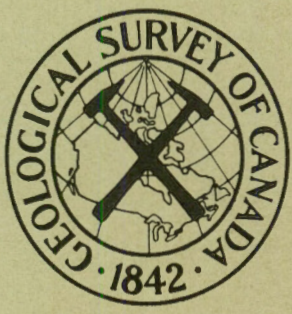


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Illustrations of Canadian Fossils CARBONIFEROUS PLANTS OF EASTERN CANADA

(Report and 36 plates)

W. A. Bell

a



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OF CANADA**

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CARBONIFEROUS PLANTS OF EASTERN CANADA

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ABSTRACT

Illustrates the more common and recognizable carboniferous megaplant remains from eastern Canada. The plants illustrated range from Tournaisian to late Westphalian. Some are long ranging but others may be assigned to distinct floral assemblages that permit correlation and assist in deciphering the time sequences of the various formations or groups into which the Carboniferous rocks of the region have been divided for purposes of geological mapping.

Illustrations of Canadian Fossils

CARBONIFEROUS PLANTS OF EASTERN CANADA

Introduction

This paper contains illustrations of megaplant remains that were found to be of common occurrence in Carboniferous strata of eastern Canada. It is one of a series designed by the Geological Survey, primarily for use of field geologists.

Many of these plants have too long a vertical stratigraphical range to be useful in refined age correlations. Others, however, make up floral assemblages that are sufficiently restricted in range to enable geologists to decipher time sequences of the various lithological formations or groups into which the Carboniferous sediments of the region have been divided for purposes of geological mapping. Moreover, they permit correlating stratigraphic zones containing such assemblages in terms of ages accepted for international usage.

The ages indicated by one or more floral assemblages within a group do not define the total time interval of deposition of that unit. No group is a time-rock unit, but each transects time-horizons. Moreover, the floral zones indicative of age are within it, and rarely extend to both its basal and upper stratigraphic limits. In addition to the floral zones a group contains both transgressive and regressive facies, including coarse marginal deposits and commonly, particularly at the top, thick red-bed sequences, neither of which ordinarily contain megaplants suitable for refined age correlation. Recently, studies of miospore assemblages have added to the time interval previously assigned to a group. As an example, marginal deposits of the Cumberland Group in the Apple River-Spicer Cove area at southwestern end of the classic Joggins section have yielded a miospore assemblage interpreted to be indicative of an early Westphalian C and/or late Westphalian B age, extending the time-interval of deposition of that group from early Westphalian B - the age indicated by megaplants derived from the coal-bearing central basin facies (P.A. Hacquebard and J.R. Donaldson; GSC Paper 64-2, p. 9).

The plates have been arranged in general order of time sequence of the lithological groups. Following Tournaisian and Viséan, early Namurian is considered to embrace mainly Namurian A age; late Namurian, to include some interval within Namurian B - Namurian C. Early Westphalian is used to cover some part of Westphalian A, mid-Westphalian an interval within Westphalian B - Westphalian early C, and late Westphalian an interval within Westphalian late C - Westphalian D.

Miospore assemblages indicative of Stephanian and early Permian ages have been collected from Carboniferous strata of Prince Edward Island (M.S. Barss, P.A. Hacquebard and R.D. Howie, GSC Paper 63-3, p. 7). Imprints of megaplants, particularly of pectopterids and of Walchia do occur in the Island deposits, but details of the venation are generally lacking, or so obscure as to defy reliable specific identification, and none of these remains have been illustrated in this paper.

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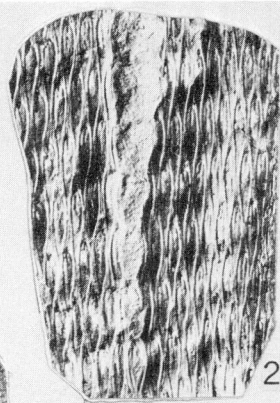
PLATE I

Mississippian (Tournaisian - Namurian)

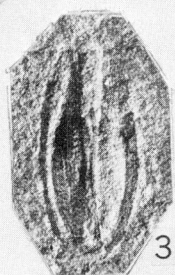
- FIGURE 1: Aneimites acadica Dawson. Hypotype, GSC No. 720. Horton Group (Horton Bluff Formation). Harding Angus Brook, Gaspereau area, N.S., GSC loc. 1170. Collector, H.M. Ami.
- FIGURE 2: Lepidendropsis corrugata (Dawson) Bell. Hypotype, GSC No. 15016. Horton Group (Horton Bluff Formation). Reed Brook, about one mile upstream from bridge on Avonport-Wallbrook road, N.S., GSC loc. 423. Collector, W.A. Bell.
- FIGURE 3: Carpolithus tenellus (Dawson) Bell. Hypotype, GSC No. 786a x 4. Horton Group (Horton Bluff Formation). Curry Brook, about 500 feet downstream from bridge on secondary road southwest of Wallbrook, N.S., GSC loc. 683. Collector, W.A. Bell.
- FIGURE 4: Asterocalamites scrobiculatus (Schlotheim) Zeiller. Hypotype, GSC No. 783. Horton Group (Cheverie member). Avon River shore, about 5,040 feet southwesterly from bridge over Cheverie Creek, N.S., GSC loc. 22176 (= 2070). Collector, W.A. Bell.
- FIGURE 5: Lepidodendropsis sp. A, Bell. GSC No. 15014. Horton Group (Horton Bluff Formation). Horton bluffs, Avon River, Avonport, N.S., GSC loc. 813. Collector, W.A. Bell.
- FIGURE 6: Triphyllopteris virginiana (Meek) Read. Hypotype, GSC No. 761. Horton Group. McPherson Lake, east of Guysboro, N.S., GSC loc. 5032. Collector, I.M. Stevenson.



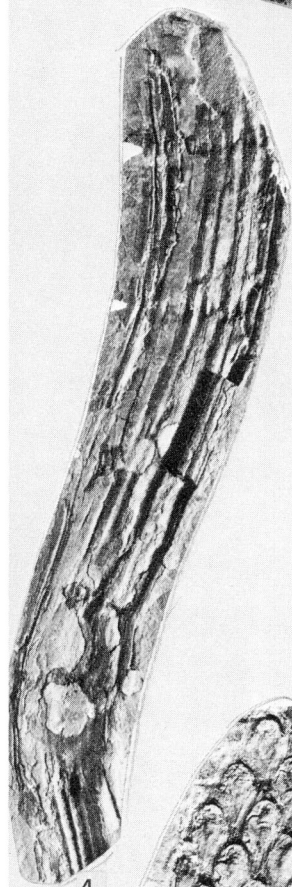
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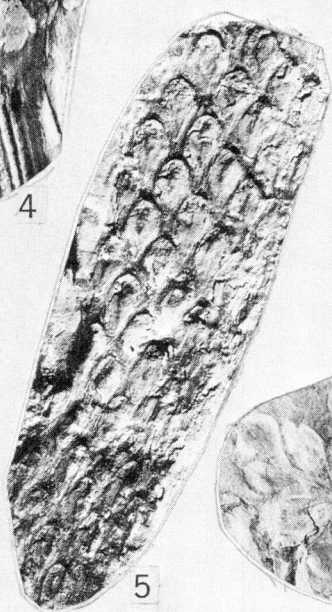
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PLATE II

