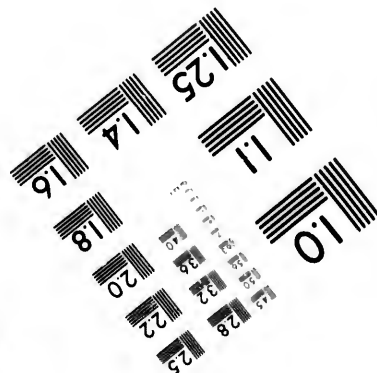
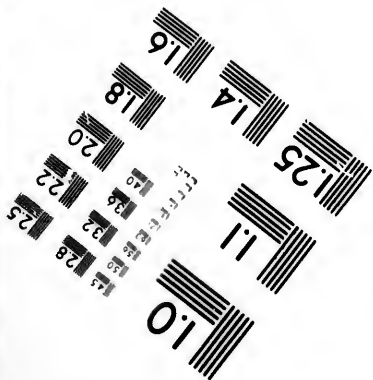
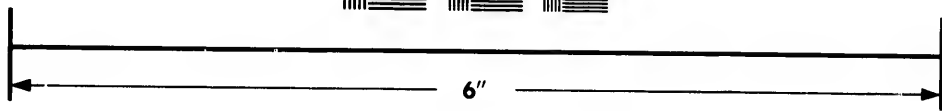
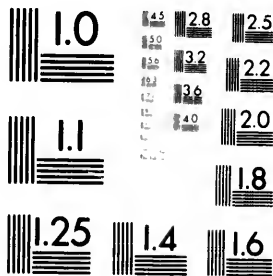


