oxide of iron that are capable of forming peculiar acids with the elements of prussic acid; and the most remarkable of these is sulphur, which makes an acid of a red colour, having always the same properties, though formed in various different ways. The first method by which Mr. Porrett formed this acid, was by boiling together sulphuret of potash with prussian blue; but he has also made it by the same sulphuret with prussiate of mercury. Also by heating together sulphuret of potash with animal charcoal, and by sulphate of potash with the same coal. Also by boiling a simple alkaline prussiate with sulphur, or by mixing prussiate of ammonia with hydroguretted sulphuret of potash. Since one of the properties of this acid is to form an insoluble compound with copper, the author takes advantage of this valuable property for obtaining the acid in a pure state. After decomposing a salt of copper for this purpose, a quantity of sulphuric acid is poured on the precipitate, and the whole submitted to gentle distillation, by which the acid is obtained nearly pure, or may be easily purified. The author examines the salts formed by union of this acid with the several alkalies, earths, and metallic oxides, showing that it may be transferred from one to another without change of its properties, and supporting his opinion that it should be regarded as an acid of a peculiar and extremely compound nature.

For the acids here described, the author invents names by combining the initials of three of their constituents, carbon, hydrogen, and azote, which give him the term Chyazic; and hence he denominates the former Ferruretted Chyazic acid, and the latter Sulphuretted Chyazic acid. By careful analysis of the former, the author found 17·26 oxide of iron in 47·66 of the dry acid; and in 18·4 of the latter he found 12 of sulphur.

In the course of these experiments Mr. Porrett examines and describes the precautions which are necessary in ascertaining the quantity of iron present in any solution by the quantity of prussian blue that can be formed: and he also shows the use that may be made of the sulphuretted chyazates as precipitants of copper. He observes, that the precipitate formed in this case contains no water, and consists of about 63 protoxide of copper, combined with 37 sulphuretted chyazic acid.

Some Experiments on the Combustion of the Diamond and other carbonaceous Substances. *By Sir* Humphry Davy, *LL.D. F.R.S. V.P.R.I.* Read June 23, 1814. [*Phil. Trans.* 1814, *p.* 557.]

Notwithstanding the many accurate experiments which have been made and recorded, showing that diamond and carbonaceous substances combine with the same quantity of oxygen, and form the same quantity of carbonic acid, various conjectures have been formed respecting some difference in their chemical composition, which might account for the remarkable difference in various sensible qualities. Messrs. Biot and Arago conjectured, from the great refractive power of the diamond, that hydrogen must be present. Guyton de Morveau

imagined that other carbonaceous substances were oxides of diamond; and Sir Humphry Davy himself supposed, on the contrary, that diamond, as a non-conductor of electricity, probably contained oxygen, and afterwards that it contained some new principle of the same class with oxygen.

Having, however, lately made some direct experiments on the combustion of the diamond in oxygen gas, by means of the great lens belonging to the Academy at Florence, his results have not differed from those made by Mr. Tennant, and subsequently by Messrs. Allen and Pepys, respecting the quantity or quality of the gas produced; and he acknowledges that the general tenour of his experiments is opposed to the conjectures that have been entertained by himself and others respecting the existence of oxygen, either in the diamond itself, or in carbonaceous substances. His experiments likewise, so far from supporting the hypotheses of Messrs. Biot and Arago as to the existence of hydrogen as a constituent part of diamond, showed that a minute quantity of hydrogen was really contained in each of the other carbonaceous substances employed for comparison, not excepting plumbago. The presence of hydrogen in these bodies is most distinctly shown on heating them in chlorine, by white fumes that are immediately perceived in consequence of the production of muriatic acid; but when diamond is heated in the same gas, no such vapour appears. In the course of these experiments the author notices a phenomenon which *he* had not before *seen*, namely, that diamond when once ignited in oxygen, continues to burn till it is consumed.

Some Account of the fossil Remains of an Animal more nearly allied to Fishes than any of the other Classes of Animals. By Sir Everard Home, *Bart. F.R.S.* Read June 23, 1814. [*Phil. Trans.* 1814, *p.* 571.]

The bones here spoken of, are from the cliff between Lyme and Charmouth in Dorsetshire. The cliff, says the author, is composed of limestone, upon which is a stratum of blue clay two or three feet thick, in which these bones were deposited.

A drawing has been made of these bones to accompany the paper, which supersedes the necessity of a very particular description. Their magnitude is such, that the head alone measures four feet. The upper and under jaw are very distinct, set with small conical teeth, as in the crocodile; but the lower jaw is not articulated as in that animal, but connected by an intermediate flat bone, as in fishes. The sclerotic coat of the eye is also, as in fish, bony, but is subdivided, as in the eyes of many birds, into a number of separate plates. The intervertebral cavities of the spine likewise prove, that this skeleton is that of a swimming animal; since the form of each cavity is that of an oblate oval, much wider in its transverse diameter than in the direction of the spine. The mode of articulation of the lower jaw, which admits of its being opened to a great extent, seems to show the animal