

ART. IV.—CARBONIFEROUS FLORA, WITH ATTACHED SPIRORBES,  
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When making a special examination of the Fossil Flora in the Museum, and more particularly the beautiful series of Carboniferous Flora collected by the late Barnes, M. E., for the Paris Exhibition of 1867, as well as others collected by myself before and after this date, I had occasion to consult "The Fossil Plants of the Devonian and Upper Silurian Formations of Canada," by (Sir) J. W. Dawson, LL. D., F. R. S., F. G. S. (Geological Survey of Canada, 1841). In Plate XIV. I observed Fig. 161, a. b. of Cordaite with a number of Spirorbes attached, and enlargement of the latter. In page 43 "Like the Cordaites of the coal formation it sometimes has on its surface shells of Spirorbes (Fig. 161)." In a note we read "these shells are attached to some of the leaves of *Cordaites Robbii* in Prof. Hartt's collections, and I have noticed the same fact as occurring at Gaspé, though the specimens seem to have been mislaid. The shells from St. John are similar to the *S. Carbonarius* of the coal formation, but the tube widens more rapidly and is smooth. They may be named *S. Erianus*."

It seems hopeless to convince palaeobotanists that the *Spirorbes* are really shells. As long ago as 1845 I showed evidence of this, and described these shells as *Spirorbes*, and subsequently I have investigated and described the microscopic structure of the shell. Yet I see that Schimper reproduces, though with doubt, the old error, that these organisms are fungi (*Gyromyces ammonis* of Gœppert). I have represented the St. John specimens in fig. 161. They appear reversed or sinistral, but when placed on a thin leaf their appearance in this respect depends on the side of the leaf exposed. Fig. 161 b. shows the actual appearance as seen on the upper side of the leaf. *Vide* Acadian Geology, p. 205, and proceedings of the Geological Society, December, 1885.

Our first specimen is a cast of a *stipe* in clay slate. Its length is 73 mm., and width 6 mm. Attached to it are 23 Spirorbes; all are sinistral. I found this specimen at the McAulay Mine (Gowrie Mine), Cape Breton, in 1861.

Specimen second is a piece of clay slate, having six fronds of sphenopteris. Attached to five of these we have seven Spirorbes. All are on the outside of the fronds; all are sinistral. The specimen belongs to Mr. Barnes' Cape Breton collection.

The third specimen is a sigillaria, which I found at South Joggins. In the scars of this we find 12 distinct Spirorbes, and there is another plant on the back of the specimen. All appear sinistral. They are evidently casts of the basis of dextral forms.

As an illustration I show an alga, a common *melanosperm*, with a large number of attached Spirorbes, whose apex after the removal of the anneloid tube would make casts having a resemblance (with a specific difference) to that of the old Carboniferous forms. I am surprised to find that there ever was any difference of opinion entertained in reference to the character of these Carboniferous forms.