

No. 1. Sand, white, yellowish, or ferruginous, with concretions of limestone and chert	-	-	-	-	70 feet.
2. Sand with green matter	-	-	-	-	70 to 100 feet.
3. Calcareous stone, called Kentish rag	-	-	-	-	60 to 80 feet.

In his detailed description of the fine section displayed at Atherfield, in the south of the Isle of Wight, we find the limestone wholly wanting; in fact, the variations in the mineral composition of this group, even in contiguous districts, is very great; and on comparing the Atherfield beds with corresponding strata at Hythe in Kent, distant 95 miles, the whole series presents a most dissimilar aspect.*

On the other hand, Professor E. Forbes has shown that when the sixty-three strata at Atherfield are severally examined, the total thickness of which he gives as 843 feet, there are some fossils which range through the whole series, others which are peculiar to particular divisions. As a proof that all belong chronologically to one system, he states that whenever similar conditions are repeated in overlying strata the same species reappear. Changes of depth, or of the mineral nature of the sea-bottom, the presence or absence of lime or of peroxide of iron, the occurrence of a muddy, or a sandy, or a gravelly bottom, are marked by the banishment of certain species and the predominance of others. But these differences of conditions being mineral, chemical, and local in their nature, have nothing to do with the extinction, throughout a large area, of certain animals or plants. The rule laid down by this eminent naturalist for enabling us to test the arrival of a new state of things in the animate world, is the representation by new and different species of corresponding genera of mollusca or other beings. When the forms proper to loose sand or soft clay, or a stony or calcareous bottom, or a moderate or a great depth of water, recur with all the same species, the interval of time has been, geologically speaking, small, however dense the mass of matter accumulated. But if, the genera remaining the same, the species are changed, we have entered upon a new period; and no similarity of climate, or of geographical and local conditions, can then recall the old species which a long series of destructive causes in the animate and inanimate world has gradually annihilated. On passing from the Lower Greensand to the Gault, we suddenly reach one of these new epochs, scarcely any of the fossil species being common to the lower and upper cretaceous systems, a break in the chain implying no doubt many missing links in the series of geological monuments, which we may some day be able to supply.

One of the largest and most abundant shells in the lowest strata of the Lower Greensand, as displayed in the Atherfield section, is the large *Perna Mulleti*, of which a reduced figure is here given (fig. 296).

* Dr. Fitton, Quart. Geol. Journ., vol. i. p. 179, ii. p. 55, and iii. p. 289, where comparative sections and a valuable table showing the vertical range of the various fossils of the lower greensand at Atherfield are given.