Mississippian (Tournaisian - Namurian)

- FIGURE 1: Triletes glaber (Dawson) Bell. Hypotype, GSC No. 15015. Horton Group (Horton Bluff Formation). Horton bluffs, Avon River, Avonport, N.S., GSC loc. 813. Collector, W.A. Bell.
- FIGURE 2: Sphenopteris macconochiei? Kidston. Hypotype? GSC No. 15013. Horton Group (Cheverie member). Shore, Avon River, about one mile southwesterly from bridge over Cheverie Creek, N.S., GSC loc. 2164 (= 2070). Collector, W.A. Bell.
- FIGURE 3: Nematophyllum sp. Bell. GSC No. 789a. Horton Group (Kennebecasis Formation). Keith's beach, Kennebecasis Island, St. John Co., N.B., GSC loc. 653. Collector, W.J. Wilson.
- FIGURE 4: Rhacopteris robusta Kidston. Hypotype, GSC No. 15010. Windsor Group. Frenchvale Brook, Cape Breton Co., N.S., GSC loc. 1659. Collector, W.A. Bell.
- FIGURE 5: Telangium cf. affine (Lindley and Hutton) Kidston. GSC No. 15018. Canso Group (Alma Formation). Tributary to West River Pictou, Lovat, N.S., about three miles above its junction, GSC loc. 2072. Collector, W.A. Bell.
- FIGURE 6: Telangium cf. affine (Lindley and Hutton) Kidston. GSC No. 15018 x 2.
- FIGURE 7: Diplotmema adiantoides (Schlotheim) Gothan. Hypotype, GSC No. 15012. Canso Group (Searston beds). Stormy Point-Capeland Cove shore section, Codroy area, Newfoundland, GSC loc. 3653. Collector, W.A. Bell.
- FIGURE 8: Sphenophyllum tenerrimum Ettingshausen. Hypotype, GSC No. 14931. Canso Group (Searston beds). Stormy Point-Capeland Cove shore section, Codroy area, Newfoundland, GSC loc. 3656. Collector, W.A. Bell.

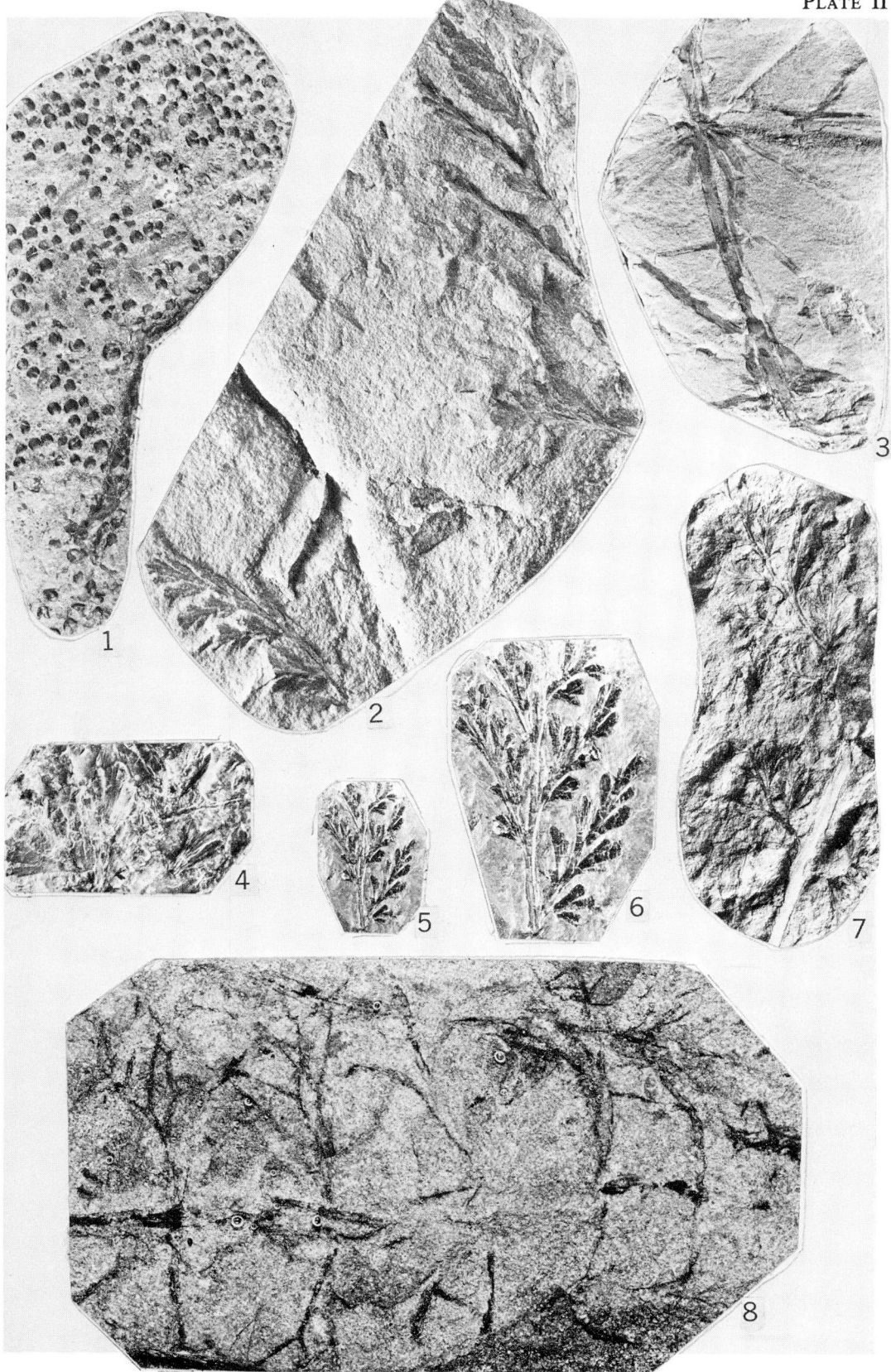


PLATE III

Mississippian (Tournaisian - Namurian)

- FIGURE 1: Diplotmema adiantoides (Schlotheim) Gothan. Hypotype, GSC No. 15012 x 2 (see Plate II, Fig. 7).
- FIGURE 2: Calamites (Mesocalamites) cistiiformis Stur. Hypotype, GSC No. 9937. Canso Group. Shore two miles west of Friar Point, and 5,000 feet south of Grand Etang, Inverness Co., N.S., GSC loc. 1418. Collector, W.A. Bell.
- FIGURE 3: Lepidodendron volkmannianum Sternberg. Hypotype, GSC No. 6320. Canso Group (Searston beds). Searston shore, Codroy area, Newfoundland, GSC loc. 3662. Collector, W.A. Bell.
- FIGURE 4: Lepidodendron praelanceolatum Bell. Holotype, GSC No. 9800 x 2. Canso Group (Point Edward Formation). Point Edward, Sydney coalfield, GSC loc. 2268. Collector, J.E. Hyde.
- FIGURE 5: Telangium cf. affine (Lindley and Hutton) Kidston. GSC No. 15019. Canso Group (Alma Formation). Tributary to West River Pictou, Lovat, N.S., about three miles below junction, GSC loc. 2072. Collector, W.A. Bell.

