

PART II.

The Fossil Flora of West Virginia

By DAVID WHITE

The following list includes the species of fossil plants published by various geologists as having been found in the upper Paleozoic and Pleistocene formations of West Virginia. The plant-bearing beds represented belong to the Pocono, the basal formation of the Mississippian ("Lower Carboniferous") series; the Princeton conglomerate member, of Chester age, also in the Mississippian series; several formations in the Pottsville group, the basal division of the Pennsylvanian ("Upper Carboniferous") series; and from various members or beds in the Allegheny, Conemaugh and Dunkard formations which constitute the remainder of the Pennsylvanian and the Permian in the bituminous regions of the Appalachian trough. The Quaternary system is represented by the Carmichaels clay, an interglacial deposit of pre-Wisconsin age.

In West Virginia the fossil plants of some of the formations, like the Allegheny, for example, have received very little attention, and the lists for these formations are accordingly short, while in others, like the Quinnimont and Kanawha (both of Pottsville age), our paleobotanical knowledge is based predominantly on material from this state. The floras of the Conemaugh have had but little study, and their differentiation from those of the Monongahela, on the one hand, or from those of the Allegheny on the other, is therefore at present very incomplete. The composition and characteristics of the plant life of the Monongahela also are but little understood, though it is known that the floras contain much that is present in, though not peculiar to, the Dunkard (basal Permian). The remains of a meager flora occurring near the top of the Greenbrier limestone in West Virginia are wholly unstudied and unrecorded. Consequently they do not appear in the list. Further study will greatly enlarge a number of the lists from formations containing large and interesting floras that are as yet comparatively unstudied.

Many of the names quoted in the accompanying lists are based

on preliminary examinations and are tentative, the collections having in a large number of cases not yet been fully studied.

The differentiation of the floras of the lower Pottsville which Doctor White has called the Pocahontas group; of the middle Pottsville, which he has termed the New River group; and of the upper Pottsville for which he has adopted the name, Beaver River group, is fairly well established. As initial, or invasion, stages the Raleigh sandstone and the Nuttall sandstone lentil of the Sewell formation are logically placed by the writer in the New River and Beaver River groups, respectively, of Dr. White. His Pocahontas and New River groups fall within the time covered by the "Millstone Grit", and the Lower Coal Measures of Great Britain, the Beaver River group being referable approximately to the Middle Coal Measures and the "transition" series of Great Britain, while the Allegheny goes, for the most part, together with the Conemaugh and Monongahela, into the Upper Coal Measures of Great Britain. The beds up to an horizon possibly as high as the base of the Kittanning group of the coals in the Allegheny formation are of Westphalian age, the higher Pennsylvanian beds being of Stephanian age as these periods are defined in Continental Europe.

The Dunkard formation, the division originally proposed by Doctor White in substitution for the "Upper Barren Measures" of the Pennsylvania State Reports, is here used for convenience and conformity with the West Virginia state nomenclature in place of Washington and Greene, the two formations into which the Dunkard has been divided.

The thanks of the writer are due to Doctor White and the other geologists of the State for the stratigraphic references of several of the fossil plant collections made from beds in the Allegheny and Conemaugh formations, the precise stage of these beds not having been determined prior to the detailed areal work now in progress by the State.

Among the species in the list there are many that have not been recorded from localities outside of West Virginia, though most are known to occur in beds of the same age in other parts of the Appalachian coalfields. In order, however, to avoid the description of new species which must necessarily be accompanied by illustrations, thus unduly increasing both the volume and the expense of publication, the list is confined to species already reported from West Virginia, or—as in the cases of Lewis Tunnel in Virginia, or Brown's Mills and Jollytown in Greene County, Pennsylvania—from localities near the state boundary.

The names inscribed in this list are based upon the identifications of a number of geologists and paleontologists and represent not merely the work of different men but also the work of different periods or stages in the growth of our knowledge of the

paleobotany of the upper Paleozoic. The identifications, therefore, represent the diverse points of view and the interpretations of men varying as to their special lines of scientific work, as to their familiarity with fossil floras, and as to their periods of study. The result is the introduction of some incompatible identifications and some confusion in the lists. There are doubtless cases in which the same species is listed under different names, while, in others, plants differing as to species, or even as to genera, are probably recorded under a single name. The results are the records as present of species not present in a given formation and the omission of others. The writer has attempted to eliminate the greater number of the paleobotanical and stratigraphic errors thus introduced. In numerous cases, however, for the sake of conservatism this has not been attempted. Obviously the errors cannot in all cases be eliminated without consultation of the original specimens, which appears to be for the most part impossible.

In the first list, which is systematic and approximately complete, the name of the species is accompanied by the citation of either the place of its original publication or the publication in which the generic combination was first introduced. Other references are to papers relating to the floras of West Virginia. The lists given in Volume II of the State Reports are not cited for the reason that these lists are quoted from a paper of earlier date by the writer (*Bulletin of the Geological Society of America*, vol XI), which is cited. In passing mention should be made of the list of fossil plants of the State printed in Professor Millspaugh's "Preliminary Catalogue of the Flora of West Virginia" (see Bul. 24, W. Va. Agric. Exp. Sta., 1892, pp. 519-527). The fossil plant list in this publication was contributed by America's great patron of paleobotany, R. D. Lacoe, of Pittston, Pa. It is based in part on identifications made by Lesquereux in his last and enfeebled years, and in part on studies made by Mr. Lacoe who was, himself, a high authority on the Paleozoic floras. Lack of comparison of the specimens studied by Fontaine and White is responsible for certain variations in identification.

Full data descriptive of the formations of the Pennsylvanian and Permian in West Virginia, the position of the coals and their stratigraphic relations will be found in Volume II A of the State Reports, to which the reader is referred for all geologic information respecting the plant beds.

SYSTEMATIC LIST OF SPECIES.

ARCHAEOPTERIS ALLEGHANENSIS (Meek) Font. & I. C. White.
Bull. Phil. Soc. Wash., Washington, vol. 1, Appendix VIII,
1874, p. xviii, pl. i, fig. 2 a. b. [Pocono sandstone.]

ARCHAEOPTERIS BOCKSCHIANA (Goeppert) Lesquereux?

Second Geol. Surv. Pa., Rept. Prog. P. (Coal Fl.), vol. 1, 1880, p. 306, pl. xl ix, figs. 1-4. [Pocono sandstone].

ARCHAEOPTERIS cf. STRICTA Andrews.

Rept. Geol. Surv. Ohio, vol. 2, pt. 2, 1875, Palaeont, p. 418, pl. xl ix, figs. 2, 2a. D. White. Bull. Geol. Soc. Am., vol. 11, 1900, p. 162. [Pottsville group: Nuttall sandstone lentil of Sewell formation].

ARCHAEOPTERIS n. sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 318. [Nuttall sandstone lentil of Sewell formation].

TRIPHYLLOPTERIS LESCURIANA (Meek) Fontaine.

Amer. Jour. Sci., 3rd ser., vol. 13, 1877, p. 123. [Pocono sandstone].

TRIPHYLLOPTERIS VIRGINIANA Meek.

Bull. Phil. Soc. Washington, vol. 1. Appendix VIII, 1874, p. xviii. [Pocono sandstone].

This is probably the plant listed by Fontaine (Amer. Jour. Sci., 3rd ser., vol. 7, 1874, p. 578) as *Cyclopteris valida*. It is one of the forms of a polymorphous type, all of which are characteristic of the lower Mississippian.

ANEIMITES cf. TENUIFOLIUS (Goeppert) D. White.

Better known as *Adiantites tenuifolius* (Goppert) Stur. Abh. K.-K. Geol. Reichsanst, vol. 8, No. 1 (Culm-Fl.), pt. 1, 1875, p. 65, pl. xvi, figs. 2, 3. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group: Quinnimont formation].

ANEIMITES ADIANTOIDES (Lindley & Hutton) Bailey.

Mem. Geol. Surv. Ireland, Expl. Sheet 137, Dublin, 1859, p. 12. Described by Lindley & Hutton as *Sphenopteris adiantoides* Foss. Fl. Great Britain, vol. 2, 1834, p. 91, pl. cxv. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 378. [Pottsville group; Clark? and Sewell formations].

ANEIMITES FERTILIS D. White.

Smithsonian Misc. Coll., vol. 47, pt. 3, 1904, p. 323, pl. xl vii. The small fruits bearing the name *Wardia fertilis* are the seeds of *Anemites fertilis*. [Pottsville group; Clark formation]

ANEIMITES (*Adiantites*) sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 313. [Princeton conglomerate (Mississippian)].

EREMOPTERIS ARTEMISIAEFOLIA (Sternberg) Schimper.

Pal. Veg., vol. 1, 1869, p. 416, pl. xxx, fig. 4; Millspaugh, Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 521. [Pottsville group, Kanawha formation].

EREMOPTERIS cf. ELEGANS (Ettingshausen) Lesquereux.

Second Geol. Surv. Pa., Rept. Prog. P. (Coal Fl.), vol. 1, 1880, p. 294, pl. liii, figs. 7, 7a. Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont and Sewell formations].

EREMOPTERIS cf. DECOMPOSITA (Kidston) D. White.

Trans. Roy. Soc. Edinburgh, vol. 30, 1882, p. 538, pl. xxxii, figs. 1, 1a, 4, 5. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 313. [Princeton conglomerate (Mississippian)].

EREMOPTERIS MICROPHYLLA Lesq?

Second Geol. Surv. Pa., Rept. Prog. P. (Coal Fl.) vol. 1, 1880, p. 296, pl. liii, figs. 6, 7, 7a. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation].

EREMOPTERIS CHEATHAMI Lesquereux.

Second Geol. Surv. Pa., Rept. Prog. P. (Coal Fl.), vol. 3, 1884, p. 770, pl. civ, figs. 2-4. [Pottsville group; Sewell formation].

EREMOPTERIS MACILENTA (Lindley & Hutton) D. White?

Known in the literature as *Sphenopteris macilenta* Lindley & Hutton: Foss Fl. Great Britain, vol. 2, 1835, p. 193, pl. cli. Fontaine: Amer. Jour. Sci., New Haven, 3rd ser., vol. II, 1876, p. 381 (identification subject to question). [Pottsville group; Clark and Sewell formations].

EREMOPTERIS cf. SAUVEURI (Crepin) D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation].

EREMOPTERIS cf. LINCOLNIANA D. White.

Twentieth Ann. Rept. U. S. Geol. Survey, 1898-'99, pt. 2, 1900, p. 869, pl. cxcii, figs. 1, 1a. Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation].

EREMOPTERIS n. sp. D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

EREMOPTERIS sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 318. [Pottsville group; Nuttall sandstone lentil of Sewell formation].

CHEILANTHITES TRIFOLIOLATUS (Artis) Goppert.

Nov. Act. Acad. Caes. Leop.—Car., vol. 17, Suppl. (Sys. Fil. Foss.), 1836, p. 245. Better known as *Pseudopeccopteris trifoliolata*. Second Geol. Surv. Pa., Rept. Prog. P. (Coal Fl.), vol. 1, 1880, p. 217, and *Sphenopteris trifoliolata*: Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 59 (50). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, pp. 161, 163. [Pottsville group; Kanawha formation].

CHEILANTHITES OBTUSILOBUS (Brongniart) Goëppert

Nov. Act. Acad. Caes. Leop.—Car., vol. 17, Suppl. (Sys. Fil. Foss.), 1836, p. 246. This is the *Pseudopeccopteris obtusiloba* (Brongniart) of Lesquereux: Second Geol. Surv. Pa., Rept. Progr. P. (Coal Fl.), vol. 3, 1884, p. 753. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. [Cone-maugh formation].

The report of the species by Fontaine (Amer. Jour. Sci. (3), vol. 7, 1874, p. 574) from the Sewell formation is undoubtedly erroneous. It is probable that the Sewell plant is close to, if not identical with, that described by Lesquereux (Coal Flora, vol. 3, 1884, p. 770, pl. civ, figs. 2-4) as *Eremopteris Cheathami*.

CHEILANTHITES OBTUSILOBUS VAR. DILATATA (Lesquereux).

The *Pseudopeccopteris obtusiloba dilatata* (Lesquereux) Lacoe: Cat. Palaeoz. Plts. N. Amer., Pittston, 1884, p. 9. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation].

CHEILANTHITES SOLIDUS D. White.

This is the *Sphenopteris solidia* of Lesquereux: Second Geol. Surv. Pa., Rept. Progr. P., vol. 3, 1884, p. 759, pl. ci, fig. 3. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. [Pottsville group; Kanawha formation]. [Also in Cone-maugh formation].

CHEILANTHITES SQUAMOSUS (Lesquereux) D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. This species, first described by Lesquereux as *Pecopteris squamosa*, has generally been recorded in the American literature as *Pseudopeccopteris anceps*. It is possibly indistinguishable from the European plant known as *Pecopteris sphenoptcroides*. [Allegheny and Conemaugh formations].

CHEILANTHITES cf. NUMMULARIUS (Gutbier) D. White.

This is the *Pseudopeccopteris cf. nummularia* (Gutbier) of Lesquereux: Second Geol. Surv. Pa., Rept. Progr. P., (Coal Fl.), vol. 3, 1884, p. 751, pl. ciii, figs. 1-3. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 168. [Pottsville group; Kanawha formation].

DIPLOTHMEMA PACHYDERMA (Fontaine & I. C. White) D. White.

The *Odontopteris pachyderma* of Fontaine and I. C. White: Second Geol. Surv. Pa., Rept. Prog. PP., 1880, p. 53, pl. x, figs. 5-10. [Dunkard formation (Permian).].

DIPLOTHMEMA cf. JACQUOTI ZEILLER.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.]

MARIOPTERIS POTTSVILLEA D. White. Twentieth Ann. Rept. U. S. Geol. Surv. 1898-'99, pt. 2, 1906.

This is the plant listed as *Pseudopeccopteris muricata*

(Schlotheim) Lesquereux "form." by D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

This species is everywhere present in the upper part of the lower Pottsville.

MARIOPTERIS POTTSVILLEA VAR. The plant listed as *Pseudopeccopteris muricata* form. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]

MARIOPTERIS INFLATA (Newberry) D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

MARIOPTERIS PYGMAEA D. White.

Twentieth Ann. Rept. U. S. Geol. Surv., 1898-'99, pt. 2, 1900, p. 876, pl. cxvii, figs. 2-6. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 162. [Pottsville group; Kanawha formation.]

MARIOPTERIS SILLIMANNI (Brongniart) D. White.

Nineteenth Ann. Rept. U. S. Geol. Surv., 1897-1898 [1899], p. 479. D. White, Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. [Allegheny and Conemaugh formations.]

MARIOPTERIS MURICATA (Schlotheim) Zeiller.

Expl. Carte Geol. France, Paris, vol. 4, Atlas, 1878, pl. clxvii, fig. 5; text 1879, p. 71. D. White, Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation, and Nuttall sandstone lentil of Sewell formation.]

MARIOPTERIS ACUTA (Brongniart) Zeiller.

Bull. Soc. Geol. France (3), vol. 7, 1879, p. 98. Recorded as *Pseudopeccopteris acuta* (Brongniart) by Lesquereux: Second Geol. Surv. Pa., Rept. Progr. P. (Coal. Fl.), vol. 1, 1880, p. 215, pl. xxxvii, fig. 6. D. White, Bull. Geol. Soc. Am., vol. 6, 1895, p. 318. [Pottsville group; Nuttall sandstone lentil of Sewell formation, and the Kanawha formation.]

MARIOPTERIS ANDRAENA (v. Roehl.) D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 163 [Pottsville group; Kanawha formation].

MARIOPTERIS LATIFOLIA (Brongniart) Zeiller?

Mem. Soc. Geol. Nord, Lille, vol. 1, No. 3, 1882, p. 5. This is the *Pseudopeccopteris latifolia* (Brong.) Lesq. form.. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation and Kanawha formation.]

MARIOPTERIS cf. DIMORPHA (Lesquereux) D. White. This is the *Pseudopeccopteris dimorpha* Lesquereux: Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 1, 1880, p. 201, pl.

xxxv, figs. 1-6. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

MARIOPTERIS SPHENOPTEROIDES (Lesquereux) Zeiller. n. var.

Fl. foss. Bass. Houill. Valenciennes, Paris, Atlas, 1886, pl. xix, figs. 3, 4; text 1888, p. 171. D. White, Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.] [Also in Allegheny formation.]

MARIOPTERIS NERVOSA (Brongniart) Zeiller.

Expl. Carte Geol. France, Paris, vol. 4, Atlas, 1878, pl. clxvii, figs. 1-4; text 1879, p. 69. D. White, Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.] [Also in the Allegheny and Conemaugh formations.]

MARIOPTERIS NEWBERRYI (Lesquereux) D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. [Allegheny formation.]

MARIOPTERIS? SPINULOSA (Lesquereux) D. W.

This is the *Pseudopeccopteris spinulosa* of Lesquereux: Second Geol. Surv. Pa., Rept. Progr. P., 1880, p. 195, pl. lvi, fig. 1. Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 525. [Conemaugh formation.]

SPHENOPTERIS (Crossotheca) OPHIOGLOSSOIDES (Lesquereux) D. White.

Bull. Geol. Soc. Am., vol. 8, 1896 [1897], p. 300 [Sorocladus]. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. [Allegheny and Conemaugh formations.]

