

MACMILLAN REPORTS SIGNS OF NEW ICE AGE

Explorer Brings Word of Unusual Movements of Greenland Glaciers— Coal Deposits Show Polar Climate Was Once Tropical

NATURE is in a strange mood beyond the Arctic Circle. Glaciers are moving from their age-old beds, pouring greater quantities of ice into the sea than recorded history has known. Broad areas of land are sinking to new levels. A number of islands have disappeared.

These are but a few of the observations made in a fifteen months' cruise by Donald B. MacMillan, who has just returned home in the cockleshell schooner *Bowdoin* from an eventful trip into the North.

He reports, among other notable things, the discovery of extensive coal deposits within 600 miles of the North Pole, indicating that the polar area once had a temperate climate and supported such trees and other vegetation as have left their carbon in the coal deposits of Pennsylvania. In other words, the climate of Northern Greenland was once at least as mild as that of our own latitude today, and was perhaps even tropical.

Further evidence that the North was not always frozen was found by Mr. MacMillan in banks of clam shells. These relics of a warmer age occur on land at an elevation of 1,200 feet, showing that water once flowed over a large surface of Arctic territory.

A New Glacial Age?

Many questions throng fast upon the heels of such discoveries. One is the possibility that we wait at the threshold of a new glacial age. With the ice cap of the Arctic slipping nearer to temperate regions, it becomes an interesting problem as to how far the process may extend and how long it will go on.

Every foot of advance means a corresponding drop in temperature. If the ice came far enough, it would engulf the frontiers of civilization, then conceivably might sweep down the valleys of the continent into the sea, carrying all before it. The Hudson River was carved out by a glacial deluge in times long past.

"Contrary to instruction in our schools and colleges today, a large section of the Arctic glaciers are not receding, but actually advancing," said Mr. MacMillan, enjoying the comfort of a New York hotel suite after his long sojourn in the icy wilderness. "We have been taught that the world was just about at the end of its last great glacial era. But the evidence of the glaciers themselves shows that they are advancing, increasing in mass, emptying unmeasured quantities of ice into the northern seas. I traced this condition over a broad sweep of the glacial formations from Greenland north.

"In Alaska and the Alps the ice has receded somewhat, but the Atlantic is watered every day by an increasing flow of glacial ice. This means, of course, that there will be more bergs in the North Atlantic steamship lanes and graver problems of control.

"It is about 50,000 years since our world went through its last glacial era. Ordinarily one of these periods will last 50,000 to 75,000 years. Scientists differ as to the total number of periods that have occurred. There have been four or five, with an intermediate period of perhaps 25,000 years between the submersions of ice.

"According to that estimate, the world has enjoyed warmth for twice the usual span of time. It is conceivable that another submersion may lie ahead. I do not know, and have no guesses to offer. But the ice is moving over a great stretch of territory.

Greenland Shore Sinking.

"At the same moment Arctic land is sinking. The whole shore of North Greenland shows evidences of this recession. What we determined by scientific means was also a matter of common observation among the Eskimos. Old men of the tribes told me that they were certain the glaciers had moved. And the natives are building their igloos further inland every year as a result of seeing the shore recede.

"Some investigators seek to find a connection between this movement of the glaciers and the sinking of the earth. But I doubt that the two have any relation. It is hard to believe that even the weight of a glacier would press down the earth's surface. Instead, I think that this recession is another oscillation of the crust that envelops our world. These oscillations have continued throughout the ages, as indicated by the appearance and disappearance of islands, plateaus and similar formations. To my mind, the important connection between the two movements is the fact that they are taking place at the same time, proving the Arctic not to be in a static condition.

"The first creditable maps of the North are seventy-four years old. Look-

ing at one of these maps, I was impressed by the number of islands former explorers had noted which have now wholly disappeared. Some of the land indicated also is very doubtful, proving that the Arctic has undergone a transformation even in so brief a time as seventy-four years. There can be no question that the earth and glacial movements have quickened in the last few years."

Finding the Coal.

MacMillan has confirmed earlier reports that Arctic coal exists on a broad scale, veins of twenty-five feet showing plainly. He described the coal as of an excellent quality, and especially welcome in the ship stove when the atmosphere outside touched a matter of forty degrees below zero. Sketching on the map, he showed where the coal could be found.

