

Beneath the freshwater strata last described, a very thin band of greenish shales, with marine shells and impressions of leaves, like those of a large *Zostera*, succeeds, forming the base of the Middle Purbeck.

Lower Purbeck.—Beneath the thin marine band above mentioned, purely freshwater marls occur, containing species of *Cypris* (fig. 339, *a, b*), *Valvata*, and *Lymnæus*, different from those of the Middle Purbeck. This is the beginning of the inferior division, which is about 80 feet thick. Below the marls are seen more than 30 feet of brackish-water beds, at Meup's Bay, abounding in a species of *Serpula*, allied to, if not identical with, *Serpula coacervites*, found in

beds of the same age in Hanover. There are also shells of the genus *Rissoa* (of the subgenus *Hydrobia*), and a little *Cardium* of the subgenus *Protocardium*, in the same beds, together with *Cypris*. Some of the cypris-bearing shales are strangely contorted and broken up, at the west end of the Isle of Purbeck. The great dirt-bed or vegetable soil containing the roots and stools of *Cycadææ*, which I shall presently describe, underlies these marls, and rests upon the lowest freshwater limestone, a rock about 8 feet thick, containing *Cyclas*, *Valvata*, and *Limnæus*, of the same species as those of the uppermost part of the Lower Purbeck, or above the dirt-bed. The freshwater limestone in its turn rests upon the top beds of the Portland stone, which, although it contains purely marine remains, often consists of a rock quite homogeneous in mineral character with the lowest Purbeck limestone.*

The most remarkable of all the varied succession of beds enumerated in the above list, is that called by the quarrymen "the dirt," or "black dirt," which was evidently an ancient vegetable soil. It is from 12 to 18 inches thick, is of a dark brown or black color, and contains a large proportion of earthy lignite. Through it are dispersed rounded fragments of stone, from 3 to 9 inches in diameter, in such numbers that it almost deserves the name of gravel. Many silicified trunks of coniferous trees, and the remains of plants allied to *Zamia* and *Cycas*, are buried in this dirt-bed (see figure of fossil species, fig. 340, and of living *Zamia*, fig. 341).

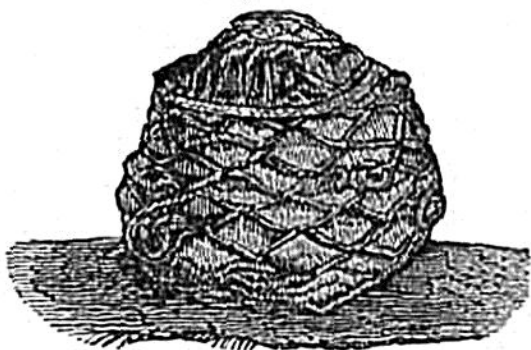
Fig. 339.



Cyprides from the Lower Purbecks.

a. Cypris Purbeckensis, *b. Cypris punctata*,
E. Forbes. E. Forbes.

Fig. 340.



Cycadeoidea (Mantellia) megalophylla,
Buckland.

* Weston, Geol. Q. J., vol. viii. p. 117.