

with Göppert, has investigated the botany of these formations. It will be seen that in the leaf of this *Daphnogene* two veins branch off on each side from the mid-rib, and run up without interruption to the point.

On the Lower Rhine, whether in the Mayence basin or in the Siebengebirge, and in the neighborhood of Bonn and Cologne, there seem to be Brown Coals of more than one age. Von Buch tells us that the only fossil found in the Brown Coal near Cologne, one often met with there in the excavation of a tunnel, is the peculiar fruit, so like a cocoanut, called *Nipadites* or *Burtonia Fanjasii* (see fig. 220). Now this fossil abounds in the Lower Eocene or Sheppy clay near London, also in the Middle Eocene at Brussels; and I found it still higher in the same nummulitic series at Cassel, in French Flanders. This fact taken alone would rather lead us to refer the Cologne lignite to the Eocene period.

Some of the lignites of the Siebengebirge near Bonn associated with volcanic rocks, and those of Hesse Cassel which accompany basaltic outpourings, are certainly of much later date.

UPPER EOCENE STRATA OF ENGLAND.

Hempstead beds.—Isle of Wight.—Until very lately it was supposed by English geologists that the newest tertiary strata of the Isle of Wight corresponded in age with the gypseous series of Montmartre near Paris; and this idea was confirmed by the fact that the same species of *Palæotherium*, *Anoplotherium*, and other extinct mammalia so characteristic of the Parisian series, were also found at Binstead, near Ryde, in the northern district of the island, forming part of the fluvio-marine series. We are indebted to Prof. E. Forbes for having discovered in the autumn of 1852 that there exist three formations, the true position of which had been overlooked, all of them newer than the beds of Headon Hill, in Alum Bay, which last were formerly believed to be the uppermost part of the Isle of Wight tertiary series.*

The three overlying formations to which I allude are as follows:—

1st, certain shales and sandstones called the St. Helen's beds (see Table, p. 104, *et seq.*) rest immediately upon the Headon series; 2dly, the St. Helen's series is succeeded by the Bembridge beds before mentioned, the equivalent of the Montmartre gypsum; and 3dly, above the whole is found the Upper Eocene or Hempstead series. This newer deposit, which is 170 feet thick, has been so called from Hempstead Hill, near Yarmouth, in the Isle of Wight.† The following is the succession of strata there discovered, the details of which are important for reasons explained in the preliminary remarks of this chapter (p. 187):—

* E. Forbes, Geol. Quart. Journ. 1853.

† This hill must not be confounded with Hampstead Hill, near London, where the Lower Eocene or London Clay is capped by Middle Eocene sands.