

It shows in the first two columns the highest and lowest scale readings in the hourly series of observations for each month. In the next two columns are the highest and lowest scale readings, whether in the hourly series or observations between the hours. Under the head "Range" is shown the differences of the highest and lowest scale readings in the previous columns, or range expressed in scale divisions and arc.

The value of one scale division = $0^{\circ} 6' 32.5''$.

The highest scale reading recorded is 930, in the month of February, the lowest 170, in March; the difference of which equals 8° of arc. The greatest range on any given day was on the 19th February, when it attained a value of $5^{\circ} 47' 9''$; the smallest on the 12th January, when it was only $0^{\circ} 6' 9''$. The mean daily range (or the square root of the mean of the squares of the daily ranges) for each month was—

1875, October	=	93.3
„ November	=	90.2
„ December	=	69.6
1876, January	=	72.3
„ February	=	93.7
„ March	=	108.2

The mean daily range, therefore, gradually declined in value from October to December, when the minimum range was reached, but again increased during the subsequent months of observation.

Comparing the results of the mean daily range during the whole period with those obtained at Floeberg Beach and Van Rensselaer Harbour—stations where the inclination and horizontal force differ so little from the same elements at Discovery Bay—it is found that the mean daily range at Van Rensselaer harbour was $2^{\circ} 28' 6''$; Floeberg Beach, $1^{\circ} 31' 5''$; Discovery Bay, $1^{\circ} 28' 0''$.

The high value obtained at Van Rensselaer Harbour, as compared with the other two stations, may possibly be accounted for from being the result of only 17 days observations spread over a period of three months, when many days of probably small range have not been selected for observations.

MEAN DIURNAL VARIATION IN THE DECLINATION.

In Table II. are presented, for each month, the mean scale reading of the declinometer at each hour of the astronomical day during the month; the differences between this mean hourly scale reading and the mean for the whole month, expressed in arc, or the mean diurnal variation or inequality in the declination.

In this table we find that, taking the months separately, the hours of extreme westerly deflection (always regarding the mean direction of the magnet as pointing to the North) varied in the different months—between 10 and 11 a.m. in October, November, and December; and between Noon and 1 p.m. in January, February, and March.

The extreme easterly deflection occurred between 11 p.m. and Midnight, throughout the period.

In Table III. are given the values of the mean diurnal variation for the whole period of observation at Discovery Bay, Floeberg Beach, and Van Rensselaer Harbour, as observed.

Hours of extreme deflection at the three stations and Port Bowen, compared:—

Westerly extreme	Noon,	Van Rensselaer Harbour,	2 a.m.	Easterly extreme.
	Noon,	Floeberg Beach,	Midnight,	
	10 a.m.,	Discovery Bay,	11 p.m.,	
	11.49 a.m.,	Port Bowen,	10 p.m.,	

As it is probable that magnetic disturbances have had a certain degree of control over the determination of these hours of extreme deflection, it now becomes necessary to define as nearly as possible the amount of disturbance, and form tables of the mean diurnal variation of the declination, freed from such disturbance.

These are given in Table IV., formed in the same manner as Table II., after rejecting all observation made on certain days selected as days of disturbance. On the present occasion 69 days out of 156 have been rejected as disturbed during some portion of the 24 hours.

Two methods have been generally adopted for eliminating disturbance variation: one, in which an arbitrary separating value has been decided upon, and all hourly observations differing by that quantity from the mean hourly value have been rejected; another, in which the observations of the whole day during which any disturbance