

THE KRONPRINZESSIN CECILIE FROM THE UPPER CROW'S-NEST
This shows the lifeboats in perfect order on both sides of the deck



TAKING OBSERVATIONS OF THE STARS TO DETERMINE THE SHIP'S POSITION

THE SAFER SEAS

BY ARTHUR HEWITT

WITH PHOTOGRAPHS BY THE AUTHOR

THE way of a ship in the midst of the sea has ever been a thing of mystery and romance, before and since the unknown writer of the Proverbs named it as one of the quartet of things beyond his understanding. We comprehend it better now ; and our better comprehension has robbed it of a deal of its mystery. But surely we have only added to its romance. The swift gathering from the four quarters of the sea of the ready helpers in response to the appeal flung across the ocean of the ether by the stricken Republic has as much of romance in it as any tale of Golden Fleece or Flying Dutchman or Columbian caravel. The conquest of man over the sea is wonderful in the matters of speed and endurance, but it is little less remarkable in the point of safety.

During the past few years, with the immensely increased value of ships as one powerful incentive, and the rapid advance of science and invention as a means, the factor of uncertainty and danger has been reduced to a minimum. For instance, navigators for

years had been discomfited by the vagaries of the fog-horn. Sound does not travel in a straight line through fog, but tunes itself to certain air-currents, which often bear it, arc-like, over ships and render it inaudible. The wind, too, often carries it in a direction contrary to where it would be of use. Now experimentation has proved that better than the fog-horn is the exploding at definite intervals of dynamite bombs, But better even than that is the tiny tinkle of the submarine bell which spreads out in a circle under the water for a radius of fifteen miles and is caught up by the telephonic receiver of the fast-traveling ship.

There are many other recently added devices on board the ships themselves that give greater security to the sea-goer. If he falls overboard, an alarm is given, the officer on the bridge touches a small hand lever, an electrical current is switched on, and a life buoy drops on the instant from the stern of the ship. Close on its heels falls a carton which the touch of the water, by chemical action, turns into a brilliant flare of light. Combined with

this a perfectly arranged drill throws over the ship's side (all in a few seconds) a life-boat, perhaps only a cockleshell on the waves, but fully stocked with provisions and water and manned by a crew expert to the highest point of seamanship. If fire breaks out in any one of the holds of a modern ship, the beginning of it is immediately registered under the very nose of the officers on the bridge. If a vessel is struck in sudden collision, with the pulling down of a lever or the twist of a wheel the officer on watch can shut with certainty every bulkhead door throughout the vessel, and thus save her from at least immediate sinking. I must not forget the wireless, next in importance to the submarine bell, quick to call and to save in time of danger with the now proverbial "C. Q. D.," so recently proved sure in protection.

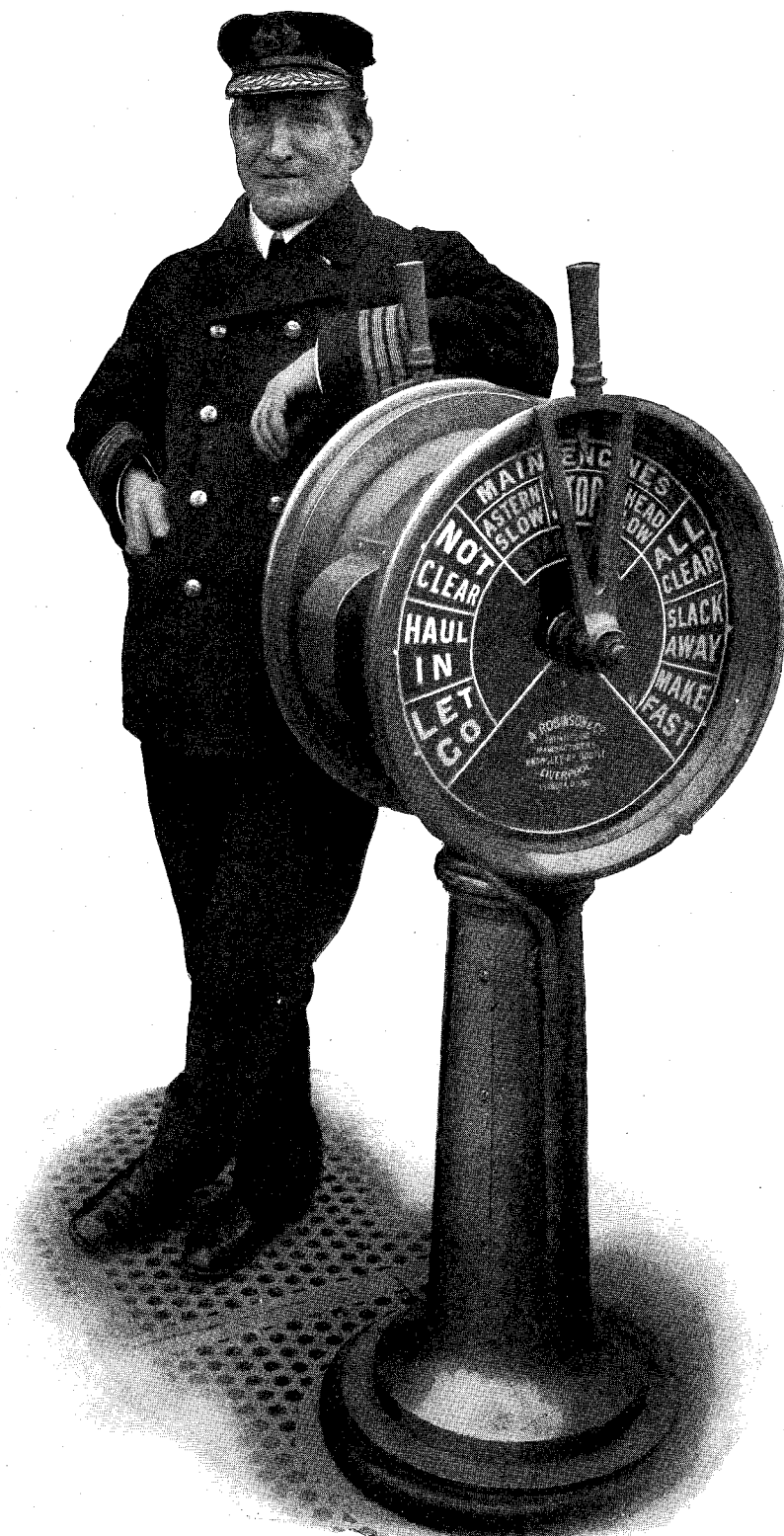
These things, already heard of, I went down to see for myself.