SPHENOPTERIS SPINOSA Goppert.

Gatt. Foss. Pflanzen, pts. 3 & 4, 1842, p. 104, pl. xii. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

SPHENOPTERIS PATENTISSIMA (Ettingshausen) Schimper.

Pal. Veg., vol. 1, 1869, p. 407. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

SPHENOPTERIS cf. ROVI Lesquereux, Second Geol. Surv. Pa., Rept. Prog. P. (Coal Fl.), vol. 3, 1884, p. 768, pl. civ, figs. 7-10. [Pottsville group; Sewell formation.]

SPHENOPTERIS FURCATA Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 59 (50). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

SPHENOPTERIS ELEGANS (Brongniart) Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xv. pl. xxiii, fig. 2. Millspaugh, Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 527. [Pottsville group; Kanawha formation.]

SPHENOPTERIS DISTANS Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xvi. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 313. [Princeton conglomerate (Mississippian).]

SPHENOPTERIS DIVARICATA of Lesquereux.

Second Geol. Surv. Pa., Rept. Prog. P (Coal Fl.), vol. 3, 1884, p. 767, pl. civ, fig. 6. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

A plant doubtfully referred to the same species occurs in the Nuttall sandstone lentil of the Sewell formation.

SPHENOPTERIS cf. GOEPPERTI (Ettingshausen) Schimper.

Pal. Veg., vol. 1, 1869, p. 412. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

SPHENOPTERIS HOENINGHAUSII Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 60 (51). D. White: Smithsonian Misc. Coll. (Quarterly Issue), vol. 47, pt. 3, 1905, p. 383, pl. liii, fig. 2. [Pottsville group; Clark, Quinnimont and Sewell formations.]

SPHENOPTERIS RARINERVIS Fontaine.

Am. Jour. Sci. (3), vol. 11, 1876, p. 381. [Pottsville group; Clark formation.]

SPHENOPTERIS cf. LINEARIS Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xv, pl. xlvi, fig. 4. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 162. [Pottsville group; Kanawha formation.]

SPHENOPTERIS SUBGENICULATA (Stur) Rothpletz.

Botanisches Centralblatt, Cassel, vol. 1-2, 1880, III, Gratis-Beilage, No. 1, p. 14, pl. iii, fig. 17. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 313. [Princeton conglomerate (Mississippian).].

SPHENOPTERIS cf. GENICULATA Germar & Kaulfuss.

Nov. Act. Acad. Caes. Leop-Car., vol. 15, pt. 2, 1831, p. 224, pl. lxv, fig. 2. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.]

SPHENOPTERIS sp. cf. HILDRETI Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 1, 1880, p. 283. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.]

SPHENOPTERIS cf. TRICHOMANOIDES Brongniart.

Hist. Veg. Foss., Paris, vol. 1, 1829, p. 182, pl. xlvi, fig. 3. D. White: Bull. Geol. Surv. Am., vol. 11, 1900, p. 169 [Pottsville group; Kanawha formation.]

SPHENOPTERIS LINKII (Goeppert) Presl.

In Sternberg, Flora d. Vorwelt, vol. 2 (Versuch), pts. 7 & 8, 1838, p. 132. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

SPHENOPTERIS TRACYANA Lesquereux?

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 3, 1884, p. 766, pl. ci, fig. 2. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

SPHENOPTERIS TENELLA Brongniart.

Hist. Veg. Foss., Paris, vol. 1, 1829, p. 186, pl. xlix, fig. 1. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

SPHENOPTERIS (ZELLERIA) DELICATULA Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xvi, pl. xxvi, fig. 5. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.]

SPHENOPTERIS FLEXICAULIS Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 1, 1880, p. 284. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]

SPHENOPTERIS cf. LARISCHII (Stur) Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 1, 1880, p. 288, pl. iv, figs. 7, 7a. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]

SPHENOPTERIS HYMENOPHYLLOIDES Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 60 (51). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

SPHENOPTERIS PINNATIFIDA (Lesquereux) D. White.

Bull. Geol. Soc. Am., vol. 8, 1896 [1897], p. 291. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Allegheny formation.]

SPHENOPTERIS DICKSONIOIDES (Goeppert) Schuetze, form.

Abh. Geol. Speciafk. Preuss., vol. 4, No. 4, 1882, p. 22. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinimont formation.]

SPHENOPTERIS KARWINENSIS Stur.

Verh. K.-K. Geol. Reichsanst., 1874, p. 299. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

SPHENOPTERIS cf. DUBUSSONIS Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 60 (51). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

SPHENOPTERIS MINUTI-SECTA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 43, pl. v, figs. 1-4. [Conemaugh formation; and Dunkard formation (Permian).]

SPHENOPTERIS (*Renaultia*) MICROCARPA Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. I, 1880, p. 280, pl. xlvii, figs. 2-2b. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont, Sewell, and Kanawha formations.]

SPHENOPTERIS SCHATZLARENSIS Stur.

Abh. K.-K. Geol. Reichsanst., vol. 8, No. 2 (Culm. Fl., pt. 2), 1877, p. 321 (427). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, pp. 161, 163. [Pottsville group; Kanawha formation.]

SPHENOPTERIS CHAEROPHYLLOIDES (Brongniart) Presl.

In Sternberg, Flora d. Vorwelt, vol. 2 (Versuch), pts. 7 & 8, 1838, p. 131. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. [Allegheny formation.]

SPHENOPTERIS BREVILOBA (Fontaine & I. C. White) D. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 86, pl. xxxi, fig. 3. [Dunkard formation (Permian).]

SPHENOPTERIS FORMOSA (Fontaine & I. C. White) D. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 86, pl. xxxi, figs. 1-2. [Dunkard formation (Permian).]

SPHENOPTERIS LOBATA (Fontaine & I. C. White) D. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 87, pl. xxxi, fig. 4. [Dunkard formation (Permian).]

SPHENOPTERIS OBTUSILOBA (Fontaine & I. C. White) D. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 85, pl. xxxi, figs. 5-6. [Dunkard formation (Permian).]

SPHENOPTERIS cf. BROADHEADI D. White.

Mon. U. S. Geol. Survey, vol. 37, 1899, p. 41, pl. xiii, figs. 1, 2. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

SPHENOPTERIS LESCURIANA Fontaine & I. C. White.

Second Geol. Survey Pa., Rept. Prog. PP, 1880, p. 44, pl. vi, fig. 1; pl. vii, figs. 1, 2. [Dunkard formation (Permian).]

SPHENOPTERIS DENTATA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 42, pl. v, figs. 7-8. [Dunkard formation (Permian).]

SPHENOPTERIS AURICULATA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 42, pl. vii, figs. 3-4. [Dunkard formation (Permian).]

SPHENOPTERIS FOLIOSA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 44, pl. v, figs. 9-11. [Dunkard formation (Permian).]

SPHENOPTERIS PACHYNERVIS Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 46, pl. vii, figs. 5-6. [Dunkard formation (Permian).]

SPHENOPTERIS HASTATA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 46, pl. vii, fig. 7. [Dunkard formation (Permian).]

SPHENOPTERIS ACROCARPA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 40, pl. iii, figs. 1-3; pl. iv, figs. 1-5. [Dunkard formation (Permian).]

SPHENOPTERIS sp.? Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 42, pl. xi, figs. 5-7. [Dunkard formation (Permian).]

SPHENOPTERIS cf. CANNELTONENSIS D. White.

Mon. U. S. Geol. Surv., vol. 37, 1899, p. 55, pl. xv, fig. 2. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.]

SPHENOPTERIS MIXTA Schimper.

Pal. Veg., vol. 1, 1869, p. 382. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.] [Also in Allegheny formation.]

SPHENOPTERIS cf. STIPULATA Gutbier.

In Reichenbach, Gaa von Sachs. (Verst. Obersachsen), 1843, p. 74. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Allegheny formation.]

SPHENOPTERIS COMMUNIS Lesquereux.

Second Geol. Surv. Pa., Rept. Prog. P (Coal Fl.), vol. 3, 1884, p. 762, pl. civ, figs. 1, 1a. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]

SPHENOPTERIS sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 313. [Princeton conglomerate (Mississippian).]

SPHENOPTERIS n. sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 314. Near. Pocahontas coal. [Pottsville group; Clark formation.]

OLIGOCARPIA ALABAMENSIS Lesquereux?

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 1, 1880, p. 266, pl. xlvi, figs. 1-1b. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.]

OLIGOCARPIA sp. D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.]

SPHENOPTERIS (*Crossotheca*) **SAGITTATUS** (Lesquereux) D. White.
Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Allegheny formation.]

SPHENOPTERIS (*Crossotheca*) **OPHIOGLOSSOIDES** (Lesquereux) D. White.

Bull. Geol. Soc. Am., vol. 8, 1896 [1897], p. 300. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.] [Also in Allegheny formation.]

SPHENOPTERIS (*Crossotheca*) N. SP. *cf. CREPINI* Zeiller.

Bull. Soc. Geol. de France, 3rd ser., vol. 12, 1884, p. 194. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.]

PECOPTERIS PLUCKENETI Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xix. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, p. 67, pl. xxi, figs. 4-5. [Conemaugh formation; and Dunkard formation (Permian).]

PECOPTERIS PLUCKENETI var. **CONSTRICTA** Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 68, pl. xxi, fig. 8. [Dunkard formation (Permian).]

PECOPTERIS GERMARI (Weiss) Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 68, pl. xix, figs. 1-7. [Dunkard formation (Permian).]

PECOPTERIS GERMARI var. **CRASSINERVIS** Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 70, pl. xx, fig. 5. [Dunkard formation (Permian).]

PECOPTERIS GERMARI var. **CUSPIDATA** Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 70, pl. xx, fig. 4. [Dunkard formation (Permian).]

PECOPTERIS PLUMOSA (Artis) Sternberg?

Flora, Regensburg, vol. 1, 1827, p. 137. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation, and Nuttall sandstone lentil of the Sewell formation.]

PECOPTERIS (?) **SERRULATA** (Dawson) Hartt, Dawson. Acad.

Geol., London, 2d Ed., 1868, p. 553, text-fig. 192K. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]

PECOPTERIS DENTATA Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 67 (58). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Allegheny formation.]

PECOPTERIS DENTATA var. *PARVA* Fontaine & I. C. White.

Second Geol. Survey Pa., Rept. Progr. PP, 1880, p. 67, pl. xxii, fig. 2. Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 524. [Dunkard formation (Permian).]

PECOPTERIS DENTATA var. *CRENATA* Fontaine & I. C. White.

Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 66, pl. xxii, figs. 1-5. [Dunkard formation (Permian).]

PECOPTERIS ASPERA Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 67 (58). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.]

PECOPTERIS PACHYPTEROIDES Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 76, pl. xxvi, figs. 1-4. [Dunkard formation (Permian).]

PECOPTERIS UNITA Brongniart (not *P. unita* (F. & I. C. W.) D. W.)

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 67 (58). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. [Allegheny and Conemaugh formations.]

PECOPTERIS EMARGINATA (Goeppert) Presl.

In Sternberg, Flora d. Vorwelt, vol. 2 (Versuch), pts. 7 & 8, 1838, p. 158. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 82. [Allegheny formation.] [Dunkard formation (Permian).]

PECOPTERIS (Goniopteris) OBLONGA (Fontaine & I. C. White) Miller.

Am. Pal. Foss., Supplement, 1883, p. 255. [Dunkard formation (Permian).]

PECOPTERIS (Goniopteris) NEWBERRYANA (Fontaine & I. C. White) Miller.

Am. Pal. Foss., Supplement, 1883, p. 255. Identified by Zeiller as *P. foeminaeformis* (Schloth.) (Zeill.) var. *diplozioides*. [Dunkard formation (Permian).]

PECOPTERIS (Goniopteris) LONGIFOLIA (Fontaine & I. C. White) D. White.

Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 82. [Dunkard formation (Permian).]

PECOPTERIS (Goniopteris) ELLIPTICA (Fontaine & I. C. White) D. White.

Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 83, pl. xxx, fig. 1. [Dunkard formation (Permian).]

PECOPTERIS (*Goniopteris*) sp? Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 83, pl. xvii, fig. 6. [Dunkard formation (Permian).]

PECOPTERIS (*Goniopteris*) ARGUTA (Brongn.) Schimp.

Pal. Veg., vol. 1, 1869, p. 543. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 82. [Dunkard formation (Permian).]

PECOPTERIS GONIOPTEROIDES Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 80, pl. xxv, fig. 2. [Dunkard formation (Permian).]

PECOPTERIS (GONIOPTERIS) ELEGANS (Germar) Schimper.

Pal. Veg., vol. 1, 1869, p. 542. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 82. [Dunkard formation (Permian).]

PECOPTERIS ARBORESCENS (Schlotheim) Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 65 (56). Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 62. [Dunkard formation (Permian).]

PECOPTERIS ARBORESCENS var. INTEGRIPINNA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 63, pl. xxvii, fig. 6. [Dunkard formation (Permian).]

PECOPTERIS MICROPHYLLA Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 67 (58). Lacoe in Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 524. [Dunkard formation (Permian).]

PECOPTERIS NODOSA (Goeppert) Schimper.

Pal. Veg., vol. 1, 1869, p. 500, pl. xli, fig. 14. Lesquereux: Second Geol. Survey Pa., Rept. Progr. P (Coal Fl.), vol. 3, 1884, p. 872. [Conemaugh formation.]

PECOPTERIS VESTITA Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 1, 1880, p. 252, pl. xlili, figs. 1-7. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. [Allegheny formation.]

PECOPTERIS VILLOSA Brongniart?

Hist. Veg. Foss., Paris, vol. 1, 1834, p. 315, pl. civ, fig. 3. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Allegheny and Conemaugh formations.]

PECOPTERIS PENNAEFORMIS var. LATIFOLIA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 65, pl. xvii, figs. 4, 5. [Dunkard formation (Permian).]

PECOPTERIS CANDOLLEANNA Brongn.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 65 (56). Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 63, pl. xx, figs. 1, 2, 3. [Dunkard formation (Permian).]

PECOPTERIS OREOPTERIDIA (Schlotheim) Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xix. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 64. [Dunkard formation (Permian).] [Allegheny and Conemaugh formations.]

PECOPTERIS RARINERVIS Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 71, pl. xx, figs. 6, 7, 8. [Dunkard formation (Permian).]

PECOPTERIS IMBRICATA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 72, pl. xxiii, fig. 1. [Dunkard formation (Permian).]

PECOPTERIS IMBRICATA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 72, pl. xxiii, fig. 1. [Dunkard formation (Permian).]

PECOPTERIS PLATYNERVIS Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 73, pl. xviii, figs. 1-6. [Dunkard formation (Permian).]

PECOPTERIS ASPLENIOIDES Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 72, pl. xxv, fig. 1. [Dunkard formation (Permian).]

PECOPTERIS ROTUNDILOBA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 74, pl. xvii, fig. 2. [Dunkard formation (Permian).]

PECOPTERIS ANGUSTIPINNA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 76, pl. xxvii, figs. 1-3. [Dunkard formation (Permian).]

PECOPTERIS TENUINERVIS Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 77, pl. xxviii, figs. 1-4. [Dunkard formation (Permian).]

PECOPTERIS SUB-FALCATA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 70, pl. xxi, figs. 1-2. [Dunkard formation (Permian).]

PECOPTERIS HEERIANA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 77, pl. xxv, figs. 3-7. [Dunkard formation (Permian).]

PECOPTERIS SCHIMPERIANA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 75, pl. xxiv, figs 1-5. [Dunkard formation (Permian).]

PECOPTERIS LANCEOLATA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 79, pl. xxix, figs. 7, 8, 9. [Dunkard formation (Permian).]

PECOPTERIS INCLINATA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 80, pl. xxix, fig. 4. [Dunkard formation (Permian).]

PECOPTERIS NOTATA Lesquereux.

Boston Jour. Nat. Hist., vol. 6 (New Spec. Foss. Plts Anthr.), 1854, p. 424. Fontaine & I. C. White: Second Geol Surv. Pa., Rept. Progr. PP, 1880, p. 68. [Monongahela formation.]

PECOPTERIS MERIANIOPTEROIDES Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 78, pl. xxix, figs. 1-2. [Dunkard formation (Permian).]

PECOPTERIS ROTUNDIFOLIA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 73, pl. xxiv, fig. 6. [Dunkard formation (Permian).]

PECOPTERIS SP.? Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 80, pl. xxvii, figs. 4, 5, 7. [Dunkard formation (Permian).]

PECOPTERIS SP. cf. INTEGRA (Andrae) Schimper.

Pal. Veg., vol. 1, 1869, p. 530. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

PECOPTERIS N. SP. cf. CRENULATA Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 66 (57). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.]

PECOPTERIS OVOIDES Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 79, pl. xxix, fig. 3. [Dunkard formation (Permian).]

PECOPTERIS LATIFOLIA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 79, pl. xxix, figs. 5-6. [Dunkard formation (Permian).]

PECOPTERIS cf. JENNEYI D. White.

Mon. U. S. Geol. Surv., vol. 37 (Fl. Low. Coal. Meas. Mo.), 1899, p. 80, pl. xxxvi, figs. 1, 2. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. [Conemaugh formation.]

PECOPTERIS PTEROIDES Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 65 (57). Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 67. [Dunkard formation (Permian).]

PECOPTERIS MILTONI (Artis) Sternberg.

