

**Royal
Geographical
Society**

with IBG

Advancing geography
and geographical learning

WILEY

The Physical Conditions of the Weddell Sea: Discussion

Author(s): H. R. Mill and Rudmose Brown

Source: *The Geographical Journal*, Vol. 48, No. 6 (Dec., 1916), pp. 498-500

Published by: geographicalj

Stable URL: <http://www.jstor.org/stable/1779819>

Accessed: 10-06-2016 04:42 UTC

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at

<http://about.jstor.org/terms>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



The Royal Geographical Society (with the Institute of British Geographers), Wiley are collaborating with JSTOR to digitize, preserve and extend access to *The Geographical Journal*

it may be noted that the isotherm of 2° C. ($35^{\circ}6$ Fahr.) on the Greenwich meridian in summer lies in about 51° S., whereas in the vicinity of the South Shetland the same sea temperature is not reached until 62° S. on the meridian 60° W.

Magnetic Observations.

Absolute determinations of the magnetic elements were commenced by the writer in May 1903, and continued by him in this form until the end of 1904. A discussion of the 1903 data by Dr. Chree, F.R.S., appears in Vol. 2 of the *Scotia* results, while the results for the year following when the station was carried on under Argentine auspices are discussed by Mr. L. G. Schultz in Vol. 16 of the *Anales of the Oficina Meteorológica Argentina*. In January 1905 automatic methods of registration were introduced, and the data down to the end of 1912 are quoted in Part II., Vol. 17 of the above *Anales*, pp. 173-314. The following comparison from hourly records for the years 1905 to 1912 will be sufficient to indicate the annual march of the magnetic elements.

Year,	Declination,	Horizontal force.	Dip.	Horizontal intensity.	Total force.
	°		°		
1905	5 16.0 E.	0.25667	54 31.0	0.25558	0.02358
1912	4 44.6 E.	0.25334	54 26.0	0.25256	0.02110

Tides.

The tidal observations made at Laurie Island, while the *Scotia* was frozen in from March to November 1903, are discussed by the late Sir George H. Darwin, who remarks that the tide seems to be normal for a place in the Southern Ocean. "The semi-diurnal tides are considerable, but the solar tide is unusually large compared with the lunar tide, the ratio being 0.6 as compared with 0.465 of the equilibrium theory. The semi-diurnal tides are almost exactly 'inverted,' so that low water occurs very nearly when the moon is on the meridian" (*Scotia Reports*, vol. 2, 'Physics,' pp. 321-324).

Before the paper the PRESIDENT said: Mr. Mossman, who is to give us a paper on the Weddell Sea, has been in that inhospitable region with Dr. Bruce. He has lived for some time in the South Orkneys, and he has made a particular study of the meteorological conditions of that portion of the globe.

(*Mr. Mossman then read the paper printed above and a discussion followed.*)

Dr. H. R. MILL: It is a very great pleasure for me to be here. Mr. Mossman is one of my oldest friends and colleagues, and he is the only man at present in this country who has had experience of meteorological observations in those regions. It was he who as a member of the staff of the *Scotia* founded the meteorological station in the South Orkneys, and he remained there during the time when the *Scotia* was making her second trip in the Weddell Sea, so that he spoke from experience, which his modesty hardly let you perceive, when he referred to the extremely unpleasant conditions of the winter there. I am

tempted to follow him into the historical portion of his narrative, but I think it would be better to leave that until the return of Sir Ernest Shackleton, who will doubtless have a good deal to say about the *coup de grace* which he has given to New South Greenland, an old enemy of mine, the non-existence of which I argued from historical evidence in the 'Siege of the South Pole.' The special importance of this paper has been taken out of it by the happy perversity with which Sir Ernest Shackleton emerged just at that moment when we were planning how we could best try to find him. If no news had been received from the Weddell Sea this paper would have been very useful, because it embodies those conditions of the atmosphere and the sea-ice from which alone it would have been possible to formulate any plan for proceeding in search of the *Endurance* or her crew. Fortunately this application of the paper is no longer required, but it bears on the prospects of the little trawler that has gone out by the good offices of the Uruguayan Government to bring off the party from Elephant Island, and it is very satisfactory to know from Mr. Mossman that the chances of that vessel making a successful rescue are so good. We shall look forward in the course of a week or so to hearing of the fulfilment of his expectation. I do not say his prediction, because he is too good a meteorologist to venture on predictions of a definite kind. With regard to the atmospheric movements in these regions, it has been pointed out by every voyager who went down into the far south that the prevailing winds were in the main easterly, in direct contrast to the westerly winds of the Roaring Forties, and it is a very curious thing that almost every explorer who has ever tried to navigate those seas has tried to do so in the teeth of the prevailing wind. The drifts of the *Deutschland* showed most definitely that in the far south the wind and currents drove it from east to west, in the middle latitudes from south to north, and in the neighbourhood of the Antarctic circle the tendency was again from west to east. This fact would have enabled us, from the data already known, to have formed some idea of the probable drift of the *Endurance* on the hypothesis that she was caught in the ice. The fact fits in most neatly, for, as we saw from the chart which Mr. Mossman displayed, the drift, so far as we can judge it from three points (and three points give a very fair idea), was almost exactly parallel with that of the *Deutschland*, and show the same conditions prevailing presumably right across the Weddell Sea up to the land. I am quite sure we shall all unite in thanking Mr. Mossman for giving this invaluable combination of personal experience and scientific study, and bringing it to bear on what was when he started this paper a practical problem of the most pressing importance.

