

VIII.—FOSSILS, POSSIBLY TRIASSIC, IN GLACIATED FRAGMENTS
IN THE BOULDER-CLAY OF KINGS COUNTY, N. S.—BY
PROFESSOR ERNEST HAYCOCK, *Acadia College, Wolf-*
ville, N. S.

(Received for publication, 18th December, 1901.)

The belt of red Triassic sandstones that extends from St. Mary's Bay to Truro, a distance of one hundred and fifty miles, has not as yet yielded any fossils

It has, for several years, seemed to me unlikely that living things were absent throughout this region when this great series of water-formed beds, often showing ripple-marks and current-bedding, was being laid down. It has seemed equally improbable that at no time or place were the conditions favorable for the preservation of the remains of those living things, if they were present. For these reasons I have believed that such remains exist and are likely to be discovered if carefully searched for.

In many of the finer layers of the red sandstone where it forms bare red cliffs along the north shore of St. Mary's Bay at Rossway, occur spherical greenish-gray blotches with a black central spot, which vary in size from minute specks to spheres an inch in diameter. They appear to be due to the original presence of some organism, the carbon of which has been oxidized from the red oxide of iron which forms the coloring matter of the beds, producing soluble compounds which have been removed, leaving a bleached zone surrounding the former position of the organism.

In beds of the same formation near Pereaue, Kings County, the same bleached spheres were noticed in the sandstone, at about the same stratigraphical horizon, taking the surface of contact with the overlying trap as a datum line.

When examining, last summer, the splendid coast section along the southwest side of Minas Basin between Kingsport and

Pereau river, a fragment of a very fine-grained, laminated, reddish-brown, calcareous shale was noticed on the beach which when broken open was found to contain beautifully preserved impressions of small shells that suggested the small bivalve crustacea usually known as ostracods. The origin of the fragments was for some time in doubt. Careful search of the north-dipping beds in the immediate vicinity failed to reveal it, but several other fragments of the same material, some of which contained fossils, were found within a mile or two of the place where the first piece of shale was found.

The surface of the red sandstone is here surmounted by a rather thick coating of boulder-clay. About midway between Kingsport point and Pereau river this sheet descends to near the level of the beach, and is well exposed and accessible to examination where a small brook meets the shore. A brief search in this formation brought to light a glaciated fragment of the same material, which when broken open revealed the same fossils and the problem of the immediate origin was solved.

The location of the strata from which these fragments were detached by the ice of the Glacial Period has not been fixed as yet. The striation of the bed-rock in this county, and the presence of amygdaloidal trap from the North Mountain in the boulder-clay, indicate that the ice moved and brought its load of clay and stones from the northwest. The source of these fragments must also be to the northwest, but in that direction the Triassic red sandstone extends to the trap of the North Mountain. Beyond the trap, on the very shore of the Bay, is a newer formation of greenish calcareous shale; but a careful study of every exposed section of these newer beds has revealed no layers in any respect resembling the fragments in color, composition or fossil contents, and there is no evidence that they were derived from that formation. That they were derived from beds on the Cumberland shore, the more distant New Brunswick coast or the bottom of the Bay of Fundy is also unlikely, so that we must look to the Triassic beds intervening between the Kingsport shore and the North Mountain as the source of the fragments.

Some internal evidences of this derivation are found in the fragments themselves. The material differs from the usual red sandstone beds only in fineness of texture. It contains the minute spherical blotches that have been described as occurring in these sandstones at Rossway and Pereau, and the Pereau locality lies about two miles to the north. Again, the glaciation of the fragments does not indicate a long journey; though deeply scratched, the corners are only partially rounded. The rather soft and brittle nature of the rock is also unfavorable to a long exposure to ice action. Thus there seems to be little doubt that these fossils were derived from the Triassic sandstones; that the layers from which they were derived lie between Kingsport point and the contact of the sandstone and trap on the southern slope of the North Mountain, and that they are more likely to be found on the north side of the Pereau river.

If the origin of the fossils proves to be as supposed, they are, so far as my knowledge goes, the first recorded animal remains from this formation in Nova Scotia; and they may help to fix the age of a series of beds that heretofore have had their position in the Geological Record determined by their lithological resemblances to a formation in the Connecticut Valley several hundred miles distant.