REPORT ON THE CARR AND DANIELS COLLECTIONS OF FOSSIL PLANTS FROM MAZON CREEK

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The Natural History Museum of the University of Illinois[1] has had since 1920, two collections of fossil plants made up almost entirely of specimens from the now famous Mazon Creek area near Morris, Illinois. The collectors, L. E. Daniels and J. C. Carr, both resided in Morris, Illinois, when making their respective collections.

From the time these collections were procured by the University, the majority of the specimens remained in storage and for the most part inaccessible for study. At one time, part of the Daniels collection was investigated by A. C. Noé (1925) who published photographs of several specimens.

In order to make the material in the Carr and Daniels collections available for further study all specimens which were well enough preserved were identified and catalogued. The identification of specimens was done by comparing them with those previously figured and described by Zeiller (1888), White (1899), Noé (1925), Hirmer (1927), Bell (1938, 1944), and Janssen (1939, 1941). The generic and specific names were checked with those listed by Jongmans (1913-37).

The first extensive studies of the fossil flora of the Mazon Creek locality were by Lesquereux (1866, 1870). The results of his studies were later incorporated in a comprehensive account of the fossil plants of the American Carboniferous (1879, 1880). In a series of brief reports, White, while a member of the Illinois State Geological Survey, mentioned the occurrence of several genera of fossil plants from Mazon Creek. His observations on the fossil flora of the Pennsylvanian of Illinois resulted in the subdivision of this system into the Pottsville, Carbondale, and McLeansboro groups. Lesquereux's nomenclature (1866, 1870, 1879, 1880) was revised by Noé (1925), with more recent revisions of the fossil flora of Northern Illinois by Janssen (1939, 1941).

The Collections

The majority of the specimens are ironstone concretions with only a few compressions on shale and stem casts. Geographically, the Mazon Creek fossils are still to be found along the so-called Ox Bow of the Mazon River, 6 to 6¾ miles southeast of Morris extending from NE. ¼ sec. 24 to NE. ¼ sec. 25, T. 32 N., R. 7 E. Stratigraphically the concretions, when found in place, lie in the Francis Creek shale just above No. 2 coal of the Lower Carbondale group.

Because of the fragmentary nature of fossil plant remains the problems of their nomenclature and classification are more difficult than for living plants, where complete specimens are available. For this reason paleobotanists are primarily in-

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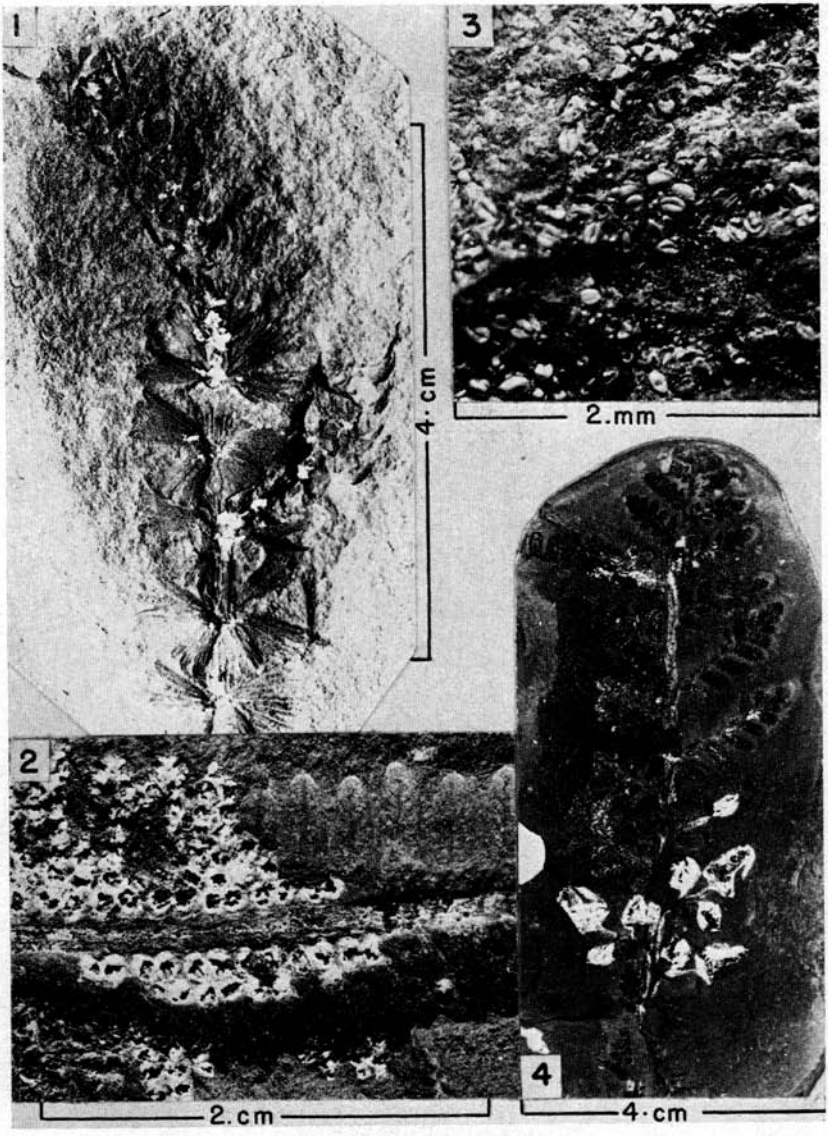

FIG. 1.—Cone-bearing branch of *Sphenophyllum cuneifolium.*

FIG. 2.—Pinna of *Pecopteris* (*Ptychocorpus*) *unita* showing fertile and sterile aspect of a pinnule.