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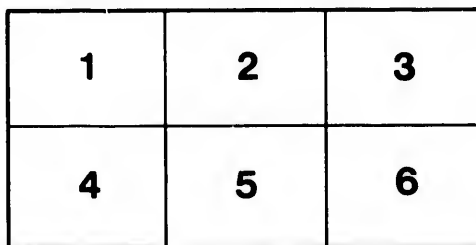
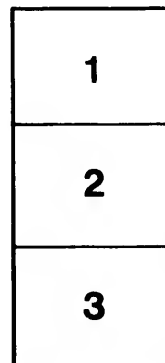
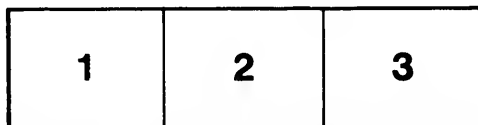
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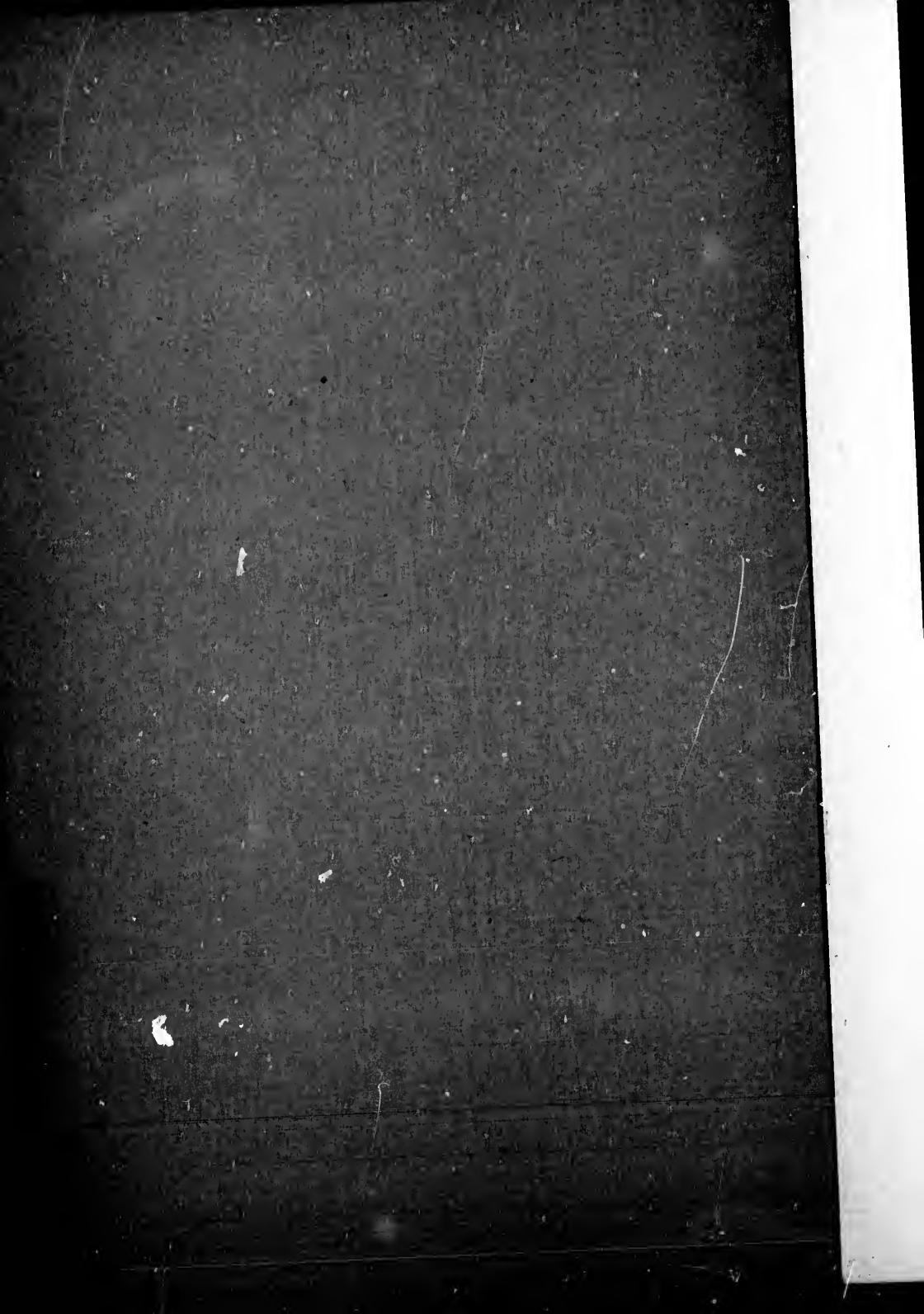
No. 7.—NOTE ON CARBONIFEROUS ENTOMOSTRACA FROM
NOVA SCOTIA, IN THE PETER REDPATH MUSEUM,
DETERMINED AND DESCRIBED BY PROF. T.
RUPERT JONES, F.R.S., AND MR. KIRBY.

BY

SIR J. WILLIAM DAWSON, C.M.G.

[Reprinted from the Canadian Record of Science, January, 1897.]

MONTREAL, 1897.



“Reprinted from the *Canadian Record of Science*, January, 1897.”

NOTE ON CARBONIFEROUS ENTOMOSTRACA, FROM NOVA
SCOTIA, IN THE PETER REDPATH MUSEUM, DETERMINED
AND DESCRIBED BY PROF. T. RUPERT JONES, F.R.S.,
AND MR. KIRKBY.

By SIR WILLIAM DAWSON, LL.D., F.R.S.

Having had occasion recently to look over some specimens of these interesting animals in the Peter Redpath Museum, it occurs to me as likely to be useful to collectors and geological workers to summarize in the *Record of Science* what is known of them as occurring in Nova Scotia.

