

strong solution of sulphate of iron. When they had been thoroughly soaked in the liquid for several days they were dried and exposed to a red-heat until the vegetable matter was burnt up and nothing remained but an oxide of iron, which was found to have taken the form of the deal so exactly that casts even of the dotted vessels peculiar to this family of plants were distinctly visible under the microscope.

Another accidental experiment has been recorded by Mr. Pepys in the *Geological Transactions*.* An earthen pitcher containing several quarts of sulphate of iron had remained undisturbed and unnoticed for about a twelvemonth in the laboratory. At the end of this time when the liquor was examined an oily appearance was observed on the surface, and a yellowish powder, which proved to be sulphur, together with a quantity of small hairs. At the bottom were discovered the bones of several mice in a sediment consisting of small grains of pyrites, others of sulphur, others of crystallized green sulphate of iron, and a black muddy oxide of iron. It was evident that some mice had accidentally been drowned in the fluid, and by the mutual action of the animal matter and the sulphate of iron on each other, the metallic sulphate had been deprived of its oxygen; hence the pyrites and the other compounds were thrown down. Although the mice were not mineralized, or turned into pyrites, the phenomenon shows how mineral waters, charged with sulphate of iron, may be deoxydated on coming in contact with animal matter undergoing putrefaction, so that atom after atom of pyrites may be precipitated, and ready, under favorable circumstances, to replace the oxygen, hydrogen, and carbon into which the original body would be resolved.

The late Dr. Turner observes, that when mineral matter is in a "nascent state," that is to say, just liberated from a previous state of chemical combination, it is most ready to unite with other matter, and form a new chemical compound. Probably the particles or atoms just set free are of extreme minuteness, and therefore move more freely, and are more ready to obey any impulse of chemical affinity. Whatever be the cause, it clearly follows, as before stated, that where organic matter newly imbedded in sediment is decomposing, there will chemical changes take place most actively.

An analysis was lately made of the water which was flowing off from the rich mud deposited by the Hooghly river in the Delta of the Ganges after the annual inundation. This water was found to be highly charged with carbonic acid gas holding lime in solution.† Now if newly-deposited mud is thus proved to be permeated by mineral matter in a state of solution, it is not difficult to perceive that decomposing organic bodies, naturally imbedded in sediment, may as readily become petrified as the substances artificially immersed by Professor Göppert in various fluid mixtures.

It is well known that the water of springs, or that which is continually

* Vol. i. p. 399, first series.

† Piddington, *Asiat. Research.* vol. xviii. p. 226.