Ellesmere Land contains one of the important deposits in north latitude 81.40, some 620 miles from the Pole. The nearest shipping point would be Etah, 78.20, which is 200 miles from the open veins.

This particular deposit was chanced upon in an odd way. During a thousand-mile dog sled trip across Davis Strait and into Ellesmere Land, an Eskimo brought in a fragment of the precious coal. He had seen it burned by the white men elsewhere and conjectured that it would be welcome. That night a merry campfire burned in the midst of the frozen expanse.

This Ellesmere coal has been a source of grief to the Eskimos. Their religious faith centres around evil spirits that exercise a fearsome influence on the lives of human beings. So they are constantly propitiating some god or other of the spirit world. Having seen the white men burn coal and keep comfortable, two families decided to settle in Ellesmere Land, near the veins, and live warmly ever after.

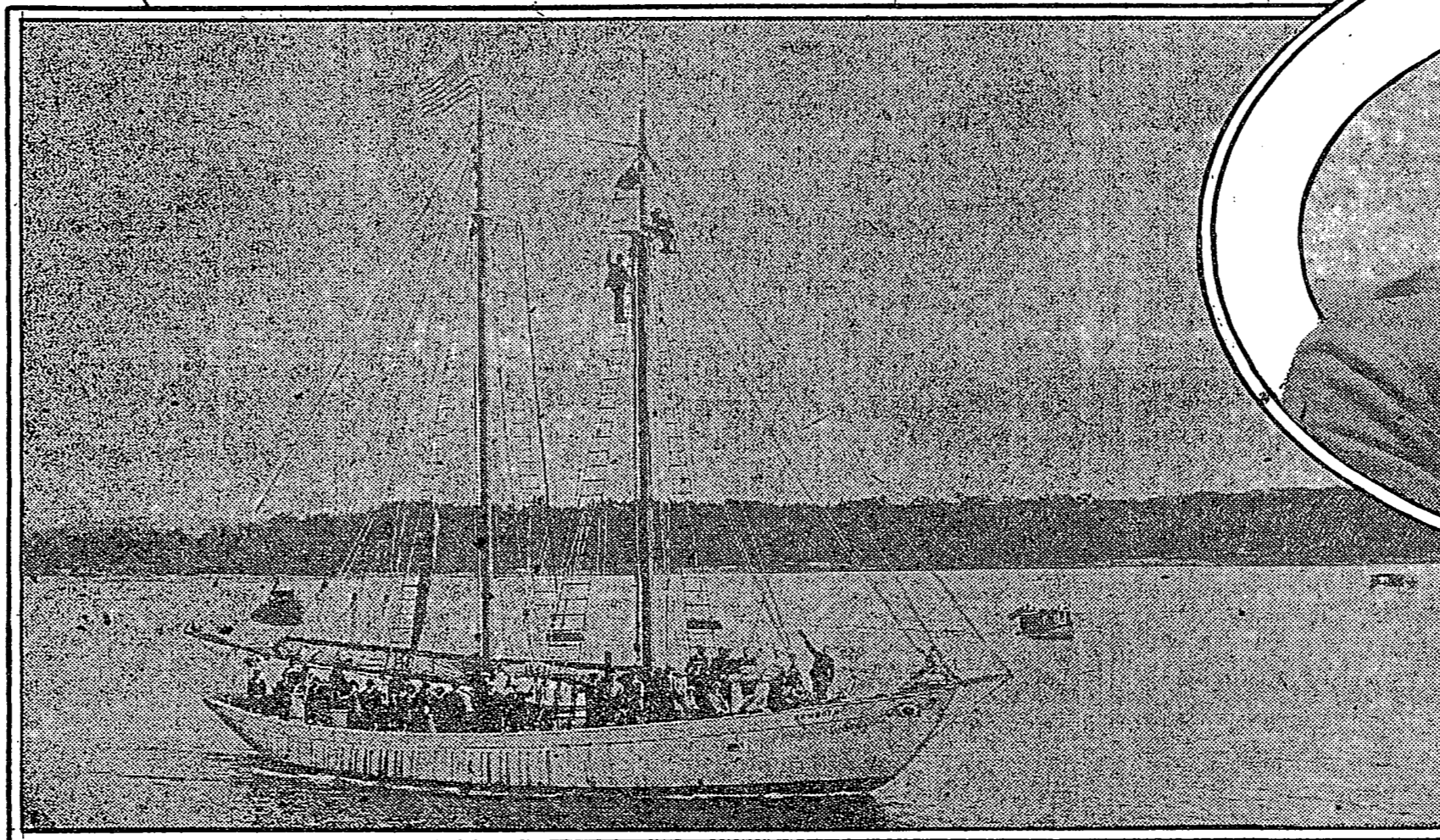
An Eskimo Tragedy.

