bases, magazines, and other stations. Many operations are also carried over land and sea to divert the attention and mislead the enemy while strategical operations are being carried out.

All types of aircraft are also employed to coöperate with submarines and guide them in their attacks on enemy fleets and bases. In many scouting trips they locate the presence of mine fields and keep their fleets informed of their position. Much valuable time is saved, again, in planting mines by the assistance of the air squadrons. In attacking hostile ships and directing gun fire the spotting of aircraft is invaluable.

It often happens that messages cannot be transmitted, even by wireless, between ships widely separated without giving the enemy a

clue as to the ship's position. The aircraft serve as despatch-bearers in carrying messages, at a rate of a hundred miles an hour or more, throughout a radius of hundreds of miles.

XXVI

EARLY EXPLOITS

THE American Navy was the first to recognize the possibilities of aircraft and to organize an aviation section. The officers who ventured aloft in many experimental flights faced a hazard unique in naval history. To their daring and ingenuity is due much of the development of the air service at sea, which other nations have been quick to utilize. In any record of the naval heroes of to-day the exploits of these men, who dared so much for the advancement of their service, deserve to be remembered.

The first naval appropriation for aëronautics in history was made by Congress in 1911. In view of the war budget a few years later counted by billions, it is interesting to recall that the first appropriation was $25,000. The Navy first appointed three officers to visit the aëroplane factories

to receive instructions in flying. At that date the seaplane was unknown, and aëroplanes had not yet been equipped with pontoons to support them on the water. Some very daring experiments were carried on by these officers in attempting to start aëroplanes by a cable launching device, which was the nucleus of the catapult of later years.

Considering the difficulties and dangers of this experimental work, the progress was remarkable. From April, 1911, to August, 1912, some 593 flights were made by the instruction officers. The United States Navy at this period owned an air fleet consisting of three aëroplanes. In the winter of 1911 the aviation camp was transferred to San Diego, California; later it was established at Annapolis.

The first aërial reconnaissance ever made by a naval officer of rank was flown May 2, 1912, under the direction of Rear-Admiral Bradley A. Fiske, then commanding the Second Squadron of the Atlantic Fleet. The aëroplane in this historic flight flew to and landed alongside the U. S. S. *Georgia,* the flagship anchored at Salem harbor. Later

Rear-Admiral Fiske flew in this machine. A sea flight was made a few weeks later from the Aëro Station near Annapolis to the battle-ship *Louisiana* at an altitude of four hundred feet, which aroused world-wide attention. In the same year a world's record was established in flying over Chesapeake Bay, when the officer remained aloft for six hours and ten minutes. Some interesting experiments were also made in communicating by wireless electricity between an aëroplane aloft and a battle-ship. The aëroplane had now passed the experimental stage and was recognized as one of the arms of the fleet.

The United States Navy was also the first in history to fly under war conditions. When the mobilization was ordered to proceed to Mexican waters in the summer of 1914, it found the Navy prepared. The organization of the aëro division is shown by the promptness with which it was able to act. Orders were received at the Pensacola station at noon on Sunday, April 19, for the First Aëroplane Section to embark on the *Birmingham*. Within six hours the avail-

able fleet of six aëroplanes, with all necessary parts required for active service, two hangar tents, and camp equipment for three officers and ten men of the section were on the dock. The Second Aëronautical Section was no less prompt in embarking on the *Mississippi.*

When the *Mississippi,* with the Second Aëroplane Section on board, reached Vera Cruz on April 25, an aëroplane was in the air five minutes after she dropped anchor. On every day following flights were made; sometimes the aëroplanes went aloft several times a day. The navy aëroplanes scouted along the outposts and far beyond the lines, preparing maps of the country and observing the position of the Mexican forces.

For some time America held the distinction of having not only the first but the most highly developed aëronautical section of any navy in the world. With the progress of the war America fell behind and was soon outclassed. Her activities to-day may enable her to regain her position of the first naval air force.

XXVII

AN AIR BATTLE

THERE is no better raw material in the world for the making of heroes than is to be found in America. Ensign Stephen Potter, U. S. N. R., was enrolled as a second-class seaman in the Naval Flying Corps, on September 26, 1917, and was made an ensign November 2 of the same year. On November 12 he was ordered to France, and was sent to England on January 18, 1918, for active service. The dates are eloquent, indicating as they do how quickly the average American youth may be transformed into a skilful flyer.

Within six weeks of his enrolment Potter had acquired an experience in this difficult and dangerous service that made it possible for him to go to France, and in a little more than a month he saw actual air service at the front. There are doubtless thousands of

similar cases, but Potter has been singled out by the Government because of his brilliant subsequent record and the stirring air battle in which he met his death.

The records show that Potter had been flying in actual service scarcely six weeks when he met a German seaplane in Heligoland Bight and in a brilliant air fight shot it down. His last battle occurred April 25 over the North Sea. He was serving at the time as second pilot to a British Royal Air Force captain. While out on scout duty, he was overtaken by a formidable German fleet of seven single-seaters, and found himself hopelessly outclassed; but he sold his life dearly.

Potter's last air battle is one of the most daring in the history of air conflicts. The report of the engagement that follows, received from the London representative of the Committee on Public Information, needs no elaboration.

Potter left a North Sea station in a British seaplane, and steered due east until six miles W. S. W. north of Hinder light. Another plane accompanied Potter, keeping a position to starboard throughout the action.

Two enemy planes were sighted to port, heading toward them, flying low. Both British planes dived about a hundred yards apart, closing upon the nearest German.

Fire opened from both at close range. Potter's companion had emptied one drum from the forward cockpit when the gun jammed. Two more hostile planes then appeared overhead, attacking vigorously. Both Britons turned to the west, pursuing one of the lower enemy, who was soon lost to view. Three others passed astern, followed at a sharp angle. Potter was close above his companion, and dove to within a hundred feet of the water.

Both machines flattened out, and Potter's companion, being faster, throttled down until Potter came abreast. They ran westward in this formation at full speed for several minutes, under continuous volleys from the rear.

Four more enemy machines now appeared in V formation. Of the seven Germans in action, four attacked Potter, and the others engaged his companion. Potter fell behind and began to zigzag. He first veered

slightly to starboard, then turned at right angles to port.

Again his companion throttled down to let him catch up, and began climbing to reduce headway. Potter dodged again, but was then broadside to all enemy machines, and under their fire only fifty feet from the water. His companion, flying above saw, Potter's machine burst into flames, come down part of the way under control, then crash on the port wing-tip.

Potter was last seen on the surface amid flames that turned suddenly to a huge cloud of smoke.

Two of the enemy circled over the spot, then joined the other five. When the pall had cleared, not even wreckage was visible.

The commanding officer of the station from which Potter went aloft on his last flight added the following comment to the official report of the air battle:

"Potter always displayed the greatest eagerness to fly at all times. On the long reconnaissance in which he shot down the German aëroplane he showed courage and coolness. He was very popular at this station."

XXVIII

A SEAPLANE WRECK

WITH the appearance of the seaplane in our Navy has come a new test of courage. The pilot and observer aboard these frail aircraft in their long scouting trips at sea face a unique danger. In case of accident on a surface craft the life-boats give the sailor a fighting chance of escape. The worst catastrophe to ordinary craft, too, falls less swiftly. The airman finds gravity a very exacting master. Let his engine stall or any one of a hundred possible accidents befall his delicate craft with its complicated machinery, and his descent is measured by seconds only. Even if he carry wireless equipment, there is likely to be little chance to use it to summon help, and the aircraft carries no life-boats for navigating either air or water.

After a rapid volplane to the surface the aviator's plight is likely to be serious. The

fragile pontoons on which his aircraft rests offer very slight support. His aëroplane is in no sense seaworthy, and he is at the mercy of every wave. He is without oars or other means of propulsion, and must lie chained to his curious wreck. The wreck of the seaplane carrying Ensign E. A. Stone, U. S. Naval Reserve, is unique in naval history. Forced to descend to the surface of the water while far out at sea, Stone and his companion floated for eighty hours and lived out a severe storm before relief arrived.

The American sailor acting as a pilot of a British seaplane, with Sub-Lieutenant Eric Moore of the Royal Naval Air Service, had started out to convoy patrols from a British port. Land was far out of sight when the periscope of a German submarine was sighted, and the aircraft at once started in pursuit. It was unsuccessful in picking up the German, and meanwhile lost its way. Some two and a half hours later the engine dropped dead, and the airmen were forced to descend to the surface of a rough sea. The situation in which the men found themselves is described in Stone's own words:

"We had no kite or radio to call for assistance, so we released our two carrier-pigeons. We tied a message with our position and the word *sinking* on each. The first bird, a blue-barred one, flew straight off and reached home. But the other, which was white checked, lit on our machine and would not budge until Moore threw a navigation clock at him, which probably upset him so that he failed us."

The sea rose, meanwhile, until the waves broke the frail wings of the aëroplane, causing them to sink. It soon became clear that the machine was being slowly but steadily drawn down by the stern, thus turning her over. To lessen the impact of the waves, the airmen tore away the covering of the wings, but she continued to go down. The aëroplane finally rose perpendicularly in the air, and the men were obliged to climb over her nose and cling to the under side of the pontoons. Since these consisted merely of light frames covered with thin plate metal, their buoyancy was not great. Stories of suffering from hunger at sea are common,

but the experience of the wrecked airmen in this respect is peculiarly trying. Ensign Stone says, in writing of these hours:

"Our emergency ration had been in the observer's seat at the back, but we had been so busy in trying to repair the motor and save ourselves from turning over that we didn't remember this until too late. When I crawled aft for food, Moore saw that I was only helping the machine to capsize. He yelled to me to come back, and I did, just in time to save myself from being carried down with the tail and drowned.

"From then on, for nearly four days, until picked up by a trawler, we were continually soaked and lashed by seas, and with nothing to eat or drink. We had nothing to cling to, and so, to keep from being washed overboard, we got upon the same pontoon and hugged our arms around each other's bodies for the whole time.

"We suffered from thirst. I had a craving for canned peaches. Twice a drizzle came on, wetting the pontoon. We turned on our stomachs and lapped up the moisture,

but the paint came off, with the salt, and nauseated us.

"Our limbs grew numb. From time to time the wreckage from torpedoed ships would pass. Once two biscuit tins came near enough to swim for; but by then, in our weakened state, we knew that we would drown if we tried to get them. We did haul in a tin and break it open. It was filled with tobacco."

The shipwrecked sailor in an open boat or even on a raft suffers less than men aboard a wrecked seaplane. The airmen could not lie down or stretch themselves, and the effort of holding to the wreck in the rough seas was very exhausting. They had no mast on which to raise a flag, or lights to attract the attention of passing boats. Several ships passed within a comparatively short distance without sighting the low-lying wreck of the aircraft. These airmen were doubtless the first shipwrecked seamen in the history of the seas to sight an aëroplane. Let the air pilot tell the experience in his own words:

"On Monday afternoon a seaplane came from the west. It was flying only 800 feet

over our head, aiming down the Channel. It seemed impossible that she could not sight us, for the air was perfectly clear. She passed straight above, without making any signal, flew two miles beyond, and came back on her course.

