NARRATIVE ACCOUNT OF THE " MARION " EXPEDITION.

by

LIEUTENANT COMMANDER EDWARD H. SMITH, COMMANDING THE EXPEDITION.

The Coast Guard patrol boat *Marion* sailed into the harbor of New London, Conn., on the morning of September 18th, her safe return to that port marking the close of one of the most interesting and successful expeditions undertaken by the United States Government. It was less than three months since the *Marion* Expedition, under the command of Lieutenant Commander Edward H. SMITH, sailed from New London on the cruise to the Far North to investigate the currents, ice, weather, and other conditions in furtherance of a knowledge of oceanographic and physical conditions of that vast sparsely-explored water area between the North American continent and Greenland. The expedition cruised 3,100 miles, covering with an oceanographic survey a 450.000 mile area. A total of 190 observation stations were occupied at carefully selected positions in these waters and about 1.900 observations of the temperature and salinity of the water were made. The 1.000 temperature and water samples were taken at various levels from the surface down to near the bottom, use being made of NEGRETTI and ZAMBRA reversing thermometers and GREENE-BIGELOW water bottles clamped on steel wire cables with over three miles of the wire suspended from the ship. A special bottom sampling tool was used at many of the stations to obtain good size samples of the muds and oozes from the ocean floor. In all 2000 salinity tests were made on board with the Salinometers. These instruments, the only ones of their kind, determine the salinity by means of measuring electrical conductivity of sea water after it has been placed in a special glass cell and brought to a very carefully regulated temperature of 25 degrees Centigrade by a water bath. This instrument was developed by Dr. F. WENNER of the Bureau of Standards, Washington, D. C., in response to an appeal of the International Ice Patrol Service for a quick and accurate method of determining the salinity of sea water and adaptable to the arduous conditions met on shipboard. Lieutenant Commander Edward H. SMITH, of Marthas Vineyard, Mass., has been identified with the Ice Patrol Service since 1920 and from 1922 to 1927 he has been the oceanographer of the Ice Patrol and is considered the foremost authority on icebergs and ice problems of the North-Atlantic. During the off-season when no icebergs normally invade the Atlantic and threaten the steamships, Commander SMITH has devoted his time to research work on ice problems at Harvard University. In 1924 he was made an American Scandinavian Fellow in Oceanography and spent a year in Norway with Scandinavian oceanographers learning the newest methods in dynamic oceanography of mapping oceanic circulation.

Backed by the indorsement of Coast Guard officials Commander SMITH has in the past few years adapted the so-called BJERKNES formulae of free motion to tracing movements of the dangerous icebergs that every spring infest the waters off the Grand Banks. This work under the direction of the United States Coast Guard does much to insure the safety of the trans-Atlantic liners, and eliminate the probabilities of another terrible *Titanic* disaster. Few of the general public realize that the ocean areas off Newfoundland are being mapped as to currents every two weeks during the Ice Patrol season and the various tongues of the Labrador current and the Gulf Stream swirling menacing icebergs into the paths of commerce, are plotted like the isobars on a weather map by the Weather Bureau. The Ice Patrol ships *Tampa* and *Modoc* each night and morning issue by radio to all approaching ships their ice warnings and forecasts. The cur-

rent and ice maps constructed immediately on board the ice ships for dissemination to North Atlantic navigators represent a great practical application of oceanography and is a fine tribute to the United States Government administration of this important international safety work.

The advance in methods developed by the needs of the Ice Patrol has caused much notice in scientific circles. In this connection there has been for some time a growing demand for a northward extension of the current work, because the currents are the transporters of the dangerous Arctic field ice and icebergs. The Ice Patrol has gained a very clear and accurate picture of the behavior of the ice south of Newfoundland and now the time has arrived to learn the whole story over the total length of the berg pathway (approximately 2.000 miles) from the time the berg breaks off the glaciers in far-off Greenland's ice mountains until they finally melt in the warm tropical waters of the Gulf Stream. In 1927, the United States Ice Patrol Board made an urgent request that the Coast Guard send an expedition to the region of Davis Strait immediately after the withdrawal of its patrol-boats at the end of that ice season in June. All Coast Guard vessels were needed that year however in coastal work, but in the Spring of 1928 when the request was renewed it was decided that a patrol-boat could be spared. The *Marion*, because of her great cruising ability, being able to cruise as far as Europe and back without refueling, was chosen for the expedition and hurriedly prepared. When the *Mojave* and the *Modoc*, the two Coast Guard patrol-boats that carried on the ice patrol during the Spring of 1928, returned to the United States in June, their scientific equipment and a few of their trained observers were transferred to the *Marion*. Lieutenant N. G. RICKETTS, of Thompsonville, Conn., the successor of Commander SMITH on Ice Patrol volunteered to accompany the expedition as second in command despite the fact that he had just come ashore from three months without sight of land. His services greatly added to the success of the expedition. It was only a matter of a few days before everything was adjusted and tried out, and the *Marion* sailed from New London on July 7th.

