

er than the upper chalk, and is sometimes used for building stone. In France, the beds of chalk seldom attain the thickness which they have in England. The French divide the chalk formation into the lowest or chalk marl, with green particles, *craie chloritée*, or *glauconie crayeuse*; the middle or coarse chalk is of a greyish colour, and intermixed with sand; it contains whitish chert (*craie grossière*, or *craie tufeau*); the upper or white chalk (*craie blanche*), which contains nodules of common flint.

M. Humboldt, after noticing the great intermixture of the sandy calcareous and argillaceous beds, in the formations below chalk, and which is greatly increased in the tertiary strata above chalk, observes, "that nature seems to have relented in her tendency to form complex mixtures, when chalk was deposited." In the chalk formation, we find a vast assemblage of calcareous strata, composed of carbonate of lime, with very little intermixture of the other earths, and without any alternation with argillaceous or siliceous strata. Chalk is not, however, absolutely pure; for, beside the nodules and veins of flint that occur in it, but which bear no sensible proportion to the whole mass, some of the strata contain an intermixture with siliceous sand, and in other strata, calcareous earth is combined with magnesia. In some of the chalk strata in France, the magnesia exceeds ten per cent., and, I believe, many of the English chalk strata contain as great a proportion of magnesian earth.

Chalk which contains a notable portion of magnesia, may generally be known by an appearance of dendritical spotted delineations on the surface of the natural partings, and by minute black spots, like grains of gunpowder, in the substance of the chalk.

In chalk, the stratification is seldom so distinct as it is in many other calcareous formations: this may be owing partly to the softness of the beds, which appear to have yielded to pressure; and to the same cause we may probably ascribe the fractured state of the nodules of flint in chalk, which often appear whole, when they are imbedded in the rock, but when taken out, are found to be shivered into innumerable angular fragments. The nodules of flint in the chalk are commonly arranged, in pretty regular layers; they occur in detached concretions of various shapes and sizes: some of them are believed to be the casts of spongiform zoophytes, and this is rendered more probable by the frequent occurrence of fossil echini in chalk, in which the internal part is filled with flint, and forms a perfect cast of the animal. In some of the chalk flints near Paris, there are beautiful small crystals of sulphate of strontian.

The constant occurrence of flint in the upper chalk, and the apparent conversion of animal remains into flint, formerly gave rise to much speculation respecting the origin of flint; and it was at one time maintained, that flint and chalk were convertible or capable of undergoing a mutual transmutation: but whatever hidden processes there may be in the great laboratory of the earth, by which all min-