Pennsylvanian (Westphalian A)

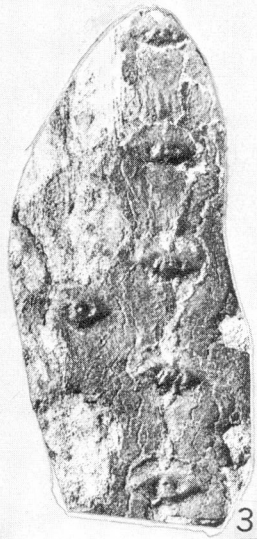
- FIGURE 6: Mariopteris acuta (Brongniart) Zeiller. Hypotype, GSC No. 3074. Riversdale Group (Port Hood Formation). Shore about two-fifths mile north of old slope on coal seam at Chimney Corner, Inverness Co., N.S., GSC loc. 1420. Collector, W.A. Bell.
- FIGURE 7: Sphenopteris lineata Bell. Hypotype, GSC No. 15032. Riversdale Group (Boss Point Formation). Oxford Junction, N.S., on River Philip south of Racetrack Brook, GSC loc. 879. Collector, W.A. Bell.
- FIGURE 8: Sphenopteris lineata Bell. Holotype, GSC No. 10969. Riversdale Group (Parrsboro Formation). West Bay shore of Minas Basin, Parrsboro area, N.S., GSC loc. 1928. Collector, W.A. Bell.



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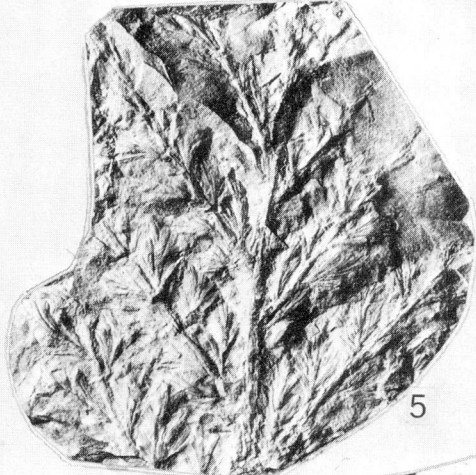
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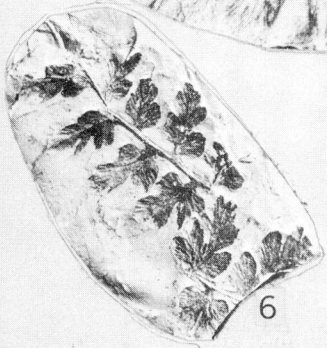
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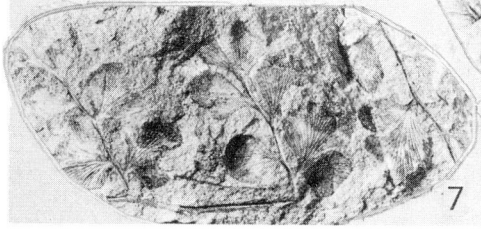
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PLATE IV

Pennsylvanian (Westphalian A)

- FIGURE 1: Crossotheca pinnatifida (Gutbier) H. Potonié. Hypotype, GSC No. 15040. Riversdale Group (Boss Point Formation). Cape Enragé, Albert Co., N.B., 10 chains north of Squaw Cape, GSC loc. 887. Collector, A.W. Wilson.
- FIGURE 2: Whittleseyia desiderata D. White. Hypotype, GSC No. 14961 x 2. Riversdale Group (Parrsboro Formation). Harrington River, N.S., GSC loc. 3100. Collector, H.M. Ami.
- FIGURE 3: Whittleseyia desiderata D. White. Hypotype, GSC No. 14961, natural size. Riversdale Group. Harrington River, N.S., GSC loc. 3100. Collector, H.M. Ami.
- FIGURE 4: Alethopteris decurrens (Artis) Zeller. Hypotype, GSC No. 14995. Riversdale Group (Parrsboro Formation). Minas basin, Parrsboro area, N.S., shore between Moose River and Moose Creek, N.S., GSC 1450. Collector, W.A. Bell.
- FIGURE 5: Adiantites oblongifolius Göppert. Hypotype, GSC No. 15051. Riversdale Group (Port Hood Formation). St. Rose, Inverness Co., N.S., GSC loc. 5868. Collector, W.A. Bell.
- FIGURE 6: Whittleseyia desiderata D. White. Hypotype, GSC No. 14959. Riversdale Group (Parrsboro Formation). West Branch North River, Five Islands, N.S., GSC loc. 1946. Collector, W.A. Bell.
- FIGURE 7: Neuropteris schlehani Stur. Hypotype, GSC No. 14955. Riversdale Group (Boss Point Formation). Maringouin Peninsula, N.B., Shepody Bay, south of Hard Ledge and above Enragé conglomerate, GSC loc. 1357. Collector, W.A. Bell.
- FIGURE 8: Adiantites oblongifolius Göppert. Hypotype, GSC No. 15045. Riversdale Group (Port Hood Formation). St. Rose, Inverness Co., N.S., GSC loc. 5868. Collector, W.A. Bell.
- FIGURE 9: Sphenopteris sulcata Bell. Hypotype, GSC No. 15025. Riversdale Group (Boss Point Formation). Shore at St. Mary's Point, Albert Co., N.B., GSC loc. 14331 (= 1429). Collector, W.A. Bell.
- FIGURE 10: Adiantites oblongifolius Göppert. Hypotype, GSC No. 15052. Riversdale Group (Port Hood Formation). St. Rose, Inverness Co., N.S., GSC loc. 5868. Collector, W.A. Bell.
- FIGURE 11: Sphenopteris lineata Bell. Hypotype, GSC No. 15055. Riversdale Group (Parrsboro Formation). Harrington River, N.S., GSC loc. 3100. Collector, H.M. Ami.
- FIGURE 12: Neuropteris schlehani Stur. Hypotype, GSC No. 14946. Riversdale Group (Boss Point Formation). Maringouin Peninsula, N.B., Shepody Bay, south of Hard Ledge and above Enragé conglomerate, GSC loc. 1357. Collector, W.A. Bell.
- FIGURE 13: Lepidodendron pictoense Dawson (= ? L. ophiurus Brongniart). Hypotype, GSC No. 14929. Riversdale Group (Parrsboro Formation). Minas Basin shore between Moose River and Moose Creek, N.S., GSC loc. 3100. Collector, W.A. Bell.