Since the famous *Challenger* Expedition undertaken by the British from 1872 to 1876 many governments and quite a few private individuals and institutions have carried out scientific oceanographic investigations. The U. S. Coast and Geodetic Survey and the U. S. Navy have both been identified with notable work along oceanographic lines. A famous pioneer in the physical geography of the oceans was an American Naval Officer, Lieutenant Matthews Fontaine MAURY, and so in sending out the *Marion* our Government has in a sense embarked again on a field of exploration in which we have a fine heritage. Another important point:— practically no oceanographic research work by any one had as yet been done in the area covered this summer by the *Marion*.

As has been the case with most sciences the work in oceanography has grown more diverse and complex as progress and additions have been made to man's knowledge of the seas. Today the general science of oceanography is divided into many distinct and specialized fields such as marine biology, chemical oceanography and physical oceanography, etc. It is with the latter field primarily that the *Marion* Expedition had to do. Equipped as she was with the knowledge of what has been done before in oceanographic research, and with the aid of the skill and instruments of the Ice Patrol, she was in a very favorable position to go into the practically virgin territory between Baffin Land, Labrador and Greenland with numerous opportunities for important discoveries and success. The results of the work already apparent will be of primary importance to the work of the Ice Patrol and the scientific data will throw much light upon general problems and theories in geophysics. On account of its peculiar location, the northwest corner of the Atlantic, where the observations were taken, is a natural outlet for the waters flowing into the Atlantic from Hudson Bay and the great reaches of the northwest. The flowing waters bring out the ice with them. It is perhaps realized by but few that each year the bergs and the field ice push southward more than half way from the pole to the equator in the regions of the Grand Banks. In some years the bergs are more numerous than in others. This spring, for example, the Arctic ice at times invaded the North Atlantic to a point South of the latitude of Baltimore, Md. The bergs get farther South than the field ice because their form and size enable them to resist the waves and the heat. It is obvious that the water North of the trans-Atlantic lanes hold problems of the most intense interest. The carefully prepared account of the *Marion* Expedition that Lieutenant Commander SMITH and Lieutenant RICKETTS are now working on is bound to contain many interesting facts and lessons. The published report

of the *Marion* Expedition, it is safe to say, will take rank as one of the most important contributions made to physical oceanography in recent years by our country.

It is a little early to draw many final conclusions from the data obtained. However, such great progress has been made with the working up of the observations on account of the short cuts and latest methods that some of the main conclusions and facts brought out by the survey can now be made:

(1) A surface layer 100 metres in thickness covering an ocean area 100.000 square miles five degrees warmer than normal. An additional heat reservoir of tremendous proportions, which is bound to have far reaching climatic effects. This supports the assertions of many that Arctic climate has undergone recent temporary amelioration.

(2) Bottom water was found in the trough between Greenland and Labrador, temperature 2.6 degrees Centigrade and 34.90 salinity. The observations showed that this water was not produced on surface or by ice melting, as suggested in theories of NANSEN and PETTERSSON, but indications point to a slow bottom creep from the Antarctic as the source of such water, even off the Coast of Greenland.

(3) Coastal shelves of Greenland are much narrower than shown on present day maps while the Labrador shelf reveals itself to be wider.

(4) Three headlands sighted by the *Marion* North of sixty degrees latitude indicate discrepancies in location of Baffin Land Coast line on the maps by as much as 20 miles in some cases.

(5) Arctic waters were extremely open this summer. About one thousand bergs in Disko Bay near the glacier front and 200 bergs stranded on Labrador Coast near Cape Harrison, is practically only ice present. The Arctic pack itself shrank back to 20 miles off Cape Dier, Baffin Land.