When preparing my *Acadian Geology*, and especially the second edition of that work,¹ as well as later papers

¹ 1868.

supplementary to it, I took advantage of the kindness of Prof. Rupert Jones, F.R.S., the highest authority in the study of the Palæozoic Entomostraca, to place in his hands for determination the specimens which I had collected. The material thus submitted to Prof. Jones, between the years 1855 and 1884, was eventually in the latter year published in a collected form in a paper contributed by him to the *London Geological Magazine*, with a page of excellent illustrations, some of which are copied, by permission, in the present note. A little later, in 1889, Prof. Jones published in the same magazine an additional note on specimens collected by Mr. Foord, F.G.S., in the coal-formation at Mabou, Cape Breton, and which were communicated to him by Mr. Whitteaves, F.G.S., Palæontologist to the Geological Survey of Canada. These, however, added no new species to those previously known. Still later, in one of his reports to the British Association, he notices an example of *Estheria Dawsoni*, collected by Mr. Fletcher of the Geological Survey, at Five Islands.

The specimens described or noticed in the paper of 1884¹ were partly from the Horton series of the Lower Carboniferous, at Lower Horton, Horton Bluff and the Strait of Canseau, and partly from the Middle Coal-formation of Cumberland, Colchester, Pictou and Cape Breton; and in order to indicate their stratigraphical positions, it may be best to take them here in the order of time, as constituting two groups, one Lower Carboniferous (Sub-Carboniferous of Dana, Tweedian and Calciferous of Great Britain and Culm of the continent of Europe), the other belonging to the time of the Middle or Productive Coal-Measures.

¹Carboniferous Entomostraca from Nova Scotia, by T. Rupert Jones and James W. Kirkby, *Geological Magazine*, August, 1884. Some of the species had been separately mentioned or described in the same journal in 1870, 1878 and 1881.

I.—LOWER CARBONIFEROUS.

The Lower Carboniferous collections belong to the beds holding plants and fish remains which locally underlie or replace the marine limestones, and which I have called the Horton Series, from their great development and good exposure at Lower Horton and Horton Bluff, where they were examined and recognized as the equivalent of the lowest member of the Carboniferous in Scotland, by both Lyell and Logan. In specimens collected in these beds and the corresponding beds on the Strait of Canseau and in Pictou, the following species have been recognized by Prof. Jones.

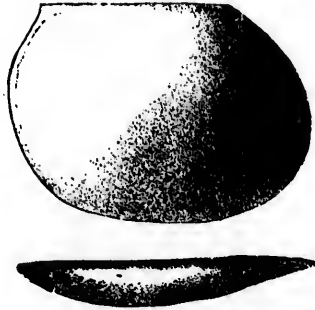


Fig. 1. Left Valve. 1b. Valve edgewise, x 25.

1. *Leperditia Okeni*, Munster (Fig. 1) and its variety *L. Scotoburdiagalensis* of Hibbert, a very widely distributed species and characteristic of the Lower Carboniferous in Russia, Bavaria and Scotland. In the latter it occurs abundantly in the shale and limestone of Burdiehouse, near Edinburgh, celebrated for fish remains; and in which I first saw this fossil in my student days in Edinburgh; before I had collected it in Nova Scotia. Prof. Jones remarks: "It is of especial interest to meet with so old a friend, so abundantly and with so robust a habit, for we have not seen larger examples of it in Scotland, in

Carboniferous rocks on the American side of the Atlantic." I may add that in Nova Scotia, as in Scotland, it is associated with fishes of Carboniferous genera and with *Lepidodendra* and Ferns of Lower Carboniferous types, the whole being, as I have shown in "Acadian Geology" and in my report on the Flora of the Lower Carboniferous in Nova Scotia,¹ a very precise equivalent of the European beds representing this interesting formation, the earliest precursor of the conditions of the Coal-Measures.

I have specimens of this *Leperditia* less perfectly preserved, from the Lower Carboniferous shales of the East Branch of the East River of Pictou.

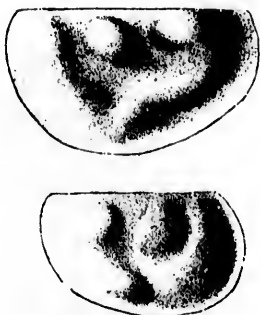


Fig. 2. Right and Left Valves, x 25.