After the necessary interviews with the officials of the Cunard Line, I met and chatted with Captain Turner, R.N.R., of the *Lusitania*. He was simple, affable, and quiet, and we talked of ships and signals. "Yes," he said, "I am tired of the old fog-horn. We can't hear it half the time, and it is always uncertain. The birds may hear it over our heads, but not we. I remember some time back that I was taking her [the liner] across, and I hadn't been able to make an observation, because of fog, during the whole voyage, but I knew by dead reckoning that I must be somewhere near the other side, so I stopped her, took an up-and-down sounding, with the lead I mean; but that didn't do me much good. It was still thick weather, so I just headed her round—went dead slow—and pointed for the shore. Presently I heard two guns in quick succession to starboard. I threw her helm over to port a bit, and told the officer on the bridge to time me off on his watch six minutes; and, sure enough, after the interval I heard again the two guns, and it meant to me the Head of Kinsale. We don't often have to do it that way, and it is lucky we don't. But I like these explosive signals, and I believe they will be adopted more generally by many of the lightships and lighthouses. No," he said, turning to me with a quiet, searching look

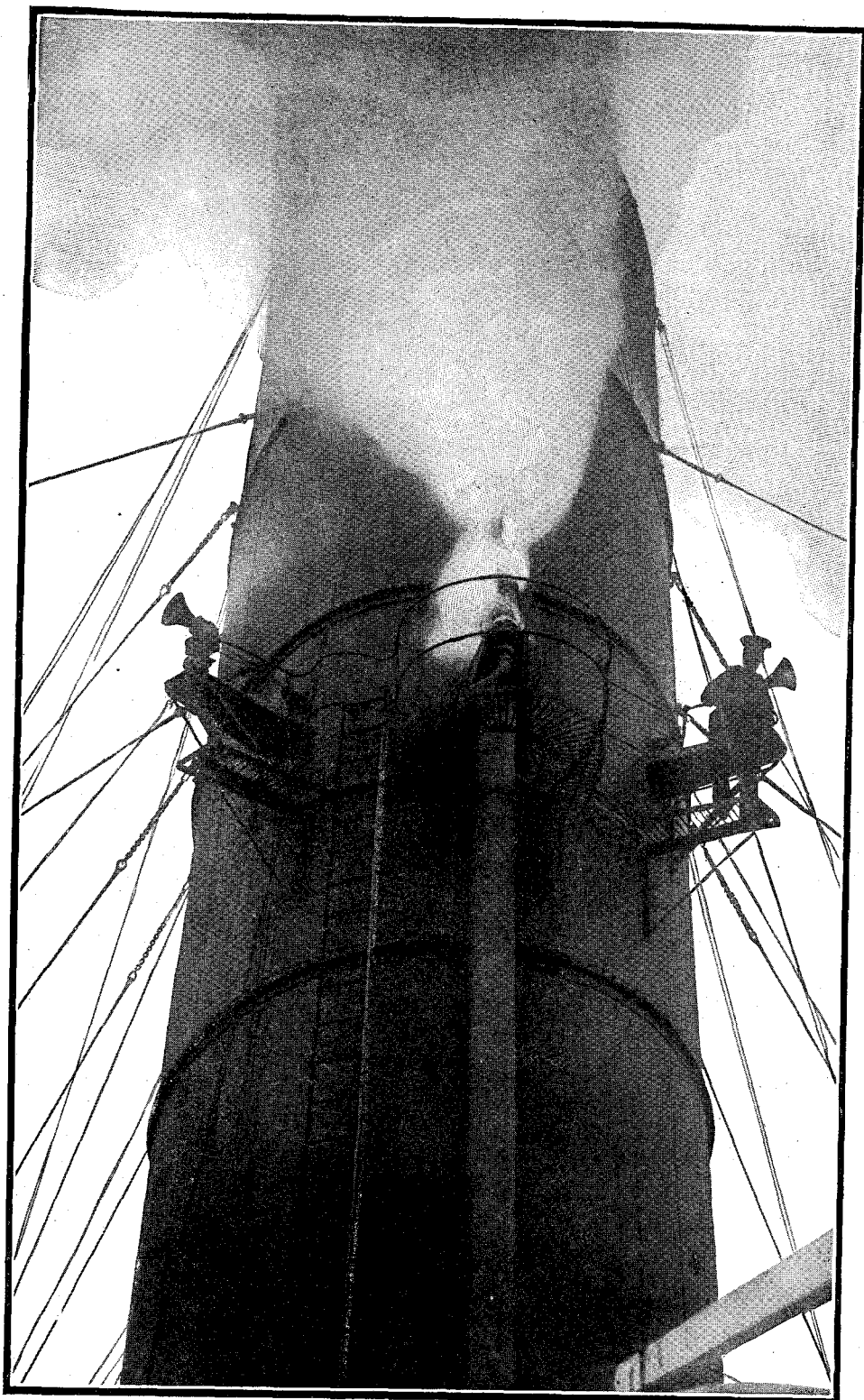
on his calm face, "people don't know the danger very often, but we on the bridge know it only too well. The bell is the thing, the submarine bell. I heard the one on the Boston Lightship in a storm once ten miles to sea. Another time, from the North West Lightship in a dangerous fog I picked up the sound eleven and a quarter miles off. But if you will come aboard I will show you more of our safety appliances; and if you keep out of my way when we sail next Wednesday, you can come down the Bay with us, if the pilot will promise to take you off when he leaves." I looked at Captain Turner and thought that, after all, the problem was only half solved by that which was inventive and automatic. It still required a man who made no error of judgment; who was cool, calm, collected, and who knew the seas as if they had been the streets of a mapped-out city.