The work next in importance to the determination of the set and drift of the currents and their extent was the sounding out of the sea areas covered. The Submarine Signal Company's Fathometer was used for the measuring of the depths. This instrument obtains depths rapidly and accurately by timing the echoes from the sea bottom of sound waves that are sent out from the hull of the ship. It was in use day and night throughout the cruise. The result is that there are recorded over 2.100 carefully taken and located soundings from which the conclusions relative to the bathymetrical contours have been drawn. In addition to the station and sounding work, continuous records of surface temperatures and salinities were kept. All ice and other noteworthy things along the route were recorded by being drawn in on the plotting sheets. These were always kept up to date by the navigating officer.

Many questions were asked at each port visited about the facilities for repairing vessels, the stores obtainable, the usual weather, anchorages, and other matters. A full report of port facilities has been prepared for the U. S. Hydrographic Office. That Office is also being sent a tracing of each harbor visited, showing the depths observed with the Fathometer in entering and leaving. For quite a few northern harbors there are now hundreds of soundings available where there were only a dozen or so before.

The weather was carefully observed. As on nearly all ships at sea, the observations were recorded hourly in the log. Twice a day the conditions were radioed in code to the United States Weather Bureau at Washington to be used in making up ocean forecasts for the North Atlantic.

Time signals and press news were received by radio from the United States almost every night. On the transmitting end the short wave radio set worked remarkably well, considering the handicaps of long distance, ship's vibration and noises. With the exception of a few days, the expedition was always in touch with Coast Guard Headquarters at Washington. There being no mail facilities, of course, in the Far North, the members of the crew were permitted to keep in touch with their relatives and friends by means of a weekly radio message. Regular schedules were kept with numerous amateur stations in the States. Those seemed better adapted for working on the short waves used than the commercial stations. Stations 1 IC at Bridgewater, Mass., and 2 WI at Westfield, N. J., were regularly worked on 35.5 metres and the success of the communication service was largely due to the fine co-operation of the amateurs in charge of those stations.

There was plenty of work for each of the 25 persons on board. Day and night the little craft, for the *Marion* is only 125 feet long, pushed on taking station after station and making observations in all sorts of weather. There were several anxious moments when heavy weather at sea, as it is liable to do, brought minor breakdowns of the oceanographic hoists, water bottles and other gear, but by straining nerves and using ingenuity, things were usually kept so that everything was ready for the next station when the time came. This was only possible by the cheerful working of every man of the 25 on board without regard for hours of rest. One stormy night early in the cruise all hands toiled until dawn. Through it all the health of all hands remained fine. Appetites were enormous.

Whenever things got to the point that they seemed monotonous or wearisome, there was always some new sight or adventure to keep spirits up and bodies going. The men who went along with the idea of seeing strange sights and having many adventures were not disappointed. After leaving Sydney, N. S., first of all came the mountains of Newfoundland, then the icebergs about Belle-Isle. These were the first bergs most of the crew had ever seen. Then came a few hours stop at Battle Harbor, Labrador. That gave all hands their first view of Eskimo dogs and the strange plants and flowers of the sub-Arctic. Spotted Island Harbor, Labrador, was the next stop and there half-breed Eskimos were seen, dogs were heard howling in chorus, a native dance was witnessed and a closer acquaintances had with the bare rocky ice-hewn land.

It was a long run, with plenty of hard work setting and taking in oceanographic instruments for every man and jack before Godthaab, Greenland, was reached. This quaint place repaid all trials, for Greenland's snow-capped mountain peaks about it were sighted in the bright light of a warm morning. The brilliant and strange costumes of the Eskimos, the kind friendliness of the Danish officials, the well-painted, prosperous and neat aspect of the town made a deep impression on all. It was here that kayaks were first seen, crawberries first cautiously tasted, and an acquaintance made with the hanging glaciers and rocky mountains of the outskirts of Greenland. There was no time for the new sights to pall for in less than a day the *Marion* was on her way out to sea, headed northwards. Soon the magic Arctic Circle was passed and the ship enjoyed 24 hours of sunlight each day. The novelty wore off and the crew became accustomed to taking scientific observations, which were relentlessly compiled watch after watch as the *Marion* pushed on into the Arctic. Finally one evening a curtain of fog rolled away, revealing the towering side of Disko Island with hundreds of snow-white icebergs scattered in the foreground of the Bay — a wild, primeval scene. At a small indentation in the cliffs nestles the settlement of Godhavn, where the *Marion* sought anchorage and the acquaintance and visits with the government officials were exchanged. Here, as at Godthaab, the crew enjoyed seeing and participating in ar Eskimo dance. A dance is always in order when a vessel reaches a northern port. The trading for clothes and other articles with the natives went on while in Godhavn at a lively pace.

