

very numerous arched veins." This was supplemented by a drawing in 1871, pl. XVII, fig. 200, which indicates that the pinnule was probably the same as those he described in 1871 as *N. retorquata*.

The species *N. retorquata* is based on a number of separate pinnules found scattered on the shales. The type specimen is No. 3322 in the McGill University, and from this it appears that the four pinnules drawn by Dawson, 1871, pl. XVII, fig. 197, were taken; though they do not lie on the block as he has them, it is obvious that they were re-arranged from considerations of space. In my plate XVI, fig. 41, a photograph of the original slab is given.

Dawson remarks that "It is a very distinct species, allied, however, to *N. flexuosa* and *N. gigantea* of the Carboniferous. The pinnules were either somewhat thick or strongly reflexed at the margin. In these characters, as well as in the form of the pinnules, it differs markedly from *N. polymorpha*, with which it is associated in beds at Lepreau."

The justice of the concluding remark will be recognised immediately on reference to the illustrations of "*N. polymorpha*" (see pl. XIV, fig. 35, pl. XV, fig. 38). Dawson recognised that his species was allied to *N. gigantea*, but with his separation of the Canadian specimens from that species, I cannot agree, for they show no single character which justifies the step.

Zeiller (1888, p. 258) gives a very complete and detailed description of the species from large and relatively complete specimens, and he notes that it is very variable. When I was in Paris, M. Zeiller kindly showed me specimens with which to compare Dawson's St. John's type, and among them it was interesting to notice the frequency of scattered pinnules without any rachis. The tendency for the pinnules to drop from the rachis may possibly be a specific character, in which case it would give further support to the view that the St. John specimens are identical with the European ones, because the only examples of the former which exist are merely isolated pinnules.

On the type specimen at McGill are a number of separate pinnules, as can be seen in the photograph. They vary from less than 1 cm to nearly 2 cm in length, and from 4 mm to 8 mm in breadth. There is no distinct midrib, the veins radiating from