I boarded the liner the following Wednesday morning as she lay at her dock with the blue-peter hoisted at her fore-truck, signal of her near departure. She looked doubly huge in the dense fog that held the city and harbor that morning, with her details in shadow and only her great sweeping lines outlined. Down on the wharf there was the rush and hurry of the passengers, and in gangs at every hatchway four hundred men were trundling, heaving, straining to get on board the last of the cargo which was billed to go. They take no chances as to the weather, for when the hour of sailing has once come, and there is a clearing, she will be off in a jiffy on her five-day flight across the Atlantic. For me the fog was the weather of fortune; it gave time to make the pictures, talk to the officers, and study the ship.

Spick and span, with all in perfect readiness, the hour of sailing passed, and still she did not go; the fog thickened and thinned in streaks. It blurred the eyes and tried to make my pictures gray. By turns it cleared up, and gave the vision of a sick sun that leered out and then fled; until suddenly, an hour and a half late, when there was a rift in the semi-darkness, her giant whistles on the fore smoke-stack screamed the note warning of departure. The *Lusitania* has two steam sirens and one six-inch steam whistle, and it was a wonderful noise indeed that they hooted

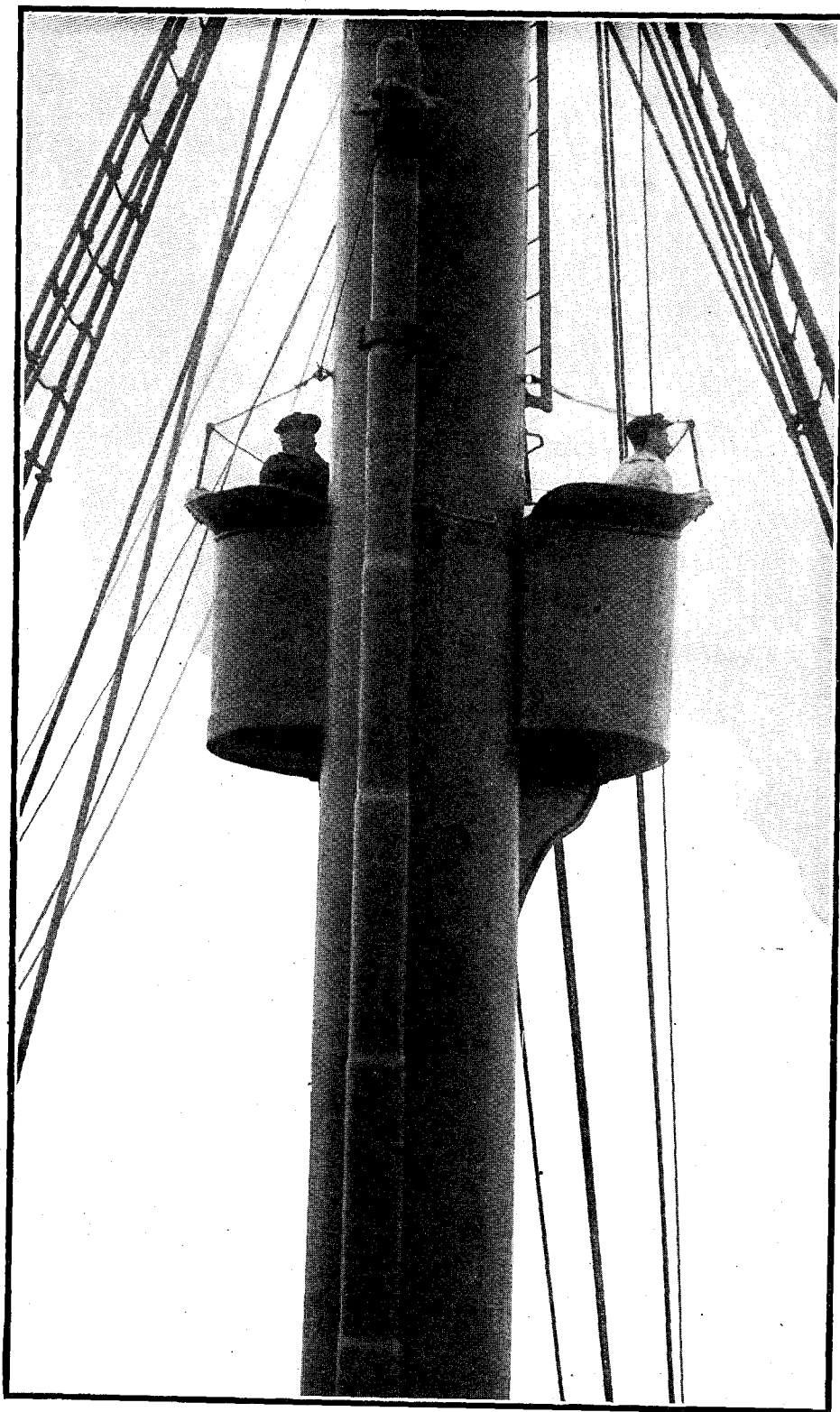


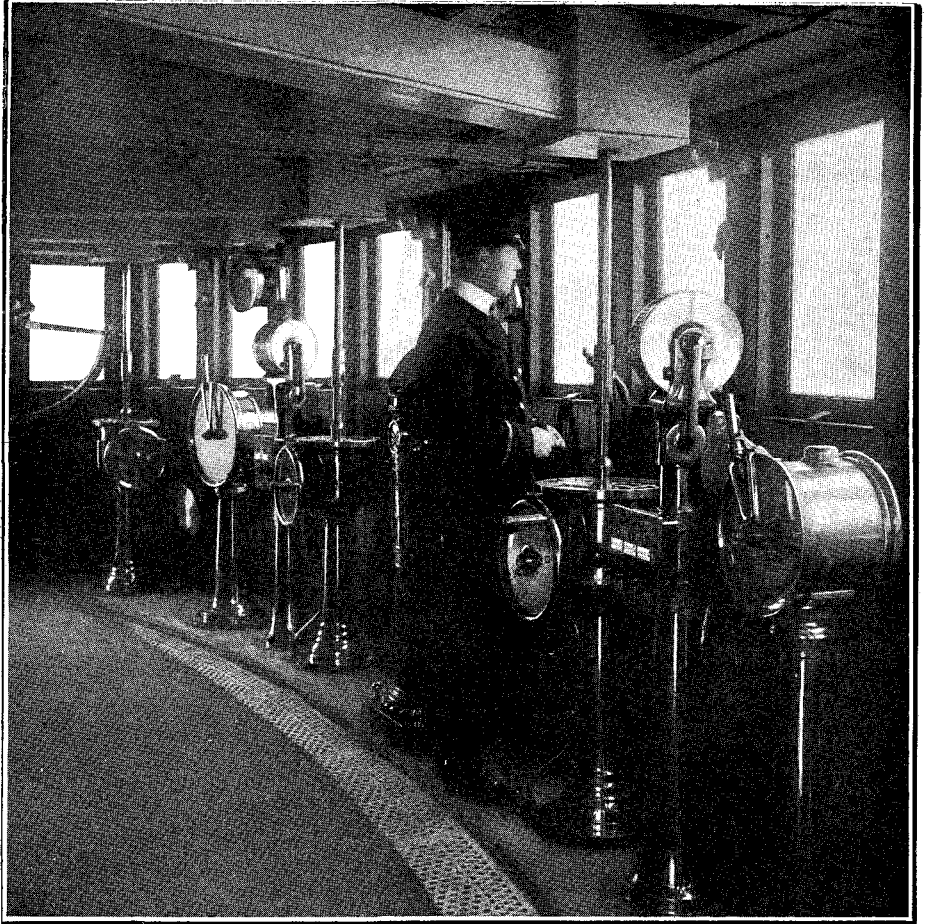
CAPTAIN TURNER, R.N.R., UPON THE BRIDGE OF THE LUSITANIA



THE FOREMOST SMOKE-STACK OF THE LUSITANIA

This smoke-stack has three fog-horns—two sirens and one six-inch steam whistle—which are all used together in a fog





THE NAVIGATING OFFICER IN THE WHEEL-HOUSE OF THE LUSITANIA

This wheel-house has the most modern instruments and safety devices for controlling the ship in all her movements

out. How could she, with such shrill notes, ever get tangled up with other craft?

