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GEODESY

Uncle Sam's Life-Saving Surveyors

By N. H. HECK

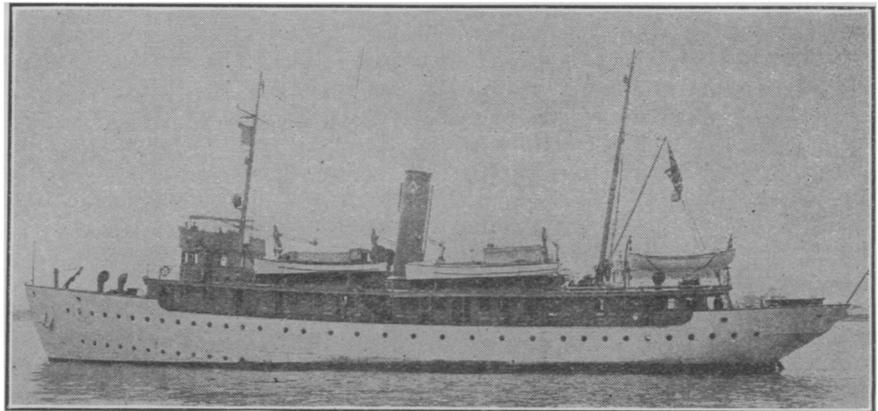
Commander Heck is in charge of the Division of Terrestrial Magnetism and Seismology of the U. S. Coast and Geodetic Survey.

If you were going to plan a garden in your back yard, you wouldn't worry because the garden lay on a curved surface—the surface of the earth. But if you were confronted with the job of surveying an entire continent, or 3,000 miles of coast line, the earth's curvature would be an important factor. Imagine, then, being pals with a giant globe, 25,000 miles in circumference, that is whirling at the rate of four miles a second. Imagine a surveying job so big that the curvature of the earth must be taken into account. That's the job of the engineers of the United States Coast and Geodetic Survey.

Now, the Coast and Geodetic Survey has sometimes been called "The Government Bureau with the name nobody knows." Briefly, its scientists and engineers make the charts which guide the mariner upon the high seas, and also they make the control maps upon which all detailed mapping is based.

So it happens that the Survey's fleet of ships sails ahead of the mariner and makes the charts which are later followed in the commerce of the sea. This brings about a somewhat peculiar situation. The U. S. Coast Guard is charged by law with protecting life and property along the coasts of the United States and its possessions. Nevertheless, the ships of the Coast Guard cannot be everywhere at the same time, and because the Coast and Geodetic Survey ships are usually in more or less dangerous waters, these ships are frequently called upon in the saving of life and property. They are obeying the law of the sea in this work—a higher law than any man-made statute.

In the Washington office of the



THE SURVEYOR, one of the U. S. Coast and Geodetic Survey's fleet of vessels for charting our coast lines, but which, on occasion, act as life savers

Coast and Geodetic Survey there hangs a memorial plaque commemorating a feat of valor on the part of the officers and men of the Survey ship *Patterson* in rescuing the Coast Guard Steamer *Tahoma*. The *Tahoma* was wrecked on a reef on the western Aleutian Islands in Alaska in September, 1914. The Survey Ship *Patterson*, James B. Miller commanding, made a voyage of 1,600 miles through dangerous, uncharted waters to its relief in response to an urgent call by wireless. A letter from Commander Miller to the Director of the Coast and Geodetic Survey just as the *Patterson* was starting on its mission of mercy stated: "I am fully aware that this is a most hazardous trip with this vessel, approaching foolhardy, but the circumstances are serious in the highest degree and admit of no delay. According to reports, the *Tahoma* struck 24 hours ago and is fast breaking up. There are 87 persons on board. The *Patterson* is two days nearer than any other vessel."

The letter, which in Commander Miller's heart, he undoubtedly felt was his goodbye to the world, ended with this sentence: "I trust this action of mine in going to the relief

of this ship will be approved as it appears to the best of my judgment to be my plain duty, and the case is an extreme one."

Fortunately, the *Patterson* came through with flying colors, rescued the survivors of the *Tahoma*, and returned to its Survey working grounds none the worse for the experience. This, you may say, is bravery. But, after all, what is bravery? The sailorman has a code—the tradition of the sea—and he is more afraid to break that code than to follow it even though he knows that by so doing he is going to certain death.

