ſo unalterable, so eminently poſſeſſed of ſaline proper­ties, as vitriolic acid. ”

The vitriolic acid, when combined with other ſubſtances, forms vitriolic ſalts, which vary both in ſpeciſic names and properties, according to the various ſubſtances with which the acid is combined. Thus the vitriolic acid, combined with mineral alkali, forms the ſalt called *Glauber's ſalt,* or *ſal mirabile.* When it is combined with calcareous earths, it forms vitriolic ſalts with baſes of calcareous earth, which are commonly called *ſelenites.* When combined with argillaceous earths, it forms alum. When combined with metals, it forms vitriolic ſalts with metallic baſes, to which the general name *vitriols* is given; and in commerce are commonly called *copperas.* The vitriols principally uſed are, 1. The martial vitriol; called alſo *English* *vitriol, green vitriol,* or *green copperas,* which is a combination of vitriolic acid with iron. 2. The vitriol of copper, called alſo *blue vitriol, Cyprian vitriol,* or *blue copperas;* which is a combination of vitriolic acid and copper. 3. The vitriol of zinc, called alſo *white copperas,* and *Goſlar vitriol,* which is a combination of the ſame acid with a ſemimetal called *zinc.* It is a property peculiar to the vitriolic acid, that all the combinations of it, with thoſe ſubſtances with which it can form neutral ſalts, are ſuſceptible of cryſtallization.

“Secondly, Amongſt the other ſaline ſubſtances, thoſe which appear moſt active and moſt simple, as ni­trous and marine acids, are at the ſame time thoſe whoſe properties moſt reſemble the properties of vitriolic acid.”

The nitrous acid, combined with all the ſubſtances with which it can mix, forms ſaline ſubſtances, in gene­ral called *nitrous ſalts;* ſpecifying each particular ſalt by the name of the ſubſtance united to the acid. Thus nitrous acid, with fixed vegetable alkali, forms a ſaline ſubſtance called *nitre,* or *ſaltpetre.* With mineral al­kali, forms cubic or quadrangular nitre. When mixed with metallic ſubſtances, forms metallic nitres, which are ſpecified *nitre of gold; nitre of ſilver,* or *lunar nitre, lunar crystals,* and *cryſtals oſ ſilver, nitrous cryſtals oſ mercury; nitre of copper,* &c.

“Thirdly, We may give to vitriolic acid many of the characteriſtic properties of nitrous acid, by com­bining it in a certain manner with the inflammable prin­ciple, as we ſee in the volatile ſulphureous acid; and even, according to an experiment of Mr Piech, related in a memoir concerning the origin of nitre, which gained the prize of the academy of Berlin, vitriolic acid, mixed with vegetable and animal matters ſuſcep­tible of fermentation, is really transformed into a ni­trous acid by the putrefaction of theſe matters. See Chemistry, no 720.

“Fourthly, The marine acid, although its princi­ples are leſs known than thoſe of the nitrous acid, may be approximated to the character of vitriolic and ni­trous acids by certain methods. This acid, after it has been treated with tin and other metallic matters, is capable oſ forming either with ſpirit of wine, as vi­triolic acid does, which it cannot do in its natural ſtate; and when iron is diſſolved in it, it ſeems to be appro­ximated to the nature of nitrous acid. Reciprocally,

the approximation of vitriolic acid to the character of marine acid ſeems not impoſſible. Having once diſtilled very pure vitriolic acid upon a conſiderable quantity of white arſenic, I was ſtruck with a ſtrong ſmell like that of marine acid, which was not either that of arſenic or of vitriolic acid; for this has no ſmell when it is pure. ”

The marine acid, combined with various matters, forms marine ſalts, or Amply ſalts, ſpeciſied by the names of their particular baſes. The ſea-ſalt, or kit­chen ſalt, and ſal gem, are combinations of marine acid and mineral alkali. When this acid is combined with volatile alkali, it forms ſal ammoniac (a. ) With metals it forms metallic ſalts, called *ſalt of gold, ſalt of copper,* &c. according to the various metals combined with the acid. The ſalt of ſilver is alſo called *luna cornea*; the ſalt of lead is often called *plumbum corneum;* and the ſalts of antimony, and of arſenic, are known by the names of *butter oſ antimony,* and *butter of arſenic.*

“Fifthly, Oily vegetable acids become ſo much ſtronger, and more ſimilar to vitriolic acid, as they are more perfectly deprived of their oily principle, by combining them with alkalis, earths, or metals; and afterwards by ſeparating them from theſe ſubſtancee by diſtillation, and eſpecially by frequently repeating theſe operations. They might perhaps be reduced to a pure vitriolic acid, by continuing ſufficiently this method: and reciprocally, vitriolic and nitrous acids, weakened by water, and treated with much oily matters, or ſtill better with ſpirit of wine, acquire the characters of vegetable acids. We may ſee a remarkable inſtance of this in Mr Pott’s diſſertation *De acido nitri vinofo.* [The moſt remarkable experiment in which is related under the article Chemistry, no 781. ]

“Sixthly, The properties of fixed alkalis ſeem to be very different from thoſe of acids in general, and conſequently of vitriolic acid. Yet if we conſider that a large quantity of earth enters their compoſition; that much of it may be ſeparated by repeated ſolutions and calcinations; and alſo, that by depriving theſe ſaline ſubſtances of their earthy principles, they become leſs fixed, more deliqueſcent, and, in a word, more ſimilar to vitriolic acid in this reſpect; — we ſhall not think it improbable, that fixed alkalis owe their ſaline properties to a ſaline principle, of the nature of vitriolic acid, but much diſguiſed by the quantity of earth, and probably of inflammable principle, to which it is united in theſe combinations. The properties of volatile alkalis, and the transformation of fixed alkali, or of its materials, into volatile alkali in putrefaction, and in ſeveral diſtillations, ſeem to (how ſufficiently that they are matters eſſentially ſaline, as fixed alkalis are, and that their volatility which diſtinguiſhes them proceeds from their containing a leſs quantity of earth, but more attenuated, and a portion of very ſubtile and volatile oil, which enters their compoſition. [For ſome other particulars relating to the tranſmutation of ſalts, ſee Chemistry, n⁰ 784. ]

“Beſides theſe principal facts, there are many others, too numerous to be even ſlightly mentioned here; they may be found ſcattered in the works of chemiſts, particularly of Stahl. But perſons who would collect and compare all the experiments relating to this