Before starting out on the southward track there was time for a look about Disko Bay and its Arctic wonders. They were well shown off for we persuaded a kindly patriarch of the North to visit our ship for a few days. Guided by Dr. Morten P. Porsild, a scientist who has devoted his life to Polar problems at the Danish Arctic Station at Godhavn, the expedition set out across the Bay for Jacobshavn.

From two hundred to three hundred great bergs were normally in sight about the ship at all times in the Bay. They would occasionally roar like thunder as they split and halved in the warm mellow light, but there was really no danger from them so long as it did not get foggy. Should they be ever so thick they could always be avoided by the ship like an auto avoids sky-scrapers in Manhattan.

The first stop was Jacobshavn on the mainland about 60 miles due East of Godhavn. Here the crew had the experience of tramping over the peat-coated rocky hills to see the great jam of icebergs in Jacobshavn fjord. This is the source of the large bergs in Disko Bay. Some of them find their way down eventually to the trans-Atlantic lanes in the latitudes of Boston and New York. A few come from farther North and a few from Ellesmere Land, lying over to the northwest across Baffin Bay, but the main source of the dangerous bergs are the glaciers along the Greenland coast from the one at Jacobshavn on North to Cape York.

Even up in 70° North there were blueberries and crawberries to eat along the way. The waters off Jacobshavn teemed with Arctic cod and halibut. Sharks and other fish are also

caught. From Jacboshavn fjord landlocked harbor the *Marion* went to the ice front of the Jacobshavn fjord. She looked very diminutive against the cliffs of solid ice. The cliffs from time to time pushed forth, due to the pressure from behind, and they spread out over the bay in the form of giant bergs.

From here the ship cruised North along mountainous shores to Port de Quervain. This was the spot that DE QUERVAIN, the Swiss geologist and glaciologist, chose in 1912 as his start to cross the Greenland ice cap. A cairn in which a record of the *Marion* Expedition was deposited, was erected near one left by de Quervain. This was the farthest North of the expedition. Here there was another glacier discharging into the sea. This one is not so dangerous and does not produce such large bergs as the one near Jacobshavn. It was noted that before each ice front the water is milky and flows strongly from under the ice. This is due to the presence of rivers from the interior flowing out from the shore. The milkiness is due to mud and rock flour from the Greenland bedrock. The relentless grind of the ice cap and its outpouring glaciers keeps a constant supply of fine particles in the water.

Port de Quervain was visited because it was a place from which the great Inland Ice can be reached with comparative ease. Once again the ship was left with a few shipkeepers only while the majority of officers and crew left early on the cloudy morning of August 10, to visit the great ice cap. It was only five or six miles each way, but it seemed like twenty. Led by a native guide and accompanied by Dr. PORSILD, the party began the climb up and down the boulder strewn mountains, over glacial hill and by ponds and lakes towards the interior. Few had ever taken such a jaunt before and few will ever take such a one again. The party reached the terminal moraine of the ice cap a little after noon, with just enough strength to climb over its clay and gravel and boulders, and to get up on the edge of the living ice. A piercing wind was blowing down from the ice cap. Still, the sun was warm enough to make small streams flow down beds of ice to the edge, where they ran under the ice to appear later in places as cascades where a break in the hills would let them out. A good look at the billowy deserts of ice, a few mouthfuls of the icy water for parched throats and a hasty retreat was made toward a sheltered spot some way back. Here lunch was eaten, with many a shiver, and then the party dragged weary bodies back to the ship, which looked very good when it was finally reached. The next day was spent amid the scenic grandeur of the Viagat. That is the icy strait between Disko Island and the Nugsuak Peninsula to the North. The red peaks of the ice-worn lava mountains reach up to the height of 5.000 feet and more on each side of the berg-dotted ribbon of blue water. The rocks near the water of creamy sandstone contain seams of coal and plant fossils which bear witness to a past tropical clime. A stop was made for an hour or two at a coal mine that the Danish Government is developing on the Disko side just above the 70th parallel of latitude. The European engineers and the families here in the shadow of the mountains live in a wild bleak setting. Cut off as they are most of the time from all touch with civilization they must find it a cruel and lonely land. From the *Marion's* anchorage, half a mile from the shore could be heard the roar of the waters rushing down from the hanging glaciers of the mountains above. Should this mine prove successful it will be able to supply all Greenland with coal and make it independent of Europe for its supply.