During the world war the British Admiralty sent out an order commanding all ships to refuse to go to the aid of any disabled vessels. This was because of the submarine menace, which in the opinion of the British high command, would result in larger loss of life than to refuse aid to distressed ships. The order, given in good faith and with the best of intentions, was one of the hardest things the British sailorman ever had to contend with. As a matter of fact, there are at least rumors to the effect that the order was dis-

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Life-Saving Surveyors

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regarded in more than one instance because the commander of the ship had to choose between the mutiny of his crew and the breaking of the order.

Just the other day the Canadian Pacific Liner *Princess Charlotte*, southbound through Alaskan waters, ran aground in Wrangell Narrows. Her SOS calls were picked up by the Coast and Geodetic Survey Ship *Explorer*, working in the vicinity. The *Explorer* got under way immediately and after an all night run through a dense fog reached the *Princess Charlotte* at 4 o'clock in the morning. Two hundred and sixty-seven passengers were removed and taken to Wrangell, Alaska.

Last July, the Survey Ship *Marinduque* went to the assistance of the British Steamer *Taipeng* aground on Cap Island in the Philippines, removed all passengers and took them to the nearest port. Not so long ago the Spanish Royal Mail Line Steamer *Fernando Po* stranded on a rock in the Sulu Sea, Philippine Islands. The Survey Steamer *Pathfinder*, then at anchor among the maze of coral reefs off Palawan Island, received the distress calls, went to the assistance of the stranded steamer, a distance of 1800 miles, took off 59 passengers, and took both passengers and mail to a port of safety.

Many other instances might be cited but they all sum up into one fact: that the Government agency charged with charting the coasts of the United States and its possessions is, because of the very nature of its work, a most efficient life saving agency.

This matter of saving lives on the high seas appeals to the imagination. Saving 267 passengers from the Steamer *Princess Charlotte* sounds like an achievement, yet, in its everyday work of surveying, the Coast and Geodetic Survey probably saves

more lives in the aggregate every year than could be packed on a thousand steamers such as the Steamer *Princess Charlotte*.

Twenty years ago navigation in Alaskan waters was a decidedly hazardous undertaking. Up there, murderous pinnacle rocks poke their spires up through deep waters, lying in wait to tear the entrails from unwary vessels. And twenty years ago the majority of these rocks were not charted. The mariner had to take his chances.

Those pinnacle rocks, many of them, are named. They are named after vessels which have been wrecked on them. Today, practically every one of those rocks is placed definitely upon the charts of the United States, and ships are safe to traverse Alaskan waters as a consequence.

The marine losses in Alaska during the last 5 years were only \$481,000, although Alaskan commerce is more than 4 times greater than a few years ago. Yet, from 1916 to 1920, a four-year period, the marine losses in Alaska were over three and a half million dollars, to say nothing of loss of lives.

Up in New England, where for 300 years they have bred the finest kind of sea-faring men, the same kind of dangerous rocks as are found in Alaska have been discovered and charted by the Coast and Geodetic Survey during the last twenty years. On one occasion just as one of these dangerous rocks was being discovered a great battleship passed a few hundred yards away in complete ignorance of her danger.

In the old days, going down to the sea in ships was an undertaking only a little less hazardous than attempting to cross the Atlantic by airplane. Today, with larger ports and improved navigational instruments, ocean travel is less dangerous than a ride in a flivver. But these

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Life-Saving Surveyors

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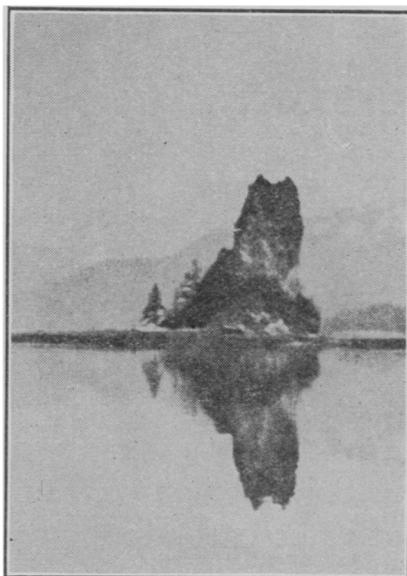
improved conditions call for improved charts—and the Coast and Geodetic Survey today is bending every energy toward producing the sort of chart which will be of the greatest value in connection with improved methods of navigation.