What didn't she have, that liner, in the way of mechanisms that were the antidotes of danger? The submarine bell telephone, of course, heads the list, and warrants a full description. The bell itself is not carried by the steamers, but hangs submerged to a depth of twenty feet from the side of each lightship on, some dangerous shoal. It is struck by pneumatic machinery so many times and at varying intervals coincident with a signal code which mariners know, and which denotes each particular lightship. The accompanying illustration of the bell was made on the Ambrose Channel Station. Water being an excellent conductor of sound, the notes of the bell are thereby carried long distances in all directions, until they reach

and strike the side of an approaching or passing ship. The receiving apparatus on the vessel receiving the signal consists simply of square iron tanks filled with water set inside and against the hull of the ship on either bow, having open communication with the water outside. From the tanks the sound is carried through microphones (and thereby intensified) to the telephonic receivers in the wheel-house. Here it may be listened for by two ear-pieces, one coming from the tank on either side of the ship. It is easy thus to learn on which side of the receiving vessel the transmitted signal is arriving, and in like manner also the position of the signaler or lightship is determined.

I will run over the other safety appliances quickly, for there were many: the special device for detecting fire, a little

trimly constructed bird-cage of a box with an electric fan within, which, started by a clock attachment every quarter of an hour, by its revolutions would suck up a sample of air from each compartment below. If there were fire in any compartment, a film of smoke would come out of the funnel-like top of the pipe leading from that compartment, and the officer on duty would know instantly of the danger and its exact location. Each hold could send smoke by a separate pipe to this box and thus the fire could easily be located, whether it was in the mail-room, passengers' baggage-room, in the fore or after holds. And should this by chance ever happen, within a min-

ute a valve could be opened and a rush of high-pressure steam, the best fire extinguisher possible, would be fighting

the flames below. There were also many methods of signaling. One could use the semaphore by day and by night the blink

and flash of electric lamps spelling messages in the Morse code.

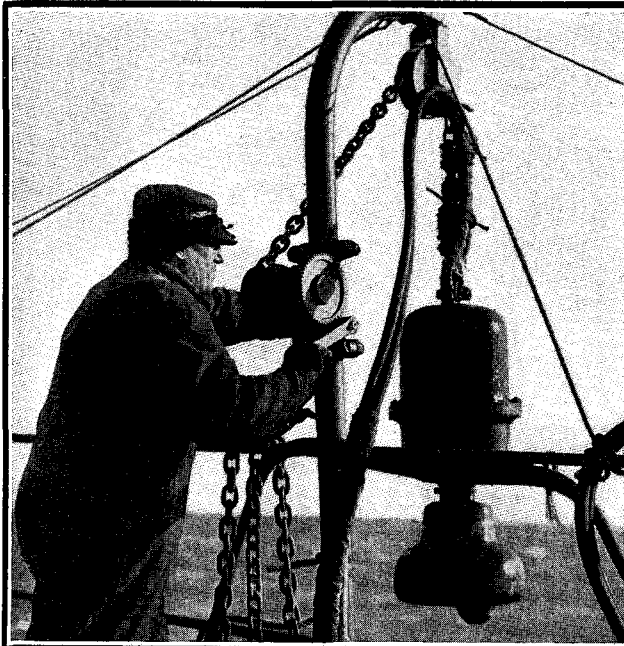
Clockwork machinery blew the ship's fog-whistles in six-second blasts-separated by silent intervals of fifty-four seconds, and with one winding the apparatus would run for a week. If it failed, there were other hand-gearred mechanisms to take its place. Steam steering-gear helped the helmsman, with two sets of steering engines, one above and one below water level, and both again in duplicate. By Graham's famous telephone any part of the ship could be rung up from the bridge and the orders spoken direct to it.

Lastly, I interviewed



LISTENING FOR THE TAP OF THE SUBMARINE BELL

The two telephonic receivers (one of which the officer has at his ear) connect with the two receiving tanks on each side of the ship. If the bell is heard with both receivers the lightship is dead ahead; if with only one, or stronger with one than the other, the lightship is on that side



