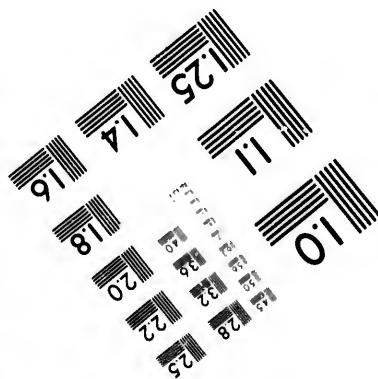
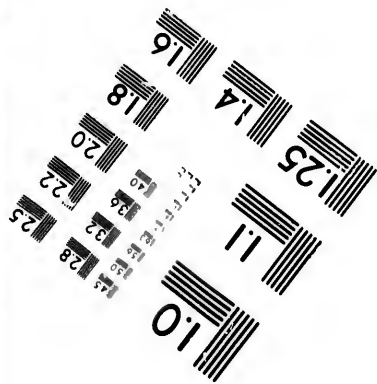
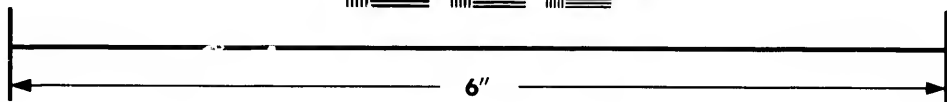
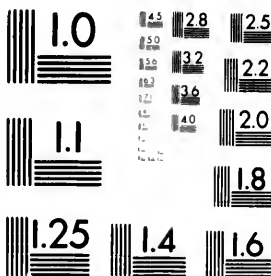


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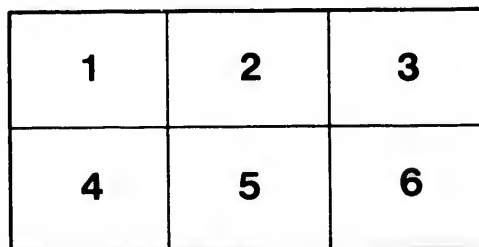
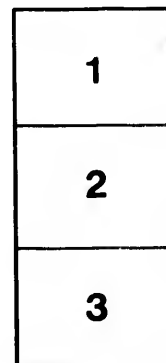
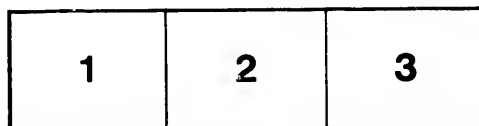
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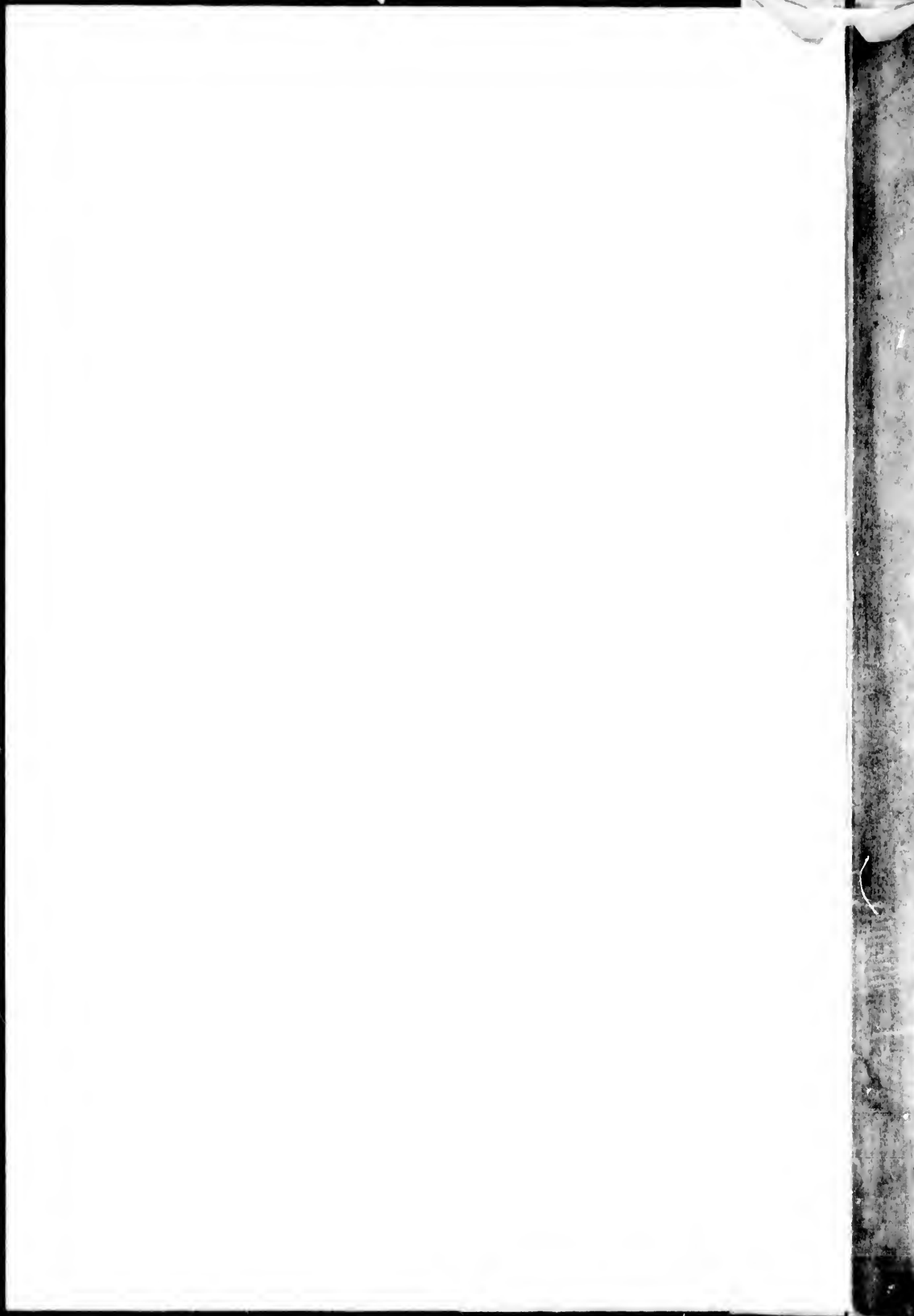
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(From the Canadian Naturalist, Vol. X. No. 2.)