FIG. 3.—Monolete spores of *Codonotheca caduca* in the matrix of a concretion.

FIG. 4.—Pinna of *Crossotheca sagittata* with fertile pinnules intercalary in position.

terested in those specimens which bear reproductive parts and thus indicate something of the natural affinities of the fossil plants. In the Carr and Daniels collections there are many fertile specimens of lycopsids, sphenopsids, and pteropsids. Figures 1-4 show some of the fructifications (see explanation of figures for more complete descriptions) which still contain spores within their sporangia (fig. 3). As is true of all fossil plant remains collected from the Mazon Creek locality, the majority is sterile leaf material of the genera Pecopteris and Neuropteris. Many of these sterile leaf fragments are large enough to show something of the high degree of polymorphism within a frond. A critical examination of this material, not undertaken here, may show that a number of species currently recognized as distinct can be grouped in only a few species.

Of the total number of specimens (4018) in the two collections, 758 belong to the Daniels collection and 3260 to the Carr collection. The combined collections have 103 different species belonging to 51 genera.

List of Genera and Species

(Number of specimens in Carr and Daniels Collections given in parenthesis)

Phylum—*Tracheophyta*
Subphylum—*Lycopsida*
Order—*Lepidodendrales*
Genera and species:
Bothrodendron sp? Lindley and Hutton (1)
Halonia sp? Lindley and Hutton (1)
Knorria sp? Sternberg (1)
Lepidodendron Sternberg (9)
L. aculeatum Sternberg (9)
L. dichotomum Sternberg (1)
L. lanceolatum Lesquereux (4)
L. obovatum Sternberg (25)
L. rigens Lesquereux (5)
L. rimosum Sternberg (2)
L. veltheimi Sternberg (3)
L. wortheni Lesquereux (3)
Lepidophloios sp? Sternberg (5)
L. acerosus Kidston (3)
L. luricinus Sternberg (2)
L. protuberans Lesquereux (1)
Lepidophyllum longifolium Brongniart (5)
Lepidostrobophyllum sp? Hirmer[2] (1)
L. brevifolium (Lesquereux) Hirmer (1)
L. intermedium (Lindley and Hutton) Hirmer (3)
L. lanceolatum (Lindley and Hutton) Hirmer (2)
L. lancifolium (Brongniart) (26)
L. majus (Brongniart) Hirmer (12)
L. ovatifolium (Lesquereux) Hirmer (45)
L. triangulare (Zeiller) Hirmer (7)
Lepidestrobus sp? Brongniart (3)
L. brevifolium Lesquereux (16)
L. brownii ? Schimper (1)
L. hastatus Lesquereux (3)
L. lancifolium Lesquereux (1)
L. oblongifolium Lesquereux (6)
L. triangularis Zeiller (2)
Sigillaria sp? Brongniart (2)
Stigmaria ficoides (Sternberg) Brongniart (10)
Syringodendron sp? Sternberg (4)
Order—*Lycopodiales*
Genus and species:
Lycopodites meeki Lesquereux (16)
Subphylum—*Sphenopsida*
Order—*Sphenophyllales*
Genera and species:
Sphenophyllum cuneifolium[3] Sternberg (1)
S. emarginatum (Brongniart) Koenig (18)
S. longifolium Germar (2)
S. majus (Bronn) Bronn (1)
Order—*Equisetales*
Genera and species:
Annularia sp? Sternberg (8)
A. radiata (Brongniart) Sternberg (127)
A. sphenophylloides (Zenker) Gutbier (32)
A. stellata (Schlotheim) Wood (88)
Asterophyllites sp? Brongniart (57)
A. equisetiformis Schlotheim (13)
A. longifolius (Sternberg) Brongniart (7)
Calamites sp? Schlotheim (16)
C ramosus Artis (2)
C. suckowi Brongniart (6)
Calamostachys sp? Schimper (8)
C. germanica Weiss (1)
C. magna Lesquereux (1)
C. solmsi (Weiss) Weiss (2)
Macrostachya sp? Schimper (2)

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[2] Lepidostrobophyllum. Hirmer, M. 1927—Handbuch der Palaobotanik, Munchen und Berlin; 231. This genus, though a useful one, does not meet the requirements of valid publication according to the International Rules.

[3] This specimen bears two cones. (See fig. 1.)

