

durable do not waste away till afterwards, when the supply has failed, and so never become petrified. The converse of these circumstances gives rise to exactly opposite results.

Professor Göppert, of Breslau, has instituted a series of curious experiments, in which he has succeeded in producing some very remarkable imitations of fossil petrifications. He placed recent ferns between soft layers of clay, dried these in the shade, and then slowly and gradually heated them, till they were red-hot. The result was the production of so perfect a counterpart of fossil plants as might have deceived an experienced geologist. According to the different degrees of heat applied, the plants were obtained in a brown or perfectly carbonized condition; and sometimes, but more rarely, they were in a black shining state, adhering closely to the layer of clay. If the red heat was sustained until all the organic matter was burnt up, only an impression of the plant remained.

The same chemist steeped plants in a moderately strong solution of sulphate of iron, and left them immersed in it for several days, until they were thoroughly soaked in the liquid. They were then dried, and kept heated until they would no longer shrink in volume, and until every trace of organic matter had disappeared. On cooling them he found that the oxide formed by this process had taken the form of the plants. A variety of other experiments were made by steeping animal and vegetable substances in siliceous, calcareous, and metallic solutions, and all tended to prove that the mineralization of organic bodies can be carried much farther in a short time than had been previously supposed.\*

### *Imbedding of the Remains of Insects.*

I have observed the elytra and other parts of beetles in a band of fissile clay, separating two beds of recent shell-marl, in the Loch of Kinnordy in Forfarshire. Amongst these, Mr. Curtis recognized *Elator lineatus* and *Atopa cervina*, species still living in Scotland. These, as well as other remains which accompanied them, appear to belong to terrestrial, not aquatic, species, and must have been carried down in muddy water during an inundation. In the lacustrine peat of the same locality, the elytra of beetles are not uncommon; but in the deposits of drained lakes generally, and in the silt of our estuaries, the relics of this class of the animal kingdom are rare. In the blue clay of very modern origin of Lewes levels, Mr. Mantell has found the Indusia, or cases of the larvæ of Phryganea, in abundance, with minute shells belonging to the genera Planorbis, Limnea, &c., adhering to them.†

When speaking of the migrations of insects, I pointed out that an

\* Göppert, Poggendorff's *Annalen der Physik und Chemie*, vol. xxxviii. part iv., Leipsic, 1836. See also Lyell's *Elements of Geol.* vol. i. p. 86., 2d edit. † *Trans. Geol. Soc.*, vol. iii. part i. p. 201., second series.