

the members of the expedition. In any site at all suitable from magnetic considerations of paramount importance in the neighbourhood of Christchurch, it is liable to be disturbed if the single-trolley system should be put in. On the other hand, there are several other systems which would not so disturb it. It is difficult to know what is to become of magnetic observatories in common with some other products of civilisation if the use of the earth as a return conductor for heavy electric currents is not restricted. With the great development of electric traction it is impossible to say how long any particular site may be unaffected by them. The cost of removing the Observatory would not be heavy, as, with the exception of the concrete cellar, the buildings are quite capable of removal—at least, so the contractor who built them informs me. But to find a site magnetically suitable and likely to be unaffected by stray currents for a long period of years may be difficult. In connection with the various expeditions which have set out, observatories have been erected at great expense in latitudes where permanent work is an impossibility, in order to act as base stations to the expeditions they are connected with. This has been done at Staaten Island and at Kerguelen Island, and even if it should be necessary to remove the Christchurch Observatory, its temporary erection on a site so suitable for expeditionary work as the present is certainly ample justification for putting it there.

In addition to the magnetic work, a continuous seismograph record has been kept throughout the year, with the exception of a few days, during which for various reasons the instrument was not recording. It may be a relief to know that an examination of this record indicates a distinctly more peaceful state of internal terrestrial affairs than was the case this time last year. The list of earthquakes tabulated below in accordance with the British association scheme of tabulation will show the increasing serenity. Most of these earthquakes had their origin at places far removed from New Zealand, and many of them have been recorded wherever there has been a seismograph. They have shaken the whole world, but, of course, imperceptibly to us without instrumental means of detection. In the case of most of them I do not know the origin; but of one or two I do, and these are stated in the margin of the table. The origin of an earthquake is not obtainable from one record, and for this reason the tabulation, with photographic prints of the principal seismograms, are sent to a central authority in England. They are there collected and printed, and our information of the interior condition and structure of the earth is in this way increasing. Owing to the kindness of Mr. Baracchi, the Government Astronomer for Victoria, and Mr. Cooke, the Government Astronomer for Western Australia, I am able to give, side by side, the records of one of these world-shaking earthquakes as obtained at Melbourne, Perth, and Christchurch. This earthquake took place in Turkestan, and killed a great number of persons in the City of Kashgar. (See Plate C.) During the year I have made an experimental examination of the effect of periodically loading the seismograph pillar in imitation of the effects of a series of east-west earth-waves passing under it. In consequence of this examination I have been led to somewhat different views as to the interpretation of one of these diagrams from those of Professor Milne. With a view to getting some discussion on the subject, I sent a paper to Dr. Chree, of Kew Observatory, who read it before the Physical Society, and I also read it before the Canterbury Philosophical Institute. Observations have also been made of the variations of electrical potential at a fixed point in the air. I had hoped to be able to take these regularly, as there is almost no information on this point as regards Australasia. During the time that I was without assistance, however, I was compelled to restrict the work to term days, when the potential was determined at intervals of ninety minutes throughout the day and night. Since the 1st March of the present year regular work has been carried on, measurements of potential being made at 9.30, 10.30, 12.30, 2.30, and 4.30 each day. Parallel with the term-day determinations of potential I also made a series of observations of the rate of dissipation of electric charges. No reduction of this work has yet been effected, but I hope to commence it soon. Complete meteorological data have been kept in connection with the above work, and we have also, in accordance with the wishes of the International Meteorological Co-operation, made certain observations at 11.30 p.m. for each night, corresponding to Greenwich noon.

That the work carried on here is appreciated is abundantly evident, and I have received requests from many parts of the world for information. Dr. Chree, the Superintendent of the Kew Observatory, has also written an article to *Nature*, and points out how much more than merely local importance the Observatory has. He says, *inter alia*, "The public spirit and appreciation of scientific aims shown by the New Zealand Government in providing the necessary funds for equipping and maintaining the Observatory is a happy augury. It shows that war is not the only department in which the colony is anxious to come to the front."

Appended is a report on the field-work of the magnetic survey by Mr. Skey.

FIELD-WORK OF THE MAGNETIC SURVEY.

By H. F. SKEY, B.Sc.

FIELD-WORK in connection with the magnetic survey was recommenced in September, 1902, after having been in abeyance since March, 1901. The interval, something over eighteen months, has been occupied in installing the self-registering magnetographs at the Base Station, Christchurch Magnetic Observatory, and in work rendered necessary by the arrival of the National Antarctic Expedition in the "Discovery," for whose magnetic work Christchurch has been made the base. Early in September it was found possible to resume the survey of the North Island. Since then, up to the 9th April, 1903, this has been carried on as quickly as possible, and sixty new stations have been observed at. In making fresh stations the procedure was to first observe at a series of stations along the eastern coast of the Island, and subsequently to fill the interior with stations in suitable and accessible spots. The imperfect roading of the North Island has prevented the distribution of the stations from being uniform, but a glance at the map published herein will