

THE PALEOBOTANY OF THE BLOOMINGTON, INDIANA,
QUADRANGLE.

T. F. JACKSON.

The fossil plants herein discussed are, with three exceptions, Pennsylvania forms and were collected principally from two localities in the Bloomington, Indiana, Quadrangle. The greater part of them were obtained from a shale bed about one-fourth mile southeast of the Yoho School. This bed was made up of a succession of thin, bluish-gray clay-shales interstratified with thin sandy layers, with nodules of iron ore irregularly distributed throughout the entire bed. The shale layers were very soft and plastic when wet and both the shale layers and sandy layers were rather hard and very brittle when dry. One of the shale layers was very highly impregnated with iron oxides, and from this layer the best fossils were obtained. The entire bed attains a thickness of eight to nine feet.

The remainder of the Pennsylvanian forms were obtained from a thin, ferruginous sandstone layer and an overlying sandstone layer, about one-fourth mile southeast of Cincinnati. Molds and casts of *Lepidodendron* and *Calamite* forms were collected from the latter. The ferruginous sandstone layer contained a number of *Trigonocarpon* and a few *Carpolithes* forms.

Loose sandstone fragments of fossil plants, apparently of Pennsylvanian age, were noted in a number of places in the southwestern part of the Quadrangle, but, as their exact horizon could not be ascertained, those forms are not included in the following lists of species.

A few fragments of Mississippian forms were noted in the central and northern part of the west half of the Quadrangle. Those plants were very poorly preserved and at but one place were fossils obtained in a state of preservation such that identification was possible. Three species in a fair state of preservation were found in a sandstone layer a few feet above the Mitchell limestone, about one-half mile west of Whitehall.

Although a few of the Pennsylvanian plants examined represent new species and several others differ more or less from previously described forms it is not thought to be advisable to figure and describe those new forms at this time inasmuch as it is planned to include them in a later paper on the flora of the entire Pottsville section as represented in the State.

List of plants from the Yoho School locality:

- Sphenophyllum cuneifolium* (Stb.) Zeill.
- Sphenophyllum bifurcatum* Lx.
- Sphenophyllum tenerrimum?* Ett.
- Asterophyllites erectifolius* And.
- Asterophyllites gracilis* Lx.
- Calamostachys* sp.
- Lepidodendron clypeatum* Lx.
- Lepidodendron* sp.
- Alethopteris Evansii* Lx.
- Alethopteris grandifolia* Newb.
- Alethopteris lonchitica* (Schloth.) Brongn.
- Alethopteris* sp.
- Pecopteris plumosa?* Brongn.
- Pecopteris* sp.
- Neuropteris Elrodi* Lx.
- Neuropteris Jenneyi?* D. W.
- Neuropteris* sp.
- Neuropteris fimbriata* Lx.
- Neuodontopteris?* sp.
- Pseudocopteris decipiens* Lx.
- Sphenopteris* sp.
- Sphenopteris communis* Lx.
- Zeilleria* sp.
- Cardiocarpon annulatum* Newb.
- Cardiocarpon cornutum* Dn.
- Cardiocarpon pachytesta?* Lx.
- Cardiocarpon* sp.
- Rhabdocarpus* sp.
- Carpolithes* sp.

A mere casual inspection of the above list will show the Pottsville aspect of the plants. Of these forms *Sphenophyllum cuneifolium*, *S. bifurcatum*, *S. tenerrimum?*, *Asterophyllites erectifolius*, *A. gracilis*, *Alethopteris Evansi*, *A. grandifolia*, *A. lonchitica*, *Neuropteris Elrodi*, *N. fimbriata*, *N. Jenneyi*, *Pseudocopteris decipiens*, *Shenopteris communis*, *Cardiocarpon annulatum*, *C. cornutum*, *C. pachytesta?*, have not been reported, I believe, from formations younger than Pottsville age. Of those Pottsville forms *Sphenophyllum bifurcatum*, *Alethopteris Evansi*, *A. lonchitica*, *Neuropteris Elrodi*, *N. fimbriata*, and *Cardiocarpon cornutum* were reported by White* as being confined to the Upper Lykens Coal group of the Pottsville type section. *Sphenophyllum cuneifolium* and *Cardiocarpon annulatum* were reported from both the Upper Lykens Coal group and the Upper Intermediate group of the type section. *Alethopteris grandifolia* was reported from the Lower Intermediate group in the type section. The vertical range of several of the remaining forms is either not definitely known or is too great for correlation purposes; the rest of the forms are too poorly preserved for specific classification. Therefore only those forms reported from the Pottsville type sections are considered of value for correlation. A comparison of the list of Pottsville plants from the Yoho School locality with the list of plants from the Pottsville type section indicates that the Pennsylvanian of the Yoho School area represents an horizon in the upper part of the Middle Pottsville of the type section.

List of plants from the Cincinnati locality:

- Calamites approximatus* Schloth.
- Calamites* sp.
- Lepidodendron clypeatum* Lx.
- Lepidodendron* sp.
- Neuropteris lunata?* D. W.
- Lepidophloios* sp.

Of the above listed forms *Calamites approximatus* and *Neuropteris lunata?* have been reported from the Upper Lykens Coal group of the type section of the Pottsville. *Lepidodendron clypeatum* has too great a vertical range to be of value as a horizon marker. The other forms were too

*White, David. The Stratigraphic Succession of the Fossil Floras of the Pottsville Formation in the Southern Anthracite Coal Field, Pennsylvania. 20th Ann. Rep't. U. S. G. S. Part II, 1900.

poorly preserved for accurate classification. Considering only the forms first mentioned it would appear that the Pennsylvanian of the Cincinnati locality would fall within the Middle Pottsville of the type section.

Three Mississippian fossil plants, *Lepidodendron Volkmannianum* St., *Lepidodendron* sp., and a variety of *Stigmaria ficoides* were obtained from the Chester sandstone a few feet above the Mitchell limestone, about one-half mile west of Whitehall.