

My thanks are due to the Hydrographer for the advice and assistance given by him in connection with the arrangement for a supply of the New Zealand predictions from Messrs. Roberts and Son, Broadstairs.

The details of the tidal work are more fully dealt with in the report by Mr. E. J. Williams, Tide-computer, appended hereto.

MAGNETIC OBSERVATORY.

During the year the work of the Magnetic Observatory at Christchurch and the substation at Amberley has been efficiently carried on by the Director, Mr. H. F. Skey, B.Sc. His full report, with diagrams, tables, and seismic records, is published as an appendix hereto.

The magnetographs have continued in regular operation throughout the year, and the base values of the curves were determined by absolute observations of declinations, dip, and horizontal force, usually taken once a month. The results of the absolute observations and of certain meteorological observations have appeared month by month in the monthly report of the Director.

Mr. D. G. Coleman, of the Department of Terrestrial Magnetism, Carnegie Institute of Washington, visited the Dominion in March and April, 1922. He was making observations for secular change in the Pacific islands and Australia. He reobserved the magnetic elements at several stations in New Zealand where Mr. W. C. Parkinson, of the Carnegie Institution, had made similar determinations in 1916. When the results of Mr. Coleman's observations are published valuable information regarding the change in the magnetic elements will be known, and the secular change in declination can be made use of for correcting the magnetic variation shown on the charts of the coast.

A distinguished scientist, Dr. L. A. Bauer, Director of the Department of Research in Terrestrial Magnetism, Carnegie Institution of Washington, visited Wellington in July last on his return journey from the meeting of the International Geodetic and Geophysical Union held at Rome in May, 1922. He submitted the following resolutions passed by the International Section of Terrestrial Magnetism and Electricity at the Rome meeting, 9th May, 1922, for the information of the Government:—

- (a.) That the steps already taken by the New Zealand Government regarding the continuation of the Apia Observatory in Samoa are highly commended, and it is hoped that the New Zealand Government may find it possible to provide for the continued activities of the Observatory.
- (b.) That every magnetic observatory publish annually the monthly and annual mean values of the magnetic elements observed during the preceding year, for the purpose of the mutual exchange of such results.
- (c.) That the organizations responsible for the various magnetic services be urged to make prompt publication of their data as completely as circumstances permit.

Dr. Bauer also kindly undertook to include a summary of the state of the New Zealand magnetic survey, and the work done at the Christchurch Observatory, in the report of the International Geodetic Union, and supplied valuable information regarding instruments and methods of observing and recording results in use in his Department. My thanks are due to him for these, and the keen interest he took in all matters pertaining to the magnetic work being done in this Dominion.

In addition to the current work of the year being satisfactorily performed, the arrears in connection with the measurement of the records between the years 1906 and 1913 are being steadily overtaken, and the record of the declination curve for the year 1911 has also been measured during the year under report.

The mean annual values of the magnetic elements as far as they are available are given in Table D following:—

TABLE D.

Mean Annual Values of the Magnetic Elements at Christchurch Observatory.

Date.	Declination E. of N.	Annual Change.	Horizontal Force.	Annual Change.	Vertical Force.	Annual Change.	Inclination South.	Annual Change.	Hourly Values: Published in Annual Report.
	° ' "	' "	C.G.S. Unit.	γ	C.G.S. Unit.	γ	° ' "	' "	
1902 ..	16 15.1	+3.2	0.22694	—25	0.55277	+9	67 40.8	+1.50	1912–13
1903 ..	16 18.3	+3.5	0.22669	—25	0.55286	+21	67 42.3	+1.80	1912–13
1904 ..	16 21.8	+3.6	0.22644	—16	0.55307	+41	67 44.1	+1.70	1912–13
1905 ..	16 25.4	+2.4	0.22628	—23	0.55348	+28	67 45.8	+1.80	1919–20
1906 ..	..	..	..	..	..	..	..	..	..
1907 ..	16 31.1	..	..	..	..	..	..	..	..
1908 ..	..	..	..	..	..	..	..	..	..
1909 ..	..	..	..	..	..	..	..	..	..
1910 ..	16 37.6	+1.4	0.22515	—27	0.55485	+12	67 54.8	+1.40	1920–21
1911 ..	16 39.0	+2.5	0.22494	—23	0.55497	—9	67 56.2	+1.00	..
1912 ..	..	..	..	..	..	..	..	..	..
1913 ..	16 44.0	+0.8	0.22449	—35	0.55478	—13	67 58.2	+1.60	1913–14
1914 ..	16 44.8	+2.2	0.22414	—27	0.55465	+7	67 59.8	+1.67	1914–15
1915 ..	16 47.0	+2.8	0.22387	—32	..	..	..	..	*Sept., 1918
1916 ..	16 49.8	+3.2	0.22355	—27	..	..	..	..	*Sept., 1918
1917 ..	16 53.0	+2.7	0.22328	—24	0.55486	+30	68 04.8	+1.90	*Mar., 1921
1918 ..	16 55.7	+2.9	0.22304	—24	0.55516	—9	68 06.7	+1.10	1918–19
1919 ..	16 58.6	+3.1	0.22280	—19	0.55507	+18	68 07.8	+1.40	1919–20
1920 ..	17 01.7	+2.9	0.22261	—20	0.55525	+03	68 09.2	+1.10	†1920–21
1921 ..	17 04.6	+3.7	0.22241	—24	0.55528	—21	68 10.3	+0.90	†1921–22
1922 ..	17 08.3	..	0.22217	..	0.55507	..	68 11.2	..	†1922–23

* Mean hourly values published in *New Zealand Journal of Science and Technology*.

† Special publication.