THE SUBMARINE BELL ON THE AMBROSE CHANNEL LIGHTSHIP

The keeper is about to lower it into position



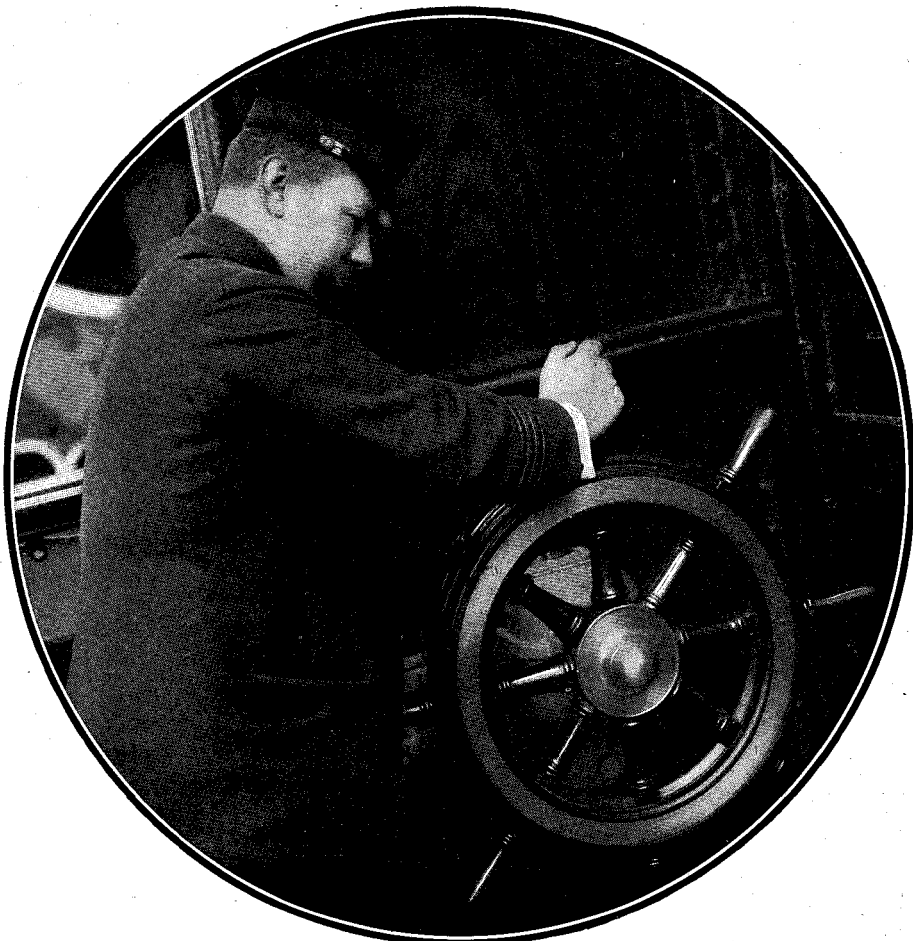
THE WIRELESS MAN

"Why," he said, "we can transmit a message 500 miles and receive one direct 2,000 miles"

the Wireless Man. He told me the marvels of his apparatus and of the certainty and correctness of it. "Why," he said in answer to my questions, "we can transmit a message five hundred miles and receive one direct two thousand miles. On the second day out we publish a paper with press news from both sides the Atlantic. We are never out of touch with two or more ships during the entire voyage, and the captain advises both London and New York every day at noon the exact position of his ship." In answer to a query of mine whether he often made mistakes, the wireless man showed me a reprimand from his officials for the tiny fault of leaving out an "r" in a word. "We are just as good as a land wire," he went on to explain. "We

are able through the wireless to buy and sell stock in Wall Street and transact important business for our passengers all the time."

The great ship had flung itself out in the stream until she almost seemed to bridge the North River. There was still a heavy fog, yet with wonderful care she was straightened out on her course and cautiously made for the open sea. By some miracle of intuition, as it seemed to a landsman, the captain had judged right, and just as we struck the Ambrose Channel (and you must *see* the buoys there before you can go ahead), the weather cleared and the sun shone brightly and we gathered speed and all was well. There was just one little let-up in the ship's outward course when the pilot's tiny boat



CLOSING THE WATER-TIGHT DOORS

With this device the ship in a few seconds can be divided into a score of water-tight compartments, so that a hole in one spot will flood only a small fraction of the vessel's hull

impudently came alongside to take off him and the writer.