" 'Her observer must be sending wireless about us,' I said.

" 'Yes; that is why we get no recognition,' said Moore; 'and now she's decided to go back and report.'

"But the plane had not even seen us. Our spirits fell."

It was not until after eighty hours had been spent on the wrecked seaplane that help came. A trawler sighted them, and, mistaking them for Germans, approached warily. Both men were too weak to stand up and signal, but the ship finally drew near and the men were lifted aboard. Later they learned that every machine from the seaplane bases, and even those from a station on the French coast, had flown continually for three days over the sea in search of them.

Ensign Stone, who is a native of Norfolk, enlisted as a seaman, was trained as an avi-

ator, and attached to the naval air station at Hampton Roads. While flying abroad he served under the commander of the United States naval forces for patrol duty.

XXIX

A BALLOON WRECK

THE first American medal to be awarded for "extraordinary heroism" in the war with Germany was presented to Patrick McGunigal, a ship's fitter of the U.S.S. *Huntington.* No matter what position a man may fill in the United States Navy, he may be counted upon to respond instantly to a call for help. The hero is often a man with no special preparation for the work demanded.

In the long history of the Navy it might be imagined that every conceivable form of accident would be a commonplace, but McGunigal nevertheless faced a danger new to the seas. A lieutenant had gone aloft in a balloon to make observations, when a squall struck his unwieldy craft so suddenly that he had no time to save it. The captive balloon is a novelty on shipboard, and the crews

are as yet scarcely familiar with all the tricks that the wind may play with it.

A balloon is in no sense shipshape. Under the most favorable conditions it is an awkward, unwieldy thing to handle. The inflation even of a small observation balloon requires skill and patience. The generators must be carefully adjusted and the huge silken bag kept under control with difficulty while it slowly fills. A considerable force of men is required for the work.

No other activity on shipboard is so much at the mercy of the weather. A gust of wind that would pass unnoticed under ordinary conditions is anxiously watched by the balloon crew. A light breeze is enough to make the captive balloon toss about and strain at its ropes. The fabric, too, is so delicate that contact with some metal corner of the ship's upper works may tear it.

Once inflated and the observer's basket attached, the balloon ropes must be paid out skilfully until it is free from the ship. Should it swing against hot metal, there is imminent danger of an explosion. The wind must be closely watched, since every

gust is a menace to the balloon and its passengers. Even when it has risen above the level of the stacks, the towering steel observation masts of our battle-ships menace it until the balloon is well aloft.

In drawing down and housing the ship's balloon the dangers are repeated. The balloon must, besides, be kept inflated for days at a time. It is usually lashed as securely as possible on the after-deck, where it takes up a surprising amount of valuable space. A ship thus equipped appears to have some curious swelling or excrescence bulging high above the turrets. In case of a blow the silken bag, even in this position, offers so much surface to the wind that it is often difficult to keep it in place.

The captive balloon on the U.S.S. *Huntington* had been struck by a squall, driven down, and soused into the sea in a flash. The officer observer in the basket was drawn under the water, and on rising found himself a prisoner amid a tangle of ropes in the partially submerged basket. A wrecked balloon is an exceedingly dangerous craft. The air-filled bag is, of course, practically

unsinkable, but it also drives before the wind. The basket may be compared to a tilted pail as it is dragged along the water in the wake of the balloon. The inflated silk proves very elusive. A man cannot dig his nails into the soft silk, and it sinks like a pillow under his weight if he tries to climb on it.

The officer in the basket was drenched and blinded by the water. McGunigal was the first to reach the wreck. He climbed down the ship's side and, dragging a rope after him, swam to the balloon. The basket filled and sank, and McGunigal, while supporting the exhausted officer, struggled with the tangle of ropes.

While supporting the officer with one arm, McGunigal tried desperately to hold to the balloon for support. It continued to elude him, sinking at the slightest touch or driving ahead before the wind with each gust, and pulling the two men along in its wake. It would be difficult to conceive of a more baffling object. But a drowning man will grasp at a straw—or a submerged balloon. McGunigal managed to fasten the rope he

carried about the officer, who was now thoroughly exhausted, and the two were finally drawn on board.

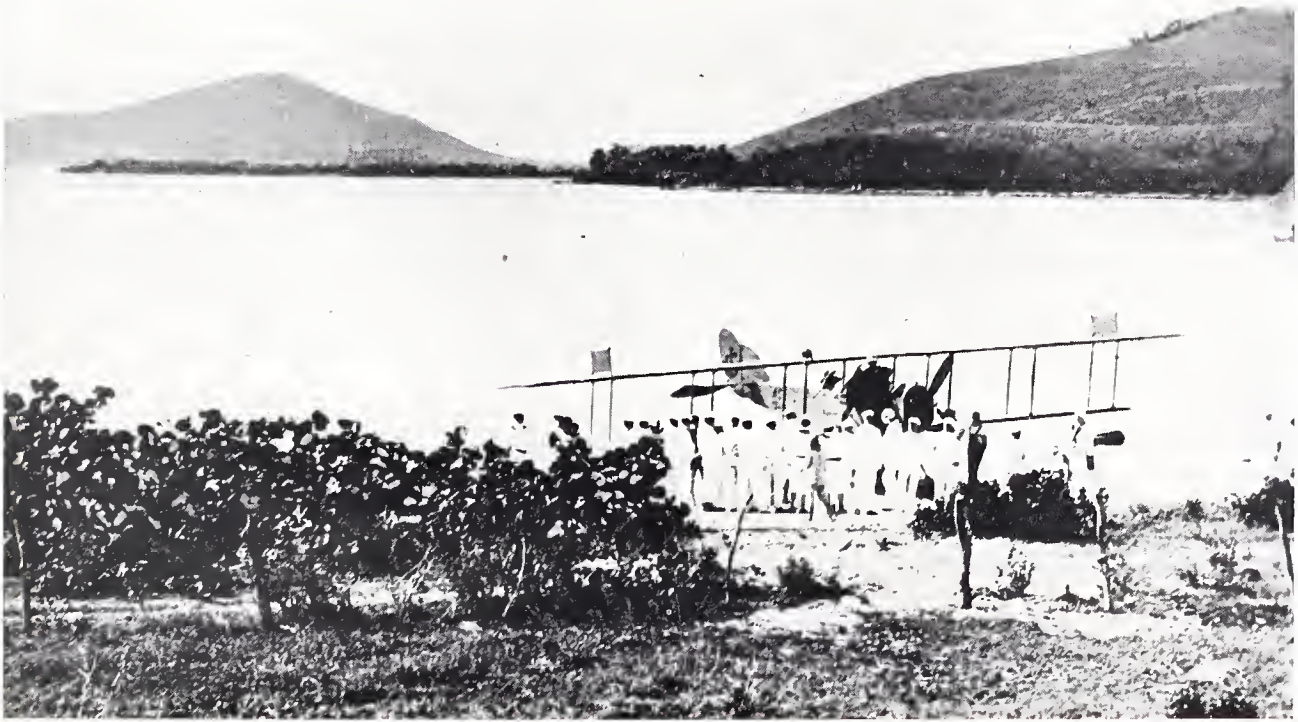
XXX

AIR COAST PATROL

THE exploit of the first naval dirigible to be detailed on actual submarine scout duty in home waters is typical of this dangerous service. The names of the pilot and of the student who made the flight have been censored by the naval authorities.

Profiting by French and English experience in building such aircraft, the new American naval dirigible is especially efficient. It is of the general "blimp" type. Beneath a cigar-shaped balloon envelope is suspended a serviceable car carrying the engines and the crew, which, unlike many European dirigibles, will float upon the surface of the water.

The craft will rise rapidly to great altitudes, and may be driven under favorable conditions at a speed of forty miles an hour or better. Like other lighter-than-air ma-



(C) Brown and Dawson.

Seaplane Practice

Drill at the Newport Navy Yard

chines, the naval dirigible can maintain a stationary position in the air, which renders it especially valuable for scout work. It can therefore do some scout work better than the aëroplane—in its present stage of development.

The aëroplane scout makes much faster time than a dirigible covering a wider area; but the aëroplane must maintain a constant speed of fifty miles an hour or so, which makes close observation difficult. If the sea be rough or obscured by fog, it is a very easy matter in such rapid flight to miss so small an object as the periscope of a submarine. From the car of the new naval dirigible, whose flight may be stopped at any moment, the observer can observe more closely.

When the first submarine raid was made on American shipping off the Atlantic coast, it found the Navy in readiness for scout service. The Government has not permitted any definite figures to be published as to the strength of the scouting fleet of aircraft engaged in the work, but it was probably numbered by hundreds. While the torpedo-boats and submarine-chasers were scouring

the waters for the enemy, the most formidable air fleet ever assembled in America was soon aloft, scouting far out to sea. From the various coast resorts the air fleets were watched day after day as they patrolled back and forth at regular intervals with the regularity of a railroad schedule.

The service aloft in these scouting craft is a very daunting business. It is extremely creditable to the hundreds of naval airmen that they should have responded so quickly and acquitted themselves so well in this new experience. Few, if any, of these men had ever seen active service. The scouting trips carried them far out of sight of land. In case of accident they might find themselves far from assistance in the open sea.

Much of the time the weather was unfavorable and the air fleets faced high winds. The reader will readily recall the fact that but a few years since an airman who went aloft took his life in his hands and his flight was watched with breathless interest. To-day the Navy comprises tens of thousands of men who not only take their aircraft aloft

under the most dangerous weather conditions but are prepared to fight as well. Every member of the great scouting fleet may be said to have shown conspicuous bravery.

One of the scouting dirigibles, however, deserves special mention. It had started out from the naval station at Cape May, carrying a pilot and a student aviator. So fleet are these craft that it was ordered to patrol the entire length of the New Jersey coast from Cape May to Sandy Hook. While flying far out at a point forty-five miles southeast of Sandy Hook, the engines became disabled and the dirigible was forced to descend.

The dirigible had planned to scout off shore the length of the New Jersey coast and return before night. When the time for her arrival had passed, a fleet of seaplanes and destroyers was sent out, and searched throughout the night, but without finding any trace of her. The crew of the wrecked dirigible, meanwhile, pluckily labored for hours to get the engines to work,

without success. Several passing ships were sighted at a distance, but they failed to sight the dirigible.

After many hours in this extremely perilous position, the dirigible was sighted by the schooner *Luther Little* and brought safely to New York. Three other naval airmen were wrecked in a similar manner, and were missing for three days, but succeeded in bringing back their aircraft. It is gratifying to know that the naval airmen were found well prepared for service and that hundreds of aircraft were able to fly for tens of thousands of miles under difficult conditions without the loss of a single man.

