

produces a red flame, with the formation of muriatic acid; it is insoluble in water, and readily soluble in alcohol, ether, and oils; and nearly insoluble in acids. When heated with several metallic peroxides it is decomposed with the production of carbonic acid, and a metallic perchloride.

The author describes several experiments made with a view to ascertain the proportions in which the carbon and chlorine exist in this compound, from which it appears, that as one volume of olefiant gas requires five volumes of chlorine for its conversion into muriatic acid and this new chloride, and as four volumes of muriatic acid are formed, so three volumes of chlorine must unite to two of carbon to form the solid chloride.

When this perchloride is passed through a red hot tube chlorine is evolved, and a liquid compound of carbon and chlorine is obtained, which assumes the form of a vapour at 170° , and which, like the former, is insoluble in water, but soluble in alcohol and ether, and burns with the same phenomena as the solid chloride.

The results of the author's analytical experiments upon this fluid compound, induce him to regard it as consisting of one proportion of each of its elements.

By exposing the vapour of iodine and olefiant gas to the sun's rays, Mr. Faraday obtained a colourless crystalline compound, difficultly combustible, but decomposable at a high temperature, of a sweet taste and aromatic odour, and composed of iodine, carbon, and hydrogen. He has not yet succeeded in forming a binary compound of carbon and iodine, though his experiments leave little doubt of the existence of such a compound, and of the possibility of forming it when aided by a bright sunshine.

An Account of the Comparison of various British Standards of Linear Measure. By Captain Henry Kater, F.R.S. &c. Read January 18, 1821. [*Phil. Trans.* 1821, p. 75.]

The Commissioners of Weights and Measures having recommended, for the legal determination of the standard yard, that employed by General Roy in the measurement of a base on Hounslow Heath, as a foundation for the trigonometrical operations that have been carried on by the Ordnance throughout the country, it became necessary to examine the standard to which the report alludes, with the intention of subsequently deriving from it a scale of feet and inches.

This standard consists of an iron bar, 20 feet long, described by Captain Kater, in which gold points are inserted, at the distance of 40 inches from each other, from a standard scale of Mr. Ramsden's, which was declared similar to that of General Roy, and also to that of the Royal Society; but on examining these scales, Captain Kater ascertained the existence of material differences between them; and being aware of the existence of other standards of high authority, he procured and compared them.

The author then details at length the methods by which he effected these comparisons, and gives tables of the various measurements, which are afterwards comprised in the following abstract, taking Colonel Lambton's standard, used in the survey of India, as the point of departure, in consequence of its being the shortest. Captain Kater finds the excess on 36 inches to be as follows:—

Sir George Shuckburgh's standard	+ 000642
Bird's standard, 1760	+ 000659
General Roy's scale	+ 001537
Royal Society's standard	+ 002007
Ramsden's bar, used in the trigonometrical survey	+ 003147

The author then proceeds to investigate the effect of these differences on the figure of the earth, and arrives at the conclusion, that the comparison given in the abstract of Colonel Lambton's paper, in the Philosophical Transactions for 1818, namely, $\frac{301}{301.75}$ should be $\frac{301}{301.75}$, which agrees very nearly with the deduction of M. Laplace from the lunar irregularities; with the result of Dr. Young's investigation, by a comparison of the mean with the superficial density of the earth; and with the conjecture hazarded by the author, from the compression given by the experiments on the length of the pendulum at Unst and Portsoy.

An Account of the Urinary Organs and Urine of Two Species of the genus Rana. By John Davy, M.D. F.R.S. Read January 18, 1821. [*Phil. Trans.* 1821, p. 95.]

The species of the genus *Rana*, adverted to in the title of this paper, are the *Rana taurina*, or bull frog, and the *Bufo fuscus*, or brown toad.

The kidneys of the bull frog are lobulated, and the ureters terminate in the rectum, between the orifice of the bladder and the anus; the bladder is large, and its orifice well calculated to receive the urine as it flows from the ureters, its escape from the rectum being prevented by the sphincter muscle of the anus. In the brown toad the ureters have an analogous termination; but the bladder when distended resembles two oval bags, freely communicating just over the symphysis pubis, to which they are firmly attached.

The urine of the bull frog is without action on vegetable colours, and contains urea, with traces of sea salt and a little phosphate of lime.

The author concludes this paper with some remarks relative to the dissimilarity of the urine in animals, whose diet is similar, and considers the nature of that secretion as depending rather upon the intimate and invisible structure of the kidney than upon the kind of food which they consume. The brown toad and the lizard both live upon flies, but their urine is very different; the parrot eats vegetables only, and the snake feeds exclusively upon animal matter, yet in them the urinary secretion is in all main points alike, uric acid being the predominant ingredient in both.