On the Mean Density of the Earth. [Abstract]

Charles Hutton

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tended; in the viscera of these animals there is, however, a more marked difference.

The bones of the Sumatran tapir closely resemble those of the American, but the skull of the former has a broader frontal bone, and no middle ridge; the nasal bones are larger, giving a proportionate increased dimension to the nostrils. The skeleton of the tapir differs from that of the rhinoceros in the smaller extent of the scapulæ and pelvis.

The stomach of the Sumatran tapir is shaped like that of the rhinoceros; the œsophagus is smooth and cuticular; the small intestines are 69 feet long; the length and greatest breadth of the cæcum is 1 foot; the length of the colon and rectum is 19 feet 6 inches; the spleen is long and narrow; the kidneys conglobate; and the lungs composed of one principal lobe on each side, of considerable length, and two smaller lobes.

On the Mean Density of the Earth. *By Dr.* Charles Hutton, *F.R.S.* Read April 5, 1821. [*Phil. Trans.* 1821, *p.* 276.]

Since the first notice of the determination of the mean density of the earth by Newton, two experimental inquiries only have been undertaken in relation to it; namely, in the case of the Schehallien experiment by the author and by Dr. Maskelyne; and by Mr. Cavendish, who used a method invented by Mr. Mitchell.

Dr. Hutton proposes in this paper to show by a statement of, and observations upon, the two methods, that the preference, in point of accuracy, belongs to the mountain experiment over that of the small balls employed by Mr. Cavendish; and the results of this experiment, duly corrected by that of Mr. Playfair's lithological survey of the mountain, give the mean density of the earth equal to 5 times the density of water, and not 4·5, a number unfairly assumed on some occasions, as the author's final determination.

In adverting to the advantage that might result from a repetition of the mountain experiment in some other favourable situation, and with improved means, Dr. Hutton suggests the employment of one of the large pyramids of Egypt for the purpose. The mass, he says, is sufficiently large, and the station for the plummet or zenith sector might be taken much nearer the centre of the mass than on a mountain, which would give a larger quantity of deviation of the plummet.

The regular figure and known composition of the mass would also yield facilities in calculating its attraction; and, moreover, the deviation of the plummet might be observed on all four sides.

On the Separation of Iron from other Metals. *By* J. F. W. Herschel, *Esq. F.R.S.* Read April 5, 1821. [*Phil. Trans.* 1821, *p.* 293.

After adverting to the importance of an easy means of effecting the above purpose in analytical inquiries, and to the insufficiency of