XXXI

SPOTTING THE FALL OF SHOTS

DURING a naval engagement the most exposed position in the entire fleet is probably that of the men who go aloft to spot the fall of shots. Whether his observations be made from a kite balloon or an aëroplane, he becomes a tempting target for the enemy's fire. The great bulk of a balloon tethered to the masts of the battle-ship is clearly visible for miles, while the white wings of an aëroplane are always conspicuous. The observer in such a craft is absolutely without protection of any kind, and a lucky shot brings him down with a rush.

A writer of fiction who prophesied years ago the use of aircraft with the navies questioned whether men could be found to face calmly so great a hazard as these flights required. He dwelt upon the horrors of a fall from a great altitude, and the insecurity

of the position, drawing a fairly accurate picture of the service that is to-day a commonplace. His doubts have been definitely answered. Aëronautical work is now probably the most popular branch of the service.

The records of the Navy Department fail to mention any award of merit for conspicuous bravery among the aëro observers. It is a high tribute to the courage of the men that this exceedingly difficult and dangerous work should have been performed satisfactorily for years, and is looked upon merely as an every-day affair undeserving special mention.

The observers are carried aloft by aëroplanes, naval dirigible balloons, kite balloons, and ordinary captive balloons. Each form of aircraft has some advantage of its own; all are distinctly perilous. From a position above the fighting-ships the observer must not only coolly face the danger of instant destruction, but his observations require him, at the same time, to make complicated mathematical calculations. A man may find courage to control himself and look down

the mouth of an enemy's gun, but it is another thing at such a time to make use of his knowledge of higher mathematics.

The observer in a captive balloon communicates with his base, as a rule, by means of a telephone running down the rope that tethers him to his ship. He sits in the basket with a telephone receiver clasped to his ears and a transmitter before him, leaving both hands free. With his glasses trained on the enemy's position, he can report his observation without the delay of a second. The value of such observations are obvious.

An aëroplane or a naval dirigible, being detached, may cruise to any distance, and has a much better chance of dodging the enemy's fire. The observations in this case are transmitted by wireless telegraphy. Until the war came, observers were seriously hampered by the lack of light and efficient wireless apparatus. The equipment weighed from three to five pounds per mile of transmission. Their radius was thus very limited. In two years the weight of such apparatus was reduced, however, to only one

pound per mile of transmission, and the carrying capacity of all forms of aircraft was at the same time greatly increased.

It is necessary for the observer in an aëroplane or a dirigible to be an expert wireless operator or to carry an assistant. It requires a good mental poise to use one's knowledge of so complicated a science when exposed under fire at high altitude, but there is no lack of volunteers for this difficult post.

The efficiency of gun fire has been enormously increased with the assistance of these observers. From an altitude of perhaps several miles they can look directly down upon the enemy. If a shot falls short or goes too far, the gunners are instantly informed and can correct their aim for the next discharge. Since the gun fire of modern battle-ships is marvelously accurate, a word is sufficient. There have been instances of observers giving such minute directions to their gun crews that a particular part of a ship has been struck, not once but repeatedly, at a distance of several miles.

With the aid of the observers, the long-range guns of the battle-ships may be used

to bombard cities and ships on waterways far inland. The target may be miles distant, and separated by intervening mountains and wooded country; yet shots thus directed have struck within a few feet of the target.

XXXII

AIR SCOUTING

WHEN the history of the war comes to be written, it will be found that the naval air pilots have taken a major part in turning the scales against the submarine. When a new line of attack was demanded to overcome this menace, the naval air pilot rose to the occasion. By many long and perilous vigils, by day and night, above the sea lanes, he has put fear into the hearts of the U-boats' crews.

Naval aircraft are counted by thousands. With the progress of the war the most fantastic dreams of romances have been realized. These fleets go aloft, patrol extended areas, and return with the regularity of a railroad schedule. Thousands of square miles of water are thus kept under constant observation. Even so small an object as the periscope of a submarine cannot long escape their observation.

These air fleets must be manned by a highly specialized personnel. Apart from the skill and experience required by the pilot in making long air cruises, the observer must be especially fitted for his work. One of the great advantages of such craft is the opportunity they afford for "deep sea vision." The phase is new in naval terms. From a point directly above, the observer is able to look down into the water to surprising depths. He can spy upon submarines, even when submerged to a depth of a hundred feet, which would be invisible to any other craft.

Before being intrusted with the post of observer, the naval aëro observer requires long technical training. The depth at which a submarine may be observed depends upon the color of the floor of the sea and on that of the sky. A thousand details must be mastered. A different experience in training is required for the men who observe from a scouting aëroplane or from a "blimp"—a balloon with an aëroplane chassis attached beneath it. The chassis carries the motor and propeller, these being supported by the

balloon instead of by wings. The propeller drives the chassis through the air, and the balloon is drawn along after it. The observer in a "blimp" can travel forty miles an hour, but he can also hover or come to rest in mid-air, and remain in a stationary position for an indefinite time. The aëroplane, on the other hand, may have a speed of more than a hundred miles an hour, but it cannot slow down to less than thirty miles without danger of falling.

The American Navy has for several years been actively training air pilots and observers. It is not generally known that the first submarine hunt in America occurred as early as March 26, 1917. Two U-boats were reported one day off the Long Island shore, "lying in toward the Sound." The report proved to be a false alarm, but it found the naval authorities on the alert. Four flyers rose from Mineola and Governor's Island, and, in the face of a forty-mile wind with rain and fog, scouted off the Long Island shore. The aëroplanes went out to sea from five to seven miles. The search lasted for three days.

The first report of the submarine raid on American shipping off our coast early in 1918 found the Navy well prepared. No official figures are available, for obvious reasons; but it is known that several hundred aëroplanes, manned with experienced pilots and observers, were ready for duty. Within a few hours the whir of their propellers might be heard along the coast from Maine to Florida. The patrol covered thousands of miles without a serious accident.

The pilots and observers are also trained in bomb-dropping. The men first receive technical instruction which enables them to calculate the trajectory of a bomb in falling from an aëroplane in rapid flight. He practises with an ingenious contrivance, dropping weights upon a miniature landscape or sea dotted with ships. In many flights he learns to drop dummy bombs upon a variety of targets. A great force of alert American boys are already actively engaged in such naval patrol work abroad and at home, while a much larger force is receiving instruction.

No flying is probably at once so perilous and so fascinating as the night reconnais-

sance work. As a rule, only the most experienced and dependable air pilots are intrusted with such details. These airmen must fly practically blindfolded. Since the earth is hidden, the pilot must depend largely upon his sense of equilibrium to tell him at what angle his craft may be inclined. The lights visible on land or water at night from an altitude of several miles are at best very indistinct and misleading.

Since all friendly as well as enemy aircraft fly with lights out, they cannot be seen, even on clear nights, except at close range. The night pilot must get his bearings at such times from the noise made by the propellers of approaching craft. From long experience, he is able to distinguish the different note in the whir of the propellers driven by different engines. His life may depend upon the accuracy of his judgment in thus distinguishing friend from foe.

The obvious danger in night flying is, of course, that the pilot may lose his way and be unable to return to his base. An elaborate system of signals has been worked out to enable him to recognize his friend. On

approaching his base, while sailing at a safe altitude, the pilot, by means of a light, communicates in a secret code. He must wait until he receives a reply in the same code before coming down. The enemy will, of course, try to deceive him, and the pilot must be on his guard. Only when an exchange of signals absolutely satisfies him is the pilot allowed to negotiate the difficult operation of a night landing.

XXXIII

AERO PHOTOGRAPHY

ALTHOUGH no men have as yet been singled out for conspicuous bravery among the aëro photographers of the Navy, their service is at once so perilous and so picturesque that no list of naval heroes would be complete without them. The aëro photographer faces much the same danger as other flyers, and in addition must approach close enough to the enemy positions to focus his camera upon them, and return again and again to the point of danger to make sure of his exposures. A verbal report of the work of the bombing planes will not suffice: the aëro camera-man must bring back actual photographs, and good ones, of the damage inflicted.

No other country is so well prepared as America to supply expert camera-men for this service. We are a nation of photog-

raphers. It has been estimated that there is one camera in use for every four people, counting the entire population. Children begin by snapping pictures with small hand cameras, and replace them with better apparatus as they grow older. Much of this knowledge is elemental, but a large proportion of the population learn to take excellent pictures. When the demand for photographers for the Navy was made, there was a wealth of good material to choose from. It was not necessary to train men from the beginning. Thousands were found among those enlisted who were already skilled camera-men.

In order to carry on naval preparations over the sea, hundreds of miles of photographic maps must be prepared. Every detail of the enemy's coast-lines is photographed. Before an air raid is carried out —such as that upon the German submarine base at Ostend—the aëro photographers are sent out again and again. The anti-aircraft defenses are able to put up a barrage fire to a height of more than ten thousand feet, or two miles. To fly below this level is to face

great danger. The photographic planes often venture much lower down, however, to secure sharply focussed pictures. And they do so, perhaps, at intervals of a few hours, in order to photograph any changes the enemy may make in his defenses.

So vital are these aëro photographs to the naval authorities in planning a raid that no risk is considered too great in securing them. With these photographic maps of the coast-lines before him, a naval officer may be said to look directly down upon the enemy. Little is left to chance. From these pictures the exact position of the weak points in the enemy's lines are ascertained, and the pilots of bombing machines may be told just what he is to do.

Aëro photographers not only precede the raids, but they must follow them as well, to bring back definite photographic evidence of the damage inflicted. As a matter of course, the enemy knows that the aëro photographers are coming, and is on the lookout for them; but even this danger must be faced, so important is the evidence collected.

While working under (or is it over?) fire,

the aëro camera-man must have steady nerves and an unshaken hand. Every one knows how delicate a matter it is to judge the distance and the light in making a good picture. In photographing from the air the problem becomes much more complicated. The passage of clouds and the effect of atmospheric conditions at high altitudes must be considered. With the enemy sending up a deadly barrage, or perhaps an enemy fleet attempting to drive him away, these camera-men of the air forces never falter.

Everything is done to simplify the work and save a few seconds of priceless time. The cameras are sometimes placed in the floor of the car, or fastened to the outer side, and arranged with ingenious automatic devices for making the exposures. The pictures may be taken by pressing a button or pulling a strap. Moving pictures are also taken aloft, and thousands of exposures made, as the aëroplane dodges the enemy's fire.

The remarkable photographs that appear in such numbers in the papers and magazines gain a new interest when we consider how

high a price is paid to secure them. The aëro camera-man must exercise all his skill and ingenuity, knowing that any exposure may be his last and an unlucky shot may send him plunging down. The courage that enables our men to face such dangers is so common that the authorities have not seen fit to give it special mention.

