

in the negro is smaller than in the European, and consequently makes, in this respect, an approach to that of the ape, in which it is still farther diminished. The author denies that there is any innate difference in the intellectual faculties of these two varieties of the human race; and maintains that the apparent inferiority of the Negro is altogether the result of the demoralizing influence of slavery, and of the long-continued oppression and cruelty which have been exercised towards this unhappy portion of mankind by their more early civilized, and consequently more successful competitors for the dominion of the world.

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June 16.

FRANCIS BAILY, Esq., V.P. and Treasurer, in the Chair.

Moses Montefiore, Esq., was elected a Fellow of the Society.

The following papers were read, viz.

1. "Researches on the Tides; Sixth Series. On the Results of an extensive system of Tide Observations, made on the Coasts of Europe and America, in June 1835." By the Rev. William Whewell, F.R.S., Fellow of Trinity College, Cambridge.

The author having, in several previous communications to the Royal Society, urged the importance of simultaneous tide observations made at distant places, here gives an account of the steps taken to carry this plan into effect, in consequence of his representations, both by the Government in England, and by the other maritime powers of Europe. He explains, in the present paper, the general character of the observations thus obtained, the mode employed in reducing them, and enters at considerable length into a discussion of the immense mass of information which they supply with respect to the phenomena of the tides. One of his principal objects was to fix with precision the form of the *Cotidal lines* by which the motion of the tide wave is exhibited. He devotes one section of the paper to an investigation of the general form of these lines; and another to a nearer approximation to an accurate map of these lines, more especially as they exist in the German Ocean. The 4th section treats of the height of the tide in its total range from high to low water; the 5th relates to the diurnal inequality; the 6th to the semimenstrual inequality; and the 7th and last comprises general remarks on the tables which accompany the paper.

2. "On the Tides at the Port of London." By J. W. Lubbock, Esq., F.R.S.

The discussions of tide observations which the author has hitherto at various times laid before the Society, were instituted with reference to the transit of the Moon immediately preceding the time of high-water; from which the laws of the variation in the interval between the moon's transit and the time of high-water have been deduced. But the discussion of nineteen years' observations of the tides at the London Docks, which is given in the present paper, has been made with reference to the moon's transit two days previously, and proves very satisfactorily that the laws to which the phenomena are subject

accord generally with the views propounded long since by Bernoulli. The relations which the author points out between the height of high-water and the atmospheric pressure as indicated by the barometer are particularly interesting and important. The influence of the wind is also considered; and such corrections indicated as are requisite in consequence of the employment by several observers of solar instead of mean time.

3. "Discussion of the Magnetical Observations made by Captain Back, R.N., during his late Arctic Expedition." By Samuel Hunter Christie, Esq., M.A., F.R.S. Part II.

The author proceeds, in this paper, which is a sequel to his former communication, to discuss the observations made by Captain Back relating to the magnetic intensity, and which were of two kinds; the first, obtained by noting the times of vibration of a needle in the plane of the magnetic meridian; the second, by noting the times of vibration of three needles suspended horizontally according to the method of Hansteen. The results are given in the form of tables.

Before deducing results from these observations, the author describes a series of experiments instituted with each needle, for the purpose of determining the corrections necessary to be applied in order to reduce the intensities, which would result from observations made at different temperatures, to intensities at a standard temperature; and he gives formulæ for these corrections. He then determines the relative terrestrial magnetic intensities, at the several stations where observations were made, from the times of vibration of the dipping needle in the plane of the meridian, applying the corrections which he had obtained for difference of temperature; and gives the results in tables. A comparison is instituted between these results and a formula derived from the hypothesis of two magnetic poles not far removed from the centre of the earth. The author considers that this comparison is quite conclusive against the correctness of the formulæ, and consequently of the hypothesis itself, if applied to the results deduced from the observations in London, in conjunction with those in America; but that, in the tract of country comprised by Capt. Back's observations from New York to the Arctic Sea, the phenomena of terrestrial magnetic intensity are very correctly represented by the formula in question.

The author then proceeds to determine the intensity from the observations with horizontal needles, applying here, likewise, to the results, corrections for the difference in the temperatures at which the observations were made. In these results there are great discrepancies, which the author attributes to the inapplicability of Hansteen's method of determining the intensity by the times of vibration of horizontal needles to cases where the dip of the needle is very great, rather than to errors in the observations themselves, or to a variation in the magnetism of the needles employed. He concludes by a just tribute to the zeal which Captain Back has manifested in the cause of science, by availing himself of every opportunity of making these tedious observations, during an unknown and perilous navigation.