

Example V.

At Kaukau.

Circle set at				Somes Island.	Level-correction.
				Dep.	
0	..	..	..	2° 38' 25.7"	— 2.1
45	..	..	..	2 38 21.7	+ 1.4
90	..	..	..	2 38 11.2	— 1.4
135	..	..	..	2 38 20.7	+ 2.9
Sum	..	..	..	79.3	+ 0.8
Final vertical angle			..	2 38 19.8	+ 0.2

In keeping my field-book I show by different colours the actual figures read as printed above in roman, the means of different sets and level-corrections in italic, and the final means of the sets in antique.

The height of the axis of the instrument and different parts of the signal are noted as each trig. station is visited.

In Example V above, the figures taken with circle set at 90 differ from the other results. This is due to refraction, which is proved by observations to other signals taken at the same time. At every trig. station I get variations, up to about 10 seconds, even though the observations are taken at the same time of the day, so I spread the observations over a number of days and take the mean of the lot. It is not often that three out of the four sets agree so closely as in the example given.

APPENDIX VII.

REPORT ON THE MAGNETIC OBSERVATORY.

As in previous years, the regular observational work of the Observatory has been thoroughly carried out, and this year two years' magnetic curves have been measured at hourly intervals. Towards the end of 1914 a temporary assistant was appointed (Mr. H. S. Richards), who had been previously employed here. His services were specially employed on the work of computation of the curve-measurements made from the 1905 magnetograms, &c., and tabulation of the hourly values therefor. I have to congratulate Mr. Richards, who is a graduate of the New Zealand University, upon his selection as Rhodes Scholar for the year, and to wish him success in his studies at Oxford. I wish also to recognize the valuable services of Mr. T. Maben throughout the year.

Every effort has been made to secure accuracy in the published tables by checking wherever possible, and any errors that have escaped detection must be very small, and are certainly very few. In no case can they appreciably affect even the mean for a single day.

A number of diagrams are attached to this report, and some remarks thereon are given below under separate headings.

Meteorological observations have been made twice daily, and three times on week-days, at times 9.30 a.m., 12 noon, and 5 p.m. These have been published daily for public information, and a monthly synopsis furnished to the Meteorological Department, which has kindly offered a meteorological equipment for the Amberley sub-station when it is in operation. A self-recording rain-gauge, or pluviograph, has been installed here, as it is useful in obtaining the rate of rainfall, and it is further proposed to obtain an evaporimeter. The recording barograph and thermograph have been in continuous operation.

ADIE MAGNETOGRAPHS.

During the year these have been kept in continuous operation, and the resulting magnetograms have been developed and measured. The usual absolute observations for the determination of base-line values have been duly made. The magnetograms have been measured at hourly intervals, and the measurements converted, base-line values and temperature corrections applied, and the results tabulated for magnetic declination (D) and horizontal magnetic force (HF).

These tables are published herewith, and a glance will show that very satisfactory registration has been obtained. The few gaps in the tables are due to lamp-failure in all cases but the 1st January, part of which day's register of D and HF was lost through the failure of a holding-clip in the recording mechanism. On the 27th January the HF recording-lamp failed for the first part of the day, but a mean for thirty whole days was still obtained. In a similar way the record of HF for the 14th December was lost, this being the only day's record of HF entirely missing. In D no day's record is entirely missing, the only loss being the last fourteen hours of the 1st January.