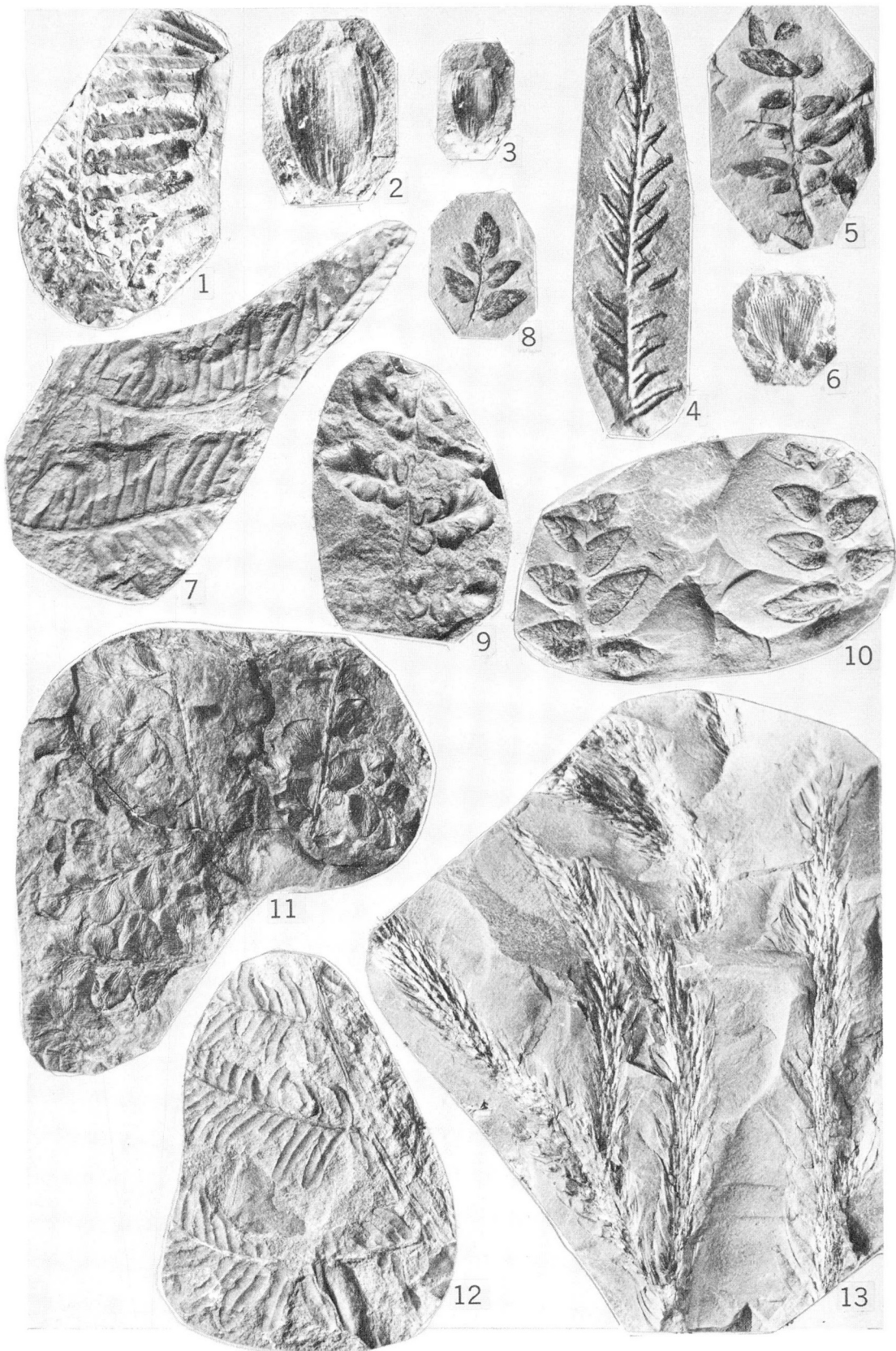


PLATE V

Pennsylvanian (Westphalian A)

- FIGURE 1: Artisia sp. GSC No. 15062 (a discoid pithcast of Cordaites). Riversdale Group (Port Hood Formation). Cape Susan, Inverness Co., N.S., GSC loc. 3387. Collector, W.A. Bell.
- FIGURE 2: Whittleseya desiderata D. White. Hypotype GSC No. 14958. Riversdale Group (Parrsboro Formation). West Branch North River, Five Islands, N.S., GSC loc. 1946. Collector, W.A. Bell.
- FIGURE 3: Hypotype No. 14958 (above) x 2.
- FIGURE 4: Whittleseya desiderata D. White. Hypotype GSC No. 14959. Riversdale Group (Boss Point Formation). Big Lake Brook, Cumberland Co., N.S., 5/8 mile southeast of where brook enters Pugwash River, GSC loc. 875. Collector, G.W.H. Norman.
- FIGURE 5: Hypotype No. 14959 (above) x 2.
- FIGURE 6: Whittleseya desiderata D. White. Hypotype, GSC No. 14944 x 2. Riversdale Group. Harrington River, Five Islands, N.S., GSC loc. 3100. Collector, H.M. Ami.
- FIGURE 7: Rhodea laqueata Bell. Hypotype, GSC No. 15046. Riversdale Group (Port Hood Formation). Chimney Corner section, Inverness Co., N.S., shore about 2/5 mile north of old coal mine at Chimney Corner, GSC loc. 1420. Collector, W.A. Bell.
- FIGURE 8: Hypotype GSC No. 15046 (above) x 2.
- FIGURE 9: Neuropteris schlehani Stur. Hypotype, GSC No. 14954. Riversdale Group. Shore at St. Mary's Point, Albert Co., N.B., GSC loc. 1429. Collector, W.A. Bell.
- FIGURE 10: Samaropsis baileyi (Dawson) Bell. Hypotype, GSC No. 5898. Cumberland Group (Lancaster Formation). Gardiner Creek, 40 chains east of Doctor Brook, St. John Co., N.B., GSC loc. 700. Collector, W.J. Wilson.
- FIGURE 11: Cordaicarpus dawsoni Bell. Hypotype, GSC No. 5529. Cumberland Group. Spicer Cove, Apple River area, Joggins section, N.S., GSC loc. 1348. Collector, W.A. Bell.
- FIGURE 12: Hypotype No. 5529 (above) x 2.
- FIGURE 13: Samaropsis crampii (Hartt) Bell. Hypotype, GSC No. 8217. Cumberland Group (Lancaster Formation). Tynemouth Creek, St. John Co., N.B., GSC loc. 562. Collector, W.J. Wilson.
- FIGURE 14: Annularia acicularis (Dawson) Mathew. Hypotype, GSC No. 14912. Springhill, N.S., unspecified location of bore-hole at depth 905 feet, GSC loc. 666. Collector, W.A. Bell.
- FIGURE 15: Adiantites obtusus (Dawson) Bell. Hypotype, GSC No. 15031. Cumberland Group. Joggins sections, N.S., Division III Logan, GSC loc. 1364. Collector, W.A. Bell.
- FIGURE 16: Calamites undulatus Brongniart. Hypotype, GSC No. 9808. Riversdale Group (Parrsboro Formation). Minas Bay shore, Parrsboro area, between Moose River and Moose Creek, N.S., GSC loc. 1406. Collector, W.A. Bell.
- FIGURE 17: Adiantites obtusus (Dawson) Bell. Hypotype, GSC No. 15030. Cumberland Group. Joggins section, N.S., Division III Logan, GSC loc. 1364. Collector, W.A. Bell.
- FIGURE 18: Senftenbergia plumosa Artis. Hypotype, GSC No. 15006. Cumberland Group. East Apple River above small falls and about 1 mile upstream from bridge, Joggins section, N.S., GSC loc. 1362. Collector, W.A. Bell.
- FIGURE 19: Sphenopteris deltiformis Kidston. Hypotype, GSC No. 15036. Cumberland Group (Lancaster Formation), Fern ledges[†], Duck Cove, St. John, N.B., GSC loc. 352. Collector, M.C. Stopes.