These two families rigged up makeshift stoves from old tins left behind by explorers. Then they started the fires, piled on the fuel, and settled down for a pleasant life. But their igloos lacked modern ventilation, and coal gas promptly killed one of the natives. The grief of the coal had been revenged.

The survivors broke up the settlement and left such an evil spot. In order to understand their sorrow a little better, it may be said that the Eskimos put their place of future punishment in the sky, where it is always cold and dreary, and conceive of paradise as a nice warm corner inside the earth.

Another extensive deposit of coal lies near Lady Franklin Bay, only nine degrees from the Pole. It is of the same general quality as the Ellesmere veins. In the island of Disco, near South Greenland, twenty mines are under operation by the Danes. Other deposits are likely. There also is copper and cryolite in South Greenland, but no other valuable minerals are known to exist in the Arctic. MacMillan pointed out that the coal might be used for generating power at its source, the power to be transmitted back to civilization.

"Although I have no definite measurements of the deposits, I believe that



The Schooner Bowdoin in Which MacMillan Made His Voyage to the Frozen North.

Wide World Photo



Donald B. MacMillan, Arctic Explorer, With One of His Dogs.

Wide World Photo

inshore, where the radiation of heat from the rocks had left a strip of clear water. Having attained that vantage point, he would try to reach open water. In the process a number of things happened, the *Bowdoin* heeling over until it looked as if she might not be righted again. That was the day she split her timbers. But finally she felt water instead of ice beneath her keel, and proved her mettle by sailing home to Maine again, as pretty as one could wish.

Teacher and Adventurer.

The story of MacMillan and his adventures reads like one of those yarns that used to charm boyhood when G. A. Henty and others of the noble race of romancers were writing stories that kept youth awake at night.

Donald MacMillan went to college and turned school teacher. Probably the wisecracks of his home in Provincetown thought that Don would end up a schoolmaster, as he had begun. But there was a mixture of books and the sea in him that could not be denied. So, in 1908, he joined the Peary expedition of that year and went to the Pole.

Just why he took up Arctic exploration none of his friends seem to know, but many of them say that Don was likely to take up anything. Certainly he met with high success in the first taking. Ever since then the Arctic has held him tight in its lure, and it is a dull year when he does not go sailing off to points unknown.

Adopting the Arctic as a pastime and vocation is not so simple a matter as might be thought. For one thing, it requires considerable capital, and the salaries of teachers do not usually suffice for such enterprises. Just how Captain MacMillan financed his first voyages is a subject that would be

worth the telling. Probably he is the only man who knows. But in 1913 the American Museum of Natural History and affiliated institutions fitted him out in the good ship *Diana* for another try at the secrets of the North.

He went with high heart and bright prospects—and foundered, as many a man had done before him. Then came the question of relief. Two expeditions failed to get through, but a third brought the party back. MacMillan had tried on this voyage to reach the supposed continent which Peary believed he had seen at a great distance in 1906. But the continent failed to develop and shipwreck blighted other hopes.

The mixture of books and adventuring is strong in MacMillan. He came home and turned his hand to teaching at Bowdoin College. There he was engaged to lecture on anthropology, seemingly a strange subject for an Arctic explorer. Then came the opportunity to push north in the *Bowdoin*, and a large part of the world knows the result.

If nothing happens to prevent, MacMillan expects to turn her nose seaward again next June and spend the Summer looking over the ice floes. He does not plan to make a long voyage until later.

It is hard for a man to overcome the bookish strain. Explorer though he may be, MacMillan still is the schoolman. On his last trip to the circle he spent some idle Winter hours compiling what is intended to be a dictionary of the Eskimo language.

He says that this tongue is interlarded wholly for utility, and not at all for the higher expression to which modern language tends. It is a language of necessity. When an Eskimo needs or desires some object ardently he gives it a name. And the name is distinctly expressive, meaning just one thing—no more. There are no abstract ideas in the language and no colorful flights. The equivalent of dog, for instance, signifies "that which pulls."