Flora, Regensburg, vol. 1, 1827, p. 137. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 65, pl. xxiii, figs. 2, 3. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 170. [Allegheny & Conemaugh formations.] [Dunkard formation (Permian).]

PECOPTERIS POLYMORPHA Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 65 (56). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 172. [Conemaugh formation.] [Dunkard formation (Permian).]

PECOPTERIS ELLIPTICA Bunbury.

Quart. Jour. Geol. Soc. London, vol. 2, 1845, p. 84, pl. vii. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 64, pl. xvii, fig. 1. [Dunkard formation (Permian).]

PECOPTERIS (*Callipteridium*) GRANDIFOLIA (Fontaine & I. C. White) D. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 58, pl. xv, figs. 1-4; pl. xvi, figs. 2-4. D. White: Bull. Geol. Soc. Am., vol. 14, 1904, p. 540. [Dunkard formation (Permian).]

PECOPTERIS (*Callipteridium*) OBLONGIFOLIA (Fontaine & I. C. White) D. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 56, pl. xii, figs. 1-5. [Dunkard formation (Permian).]

PECOPTERIS (*Callipteridium*) ODONTOPTEROIDES (Fontaine & I. C. White) D. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 59, pl. xvi, fig. 1. D. White: Bull. Geol. Soc. Am., vol. 14, 1904, p. 539. [Dunkard formation (Permian).]

PECOPTERIS (*Callipteridium*) UNITA (Fontaine & I. C. White) D. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 60, pl. xiv, figs. 2, 3. [Dunkard formation (Permian).]

PECOPTERIS (*Callipteridium*) DAWSONIANANA (Fontaine & I. C. White) D. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 56, pl. xiii, figs. 1-2; pl. xiv, fig. 1. D. White: Bull. Geol. Soc. Am., vol. 14, 1904, p. 539. [Dunkard formation (Permian).]

PECOPTERIS SP. D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 172. [Conemaugh formation].

ALETHOPTERIS DECURRENS (Artis) Sternberg.

Flora, Regensburg, vol. 1, 1827, p. 138. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group: Kanawha formation.] Characteristic of the middle and upper Pottsville.

ALETHOPTERIS AQUILINA (Schlotheim) Goeppert.

Nov. Acta Acad. Caes. Leop. Car., vol. 17, Suppl. (Syst. Fil. Foss.), 1836, p. 298. Lacoë in Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 519. [Conemaugh formation.]

ALETHOPTERIS LONCHITICA (Schlotheim) Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xxi. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group: Sewell? and Kanawha formation].

Characteristic of the upper Pottsville. The typical form is unknown in the Allegheny or later beds.

ALETHOPTERIS SERLII (Brongniart) Goeppert.

Nov. Act. Acad. Caes. Leop. Car., vol. 17, Suppl. (Sys. Fil. Foss.) 1836, p. 301, pl. xxi, figs. 6-7. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161.

Species mainly confined to the Allegheny and upper Pottsville formations. [Pottsville group; Kanawha formation]. [Conemaugh formation].

ALETHOPTERIS SERLII VAR. EUROPAEA (Brongniart) Goeppert.

Nov. Act. Acad. Caes. Leop. Car., vol. 17, 1874, Suppl. (Sys. Fil. Foss.), 1836, p. 301. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 7, 1874, p. 574; ibid, vol. 11, 1876, p. 379. [Pottsville group; Sewell formation].

This species is near *Alethopteris helenae*, Lesquereux (Geol Surv. Alabama, Rept. Prog., 1875 [1876], p. 77), a type known only in the Pottsville. It is probably the plant listed by Fontaine as *Alethopteris Serlii*.

ALETHOPTERIS SERLII VAR. AMERICANA (Brongniart) Goeppert

Nov. Act. Acad. Caes. Leop. Car., vol. 17, Suppl. (Sys. Fil. Foss.), 1836, p. 301. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 7, 1874, p. 574. [Pottsville group; Sewell formation].

ALETHOPTERIS MASSILIONIS (Lesquereux) D. White.

Second Geol. Surv. Pa., Rept. Prog. P, 1880, p. 173. Lacobé, in Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta, Morgantown, 1892, p. 520. [Pottsville group; Kanawha formation].

ALETHOPTERIS *cf.* GRANDIFOLIA Newberry.

Ann. Sci., Cleveland, vol. 1, 1853, p. 107. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 379. [Pottsville group; Clark formation].

ALETHOPTERIS EVANSII Lesquereux.

Second. Geol. Surv. Pa., Rept. Prog. P, (Coal Fl.), vol 3, 1884, p. 834. D. White: Bull. Geol. Soc. Amer., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation].

ALETHOPTERIS *cf.* AMBIGUA Lesquereux.

In I. C. White: Geol. Surv. Pa., Rept. Prog. Q, 1875 [1878], p. 54. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 318. [Pottsville group; Nuttall sandstone lentil of Sewell formation].

ALETHOPTERIS PENNSYLVANICA Lesquereux.

Boston Jour. Nat. Hist., vol. 6, 1854, p. 433. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 172. [Allegheny formation].

ALETHOPTERIS VIRGINIANA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 88, pl. xxxii, figs. 1-5; pl. xxxiii, figs. 1-4. [Dunkard formation (Permian).]

ALETHOPTERIS GIGAS (Gutbier) Geinitz.

Leitpfl. Rothl. u. Zechst. Sachsen, 1858, p. 12, pl. i, figs. 2-3. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 89, pl. xxxiii, figs. 5-6. [Dunkard formation (Permian).]

ALETHOPTERIS SP. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation].

ALETHOPTERIS SP. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Clark formation].

CALLIPTERIDIUM SP. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation].

CALLIPTERIDIUM INAEQUALE Lesquereux.

Second Geol. Surv. Pa., Rept. Prog. P, 1880, p. 168, pl. xxxiii, figs. 2-5. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 172. [Allegheny formation].

CALLIPTERIS CONFERTA (Sternberg) Brongniart.

Dict. Univ. Hist. Nat., vol. 13 (Tableau), 1849, p. 66 (17). Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 54, pl. xi, figs. 1-4. [Dunkard formation (Permian).]

CALLIPTERIS LYRATIFOLIA VAR. CORIACEA (Fontaine & I. C. White) D. White.

This is the *Sphenopteris coriacea* of Fontaine and I. C. White: Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 41, pl. v, figs. 5-6. D. White: Bull. Geol. Soc. Am., vol. 14, 1903, p. 539. [Dunkard formation (Permian).]

CALLIPTERIS CURRETIENSIS Zeiller.

In Mouret: Bass. Houill. Perm. Brive (Stratigr., pt. 1), 1891, p. 83. D. White: Bull. Geol. Soc. Am., vol. 14, 1903, p. 539; W. Va., Geol. Surv., vol. 2, 1903, p. 120. [Dunkard formation (Permian).]

CARDIOPTERIS FRONDOSA (Goeppert) Schimper?

Pal. Veg., vol. 1, 1869, p. 453, pl. xxv. Lacoë in Millsbaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 521. The identification of this species is very doubtful. [Pocono sandstone].

MEGALOPTERIS SP. D. White.

Am. Jour. Sci., 3rd ser., vol. 11, 1876, p. 383. [Pottsville group; Kanawha formation].

MEGALOPTERIS cf. DAWSONI (Hartt) Andrews.

Rept. Geol. Surv. Ohio, vol. 2, pt. 2, Palaeont., 1875, p. 415. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation].

MEGALOPTERIS SEWELLENSIS Fontaine.

Am. Jour. Sci., 3rd ser., vol. 11, 1876, p. 383. [Pottsville group; Sewell formation].

MEGALOPTERIS SEWELLENSIS Fontaine.

Am. Jour. Sci., 3rd ser., vol. 11, 1876, p. 383. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation].

MEGALOPTERIS HARTII Andrews.

Rept. Geol. Surv. Ohio, vol. 2, pt. 2, Palaeont., 1875, p. 416, pl. xlvi, figs. 1, 1a. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 382. Probably the species earlier listed by Fontaine as *M. Dawsonii* (Amer. Jour. Sci., vol. 7, 1874, p. 574. [Pottsville group; Sewell formation].)

TAENIOPTERIS LESCURIANA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 91, pl. xxxiv, fig. 9. [Dunkard formation (Permian).]

TAENIOPTERIS NEWBERRIANA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 91, pl. xxxiv, figs. 1-8. [Dunkard formation (Permian).]

TAENIOPTERIS NEWBERRIANA VAR. ANGUSTA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, pl. xxxiv, fig. 8. [Dunkard formation (Permian).]

NEUROPTERIS POCAHONTAS D. White.

Twentyith Ann. Rept. U. S. Geol. Surv., 1898-'99, pt. 2, 1900, p. 888, pl. clxxxix figs. 4, 4a; pl. xcxi, figs. 5, 5a. [Pottsville group; Clark and Thurmond formations].

Type characteristic of the Pocahontas or lowest Pottsville. It gave rise to numerous variations, several of which are distinct species. In the upper part (Quinnimont formation) of the lower Pottsville it is replaced by a group of forms, generally listed as *N. Smithii* Lesq. (see below), while in the middle Pottsville it is followed by forms probably indistinguishable from *N. Schlehani* Stur.

NEUROPTERIS SMITHII Lesquereux.

Geol. Surv. Alabama, Rept. Prog. 1875 [1876], p. 76. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 314. [Pottsville group; Clark and Quinnimont formations].

This species, everywhere present in the lower Pottsville, and represented by derivatives in the middle Pottsville, belongs to the group referred by European paleobotanists to *Neuropteris Schlehani*.

NEUROPTERIS SCHLEHANI Stur. var. D. White.

Abh. K. K. Geol. Reichsanst., vol. 8, No. 2 (Culm. Fl., pt. 2), 1877, p. 183 (289), pl. xi, figs. 7, 8a-c. [Pottsville group; Sewell formation].

NEUROPTERIS BIFORMIS Lesquereux (form) D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation].

NEUROPTERIS ELRODI Lesquereux (form) D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation].

NEUROPTERIS TENUIFOLIA (Schlotheim) Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xvii. [Pottsville group; Clark formation].

Species characteristic of the upper Pottsville, especially the Mercer group. The plant referred by Fontaine (Amer. Jour. Sci., New Haven, vol. 11, 1876, p. 380), to this species is undoubtedly referable to the *N. Smithii* type.

NEUROPTERIS FLEXUOSA Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xvi, pl. xxxii, fig. 2, D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Kanawha formation.]

Abundant in the Kanawha formation and the Mercer coal group. The species from the Dunkard formation listed (Second Geol. Surv. Pa., Rept. Prog. PP, p. 49), under this name is quite distinct.

NEUROPTERIS PLANCHARDI VAR. LONGIFOLIA (Fontaine & I. C. White) D. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 49, pl. viii, fig. 1. D. White: Bull. Geol. Soc. Am., vol. 14, 1903 [1904], p. 540. [Dunkard formation (Permian).]

This variety is specifically distinct from *N. flexuosa*.

NEUROPTERIS LINDLEYANA Sternb., VAR. Fontaine.

Am. Jour. Sci., 3rd ser., vol. 11, 1876, p. 381. [Pottsville group; Quinnimont formation].

The species listed under this name is probably the *N. Pocahontas* D. White.

NEUROPTERIS RARINERVIS Bunbury.

Quart. Jour. Geol. Soc., London, vol. 3, 1847, p. 425, pl. xxii. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation]. [Also in Allegheny formation].

Plant unknown below the "Mercer Coal group" and upper Kanawha.

NEUROPTERIS SP. cf. GIGANTEA Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xvii, pl. xxii. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 163. [Pottsville group; Kanawha formation.]

Type is strictly Pottsville.

NEUROPTERIS OVATA Hoffman.

Teutschl. geogn. geol. dargest., Weimar, vol. 4, 1826, p. 159, pl. 1b, figs. 5-8. D. White: Bull. Geol. Soc. Am., vol.

II, 1900, p. 169. [Pottsville group; Kanawha formation.] [Also in the Allegheny and Conemaugh formations.] [Dunkard formation (Permian).]

In West Virginia this species is not known below the highest horizons of the Kanawha.

NEUROPTERIS GIBBOSA Lesquereux.

Boston Jour. Nat. Hist., vol. 6, 1854, p. 418. Lacoë, in Millspaugh: Bull. No. 24, W. Va., Agric. Exp. Sta., Morgantown, 1892, p. 522. [Dunkard formation (Permian).]

NEUROPTERIS PLICATA Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xvi. Lacoë, in Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta. Morgantown, 1892, p. 523. Probably identified with the preceding species. [Dunkard formation (Permian).]

NEUROPTERIS VERMICULARIS Lesquereux.

Second Rept. Geol. Recon. Arkansas, 1860, p. 315. D. White: Bull. Geol. Soc. Am., vol. II, 1900, p. 171. [Allegheny formation].

So far as known this species is confined to the lower part of the Allegheny.

NEUROPTERIS cf. CARRII Lesquereux.

Second Geol. Surv. Pa., Rept. Prog. P. (Coal Fl.), vol. 3, 1884, p. 731, pl. xciv, figs. 4-7. D. White: Bull. Geol. Soc. Am., vol. II, 1900, p. 169. [Pottsville group; Kanawha formation].

This plant belongs to a group unknown below the highest horizon of the Pottsville.

NEUROPTERIS CISTII Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 62 (53). D. White: Bull. Geol. Soc. Am., vol. II, 1900, p. 164. [Pottsville group; Kanawha formation].

NEUROPTERIS GRANGERI Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 62, (53), Lacoë, in Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta. Morgantown, 1892, p. 522. [Conemaugh formation].

NEUROPTERIS CALLOSA Lesquereux.

Second Geol. Surv. Pa., Rept. Prog. P. (Coal Fl.), vol. I, 1880, p. 115, pl. xvi, figs. 1-8. [Conemaugh formation].

NEUROPTERIS DICTYOPTEROIDES Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 49, pl. viii, figs. 3-5. [Dunkard formation (Permian).]

NEUROPTERIS FIMBRIATA Lesquereux.

Third Rept. Geol. Surv. Kentucky, Frankfort, 1857, p. 536. D. White: Bull. Geol. Soc. Am., vol. II, 1900, p. 171. [Allegheny and Conemaugh formations.] [Dunkard formation (Permian).]

NEUROPTERIS cf. ZEILLERI Potonie.

Jahrb. K. Preuss. Geol. Landesanst., Berlin, vol. 12, 1891 [1893], p. 22, text-fig. 5. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation].

NEUROPTERIS SCHEUCHZERI Hoffman.

Teutschl. geogn. geol. dargest., Weimar, vol. 4, 1826, p. 157, pl. 1b, figs. 1-4. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169.

This fossil, long known as *N. hirsuta* Lesq., is very abundant in the Allegheny and higher beds, but not known below the Mercer group and topmost Kanawha. [Pottsville group; Kanawha formation.] [Also in Conemaugh and Allegheny formations.]

NEUROPTERIS ODONTOPTEROIDES Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 50, pl. ix, figs. 1-6. [Dunkard formation (Permian).]

NEUROPTERIS CORDATA Brongniart.

Hist. Veg. Foss., Paris, vol. 1, 1830, p. 229, pl. lxiv, fig. 5. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 51. [Dunkard formation (Permian).]

NEUROPTERIS AURICULATA Brongniart.

Hist. Veg. Foss., Paris, vol. 1, 1830, p. 236, pl. lxvi. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 50. [Dunkard formation (Permian).]

NEUROPTERIS CRENULATA Brongniart.

Hist. Veg. Foss., Paris, vol. 1, 1830, p. 234, pl. lxiv, fig. 2. Lesquereux: Second Geol. Surv. Pa., Rept. Prog. P (Coal Fl.), vol. 3, 1884, p. 871. [Conemaugh formation.]

NEUROPTERIS AGASSIZI Lesquereux.

Second Geol. Surv. Pa., Rept. Prog. P (Coal Fl.), vol. 1, 1880, p. 117, pl. xvii, figs. 1-4. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 172. [Allegheny formation.]

Doubtful identification.

NEUROPTERIS N. SP. No. 1, D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Allegheny formation].

NEUROPTERIS SP. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 318. [Pottsville group; Nuttal sandstone lentil of the Sewell formation.]

NEUROPTERIS SP.? Fontaine.

Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 378. [Pottsville group; Sewell formation].

LINOPTERIS OBLIQUA (Bunbury) Zeiller.

Mem. Soc. Geol. France, vol. 8, Mem. 21, 1899, p. 46, pl. xx (iv), figs. 14-17. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 172. [Allegheny formation].

A plant characteristic of middle and upper Allegheny.

LESCUROPTERIS ADIANTITES Lesquereux.

Second Geol. Surv. Pa., Rept. Prog. P, 1880, p. 163, pl. xxvi, fig. 4. Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 522. [Dunkard formation (Permian).]

LESCUROPTERIS MOORII (Lesquereux) Schimper.

Pal. Veg., vol. 1, 1869, p. 465. Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 522. [Cone-maugh formation].

ODONTOPTERIS NEUROPTEROIDES Newberry.

Ann. Sci., Cleveland, vol. 1, 1853, p. 106. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 383. [Pottsville group; Quinnimont formation].

Probably wrongly identified and may be *N. Pocahontas*, D. White.