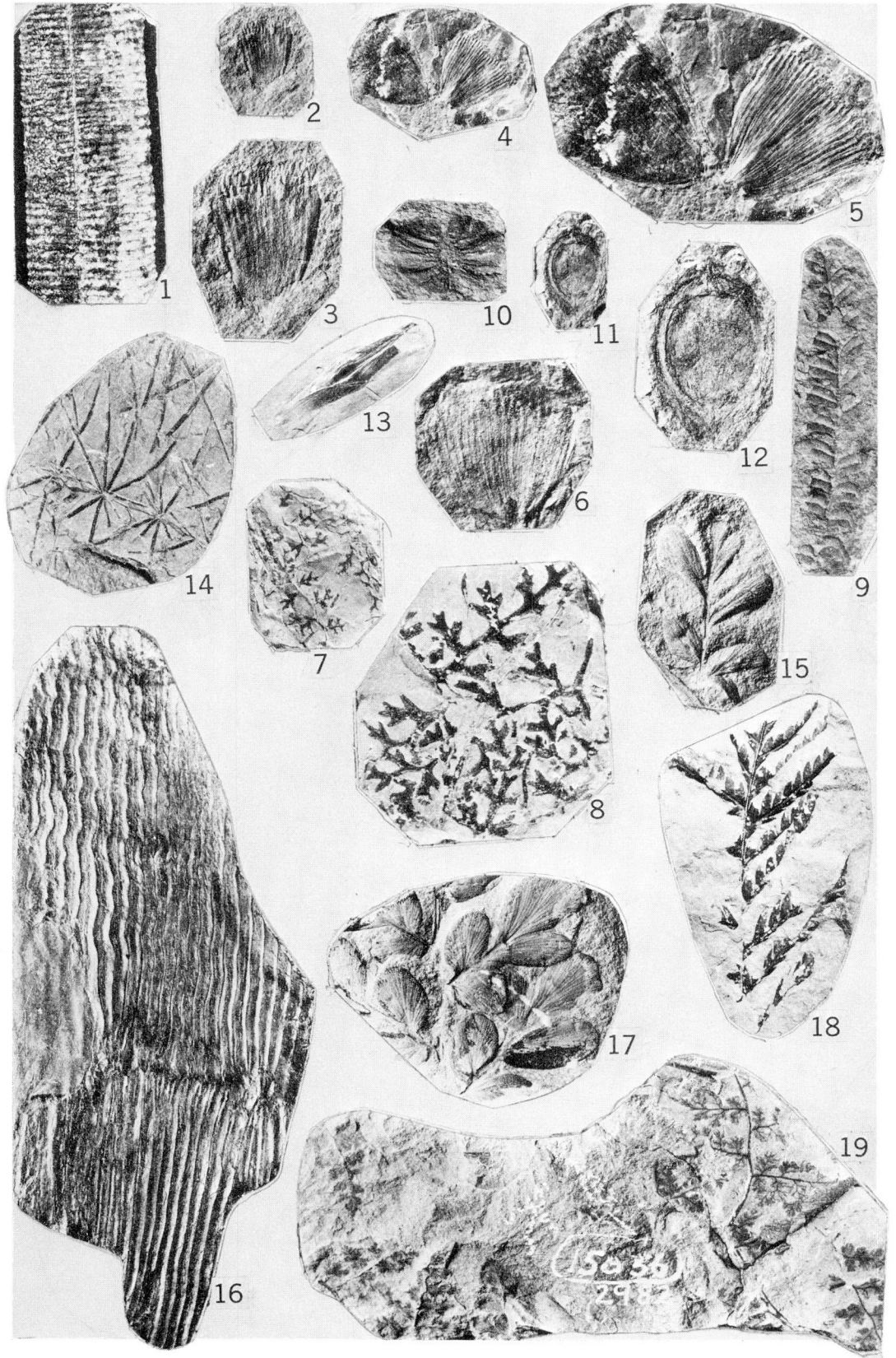
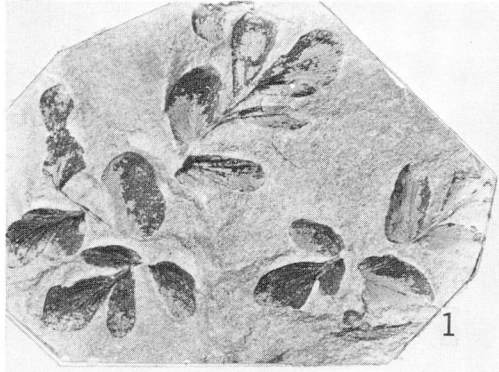


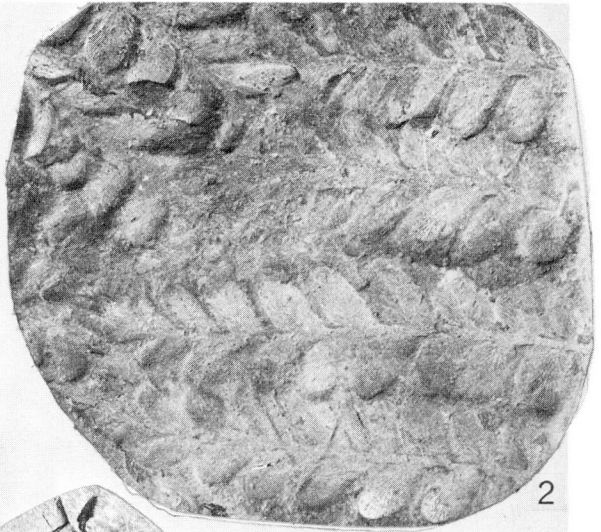
PLATE VI

Pennsylvanian (Westphalian B)

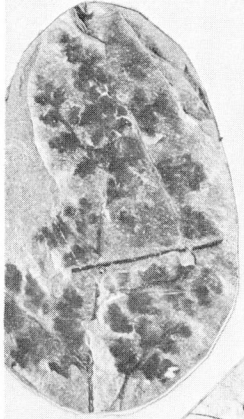
- FIGURE 1: Adiantites obtusus (Dawson) Bell. Hypotype, GSC No. 15031. Cumberland Group. Joggins section, Cumberland Co., N.S., Division III Logan, GSC loc. 1364. Collector, W.A. Bell.
- FIGURE 2: Neuropteris (Mixoneura) obliqua Brongniart. Hypotype, GSC No. 14960. Cumberland Group. Spicer Cove, Apple River area, N.S., Joggins section. GSC loc. 1348. Collector, W.A. Bell.
- FIGURE 3: Renaultia rotundifolia Andrae. Hypotype, GSC No. 15033. Cumberland Group (Lancaster Formation). 'Fern ledges', Duck Cove, St. John, N.B., GSC loc. 352. Collector, M.C. Stopes.
- FIGURE 4: Alloiopteris (Corynepteris) sternbergi (Ettingshausen) H. Potonié. Hypotype, GSC No. 15053. Cumberland Group. Smith Brook, about two miles from its junction with South Branch Black River, Springhill area, N.S., GSC loc. 1052. Collector, F.A. Kerr.
- FIGURE 5: Neuropteris schlehani Stur. Hypotype, No. 10957. Cumberland Group, Springhill, N.S., roof No. 1 coal seam. GSC loc. (unnumbered). Collector, M. Jones.