It was an all night run back to Godhavn where the *Marion* arrived Sunday morning, August 12th. A challenge from the Greenlanders to play a game of soccer came as a surprise. It seems the Danish radio operator, an ex-soccer player of repute, has labored to teach the native Greenlanders the rudiments of the game. A defeat for the Americans of 28-0 was due to the cleverness and fleetness of the Eskimos at a white man's game. Here farewells were said to the officials and the expedition's firm friend and mentor, Dr. PERSILD. The *Marion* left on the afternoon of August 13, 1928, in fog and rain.

Godhavn was left in the best of spirits for it meant that half of the cruise was ended and each mile from now on was one mile nearer the States and home.

There was need enough for cheerfulness for hardly had the ship got well offshore in Davis Strait before a fierce northwest gale set in. The little *Marion* is staunch and seaworthy but in a real rough sea things are pretty miserable on board. Practically no work can be done. So severe is the motion that one is nearly thrown out of one's bunk by the jerks and swerves of the laboring. Even if not deathly seasick, as some are, one loathes the food and wonders why one ever went to sea.

The next day brought relief and also something else. Field ice! It was the first experience with pack ice and all were dubious and a little fearful. The pieces were heavy old floes from the Arctic well slackened out and with considerable water between them. The ship wormed her way in along the leads all hands watching the thick chunks and shuddering a bit as the vessel would hit one where they were too thick to be avoided and tremble from the shock. It was known that the twin screws projected well out from the sides aft and that one lick against a fifteen feet thick ice cake could well put one of them out of commission and that two such licks might end the expedition by leaving the vessel helpless in the ice. However, very careful use was made of the screws and a good lookout kept aft and there was no damage done.

The next day was still slower with the ice packed tighter. The swell of the sea was absent and the vessel rammed and twisted her way through the dead waters in the warm sunlight, like a water bug among giant white lily pads. It was evident that Cape Dier was blocked off and that the nearest point to it that could be reached with the stations was about 40 miles off instead of 5 as planned. The slow working to the south was kept up all day in order to get around to the south end off the Arctic ice and over to the Baffin Land shore down by Cape Marchison if possible. The morning of the third day found everyone pretty gloomy and travel slow as the ship was driven again and again into leads which always blocked her progress. The ice was delaying the cruise and putting out the schedule badly. The morning however was enlivened by the sighting of several walruses. A couple of them were shot but they fell off the ice cakes and sank. About two o'clock in the afternoon those off watch were brought quickly on deck by the cry "Polar Bears!" and sure enough there were three, an old mother and her two cubs. The ship worked near to the cake where the bears were devouring a freshly caught seal, apparently reluctant to give ground as they curiously watched the *Marion* draw closer and closer. The hidden riflemen raised up in the bow just as the bears began a slow retreat. The large bear was killed with two well placed shots from a 30-30 service rifle while swimming a lead but the two small ones were spared as they were wanted alive. They outdistanced the ship and would have escaped except that one was killed just before it got out of range. The other, with wild roars, turned to defend her dead brother. This proved her undoing for it enabled her to be noosed and roped by Boatswain KRESTENSON who went out for her among the floes in a dory manned by three picked men. The ship worked up to where the bear was being held. After being securely trussed up the big cub was hoisted aboard to be liberated in the forward hold. Then after that the cruise was never dull for Marian, as she was called, is a bad actor. About ten o'clock the next morning without warning the young polar bear with a roar and crash broke loose her lashings and emerged from the ship's hold on to the forward deck looking for fight. Boatswain KRESTENSON was on watch on the bridge when he suddenly saw his prize ready to put up a serious argument of escape. He tore down from the bridge and gave battle singlehanded yelling for assistance. Alone he grabbed the bear by the hind quarters and yanked her back on board just as she was about to leap the rail. Once he received a nasty bite on the hand but odds and dangers were cast aside. The Captain was the first man to his assistance. For an instant the two battled together against the bear. Then the bear made an attack on the Captain, who in dodging, tripped and half fell to the deck. In a flash the bear was clawing and tearing out the back of his coat with her fangs. The tide then swayed against bruin as KRESTENSON and others get a secure hold on her head. Helpless from sheer overpowering weight of numbers — Marian was dragged forward again and ignominiously dumped into her hold. You can be sure that this time lashings and weights were put on the latch that would have kept down an elephant or a Hercules. A strong wooded and wire cage was built upon arrival at Ivigtut, Greenland, in which the bear is destined to be taken to the National Zoo in Washington, D. C

At last the field ice was passed and Brevoort Island reached. That was the place that is charted too far to the west. It was sighted suddenly and unexpectedly close one night. It is lucky that the ship did not pile upon on its rocks.