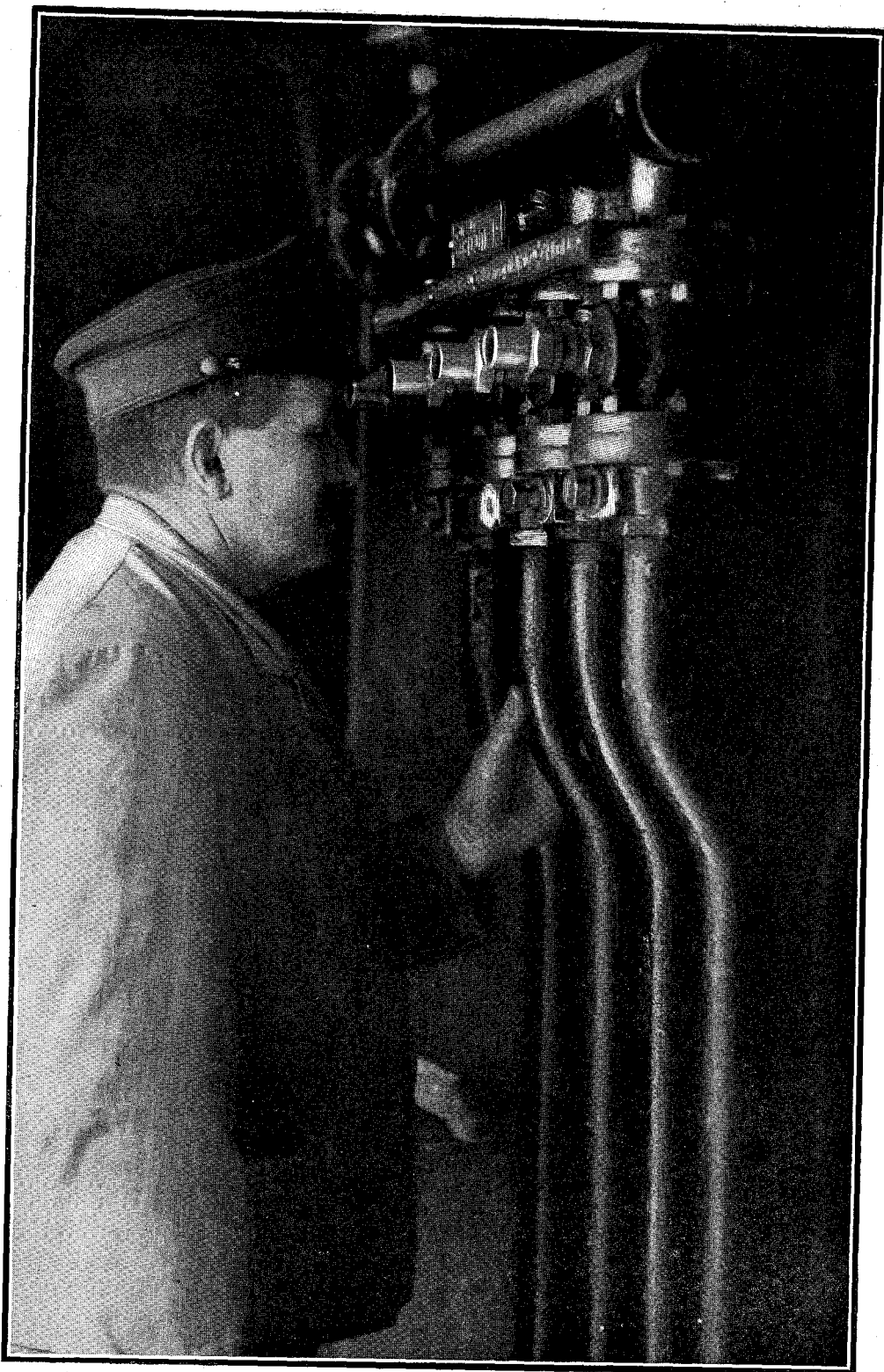
The Kronprinzessin Cecilie being in port, I chose her to glean any further details of safety appliances. On her I found all that is most modern in this art of protection, and her immense size, her gayly painted yellow funnels and deck gear, made her most picturesque. The type of her men and officers seemed to me to be particularly noteworthy—the *esprit de corps*, the pride in their ship, were ever in view.

I heard again wonderful stories of the extreme importance of the submarine bell. I was told how it had once guided the Kronprinzessin Cecilie on her eastward journey through the English Channel and up on through the North Sea to her home port, Bremen, the whole course being in

dense fog. I give the report of Captain D. Hogemann as extracted from the log of that voyage :

A heavy fog enveloped us between Dungeness and Terschellinger Bank Lightship in the North Sea about 8:35 o'clock at night. It was 10:30 o'clock, judging by the fog signal, when we passed Dover. At 11:25 o'clock we received quite distinctly the sounds from the submarine bell from East Goodwin Lightship, about seven miles distant. We could get no perceptible sound through the starboard receiver. As we approached the lightship the sounds became plainer, until they were quite distinct. At 12:17 o'clock the sounds were the plainest, and, because of this, we felt it was safe to assume the light vessel was directly opposite us.

After this the sounds gradually decreased until at 12:52 o'clock we heard them no more. The fog-horn on the light vessel was not heard by us at any time.



THE ARRANGEMENT FOR DETECTING FIRE ON BOARD THE KRONPRINZESSIN CECILIE
It is the carpenter's duty to smell the vent pipes to test for smoke. These pipes lead from the various holds of the ship

When, in our judgment, we were opposite the East Goodwin Lightship, we heard the bell of the Sandettie Lightship very faintly and only through the starboard receiver. The sounds became more distinct and clear and were without an echo. The distance was between nine and ten nautical miles. The fog-horn on the lightship was first heard at 12:59 o'clock, about three miles distant. We passed the lightship at a distance of about two miles, judging by the sound of the fog-horn, and at 1:48 o'clock heard the last sound.

We also heard the bell on Noord Hinder Lightship, about ten nautical miles distant, faintly, and only through the starboard receiver. As we should pass Noord Hinder Light at a distance of about seven nautical miles, the sounds were faint, although now and then louder, increasing and decreasing in volume. It was impossible to judge by the sound whether or not we were opposite the lightship. The fog-horn on this lightship was not heard.