XXXIV

A SEVEN-HOUR AIR BATTLE

AT the beginning of the war the aëroplane was little more than a toy. Its most enthusiastic friends did not anticipate its amazing development. The first encounters between aircraft were watched with curiosity, but the military advantage of the air fleets was considered problematical. Under the most favorable conditions it was found difficult to keep an aëroplane aloft for any length of time; they carried little weight, and air navigation was difficult. When two aëroplanes met in combat, they manœuvered much the same as knights in a medieval tournament. Flying at comparatively low altitudes, they would pass each other, firing a few shots from guns of small caliber, and then turn and repeat the attack.

Two American officers—Lieutenant J. A. Eaton and K. B. Keyes—recently took part in an air battle that lasted for more than

seven hours. The engagement took place above the sea, far out of sight of land. In case of accident the airmen faced the danger of drowning. A series of complicated manœuvers were carried on aloft, while the battle was fought by formidable air batteries.

The description of the air battle written by Lieutenant Keyes is fascinating. Keyes was gun-layer in an aëroplane, one of a fleet of five aircraft flying off the coast of Holland near Terschelling, when a fleet of German machines was sighted.

"Lieutenant G—— was seated near the wheel," Keyes writes. "His duty was to kneel, with his eyes above the cowl, and direct the pilot. I was in the front cockpit, with one gun and four hundred rounds of ammunition. In the stern cockpit the engineer and wireless ratings were to handle three guns.

"We took battle formation, and went forward to meet the enemy machines; but when almost within range they turned and ran away from us."

Later another fleet of German planes was sighted and again driven off. These fleets

were probably acting as decoys, for shortly afterward the Germans appeared in considerable force. Lieutenant Keyes describes the main action as follows:

"Suddenly we discovered that a large number of hostile planes were steering toward us, not high in the air, but very close to the water. Ten machines were in this group, but they were joined in a few minutes by five more. The scouts were painted black and the two seaters green, and seemed very hard to pick up.

"We swung into battle formation and aimed for the middle of the fleet. When we were nearly within range, four planes on the port side and five on the starboard side were close to our level. Two planes passed directly beneath us, shooting upward. The firing was incessant from the beginning, and the air seemed blue with tracer smoke. The Germans used explosive bullets."

The wounding of Lieutenant G——, which occurred at the height of the battle, did not shake the nerve of the Americans, who continued to fight while their comrade lay unconscious beside them.

"Once I looked round," writes Lieutenant Keyes, "and noticed that Lieutenant G—— was in a stooping position, with his head and one arm on his seat, the other arm hanging down as if reaching for something. I had seen him in this posture earlier in the day, and so thought nothing of it. All this I noticed in the fraction of a second, for I had to continue firing.

"A few minutes later I turned around once more, and found with a shock that Lieutenant G—— was in the same position. It was then that the first inkling of the truth dawned on me. By bending lower I discovered his head was lying in a pool of blood."

The Allied squadron put up a good running fight, despite their losses. The reports of the various pilots shows that the discipline was excellent throughout. The aëroplanes kept in battle formation and carried out several difficult air manœuvers. Lieutenant Keyes' description of the later phases of the battle makes stirring reading:

"Suddenly I found our machine had been

cut off from the formation and we were surrounded by seven enemy seaplanes. We fought for ten miles or so, until we drove seven Germans off. One of them was driven down out of control and made a very poor landing. Another was badly hit, sideslipped, and crashed in flames from a height of two thousand feet. All were severely punished."

The engines of Lieutenant Keyes' machine now began to act badly. From the matter-of-fact description it is difficult to realize that the scene was taking place high above the sea.

"The engineer came forward," writes the Lieutenant, "to say that the port engine petrol pipe had broken. By this time I had laid out Lieutenant G—— in the wireless cockpit, cleaned up the second pilot's seat, and taken it myself.

"We descended to the water at 4:45 P. M., ten miles northwest of Vlieland. There I loosened Lieutenant G——'s clothing, made his position easier, and felt for his heart, which I was sure was beating feebly. Then

we rose and sighted two of our own planes. We picked them up, swung into formation, and laid our course for Z.

"At 7:10 we sighted land, and twenty minutes after we were resting in front of the slipway. We at once summoned medical aid, but found that nothing could be done for Lieutenant G——. The shot had gone through his head, striking his mouth and coming out behind one ear, tearing a two-inch gash. Our boat was riddled with a number of shots, and had also a torn top between the front cockpit and the beginning of the cowl. The duration of the fight was seven hours and ten minutes."

PART IV

IN HOME WATERS

XXXV

IN PEACE TIMES

PEACE has its heroes no less than war. In the daily routine life of the fleet there is no lack of opportunity for distinguished service. The fleets comprise a widely scattered population equal to that of a considerable city. An immense amount of labor must be done on an exacting schedule. This population, again, is constantly threatened by the manifold dangers of life at sea, while each of the floating fortresses carries immense stores of explosives. The average man who watches a great fleet sweep out to sea little realizes the sleepless vigilance that guards its safety.

From the hour a ship is laid down in some navy-yard until, years later, she is condemned and broken up, every hour of her life is fraught with danger. A man-of-war laid up for repairs at the New York Navy-Yard

would seem to be safe from the perils of the sea. No submarine could penetrate here while her gangway leads directly to solid earth. Yet, during the repairing of a ship in this dry-dock recently, an ugly fire broke out in the lower part of the ship's hold. It was a simple matter to flood the burning area, and the fire-fighters of the crew were at their stations, when a report came that a workman was missing somewhere below. Following the alarm there had been ample time for all to reach the deck; but, as it was discovered later, a boy assisting the workmen in the ship's tank had become unconscious from the smoke and heat and was left behind.

A hurried consultation was held on deck, and it was decided that the boy must lie at the bottom of a shaft some thirty feet below the main-deck. It was impossible to reach the point by the ship's ladder or by stairways, which were cut off by the flames. A volunteer was called for, and a seaman was selected from the several sailors who stepped forward. A line was placed around his body, and, armed with a small lantern, he

was lowered cautiously into the darkness.

As he descended the heat became intense and the smoke was suffocating. A signal would have brought him to the safe level of the deck in a few seconds; but the sailor made the descent, and then, lantern in hand, began to search for the missing workman. To the men holding the rope on deck the time seemed interminable. Several minutes passed without any sign from below. The men were on the point of pulling up, fearing their man was unconscious, when the welcome signal came. The increased weight on the rope told its own story. When the sailor appeared above deck, he was clasping the unconscious body of the missing boy. A little adventure of this kind is considered all in the day's work.

A somewhat similar accident occurred aboard the U. S. S. *Buck* at one of the navy-yards. Two employees of the navy-yard had entered the coffer-dam of the *Buck* without permission, and were overcome by poisonous gases in the hold of the vessel. Every one realized the danger of entering the hold and breathing the dangerous fumes, but volun-

teers to save the men were not lacking. A quartermaster, Felix Laskowsky, was selected from among those who volunteered. Attaching a long line about his body, he descended into the hold safely, found one of the unconscious men, and was struggling up the ladder with his burden when he was himself overcome. He fell from the ladder, fracturing his skull, and died almost immediately. The young quartermaster had enlisted at Dallas, Texas, less than a year before.

The term sea-cook should no longer be a term of reproach. No special heroism is called for in the ship's galley under ordinary circumstances. Every man aboard ship nevertheless, when the test comes, may be depended upon. The adventure of William B. Gray of the Naval Reserve, while serving as ship's cook, should serve to remove that ancient stigma which attaches to the sea cook and his progeny.

Gray's ship chanced to be stationed in North Carolina Sounds one January when an unusually severe cold wave covered the Sounds with thick ice, which remained un-

broken for three weeks. The condition was very unusual in that locality. A lighthouse within sight of the ship, with its inmates stationed at a particularly inaccessible point, was completely isolated and cut off from supplies. Word reached the ship that the lighthouse-keeper and his family were suffering.

The ice covering the Sounds was much too thick to break a channel for a boat, while too thin in places to allow a man to cross in safety. The Sounds were, besides, swept by strong and irregular currents, and should a man break through he would probably be swept under the ice. Gray conceived the idea of attaching runners to a ship's boat, and when this remarkable boat-sled was ready it was loaded with supplies for the marooned lighthouse-keeper. Gray made the trip alone.

The heavier portions of the ice were crossed by pushing the boat cautiously forward. There were many weak spots, and Gray had to keep tight hold of his boat to guard against accident. Several times he broke through the ice, but saved himself by holding to the side of the boat and climbing

aboard. When the ice proved too thin to support the sled, the boat was pushed laboriously forward. Standing at the prow, Gray would break the ice before him with an oar and then push his boat into the opening. It was slow work.

After many hours Gray reached the lighthouse and the supplies were transferred. Throughout the trip the cold was intense, and after each wetting the water froze solidly the cook's clothes. Considerable skill was required in handling the boat to negotiate these icy passages. Gray was new to the service, having enlisted but a few months before. He is a native of Newbern, North Carolina, and doubtless drew encouragement from the fact that his act of heroism was to bring relief to people of his own State.

XXXVI

ON THE SPUR OF THE MOMENT

IN commending the bravery of Ora Graves, a seaman of the U.S.S. *Pittsburgh,* the Government showed that it keeps an alert eye upon every activity of its great fleets. On this date, December 23, 1917, great issues were at stake in European waters, and an act of heroism at home might easily have passed unnoticed.

The Graves affair is specially interesting because it came unexpectedly in the course of ordinary daily drill. In a great naval battle, or while navigating dangerous waters, the crew might naturally be keyed up to the occasion and in a mood for special acts of heroism. The firing of a salute in American waters was as commonplace as the scrubbing of a deck. Discipline might be expected to relax at such times below the fighting pitch. Like scores of other duties aboard ship, it is

all in the day's work, when the men might be caught off their guard.

The drill has been made familiar by many pictures, including moving pictures. The gun crew take their stations on the open deck, for no return fire is to be expected. The cartridge is brought up by an electric hoist. The men have come to look upon such drill with the contempt of its dangers bred of long familiarity. A mere three-inch shell seems as harmless to them as a fire-cracker. The smooth mechanism of the gun is set in motion. The gun is opened and a cartridge slid swiftly into place and the breech closed. Accustomed to the roar of fourteen-inch guns the report of the salute charge scarcely attracts the crew's attention.

At the firing of such a salute charge from a three-inch gun, one day aboard the U.S.S. *Pittsburgh,* an ugly explosion occurred. Two men were instantly killed and several others, including Graves, seriously injured. The crew were taken entirely by surprise.

The seaman Graves had been struck senseless and hurled some distance along the deck. The alarm of the explosion spread instantly,

and in a moment men were rushing to the gun to lend assistance. Graves lay for a few seconds unconscious some feet from the gun, and in the excitement of the moment was overlooked.