The next stop was at an uninhabited fjord about 50 miles south of Cape Chidley, the northernmost point of Labrador. It was reached after a wild night among the overfalls of Hudson Strait and after two days futile search for the fliers HOSSELL and CRAMMER off Resolution Island. This spot was under the shadow of the 7.000 foot Torngats of Labrador, the highest land anywhere near the east coast of the Americas. This stop furnished us with water

and a short rest from vibration and rolling but its warmth and pleasantness were deceptive for hardly had the anchor been let go in a bend by a fine snow-fed torrent than a shrieking williwar swept down and whitened the water. Such was its fury that the ship heeled over and swerved as though grasped by giant hands. All night long these intermittent winds, warmed by the compression due to their quick descent from the heights above, shook the ship. Few cared, however, for all hands but the anchor watch turned in and slept from utter weariness. The next day it was out so sea again after a walk to a hanging glacier and a berry picking party that netted just enough blue-berries for a pudding for all hands.

It was not long before the route reached Greenland again, this time at Ivigtut where there are great rounded mountains, covered near the water with a thick-sub-Arctic flora, and where dead cod stocked fjords about. Here was seen the rich Danish cryolite mine. Two small scandinavian steamers were in port for cryolite cargoes, one for Philadelphia and the other for Copenhagen. The mine officials were very kind and nearly overcame the officers and crew with their parties and hospitality. The next day the compliment was returned by taking them to the glacier at the head of Arsuk Fjord in the *Marion*. When Ivigtut was finally left it was September 1st. A very low barometer prevailed (29.15) but it was not stormy and the coastwise run down to Cape Farewell was very pleasant. The time for taking the oceanographic observations in this dangerous region was chosen by the *Marion* with much care. A little earlier or a little later in the season and the dreaded storms of the Storis of the East Greenland current would have possibly proved fatal. As it was some cold water and a few bergs were found in the head current, but no real ice menace was encountered. The southern tip of Greenland was reached on the afternoon of September 3rd. It had been foggy but when the *Marion* arrived off the headland of Egger Island and began the station work the fog rolled away like a curtain from all the high peaks, permitting a glimpse of the Cape Horn of the North, Cape Farewell, which is dreaded by all who go to Greenland. It is shunned by most mariners and has been gazed on as the *Marion's* men saw it by but few. The mountains there are entirely different from the ice rounded cones and domes farther North. Here they are terrible and needle like Alpine horns. The whole coast was lit up by a pink light from the setting sun. The snow fields and fog patches stood out against the wild cloud patched sky with a blue-gray cruelty and coldness that will never be forgotten. If only a painter or artist could have truly depicted that waste of water, fog, sky, snow and sunlit rock, he would have become famous overnight.

All hands were glad to begin the last line of stations toward Belle-Isle. There were a few days of uncertainty when it was thought that perhaps the ship might have to go a thousand miles back to Holstenburg, Greenland, to pick up the fliers HOSSEL and CRAMMER. All hands were relieved when the radio advised that commercial transportation had been provided. Belle Isle was reached on the morning of September 7th. Two short lines of stations off the North Newfoundland coast and the station work was ended. A short investigation of a reported ice island several miles long in the vicinity of Belle Isle proved the falsity of this report. Nothing larger than a berg about 800 feet square and fifty feet high could be located. On September 12th St. John was entered and much needed food and water obtained. The bread and vegetables seemed delicious in exchange from the canned goods, beans, and such stores that had been the fare. From St. Johns there remained but the child's play of a thousand mile run from the southwest around Newfoundland and by Nova Scotia towards home. The five days of this run were devoted to cleaning ship and clothing as much as possible and to packing up the oceanographic instruments for storage until the next ice patrol season. Then came the end of the expedition as the ship moored at her old berth at the State Pier, in New London, Conn., amid the friendly crowds of Coast Guardsmen civilians. It was the greatest moment of all when loved ones were greeted once again. Then the stores of Arctic treasures were dragged forth and the endless flow of adventurous tales was begun.