ODONTOPTERIS OBTUSILOBA VAR. **RARINERVIS** Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 52. [Dunkard formation (Permian).]

ODONTOPTERIS NERVOSA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Prog. PP, 1880, p. 52, pl. x, figs. 1-2. [Dunkard formation (Permian).]

ODONTOPTERIS WORTHENI Lesquereux.

Geol. Surv. Illinois, vol. 2, 1866, Pal., p. 432, pl. xxxvi, figs. 1, 1b. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 172. [Allegheny formation.]

ODONTOPTERIS SUBCUNNEATA Bunbury.

Quart. Jour. Geo!. Soc., London, vol. 3, 1847, p. 427, pl. xxiii, figs. 1A, 1B. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Allegheny formation.]

ODONTOPTERIS DENSIFOLIA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 54, pl. x, fig. 3. Dunkard formation (Permian).]

ODONTOPTERIS AEQUALIS Lesquereux.

Geol. Surv. Illinois, vol. 2, 1866, Pal., p. 434, pl. xxxvi, fig. 2. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Allegheny formation.]

ODONTOPTERIS NEWBERRYI Lesquereux.

Second Geol. Surv. Pa. Rept. Progr. P, 1880, p. 127. Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 523. [Pottsville group; Sewell formation.]

ODONTOPTERIS REICHIANA Guttier.

Abdr. Verst. Zwick, Schwarzk., Zwickau, 1835, p. 65, pl. ix, figs. 1-3, 5, 7; pl. x, fig. 13. Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 523. [Dunkard formation (Permian).]

ODONTOPTERIS GRACILLIMA Newberry.

Rept. Geol. Surv. Ohio, vol. 1, pt. 2, Palaeont., 1873, p. 378, pl. xlvi, figs. 1-3a. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 378. [Pottsville group; Sewell formation and Nuttall sandstone lentil in the Sewell.]

CAULOPTERIS GIGANTEA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 95, pl. xxxvi, fig. 1; pl. xxxviii, fig. 5. [Dunkard formation (Permian).]

CAULOPTERIS ELLIPTICA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 95, pl. xxxv, figs. 4, 5. [Dunkard formation (Permian).]

APHLEBIA SPINOSA (Goeppert) D. White.

Bull. Geol. Soc. Am., vol. 8, 1896 [1897], p. 292 [Sphe-nopteris]. [Pottsville group; Clark formation.]

APHLEBIA (*Rhacophyllum*) LACINIATA (Fontaine & I. C. White) Sellards.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 94, pl. xxxv, fig. 2. Sellards: Univ. Geol. Surv. Kansas, vol. 9, 1908, p. 454. [Dunkard formation (Permian).]

APHLEBIA FILICIFORMIS (Guttier) Schimper.

Pal. Veg., vol. 1, 1869, p. 685, pl. xlviii, figs. 3-6. Lacoe, in Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 526. [Conemaugh formation.]

APHLEBIA LACTUCA (Presl) Sterzel.

Erlaut. Geol. Specialk. Konigr. Sachsen, Leipzig, Blatt 113, 1881, p. 104. Fontaine: & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 94. [Dunkard formation (Permian).]

APHLEBIA SPECIOSISSIMA (Schimper) D. White.

Pal. Veg., vol. 1, 1869, p. 685. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 94. [Dunkard formation (Permian).]

APHLEBIA FILICIFORMIS var. MAJUS (Fontaine & I. C. White) D. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 93, pl. xxxv, fig. 1. [Dunkard formation (Permian).]

EQUISETITES RUGOSUS Schimper.

Pal. Veg., vol. 1, 1869, p. 287, pl. xvii, figs. 1-3. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 33, pl. i, fig. 6. [Dunkard formation (Permian).]

EQUISETITES STRIATUS Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 34, pl. i, fig. 5. [Dunkard formation (Permian).]

EQUISETITES ELONGATUS Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 33, pl. i, figs. 1-4. [Dunkard formation (Permian).]

EQUISETITES OCCIDENTALIS Lesqueux.

Geol. Surv. Illinois, vol. 4, Pal. pt. 2, 1870, p. 425, pl. xx, fig. 5. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Clark and Quinnimont formations.]

Known only in lower Pottsville of West Virginia, Tennessee and Georgia. It may be the same as the fossil described by Fontaine as *Equisetites* sp.? (Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 381).

ASTEROCALAMITES SCROBICULATUS (Schlotheim) Zeiller.

Expl. Carte Geol. France, Paris, vol. 4, Atlas, 1878, pl. clix, fig. 21; text 1879, p. 16. [Pottsville group; Clark and Quinnimont formations.]

This species is generally known in our American literature as *Bornia radiata* (Brongniart) Schimper (Pal. Veg., vol. 1, 1869, p. 335, pl. xxiv, figs. 1-10). D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. Species generally characteristic of the upper Mississippian. The identification of this plant in the Pennsylvanian is questionable.

CALAMITES SUCKOWI Brongniart.

Hist. Veg. Foss., Paris, vol. 1, 1828, p. 124, pl. xiv, fig. 6; pl. xv, figs. 1-6; pl. xvi. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Kanawha formation.]

CALAMITES SUCKOWI Brongniart.

Hist. Veg. Foss., Paris, vol. 1, 1828, p. 124, pl. xiv, fig. 6; pl. xv, figs. 1-6; pl. xvi. Fontaine: & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 35. [Dunkard formation (Permian).]

CALAMITES CISTII Brongniart.

Hist. Veg. Foss., Paris, vol. 1, 1828, p. 129, pl. xx. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Kanawha formation.] [Also in Allegheny formation.]

CALAMITES CANNAEFORMIS Schlotheim.

Petrefactenkunde, Gotha, 1820, p. 398, pl. xx, fig. 1. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 379. [Pottsville group; Quinnimont formation.]

CALAMITES ROEMERI Goppert?

Zeitscher. Deutsch. Geol. Ges., vol. 3, 1851, p. 190. Fontaine: Amer. Jour. Sci., 3rd. ser., vol. 11, 1876, p. 378. [Pottsville group; Sewell formation.]

CALAMITES RAMOSUS Artis.

Antediluvian Phytology, London, 1825, p. 2, pl. ii. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

CALAMITES APPROXIMATUS Schlotheim.

Petrefactenkunde, Gotha, 1820, p. 399. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 383. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Sewell, including Nuttall sandstone lentil, and Kanawha formations.]

CALAMITES sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

CALAMITINA sp. D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Kanawha formation.]

CALAMODENDRON sp. D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Kanawha formation.]

ASTEROPHYLLITES MINUTUS Andrews.

Rept. Geol. Surv., Ohio, vol. 2, pt. 2, Palaeont., 1875, p. 424, pl. li, figs. 4, 4a. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315; Bull. Geol. Soc. Am., vol. 11, 1900, p. 161 and 164. Species in general characteristic of the Pottsville group. [Princeton conglomerate?? (Mississippian).] [Pottsville group; Quinnimont and Kanawha formations and Nuttall sandstone lentil of Sewell formation.]

ASTEROPHYLLITES GRACILIS Lesquereux.

Second Rept. Geol. Recom. Arkansas, 1860, p. 310, pl. ii, fig. 4. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]

ASTEROPHYLLITES EQUSETIFORMIS (Schlotheim) Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 156 (159). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

Plant ranges from Mercer group upwards into the Permian.

ASTEROPHYLLITES LYCOPODIOIDES Zeiller.

Fl. foss. Bass. Houill. Valenciennes, Paris, Atlas, 1886, pl. lix, figs. 1, 2; text 1888, p. 380. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Kanawha formation.]

ASTEROPHYLLITES sp. indet. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 313. [Princeton conglomerate (Mississippian).]

ASTEROPHYLLITES ERECTIFOLIUS Andrews.

Rept. Geol. Surv. Ohio, vol. 2, pt. 2, Palaeont., 1875, p. 425, pl. xlix, fig. 3. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]

ASTEROPHYLLITES RIGIDUS (Sternberg) Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 157 (159). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

NEMATOPHYLLUM ANGUSTUM Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 35, pl. ii, figs. 1-5. [Dunkard formation (Permian).]

ANNULARIA ACICULARIS (Dawson) Renault.

Cours. de Bot. Foss., vol. 2, 1882, p. 171. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

ANNULARIA RAMOSA (Brongniart) Weiss.

Neues Jahrb. f. Min., vol. 2, 1881, p. 273. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315; Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Quinnimont?, and Kanawha formations.] [Also in Conemaugh formation.]

ANNULARIA CUSPIDATA Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P, 1884, p. 725, pl. xcii, figs. 7, 7a. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 162. [Pottsville group; Kanawha formation, and Nuttall sandstone lentil of Sewell formation.]

ANNULARIA RADIATA (Brongniart) Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xxxi. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 39. [Pottsville group; Sewell formation.] [Dunkard formation (Permian)?]

ANNULARIA STELLATA (Schlotheim) Wood.

Proc. Acad. Nat. Sci., Philadelphia, vol. 12, 1860, p. 236. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.] [Also in Conemaugh and Allegheny formations; and Dunkard formation (Permian).]

ANNULARIA SPHENOPHYLLOIDES (Zenker) Gutbier.

Isis von Oken, Leipzig, vol. 30, 1837, p. 436. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 39. [Pottsville group; Kanawha formation.] [Also in Allegheny and Conemaugh formations, and in Dunkard formation (Permian).]

Has same wide range as the preceding species.

ANNULARIA SPHENOPHYLLOIDES var. *INTERMEDIA* Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P, 1884, p. 724. [Allegheny and Conemaugh formations.]

ANNULARIA CARINATA Guttbier.

Isis von Oken, Leipzig, vol. 30, 1837, p. 436. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 38. [Dunkard formation (Permian).]

ANNULARIA MINUTA Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 153 (155). Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 39. [Dunkard formation (Permian).]

ANNULARIA sp. D. White.

Bull. Geol. Soc., Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

CALAMOSTACHYS LANCEOLATA Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P, (Coal Fl.), vol. 3, 1884, p. 715, pl. xci, figs. 1, 2; pl. xciii. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

CALAMOSTACHYS RAMOSUS (Artis) Weiss.

Abh. Geol. Speciafk. Preuss., vol. 5, No. 2 (Steink.-Calam. pt. 2), 1884, p. 193 (107), pl. xx, figs. 1, 2. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

MACROSTACHYA sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]

Expl. Carte Geol. France, vol. 4, Atlas, 1878, pl. clxi, figs. 1, 2; text 1879, p. 30. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation and Nuttall sandstone lentil of Sewell formation.]

Plant characteristic of the middle and upper Pottsville formations. Typical form is unknown in Allegheny or higher beds.

SPHENOPHYLLUM ANTIQUUM Dawson.

Canadian Naturalist, Montreal, vol. 6, 1861, p. 170, text fig. 7. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 7, 1874, p. 574. [Pottsville group; Sewell formation.]

SPHENOPHYLLUM LESCURIANUM D. White.

Mon. U. S. Geol. Surv., vol. 37, 1899, p. 182, pl. 1, fig. 6b; pl. li, fig. b; pl. xxiv, fig. 3c. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

SPHENOPHYLLUM EMARGINATUM (Brongniart) Koenig.

Icones Foss. Sect., London, 1825(?), pl. xii, fig. 149. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.] [Also in Allegheny and Conemaugh formations.]

Plant unknown below "Mercer coal group."

SPHENOPHYLLUM MAJUS (Bronn in Bischoff) Bronn.

Letheae Geogn., Stuttgart, vol. 1, 1834, p. 32, pl. viii, fig. 9, a, b. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Allegheny and Conemaugh formations.]

SPHENOPHYLLUM FURCATUM (Lindley & Hutton) Geinitz.

Furstl. Jablon. Ges. Preisschr., No. 5 (Fl. Hain.-Ebers. & Floeh. Kohl.), Leipzig, 1854, p. 36, pl. i, figs. 10-12; pl. ii, figs. 2, 1. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

SPHENOPHYLLUM TENUE D. White.

Twentieth Ann. Rept. U. S. Geol. Surv., 1898-'99, pt. 2, 1900, p. 900, pl. cxci, figs. 6, 7. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

Species characteristic of lower Pottsville and basal middle Pottsville in the central and northern Appalachian regions.

SPHENOPHYLLUM ANGUSTIFOLIUM (Germar) Goppert.

In Bronn, Naturgeschte d. drei Reiche, vol. 3 (Nomencl. Palaeont.), 1848, p. 1166. Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 526. [Dunkard formation (Permian).]

SPHENOPHYLLUM OBLONGIFOLIUM (Germar & Kaulfuss) Unger.

Gen. et Spec. Pl. Foss., 1850, p. 70. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 38. [Dunkard formation (Permian).]

SPHENOPHYLLUM LONGIFOLIUM (Germar) Geinitz & Gutbier.

In Reichenbach, Gaa von Sachs. (Verst. Obersachsen), 1843, p. 72. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 38. [Dunkard formation (Permian).]

SPHENOPHYLLUM THONI Mahr.

Zeitschr. Deutsch. Geol. Ges., vol. 20, 1868, p. 433, pl. viii. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 172. [Dunkard formation (Permian).]

SPHENOPHYLLUM FONTAINEAUM S. A. Miller.

North American Geol. & Palaeont., Cincinnati, 1889, p. 141. [Dunkard formation (Permian).]

This is the plant described as *Sphenophyllum latifolium* Fontaine & I. C. White, a preoccupied name, in the Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 36, pl. i, figs. 10-11.

SPHENOPHYLLUM FILICULME Lesquereux.

Boston Jour. Nat. Hist., voi. 6, 1854, p. 415. Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 37, pl. i, fig. 8. [Dunkard formation (Permian).]

SPHENOPHYLLUM TENUIFOLIUM Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 38, pl. i, fig. 9. [Dunkard formation (Permian).]

SPHENOPHYLLUM DENSIFOLIUM Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 37, pl. i, fig. 7. [Dunkard formation (Permian).]

LYCOPODITES MEEKII Lesquereux.

Geol. Surv. Illinois, vol. 4, Geol. & Pal., pt. 2, 1870, p. 426, pl. xxvi, figs. 6, 6a. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

LYCOPODITES PENDULUS Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 2, 1880, p. 357, pl. lxii, figs. 2, 2a. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Conemaugh formation.]

LYCOPODITES SIMPLEX Lesquereux?

Second Geol. Surv. Pa., Rept. of Progr., G⁷, Harrisburg, 1882 [1883], p. 40. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Kanawha formation.]

LYCOPODITES n. sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

BOTHRODENDRON sp. *cf.* **MINUTIFOLIUM** (Boulay) Zeiller.

Expl. Carte Geol. France, Paris, vol. 4, text 1879, p. 117. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]

BOTHRODENDRON n. sp. D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

LEPIDODENDRON sp. *cf.* **BRITTSII** Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 2, 1880, p. 368, pl. lxiii, figs. 1-2. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Kanawha formation.]

LEPIDODENDRON RUSHVILLENSE Andrews.

Rept. Geol. Surv., Ohio, vol. 2, pt. 2, Paleont., 1875, p. 423, pl. liii, fig. 4. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 162. [Pottsville group; Kanawha formation.]

LEPIDODENDRON SELAGINOIDES Sternberg.

Flora d. Vorwelt, vol. 1 (Versuch), pt. 2, 1822, p. 31, pl. xvi, fig. 3; pl. xvii, fig. 1. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 378. [Pottsville group; Clark formation.]

LEPIDODENDRON SCOBINIFORME Meek.

Bull. Phil. Soc. Washington, vol. 1, Appendix VIII, 1874, p. xiii, pl. i, fig. 1. [Pocono sandstone.]

This species is cited generally as *L. corrugatum* Dawson. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 7, 1874, p. 578.

LEPIDODENDRON ACUMINATUM (Goeppert) Unger.

Gen. et. Spec. Pl. Foss., 1850, p. 261. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Quinnimont (?) and Kanawha formations.]

LEPIDODENDRON STERNBERGII (form.) D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont and Sewell formations.]

LEPIDODENDRON VELTHEIMIANUM Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xii, pl. lii, fig. 3. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. D. White: Bull. Geol. Soc. Am., Rochester, vol. 11, 1900, p. 164. [Pottsville group; Quinnimont and Kanawha formations.]

LEPIDODENDRON LANCEOLATUM Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 2, 1880, p. 369, pl. lxiii, figs. 3-5a. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

LEPIDODENDRON sp. *cf. DICHTOMUM* Sternberg.

Flora d. Vorwelt, vol. 1 (Versuch), pt. 1, 1820, p. 23, pls. i, ii, iii; pl. lxviii, fig. 1. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

LEPIDODENDRON CLYPEATUM Lesquereux.

Boston Jour. Nat. Hist., vol. 6, 1854, p. 429. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Kanawha formation.]

Characteristic of the upper and middle Pottsville.

LEPIDODENDRON OBOVATUM Sternberg.

Flora d. Vorwelt, vol. 1 (Versuch), pt. 1, 1820, p. 23, pl. vi, fig. 2; pl. viii, fig. 1 B, a-b; pl. xv, fig. 5. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]

LEPIDODENDRON *cf. MAGNUM* Wood.

Proc. Acad. Nat. Sci., Philadelphia, vol. 12, 1860, pl. vi, fig. 4. D. White: Bull. Geol. Soc. Am., Rochester, vol. 11, 1900, p. 164. [Pottsville group; Kanawha formation.]

