

POLAR ICE AND THE WEATHER

One of the Riddles of Meteorology

NATURE'S COMPLEX SCHEME

The Antarctic continent attains a height of 10,000 feet. Sir Douglas Mawson says this immense plateau may be nearly all solid ice! Explorers declare that this ice grows and diminishes with the passing of years.

ALL messages from the Mawson Antarctic expedition indicate that ice exists in southern latitudes in much vaster quantities than when earlier expeditions have visited these parts.

On the southern coast of the Australian continent the impression prevails that the present summer is exceptionally cool. Melbourne on Tuesday, after weeks of cold, wet weather, recorded its coldest day for 60 years.

Is the mass of ice in the south giving us a cool summer? Mr. Bromley, with meteorological statistics to support his contention, says there is no evidence in Australian weather that the ice to the south is having any influence.

Nature Abhors Monotony
"If all ice were removed from the Antarctic circle," he said this week, "we would know, of course, that our weather would be different; but whether increase or decrease of ice influences temperatures in Australia is very problematical. This is one of the riddles of meteorology. As air becomes lighter when warmed, and increases in weight as it cools, it is not unreasonable to think that there should really be a constant stream of air from the poles to the equator, and an equally steady flow of the upper atmosphere from the equator to the poles. But the spherical shape of the earth, its rotation on its axis, and other influences, prevent such monotony. The eddies and currents and storms of the atmosphere seem to be induced by Providence in order to make the world habitable. Everything is on such a large scale that the mind of man cannot yet comprehend all the complexities of atmospheric movement. There are large systems and small, with great differences even between systems of the same type. In our latitudes a cyclone at the Leduc win may disappear before reaching Adelaide; an unpromising disturbance in the West may become a storm by the time it reaches us; and there is no discernible reason for these vagaries. So it can hardly be said that a blizzard in the Antarctic would necessarily give cool winds in Holdfast Bay. The drift of weather systems is generally from west to east, and the nature of these systems, and not, so far as we can ascertain, the temperature of the air thousands of miles south of us, determines whether the cold air in the south shall reach our continent, and quickly enough to prevent their being warmed as they enter the zone of higher temperatures."

Records Belle Appearances
The impression that the present summer is a cool one is not supported by Mr. Bromley's records. The mean temperature for December was nearly 3 degrees above normal, and the month was the warmest since 1901. There have been no severe heat waves, and January has been cool so far; but there is yet time for the average temperature of the month to reach normal. The accumulation of ice in Antarctic seas probably takes years, says Mr. Bromley. Sir Douglas Mawson stated that on his way back from England two years ago he had observed icebergs much farther north than usual. Again, on his Antarctic exploration last summer he reported on the extensiveness of the ice fields. Yet the year 1920 provided the highest mean temperature at Adelaide for 74 years, with only two exceptions, 1914 and 1862. Mr. Bromley says the more the causes of weather changes are examined the more complex they are found to be.

"We take most of our weather observations on the ground, but we know that conditions in the upper atmosphere may be the reverse of those below," he remarked. "A prominent meteorologist has truly said that every anticyclone has a cyclone on its back. In the lower atmosphere the winds may be circulating in one direction; above, the air may be moving the opposite way. I mention these things to show how difficult it is to say what effect any given circumstance in one place may have upon weather in a place thousands of miles distant, where nature's incomprehensible scheme of things, too vast to be influenced even by the ice of a frozen continent, is being worked out for the weal or woe of mankind."

MAWSON PARTY PROBES THE DEPTHS

Extraordinary Netting At 550 Fathoms

(Radio message from Sir Douglas Mawson on the Discovery, January 26. All rights reserved.)

ALTHOUGH a clearance in the weather seemed imminent on January 21, we were sadly disappointed, for no sooner had the Discovery pushed out of the pack to the open sea than an easterly gale arose and the ship then had to tarry for two days. The wind gradually abated and clouds cleared from the southern horizon, where an appearance of land was presented. While awaiting for the subsidence of a heavy cross swell for suitable conditions for the launch and aeroplane, a heavy fog with snow descended and still remains unchanged. Evidently this is an exceptionally foggy locality.

This morning we decided that we could wait no longer for a clearance, so have moved west and are now in 240 fathoms water in latitude 110, longitude 109.30. This is a dead reckoning position, for the sun has not been seen for several days. Although fog and weather bound, we are still able to do much scientific work. Thus without delaying the purely scientific operation, an important series of marine stations have been conducted throughout the cruise.

DATA ON TEMPERATURES
Data relating to temperatures, chemical characteristics, current movements and peculiar life of the seas have been accumulated at frequent intervals along the route. Each of these stations deals with serial observations from the surface to the ocean bottom.

Today marine life has been particularly abundant. Professor Harvey Johnston and other zoologists are working overtime effectually to deal with our catches. A netting taken between 500 and 550 fathoms surpasses anything thus far experienced at such a distance below the surface. In this instance there is more life in the deep water than nearer the surface. Many varieties of fish, in addition to multitudes of invertebrate life, are represented. While one of the nets was being hauled in, two blue whales became interested in the operation. After examining the steel wire hauling cable at the stern of the ship, one of the whales followed the cable down towards the net. For a time we contemplated with anxiety the possibility of securing an undesirably large and embarrassing catch, but the monster evidently lost interest before reaching the net.

