

APPENDIX II.

THE MAGNETIC OBSERVATORY AND THE MAGNETIC SURVEY.

As in previous years, the routine work of the Observatory has been carried on in all its branches, and, in addition, the extra work entailed by the visits of the British Antarctic Expedition's vessel "Nimrod," under Lieutenant Shackleton, and of the magnetic surveying vessel "Galilee," of the Carnegie Institute, under Mr. W. J. Peters. A considerable amount of work was also performed in connection with the scientific expedition to the Southern Islands, promoted by the Philosophical Institute of Canterbury, assisted by the Government of New Zealand.

The self-recording magnetographs have been maintained in continuous working throughout the year, and the absolute magnetic observations necessary for standardising the curves obtained from the magnetographs have been duly made.

Substantial progress has been made in the work of reducing the tables of hourly values of magnetic elements from the curves of past years. In this connection I am informed by Dr. Chree that the work of reduction of the magnetic observations made by the British National Antarctic Expedition of 1902-4, and the compilation and comparison of all the magnetic observations made at various observatories throughout the world in conjunction with that expedition, are nearing completion, and that the observations and results will very shortly be published.

The magnetograms showing the curves of declination, horizontal magnetic force, and vertical magnetic force, for the nine most disturbed days of the year are herewith reproduced for the information of other observatories.

The Milne seismograph No. 16 has also been kept in continuous operation, and the records obtained have been developed and measured. The number of earthquakes recorded during the twelve months was eighty-seven. A table is appended giving details of these records. Eight of the principal seismograms are reproduced herewith, including those of the Mexican earthquakes of 26th and 27th March, 1908.

The meteorological observations were made regularly at 9.30 a.m., and forwarded monthly for the information of the Weather-forecast Department. Since the beginning of January, 1908, these observations have also been made at 5 p.m. The observations have been furnished daily to the newspapers, for the information of the public.

In December last there arrived at Lyttelton two expeditionary vessels, the "Nimrod" and the "Galilee," attracted here by the existence of the Magnetic Observatory in Christchurch. The "Nimrod" is the vessel of the present British Antarctic Expedition, under Lieutenant Shackleton. This expedition has made Christchurch its base for its Antarctic work. Several of the officers of the expedition—viz., Dr. Marshall, and Lieutenants Adams and Macintosh—visited the Observatory with the magnetic instruments belonging to the expedition, and these latter were standardised at the Observatory, and compared with the standard instruments of the Observatory. The practice afforded in the use of these instruments will prove a valuable addition to the preliminary instruction these gentlemen received at the National Physical Laboratory before leaving England. In order to increase the value of their magnetic work in the far south, it was considered expedient to send down with the "Nimrod" the Kew magnetometer N.A.B.C. on loan to the Observatory, and hitherto used in the field-work of the magnetic survey of New Zealand. The committee of the National Physical Laboratory approved of this being done. A comparison of this magnetometer with our standard magnetometer No. 1 was made, showing no alteration in the instrument since the previous comparison. On the return of the expedition to New Zealand the magnetometer N.A.B.C. will be returned here and another comparison made, and the dip circles of the expedition will again be standardised and their instrumental constants redetermined. Lieutenant Shackleton has unfortunately, owing to the presence of ice-packs, been unable to land in King Edward VII Land, and had to make a landing in Victoria Land, where it is hoped, with his equipment, he will be able to push his way even farther south than Captain Scott, of the "Discovery," and the magnetic observations made there will be extremely valuable.

The "Galilee" was an ocean magnetic surveying vessel, under charter to the Department of Terrestrial Magnetism of the Carnegie Institute of Washington, and was under the command of Mr. W. J. Peters, late of the Ziegler North Polar Expedition, and had a scientific staff of four. The vessel was engaged upon the magnetic survey of the Pacific Ocean. All facilities were extended to Mr. Peters and staff for making a most complete comparison of his magnetic instruments with those of the Observatory and for doing other work.

Both the "Nimrod" and "Galilee" were docked free of charge through the courtesy of the Lyttelton Harbour Board, a courtesy which was much appreciated by their respective authorities.

Dr. Bauer, Director of the Department of Terrestrial Magnetism of the Carnegie Institute, informs me that the Department is building a vessel especially designed for ocean magnetic surveying purposes. This vessel is intended to complete the magnetic survey of the Indian and Atlantic Oceans, and will visit New Zealand in the course of her work in order to compare instruments and connect her work with that done in New Zealand. Dr. Bauer has kindly sent out on