NOTE ON A FERN ASSOCIATED WITH PLATEPHEMERA ANTIQUA, Scudder. By J. W. DAWSON, L.L.D., F.R.S., &c.

The oldest remains of insects known to geologists, those of the Erian (Devonian) shales of St. John, New Brunswick, occur in beds rich in plant remains. It was indeed solely by means of the extensive quarrying operations carried on by Messrs. Hartt and Matthew in these beds in search of fossil plants, that the insect remains were discovered. In less thoroughly explored beds, fossils so rare and so obscure could not have been found. It is natural therefore that fossil plants should occur on the same slabs with the insects. On one of these, holding a fragment of the wing of *Platephemera antiqua*, there appears a considerable portion of a frond of *Pecopteris (Aspidites) serrulata*, Hartt, a common species in these beds, and also a small fragment of a leaf of the still more common *Cordaites Robbii*. It appears that Dr. Geinitz of Dresden saw this specimen in 1866, and not being at that time familiar with the ferns of the Devonian of New Brunswick, very naturally supposed that the frond was that of the closely allied *P. plumosa* of Brongniart, and on this ground he was induced to hint a suspicion that the specimen was of Carboniferous age. Dr. Scudder referred to this opinion of Geinitz in his paper on Devonian insects in the Geological Magazine, Vol. V.; and gave reasons sustaining the Devonian age of both fern and insect. I did not think it necessary to refer publicly to the matter, but took occasion to explain the true state of the case in a private letter to Geinitz; and in my report on the Devonian plants of Canada I quoted Hartt's description in full, and noticed the distinctness of his species from *P. plumosa*.