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TOO COLD FOR FISH

DISCOVERY'S VOYAGE SOUTH

Charting MacRobertson Land

Canberra, February 17.
The following wireless message has been received from Sir Douglas Mawson, on board the Discovery, dated February 12:—"On the 11th the Discovery pushed through the area of slack pack into a splendid sea of open water, leading south. In these ice-encircled waters a strong southerly wind had worked up quite a considerable sea. After establishing connection with land, we followed the coast south all day. Late in the afternoon, in the shelter of an enormous tabular berg, the aeroplane was got up, and further geographic observations were made, whilst a radio station was run from the ship. We were then in an extensive region of shallow sea, ranging from 100 to 250 fathoms in depth."

"Here the water is uniformly cold. Mr. Howard found the bottom water the coldest yet recorded by this expedition, viz. 28.30 degrees Fahrenheit. Large numbers of small fish floated past the ship dead, apparently frozen. Captain Hurley sculled the prism into some remarkable grotto formations, sculptured in grounded bergs, and obtained some striking photographic records."

Inland Ice-Sheet

"From latitude 67.43, longitude 69.20 east, the coast takes a sharp turn to the south, with open water along the coast until past the 69th degree of latitude. Then it comes back slightly to the north, extending east to meet the land ice slopes seen from the aeroplane on the 9th instant. The land is entirely covered by ice. This inland ice-sheet was observed to reach an elevation of 4,000 feet at no great distance inland. From such heights it descends in a series of undulations. Finally at sea level it is fringed for the most part by horizontally-disposed floating extensions, which advance several miles over the waters before frusion by periodic 'calving' of tabular bergs. The existence of this ice locked the sea. Extending to beyond the 69th degree of latitude is an interesting discovery. "Very strong winds descending the land, ice slopes are a feature of this neighborhood, and appear to be responsible for driving the pack away from the coast. The air is much cooler lately, being usually below 20 degrees Fahrenheit, and as low as 3 degrees Fahrenheit has been recorded by the aeroplane."

"To-day we have been steaming north out of this polynia, in order to resume the delayed charting of the MacRobertson Land coast, further to the west."

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DISCOVERY FOR SOUTH AGAIN

WILL LEAVE IN OCTOBER

Canberra, May 1.
As Mr. MacPherson Robertson has guaranteed £6,000 towards expenses, the Discovery will make a second visit to the Antarctic at the end of the year, the chairman of the Antarctic Committee (Senator Daly) announced to-night.

The Discovery will sail from Melbourne in October, but Hobart will be the actual port of departure for the Antarctic.

CHRISTMAS DAY IN ANTARCTIC

Discovery's Crew Celebrates

SOUTH AUSTRALIAN PRESENTS

Canberra, January 4.
In a wireless message from the Discovery, Sir Douglas Mawson describes how the officers and crew of the vessel celebrated Christmas Day. The message, which was sent on December 30, says:—

The Discovery is now in an open pack on the 142nd meridian, about 50 miles north of the Antarctic coast. A howling blizzard, with thick falling snow, at present dominates our activities. In such a wind and among such heavy ice as composes the pack hereabouts, the greatest vigilance is required to preserve the ship from damage.

Since last reporting many days have been spent in threading our way west through and on the margin of the pack. Here again the ice is found to extend much further north than was the case years ago, when the Australian expedition operated in this neighborhood. Instead of the open water or lack of pack then ruling north of Adelle Land, we now find a broad heavy pack belt. Several days have been expended in exploring blind leads in the pack and combating a strong westerly wind.

Decorating and Gifts
Christmas was celebrated in time-honored fashion. Radiograms, letters, and parcels from friends focussed our thoughts for a few hours on less austere climes and the fellowship of others outside the limited circle of our small community. An immense box of decorations and individual presents, contributed by wives of members of the Geographical Society of South Australia, gaily illuminated the ward room and forecastle. To these were added fine contributions from Launceston Grammar School and Woodlands Grammar School, Glenelg, and from many private individuals. Our best thanks overflowed to those who thus joined with us on this festive occasion.

Whaling Ship Met

A new feature developed when, day before yesterday, the pack receded south. Early on that afternoon a multitude of birds was observed, feeding off a portion of a whale carcass, which indicated whaling activities in our neighborhood.

Mr. Williams, who has had the wireless directing and finding apparatus working admirably, soon located a whaler, which proved to be the Kosmos, about 60 miles to the west. As so much coal had been consumed in pursuing the Sir James Clark Ross far to the east of the anticipated rendezvous, we now saw an opportunity to recoup this expense. Accordingly, we lost no time in communicating with the Kosmos in the hope of obtaining additional supplies. Great was our relief when Captain Andresen replied that he could spare 50 tons.

