

MILNE SEISMOGRAPH NO. 16.

The Milne seismograph has enabled us to obtain records of seventy-four earthquakes, and some of the most important of these are reproduced in three sheets herewith. This instrument has now been provided with a quick-moving recorder, giving a more open time scale on the records, which facilitates the identification of the various phases of the motion, and also facilitates inter-comparison with records obtained at different places.

MAGNETIC SURVEY.

During the year further progress has been made with the reduction to epoch of the field observations.

Dr. L. A. Bauer, Director of the Magnetic Department of the Carnegie Institution, made a friendly visit to the Observatory in May. Dr. Bauer expresses great satisfaction at the magnetic work being done by the Government of New Zealand, and emphasizes the desirability of the extension of the field observations to the remainder of New Zealand's dependencies. He also strongly advocates the periodic reoccupation of certain stations in the main Islands, in order to exactly determine the amount of the secular change in the different parts of New Zealand. This is of importance from the point of view of the world magnetic survey now being carried out by his Department. Dr. Bauer states that the field-work of his Department is confined to ocean regions and other parts where accurate magnetic work has not been done, and the world survey aims at incorporating with these observations the work that has been and is now being done by various Governments.

ANTARCTIC.

The year 1910 has been remarkable for the departure of Captain Scott's second polar expedition to the Antarctic. Lyttelton was the base for finally fitting out the "Terra Nova" for its journey, and Christchurch was made a magnetic base for the expedition. Dr. Simpson and Mr. Wright were busily engaged for some weeks at the Observatory in completing the adjustment of their instruments for use in the Antarctic, and in swinging a set of half-second gravity pendulums belonging to the expedition. Lieutenant Pennell also redetermined the constants of the relative Lloyd Creak circles, used for determining the total magnetic force and inclination. Dr. Simpson was given facilities for the erection of the Eschenhagen self-recording magnetographs to be used on the expedition, and was enabled to detect and remedy several minor defects in them, thus insuring their successful running at Winter Quarters.

A concrete pier was erected in the Observatory grounds to enable these observers to use their meridian transit instrument. In order to enable the expeditionary observers to devote their time to other indispensable work, I personally cleaned and erected the instrument, setting up a meridian-mark, and regulated their sidereal clock preliminary to their making the gravity observations. Groups of star transits were observed on a considerable number of nights to control the sidereal clock rate over the days on which the pendulums were swung. The excellently clear nights especially favoured this work.

A programme of observation of international magnetic term-hours in connection with the expedition was arranged by the Royal Society, and the Observatory was asked to co-operate, and is doing so. Owing to some of the term-hours coming during the time of running of the Christchurch electric tramways, it has not been possible to observe all the term-hours at the Observatory itself. At such times thirty second eye-readings of declination have been made at Amberley, some thirty miles north of Christchurch, and situated therefore beyond the range of tramway disturbance, and these will suffice at any rate to determine the comparative ranges of disturbances noted here and at Winter Quarters. The programme arranged has been based upon the results obtained from the observations made in connection with Captain Scott's previous expedition in 1902-4. In making the outside eye-observations I have been ably assisted by Mr. Eric N. Webb, of Canterbury College, and I am glad to be able to state that Mr. Webb has been engaged by the Magnetic Department of the Carnegie Institution to assist Mr. E. Kidson in magnetic work in Australia, undertaken to further the magnetic survey of the globe.

METEOROLOGICAL OBSERVATIONS.

Daily throughout the year at 9.30 a.m. and 5 p.m. there have been made observations of the temperature, pressure, and humidity of the air, its direction and velocity of motion, the amount of cloud and rainfall, and the daily ranges of temperature. Monthly abstracts of these have been forwarded to the Weather Forecast Department, and a daily summary of the observations has been published for the information of the public.

A tabular statement of the monthly totals of rainfall for ten years is appended, giving also the yearly totals, and the means for the respective months. The average annual rainfall at Christchurch for the ten years has been 27.216 in.

GENERAL.

During the year the Christchurch Domain Board has carried out very considerable improvements in the vicinity of the Observatory, including the formation of a small artificial lake. In order to avoid the putting-down of iron artesian wells in the immediate neighbourhood of the Observatory, the Department made a small grant to the Board, enabling them to bring the overflow from Victoria Lake in to supply the new lake, thus avoiding interference with the magnetic field at the Observatory.

I was rather unfortunate in losing the services of my very capable assistant, Mr. B. V. Pemberton, towards the end of 1910. Mr. Pemberton has been transferred to the Meteorological Department, Wellington, as first assistant to Mr. D. C. Bates. His place here has been taken by Mr. Thomas Maben. To both Mr. Pemberton and Mr. Maben I am much indebted for their valuable assistance during the year.

I have to acknowledge with thanks the receipt of many valuable reports and publications on magnetic science, &c., from various British and foreign observatories and scientists, too numerous to mention.

HENRY F. SKEY, B.Sc.,

Officer in Charge.