organic remains on the muddy bottom. A brief volcanic explosion is marked by the thin tuff-bed (8), after which the old conditions of deposit continued, the bottom of the water, as the shale (9) shows, being crowded with ostracod crustaceans, while fishes, whose coprolites have been left in the mud, haunted the locality. At last, however, a much more powerful and prolonged volcanic explosion took place. A coarse agglomerate or tuff (10), with blocks sometimes nearly a foot in diameter, was then thrown out and overspread the lagoon.

The second example (Fig. 307) brings before the mind a volcanic episode of another kind, in the history of the same region. At the bottom of the section, a pale amygdaloidal, somewhat altered form of basalt (A) marks the upper surface of one of the submarine lavas of the Carboniferous Limestone period. Directly over it comes a bed of limestone (B) 15 feet thick, the lower layers of which are made up of a dense growth of the thin-stemmed coral, *Lithostrotion irregulare*, which overspread the hardened lava. The next stratum is a band of dark shale (C), about 2 feet thick, followed by about the same thickness of an impure limestone with shale seams. The conditions for coral growth were evidently not favorable; for the deposit of this argillaceous limestone was arrested by the precipitation of a dark mud, now to be seen in the form of 3 or 4 inches of a black pyritous shale (E), and next by the inroad of a large quantity of a dark sandy mud, and drift vegetation, which has been preserved as a sandy shale (F) containing *Calamites*, *Producti*, ganoid scales, and other traces of the terrestrial and marine life of the time. Finally a sheet of lava, represented by the uppermost amygdaloid (G), overspread the area, and sealed up these records of Palæozoic history.[8]

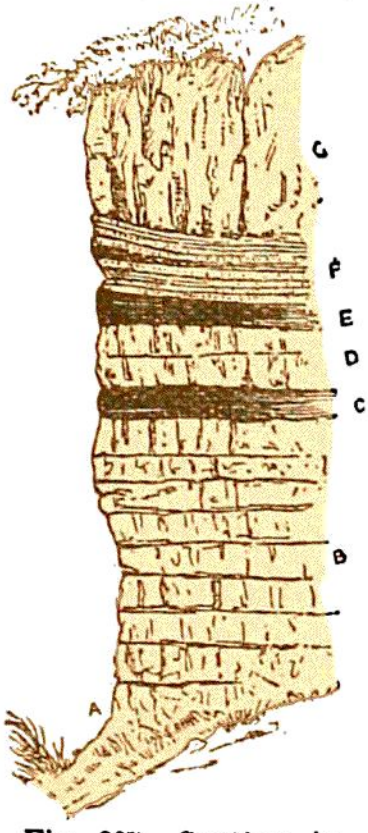

Fig. 307.—Section in Wardlaw Quarry, Linlithgowshire.

[8] See "Memoirs of Geol. Survey, Geology of Edinburgh," pp. 45, 58. Trans. Roy. Soc. Edin. xxix. p. 483.