

The great eruptions of granite, protogine, and porphyry took place, according to M. Fournet, during the carboniferous period, for porphyritic pebbles are found in the conglomerates of the Coal-measure period. "The granite of Dartmoor, in Devonshire," says Lyell,* "was formerly supposed to be one of the most ancient of the plutonic rocks, but it is now ascertained to be posterior in date to the culm-measures of that county, which from their position, and as containing true coal-plants, are regarded by Professor Sedgwick and Sir R. Murchison as members of the true Carboniferous series. This granite, like the syenitic granite of Christiana, has broken through the stratified formations without much changing their strike. Hence, on the north-west side of Dartmoor, the successive members of the Culm-measures abut against the granite, and become metamorphic as they approach. The granite of Cornwall is probably of the same date, and therefore as modern as the Carboniferous strata, if not newer."

The *ancient granites* show themselves in France in the Vosges, in Auvergne, at Espinouse in Languedoc, at Plan-de-la-Tour in Provence, in the chain of the Cevennes, at Mont Pilat near Lyons, and in the southern part of the Lyonnaise chain. They rarely impart boldness or grandeur to the landscape, as might be expected from their crystallised texture and hardness; for having been exposed to the effects of atmospheric changes from the earliest times of the earth's consolidation, the rocks have become greatly worn away and rounded in the outlines of their masses. It is only when recent dislocations have broken them up that they assume a picturesque character.

The Christiania granite alluded to above was at one time thought to have belonged to the Silurian period. But, in 1813, Von Buch announced that the strata in question consisted of limestones containing orthoceratites and trilobites; the shales and limestone being only penetrated by granite-veins, and altered for a considerable distance from the point of contact.† The same granite is found to penetrate the ancient gneiss of the country on which the fossiliferous beds rest—unconformably, as the geologists say; that is, they rest on the edges of the gneiss, from which other stratified deposits had been washed away, leaving the gneiss denuded before the sedimentary beds were deposited. "Between the origin, therefore, of the gneiss and the granite,"‡ says Lyell, "there intervened, first, the period when the strata of gneiss were denuded; secondly, the period of the deposition

* "Elements of Geology," p. 716, 6th edition.

+ "Elements of Geology," p. 717.

‡ Ibid, p. 718.