

earths are compounds of a similar nature ; and in some experiments upon both barytes and strontian, inflammable matter was produced at the negative surface, and burned with a red flame. This matter Mr. Davy has much reason to believe was the basis of the earth employed. Moreover, although these earths have the strongest relation to the alkalies, there is also a further chain of resemblances through lime, magnesia, glucine, alumine, and silex ; each of which, there is some reason to imagine, may yield new elements when subjected to analysis by electric attraction and repulsion. Nor, indeed, are our hopes or expectations confined to the decomposition of earthy substances ; as there is equal reason to suppose that the three acids which have hitherto resisted decomposition, by the usual means of chemical analysis, may nevertheless yield the oxygen which they have been presumed to contain when subjected to the more intense action of electro-chemical affinity.

*On the Structure and Uses of the Spleen.* By Everard Home, Esq. F.R.S. Read November 26, 1807. [*Phil. Trans.* 1808, p. 45.]

Mr. Home, in the course of his late investigation of the functions of the stomach, having observed that the pyloric and cardiac portions of that cavity were separated in many animals by a permanent division, and in most by at least a temporary muscular contraction, during the process of digestion ; and having also found that the food in the pyloric portion has in general nearly the same consistence, was led to consider by what means the quantity of fluid frequently taken at meals could be absorbed from the cardiac portion ; and he imagined the spleen, from its contiguity to the stomach, to be the most natural channel for that purpose.

To ascertain whether liquids do really pass from the stomach by any other channel than the pylorus, that passage was secured by a ligature in a living dog, and five ounces of fluid coloured with indigo were injected into the stomach. At the end of half an hour, two ounces were brought up by vomiting ; and the dog being killed, one ounce was found remaining in the stomach ; so that two ounces had escaped. The spleen was turgid : and upon making a transverse section of it, the cut surface presented an appearance of molecules or vesicles of a white colour, surrounded by the small ramifications of the arteries and plexuses of small veins.

In Mr. Home's next experiment, he endeavoured to detect the course of the fluid from the stomach of a dog, by employing a decoction of madder ; but though the urine appeared to be somewhat tinged with the madder, no such colour could be discerned in the spleen.

At the suggestion of Mr. William Brande, he next substituted tincture of rhubarb, the presence of which might be made very evident by the addition of an alkali, which occasions it to assume a brownish red colour.

After having learned, by various trials, by what time and within what period the effect of rhubarb might be perceived in the urine of

a man, he again made a dog the subject of experiment; and after he had tied the pylorus, about three ounces of a mixture of tincture of rhubarb with water were at intervals injected into his stomach. Upon killing this dog, at the expiration of eight hours and a half, his bladder was found distended with urine highly tintured with the rhubarb. The spleen was turgid; and, when cut through and examined by a magnifying-glass, appeared to consist of two parts intermixed, but very distinguishable from each other by their colour; the one was transparent, in the form of small circles or ovals, and surrounded by a different structure, which was vascular, of a red colour, but of a lighter hue than the substance of the liver.

This spleen was immersed in water, and being cut into small pieces, the water became discernibly impregnated with the rhubarb, as was rendered manifest by the test of alkali.

On the contrary, an equal portion of the liver of the same dog, treated in the same way, gave no such colour to the water, but only tinged it with blood of a red colour. Although fluids are thus found to pass from the stomach to the spleen, the vessels by which they are conveyed have not been detected, nor does Mr. Home entertain much hope of such a discovery.

*On the Composition of the Compound Sulphuret from Huel Boys, and an Account of its Crystals.* By James Smithson, Esq. F.R.S.  
Read January 28, 1808. [*Phil. Trans.* 1808, p. 55.]

Mr. Smithson gives a particular description of the form of the sulphuret of lead, antimony, and copper, because that which was laid before the Society in 1804 appeared to him materially inaccurate and imperfect; and he further offers some observations upon Mr. Hatchett's experiments, which he deems essentially necessary to our rightly understanding this substance, as well as many other chemical compounds to which the same principles extend.

The author conceives it not to be probable that this ore is a direct quadruple combination of the three metals, lead, antimony, and copper, with sulphur; but thinks it much more credible that it consists of the three sulphurets of these metals.

On this presumption he makes experiments, to determine the proportion of these sulphurets to each other; and since 10 grains of galena produce  $12\frac{1}{2}$  sulphate of lead, he thence infers the quantity of galena indicated by 60·19 grains of sulphate of lead, obtained by Mr. Hatchett. So also with respect to sulphate of antimony;—as 10 grains yield 11 of precipitate from muriatic acid by water, he is enabled to determine the quantity of sulphuret of antimony, corresponding to Mr. Hatchett's precipitate of 28·64 grains. With respect to sulphate of copper, his method is not so direct; for as he had none of this sulphuret on which to make experiments, he only presumes that the remainder of the ore consists of this compound; and hence he obtains the following results: sulphuret of lead, 49·7; sulphuret of antimony, 29·6; sulphuret of copper, 20·7.

From the near agreement of these numbers with the simple pro-