LEPIDODENDRON MODULATUM Lesquereux.

Boston Jour. Nat. Hist., vol. 6, 1854, p. 428. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. Plant generally characteristic of the Allegheny and not known below the "Mercer coal group." [Pottsville group; Kanawha formation.] [Also in Allegheny formation.]

LEPIDOPHLOIOS sp. *cf. LARICINUS* Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xiii, pl. xi, figs. 2, 3, 4. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 164. [Pottsville group; Kanawha formation.]

LEPIDOPHLOIOS sp. D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 172. [Allegheny formation.]

ULODENDRON MAJUS Lindley & Hutton.

Foss. Fl. Great Britain, vol. 1, 1831, p. 22, pl. v. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]

ULODENDRON sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

HALONIA sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

LEPIDOSTROBOS VARIABILIS Lindley & Hutton.

Foss. Fl. Great Britain, vol. 1, 1831, p. 31, pls. x, xi. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315; ibid., vol. 11, 1900, p. 161, 169. [Pottsville group; Quinnimont and Kanawha formations, and Nuttall sandstone lentil of Sewell formation.]

LEPIDOSTROBOS ORNATUS Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 93 (88). D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]

LEPIDOSTROBOS SALISBURYI Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P, 1880, p. 443, pl. Ixix, figs. 1, 2. Millspaugh: Bull No. 24, W. Va. Agric. Exp. Sta., 1892, p. 521. [Pottsville group; Kanawha formation.]

LEPIDOSTROBOS sp. nov.? D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]

LEPIDOPHYLLUM BREVIFOLIUM Lesquereux.

Boston Jour. Nat. Hist., vol. 6, 1854, p. 430. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Allegheny formation.]

LEPIDOPHYLLUM JENNEYI D. White.

Mon. U. S. Geol. Surv., vol. 37, 1899, p. 214, pl. lix, figs. 1-3; pl. lxiii, fig. 6. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 172. [Allegheny formation.]

LEPIDOPHYLLUM ACUMINATUM Lesquereux.

Boston Jour. Nat. Hist., vol. 6, 1854, p. 430. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]

LEPIDOPHYLLUM OBLONGIFOLIUM Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 3, 1884, p. 868. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Allegheny formation.]

LEPIDOPHYLLUM LANCEOLATUM Lindley & Hutton.

Foss. Fl. Great Britain, vol. 1, 1831, p. 28, pl. vii, figs. 3, 4.
D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

LEPIDOPHYLLUM CAMPBELLIANUM Lesquereux.

Second Geol. Surv. Pa., Rept. of Progr., G⁷, Harrisburg, 1882 ([1883], p. 40. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315; ibid., Bull. Geol. Soc. Am., vol. 11, 1900, pp. 161, 165. [Pottsville group; Kanawha formation.]

LEPIDOPHYLLUM cf. CULTRIFORME Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 3, 1884, p. 785, pl. cvii, figs. 13, 14; pl. cviii, fig. 2. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]

LEPIDOPHYLLUM HASTATUM Lesquereux.

Boston Jour. Nat. Hist., vol. 6, 1854, p. 430. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 172. [Allegheny formation.]

LEPIDOPHYLLUM n. sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont and Sewell formations.]

LEPIDOCYSTIS VESICULARIS Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P, 1880, p. 457, pl. lxix, figs. 18-20. [Allegheny and Conemaugh formations.]

SIGILLARIA CAMPTOTAENIA (Wood) Wood.

Trans. Am. Phil. Soc., Philadelphia, vol. 13, 1869, p. 342. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Allegheny formation.]

This species is in general characteristic of the Allegheny formation, though rare in the "Mercer coal group."

SIGILLARIA FISSA Lesquereux.

Boston Jour. Nat. Hist., vol. 6, 1854, p. 426. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, pp. 169, 171. [Pottsville group; Kanawha formation.]

SIGILLARIA cf. RETICULATA Lesquereux. Non (Steinhauer) Miller.]

Second Rept. Geol. Recon. Arkansas, Philadelphia, 1860, p. 310, pl. iii, fig. 2. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]

SIGILLARIA MENARDI Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 74 (65). Lesquereux: Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 3, 1884, p. 871. [Conemaugh formation.]

SIGILLARIA BRARDII Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 74 (65).
 Fontaine & I. C. White: Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 97, pl. xxxii, fig. 10. [Dunkard formation (Permian).]

SIGILLARIA cf. DENTATA Newberry.

Ann. Sci., Cleveland, vol. 1, 1853, p. 165, text fig. 4. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

SIGILLARIA cf. RETICULATA Lesquereux.

Second Rept. Geol. Recon. Arkansas, Philadelphia, 1860, p. 310, pl. iii, fig. 2. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]

SIGILLARIA sp. cf. ICHTYOLEPIS (Sternberg) Corda.

Beitr. Fl. Vorwelt, 1845, p. 29, pl. ix, fig. 19. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]

SIGILLARIA APPROXIMATA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 96, pl. xxxvii, fig. 3. [Dunkard formation (Permian).]

SIGILLARIA sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

TRILETES sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 318. [Pottsville group; Nuttall sandstone lentil of Sewell formation.]

CORDAITES BORASSIFOLIUS (Sternberg) Unger.

Gen. et. Spec. Pl. Foss., 1850, p. 277. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]

CORDAITES ROBBII Dawson.

Canadian Naturalist, Montreal, vol. 6, 1861, p. 168. Fontaine: Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 379. [Pottsville group; Clark, Quinnimont and Sewell formations.]

CORDAITES CRASSINERVIS Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 97, pl. xxxvii, fig. 10. [Dunkard formation (Permian).]

POACORDAITES sp. D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

BAIERA VIRGINIANA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 103, pl. xxxvii, figs. 11, 12. [Dunkard formation (Permian).]

WHITTLESEYA ELEGANS Newberry.

Ann. Sci., Cleveland, vol. 1, 1853, p. 106. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]

SAPORTAEA GRANDIFOLIA Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 101, pl. xxxviii, fig. 4. [Dunkard formation (Permian).]

SAPORTAEA SALISBURIOIDES Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 102, pl. xxxiii, figs. 1-3. [Dunkard formation (Permian).]

CORDAICARPON GUTBIERI (Geinitz) Grand'Eury.

Fl. Carb. Dept. Loire, Paris, 1877, p. 236, pl. xxvi, fig. 19. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Conemaugh formation.]

CORDAICARPON CIRCULARIS (Lesquereux) D. White.

Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

CORDAICARPON CINCTUM Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 3, 1884, p. 804, pl. cix, figs. 5, 6. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

CARDIOCARPON CORNUTUM Dawson.

Quart. Jour. Geol. Soc., London, vol. 18, 1862, p. 324, pl. xiii, figs. 23, 24. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 162. [Pottsville group; Kanawha formation.]

CARDIOCARPON BICUSPIDATUM (Sternberg) Newberry.

Ann. Sci., Cleveland, vol. 1, 1853, p. 153, text-fig. 7. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 318. [Pottsville group; Nuttall sandstone lentil of Sewell formation.]

CARDIOCARPON MINOR Newberry.

Ann. Sci., Cleveland, vol. 1, 1853, p. 153, text-fig. 4. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Sewell and Kanawha formations.]

RHABDOCARPOS TENAX Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P, 1884, p. 818, pl. cxi, figs. 25, 26. Lacoe, in Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 526. [Pottsville group; Kanawha formation.]

CARDIOCARPON ELONGATUM Newberry.

Ann. Sci., Cleveland, vol. 1, 1853, p. 153, text-fig. 6. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]

RHABDOCARPOS MULTISTRIATUS (Presl) Lesquereux.

Second Geol. Surv. Pa., Rept. Progr. P (Coal Fl.), vol. 2, 1880, p. 578, pl. lxxxv, figs. 22, 23. D. White: Bull. Geol.

- Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]
 Probably the fruit of *Neuropteris flexuosa*.
- RHABDOCARPOS SULCATUS** (Lindley & Hutton) Schimper.
 Pal. Veg., vol. 2, 1870, p. 220. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 161. [Pottsville group; Kanawha formation.]
- RHABDOCARPOS AMYGDALAEFORMIS** (Goeppert) Goeppert & Berger, Fruc. Semin. Form. Lith., Breslau, 1848, p. 21, pl. i, fig. 12. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]
- RHABDOCARPOS OBLONGATUS** Fontaine & I. C. White.
 Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 98, pl. xxxvii, figs. 8, 9. [Dunkard formation (Permian).]
- RHABDOCARPOS BOCKSCHIANUS** Goeppert & Berger.
 Fruct. Semin. Form. Lith., Breslau, 1848, p. 21, pl. i, figs. 13, 14. Lacoe, in Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 525. [Pottsville group; Kanawha formation.]
- RHABDOCARPOS** sp. D. White.
 Bull. Geol. Soc. Am., vol. 6, 1895, p. 313. [Princeton conglomerate (Mississippian).]
- RHABDOCARPOS** sp. D. White.
 Bull. Geol. Soc. Am., vol. 6, 1895, p. 314. Near Pocahontas coal. [Pottsville group; Clark formation.]
- RHABDOCARPOS** n. sp. D. White.
 Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont and Sewell formations.]
- TRIGONOCARPUM TRiloculare** (Hildreth) Newberry.
 Rept. Geol. Surv. Ohio, vol. 1, pt. 2, Palaeont., 1873, p. 367, pl. xlili, figs. 1, 13, 13a; pl. xlili, fig. 13. Fontaine. Amer. Jour. Sci., 3rd ser., vol. 11, 1876, p. 382. [Pottsville group; Sewell formation.]
- TRIGONOCARPUM OLIVIAEFORME** Lindley & Hutton?
 Foss. Fl. Gt. Brit., vol. 3, 1837, p. 183, pl. ccxxii, fig. 1-3. D. White: Bull. Geol. Soc. Am., vol. 6, 1895, p. 317. [Pottsville group; Sewell formation.]
- TRIGONOCARPUM CLAVATUM** (Sternberg) D. White.
 Bull. Geol. Soc. Am., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]
- TRIGONOCARPUM AMPULLAEFORME** Lesquereux.
 Second Geol. Surv. Pa., Rept. Progr. P., 1884, p. 823, pl. cix, figs. 18-20, 21? Lacoe, in Millspaugh: Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 527. [Pottsville group; Kanawha formation.]

TRIGONOCARPUM NOEGGERATHII (Sternberg) Brongniart.

Dict. Sci. Nat., vol. 57 (Prodrome), 1828, p. 137. Lacoë, in Millspaugh, Bull. No. 24, W. Va. Agric. Exp. Sta., Morgantown, 1892, p. 527. [Pottsville group; Kanawha formation.]

CARPOLITHES BI-CARPUS Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 98, pl. xxxvii, figs. 6, 7. [Dunkard formation (Permian).]

CARPOLITHES ELLIPTICUS Sternberg.

Flora d. Vorwelt (Tentamen), 1825, p. xl, pl. vii, fig. 1. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 171. [Allegheny formation.]

CARPOLITHES MARGINATUS Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 98, pl. xxxvii, fig. 1. [Dunkard formation (Permian).]

CARPOLITHES sp. D. White.

Bull. Geol. Soc. Amer., vol. 6, 1895, p. 315. [Pottsville group; Quinnimont formation.]

CARPOLITHES sp. D. White.

Bull. Geol. Soc. Am., vol. 6, 1895, p. 313. [Princeton conglomerate (Mississippian).]

CARPOLITHES? *FRAGARIOIDES* Newberry.

Rept. Geol. Surv., Ohio, vol. 1, pt. 2, Palaeont., 1873, p. 370, pl. xliii, figs. 2, 2a. D. White: Bull. Geol. Soc. Amer., vol. 11, 1900, p. 165. [Pottsville group; Kanawha formation.]

GUILIELMITES ORBICULARIS Fontaine & I. C. White.

Second Geol. Surv. Pa., Rept. Progr. PP, 1880, p. 99, pl. xxxii, fig. 2. [Dunkard formation (Permian).]

The fossil described under the above name is possibly a *Dolerophyllum*.

PALAEoxyris APPENDICULATA Lesquereux.

Geol. Surv. Illinois, vol. 4, Geol. & Pal., pt. 2, 1870, p. 546, pl. xxvii, fig. 11. D. White: Bull. Geol. Soc. Am., vol. 11, 1900, p. 169. [Pottsville group; Kanawha formation.]

The species of this genus, though described as plants, are thought by many to be egg-capsules of a fossil shark or allied type of animal life. There is, at all events, little doubt that they are the envelopes of some type of fructification.

EQUISETUM ARVENSE L.

Knowlton, Amer. Geologist, Minneapolis, vol. 2, 1896, p. 371. Pleistocene (Interglacial). [Carmichaels clays.]

CYPERUS sp. Knowlton.

Amer. Geologist, Minneapolis, vol. 2, 1896, p. 371. Pleistocene (Interglacial): [Carmichaels clay.]

POTAMOGETON ROBBINSII Oakes.

Knowlton, Amer. Geologist, Minneapolis, vol. 2, 1896, p.

371. Pleistocene (Interglacial) : [Carmichaels clay.]

FAGUS FERRUGINEA Ait.

Knowlton: Amer. Geologist, Minneapolis, vol. 2, p. 371.

Pleistocene (Interglacial) : [Carmichaels clay.]

CASTANEA PUMILA Mill.

Knowlton, Amer. Geologist, Minneapolis, vol. 18, 1896, p.

371. Pleistocene (Interglacial) : [Carmichaels clay.]

QUERCUS FALCATA Mich.

Knowlton, Amer. Geologist, Minneapolis, vol. 2, 1896, p.

371. Pleistocene (Interglacial) : [Carmichaels clay.]

BETULA NIGRA L.

Knowlton, Amer. Geologist, Minneapolis, vol. 2, 1896, p.

371. Pleistocene (Interglacial) : [Carmichaels clay.]

PLATANUS OCCIDENTALIS L.

Knowlton, Amer. Geologist, Minneapolis, vol. 2, 1896, p.

371. Pleistocene (Interglacial) : [Carmichaels clay.]

ULMUS RACEMOSA Thomas.

Knowlton: Amer. Geologist, Minneapolis, vol. 2, 1896, p.

371. Pleistocene (Interglacial) : [Carmichaels clay.]

LIQUIDAMBAR STYRACIFLUA.

Knowlton: Amer. Geologist, Minneapolis, vol. 2, 1896, p.

371. Pleistocene (Interglacial) : [Carmichaels clay.]

PLANTS REPORTED FROM THE POCONO (MISSISSIPPIAN) AT LEWIS TUNNEL, VA., SIX MILES EAST OF WHITE SULPHUR, W. VA.

ARCHAEOPTERIS ALLEGHANIENSIS (Meek) Fontaine & I. C. White.

ARCHAEOPTERIS BOCKSCHIANUS Lesquereux.

TRIPTYLLOPTERIS LESCURIANA (Meek) Fontaine.*

TRIPTYLLOPTERIS VIRGINIANA (Meek) Meek.

LEPIDODENDRON SCOBINIFORME Meek.

LEPIDOCYSTIS SILIQUA (Dawson) D. White.

*The plants listed by Prof. Fontaine (Amer. Jour. Sci. (3). vols. 7 and 11, 1874 and 1876) as *Cyclopteris Jacksoni*, *Palaeopteris Jacksoni*, and *P. cf. obtusa*, probably are forms closely related to, if not identical with, *Triptyllopterus virginiana* and *T. Lescuriana*.

PLANTS REPORTED FROM THE PRINCETON CON-
GLOMERATE (MISSISSIPPIAN) ON PINEY
CREEK ROAD, RALEIGH COUNTY.

ANEIMITES sp.
EREMOPTERIS cf. *DECOMPOSITA* (Kidston) D. White.
SPHENOPTERIS DISTANS Sternberg.
SPHENOPTERIS SUBGENICULATA (Stur) Rothpletz.
SPHENOPTERIS sp.
CARDOPTERIS FRONDOSA (Goepp.) Schimp.
ASTEROPHYLLITES MINUTUS Andrews?
ASTEROPHYLLITES sp.
RHABDOCARPOS n. sp.
CARPOLITHES sp.

PLANTS REPORTED FROM THE CLARK FORMATION
(PENNSYLVANIAN: POTTSVILLE GROUP).

ANEIMITES ADIANTOIDES (Lindley & Hutton) Bailey.
 Lower Piney Creek plant bed.
ANEIMITES (Wardia) *FERTILIS* D. White.
 Keeney Creek Branch railway near Nuttall.
EREMOPTERIS MACILENTA (Lindley & Hutton) D. White.
 Lower Piney Creek plant bed.
SPHENOPTERIS HOENINGHAUSI Brongniart.
 Lower Piney Creek plant bed.
SPHENOPTERIS RARINERVIS Fontaine.
 Lower Piney Creek plant bed.
SPHENOPTERIS sp. D. White.
 Near Pocahontas coal, mouth of Arbuckle Creek.
ALETHOPTERIS cf. *GRANDIFOLIA* Newberry.
 Lower Piney Creek plant bed.
ALETHOPTERIS sp. D. White.
 Near Pocahontas coal, mouth of Arbuckle Creek.
NEUROPTERIS POCAHONTAS D. White.
 Present nearly everywhere.
NEUROPTERIS SMITHII Lesquereux.
 Clark Gap.
NEUROPTERIS TENUIFOLIA (Sclotheim) Sternberg*?
 Lower Piney Creek plant bed.

