XIV.—*On a Section recently exposed at Marchmont Road.* By
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My attention was directed in August 1883, by Messrs. Carfrae and Belfrage, C.E., to a section disclosed while excavating for the foundations of houses and for building stone on the east side of Marchmont Road, and at the south end of that street. The rocks disclosed belong to the red shale and clay series, so characteristic of the Lower Carboniferous series on the southern districts of Edinburgh. The section of rocks at four feet from the surface was as follows:—

Red clay full of little holes like air-holes, and of a pisolitic structure, about 18 inches.

Conglomerate, containing nodules of quartz and limestone about $\frac{1}{2}$ inch in diameter, in a reddish matrix, required to be blasted in some cases, about 2 feet.

Red clay as at first, but quite soft, like red ashes, about 18 inches.

Good freestone of pinkish hue, depth uncertain, but quarried to a depth of 10 feet.

The general dip of the strata is north-west.

The section coincides with one recorded by me twenty years ago, then seen in the Dick Place valley, when quarries were opened to supply building stones for mansions then being erected in that locality. The conglomerate there disclosed was similar in petrological constitution to the one now under examination; as, indeed, both are identical with that seen on the brow of the steep incline below Liberton Church, which was figured by Hay Cunningham as an outlier of the Old Red Sandstone system. Indeed, quarrymen tell me that the same bed lies below Blackford Hill.

The pisolitic structure of the red ash of the Marchmont Road specimens insensibly grades into that of the conglomerate, suggesting similar formative conditions. Microscopic examination bears out this conclusion. For, while the air-hole structure so prominent to the naked eye is indefinitely multiplied under the field of vision, certain concomitants suggest hydrothermal action under certain conditions as yet not thoroughly explained, resulting in oolitic or pisolitic structure, rather than steam holes, as seen in the ashbeds round Arthur Seat and elsewhere. As is seen by the naked eye, quartz rather than iron predominates in

the most ferruginous looking portions. Radiating tufts of crystals from one matrix are common ; so, too, is a stalactitic structure ; great masses of flocculent silica are also met with, specially in the vicinity of the quartz balls in the conglomerate. May not the sandstone bullets, with their palpable concentric structure, as found at Kingscavil Quarry, Linlithgowshire, exhibit on the large scale how the quartzite and limestone balls of our conglomerate originated. A variation in intensity of the same conditions forming the three beds under consideration may also point to a common origin. Probably the sandstone also was thus derived.