M. infundibuliformis (Brongniart) Schimper (1)
Pinnularia Lindley and Hutton (4)
Subphylum—Pteropsida
Orders[4]—*Filicales* and *Cycadofilicales*
Genera and species:
Acitheca polymorpha (Brongniart) Schimper (4)
Alethopteris sp? Sternberg (2)
A. ambigua Lesquereux (10)
A. grandini (Brongniart) Goeppert (3)
A. lonchitica (Schlotheim) Unger (3)
A. serli (Brongniart) Goeppert (43)
Alloiopteris sp? Potonié (1)
Aphlebia sp? Presl (66)
Callipteridium sullivanti (Lesquereux) Weiss (17)
Carpolithes sp? Sternberg (4)
Caulopteris sp? Lindley and Hutton (16)
Codonotheca caduca Sellards (27)
Crossotheca sagittata (Lesquereux) Zeiller (63)
Cyclopteris sp? Brongniart (105)
Dactylotheca sp? *Zeiller* (2)
Diplothmema furcatum (Brongniart) Stur (5)
Eremopteris missouriensis Lesquereux (1)
Holcospermum sp? Nathorst (7)
Lagenospermum sp? Nathorst (1)
Linopteris muensteri (Eichwald) Potonié (4)
L. neuropteroides (Gutbier) Potonié (2)
Mariopteris sp? Zeiller (4)
M. decipiens ? Lesquereux (3)
M. mazoniana (Lesquereux) White (1)
M. muricata (Schlotheim) Zeiller (6)
M. muricata var. *nervosa* (Schlotheim) Zeiller (5)
M. sphenopteroides (Lesquereux) White (11)
Mixoneura sp? Weiss (2)
M. ovata (Hoffman) Weiss (10)
Neuropteris sp? Brongniart (23)
N. clarksoni Lesquereux (20)
N. crenulata ? Brongniart (2)
N. fimbriata Lesquereux (1)
N. flexuosa Sternberg (26)
N. gigantea Sternberg (8)
N. heterophylla Brongniart (14)
N. missouriensis Lesquereux (3)
N. rarinervis Bunbury (32)
N. scheuchzeri Hoffman (898)
N. tenuifolia (Schlotheim) Sternberg (26)
N. plicata Sternberg (9)
Odontopteris sp? Brongniart (17)
O. aequalis Lesquereux (8)
O. brardleyi ? Lesquereux (1)
O. schlotheimi Brongniart (2)
O. subcuneata Bunbury (5)
O. wortheni Lesquereux (8)
Oligocarpia sp? Geoppert (1)
Pachytesta sp? Brongniart (3)
Pecopteris sp? Brongniart (24)
P. (Asterotheca) abbreviata Brongniart (53)
P. (Asterotheca) arborescens (Brongniart) Sternberg (214)
P. (Asterotheca) candolleana Brongniart (3)
P. cisti Brongniart (7)
P. clintoni Lesquereux (7)
P. (Asterotheca) crenulata Brongniart (13)
P. (Asterotheca) hemitelioides Brongniart (4)
P. (Asterotheca) miltoni (Artis) Brongniart (651)
P. obliqua Brongniart (5)
P. (Asterotheca) oreopterida Schlotheim (26)
P. (Senftenbergia) pennaeformis (Brongniart) Sternberg (3)
P. (Dicksonites) pluckeneti (Schlotheim) Brongniart (59)
P. (Dactylotheca) plumosa (Artis) Brongniart (6)
P. pseudovestita White (22)
P. (Asterotheca) serpillifolia Lesquereux (33)
P. (Asterotheca) squamosa Lesquereux (19)
P. (Dactylotheca) sturi ? Sterzel (1)
P. (Ptychocarpus) unita Brongniart (545)
Schopfia sp? Janssen (1)
Sphenopteris sp? Brongniart (11)
S. artemisaefoloides Crépin (23)
S. (Oligocarpia) brongniarti (Zeiller) Stur (2)
S. (Renaultia) chaerophylloides (Brongniart) Presl (16)
S. (Renaultia) gracilis (Brongniart) Presl (6)
S. mixta Schimper (2)
S. obtusiloba Brongniart (6)
S. spiniformis Kidston (4)
S. subcrenulata ? Lesquereux (1)
Spiropteris sp? Schimper (13)
Sporangites accuminata ? Dawson (1)
Trigonocarpus sp? Brongniart (10)

Order—*Cordaitales*
Cordaianthus sp? Grand Éury (9)
Cordaicarpus sp? Geinitz (1)
Cordaites grandifolius Lesquereux (2)
Undetermined specimens (61)

[4] It has long been suspected that many of the homosporus fructifications borne on fern-like leaves and now assigned to the Filicales may, in reality, be the microsporangia of heterosporous members of the Cycadofilicales. Furthermore, there are many species with fern-like foliage, now assigned to artificial (form) genera, the reproductive structures of which are unknown. For these reasons it is impossible, in most cases, to assign a species with any degree of certainty to either the Filicales or Cycadofilicales. Thus, it is necessary to group these two orders.

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