*Undoubtedly wrongly identified. Probably a derivative of
N. Pocahontas comparable to *N. biformis* Lesquereux.

- APHLEBIA SPINOSA* (Goeppert) D. White.
Lower Piney Creek plant bed.
- EQUISETITES OCCIDENTALIS* Lesquereux.
Lower Piney Creek plant bed.
- ASTEROCALAMITES SCROBICULATUS* (Schlotheim) Zeiller.
Lower Piney Creek plant bed.
- LEPIDODENDRON SELAGINOIDES* Sternberg.
Lower Piney Creek plant bed.
- CORDAITES ROBBII* Dawson?
Lower Piney Creek plant bed.
- RHABDOCARPOS* sp.
Near Pocahontas coal at mouth of Arbuckle Creek and
near Rush Run.

PLANTS REPORTED FROM THE QUINNIMONT FOR-
MATION (PENNSYLVANIAN: POTTS-
VILLE GROUP).

- ANEIMITES TENUIFOLIUS* (Brongniart) D. White.
Quinnimont coal at Princes, Rush Run, Dimmock, Fayette,
etc.
- EREMOPTERIS* cf. *ELEGANS* (Ett.) Lx.
Quinnimont coal at Rush Run, Fayette, Harveys.
- EREMOPTERIS MICROPHYLLA* Lx.?
Quinnimont coal near Nuttall.
- MARIOPTERIS POTTSVILLEA* D. White.
Quinnimont coal at Beechwood, Red Ash, Princes, Rush
Run, Dimmock, etc.
- MARIOPTERIS LATIFOLIA* (Brongn.) Zeill.?
Quinnimont coal at Dimmock, Rush Run, Harveys.
- MARIOPTERIS DIMORPHA* (Lesquereux) D. White.
Quinnimont coal at Princes, near Fayette station and
Nuttall.
- SPHENOPTERIS DIVARICATA* Geinitz & Gutbier.
Quinnimont coal at Princes and Fire Creek.
- SPHENOPTERIS* cf. *GOEPPERTI* (Ett.) Schimp.
Quinnimont coal at Fire Creek and Nuttall.
- SPHENOPTERIS HOENINGHAUSI* Brogn.
Quinnimont coal at Quinnimont, Princes, Rush Run,
Beechwood and Harveys.
- SPHENOPTERIS PATENTISSIMA* (Ett.) Schimp.
Quinnimont coal at Princes, Red Ash, and Fayette.
- SPHENOPTERIS DICKSONOIDES* (Goeppert) Weiss.
Quinnimont coal at Fire Creek.

SPHENOPTERIS (RENAULTIA) MICROCARPA Lesq.

Quinnimont coal at Quinnimont, Fayette, Beurys(?) and Rush Run.

MEGALOPTERIS cf. *DAWSONI* Andrews.

Quinnimont coal at Quinnimont.

MEGALOPTERIS SEWELLENSIS Font.?

Quinnimont coal at Dimmock, Rush Run and Harveys.

ALETHOPTERIS sp. D. White.

Quinnimont coal at Fire Creek, Nuttall, Harveys, and Princes.

NEUROPTERIS SMITHII Lesq.

Quinnimont coal at Fire Creek, Nuttall, Princes, Rush Run, etc.

NEUROPTERIS LINDLEYANA Sternb. var. Font.

Quinnimont coal at Sewell station.

ODONTOPTERIS NEUROPTEROIDES Newberry*.

Quinnimont coal at Quinnimont.

EQUISETITES OCCIDENTALIS Lesq.

Quinnimont coal at Quinnimont.

ASTEROCALAMITES SCROBICULATUS (Schloth.) Zeill.?

Quinnimont coal at Princes and Rush Run.

CALAMITES CANNAEFORMIS Schloth.

Quinnimont coal at Quinnimont.

CALAMITES sp. D. White.

Quinnimont coal at Quinnimont and Dimmock.

ASTEROPHYLLITES MINUTUS Andrews.

Quinnimont coal at Rush Run, Dimmock and Harveys.

ANNULARIA RAMOSA (Brong.) Weiss.

Quinnimont coal at Dimmock, Rush Run and Harveys.

ANNULARIA n. sp. D. White.

Quinnimont coal at Rush Run.

CALAMOSTACHYS LANCEOLATA Lesq. (form.).

Quinnimont coal at Rush Run.

SPHENOPHYLLUM TENUЕ D. White.

Quinnimont coal at Dimmock.

LYCOPODITES n. sp. D. White.

Quinnimont coal at Princes, Fire Creek, Dimmock and Rush Run.

LEPIDODENDRON ACUMINATUM (Goepp.) Unger?

Quinnimont coal at Rush Run, Red Ash, Fire Creek and Quinnimont.

LEPIDODENDRON STERNBERGII Brongn. (form.).

Quinnimont coal at Dimmock and Princes.

LEPIDODENDRON VELTHEIMIANUM Sternb.

Quinnimont coal at Rush Run.

*Probably wrong identification.

ULODENDRON sp. D. White.

Quinnimont coal at Quinnimont, Dimmock, Beechwood.

HALONIA sp. D. White.

Quinnimont coal at Rush Run.

LEPIDOSTROBUS VARIABILIS Lindl. & Hutt.

Quinnimont coal at Fire Creek.

LEPIDOPHYLLUM CAMPBELLIANUM Lesq.

Quinnimont coal at Dimmock and Rush Run.

LEPIDOPHYLLUM sp. D. White.

Quinnimont coal at Dimmock and Rush Run.

SIGILLARIA cf. *DENTATA* Newberry.

Quinnamont coal at Beurys and Beechwood.

SIGILLARIA sp. D. White.

Quinnimont coal at Beurys.

CORDAITES ROBII Dawson?

Quinnimont coal at Quinnimont.

RHABDOCARPOS sp. D. White.

Quinnimont coal at Fire Creek, Rush Run, Dimmock.

TRIGONOCARPUM CLAVATUM (Sternb.) D. White.

Quinnimont coal at Quinnimont and Dimmock.

CARPOLITHES sp. D. White.

Quinnimont coal at Fire Creek.

PLANTS RECORDED FROM THE SEWELL FORMATION (PENNSYLVANIAN: POTTSVILLE GROUP).

EREMOPTERIS cf. *ELEGANS* (Ett.) Lesq.

Sewell coal at Harveys.

EREMOPTERIS CHEATHAMI Lesq.

Sewell coal at Harveys.

EREMOPTERIS MACILENTA (Lesq.) D. W. form.

Sewell coal at Thurmond, Nuttall and Sewell.

MARIOPTERIS MURICATA (Schloth.) Zeill. form.

Sewell coal at Thurmond, Harveys, and Cunard.

MARIOPTERIS POTTSVILLEA D. W., var. Nov.

Sewell coal, Thurmond and Harveys.

SPHENOPTERIS cf. *ROYI* Lesq.

Sewell coal at Nuttall.

SPHENOPTERIS FLEXICAULIS Lesq.

Sewell coal, Harveys.

SPHENOPTERIS cf. *LARISCHII* (Stur) Lesq.

Sewell coal, Harveys.

SPHENOPTERIS MICROCARPA Lesq.

Sewell coal, Harveys.

SPHENOPTERIS COMMUNIS Lesq.

- Sewell coal at Nuttall.
- PECOPTERIS(?) SERRULATA* (Daws.) Hartt.
Sewell coal at Thurmond.
- MEGALOPTERIS SEWELLENSIS* Font.
Sewell coal, Sewell
- MEGALOPTERIS HARTII* Andrews.
Sewell coal, Sewell
- ALETHOPTERIS LONCHITICA* (Schloth.) Stb. (?)
Sewell coal at Thurmond, Macdonald and Nuttall.
- ALETHOPTERIS SERLII* var. *EUROPEA* (Brongn.) Goepp.
Sewell coal, Sewell
- ALETHOPTERIS SERLII* var. *AMERICANA* (Brongn.) Goepp.
Sewell coal, Sewell
- ALTEHOPTERIS EVANSII* Lesq.
Sewell coal at Cunard and Nuttall.
- CALLIPTERIDIUM* sp.
Sewell coal at Cunard and Nuttall.
- NEUROPTERIS SCHLEHANI* Stur. var.
Sewell coal in all of New River Region.
- NEUROPTERIS BIFORMIS* Lesq. form.
Sewell coal, Macdonald and Cunard.
- NEUROPTERIS?* sp. Fontaine.
Sewell coal, Sewell
- NEUROPTERIS ELRODI* Lesq.
Sewell coal: Macdonald, Thurmond and Cunard.
- ODONTOPTERIS NEWBERRYI* Lesq. (?)
Sewell coal at Macdonald.
- ODONTOPTERIS GRACILLIMA* Newberry.
Sewell coal, Sewell
- CALAMITES ROEMERI* Gopp.?
Sewell coal, Sewell
- CALAMITES APPROXIMATUS* Schlotheim.
Sewell coal, Sewell
- ASTEROPHYLLITES GRACILIS* Lesq.
Sewell coal at Macdonald.
- ASTEROPHYLLITES ERECTIFOLIUS* Andr.
Sewell coal at Macdonald, Turkey Knob, Harveys and Thurmond.
- ANNULARIA RADIATA* (Brongn.) Stb.
Sewell coal at Thurmond.
- MACROSTACHYIA* sp.
Sewell coal at Cunard.
- SPHENOPHYLLUM ANTIQUUM* Dawson.
Sewell coal, Sewell
- LEPIDODENDRON STERNBERGII* Brongn.
Sewell coal at Stone Cliff.

LEPIDOPHYLLUM sp.

Sewell coal at Thurmond.

SIGILLARIA cf. *RETICULATA* Lesq.

Sewell coal at Cunard.

CORDAITES ROBII Dawson?

Sewell coal at Sewell.

WHITTLESEYA ELEGANS Newby.

Sewell coal at Macdonald.

CARDIOCARPON cf. *BICUSPIDATUM* (Sternb.) Newby

Sewell coal at Stone Cliff.

CARDIOCARPON MINOR Newby.

Sewell coal at Turkey Knob.

CARDIOCARPON ELONGATUM Newby.

Sewell coal at Macdonald and Turkey Knob.

RHABDOCARPOS sp.

Sewell coal at Macdonald, Turkey Knob, Harveys, Stone Cliff, and Thurmond.

TRIGONOCARPUM TRILOCULARE (Hildreth) Newberry.

Sewell coal at Sewell.

TRIGONOCARPUM OLIVIAEFORME L. & H.

Sewell coal at Turkey Knob, Harveys, Thurmond and (?) Macdonald.

PLANTS REPORTED FROM THE NUTTALL SAND-
STONE LENTIL OF THE SEWELL FORMA-
TION NEAR ANSTED.

ARCHAEOPTERIS STRICTA Andrews.*ARCHAEOPTERIS* sp. D. White.*EREMOPTERIS* sp. D. White.*MARIOPTERIS MURICATA* (Schlotheim) Zeiller.*MARIOPTERIS PYGMAEA* D. White.*MARIOPTERIS ACUTA* (Brongniart) Zeiller.*SPHENOPTERIS FURCATA* Brongniart.*SPHENOPTERIS* cf. *LINEARIS* Sternburg.*ALETHOPTERIS* cf. *AMBIGUA* Lesquereux.*PECOPTERIS PLUMOSA* Sternberg.*MEGALOPTERIS* sp. D. White.*NEUROPTERIS* sp. D. White.*ODONTOPTERIS GRACILLIMA* Newberry.*CALAMITES APPROXIMATUS* Sternberg.*ASTEROPHYLLITES MINUTUS* Andrews.*ANNULARIA CUSPIDATA* Lesquereux.*CALAMOSTACIUM* sp. D. White.*SPHENOPHYLLUM CUNEIFOLIUM* (Sternberg) Zeiller.

- LEPIDODENDRON RUSHVILLENSE* Andrews.
LEPIDOSTROBUS VARIABILIS Lindley & Hutton.
LEPIDOPHYLLUM sp. D. White.
TRILETES sp. D. White.
CARDIOPARPON BICUSPIDATUM (Sternberg) Newberry.
CARDIOPARPON CORNUTUM Dawson.

PLANTS REPORTED FROM THE KANAWHA FORMATION (PENNSYLVANIAN: POTTSVILLE GROUP).

- EREMOPTERIS cf. SAUVEURI* (Crepin) D. White.
 Cedar Grove coal at East Bank.
EREMOPTERIS ARTEMISIAEFOLIA (Sternb.) Schimp.
 Coalmont.
EREMOPTERIS cf. LINCOLNIANA D. White.
 Eagle coal at St. Clair mine.
EREMOPTERIS n. sp. D. White.
 Gas coal at Ansted; Peerless coal at Peerless, Cedar Grove and Handley; Cedar Grove coal at East Bank and Riverside mine.
CHEILANTHITES TRIFOLIOLATUS (Artis) Goepp.
 Gas-Tunnel coal at Forest Hill mine near Edgewater; Peerless coal at Peerless, Slaughters Creek, Black Diamond, Monarch, Handley and Black Cat mines.
CHEILANTHITES OBTUSILOBUS var. *DILATUS* (Lesquereux) D. White.
 Cedar Grove coal at East Bank, Black Cat Mine, and Cotton Hill? Also at Short Creek and Peytona.
CHEILANTHITES cf. NUMMULARIUS (Gutbier) D. White.
 Stockton coal at Belmont, and on Buffalo Lick Fork and Spanglers Fork of Blue Creek.
MARIOPTERIS INFLATA (Newberry) D. White.
 Eagle coal at Eagle. Gas coal at Ansted; Diamond.
MARIOPTERIS cf. JACQUOTI (Zeiller) D. White.
 Cedar Grove coal at Cedar Grove.
MARIOPTERIS MURICATA (Schlotheim) Zeiller.
 Eagle coal at Eagle and St. Clair; Stockton coal on Hurricane Branch.
MARIOPTERIS LATIFOLIA (Brongniart) Zeiller.
 Coalmont.
MARIOPTERIS ACUTA (Brongniart) Zeiller.
 Eagle coal at Eagle, Crescent and St. Clair. Peerless coal, Cedar Grove, Peerless, Black Diamond and Slaughters Creek.

MARIOPTERIS ANDRAEANA (v. Roehl) D. White.

Gas coal at Ansted; Peerless coal at Peerless; Cedar Grove coal at East Bank, Black Cat. Also at Blacksburg and Coalmont.

MARIOPTERIS SPHENOPTEROIDES (Lesquereux) Zeiller var. nov. D. White.

Cedar Grove coal at East Bank, Blacksburg.

MARIOPTERIS NERVOSA (Brongniart) Zeiller.

Eagle coal at Eagle; Gas coal at Ansted and Diamond; Stockton coal at Belmont.

SPHENOPTERIS SPINOSA Gopp.

Eagle coal at Eagle and St. Clair; Peerless coal: Cedar Grove, Black Cat, and Slaughter Creek.

SPHENOPTERIS FURCATA Brongn.

Eagle coal at Crescent.

SPHENOPTERIS ELEGANS (Brongn.) Sternb.

Malden.

SPHENOPTERIS GENICULATA Germar & Kaulfuss.

Cedar Grove coal at East Bank and Black Cat mines.

SPHENOPTERIS HILDRETHI Lesquereux.

Cedar Grove coal at East Bank; also at Cotton Hill.

SPHENOPTERIS cf. TRICHOMANOIDES Brongn.

Stockton coal on Buffalo Lick Fork near Cannelton.

SPHENOPTERIS LINKII (Goeppert) Presl.

Eagle coal at Crescent.

SPHENOPTERIS TRACYANA Lesquereux?

Eagle coal at Eagle.

SPHENOPTERIS TENELLA Brongniart

Stockton coal on Buffalo Lick Fork, near Cannelton and at Pond Gap.

SPHENOPTERIS (ZELLERIA) DELICATULA Sternberg.

Gas coal at Ansted.

SPHENOPTERIS HYMENOPHYLLOIDES Brongn.

Stockton coal at Stanton mine, Pond Gap, and near mouth of Hurricane Creek.

SPHENOPTERIS KARWINENSIS Stur.

Stockton coal, Pond Gap, and Buffalo Lick Fork near Cannelton.

SPHENOPTERIS cf. DUBUISSONIS Brongn.

Eagle coal at St. Clair; Gas coal at Forest Hill mine; Peerless coal at Peerless, Handley and Black Cat mines.

SPHENOPTERIS (RENAULTIA) MICROCARPA Lesquereux?

Eagle coal at Eagle and St. Clair.

SPHENOPTERIS SCHATZLARENsis Stur.

Eagle coal at Crescent and St. Clair; Peerless coal at Peerless and Monarch mines.

