

THE MAGNETOGRAPHS.

The magnetographs have been kept in operation successfully throughout the year and the resulting magnetograms have been developed up to the end of February, 1906.

On the 12th August it was at last necessary to readjust the vertical-force magnetograph, the aging of the balance magnet having brought the recording light-spot too high. For this purpose the sealed cover was removed and the balancing-screws adjusted. Advantage was taken of this opportunity to make some slight alteration of the position of the balance in order to bring the recording beam of light to a more exact focus, since owing to some creeping movement or shrinkage of the supports this had gradually deteriorated since the first setting of the instrument. To do this it was necessary to enlarge the adjusting-holes in the base. This being successfully accomplished, the balance and supports were carefully cleaned before replacing and finally adjusting.

On the 9th January, in order to reduce the effect of electric-tramway disturbances of the vertical-force balance, I added two massive copper damping-plates to the vertical-force magnetograph. These were to some extent successful in reducing these disturbances.

Since the 1st April, 1905, the horizontal-force magnetograph has required no further readjustment, and the declination instrument has required none since it was first installed. On the 10th January I left Christchurch to continue field observations, and until my return the magnetographs were daily attended to by Mr. Kidson with the exception of a few days' holiday at Easter and a few other occasions. On these occasions I am indebted to Dr. Farr for kindly giving them the necessary attention; also for assisting Mr. Kidson in making the absolute observations once a fortnight during my absence.

Appended is a list of the absolute observations made during 1905.

The "Yearly Means from Absolute Observations" given below are the arithmetic means of the values observed each month for declination, horizontal force, and inclination, with the mean value of vertical force calculated from these. These may be taken as fairly representing the mean value of the elements for the year, but later on the values derived from the magnetograms will be published.

MILNE SEISMOGRAPH No. 16.

This seismograph has been kept in good order throughout the year, and obtained registrations of eighty-seven quakes from the 1st April, 1905, to the 31st March, 1906. A list of these is appended, and eight important seismograms are reproduced herewith. Greenwich mean civil time is used. For the earlier information of other observatories, the local record of the great San Francisco earthquake is also reproduced. The mean boom period of the seismograph is 15.4 seconds; the sensibility 1 millimetre = 0.66" of tilt.

In future, in order to make our results more directly comparable with the lists of other observatories it will be advisable to publish lists from the 1st January to the 31st December of each year, as is done in other places.

The quake recorded on the 23rd July, 1905, originated in or near India. The Indian record of it, kindly forwarded by the Director-General of Indian Observatories, shows that there the motion was very large and commenced about 13.5 minutes earlier than here, the time of duration there being 4 h. 3.1 m., against 4 h. 12.5 m. here. The similarity of the times of duration is remarkable.

As previously, a copy of our seismograph-records has been forwarded to the British Association Committee for inclusion in their Seismological Circular.

The disastrous effects of the recent San Francisco earthquake have clearly shown the great superiority of steel framing for large buildings. I am of opinion that this should not be lost sight of in the design of any lofty five, seven, or more story buildings, such as are at present in course of erection in Christchurch. The same applies to Wellington.

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