He recovered consciousness, pulled himself to a sitting position, and looked about hazily. His eyes rested on some burning waste that had been ignited by the explosion and hurled some distance from the gun. It had fallen near a casement containing a large supply of explosives. No one else had noticed the fire or realized the danger to the ship. There was not an instant to spare.

Weak as he was from the explosion, Graves staggered to his feet. He might have called for help, but he realized that he could reach the burning waste before any one else, and the safety of the ship might be decided by a second's time. His injuries pained him cruelly, and once he staggered and nearly fell; but he had reached the burning waste before any one else realized the ship's danger.

The fire had already spread near the powder when Graves, gathering up the cotton in

his arms, and working with desperate haste, began to throw it overboard. There were several armloads of the waste, but Graves stuck doggedly at his work until the last of it was in the sea. Not until the danger was over did he realize that he was seriously burned about the face, neck and hands. A few seconds' delay would have brought the flames to the powder and the entire ship would have been wrecked and probably lost.

The inspiration of the incident lies in the readiness of the seaman to think and act the moment he regained consciousness. Few people, on awaking even from a normal sleep, instantly regain all their faculties. After such a shock the strongest man might be expected to look somewhat hazily about him. Graves was able to see and act with instant decision. The medal awarded to Graves was the second to be awarded since our entrance into the war.

XXXVII

THE FIRE-FIGHTERS

AMERICAN seamen are found extremely versatile in attacking problems that demand quick decision. Scattered as they are throughout the country, a great variety of demands are continually made upon them, quite apart from their duties with the fleet. The constantly mounting debt that the public owes the men of the Navy for such assistance is not generally appreciated.

When the business district of Norfolk, Virginia, was threatened by fire, every one, as a matter of course, turned to the sailors for assistance. The case is typical. The discipline of the Navy is one of the most highly prized assets of the country. The arrival of sailors at the scene of any catastrophe instantly inspires confidence.

The fire at Norfolk, it will be remembered,

threatened the entire city. Every available piece of fighting apparatus had been called, but the fire continued to spread. The fire departments of near-by towns were called upon. Scores of fire-engines were hastily loaded on flat-cars and rushed to the city.

The arrival of a large force of enlisted men from the Norfolk Navy Yard finally turned the tide of battle and the city was saved. Hurried to the scene, some of the men were detailed to patrol the city, to handle the crowd and protect property, while others took a hand in the fight. The men gave an excellent account of themselves. At such a time the discipline and team work that is the result of years of training comes out strongly in contrast with the well meaning but undisciplined efforts of a crowd of volunteers.

No time was lost in discussion. At a command, the men advanced double quick to their designated stations. The terror of the advancing flames and the darkened streets spread terror to the people. The sailors were at home amid such confusion. Trained to stand at their guns under shell fire and

coolly to execute complicated orders, they remained as self-possessed as if on parade.

Before the arrival of the sailors there had been great difficulty in keeping the crowds within bounds. At several points they had "rushed" the ropes, filling the streets where the firemen were at work. But the sight of these well set up, disciplined men inspired confidence. Thereafter the streets were kept clear. The guard proved especially valuable in transmitting orders throughout the burning area, and in organizing and keeping the different fire-fighting units in touch with one another.

On the fighting line, face to face with the fire, the sailors proved invaluable. Without relief many of them worked continuously throughout the night. The weather was extremely cold, and many of the men were repeatedly drenched to the skin with the icy waters; but they continued at their posts, refusing to be relieved as long as the danger continued.

There were many narrow escapes, and when the men reported later the officers were gratified to find that none were missing. At

one point, in carrying a line of hose to the top of a building to gain a better position, the sailors were repeatedly warned by the local firemen. They held their posts, however, until their own officer ordered them to retreat. A few minutes afterward the walls of the building fell in.

An especially narrow escape was made by John Joseph McLoughlin, a chief boatswain's mate, and two sailors who succeeded in carrying a line of hose through the flames to a valuable strategic point of attack. Like the many others, they continued to work throughout the night, although wet with water that froze their clothing. Many of the men remained continuously on duty in the cold for more than two days.

XXXVIII

THOSE IN PERIL

IN the Navy the rescue of drowning men is almost a daily occurrence. To fail in courage when such a call comes would be a disgrace. A complete report of such rescues would become monotonous from its repetition of feats that, taken separately, would seem inspiring. Let the familiar cry, "Man overboard!" be heard at any hour of the day or night, winter or summer, in calm or storm, and there will be no lack of volunteers. The waters may be infested with sharks, or strewn with dangerous rocks: there is never a moment's hesitation. Once this trifling service has been performed, the sailor goes about his work and thinks nothing of the exercise.

It is only when such a rescue takes some novel form that the public is likely to hear of it. Even amid the endless repetition of

rescues, the case of Lieutenant Richard L. Connoly stands out prominently. At the time a full northeast gale swept the Atlantic, swinging his ship almost on its beam ends, when some object became involved with the steering-gear. A quartermaster, in trying to clear the wheel, lost his balance on a sudden roll of the ship, and was swept overboard. The sea was running wild, and, although a good swimmer, the quartermaster was soon exhausted.

When it was seen that he could not help himself, a ship's cook fastened a rope about his waist and jumped in the water after him. He reached the quartermaster, and succeeded with great difficulty in bringing him to the side of the ship. The sea, meanwhile, had worn out the cook, and both men were too weak to make use of the rope thrown to them. It was then that Lieutenant Connoly hit upon a novel plan of reaching the men. Swinging himself far out over the water, he fastened his feet in the ship's rail, and, with his head down, fished (so to speak) for the two men in the water. He could reach them only when the ship rolled far over. Several

times the ship rolled toward them, but not far enough. The Lieutenant meanwhile, hanging head down, was raised violently up and down. After repeated attempts, he reached the men in the water, who grasped his outstretched hands. With a man clinging to each arm, he was drawn back to the level of the deck, saving both men at the same time.

An ingenious variation on this method was tried with success by a seaman on the U.S.S. *Naradalogs*. The ship was lying at anchor in an Atlantic port, when a seaman, while passing a line outside the main-rigging, tumbled overboard. Like Lieutenant Connoly, the seaman saved his man without so much as wetting his shirt-sleeves. Climbing down on the ship's chain to within a few feet of the water, he took a firm hold of the chain and swung himself down until his legs were on a level with the seaman's shoulders.

The seaman was weak from his fall and exposure, but his rescuer twined his feet and legs about him and held him above the water. A boat was hastily lowered and the seaman was lifted into the boat. An interesting fea-

ture of the rescue was the fact that the agile seaman had only been in service since 1917.

The proverbial readiness of the United States Marines was evidenced in a sensational life-saving exploit in Guantanamo Bay, Cuba. A private of marines was floating on a log well out in the Caribbean Sea, when he was attacked by a shark. In defending himself he fell off the log, and, to add to the danger of the situation, was suddenly taken with cramps. He managed to keep afloat, rubbing his leg vigorously to restore circulation, and splashing the water to scare away the shark, which might still be in his neighborhood.

A squall meanwhile came up quickly, as they are likely to do in this region, and the marine found himself drifting out to sea. He was observed from shore, and a recruiting party was at once despatched to his assistance; but the rising sea prevented them from getting near him. Meanwhile Private Leonard B. Dean, of the Marine Corps Branch of the National Naval Volunteers, watched the man drifting out to sea, and made his own plans to rescue him. It is one

thing to jump into the sea in the excitement of the moment and bring in a man: it requires a different kind of courage to work out such a rescue by the laws of navigation, and to carry it out by three hours of swimming in a high sea.

Dean watched the movement of the current and the direction of the storm, and, laying a course accordingly, overtook the man on the log well out to sea, but in a favorable current. After three hours of swimming he brought his man safely to shore. He did not encounter the shark. After reaching land, Dean remarked quietly: "I thought the fellow would take the course he did, and planned it beforehand."

A high sea tests the courage of the most hardened salt, and when to the storm is added the menace of sharks the combination is terrifying. Secretary Daniels has given special recognition to Wallace Odell Prater, a machinist mate of the second class, for facing both dangers in making a rescue.

A seaman had fallen overboard and been attacked by a shark, which had bitten off his leg. Four other sharks were in plain view,

circling about the injured man with fierce darting movements. Prater, although recognizing the danger, jumped into the water without the slightest hesitation, swam to the injured man, and, supporting him, turned to the ship. The fins of several sharks were seen in the water within a few feet of the two men, but they returned in safety. Prater is a Kansas boy who had served only a few months in the Navy before making his rescue.

Every section of the country seems to have contributed men to the long list of those rewarded for saving life. It is inspiring to realize that the Navy can draw upon so wide an area for the material from which heroes are made. A lad raised in the northern part of Alaska recently won official distinction for such service. He was serving in the Naval Reserve, second class at sea, when a ship's storekeeper lost his footing and fell overboard. In falling he struck the rail of a lower deck, and was senseless when he reached the water. The body instantly disappeared between the boat and the dock. The position was extremely awkward, for

the body was quickly drawn beneath the dock.

The Alaskan, without any suggestion from his officers, instantly jumped in at the point where the body had disappeared. The body of an unconscious man is very difficult to handle even in open water, and in this cramped position great physical strength as well as skill was required. The storekeeper was brought safely aboard. The ship's officers watched the rescue from the deck almost directly above. Upon their enthusiastic report of the Alaskan's daring, the Secretary of the Navy ordered official recognition of the act.

The presence of a naval vessel of any kind is an assurance that the waters of the neighborhood will be efficiently patrolled against accident. Another remarkable rescue was made from a patrol boat in Long Island Sound. A young New York lad, who had entered the service only a few weeks before, was standing on deck when he saw a boat carrying a pleasure party swept against a wharf and its party thrown into the water.

Although the tide was unusually strong,

the sailor was after them in a moment. Swimming to the upturned boat, he reached a man, and, keeping him afloat, swam about until he found one of the women of the party. He succeeded in keeping both afloat until assistance arrived. This lad had had no experience of the water before enlisting.

A medal has been awarded by Secretary Daniels for the conspicuous bravery of a seaman in saving the life of a man who, in turn, was saving a third seaman. A launch carrying two men belonging to the Aëronautical Station at Pensacola was cruising well out to sea when its gasolene tank suddenly caught fire. The fire spread so quickly that the boat was soon a mass of flames, and the men, after fighting it until they were both badly burned, were forced to jump overboard. One of the men, an apprentice named Gash, was unable to support himself in the water, and his companion, a seaman named George Buckley, immediately went to his assistance.

Both men were afloat when a Commodore's barge arrived on the scene. A life-preserver was thrown to them, but unfortu-

nately it struck Buckley in the face, causing him to lose his hold on Gash, who disappeared. The coxswain of the launch, John R. Hay, instantly went in, and brought Buckley to the boat's side in safety, then turned to find Gash. He was nowhere to be seen. Hay swam about until he had made sure of this, and then repeatedly dived to the bottom of the bay, finally succeeding in bringing the body of Gash to the surface.