- SPHENOPTERIS cf. BROADHEADI* D. White.
Stockton coal at Pond Gap.
- SPHENOPTERIS cf. CANNELTONENSIS* D. White.
Peerless coal, Monarch mine.
- SPHENOPTERIS MIXTA* Schimp.
Stockton coal, Belmont mine, and Pond Gap.
- SPHENOPTERIS (CROSSOTHECA) OPHIOGLOSSOIDES* (Lesq.) D. White.
Stockton coal on Buffalo Lick Fork near Cannelton.
- SPHENOPTERIS (CROSSOTHECA) cf. CREPINI* Zeiller.
Peerless coal at Peerless; Gas coal at Ansted; Stockton coal on Buffalo Lick near Cannelton and at Stanton mine.
- OLIGOCARPIA ALABAMENSIS* Lesquereux?
Cedar Grove coal, Cedar Grove.
- OLIGOCARPIA* sp. D. White.
Peerless coal, Handley.
- PECOPTERIS PLUMOSA* Artis.
Gas coal, at Crescent, Diamond, Morris Creek and Ansted.
- PECOPTERIS ASPERA* Brongn.
Gas coal? Cotton Hill.
- PECOPTERIS* sp. cf. *INTEGRA* (Andrae) Schimper.
Eagle coal at Crescent.
- PECOPTERIS VILLOSA* Brongniart.
Stockton coal; Pond Gap.
- PECOPTERIS* sp. cf. *CRENULATA* Brongn.
Tunnel coal and Gas coal, Ansted, Diamond, Morris Creek, Crescent, Kelly's Creek and Carbon Hill.
- ALETHOPTERIS DECURRENS* (Artis) Sternb.
Eagle coal at Crescent.
- ALETHOPTERIS MASSILIONIS* Lx.
Short Creek.
- ALETHOPTERIS LONCHITICA* (Schlotheim) Sternberg.
Gas coal, Ansted: Peerless coal at Cedar Grove; Cedar Grove coal at Cedar Grove, East Bank, and Black Cat mines.
- ALETHOPTERIS SERLII* (Brongn.) Goepp.
Eagle coal at Eagle and St. Clair; Gas-Tunnel coal at Diamond, Forest Hill, Morris Creek; Peerless coal at Peerless, Monarch, Handley, Black Cat and on Slaughter Creek; Cedar Grove coal at East Bank, Riverside mine and on Hurricane and Kelly creeks; Stockton coal at Buffalo Lick Fork and Spanglers Fork of Blue Creek.
- NEUROPTERIS FLEXUOSA* Sternb.
Eagle coal at Eagle; Gas-Tunnel coal at Forest Hill, Diamond, Crescent, Morris Creek and Ansted; Peerless coal at Peerless, Cedar Grove, Black Diamond, Monarch, Black Cat, Handley, and on Slaughter Creek; Cedar Grove coal at Cedar Grove, East Bank and Black Cat.

NEUROPTERIS RARINERVIS Bunbury.

Stockton coal at Buffalo Lick Fork, Belmont, Pond Gap.

Stanton mine on Kelly's Creek, and on Hurricane Creek.

NEUROPTERIS cf. GIGANTEA Sternb.

Gas coal at Ansted; Cedar Grove coal at East Bank.

NEUROPTERIS OVATA Hoffm.

Stockton coal, Pond Gap.

NEUROPTERIS cf. CARRII Lesq.

Stockton coal on Spangler's Fork of Blue Creek.

NEUROPTERIS CISTII Brongn.

Cedar Grove coal at Eastbank and Riverside.

NEUROPTERIS cf. ZEILLERI Potonie.

Eagle coal at Crescent.

NEUROPTERIS SCHEUCHZERI Hoffm.

Stockton coal at Belmont, Staunton mine on Hurricane

Branch, and on Slaughter's Fork of Blue Creek.

CALAMITES SUCKOWII Brongn.

Gas coal: Ansted and Forest Hill mines; Cedar Grove
coal at Cedar Grove and Black Cat mines.

CALAMITES CISTII Brongn.

Gas coal: Ansted; Cedar Grove coal at Eastbank.

CALAMITES RAMOSUS Artis.

Eagle coal, St. Clair mine; Gas coal at Forest Hill; Peer-
less coal at Peerless; Cedar Grove coal at Eastbank; Stock-
tonl coal at Belmont.

CALAMITES APPROXIMATUS Schlotheim.

Cotton Hill.

CALAMITINA sp. D. White.

Gas coal at Morris Creek.

CALAMODENDRON sp. D. White.

Peerless coal: Peerless.

ASTEROPHYLLITES MINUTUS Andrews.

Eagle coal, Crescent; Peerless coal, Cedar Grove and
Handley.

ASTEROPHYLLITES EQUISETIFORMIS (Schlotheim) Brongn.

Stockton coal, Belmont.

ASTEROPHYLLITES LYCOPODIOIDES Zeiller.

Cedar Grove coal at Eastbank.

ASTEROPHYLLITES RIGIDUS (Sternberg) Brongn.

Eagle coal: Eagle. Gas coal: Morris Creek. Cedar Grove
coal: Hurricane Creek, Kelley Creek and Eastbank.

ANNULARIA ACICULARIS (Dawson) Renault.

Eagle coal: Eagle and Crescent.

ANNULARIA RADIATA (Brongniart) Sternberg.

Gas coal: Ansted, Cotton Hill; Peerless coal: Peerless,
Cedar Grove, on Slaughters Fork of Blue Creek; Cedar
Grove coal at Eastbank.

ANNULARIA STELLATA (Schlotheim) Wood.

Stockton coal: Belmont, Stanton mine and Pond Gap.

ANNULARIA SPHENOPHYLLOIDES (Zenker) Gutbier.

Stockton coal on Buffalo Lick Fork, at Stanton mine and Pond Gap.

ANNULARIA RAMOSA (Artis) Weiss.

Eagle coal at St. Clair and Crescent; Gas coal: Ansted; Cedar Grove coal: Eastbank; Peerless coal: Peerless, Cedar Grove, Slaughter Creek, and Handley; Stockton coal: Belmont and Stanton mines.

CALAMOSTACHYS RAMOSUS Weiss.

Eagle coal at St. Clair; Peerless coal at Peerless.

SPHENOPHYLLUM CUNEIFOLIUM (Sternberg) Zeiller.

Eagle coal: Eagle and St. Clair; Gas coal: Forest Hill, Morris Creek, Black Cat and Handley; Cedar Grove coal: Cedar Grove, Hurricane Creek; Stockton coal: Buffalo Lick Fork, Spanglers Fork of Blue Creek, Stanton mine and at Pond Gap.

SPHENOPHYLLUM LESCURIANUM D. White.

Stockton coal: Buffalo Lick Fork and Pond Gap.

SPHENOPHYLLUM EMARGINATUM (Brongniart) Koenig.

Stockton coal: Spanglers Fork of Blue Creek.

SPHENOPHYLLUM FURCATUM (Lindl. & Hutt.) Gein.

Eagle coal at Crescent and Eagle: Peerless coal at Handley.

LYCOPODITES MEEKII Lesquereux.

Stockton coal at Stanton mine and on Hurricane Creek.

LYCOPODITES SIMPLEX Lesquereux.

Peerless coal: Peerless; Cedar Grove coal: Eastbank, Cotton Hill?

BOTHRODENDRON cf. MINUTIFOLIUM (Boulay) Zeiller.

Gas coal: Morris Creek, Ansted and Forest Hill mine; Peerless coal: Peerless, Cedar Grove, Monarch, Handley, Black Cat and on Slaughter Creek; Cedar Grove coal: Cedar Grove, Eastbank, and Kelleys Creek; Stockton coal: Stanton mine.

BOTHRODENDRON sp. D. White.

Eagle coal: St. Clair.

LEPIDODENDRON cf. BRITTSII Lesq.

Gas coal: Forest Hill mine; Peerless coal: Monarch.

LEPIDODENDRON ACUMINATUM (Goepp.) Ung.

Gas coal: Crescent.

LEPIDODENDRON VELTHEIMIANUM Sternb.

Gas coal: Morris Creek; Peerless coal at Handley.

LEPIDODENDRON LANCEOLATUM Lesq.

Stockton coal: Stanton mine and on Hurricane Creek.

LEPIDODENDRON cf. DICHOTOMUM Sternb.

Eagle coal: Eagle and Crescent.

LEPIDODENDRON CLYPEATUM Lesq.

Cedar Grove coal on Kelley's Creek below mouth of Hurricane Creek.

LEPIDODENDRON OBOVATUM Sternb.

Eagle coal: Eagle; Gas coal: Diamond mine.

LEPIDODENDRON MODULATUM Lesq.

Stockton coal at Pond Gap.

LEPIDOPHLOIOS cf. LARICINUS Sternb.

Gas coal: Morris Creek and Ansted; Peerless coal at Handley.

ULODENDRON MAJUS Lindl. & Hutt.

Gas coal at Ansted; Cedar Grove coal at Eastbank.

LEPIDOSTROBUS VARIABILIS Lindl. & Hutt.

Eagle coal: Eagle and St. Clair; Gas coal: Forest Hill, Diamond and Ansted; Peerless coal: Cedar Grove, Monarch and Handley; Cedar Grove coal: Hurricane Branch; Stockton coal: Belmont and Stanton mines.

LEPIDOSTROBUS ORNATUS Brongn.?

Gas coal: Tunnel Mine, Kelley Creek.

LEPIDOSTROBUS SALISBURYI Lesq.

Coal River.

LEPIDOSTROBUS sp. D. White.

Gas coal: Kelleys Creek.

LEPIDOPHYLLUM ACUMINATUM Lesq.

Peerless coal: Peerless.

LEPIDOPHYLLUM LANCEOLATUM Lindl. & Hutt.?

Stockton coal: Stanton mine.

LEPIDOPHYLLUM CAMPBELLIANUM Lesq.

Eagle coal: Eagle and St. Clair; Gas coal: Diamond, Morris Creek, Forest Hill and Ansted; Peerless coal: Peerless; Cedar Grove coal: Kelley Creek below mouth of Hurricane Branch.

LEPIDOPHYLLUM cf. CULTRIFORME Lesq.

Gas coal: Diamond, Morris Creek and Kelley Creek.

LEPIDOCYSTIS OBTUSUS Lesq.

Gas coal: Morris Creek and Kelleys Creek.

LEPIDOCYSTIS VESICULARIS Lesq.

Stockton coal: Buffalo Lick Fork and Stanton mine.

SIGILLARIA FISSA Lesq.

Stockton coal: Hurricane Branch.

SIGILLARIA cf. RETICULATA Lesq.

Gas coal: Morris Creek.

SIGILLARIA cf. ICHTYOLEPIS (Sternb.) Corda.

Gas coal: Tunnel mine.

CORDAITES BORASSIFOLIUS (Sternb.) Ung.

- Gas coal: Tunnel mine.
POACORDAITES sp. D. White.
 Stockton coal; Pond Gap.
CORDAICARPON CIRCULARE (Lesq.) D. White.
 Stockton coal: Stockton.
CORDAICARPON CINCTUM Lesq.
 Stockton coal: Pond Gap.
CARDIOCARPON MINOR Newberry.
 Gas coal: Tunnel mine.
RHABDOCARPOS BOCKSCHIANUS Goepp. & Berg.
 Campbells Creek.
RHABDOCARPOS MULTISTRIATUS (Presl) Lesq.
 Gas coal: Ansted.
RHABDOCARPOS TENAX Lesq.
 Campbells Creek.
RHABDOCARPOS SULCATUS (Lindl. & Hutt.) Schimp.
 Eagle coal: Eagle; Gas coal: Forest Hill and Morris Creek.
RHABDOCARPOS AMYGDALAEFORMIS Goepp. & Berger.
 Peerless coal: Monarch.
CARPOLITHES? FRAGARIOIDES Newberry.
 Gas coal: Ansted; Peerless coal: Peerless.
PALAEoxyris APPENDICULATA Lesq.
 Stockton coal: Stanton mine.
TRIGONOCARPUM AMPULLAEFORME Lesq.
 Malden.
TRIGONOCARPUM NOEGGERATHII (Sternb.) Brongn.
 Campbells Creek and Malden.

PLANTS REPORTED FROM THE ALLEGHENY FORMATION (PENNSYLVANIAN).

- EREMOPTERIS SOLIDA* (Lesq.) D. White.
 Kittanning coal group near Clendennin.
CHEILANTHITES SQUAMOSUS (Lesq.) D. White.
 Granny Branch of Indian Creek near Mason; Kittanning coal group near Clendennin.
MARIOPTERIS SILLIMANNI (Brongn.) D. White.
 Granny Branch of Indian Creek near Mason; Kittanning coal group: Graham mine near Clendennin.
MARIOPTERIS NEWBERRYI (Lesq.) D. White.
 Kittanning coal group near Clendennin.
MARIOPTERIS NERVOSA (Brongn.) Zeill.
 Kittanning coal group on Belva-Lizemore road; Furnace Hollow, Wayne Co.

MARIOPTERIS SPHENOPTEROIDES (Lesq.) Zeill.

Granny Branch of Indian Creek near Mason.

SPHENOPTERIS PINNATIFIDA (Lesq.) D. White.

Kittanning coal group near Clay Court House.

SPHENOPTERIS CHAEROPHYLLOIDES (Brongn.) Presl.

Kittanning coal group near Clendennin.

SPHENOPTERIS cf. STIPULATA Gutb.

Granny Branch of Indian Creek near Mason.

SPHENOPTERIS OPHIOGLOSSOIDES (Lesq.) D. White.

Kittanning coal group: Belva-Lizemore road and near Clendennin.

SPHENOPTERIS (CROSSOTHECA) SAGITTATUS (Lesq.) D. White.

Kittanning coal group near Clay Court House.

PECOPTERIS DENTATA Brongn.

Kittanning coal group near Clay Court House; also in the Allegheny at Furnace Hollow, Wayne Co.

PECOPTERIS UNITA Brongn.

Kittanning coal group near Clendennin and on the Belva-Lizemore road.

PECOPTERIS EMARGINATA (Goepp.) Presl.

Kittanning coal group at Pleasant Retreat and Clendennin (Cobb mine).

PECOPTERIS VESTITA Lesq.

Kittanning coal group, Cobb mine near Clendennin.

PECOPTERIS VILLOSA Brongn.?

Kittanning coal group near Clendennin, and Graham mine near Mason, and along Belva-Lizemore road and near Clay Court House; also in the Allegheny at Furnace Hollow.

Wayne County; also present on Granny Branch of Indian Creek near Mason.

PECOPTERIS OREOPTERIDIA (Schloth.) Sternb.

Kittanning coal group: Graham mine near Mason; also in beds said to be Lower Freeport at Furnace Hollow, Wayne County.

PECOPTERIS MILTONI (Artis) Sternb.

Kittanning coal group at Pleasant Retreat and near Clay Court House.

ALETHOPTERIS PENNSYLVANICA Lesq.

Bed said by Dr. I. C. White to be near the Lower Freeport coal, near Furnace Hollow, Wayne County.

CALLIPTERIDIUM ? INAEQUALE Lesq.

Bed said by Dr. I. C. White to be near the Lower Freeport coal, near Furnace Hollow, Wayne County.

NEUROPTERIS RARINERVIS Bunn.

Kittanning coal group near Clay Court House; also in beds said to be Lower Freeport at Furnace Hollow, Wayne County.

NEUROPTERIS VERMICULARIS Lesq.

Gunter Hollow near Mason.

NEUROPTERIS OVATA Hoffm.

Granny Branch of Indian Creek near Mason; also in Kittanning coal group near Clay Court House, Pleasant Retreat and near Clendennin.

NEUROPTERIS FIMBRIATA Lesq.

Kittanning coal group near Clay Court House.

NEUROPTERIS SCHEUCHZERI Hoffm.

Furnace Hollow, Wayne County, and Granny Branch of Indian Creek near Mason; also from Kittanning coal group near Clay Court House, Graham mine, Pleasant Retreat and near Clendennin.

NEUROPTERIS AGASSIZI Lesq.?

Supposed Lower Freeport horizon in Furnace Hollow, Wayne County.

LINOPTERIS OBLIQUA (Bunbury) Zeill.

Kittanning coal group near Clay Court House.

ODONTOPTERIS WORTHENI Lesq.

Granny Branch of Indian Creek near Mason.

ODONTOPTERIS SUBCUNEATA Bunbury.

Kittanning coal group at Graham mine near Mason.

ODONTOPTERIS AEQUALIS Lesq.

Kittanning coal group, Belva-Lizemore road.

CALAMITES CISTII Brongn.

Kittanning coal group near Clendennin.

ANNULARIA STELLATA (Schloth.) Wood.

Kittanning coal group: Graham mine, Cob mine near Clendennin; near Clay Court House, and Pleasant Retreat.

Also reported on Granny Branch of Indian Creek near Mason.

ANNULARIA SPHENOPHYLLOIDES (Zenk.) Gutb.

Kittanning coal group: Graham mine.

ANNULARIA SPHENOPHYLLOIDES var. *INTERMEDIA* Lesq.

Furnace Hollow, Wayne County.

SPHENOPHYLLUM EMARGINATUM (Brongn.) Koenig.

Kittanning coal group; Cob mine near Clendennin; near Clay Court House, and on Belva-Lizemore road. Also re-

ported on Granny Branch of Indian Creek near Mason.

Beds said to be Lower Freeport age, near Furnace Hollow, Wayne County.

SPHENOPHYLLUM MAJUS Brunn.

Kittanning coal group; near Clendennin.

LEPIDODENDRON MODULATUM Lesq.

Granny Branch of Indian Creek near Mason; also over "Lower Freeport" coal, at Furnace Hollow, Wayne County.

SPHENOPHYLLUM MAJUS Brønn.

Kittanning coal group near Clendennin.