I find, however, that this doubt has been revived by Dr. Hagen in a paper on Devonian insects in the Bulletin of the Museum of Comparative Zoology for the present year (Vol. viii. No. 14). Dr. Hagen does not profess to be an authority in fossil plants, but fortifies his statements by a letter from Mr. Lesquereux, which does not however touch the question at issue, as he does not appear to have compared the specimen or Hartt's species with

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*P. plumosa*; and though he insinuates a doubt as to the validity of some of my Devonian species, even this does not apply, since the species in question was carefully described by the late Prof. Hartt, and accepted by me after study of his material, which included several very considerable portions of well-preserved fronds.

Though doubts and suspicions thus cast on work carefully and exhaustively done, in so far as material exists, should not seriously affect the minds of naturalists, I have thought it desirable to set the matter at rest, as far as possible; and have therefore, through the kindness of Dr. Scudder and the Curator of the Boston Society of Natural History, obtained access to the original specimen, and would now state the actual facts.

The fern on the specimen in question (No. 8496 of the Boston Society's collection) is undoubtedly *Pecopteris serrulata* of Hartt, and exhibits in a tolerable state of preservation six secondary pinnæ of one side of a primary pinna of the species. To a hasty observer, supposing the specimen to be a piece of Carboniferous shale, it would be natural to refer the fern to *P. plumosa* of Brongniart or to *Aspidites silesiacus* of Goepfert, which it perhaps more closely resembles; and since its fructification is still unknown, it may quite as likely belong to the group or sub-genus *Aspidites* in which Goepfert and Schimper place *P. silesiaca*, as to that of *Cyathites* in which Schimper places *P. plumosa*.

The distinctive characters indicated by Hartt are principally the form and insertion of the pinnæ, the slender crenulate revolute, lanceolate pinnules, and the simple veinlets. Perhaps the most obvious characteristic is the peculiarly elongated acuminate points of the primary and secondary pinnæ, in which this species seems to differ from all its near allies. In the specimen in question, though only a portion of one side of a primary pinna is seen, and its characteristic elongate termination is absent, yet one of the secondary pinnæ shows this character very well, and the simple veins and crenate revolute margins may be made out with a lens in a good light. I do not think that any palæobotanist, in view of these characters, would decide to identify this fern with *P. plumosa*, unless indeed he were of opinion that the whole group to which that species belongs should constitute one broad specific type extending from the Devonian to the Permian, a view to which I should have no objection, provided sufficient connecting links can be found.

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It is farther to be observed that this fern occurs with a group of species which I have shown to be distinct not only from those of the Coal Formation but from those of the Millstone Grit and those of the Lower Carboniferous Coal-measures or Horton series (sub-Carboniferous of some American geologists), which sub-floras are well developed in the Acadian provinces, and overlie stratigraphically the beds holding the fern which is the subject of this note and its associated fossils.

I may add here Hartt's description of the plant and my note on it, from my Report of 1870:—

“*PECOPTERIS (ASPIDITES ?) SERRULATA*, Hartt.—(Pl. XVIII, Figs. 207 to 209.)—Acad. Geol. p. 553, Fig. 92.—M.D., St. John, New Brunswick.”

Tripinnate; pinna short, alternate, close or open, lanceolate, very oblique, situated on a rather slender, rounded, sub-flexuose rachis; pinnules small, linear lanceolate, crenulate, revolute, moderately acute, oblique, sessile, decurrent, widest at the base, open, separated from one another by a space equal to the width of a pinnule, slightly arched towards the point of pinna; longest at base of pinna, decreasing thence gradually to the apex; terminal pinnule elongated. Median nerve entering the pinnule very obliquely, flexuose, running to the apex. Nervules very few, oblique, simple, and somewhat rarely forking at the margin.”

“Numerous additional specimens of this species confirm Prof. Hartt's determination of its distinctness from *P. plumosa*, Brongt. It perhaps more strongly resembles Goepfert's *P. Silesiaca*; but this last has broader and more closely arranged pinnules decurrent on the petiole. It may be taken as a Devonian representative of the delicate Pecopterids of which the species above named are Carboniferous types. Mr. Hartt's specimens enable me to represent its habit of growth. Schimper quotes under this name a Carboniferous species of Lesquereux. But Lesquereux's species is *Alethopteris serrulata*.” (This was subsequently corrected by Schimper in the Supplement to his Palæontologie Vegetale.)