Through the efforts of several fearless American seamen, the entire ship's company of the *Paddleford* was saved, when all hope of rescue seemed at an end. The *Paddleford* had gone ashore in a heavy surf at an unnamed point. It was thought that no boat could live in the sea thus running. The distress signals were answered by an American gunboat, whose crew readily volunteered to make the attempt. Lieutenant D. E. Barbey and Chief Boatswain Mates Strickland and Williams finally succeeded in carrying a line through the breakers to the *Paddleford*. A heavy line was pulled aboard, which made it possible to take off two-thirds of the *Paddleford's* crew in safety. Later

Ensign Ethridge and seven men from the gunboat succeeded in taking a boat through the breakers and by skilful seamanship coming alongside the wreck. In several trips every one remaining aboard the *Paddleford* was brought safely ashore.

XXXIX

THE WRECK OF THE "SAN DIEGO"

NAVAL discipline is maintained on the theory that the most desperate situation may develop without warning at any moment. There may be but one chance in millions that a bolt will descend from a perfectly clear sky, but the men are never caught off their guard. An excellent illustration of this rule is afforded in the attack on the United States cruiser *San Diego,* sunk off Fire Island, July 18, 1918. No German craft were supposed to be on this side of the Atlantic, and the position of the cruiser, almost at the entrance to New York harbor, with its manifold defenses, seeemed reasonably safe from attack.

Despite the suddenness of the attack, the entire crew, men of every rank, faced the danger with perfect self-possession. Captain H. H. Christy, of the *San Diego,* not

knowing how imminent was the danger of sinking, descended from deck to deck to the most inaccessible part of the hold. As the water poured into the lower part of the ship, the officers and men of the engine-rooms stood quietly at their posts. When the water had risen so high that the gun crew stood submerged to their waists, the men stubbornly stood to their guns in the hope of getting a shot at the enemy.

Later, when the vessel sank, turning over as she went under, the crew showed no undue haste in making their last leap into the water, while many clung to the ship, hoping against hope that she might right herself. Rear-Admiral Palmer, in his official report, makes the scene very real.

"The explosion took place," he writes, "on the port side just aft of the forward port engine-room bulkhead. The feed-tank and circulating pump were blown in and the port engine was wrecked. Full speed ahead was rung, and the starboard engine operated until it was stopped by water rising in the engine-room. Machinist's Mate Hawthorne, who was at the throttle in the port

engine-room, was blown four feet under the engine-room deck. He got up, closed the throttle on the engine, which had already stopped, and then escaped up the engine-room ladder.

"Lieutenant Miller, on watch in the starboard engine-room, closed the water-tight door to the engine-room, and gave the necessary instructions to the fire-room to protect the boilers.

"The ship listed to port heavily, so that water entered the gun ports on the gun-deck. The vessel listed eight degrees quickly; then hung for seven minutes; then gradually listed, the speed increasing until thirty-five degrees was reached. At this time the port quarter-deck was under three feet of water. The ship then rapidly turned turtle and sank. Captain Christy went from the bridge down two ladders to the boat-deck, slid down a line to the armor-belt, then dropped down four feet to the bilge keel, and thence to the docking keel, which at that time was eight feet above water. From there he jumped into the water. The ship was about five minutes

in turning over after she reached thirty-five degrees heel."

The first intimation of the attack was a dull explosion. The impact completely wrecked the wireless apparatus, so that it was impossible to send out a call for help. Although taken completely by surprise, the necessary orders were given and executed without the least panic. The Admiral's official report continues:

"Captain Christy immediately sounded submarine defense quarters and the general alarm. Everything went quietly and according to drill schedule. The Captain rang full speed ahead, and sent an officer to investigate the damage. At the time he thought the ship would not sink. Two motor-sailers were ordered rigged out, but not to be lowered until further orders.

"At the submarine defense call the men went quietly to their stations and manned the guns. They stood by the port guns until they were awash, and by the starboard guns until the list of the ship pointed them up into the air.

The Range Finder

Training a Gun Crew

"When it seemed obvious that the vessel would capsize, the order was given to abandon ship, except the port-side gun crew, which were to remain at their stations as long as the guns would bear. Boats were ordered lowered, and two sailboats, one dinghy, one wherry, and two punts were launched. The life-rafts were launched, and the lumber piled on deck was loosed and set adrift. Fifty mess-tables and a hundred kapok mattresses were thrown overboard. Abandon ship was complete before the vessel began to capsize.

"Perfect order was preserved, the men cheering. When on the rafts they sang 'The Star Spangled Banner' and 'My Country, 'T is of Thee," cheered for the Captain, the executive officers, and the ship, and cheered when the United States ensign was hoisted on the sailboat."

XL

THE WIRELESS GUARD

IN modern warfare, an enemy finds many opportunities to conceal his operations. The possibilites of clandestine wireless communication, for instance, are amazing. Only the constant vigilance of Government experts, and their ingenuity in outwitting the enemy, serves to keep the situation in hand.

In a war the frontiers must, of course, be carefully guarded, and an elaborate watch maintained over spies within. Wireless electricity has greatly complicated the situation. From some hidden base, perhaps hundreds of miles inside the borders, instant communication is possible with stations in other countries or even overseas. Until the invention of such communication the United States enjoyed the advantages of an isolated position.

THE WIRELESS GUARD

Long before America entered the war the regulation of wireless messages had become a serious problem. To maintain its neutrality, the Government was obliged to set a vigilant watch upon all wireless stations, whether upon the land or afloat. Many problems new to international law were encountered. It was permitted, for instance, to send messages even in cipher over an undersea cable, while a rigid censor forbade the same practice by the long-distance oversea wireless stations. The wireless message could, of course, be picked up and read by ships for thousands of miles in all directions. A sea raider—and there were several such at large—could thus receive orders from its base concerning the position of enemy ships. With every desire to be neutral, America thus became the base from which war operations were directed.

Thus an interesting problem arose as to whether the intangible wireless waves were not contraband of war, and therefore to be controlled by the laws governing such property. Early in the war, therefore, Government experts were placed in the high-

powered long-distance wireless stations on the Atlantic seaboard, and these experts rigidly censored every message thrown out across the seas. It will be recalled that the cables running directly to Germany were cut early in the war, thus isolating Germany from America, except for the wireless links.

The utmost ingenuity of Government experts must be kept constantly on the alert to foil the efforts of the German wireless men. At scores of wireless stations throughout the country experts "listened in," day and night, to detect these clandestine messages. It was possible to transmit to ships at sea from any point on the coast, or from miles inland, messages that might have disastrous results. When a suspicious message was picked up, it was located as accurately as possible, and agents were at once sent out to scour the country to find the station from which it was sent.

It soon became necessary to regulate the thousands of amateur wireless stations scattered broadcast throughout the country. No other country is so well equipped as America with such stations. There are more than a

hundred thousand amateurs in the United States operating wireless stations of some sort. The greater part of these are, of course, merely receiving sets that do no harm; but there are many thousands capable of sending messages for considerable distances. It became necessary, therefore, either to close the amateur sending stations or to forbid their operation except under rigid Government censorship.

The most arduous work of the wireless censors, however, is found in watching the floating wireless stations. Every ship inside an invisible boundary line three miles off shore comes under Government jurisdiction. When a vessel equipped with wireless comes into an American port, therefore, it comes under Government control. If there be any suspicion of its being used for purposes of the enemy, the apparatus is dismantled.

One of the most interesting cases of such censorship was aboard the captured German steamer *Appam*. Like other ships under suspicion, the *Appam* was carefully examined. Her regular wireless apparatus was

removed; but the investigation did not stop there. It was suspected that the steamer, while interned at Norfolk, Virginia, was clandestinely in communication with the German Government. For some time the most careful watch failed to fix the suspicion.

The problem was finally solved through the ingenuity of J. A. McCarron, an electrical engineer of the first class, serving aboard the United States Coast Guard cutter *Yamacraw*. The evidence was placed in the hands of the authorities on March 13, 1917. The Captain of the *Appam* had been for a long time regularly transmitting messages to the commanders of active raiders, and possibly submarines, transmitting orders from the German Government. These messages also contained information, often detailed, of the affairs of the United States Government, which could thus be relayed to Germany.

McCarron discovered aboard the *Appam* a complete secret wireless apparatus, constructed and installed with great ingenuity. The aërial was strung aloft in such a way as to be invisible to the closest scrutiny from

A Landing Party of American Sailors

Rolling Scuppers Under

great fleet of submarines in every sea, but the undersea craft do not reply. A submarine may be six thousand miles from Nauen, but it remains in constant communication with this base. The German headquarters, therefore, keeps an unbroken communication with the submarine fleet.

Most of the submarines of other countries are equipped with wireless apparatus capable of operating only throughout a radius of a few hundred miles. The antenna is raised on masts, a few feet above the deck, that are folded up and taken in when the craft submerges. The Germans employ a highly ingenious device, however, for receiving long-distance messages. Two balloons are inflated and sent aloft to an altitude of about two thousand feet. From these is suspended the antenna, which at this height picks up the long-distance waves without trouble. When the message has been received, the balloons are drawn down, emptied of their gas, and housed for the next day's use.

By "listening in" day and night, it has been found that these long-distance messages are sent out at regular intervals. The com-

mander of a submarine, of course, knows when to expect orders from its base in Germany, and is found ready waiting with his aërials aloft to receive the message. Much of the effectiveness of the U-boats has been foiled by the alertness and ingenuity of the naval wireless men.

A careful search has been made by the authorities for enemy wireless stations along the New Jersey coast and throughout a zone many miles inland. It was thought that the success of the German submarine in sinking the *Carolina* and other ships off this coast was probably due to assistance of this kind. As a result of this search, a wireless station was discovered on a farm near Englishtown, some twenty miles inland. A tall flagpole was employed to raise an "umbrella aërial" to a considerable height, from which wires had been run to a sending apparatus. The wireless outfit was capable of sending messages for several hundred miles off shore. The farm was surrounded by a pine forest, which served to conceal the antenna.

The same system has been carried out in detail in European waters. A chart has

been discovered aboard a captured German submarine which reveals exactly how work was carried on. The waters about the British Isles have been divided by the Germans into a series of squares, each of which is known by a number. The German system makes it possible to gain valuable information as to the name of boats sailing from Channel ports, their destination, and details of their cargoes. This information is sent out from the German wireless stations broadcast over the seas. The messages are, of course, in cipher; but every submarine commander has the key, and is thus informed of the position of Allied vessels with amazing definiteness. The entire submarine fleet can thus receive daily, or if necessary hourly, bulletins.