LEPIDOPHLOIOS sp. D. White.

Furnace Hollow, near Huntington pike ("Lower Freeport").

LEPIDOPHYLLUM BREVIFOLIUM Lesq.

Kittanning coal group near Clendennin.

LEPIDOPHYLLUM JENNYI D. White.

Granny Branch of Indian Creek near Mason.

LEPIDOPHYLLUM OBLONGIFOLIUM Lesq.

Kittanning coal group near Clendennin and on Belva-Lizemore road; also over "Lower Freeport" coal in Furnace Hollow, Wayne County.

LEPIDOPHYLLUM HASTATUM Lesq.

Kittanning coal group near Clay Court House.

LEPIDOCYSTIS VESICULARIS Lesq.

Kittanning coal group: Belva-Lizemore road.

SIGILLARIA CAMPTOTAENIA (Wood) Zeill.

Kittanning coal group: Belva-Lizemore road, Clendennin near Clay Court House.

CARPOLITHES ELLIPTICUS Sternb.

Kittanning group: Cobb mine near Clendennin; also reported from the formation on Granny Branch of Indian Creek near Mason.

PLANTS RECORDED FROM THE CONEMAUGH FORMATION (PENNSYLVANIAN).

CHEILANTHITES (SPHENOPTERIS) SOLIDUS (Lesq.) D. White.

Left Fork of Mill Creek, Wayne Co.

CHEILANTHITES OBTUSILOBUS (Brongn.) Gopp.

Left Fork of Mill Creek, Wayne Co.

CHEILANTHITES SQUAMOSUS (Lesq.) D. White.

Left Fork of Mill Creek, Wayne Co.

MARIOPTERIS SILLIMANNI (Brongn.) D. White.

Left Fork of Mill Creek, Wayne Co.

MARIOPTERIS NERVOSA (Brongn.) Zeill.

Left Fork of Mill Creek, Wayne Co.

SPHENOPTERIS MINUTISECTA Font. & I. C. White.

Left Fork of Mill Creek, Wayne Co.

SPHENOPTERIS (CROSSOTHECA) OPHIOGLOSSOIDES Lesq.

Left Fork of Mill Creek, Wayne Co.

ALETHOPTERIS SERLII. (Brongn.) Gopp.

Left Fork of Mill Creek, Wayne Co.

PECOPTERIS UNITA Brongn.

Left Fork of Mill Creek, Wayne Co.

- PECOPTERIS VILLOSA* Brongn.?
 Left Fork of Mill Creek, Wayne Co.
- PECOPTERIS cf. JENNEYI* D. White.
 Left Fork of Mill Creek, Wayne Co.
- PECOPTERIS OREOPTERIDIA* (Schloth.) Sternb.
 Left Fork of Mill Creek, Wayne Co.; near Lavalette.
- PECOPTERIS MILTONI* (Artis) Sternb.
 Left Fork of Mill Creek, Wayne Co.
- PECOPTERIS POLYMORPHA* Brongn.
 Near Lavalette.
- PECOPTERIS* sp. D. White.
 Near Lavalette.
- NEUROPTERIS OVATA* Hoffm.
 Left Fork of Mill Creek, Wayne Co.
- NEUROPTERIS FIMBRIATA* Lesq.
 Left Fork of Mill Creek, Wayne Co.
- NEUROPTERIS SCHEUCHZERI* Hoffm.
 Wheeling, and 20 feet below the Pittsburgh coal at
 Bellaire, Ohio.
- SPHENOPHYLLUM MAJUS* Bronn.
 Left Fork of Mill Creek, Wayne Co.
- LYCOPODITES PENDULUS* Lesq.
 Left Fork of Mill Creek, Wayne Co.
- SIGILLARIA FISSA* Lesq.
 Left Fork of Mill Creek, Wayne Co.
- LEPIDOCYSTIS VESICULARIS* Lesq.
 Left Fork of Mill Creek, Wayne Co.
- CORDAICARPON GUTBIERI* (Gein.) Gr. 'Ery.
 Left Fork of Mill Creek, Wayne Co.

PLANTS RECORDED FROM THE MONONGAHELA FORMATION (PENNSYLVANIAN).

- MARIOPTERIS?* *SPINULOSA* (Lesq.) D. White.
 Wheeling, W. Va.
- ALETHOPTERIS AQUILINA* (Schloth.) Goepp.
 Wheeling, W. Va.
- PECOPTERIS UNITA* Brongn.
 Wheeling, W. Va.
- PECOPTERIS VILLOSA* Brongn.?
 Wheeling, W. Va.
- PECOPTERIS cf. JENNEYI* D. White.
 Wheeling, W. Va.
- PECOPTERIS NOTATA* Lesq.
 Redstone coal, Wheeling, W. Va.

- PECOPTERIS NODOSA* (Goepp.) Schimp.
Marietta, Ohio.
- DICKSONITES PLUCKENETI* (Schloth.)
Wheeling, W. Va.
- NEUROPTERIS CALLOSA* Lesq.
Pomeroy, Ohio.
- NEUROPTERIS CRENULATA* Brongn.
Pomeroy, Ohio.
- NEUROPTERIS GRANGERI* Brongn.
Wheeling, W. Va., and Bellaire, Ohio.
- NEUROPTERIS SCHEUCHZERI* Hoffm.
Wheeling, W. Va., and Bellaire, Ohio; 20 feet below Pittsburgh coal.
- LESCUROPTERIS MOORII* (Lesq.) Schimp.
Wheeling, W. Va.
- APHLEBIA FILICIFORMIS* (Gutb.) Schimp.
Wheeling, W. Va.
- SIGILLARIA MENARDI* Brongn.
Pomeroy, Ohio.

LIST OF FOSSIL PLANTS REPORTED FROM THE
DUNKARD FORMATION* (PERMIAN).

- DIPLOTHMEMA PACHYDERMA* (Font. & I. C. White) D. White.
Waynesburg coal, Cassville, and Dents Run; also 500 feet above the same coal.
- SPHENOPTERIS MINUTISECTA* Font. & I. C. White.
Waynesburg coal at West Union.
- SPHENOPTERIS (CYMOGLOSSA) BREVILOBA* (Font. & I. C. W.) D. White.
Waynesburg coal at Cassville.
- SPHENOPTERIS (CYMOGLOSSA) FORMOSA* (Font. & I. C. White) D. White.
Waynesburg coal at Cassville.
- SPHENOPTERIS (CYMOGLOSSA) LOBATA* (Font. & I. C. White) D. White.
Waynesburg coal at Cassville.
- SPHENOPTERIS (CYMOGLOSSA) OBTUSIFOLIA* (Font. & I. C. White) D. White.
Waynesburg coal at Cassville.

*For notes on the Permian-Monongahela boundary see Bull. Geol. Soc., Amer., vol. xiv, 1903, p. 538; Geol. Survey W. Va., vol. 11, p. 120; and the U. S. Geol. Survey, Waynesburg and Rogersville Folios.

- SPHENOPTERIS LESCURIANA* Meek.
Waynesburg coal at West Union.
- SPHENOPTERIS DENTATA* Font. & I. C. White.
Waynesburg coal at Cassville.
- SPHENOPTERIS AURICULATA* Font. & I. C. White.
Waynesburg coal at Cassville.
- SPHENOPTERIS FOLIOSA* Font. & I. C. White.
Waynesburg coal at Cassville.
- SPHENOPTERIS HASTATA* Font. & I. C. White
Waynesburg coal at West Union.
- SPHENOPTERIS HASTATA* Font. & I. C. White.
Waynesburg coal at Cassville.
- SPHENOPTERIS ACROCARPA* Font. & I. C. White.
Waynesburg coal at Cassville.
- SPHENOPTERIS* sp.? Font. & I. C. White.
Waynesburg coal at Cassville.
- PECOPTERIS PLUCKENETI* (Schloth.) Sternb.
Waynesburg coal at West Union.
- PECOPTERIS PLUCKENETI* var. *CONSTRICTA* Font. & I. C. White.
Waynesburg coal at West Union.
- PECOPTERIS GERMARI* (Weiss) Font. & I. C. White.
Waynesburg coal at West Union and Cassville.
- PECOPTERIS GERMARI* var. *CRASSINERVIS* Font. & I. C. White.
Waynesburg coal at West Union.
- PECOPTERIS GERMARI* var. *CUSPIDATA* Font. & I. C. White.
Waynesburg coal at West Union.
- PECOPTERIS DENTATA* var. *CRENATA* Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS DENTATA* var. *PARVA* Lesq.
Waynesburg coal, Cassville.
- PECOPTERIS PACHYPTEROIDES* Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS (GONIOPTERIS) EMARGINATA* (Gopp.) D. White.
Waynesburg coal, Cassville and 800 feet higher at Bellton.
- PECOPTERIS (GONIOPTERIS) OBLONGA* (Font. & I. C. White)
Miller.
Waynesburg coal, West Union.
- PECOPTERIS (GONIOPTERIS) NEWBERRIANA* (Font. & I. C. W.)
Miller.
Waynesburg coal, West Union.
- PECOPTERIS (GONIOPTERIS) LONGIFOLIA* (Font. & I. C. W.), D.
White.
Waynesburg coal, Cassville.
- PECOPTERIS (GONIOPTERIS) ELLIPTICA* (Font. & I. C. White) D.
White.
Waynesburg coal, Cassville.

- PECOPTERIS (GONIOPTERIS) sp.? Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS (GONIOPTERIS) ARGUTA (Brongn.).
Waynesburg coal, Cassville and West Union.
- PECOPTERIS GONIOPTEROIDES Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS (GONIOPTERIS) ELEGANS (Germ.).
Waynesburg coal, Cassville.
- PECOPTERIS ARBORESCENS (Schloth.) Brongn.
Waynesburg coal at Cassville, West Union, etc.; 400 feet
above that coal at Bellton.
- PECOPTERIS ARBORESCENS var. INTEGRIPINNA Font. & I. C. White.
400-600 feet above the Waynesburg coal in Monongalia,
Tyler and Marshall counties.
- PECOPTERIS PENNAEFORMIS var. LATIFOLIA Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS CANDOLLEANIA Brongn.
Waynesburg coal, West Union.
- PECOPTERIS OREOPTERIDIA (Schloth.) Sternb.
400 feet above Waynesburg coal at Bellton.
- PECOPTERIS RARINERVIS Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS IMBRICATA Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS PLATYNERVIS Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS ASPLENIOIDES Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS ROTUNDILORA Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS MICROPHYLLA Brongn.
Waynesburg coal, Cassville.
- PECOPTERIS ANGUSTIPINNA Font. & I. C. White.
Waynesburg coal, West Union.
- PECOPTERIS TENUINERVIS Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS SUBFALCATA Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS HEERIANA Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS SCHIMPERIANA Font. & I. C. White.
Waynesburg coal, West Union.
- PECOPTERIS LANCEOLATA Font. & I. C. White.
Waynesburg coal at Moundsville, and 400 feet higher at
Bellton.
- PECOPTERIS INCLINATA Font. & I. C. White.
Waynesburg coal, Cassville.

- PECOPTERIS MERIANOPTEROIDES Font. & I. C. White.
Waynesburg coal, Cassville, W. Va., and Carmichaels.
Penna.
- PECOPTERIS ROTUNDIFOLIA Font. & I. C. White.
Waynesburg coal, Cassville.
- PECOPTERIS sp.? D. White.
Waynesburg coal, Cassville.
- PECOPTERIS OVOIDES Font. & I. C. White.
400 feet above Waynesburg coal at Bellton.
- PECOPTERIS LATIFOLIA Font. & I. C. White.
Waynesburg coal, Cassville and at Bellton.
- PECOPTERIS PTEROIDES Brongn.
Waynesburg coal near Arnettville.
- PECOPTERIS MILTONI (Artis) Sternb.
Waynesburg coal, West Union.
- PECOPTERIS POLYMORPHA Brongn.
Cassville?
- PECOPTERIS ELLIPTICA Bunbury.
Waynesburg coal, Cassville.
- PECOPTERIS (CALLIPTERIDIUM) GRANDIFOLIA (F. & I. C. W.).
D. White.
Waynesburg coal: West Union, Dents Run, and Georgetown.
- PECOPTERIS (CALLIPTERIDIUM) OBLONGIFOLIA (F. & I. C. W.).
D. White.
Waynesburg coal at Dents Run, Georgetown and Cassville,
and 400 feet higher at Bellton.
- PECOPTERIS (CALLIPTERIDIUM) ODONTOPTEROIDES (F. & I. C. W.)
D. White.
Waynesburg coal at Cassville, Georgetown and Arnettville.
- PECOPTERIS (CALLIPTERIDIUM) UNITUM (Font. & I. C. White.)
D. White.
Waynesburg coal at Cassville, Georgetown and Arnettville.
- PECOPTERIS (CALLIPTERIDIUM) Dawsonianum (F. & I. C. W.)
D. White.
Waynesburg coal, West Union, Cassville and Dents Run
- ALETHOPTERIS VIRGINIANA Font. & I. C. White.
Waynesburg coal, Cassville.
- ALETHOPTERIS GIGAS (Gutb.) Gein.
500 feet above Waynesburg coal at Bellton.
- CALLIPTERIS CONFERTA (Sternb.) Brongn.
Washington coal near Brown's Bridge, Monongalia
County.

- CALLIPTERIS LYRATIFOLIA* (Grand 'Eury) var. *CORIACEA* (F. & I. C. W.) D. White.
Washington coal group near Jollytown, Pa.
- CALLIPTERIS CURRETIENSIS* Zeill. (F & I. C. W.) D. White.
Washington coal group near Jollytown, Pa.
- TAENIOPTERIS LESCURIANA* Font. & I. C. White.
Waynesburg coal, Cassville.
- TAENIOPTERIS NEWBERRIANA* Font. & I: C. White.
Waynesburg coal, Cassville.
- TAENIOPTERIS NEWBERRIANA* var. *ANGUSTA* Font. & I. C. White
Waynesburg coal, Cassville.
- NEUROPTERIS OVATA* Hoffm. (variety).
Waynesburg coal, Cassville and Brown's Mills.
- NEUROPTERIS GIBBOSA* Lesq.
Waynesburg coal at Brown's Mills.
- NEUROPTERIS PLANCHARDI* Zeill. var. *LONGIFOLIA* (F. & I. C. W.)
D. White.
Waynesburg coal at West Union.
- NEUROPTERIS DICTYOPTEROIDES* F & I. C. White.
Waynesburg coal at West Union and 400 feet above
Waynesburg coal at Bellton.
- NEUROPTERIS FIMBRIATA* Lesq.
Waynesburg coal at Carmichaels, Pa.
- NEUROPTERIS CORDATA* Brongn.
Waynesburg coal at Cassville and West Union.
- NEUROPTERIS AURICULATA* Brongn.
Waynesburg coal at Cassville and West Union, and 400
feet higher at Bellton.
- LESCUROPTERIS ADIANTOIDES* Lesq.
Waynesburg coal at Georgetown.
- ODONTOPTERIS REICHIANA* Gutb.
Waynesburg coal at Brown's Mills.
- ODONTOPTERIS OBTUSILOBA* var. *RARINERVIS* Font. & I. C. White.
400 feet above Waynesburg coal at Bellton.
- ODONTOPTERIS NERVOSA* Font. & I. C. White.
Waynesburg coal at Cassville and West Union.
- ODONTOPTERIS DENSIFOLIA* Font. & I. C. White.
Waynesburg coal at Cassville.
- CAULOPTERIS GIGANTEA* Font. & I. C. White.
Waynesburg coal, Cassville.
- CAULOPTERIS ELLIPTICA* Font. & I. C. White.
Waynesburg coal, Cassville.
- APHLEBIA (RHACOPHYLLUM) LACINIATUM* (F. & I. C. White).
Sellards.
Waynesburg coal, Cassville.

*Probably not this species.

- SIGILLARIA BRARDII Brongn.
Waynesburg coal, Cassville.
- SIGILLARIA APPROXIMATA Font. & I. C. White.
Waynesburg coal, Arnettville.
- CORDAITES CRASSINERVIS Font. & I. C. White.
Waynesburg coal, Cassville.
- BAIERA VIRGINIANA Font. & I. C. White.
Waynesburg coal, Cassville.
- SAPORTAEA SALISBURIOIDES Font. & I. C. White.
Waynesburg coal, Cassville.
- RHABDOCARPOS OBLONGATUS Font. & I. C. White.
Waynesburg coal, Cassville.
- CARPOLITHES BICARPUS Font. & I. C. White.
Waynesburg coal, Cassville.
- CARPOLITHES MARGINATUS Font. & I. C. White.
Waynesburg coal, Cassville.
- GUILIELMITES ORBICULARIS Font. & I. C. White.
Waynesburg coal, Cassville.

FOSSIL PLANTS REPORTED FROM THE CARMICH-
AELS CLAY (PLEISTOCENE) NEAR
MORGANTOWN.

- EQUISETUM ARVENSE L.
- POTAMOGETON ROBBINSII Oakes.
- CYPERUS sp. Knowlton.
- CASTANEA PUMILA Mill.
- FAGUS FERRUGINEA Ait.
- BETULA NIGRA L.
- QUERCUS FALCATA Mich.
- ULMUS RACEMOSA Thomas.
- PLATANUS OCCIDENTALIS L.
- Liquidambar STYRACIFLUA L.

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