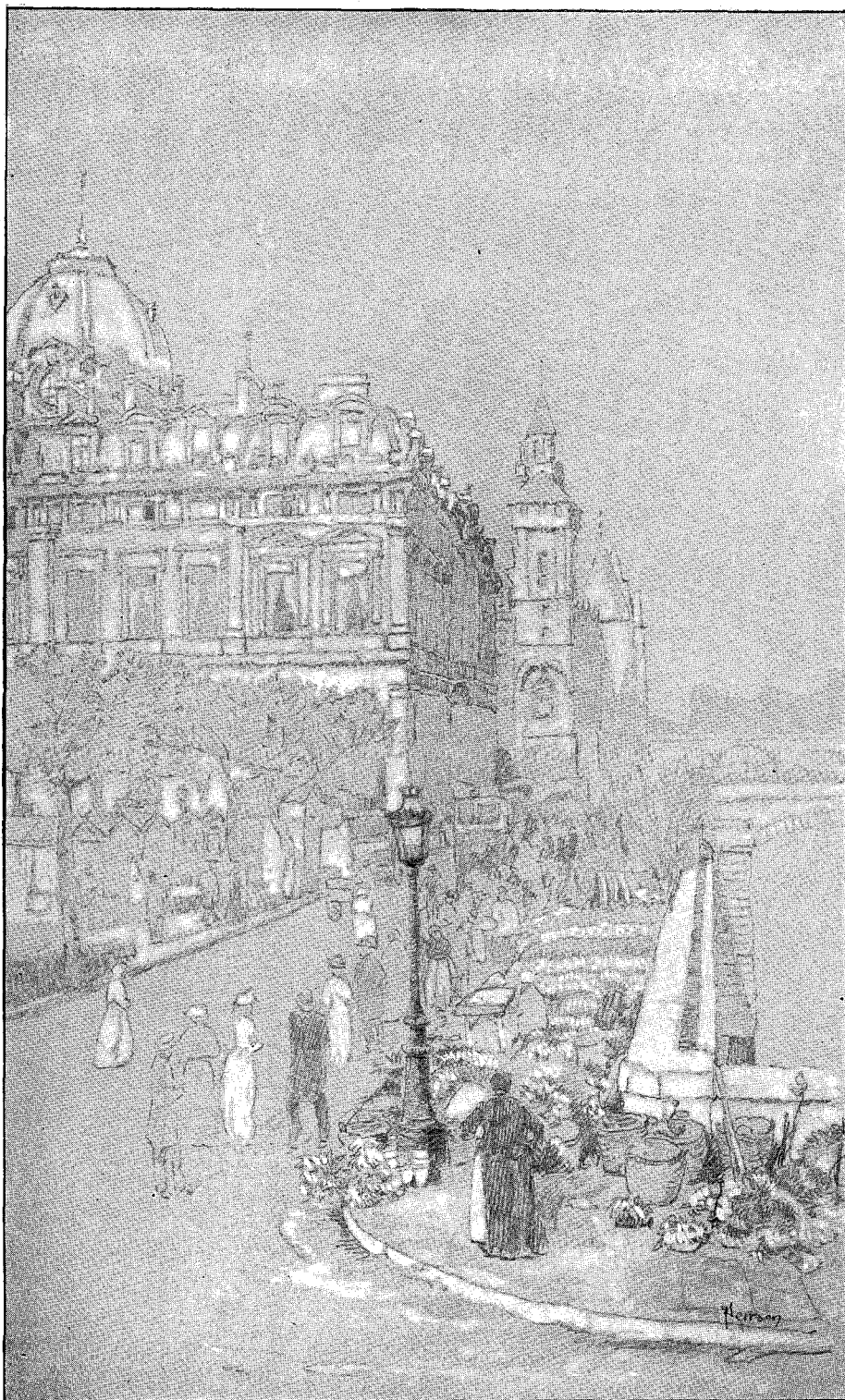
At 11:25 the bells of Haak Lightship were heard about fifteen miles distant. The sound came faintly at first, through the starboard receiver. Later the sounds were plainly heard through the starboard receiver, but were not perceptible through the port receiver.

By frequently changing course it was possible to determine the direction of the lightship to within one point of the compass.

This ship had all the apparatus that I have previously mentioned, but added to it I noticed that extra care was used in the matter of lookout stations, both in the manner of their positions and the appliances in connection with their use. On

her foremast were two crow's-nests, one three-quarters of the way up, which could hold two watchers, and the other, a smaller one, near the top. Both were fitted with telephones. The lower was reached by an iron scaling ladder which ran up the center of the steel mast, while the upper crow's-nest was far more difficult of approach. It could be reached only by climbing out from the lower one on to the rigging, and by ascending a small iron ladder fastened flat against the mast. It was an acrobatic feat to get there. Yet a sailor lad mounted to this sky-high position with certain ease to entertain me and my camera safe on the deck below. The jovial officers had been discussing what a splendid view of the ship could be got from the masthead. So an adventure invited me, and, after some argument as to danger, I was allowed to make the ascent to get a picture from the fore-truck. I did it, and a certain ancient epigram alone saved me from disaster—"Hold on till you can't hold on any longer, and then still hold on." I shall not do it again. And yet the men of the ship have to get there and watch for hours from this high vantage point, especially in storm and tempest. And it is all done to make "the safer seas," and I suppose the passenger in the sumptuous staterooms below seldom thinks or even knows of the loyal watchers in this giddy-set crow's-nest.





"ON A FINE MORNING IN MAY OR JUNE"