in 1830, when all the strata had been removed from one side. The beds which remained were so unaltered and undisturbed at the point of junction, as clearly to show that they had been tranquilly deposited round the tree, and that the tree had not subsequently pierced through them, while they were yet in a soft state. They were composed chiefly

douth. i. Shalo with Modiola Bradatone and shale. Bection of the cliffs of the South Joggins, near Minudle, Nova Scotla. . 4.Feet conl. Coal with apright trees. FIG. 402. c. Grindstone. 3 0 Red andstone and marl. 3 Afiles Obscine Oypenm ~ a. Limestone. Minadle. Bed and riche. North.

of siliceous sandstone, for the most part white; and divided into laminæ so thin, that from six to fourteen of them might be reckoned in the thickness of an Some of these thin layers were dark, and inch. contained coaly matter; but the lowest of the intersected beds were calcareous. The tree could not have been hollow when imbedded, for the interior still preserved the woody texture in a perfect state, the petrifying matter being, for the most part, calcareous.\* It is also clear, that the lapidifying matter was not introduced laterally from the strata through which the fossil passes, as most of these were not calcareous. It is well known that, in the Mississippi and other great American rivers, where thousands of trees float annually down the stream, some sink with their roots downwards, and become fixed in the mud. Thus placed, they have been compared to a lance in rest, and so often do they pierce through the bows of vessels which run against them, that they render the navigation extremely dangerous. Mr. Hugh Miller mentions four other huge trunks exposed in quarries near Edinburgh, which lay diagonally across the strata at an angle of about 30°, with their lower or heavier portions downwards, the roots of all, save one, rubbed off by attrition. One of these was 60 and another 70 feet in length, and from 4 to 6 feet in diameter. · The number of years for which the trunks of trees,

when constantly submerged, can resist decomposition, is very great; as we might suppose from the durability of wood, in artificial piles, permanently covered by water. Hence these fossil snags may not imply a rapid accumulation of beds of sand, although the channel of a river or part of a lagoon is often filled up in a very few years.

Nova Scotia.—One of the finest examples in the world of a succession of fossil forests of the carboniferous period, laid open to view in a natural section, is that seen in the lofty cliffs, called the South Joggins, bordering the Chignecto Channel, a branch of the Bay of Fundy, in Nova Scotia.<sup>†</sup>

\* See figures of texture, Witham, Foss. Veget. pl. 3.

+ See Lyell's Travels in N. America, vol. ii. p. 179 ; and Dawson, Geol. Journ. No. 87