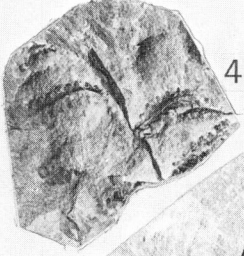
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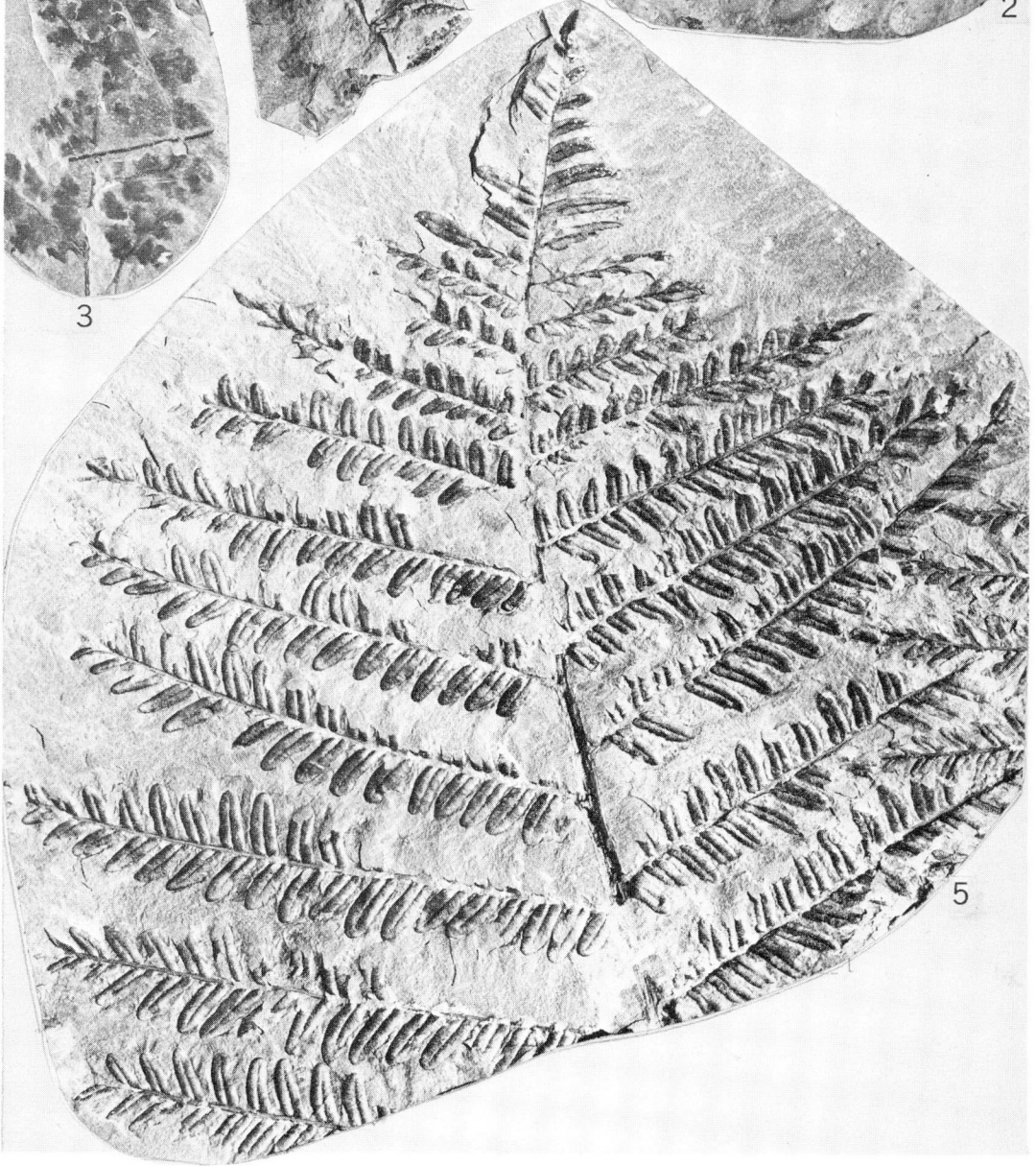
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PLATE VII

Pennsylvanian (Westphalian B)

- FIGURE 1: Alloiopteris (Corynepteris) sternbergi (Ettingshausen) H. Potonié. Hypotype GSC No. 15053 (see Plate VI, Fig. 4) x 2.
- FIGURE 2: Samaropsis ingens (Lesquereux) Bell. Hypotype, GSC No. 10337. Middle River, Pictou Co., N.S., west side, 100 feet north of small tributary and 700 feet upstream from crossing of old road that ran to Gairloch road, GSC loc. 2436. Collector, unknown.
- FIGURE 3: Annularia latifolia (Dawson) Kidston. Hypotype, GSC No. 14916. Cumberland Group (Lancaster Formation). Duck Cove, 'Fern ledges', St. John, N.B., GSC loc. 804. Collector, W.J. Wilson.
- FIGURE 4: Alethopteris lonchitica (Schlotheim) Göppert. Hypotype, GSC No. 14994. Cumberland Group. Springhill, from unspecified coal mine. Collector, unknown.



PLATE VIII

Pennsylvanian (Westphalian B)

- FIGURE 1: Adiantites obtusus (Dawson) Bell. Hypotype, GSC No. 472. Cumberland Group (Lancaster Formation). Duck Cove, 'Fern ledges', St. John, N.B., GSC loc. 2254. Collector, W.J. Wilson.
- FIGURE 2: Lepidophloios laricinus Sternberg. Hypotype, GSC No. 8563. Cumberland Group. Joggins, N.S., Division IV Logan, coal group No. 43, Joggins, N.S., GSC loc. 1982. Collector, W.A. Bell.
- FIGURE 3: Lepidodendron rimosum Sternberg. Hypotype, GSC No. 9551. Cumberland Group. Springhill, N.S., from roof of unspecified coal seam. Collector, unknown.

