

Loire, near the town of Le Puy, in Velay; and another occurs near Aurillac, in Cantal. The leading feature of the formation last mentioned, as distinguished from those of Auvergne and Velay, is the immense abundance of silex associated with calcareous marls and limestone.

The whole series may be separated into two divisions; the lower, composed of gravel, sand, and clay, such as might have been derived from the wearing down and decomposition of the granitic schists of the surrounding country; the upper system, consisting of siliceous and calcareous marls, contains subordinately gypsum, silex, and limestone.

The resemblance of the freshwater limestone of the Cantal, and its accompanying flint, to the upper chalk of England, is very instructive, and well calculated to put the student upon his guard against relying too implicitly on mineral character alone as a safe criterion of relative age.

When we approach Aurillac from the west, we pass over great heathy plains, where the sterile mica-schist is barely covered with vegetation. Near Ytrac, and between La-Capelle and Viscamp, the surface is strewn over with loose broken flints, some of them black in the interior, but with a white external coating; others stained with tints of yellow and red, and in appearance precisely like the flint gravel of our chalk districts. When heaps of this gravel have thus announced our approach to a new formation, we arrive at length at the escarpment of the lacustrine beds. At the bottom of the hill which rises before us, we see strata of clay and sand, resting on mica-schist; and above, in the quarries of Belbet, Leybros, and Bruel, a white limestone, in horizontal strata, the surface of which has been hollowed out into irregular furrows, since filled up with broken flint, marl, and dark vegetable mould. In these cavities we recognize an exact counterpart to those which are so numerous on the furrowed surface of our own white chalk. Advancing from these quarries along a road made of the white limestone, which reflects as glaring a light in the sun as do our roads composed of chalk, we reach, at length, in the neighborhood of Aurillac, hills of limestone and calcareous marl, in horizontal strata, separated in some places by regular layers of flint in nodules, the coating of each nodule being of an opaque white color, like the exterior of the flinty nodules of our chalk.

The abundant supply both of siliceous, calcareous, and gypseous matter, which the ancient lakes of France received, may have been connected with the subterranean volcanic agency of which those regions were so long the theatre, and which may have impregnated the springs with mineral matter, even before the great outbreak of lava. It is well known that the hot springs of Iceland, and many other countries, contain silex in solution; and it has been lately affirmed, that steam at a high temperature is capable of dissolving quartzose rocks without the aid of any alkaline or other flux.* Warm water charged with siliceous matter would immediately part with a portion of its silex, if its temperature was lowered by mixing with the cooler waters of a lake.

* See Proceedings of Royal Soc., No. 44, p. 238.