nites, and many genera of testaceous animals, that have left their remains in chalk and the lower strata, appear to have been extinct before the deposition of the London clay. Nautilites are however, found in it, similar to the species inhabiting the Indian Ocean, and bivalve and univalve shells are so numerous, that it would be difficult to select any particular species, as peculiarly characteristic of this formation. The shells belong mostly to genera inhabiting our present seas; yet slight variations of form may be perceived, which have induced naturalists to regard them as distinct from living species.

The springs that rise in the London clay are generally impregnated with sulphate of iron and sulphate of lime, and some of the springs contain sulphate of magnesia; the quality of the water, however, varies much in different situations, and at different depths. To obtain soft water, it is necessary to bore or sink through the London clay to the sand above the chalk, and sometimes into the chalk itself.* The London clay and the under beds have been perforated to the depth of three or four hundred feet in some situations, before good water could be obtained; when the stratum is pierced which holds the best water, it rises almost immediately, and sometimes overflows the surface. This admits of an easy explanation, by referring to the section of the Vale of Thames. (Plate IV.) The water which enters the edges of the porous strata, say at *x x*, descends to the lowest part of the trough or basin, and when perforated would rise to near the level of *x x*, were the strata deposited in a circular basin, the edges of which rose on each side from the Vale of Thames; but the strata are deposited in a longitudinal basin or trough between the chalk hills of Hertfordshire and Surrey, and the river Thames cuts through the porous edges of the strata below Greenwich; so that the water being there let out, can seldom rise in wells much above the highwater mark. Were it not for this, we might have natural *jets d'eau* of considerable height and magnitude in all the squares of London, to cool and refresh the air during the summer months, and supply the inhabitants in the vicinity with salubrious water. In order to preserve the water pure, that is obtained from chalk or the sand over chalk, it is necessary to line the inside of wells, or to put down tubes, to prevent the water from the London clay, intermixing with the pure water from below.

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* At the village of Wildsen, three miles north-west of London, the boring for water was made two hundred and eighty feet into the clay, and seventy-five feet below it into the chalk, when the water immediately rose to within thirty-five feet of the surface. Chalk rocks, and other calcareous rocks in which the strata are divided by fissures that are not filled with clay, always contain water in the fissures when the strata dip under the surface of the ground, or when they are covered by argillaceous beds. This is also the case with coal strata; and the presence of water is necessary to keep the coal in good condition. If the water be entirely drained from a bed of coal a considerable time before it is worked, the quality of the coal is much deteriorated. This may be occasioned by air penetrating the fissures, and promoting the decomposition of pyrites in the coal.