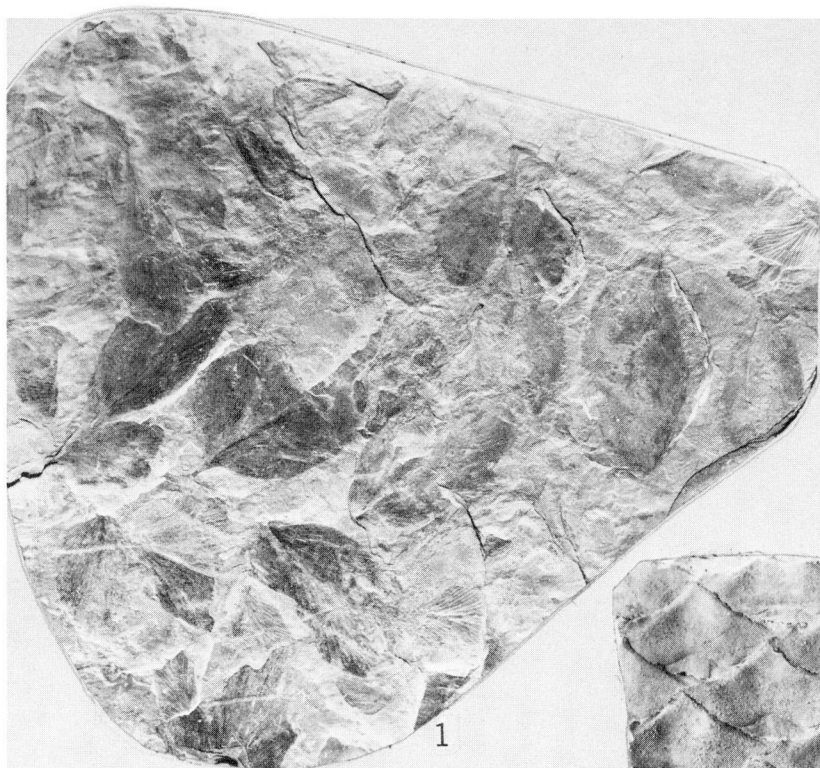
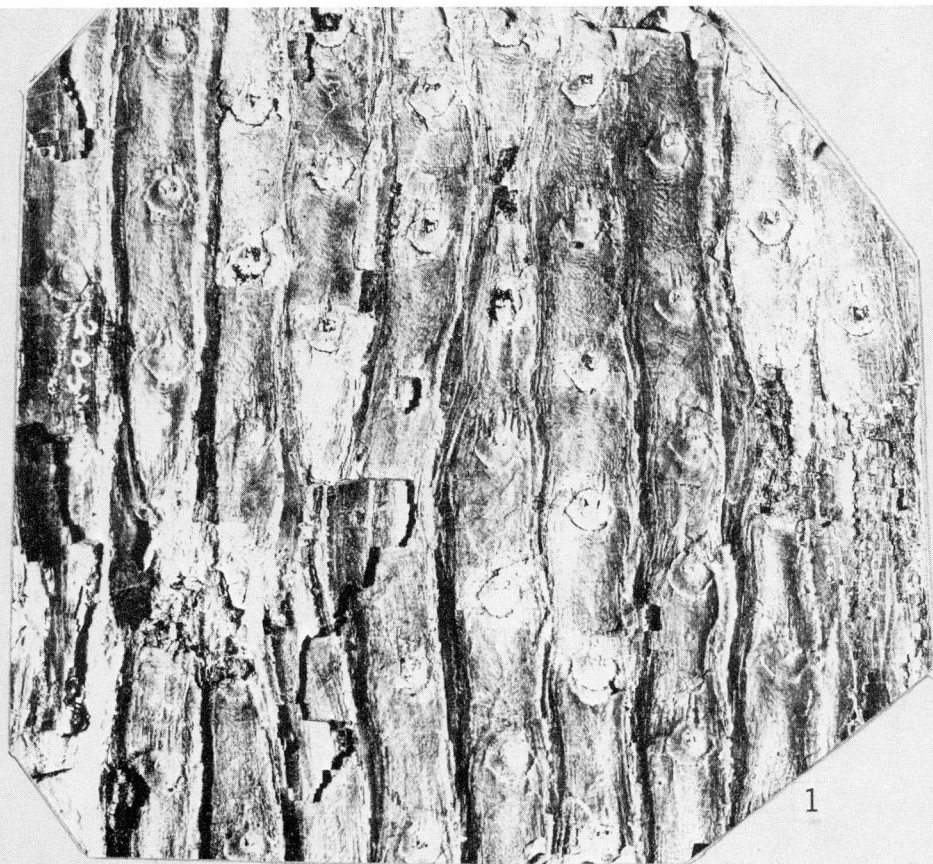


PLATE IX

Pennsylvanian (Westphalian B)

FIGURE 1: Sigillaria scutellata Brongniart. Hypotype, GSC No. 14936. Cumberland Group, Springhill, N.S., from unspecified coal mine, GSC loc. 205. Collector, H.M. Ami and L. Russell.

FIGURE 2: Stigmaria ficoides Brongniart. Hypotype, GSC No. 14932. Cumberland Group, Joggins section, N.S., pavement beds of coal group 29, section IV Logan, GSC loc. 1343. Collector, W.A. Bell.



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PLATE X

Pennsylvanian (Westphalian B)

- FIGURE 1: Sigillaria elegans (Sternberg) Brongniart. Hypotype, GSC No. 14934. Cumberland Group. Black River, Springhill, north of Deep Brook Mills, GSC loc. 1493. Collector, W.A. Bell.
- FIGURE 2: Adiantites adiantoides Lindley and Hutton. Hypotype, GSC No. 9435. Cumberland Group. East Brook, tributary to Maccan River, north of East Southampton Station, N.S., GSC loc. 1063. Collector, F.A. Kerr.
- FIGURE 3: Calamites suckowi Brongniart. Hypotype, GSC No. 14920. Cumberland Group. Joggins, N.S., Joggins section. Division IV Logan, unspecified bed, GSC loc. 1657. Collector, T.C. Weston.
- FIGURE 4: Annularia stellata (Schlotheim) Wood forma longifolia Brongniart. Hypotype, GSC No. 14910. Cumberland Group. Mapleton, Springhill area, Captain Henry Mill's Brook, tributary to Maccan River, GSC loc. 3110. Collector, L. Russell.

