

torted in various directions ; it also frequently loses its earthy texture, and is hard and semicrystalline, like transition limestone.

The Rev. R. Halifax, of Standish, near Gloucester, obligingly showed me part of the lias and oolite beds in the vicinity of Cheltenham, which he had particularly studied. Between the upper lias clay and the oolite, there is a thick bed of reddish earth with ferruginous nodules inclosing portions of lias ; this earth may be seen cropping out at the foot of Leckhampton Hill. No well-marked natural division exists, which can determine whether this bed should be classed with lias, or the oolites. The fossils in lias clay and limestone are nearly black, and are sometimes incrustated with pyrites.

The most valuable mineral substances, obtained from lias in England, are water-setting lime and alum shale. The property of setting under water may be communicated to any kind of lime, by an admixture with burned and pulverized ironstone. Many of the bituminous and pyritical shales in the coal strata, if they could be obtained with facility, would yield alum by slow combustion. When alum shale is burned, and the soluble part is extracted by water, it is necessary to add potass before the process of evaporation, as crystallized alum is a triple salt, composed of sulphate of alumine and potass.

*Oolite.*—The numerous beds of yellowish limestone alternating with beds of clay, marl, sand, and sandstone, that compose the oolite formation in England, are of variable thickness ; their aggregate average depth, from the top of the upper oolite to the lias, may be estimated at 1200 feet. These beds may be traced, with little interruption, along a waving line from the Cleveland Hills in Yorkshire, into Dorsetshire. In Gloucestershire, they compose a lofty range of hills on the south side of the Vale of Severn, called the Cotteswold Hills ; but no strata of this formation are found in any part of England or Wales north-west of the river Severn. In many parts of France, the oolite strata, accompanied with lias, present all the characters of the same formation in England ; but in the Jura mountains, where they are fully developed, the mineral characters often differ considerably ; and it is only from the geological position and the imbedded fossils, that they can be identified with the English series.

Oolite or Roestone receives its name from the small globules like the roe of a fish, that are imbedded in many of the strata : in some instances, these globules attain the size of a pea, and this variety has obtained the name of *Pisiform oolite*. In England, nearly all the beds of limestone that are oolitic, in this formation, have a yellowish brown or ochrey colour, by which they may at first sight be distinguished from lias. The limestone in which the globules are imbedded has generally an earthy texture, and is dull and incapable of receiving a polish : some varieties of oolite have been much used for architecture. Somerset House, and many of the public buildings in London, are constructed of this stone ; but it is not durable. The occurrence of small oviform globules in limestone is not confined ex-