2. *Beyrichia Nova Scotica*, Jones and Kirkby (Fig. 2.) This seems to be a new species, but is very near to one found by Eichwald in Russia—*B. Colliculus*, Eichwald. This species is less plentiful in my collections than the previous one.



Fig. 3, x 25.

3. *Beyrichia* Sp. (Fig. 3.) A single small valve from Horton represented this species in the collections sub-

¹ "Acadian Geology," p. 252, *et seq.* Report on Fossil Plants of Lower Carboniferous, etc., Geol. Survey of Canada, 1873.

mitted to Prof. Rupert Jones. It seems very rare, and may be merely a depauperated variety or immature state of the last mentioned.

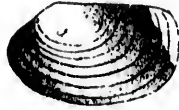


Fig. 4, x 5.

4. *Estheria Dawsoni*, Jones¹ (Fig. 4.) The specimen described by Prof. Jones is from Horton but the same species has more recently been collected by Mr. Fletcher, of the Geological Survey, at Five Islands, and was identified by Prof. Jones on being submitted to him. It has also been found in Scotland. I have either the young of this species or a similar one of smaller size from the East River of Pictou.

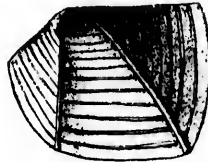


Fig. 5, x 5.

5. *Levia Leidyi*, Jones (Lea Sp.), var. *Salteriana*, Jones (Fig. 5.) This species, unique in my collections, from the Lower Carboniferous of the Strait of Canseau, is widely distributed in the Carboniferous on both sides of the Atlantic. It was first discovered in Pennsylvania, but a second species or variety of larger size has been found in Illinois. (*L. tricarinata*, Meek & Worthen.) It seems to be rare in Nova Scotia, which is unfortunate, as it is so

¹ Geol. Mag., 1870, p. 220, Pl. IX., Fig. 15.

well marked a species, and so useful as an indicator of the Lower Carboniferous in disturbed districts.



Fig. 6, x 25.

6. *Cythere* (Species), (Fig. 6.) Valves, apparently representing two species, occur in the Horton shales, but have not been identified as yet with any known species.

II.—COAL FORMATION.

Small bivalve Entomostraca are very abundant in some carbonaceous shales and bituminous limestones at the South Joggins, Chiganois River, East River of Pieton, Glace Bay, Cape Breton, Sydney, C.B., Mabon, C.B., &c., where they seem to have swarmed in the lagoons of the coal swamps, as Cyprids do in some modern ponds, but the species do not seem to be numerous. Those noticed in the paper in question are the following:—



Fig. 7, x 25.

1. *Carbonia fabulina*, Jones & Kirkby (Fig. 7.) This is one of the most abundant species at all the localities, and sometimes covers the entire surfaces of layers of shale

and shaly limestone. It is also a characteristic British species.



Fig. 8, x 25.

2. *Carbonia bairdioides*, J. & K. (Fig. 8.) Less abundant than the preceding, at the Joggins and also at Mabon, where it was collected along with the preceding by Mr. Foord, but it is abundant in the Upper Coal Formation of Smelt Brook, East River, Pictou. It is also a common Scottish species.



Fig. 9, x 25.

3. *Candona elongata*, J. & K. (Fig. 9.) Larger and more elongated than the preceding forms, but much less abundant. It attains the length of $\frac{1}{4}$ th of an inch.

Prof. Jones has some interesting remarks on the very wide distribution of all these species in the Northern Hemisphere, in connection with the fact that they were probably shallow-water, or even brackish-water species. This indicates means of transit for such animals, by shallow areas either now oceanic or now land. It concurs with many other facts in showing that the comparative rarity of great ocean depths and high mountain ranges

in the Carboniferous period had important connection with its equable climate and uniform animal and vegetable life over vast areas. Prof. Jones's discussion of this subject shows how much can be learned from the careful study of very minute and inconspicuous animal remains.

Note.—All the figures, except Nos. 4 and 5, are magnified about 25 diameters.

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