On the Pacific Coast, for instance, vessels now and then run ashore in spite of modern aids to navigation because in darkness and fog they are at the mercy of the changeable currents. The new automatic echo sounding device makes it possible for a ship at full speed to measure the depth of the water. In this way, the mariner can recognize every hill and valley in the bottom though it may be half a mile below him, and if these are correctly placed on the chart he knows as definitely where he is as does the traveller on land when he recognizes familiar land marks. This can only be done, however, if the charts are complete and correct and during the last ten years the Coast and Geodetic Survey has been busily engaged on the Pacific Coast in making charts which will meet this test even out of sight of land.

Think what modern navigational charts mean to the United States. No country is so rich that it can afford out-of-date maps and charts and it is because the United States has probably the finest marine charts of any nation in the world that commerce proceeds safely and passengers and freight are brought into all the great sea ports in greater safety than passengers and freight are brought into any railroad terminal in the world.

It is not merely one kind of ship which benefits from this work but the needs of all are provided for from the great battleship, the swift destroyer, the submarine, the great ocean liner and the coasting steamers, down to yachts, pleasure crafts, and the small motor boats used for fishing.

It would be possible to go on almost indefinitely telling of the achievements of this, the oldest scientific bureau in the United States Government, but to detail 111 years of progress is something hardly possible in a short article. In my office I have a large bookcase filled with about 90 weighty-looking books. Those books give in detail the work of the Survey from the time President Jefferson first authorized its formation in 1807. It is a long story, and one of fascinating interest.



PINNACLE ROCKS, such as this one, were a continual menace to navigation in Alaskan waters until the Coast and Geodetic Survey charted them accurately

but for the present we need only remember that Uncle Sam's Coast and Geodetic Survey is saving lives and saving property worth millions of dollars.

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There are 500 muscles in a man's body.

Nectarines are peaches with a smooth skin.

Humpback whales can travel 30 miles an hour.

Bears will eat practically any edible material.

The cow tree produces a milky sap which may be drunk.

The Welsh language is dying out, according to census reports.

Asoka, an emperor in India in the third century B. C., issued an edict commanding that shade trees be planted.

The town of Hammerfest, Norway, lying 300 miles north of the Arctic Circle, has an average winter temperature warmer than New York.

It is reported that a Swedish engineer has invented a new road pavement which does not become slippery when wet.

A new instrument for testing incandescent lamps records changes of electric current as small as one-tenth of a thousandth of a millionth of an ampere.

First Clothes Flychasers

Primitive man and his wife first took to wearing clothes in order to keep off stinging flies, sharp-billed mosquitoes, cooties, fleas, and other lively pests. This simple answer to the puzzle problem: "How did we come to wear clothes, anyway?" is advanced by Dr. Knight Dunlap, professor of psychology at Johns Hopkins University.

"Crawling and flying pests are with primitive man abundantly and very intimately," Dr. Dunlap points out, in a paper to appear in the first issue of a new scientific publication, the *Journal of General Psychology*.

Skins or cloth might be wrapped tight around the body for protection against stings and bites, but this is confining and in warm climates impossible.

"Much more efficient protection is afforded by hanging strings, leaves, strips of hide, animals' tails, and similar articles so that they will flap with the movements of the wearer," he says. "In other words, the best fly chasers are exactly the garments most characteristic of savages and primitive man. These afford protection without undue warmth or exclusion of ventilation.

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ARCHAEOLOGY

Shows Cretan Heaven

The first clue to the heaven pictured by the ancient inhabitants of the island of Crete is found on a gold funeral pendant, just described by Sir Arthur Evans, noted British authority on old civilizations of the Mediterranean. The pendant was discovered twenty years ago in a tomb at Pylos, in Greece, but it was not officially described at the time, although the find was reported as a remarkable one. The jewel was popularly named the "Ring of Nestor" because Pylos was the home of this hero of Homer's *Odyssey*. The ring attached to the pendant is too small, however, to have been worn on the finger.

Sixteen little figures are carved in the oval of the pendant, Sir Arthur states. The picture is divided into four sections by a tree trunk with two cross branches. The upper left section contains a seated goddess and her companion amusing themselves while butterflies flutter about their heads and a young woman nearby welcomes her sweetheart. In the upper right section is a lion at

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