XLI

MODERN WEAPONS

THE failure of the German submarines to work any material damage in American waters has become so obvious that an official explanation, or rather several of them, have been issued by the Kaiser's government. Germany has been very keenly disappointed over the failure of the submarine to stop American troop-ships. The confession of failure given out by the Chief of the German Admiralty Staff, Admiral von Holtzendorff, makes very interesting reading. He says, in part:

The Americans have at their disposal for debarkation the coastal region from the northern point of Scotland to the French Mediterranean ports, with dozens of debarkation places. Must we put our boats to lurk off these harbors on the chance of getting shot at by the strongly guarded convoys of fast American transports? The convoys do not come with the regularity and frequency of railway trains at a big railway station, but irregularly, with

long interruptions, and often by night and in fog.

When one remembers all that, one realizes what little prospect of success it offers to set the U-boats especially at American transports.

But the Admiral's explanation fails to explain the immunity of the American troopships. Their safety is maintained by outwitting the Germans at every turn. The ingenuity of our most experienced naval officers, the excellent seamanship of the entire personnel engaged, and a spirit of absolute fearlessness has made this possible. The defense of the home waters and the long sea lanes is a far more complicated matter than the German Admiral's explanation would indicate. The success of the American Navy in safely transporting a great army overseas will doubtless rank in history as one of the great victories of the war.

A fleet under convoy is a much more complicated formation than the landsman imagines. It is said to have been brought to its highest efficiency in the American Navy. The fleet of perhaps thirty or more ships sail in a V-shaped formation, regularly spaced, and held under the most rigid rules to avoid

collision. The group is protected by destroyers, which maintain a constant guard on all sides by sailing in a series of zigzags. Several hydroplanes may be carried to maintain an air patrol throughout a wide radius.

Such a fleet carries a variety of weapons, and men with courage and skill to use them. It is not generally realized, for instance, that a depth bomb carries the same elements of destruction as a modern torpedo, and is far more dangerous to handle. One of these bombs contains from 250 to 300 pounds of T.N.T., and four cubic feet of this explosive produces 40,000 cubic feet of gas. Now, this gas, when released, naturally follows the line of least resistance, and will blow in the side of the ship nearest it impartially, whether it be friend or foe. The charge must be dropped by a fearless and skillful hand. It is especially effective when contrived to explode at a considerable depth. The sailor must risk his life on the accuracy of abstruse calculations.

Only by long training, again, do our men become expert in managing the smoke-screens that have been brought to such per-

fection in the present war. When a ship is concealed behind a well placed smoke-screen, its chance of being hit is reduced about seventy-five per cent. There are two kinds of smoke-screens—the fixed and the movable curtains. The modern sea-fighter must be an expert chemist to handle these dangerous elements. The apparatus used for producing the smoke curtains consists of a metal container and two cylinders, each holding a different gas. By opening the valves the gas is allowed to escape under pressure, and by mixing the two chemicals the curtain is quickly developed. The gas is allowed to escape for twenty minutes, as a rule, and is controlled at any time by closing the valve.

The movable gas bombs are dropped at intervals to spread a fog-like curtain over the water, and allow a ship to escape the enemy, or at least dodge its fire. These bombs go off in from six to eleven seconds, and in so short a period of time develop a dense smoke-screen. The screen may consist of a yellow, white, or black cloud, as the occasion demands, which completely engulfs the ship. The smoke tends to fall, and the officer who

directs it must calculate the force of the wind to a nicety, in order to get the greatest possible protection.

Entirely new to this war is the art of camouflage. The first idea, in this deceptive decoration, is to render the ship as much as possible a part of its background of sea and sky. The ship should appear as shapeless as possible, the familiar form of the vessel being scientifically destroyed. Large masses of color are employed to give an effect of shadows at a distance, which do not, of course, exist. A false bow and stern are simulated, which makes it difficult to tell which way the ship is headed. A great vessel may be broken in two by ingenious camouflage, or made to appear a hopeless derelict. One of the most successful decorative schemes is to give a ship the appearance of having been wrecked by shell fire, so that the enemy decides it is not worth its while to pursue so disreputable a wreck. It is not important that the vessel should appear to have a low visibility. The proof of the success of the art is shown by the fact that the insurance

companions accept lower rates if a ship be disfigured in this way.

The vessels, again, are equipped with delicate microphones that detect the presence of a submarine at surprising distances. The sound made by the propellers of a U-boat is, of course, quickly muffled by the water; but the delicate microphone picks up the slightest disturbance, magnifies it, and brings it to the ears of the lookout. There are many more highly ingenious devices aboard the American boats whose secrets are carefully guarded. The most fearless crew would be powerless against the enemy without elaborate training and preparation.

American gunners have long enjoyed a reputation for accuracy. The new submarine warfare has raised difficulties unknown to the gunners of the past. The periscope of a U-boat is very elusive; it rises and disappears so quickly that the most expert marksman often finds himself completely baffled. An entirely new system of training must be devised to meet the new problem. Despite the difficulties of the new game,

American gunners have made a reputation for accuracy in hitting the new target.

The success of our gunners is the result of careful preparation. The difficulties of the new game are, of course, obvious. The gunner sees his target only for a moment across an expanse of shifting seas. No ordinary gun practice would train a man to bag such prey. To meet the problem, an extremely ingenious range, as it may be called, has been devised. A long table is painted to resemble the sea, while a submarine or the periscope of a submarine is carefully prepared to scale.

The gunner sights his target by looking through a slit in a card at one end of the board. He is allowed only a fleeting glimpse as a sheet of tin is slipped back and forth before his eyes, much as the shutter of a lense is used to take a photograph. In the fraction of a second he is allowed to look at the target, the gunner must make his calculation and instantly call out the aim he would give his gun.

The spot at which he has theoretically aimed his gun is marked on the board by placing over it a tuft of cotton to represent

the spout of water made by a falling shot. At the next glimpse the gunner sees the cotton marking his last effort with the dummy submarine, and corrects his aim. The toy U-boat makes a very elusive target when seen for only a flash, but it is by such training that the gun crews of the American Navy are prepared for their difficult work at sea.

A hundred new problems must be faced in driving the submarines from the seas. Each must be carefully analyzed and a new method devised for meeting it. Working with excellent material, the Navy has thus been able to turn out in record time a highly specialized personnel.

Great loss of life has been avoided by boat drills. In many accidents at sea an appalling loss of life has resulted from the clumsiness of passengers and crews in taking to the boats. This is now a thing of the past. From the first day out, all the passengers on board are required to go regularly through a boat drill to prepare them for accident. Each person learns the position of the life-preservers, and how to put them on with the least delay. When an accident befalls,

there is no confusion. Each one knows his place in the boats, and has been trained to take it without excitement or protest. It is largely due to such drills that the loss of life on torpedoed ships has steadily decreased with the progress of the war.

Aboard the submarine-chasers the drills are even more rigid. The crews of these craft literally live in their life-preservers. A special form of life-belt, or rather life-jacket, has been designed for them. It completely envelops them, while a high rolling collar protects the neck. The men eat and sleep in these jackets, so that when an accident befalls no time will be lost. A single shot from a great gun, or the explosion of a torpedo or a depth charge, may throw these men into the water without the slightest warning. All this preparation is made to save a few seconds of priceless time.

XLII

MANNING THE FLEETS

THE record of America's naval forces abroad has been made possible by a remarkable feat of organization at home. The beginning of the war found America's naval forces much reduced. In the spring of 1917 there were only about seventy thousand men enrolled in the Navy, and some thirteen thousand in the Marine Corps. Such was our first line of defense at the close of the third year of the world war.

To-day there are more than half a million fighting men enrolled in these branches of the service, and men are being mustered in at the rate of two thousand a day. Chosen from every rank of life, these great forces are being constantly fed into the great training camps for the Navy. The complicated science of seamanship must be taught from the beginning. A few months later these same lads take up perhaps the most difficult problems ever faced by American sailors.

An unprecedented problem confronted the United States Navy. The inroads of the submarine in the early months of the war were terrifying. New methods of attack and defense must be involved, and men must be trained to put them into practice. The Navy was suddenly called upon to man hundreds of ships. The acquisition of the German merchant-ships alone required the services of thousands of skilled officers and men. The *Vaterland*, rechristened the *Leviathan*, required nearly fifteen hundred men.

No figures may be printed as to the force of naval men now aboard the merchant fleets, but the total is amazing. Men must be trained on deck and in the engine-rooms besides the gun crews. The problem of the submarine defense is very complicated, and only by tireless efficiency can the tables be turned against the undersea craft. Every man placed aboard the merchant fleets in these war times must be dependable.

The men recruited in such force are first given technical instruction. Later they must serve in the engine-room and on the bridge, to gain actual experience before the

great fleets are intrusted to them. For many weary months they are required to "split watches" with men already qualified for the work. A few weeks more, and these same lads, newly recruited from the schools and officers, are intrusted with the safety of great ships carrying troops or stores to the war zone.

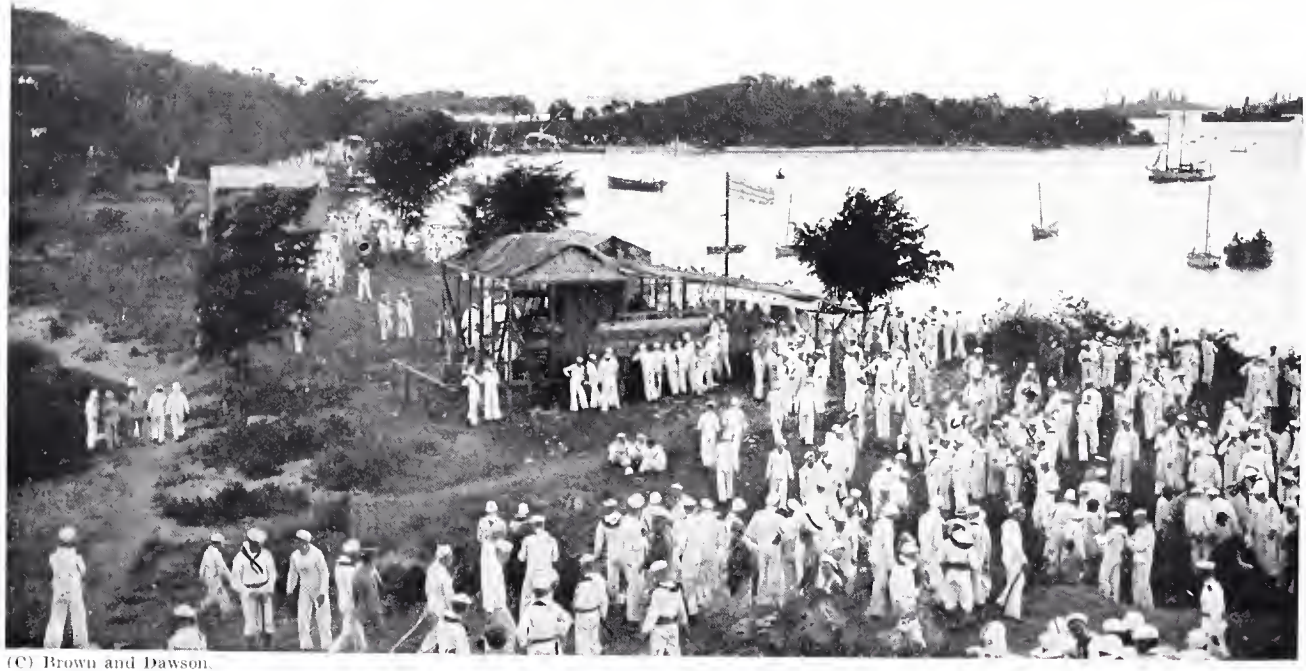
As quickly as ships are built, the men stand ready to man them. Our feat in turning out ships of every class has no parallel in history. There are at the present writing some twelve hundred in process of construction. The feat of training men to man them is even more remarkable. Secretary Daniels has recently announced that in the fall of 1918 one hundred thousand additional men will be needed for the new fleet.