Dr. RUDMOSE BROWN : There is very little to add to what Mr. Mossman has said, but I had the privilege of visiting part of the Weddell Sea he has not been in, so perhaps I may say what happened to the *Scotia* when she was caught off Coats Land. I was on board her both times she penetrated the Weddell Sea. In 1903 she was caught in about 70° S., and in 1904 in 74° S. On both occasions we drifted towards the west, on the second occasion rapidly. The fate that overtook the *Deutschland*, and in a more serious way Sir Ernest Shackleton's *Endurance*, is a fate which the *Scotia* narrowly escaped, particularly in the second year. We expected she would be crushed, and she only escaped because she was such a good ship. I think Sir Ernest Shackleton would be the last to deny that she was a stronger ship than the *Endurance*. We expected to drift towards the west and then north. We had not at that time the knowledge of any ship drifting in that way, but we did believe in New South Greenland, and some believe in it yet, and there is much evidence in

favour of it despite Sir Ernest Shackleton's discoveries. It is not an easy thing to take a longitude when you get to this latitude, and it is quite possible that Morrell's longitudes were wrong. He wrote his book ten years after his voyage, which must explain a good many discrepancies in his account. There is one other thing I might add with regard to the conditions on Elephant Island. I have lived for about eight months on Laurie Island, one of the South Orkneys, which are about 200 miles east of Elephant Island. I dare say many people think Shackleton's men are living in the ice-cave he described as having left them in, but I think that this is most improbable. Elephant island is from 30 to 40 miles long. It is rather a mountainous island, probably of just the same nature or origin as Laurie Island. Though you might, on landing at the head of some bay, find yourself forced to live in an ice-cave for a few days, you would be very silly to stay there longer. There is scarcely a bay in Laurie Island where you cannot get up on the ice covering the land and move to better quarters, and I am quite sure that the party under the leadership of such an expert as Mr. Wild will have moved to much better quarters. We found seals in Laurie Island all through the winter, and Shackleton's men should find both seals and penguins on Elephant Island. I think it not impossible they may find whalers' huts there also, left by Argentine and Chilean whalers who may have visited the island. And there is a bare possibility of finding a lowly form of coal, which if mixed with blubber makes an uncommonly good fire. I dare say you noticed from the charts the possibility of open water up to Elephant Island just as there has been open water up to Laurie Island even in mid-winter. It is perhaps more likely on Elephant Island than on Laurie Island. That of course gives hope that the Uruguayan vessel will be able to reach them, for she appears to be an unprotected vessel, and could not penetrate heavy pack without grave risk.

The PRESIDENT: It remains for me to thank Mr. Mossman for the trouble he has taken in preparing this lecture and the slides and diagrams that have illustrated it. These have given us a good deal of information which will help us to understand better Sir Ernest Shackleton's story when he comes back to this country. I will conclude by expressing the fervent hope of the Council that we may have the happiness of seeing Sir Ernest Shackleton with the whole of the members of his Weddell Sea party in this country before long. It is a great satisfaction to us all that the Admiralty have been so speedily authorized by His Majesty's Government to use the best means available for the relief of the men left on Elephant Island, and have acted with such exemplary promptitude.

THE SAKURA-JIMA ERUPTION OF 1914.

The Sakura-jima Eruptions and Earthquakes. Prof. F. Omori. *Bull. Imp. Earthq. Inv. Com.*, vol. 8, pp. 1-34 (1914), and pp. 35-179 (1916).

ON 12 January 1914 a great eruption, accompanied by numerous earthquakes, occurred in the volcanic island of Sakura-jima in Southern Japan. The various phenomena have been investigated with great care and thoroughness by Prof. F. Omori, the director of the Seismological Institute at Tokyo. The results of his researches are contained in two valuable memoirs, of which an abstract is here given.