FARMERS OF WORLD GETTING TOGETHER

AN international census of agriculture in 1930 is now being promoted by the International Institute of Agriculture at Rome, according to Asher Hobson, American delegate to the Institute. The purpose of the census is to place the agricultural statistics of all countries on a comparable basis for the intelligent interpretation of world food and fibre production and needs.

Many nations do not now take an agricultural census and the enumerations of others are not comparable because uniform forms are not used. Specialists have been employed to work out data on which a uniform schedule can be devised for submission to each member country.

The statistics of individual countries are dispatched to the Institute at Rome by telegraph, cable and radio, where they are tabulated and relayed to all countries interested. The reports to the United States are received by the Federal Department of Agriculture at Washington, where they are analyzed and the results broadcast over the country by radio and press dispatches. The service has been important in keeping American farmers and agricultural agencies informed on world conditions.

they are large enough to operate power houses at these points indefinitely," he said. "Otherwise I cannot see how the coal will be serviceable. One ship a year to Etah is about the rule, and sometimes that does not get out in time for the return trip. Greenland can be reached from May to November."

It was suggested that the difficulty of operating power plants in such a latitude might prevent that development for all time, but MacMillan would not admit the handicap of weather.

"We were there fifteen months," he said, "and enjoyed every minute."

Testing the Compass.

One of the outstanding achievements of the cruise was the extensive experiments carried on in connection with atmospheric electricity and terrestrial magnetism. These experiments were conducted for the special purpose of extending knowledge in the field of compass control. Everybody knows, of course, that the needle of a compass points continually to the "magnetic north." But it is not so well known that compasses very considerably and sometimes exhibit a temperament strictly personal. This may lead a ship

considerably out of her way, or even endanger her safety.

A few years ago there were several wrecks near Cape Race, attributed at first to various causes. Investigation led to the belief that compass trouble had been the real cause. Then a non-magnetic ship visited the scene, and it was established that a peculiar attraction in these waters had led the mariners off their course.

This subject of earth magnetism opens up wide possibilities. The MacMillan expedition is believed to have made an important contribution to its study, having maintained an observation station under favorable conditions for eight months of the time it was away. The results will be checked up in Washington during the coming Winter and doubtless will add a new measure of safety to navigation.

MacMillan was asked if any unexplored regions remained in the Arctic and what might be found there. He pointed to an expanse of map due north of Alaska, centring around latitude 82.30 and longitude 120. In the general vicinity of Axel Heiberg Land, where a million square miles of frozen waste remain untrodden and unsailed by white

men. The zone is somewhat outside the usual path of explorers and, no adequate attempts have been made to penetrate it.

Admiral Peary probably went further into this waste than any other man, and thought that he detected a great stretch of land, perhaps 100,000 square miles in extent. But even that meagre knowledge is only an assumption, so it may be said that this million square miles is the least known, most obscure part of the world today.

Looks Like a Seaman.

Studying Captain MacMillan in person and listening to his matter-of-fact discussion concerning the great northern wilderness, it is not difficult to understand his achievements in Arctic exploration. He looks like a seaman, and it is a little surprising to learn that he is a college professor in odd years and has numerous letters after his name. Surely he was born to the sea. In figure he is of moderate stature and has a square set-up that goes well with a pair of able sea legs. Particularly he has the eyes of a seaman, far-away gray eyes accustomed to long distances and great difficulties.

It is no prosaic undertaking even to venture forth from a safe harbor in a hundred-ton schooner, the sort of vessel that slips up and down the coast in fair weather and takes to port when Boreas blows. But the *Bowdoin* is that cut of craft, and she went almost to the Pole, then home again, suffering no harm except a couple of cracked timbers in her hull.

Inside that hull is a cement lining which probably would keep the *Bowdoin* afloat if she stove a hole in her bottom. But the voyage was made without serious mishap, although the matter of getting away from Refuge Harbor, Northern Greenland, was no slight undertaking. After three futile attempts to reach Cape Sabine, on the Ellesmere shore line, MacMillan turned back to Refuge Harbor last fall, and watched the ice form around his ship. Soon she was frozen like a toothpick in the Arctic waste. Then came the dog train excursion into Ellesmere Land and the chance visit to the coal veins.

The *Bowdoin* remained fixed in her bed until August, and there still was no sign of release. Then MacMillan brought forth a couple of bucksaws and cut away the ice from his hull, intending to work