It will be recalled that Germany openly sneered at the idea that a great navy could be built up in America in a few months or even years. Their naval experts laughed at the theory that men quickly trained could cope with the complicated problems of modern warfare. And there were many doubtful minds even in America. The gunners

on the great merchant fleets must fight under new and difficult conditions. The crews of the submarine-chasers of every kind must be highly skilled, and hardened to experiences that it is generally supposed come only with long practice.

The speed with which the American Navy responded, once war was declared, came as a gratifying surprise on both sides of the Atlantic. As early as May 16, 1917, it was officially announced that a flotilla of United States destroyers had arrived safely in British waters. As a matter of fact, they had reached the other side rather earlier, but it had been planned to give the officers and crews some time to rest before entering active service. When the American officers reported to the British authorities for duty, they were asked how long it would take them to get ready for service. The trip over in the frail destroyers had been very rough, and the men were naturally fatigued. The officers' answer, which deserves to be remembered with many other famous phrases of the American Navy, was:

"We are ready now."



U. S. Marines and Bluejackets Enjoying a Day's Outing at Culebra

(C) Brown and Dawson.

U. S. Marines in Action

While it was understood on this side of the Atlantic that the destroyers began their work May 16, they had made their presence felt as early as May 4. By the middle of May it was officially announced by the British Admiralty that the Americans were giving an excellent account of themselves. It is now permitted to state that the American fleet sailed late in April, and that its first port of call was Queenstown, Ireland, where it received an enthusiastic reception.

The official recognition of its entrance into the war is contained in the following message from Vice-Admiral Sir David Beatty, Commander of the British Grand Fleet, to Admiral Henry T. Mayo, Commander of the United States Atlantic Fleet. It reads:

"The Grand Fleet rejoices that the Atlantic Fleet appreciates the messages from the British Fleet and welcomes the opportunity for work with the British Fleet for the freedom of the seas."

At the present writing—August 1, 1918—there are known to be two hundred and fifty American warships having permanent bases in European waters.

PART V

WITH THE MARINES

XLIII

WITH THE MARINES

ANY one reading the list of those mentioned for "conspicuous bravery" in the Navy will be impressed by the surprising variety of the services performed. Among hundreds of such awards, no two acts are alike. The most imaginative teller of sea tales could scarcely conceive such endless variety and contrast of incident.

The part that the American Navy is playing in the Great War naturally overshadows, for the time, its other activities. However, far from the theaters of war, the American seaman still finds opportunities to distinguish himself. Even in the routine of daily duties there is the element of surprise, and opportunity need knock but once.

Two American boys attached to the Marine Corps, a service not unknown to fame, chanced recently to be on shore leave in the

Dominican Republic when an incipient revolution developed. Like many of these political outbreaks, it fell with the suddenness of a tropical thunder-storm. No political revolution followed, and the outbreak was later described in the official reports of the Navy as a "native brawl"; but for a time it raged with fierceness only possible in political discussions in those latitudes.

The American Marine Corporal William Henigsmith and Private C. E. Millard at the time were quietly enjoying their shore leave. It was Sunday. The streets were crowded with a holiday crowd, and political upheavals would scarcely be anticipated. The Americans were objects of more or less curiosity, but the crowd appeared friendly and the merchants accepted their money for various purchases with the utmost willingness. No one could have imagined that these pleasure-seekers could be transformed in a moment into a dangerous mob threatening the lives of the Americans.

The marines' attention was attracted by shouting in a side street, and on turning the corner they found a crowd of natives in vio-

lent altercation. The group quickly divided, and in a moment were savagely attacking two men. There could be no doubt about their murderous intention. Before the marines could reach the spot, both men had been wounded, one fatally and the other seriously.

The marines went to the assistance of the wounded men. They had no interest in local political questions; they were prepared to render first aid.

But the situation was perilous. The odds against the Americans, on a conservative basis, were several thousand to one. The crowd violently resented any interference in their political affairs, and for the two men to go into that seething mass of excited people was a highly dangerous undertaking. In commending them later for their act, the naval authorities especially praised the men for their cool thinking and quick decision.

Henigsmith and Millard consulted for a moment, and then hurried forward, pushing their way through the crowd to the injured men. The crowd shouted insults and abuse at very close quarters. Arms and even knives were brandished in their faces. But

the marines quite calmly kneeled beside the men and administered first aid. One of the men was saved, but the other was past help.

When the men had been bandaged as well as the situation allowed, the marines attempted to take them to the hospital. The crowd violently resented such interference. Lifting the wounded men to their feet, the Americans began to force their way through the crowd. Had they shown any trace of fear or attempted to retreat, they would doubtless have been murdered. But their coolness seemed to awe the crowd and they advanced slowly.

Carrying their double burden, the men finally reached the hospital in safety. But the crowd was not appeased, and, gathering about the building, continued to threaten the Americans. The local government seemed powerless to protect the hospital or to disperse the crowd. The news of the affair quickly spread and the crowd grew to large proportions. The marines had finished their work in administering first aid and carrying the wounded to the hospital, and their responsibility seemed at an end. But,

since the hospital itself seemed in danger of attack, they mounted guard before it to protect the wounded, and remained at this perilous post for ten hours before it was considered safe to leave. The men have been officially commended by Major-General George Barnett of the Marine Corps.

XLIV

"FIRST TO FIGHT"

MEASURED by European standards, our Marines, on reaching France, were still green troops. They had little or no "trench training," and were comparatively new to the complicated game of warfare on the western front. Under the pressure of necessity, they were thrown into the thick of the fight and confronted by "crack" German troops. Among the dead afterward identified before them were found members of the famous Prussian Guards and Death Heads, indicating that their antagonists were the most formidable that could be mustered aganist them.

The Marines engaged in this sector comprised two detachments of infantry with the customary auxiliary service. It is believed that the detachment had a larger proportion of regular army officers than is common to most American forces; but the men were,

after all, of about the general average of our enlisted personnel.

The order to advance was received at five o'clock in the afternoon of May 30, 1918. An immense amount of labor is involved in rapidly executing such an order. The men were widely scattered throughout more than fifty villages in this region. It is a matter of record that the first of the men were collected, equipped, and entrained for the front in a few minutes, and at the end of twelve and a half hours the last of the forces, with their horses, food, and ammunition, were on their way.

By midnight some of the emergency American troops were already in position, and by nine o'clock the following morning the entire force had been thrown across the famous Château Thierry road. The men carried two days' rations and supplies. Ammunition dumps were established, temporary intrenchments constructed, and the artillery was brought up to support the infantry.

During the night of June 1 a gap two and half miles in extent was reported, through

which German advance seemed imminent. The French corps commander ordered the American Marines to "fill this gap if you can." The men who were rushed forward comprised one infantry unit, a machine-gun unit, and a detachment of Marines. The men had been wakened from their sleep and hurried along dark roads, and had taken up their position on some open hills. By nine o'clock the following morning they were in readiness; and against the most determined attacks of the German troops the line held firm.

Several days of severe fighting followed. The Marine units repelled two severe attacks on June 4. The marching forces now began to arrive, and the entire unit was soon in place with the artillery supporting it. Several attacks were repulsed on June 5. On the following night an especially determined effort by the enemy failed to yield an inch. Later a part of a Marine unit counter-attacked and drove the Germans as far as Bussaires. The entire force now attacked in the direction of Torcy, driving the enemy back, inflicting heavy losses, and taking many prisoners.

It was not originally intended to take Torcy, which was not one of the objectives; but, once started, the Marines were not readily checked. They had already taken Hill 133, which commanded the place, and after making the German position untenable they swept the town.

In recognition of its splendid work, the brigade was cited by the French army, and the regimental colors received the Croix de Guerre and the palm, the highest honor won by any regiment up to that time. The American Colonel who was wounded early in the fighting was made a Chevalier of the Legion of Honor. Throughout the fighting and afterward the spirit of the Marines was above praise. Some days later, when the wounded had been transferred to a Paris hospital, a Marine insisted on sitting up in bed and singing the old battle hymn of the Marines, "The Halls of Montezuma." A great chorus instantly joined in, the wounded and the gassed men singing with a spirit that rather shocked the dignity of the great hospital.

More than a hundred of the Marines en-

gaged in these actions have been awarded distinguished service medals for conspicuous bravery. When the medals were formally presented, but thirty-seven marines appeared in the line, the rest having died on the field or were in the hospital.

The presentation took place on the lawn of a beautiful old château on the banks of the Marne. The American General who pinned the medals on the uniforms of these men found some very happy phrases to describe the work of the Marines.

"It is with inexpressible pride and satisfaction," he said, "that your commander recounts your glorious deeds on the field of battle. In the early days of June, on a front of twenty kilometers, after night marches and with only the reserve rations which you carried, you stood like a wall against the enemy advance on Paris. For this timely action you have received the thanks of the French people whose homes you saved, and the generous praise of your comrades in arms.

"Since the organization of our sector, in the face of strong opposition you have ad-

vanced your lines two kilometers on a front of eight kilometers. You have engaged, and defeated with great loss, three German divisions, and have occupied important strong points—Belleau Wood, Bouresches, and Vaux. You have taken about fourteen hundred prisoners, many machine-guns, and much other material. The complete success of the infantry was made possible by the splendid coöperation of the artillery, by the aid and assistance of the engineer and signal troops, by the diligent and watchful care of the medical and supply services, and by the unceasing work of the well organized staff. All elements of the division have worked together as a well trained machine.

"Amid the dangers and trials of battle, every officer and every man has done well his part. Let the stirring deeds, hardships, and sacrifices of the past month remain forever a bright spot in our history. Let the sacred memory of our fallen comrades spur us on to renewed effort, and to the glory of American arms."

THE END