

ART. III.—NOTES OF EXAMINATION BY PROF. JAMES HALL, OF THE  
SILURIAN COLLECTIONS OF THE PROVINCIAL MUSEUM,  
—By the Rev. D. HONEYMAN, D. C. L., F. R. S. C.,  
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(Read January 10, 1887.)

PROF. HALL'S early contributions to the Silurian and Devonian Palæontology of Nova Scotia have formed the basis of all our accurate knowledge of the subject. In these he described, figured and named characteristic Silurian and Devonian fossils, and assigned them to their proper positions in the Silurian and Devonian systems. He has consequently been regarded as paramount authority on questions relating to this department of Palæontology. Our extensive collections, made since the publication of Prof. Hall's work include almost all the fossils described by him, and a large number still undescribed. Many of these have been examined and characterized by Salter and Barrande, (although not figured or described) and referred to their proper palæontological and geological positions; while others, not examined, have been identified and characterized by myself, and referred to their supposed geological horizons. No small controversy has arisen in consequence of the publication of our views in the Transactions of our Institute and elsewhere. As the end of all our investigations is a sincere desire after truth, I have often wished for what I have at length obtained—a personal examination of my entire collections, as they are now arranged and displayed in our Museum, by an authority to which, as Sir Roderick I. Murchison would have expressed it, "we are all disposed to bow."

I directed attention: I. To a Silurian collection from Cape Breton. This consists of the Brachiopods *Lingulella* and the Trilobites *Agnostus* and *Olenus*, or *Sphærophthalmus alatus*. Professor Hall agrees with me in referring these to the "Upper Lingula Flags" of Wales, where the same forms occur, according

to Salter,—Appendix to Ramsay's Geology of North Wales. Paper Trans. 1873, Nova Scotian Geology Retrospect, page 485, 1878; Louisburg Past and Present, page 207, 1885. II. A Collection from Wentworth, I. C. R., was next examined. In this Trilobites *Calymene senaria*, *Dalmanites*. Sp. Graptolites: *Climacograpsus*. Hall, *Lingula*, *Pholidops Cincinnatiensis*, Hall, and other *Pholidops*, *Leptaena transversalis*, *L. sericea*, *Grammysia*, Sp. *Cyclonema crebristriata* were identified. A supposed *Atrypa reticularis* was discarded. Professor Hall agreed with me in referring these to the Cincinnati or Hudson River and Utica group. *Vide* Trans., 1873. Paper, Nova Scotian Geology, Intercolonial Railway, page 354. Nova Scotian Geology Retrospect, 1878, page 473. "I have assigned the lower part of these to Bala, of England, or Cincinnati, of United States, also pages 478, 481. Attention was also given to my 'Arisaig collection.'" I have divided the Arisaig fossiliferous into members and have designated them alphabetically thus: A, B, (Doctors Brook and Arisaig Harbour). B', C, (Arisaig Brook and Knoydart). D, E, (Moydart). Our collection is designated accordingly—A, B, C, E, E, F. Mr. Salter suggested this. Prof. Hall's attention had been directed to a collection made by Dr. Dawson (Sir J. W.), from B' and D. He identified named and figured certain fossils. B' was accordingly named Clinton, and D, Lower Helderberg. Salter's attention was directed to a large collection of fossils from A, B, C, D, E, at London Exhibition of 1862. He designated A, Mayhill sandstone; B, Ludlow; C, Aymestry Limestone; D, E, (upper and lower part) Ludlow Tilestone, identified and named some of the fossils. Mr. Bailly and Sir C. Wyville Thomson examined an addition to the collection at Dublin exhibition, 1865. J. Barrande and E. de Verneuil examined another addition at L. Exposition Universelle de Paris, in 1867. Medals were awarded to me for my collections at all these exhibitions. I have referred to this collection and examination in several papers read to Geological Society of London, and Nova Scotian Institute of Natural Science. So much for the past. Our last examination commenced with D and E. We propose to invert the order, and give first our

notes on A and B. In my paper "On the Geology of Antigonish County," Trans. Vol. I, Part IV., May 1866. (This paper was written 20 years ago.) We read, page 10 and 9, 'Hall's noble work on the Canadian Graptolites, has led me to consider that there is yet something to be done in the correct determination of the equivalency of the Arisaig group, as the graptolites of B appear to have the *facies* of the Hudson River group, so that A and B may be the Arisaig equivalent of this group. Instead, therefore, of beginning at the Upper Silurian age it may begin with part of the Lower Silurian, so that in Arisaig A and B are probably equivalent to the Hudson River Group—Lower Silurian." Mr. Salter's opinion that A was equivalent to the May Hill Sandstone of England, which is at the base of the Upper Silurian, led me to connect B and B', and to put an (?) after B'. In my "Revision of the Geological formations of Antigonish County," presented to the Royal Society of Canada and read before the Institute last Session (May, 1886), I was led back to my opinion of 1866, and to regard A and B as Hudson River and Utica Slate. For reasons *Vide* paper, Trans. It is satisfactory to find Prof. Hall now confirming my opinion. He recognizes the greater part of the Graptolites of Doctor's Brook as belonging to his genus *Climacograpsus*. I described to him the best specimen which I unfortunately took to the Museum of the Geological Survey at Gabriel Street, Montreal, and gave to Mr. Weston. This has been lost or mislaid. This was a beautiful and much prized specimen, I described as having the stipe pointed at the lower end, as having 10 notches (cells), alternating on either side, and terminating with about half an inch of the stipe, lanceolate and without notches. Prof. Hall says that this is characteristic of the genus. I next showed him a handful of opened nodules, with beautiful and varied lingulæ from my "Lingula Bed" Arisaig, Barney's River and Sutherland's River, especially at the two last localities, occurring at distances 12 to 14 miles and 20 miles from Arisaig. He considers this a very remarkable bed. Similar lingulæ but not in nodules are found associated with *Climacograpsus*, in the corresponding geological horizon, at Wentworth, I. C. R. Attention was next

directed to the Petraia of Arisaig A, and Lochaber. Specimens from the latter locality are considered very beautiful. Gasteropoda from A Arisaig, were recognized as *Cyclonema crebristriata*. The first of this Gasteropod which Prof. Hall recognized was in the Wentworth collection.

Trilobites of B, were also examined. *Calymene senaria*, *Calymene tuberculata*, and *Phacops*.

I would observe that the Arisaig A and B, are my own discoveries. Dr. Dawson having only brought the series down to B' Clinton, of Hall. Vide Geology of Arisaig, by D. Honeyman, Quarterly Journal of Geological Society, 1864.

I also discovered the Wentworth equivalent of A and B. Vide Nova Scotian Geology,—Intercolonial Railway, Trans., 1873. Subsequently Mr. McOuat, of the Geological Survey made collections in this locality. These led to the belief that the formation is of B', or Clinton age. My extensive collection made previously led me to consider "The Wentworth Group," as approximately "Hudson River, U. S., or Bala of England," *Loc. cit.*, page 354. Sir William Dawson and Dr. Selwyn have not examined my collections.