A large chart error was also found by the "Carnegie" at a point 47° 59′ S., 165° 53′ E., the observed declination being 18·4° E., whereas on the charts it is given as 17·5° E. This point is about 100 miles to the south-west of Stewart Island.

At 47° 59′ S. 163° 46′ E., some 2° west of the above in longitude, the observed value was only 16·9° E. and the chart error only 0·1°. The magnetograms for that day were tolerably quiet so that there is there shown a change of declination of + 1·5° in about 95 miles easting—very much more than was expected.

It seems, then, that a magnetically disturbed area exists to the south-west of New Zealand.

In the December number of the *Journal of Terrestrial Magnetism and Atmospheric Electricity* a list of the latest annual values at observatories is published. Christchurch values for 1917, 1918, and 1919 are included, and the provisional values for Samoa (Apia) for these years also, and provisional values for Potsdam for 1918, 1919, and for Seddon for 1919. The list comprises results from thirty-eight magnetic observatories, and values for 1919, final or provisional, are given for ten observations. Melbourne values from absolute observations only are included for 1918 and 1919.

Comparison Observations with "Carnegie" Observers.

On the 3rd and 4th November, 1920, comparison of declination standards was effected, the observers and instruments alternating their stations. The stations were East Pillar (E.P.) of the Absolute House, and Jarrah Peg (J.P.), the station used in the previous comparison in 1915–16. The results of all these comparisons are being published by the Carnegie Institution, and the results cannot be published as regards comparison of standards until the final checking of "Carnegie" results at Washington and comparison of "Carnegie" instruments with the Department's standards are available.

In declination the station difference established was E.P. = J.P. − 0·27′ by simultaneous observations, exchanging stations. In H.F. the difference established was E.P. = J.P. + 0·00004 C.G.S. In inclination the difference established was W.P. = J.P. + 0·0′.

The comparison was satisfactory, and the differences of Christchurch standards from the international magnetic standard were not appreciably changed, but this will be better shown later, as indicated above. Twelve sets of observations were made of declination, twelve of horizontal magnetic force, and twelve of inclination, positions alternating. Using the observations with the Christchurch inductor E.I. 109 at E.P. and J.P. made for the comparison, reference to the magnetograph curves shows that in vertical force W.P. = J.P. + 5γ.

Diurnal Inequality of Vertical Magnetic Force on Four Extremely Quiet Days.

The four days, 31st October, and 1st, 2nd, and 3rd November were extremely quiet days, and in order to get a comparison of the vertical disturbing force, and the shape of the October–November vector diagram of diurnal disturbing forces in the vertical planes, these days were measured up. The average V.F. inequalities over these days are, for Greenwich civil hours (0h = Greenwich midnight) in γ—

0h.	− 1·6	6h.	+ 0·4	12h.	+ 4·8	18h.	− 4·1
1h.	− 4·4	7h.	+ 2·0	13h.	+ 3·9	19h.	− 2·2
2h.	− 5·1	8h.	+ 3·2	14h.	+ 2·9	20h.	+ 0·0
3h.	− 4·4	9h.	+ 4·5	15h.	+ 0·7	21h.	− 0·6
4h.	− 3·2	10h.	+ 4·8	16h.	− 1·2	22h.	− 0·3
5h.	− 1·2	11h.	+ 4·5	17h.	− 3·5	23h.	− 0·9

Instantaneous ordinates were measured at the Greenwich hour.

It is hoped to publish vertical-force monthly curves for quiet days for 1921. I am afraid that an accession of staff will be needed before I can publish accurate vertical-force data for every hour of the year regularly.

It is true that a very great deal can be achieved from the discussion of D and H data alone, but quiet-day results for V will further some investigations. Our Adie vertical-force balance was not working at all well in the early years of the existence of the Observatory, but now I feel that the vertical-force curves from the Eschenhagen magnetograph we have working at Amberley are satisfactory, and we should at least measure quiet days.

With regard to the provisional Samoan results, it may be noted that in spite of the great difference of geographical position, the change of mean annual values of D and of H is almost the same as at Christchurch, and the change of inclination is not very different.

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