

the usual methods hitherto described, the author proposes the following process. The solution containing the iron is to be peroxidized by nitric acid, then neutralized while boiling by carbonate of ammonium; the iron falls, while the other metals, which Mr. Herschel supposes to be manganese, cerium, nickel, and cobalt, remain in solution. A few precautions are necessary to insure success in this operation; such as, that the solution must contain no oxide of manganese or cerium, except in their states of protoxide; and that during the precipitation the solution should be duly diluted and agitated; and the latter portions of the alkaline solution, carefully added so as to avoid its excess, though slightly surpassing the point of saturation, give rise to no error or inconvenience.

Mr. Herschel concludes this paper with some observations respecting those peculiarities of the peroxide upon which its separation in the above cases depends, and gives some instances of its application to practical analysis.

On the Re-establishment of a Canal in the Place of a Portion of the Urethra which had been destroyed. By Henry Earle, Esq. Surgeon to the Foundling, and Assistant Surgeon to St. Bartholomew's Hospital. Communicated by Sir Humphry Davy, Bart. P.R.S. Read April 12, 1821. [Phil. Trans. 1821, p. 300.]

In this paper Mr. Earle details the case of a man whose urethra was much injured in the perineum by a fall in the year 1813, and who continued to suffer difficulty of making water till 1819, when he was attacked with retention of urine, followed by effusion and mortification; by which the integuments of the perineum, and more than an inch of the canal of the urethra, sloughed away; forming afterwards a large smooth cicatrix, above and below which the mucous membrane was still visible. After properly dilating the anterior part of the urethra, Mr. Earle performed the following operation:—A portion of integument was removed, about $1\frac{1}{2}$ inch long and $\frac{1}{3}$ inch wide, on the left side of the cicatrix; an incision was then made across the perineum, so as to pare away the callous edges of the urethra, and the cutis dissected from a portion of the integument on the right side of the perineum, leaving a smooth space between the cut surfaces to form the lining of the new canal. The integuments on the right side were then dissected up, turned over a catheter, and brought in contact with the opposite groove, being kept in their place by two ligatures, some straps of adhesive plaster, and a bandage. This first operation was attended with partial success; and the patient's general health being disordered, nothing further was done till the summer of 1820, when a second operation was performed as follows:—A deep groove was made on the right side of the surface denuded of its cutis; a portion of integument was then detached from the left side, and properly retained by the quill suture and adhesive plaster. About two thirds of the canal were thus completed; and by a third operation, upon a smaller scale, the cure was ultimately

effected; so that in March 1821 the parts were fit for the performance of their natural functions.

Calculations of some Observations of the Solar Eclipse on the 7th of September, 1820. By Mr. Charles Rumker. Communicated by Thomas Young, M.D. For, Sec. R.S. Read May 10, 1821. [Phil. Trans. 1821, p. 311.]

These calculations are founded upon Burckhardt's lunar, and Carlini's solar tables.

An Account of the Re-measurement of the Cube, Cylinder, and Sphere, used by the late Sir George Shuckburgh Evelyn, in his Inquiries respecting a Standard of Weights and Measures. By Captain Henry Kater, F.R.S. Read June 7, 1821. [Phil. Trans. 1821, p. 316.]

The experiments above adverted to are detailed in the Philosophical Transactions for 1798; and though the greatest attention was bestowed on those parts of the inquiry relating to the *weight* of the solids, the method of *measuring* them is not so fully detailed; Captain Kater, therefore, was desirous of re-investigating the latter subject before the Commissioners of Weights and Measures should make their final report.

The author then proceeds to describe the state of the apparatus; and the means which he adopted in effecting this measurement of three sides of the cube gives for its content 124·1969 inches.

The length of the cylinder deduced from these means is = 5·9960 inches.

In measuring the sphere, a brass square was originally employed, the side of which was a little longer than the diameter. The sphere being properly placed and supported within the square, a micrometer screw which passed through one of the sides of the square was brought in contact with the diameter of the sphere, and the reading of the micrometer head noted; the sphere being then removed, a brass rule of known length was put into its place, and the micrometer screw being brought in contact with the end of the rule, the difference between its length and the diameter of the sphere was obtained, from which the latter was determined. Captain Kater details at length the repetition of Sir George's measurements, where it appears that the excess of the diameter of the sphere above the length of the rule gives 0·0012281 inch. The author then proceeded to measure the brass rule, the length of which was found equal to 6·0063609 inches; and the diameter of the sphere thence deduced gave 113·5264 inches for its solid content.

Captain Kater concludes this paper with a table, showing the data furnished by Sir George Shuckburgh Evelyn's experiments and his own measurements; from which it appears that the weight of a cubic inch of distilled water, in a vacuum of 62°, = 252·888 grains of Sir George's standard, or = 252·722 grains of the parliamentary standard.