The Kosmos was reached yesterday forenoon. We found the captain prepared to extend every help. Also on board was Captain Dingsor, of the Norwegian Navy, and Government inspector, who proved most cordial and helpful.

The Kosmos is another gigantic whaling mother ship with a total capacity of 22,000 tons, and of similar construction to the Sir James Clark Ross. With her nine auxiliary chasers she has already secured this season a fabulously valuable cargo. Even as we stood by, a large tanker arrived from Europe to take back a shipment of the oil.

Coaling Operations

Thus from an icy wilderness we suddenly found ourselves among a fleet of ships and a hive of industry. By 4 p.m. we had the Discovery ready to take coal on board. Then Captain Mackenzie ranged her alongside and finally secured the Discovery to the Kosmos while the latter steamed very slowly into the long ocean swell, and thus eliminated most of the differential movement between the two vessels. A couple of whales lashed between the ships proved an efficient fender. The coal and a quantity of fresh water were taken on board in less than three hours. Captain Mackenzie and I were given a very nice dinner by the captain and officers of the Kosmos, who drank success to our expedition.

After expressing our best thanks, the Discovery cast off, and we proceeded south into the pack and the teeth of the rising blizzard.

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REETINGS FROM MR. FENTON

Canberra, January 4.
Replying to Christmas greetings wireless from the Acting Prime Minister (Mr. Fenton), Sir Douglas Mawson said, "In the face of our recent difficulties due to the abnormal ice and weather conditions, your radiograms to members of the Discovery is more than ever appreciated and will be a spur to greater efforts. The hurricane is now abating, and our future prospects are good."

ANTARCTIC TRIP

WILL MAWSON RETURN?

NO DECISION REACHED

CANBERRA, Today.
No decision has yet been reached by the Commonwealth Government on the question whether Sir Douglas Mawson is to return to the Antarctic next season, or whether the Australian and New Zealand Antarctic Expedition is to be disbanded.

No official announcement on the question will be made at present. Apart from the question of finance, there are many other important considerations involved. These will require consultation with the British Government.

Apparently Sir Douglas has added a large area to the Antarctic territory claimed by Britain by right of exploration and discovery, so it appears that the object of the expedition has not been entirely scientific. The interest being taken by the United States and Norway in the territory known as the Australian sector of Antarctica was what influenced the decision of the British, Commonwealth, and New Zealand Governments to send out an expedition.

When Mr. S. M. Bruce (former Prime Minister) announced early last year that it had been decided to send the expedition under Sir Douglas Mawson, it was understood that the return of the Discovery to Antarctica, after wintering in Australia, could not be decided before the Discovery actually returned to Australia. If, however, any objects of the expedition which have not been disclosed have been accomplished, there may be no necessity for the return of the Discovery to the southern regions. On the other hand, the Commonwealth decision regarding the future of the expedition may be dependent upon negotiations between Mr. J. H. Scullin (Prime Minister) and the British Government, which may have to be conducted by personal contact. Mr. Scullin will be in London within the next six months, and a decision may be deferred until after he attends the Imperial Conference.

ANTARCTIC EXPLORATION

WORK TO BE CONTINUED

EXPEDITION THIS YEAR

Canberra, May 22.
It was announced by the Prime Minister (Mr. Scullin) in the House of Representatives to-day that the Government have decided that exploration work in the Australian sector of the Antarctic will be continued during the coming Antarctic season from November to March.

The expedition, said Mr. Scullin, would again be led by Sir Douglas Mawson, and the Discovery had again been made available by the British Government. Mr. McPherson Robertson, who donated £10,000 towards the cost of the expedition last year, had informed the Antarctic Exploration Committee that he was prepared to contribute materially towards carrying out a second year's operations. He had offered to contribute up to £5,000. The Government had accepted this offer, and had written to Mr. McPherson Robertson thanking him for his public-spirited action.

DISCOVERY'S SECOND VOYAGE IN NOVEMBER?

Necessary Funds Nearly Subscribed, Says Mawson

MELBOURNE, Tuesday.—Although it was stated officially in Government circles today that no decision on the return of the Discovery to the Antarctic next summer would be reached until Federal Cabinet had discussed it, Sir Douglas Mawson indicated that so little of the money necessary remained to be collected that probably the second voyage would begin in November, and end next March.

He added that private firms had promised goods and cash. The voyage would be a continuation of that made this summer.

The Discovery will winter in Port Phillip. She will not go to Sydney for overhaul, because she is not copper-bottomed, and it is desired to protect her from attacks by the teledu worms, which is prevalent in Port Jackson, but not in Port Phillip.

Sir Douglas Mawson was not able to say what arrangements would be made for the crew.

NEW LAND

FOUND IN ANTARCTIC

OSLO, February 16.
The Norwegian whaler Toriva, attached to the Norvegia Expedition, reports the discovery of new land between 68 deg. 10 min. to 68 deg. 30 min. south, and 65 to 71 east.

The new land is a continuation of MacRobertson Land, discovered by Sir Douglas Mawson.