In the cuttings for the North British Railway, between Arthur Seat and Musselburgh, the upper sides of the large boulders are generally found smoothed and scratched. The scratches seem to be from NW. to WNW. by compass. On some of the boulders there are indications of more recent scratches running W. $\frac{1}{2}$ S. by compass.

The boulders in the railway cuttings between Haddington and Dunbar exhibit scratches running from NW. to WNW.

The opinion formed by the author on these data was,—

(1.) That the agent which had polished and scratched the rocks on Arthur Seat, was the same as that which had polished and scratched the boulders.

(2.) That it had acted from the north-westward over a large and low district of country.

(3.) That the polishing and scratching had been effected by the gravel and angular blocks existing in the boulder clay and diluvial gravel.

(4.) That there had been rushes of water along the country, which bore along the mud, sand, gravel, and boulders now spread over the country, and which, in passing over the rocks and large boulders, smoothed and rutted them.

(5.) That, at this period and subsequently, water must have stood, in a comparatively tranquil state, above the level of Sampson's Ribs, to account for the beds of sand existing on the south side of Arthur Seat, and at a level of 200 feet above Duddingston Loch.

(6.) That the outline or configuration of the district, thus submerged, could not have been materially different from what it now presents.

3. Results of the Makerstoun Observations, No. II. On the Relation of the Variations of the Vertical Component of the Earth's Magnetic Intensity to the Solar and Lunar Periods. By J. Allan Broun, Esq. Communicated by General Sir T. M. Brisbane, Bart.

The following results are deduced from the observations of the balance or vertical force magnetometer described in the Introduction to the Makerstoun Observations. The observations were corrected for temperature by a method previously described.

The diurnal variation of the vertical component consisted, in the year 1844, of three maxima and three minima, occurring as follows :—

H. M.

The principal minimum at 14 10	Makerstoun mean time.
A secondary maximum at 20 50	
A secondary minimum at 22 50	
The principal maximum at 5 30	
A third minimum at 12 10	
A third maximum at 13 10	

The third maximum and minimum are but faintly marked. The form of the diurnal curve, and the periods and number of maxima and minima, vary throughout the year; neglecting the inferior maximum and minimum, the diurnal curve is single in winter and double in summer, the principal minimum occurs at noon in summer.

The diurnal range is greatest at the equinoxes, and least at the solstices, the range at the former being nearly two and a half times that at the latter.

Each of the mean values of the vertical component at 21^h and 0^h, is nearly equal to the mean for the year. The secular variation is negative.

The investigation for the relation of the variations of the vertical component to the moon's hour angle, gives for the mean of the two years 1844 and 1845—

The principal minimum about 5 hours before the moon's passage of the inferior meridian.
The principal maximum about 3 hours after
A secondary minimum about 4 hours beforesuperior.....
A secondary maximum about 1 hour after

The results for each year differ little from the mean of both; the secondary maximum and minimum are not so well shewn in 1844 as in 1845. The observations of single months, when free from magnetic disturbances, have been found to give the same periods.

Investigations were made for a period connected with the moon's phase or synodical revolution; each of the years 1844 and 1845 indicates maxima of the vertical component near the quadratures, and minima near the syzygies.

4. Two Verbal Notices. (1.) On the Geology of Arthur Seat. (2.) On the Dentition of the Walrus. By the Rev. Dr Fleming.

(1.) Dr Fleming read the following passage from Townson's "Tracts and Observations in Natural History," Edin. 1799, when treating of the "Rocks in the Vicinity of Edinburgh:—" "The first of the chains or ranges of rocks that I lately described, as lying at