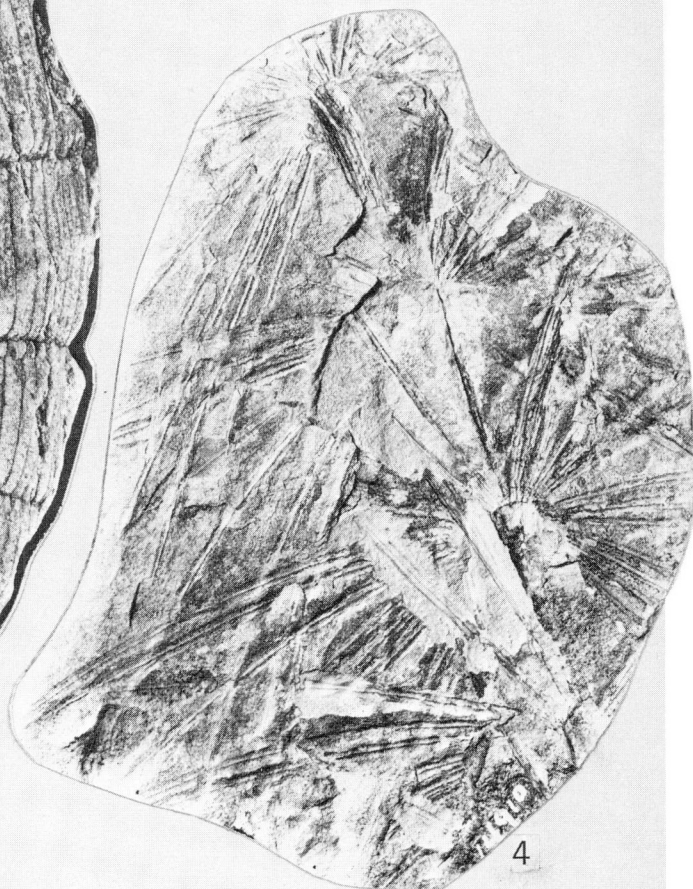
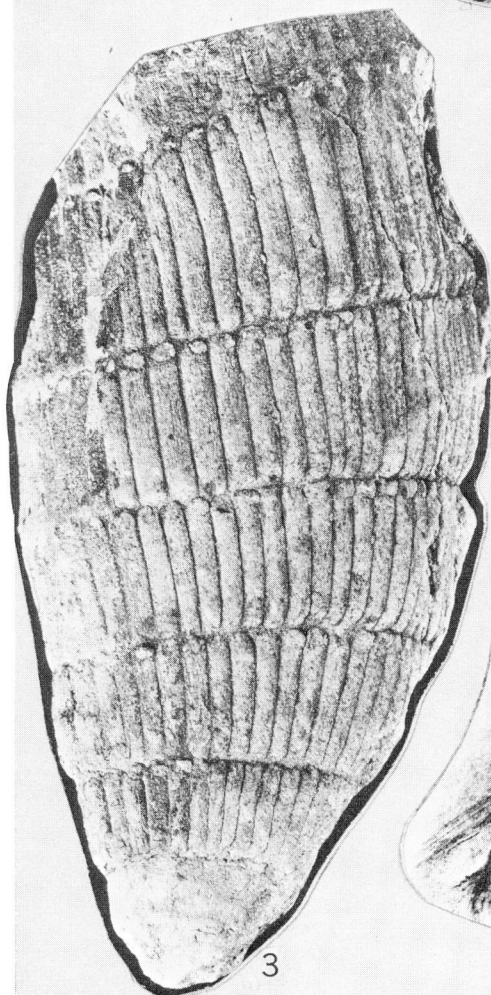
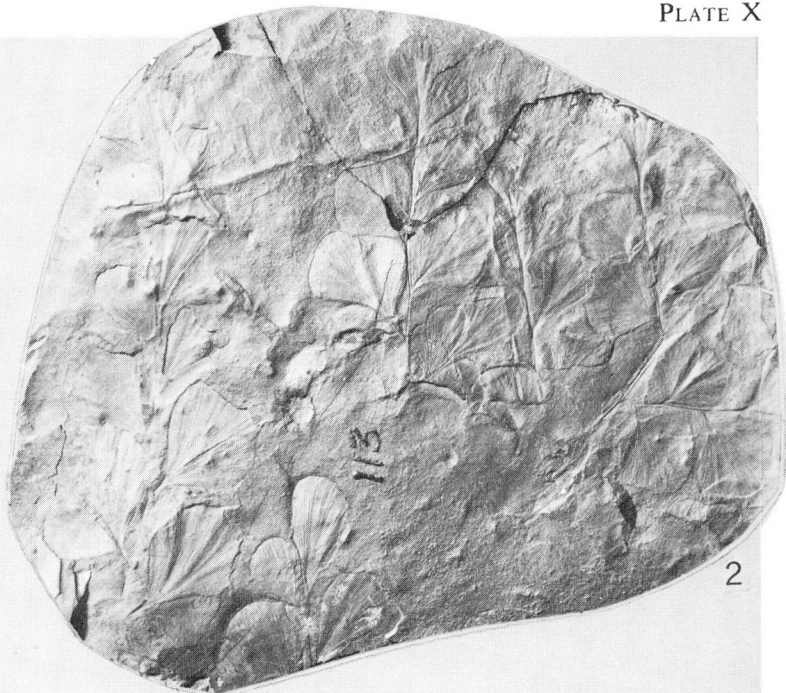
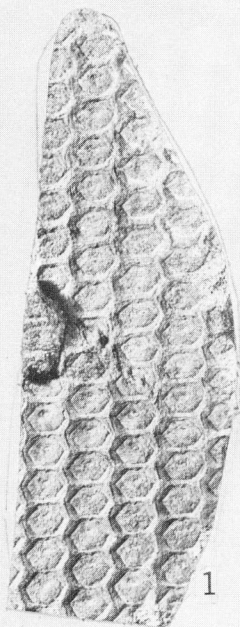


PLATE XI

Pennsylvanian (Westphalian B)

- FIGURE 1: Calamites suckowi Brongniart. Hypotype, GSC No. 14919. Cumberland Group. Joggins section, N.S. Division IV Logan, unspecified bed, GSC loc. 1657. Collector, T.C. Weston.
- FIGURE 2: Calamites sp. B. Bell of group varians Sternberg. GSC No. 5754. Cumberland Group. South Brook, Leamington, Springhill coalfield, GSC loc. 1162. Collector, H.M. Ami and H. Flekker.
- FIGURE 3: Lepidodendron wortheni Lesquereux. Hypotype, GSC No. 10232 x 2. Cumberland Group. Bore-hole near Springhill at depth 1,089 feet, GSC loc. 1141 (= 666). Collector, W.A. Bell.
- FIGURE 4: Sphenopteris (Renaultia) schatzlarensis (Stur) Zeiller. Hypotype, GSC No. 15063. Cumberland Group. Spicer Cove, Apple River area. Joggins section, N.S., GSC loc. 5865. Collector, M.J. Copeland.

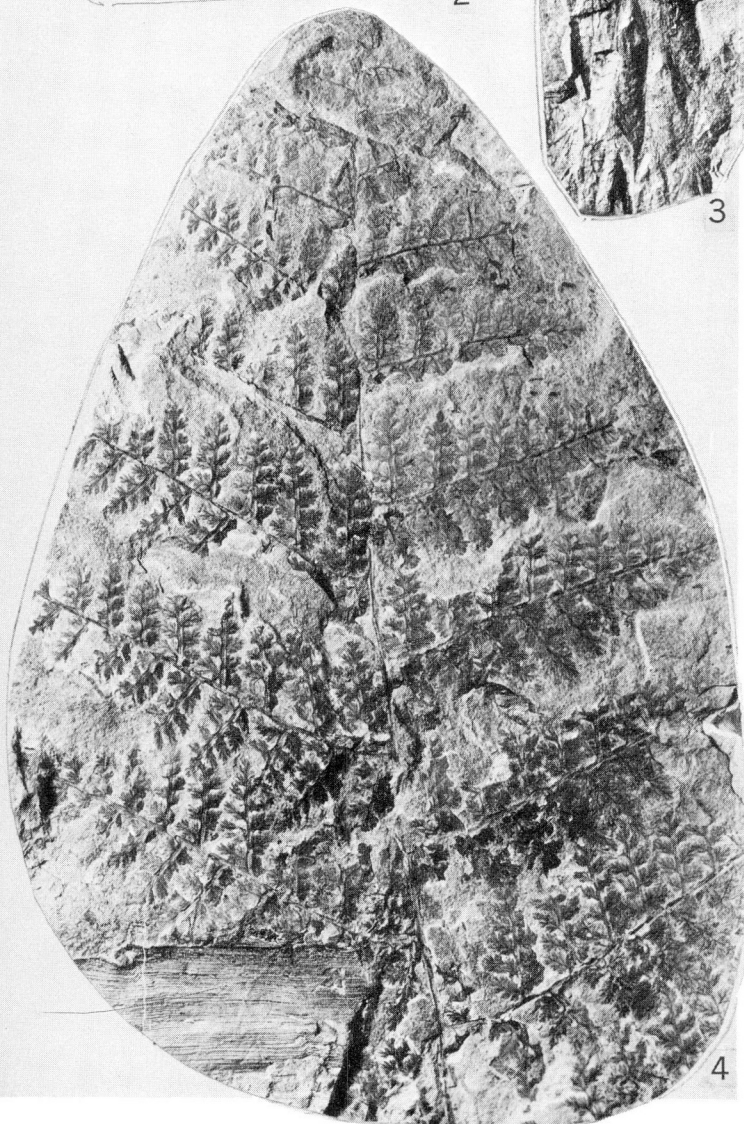
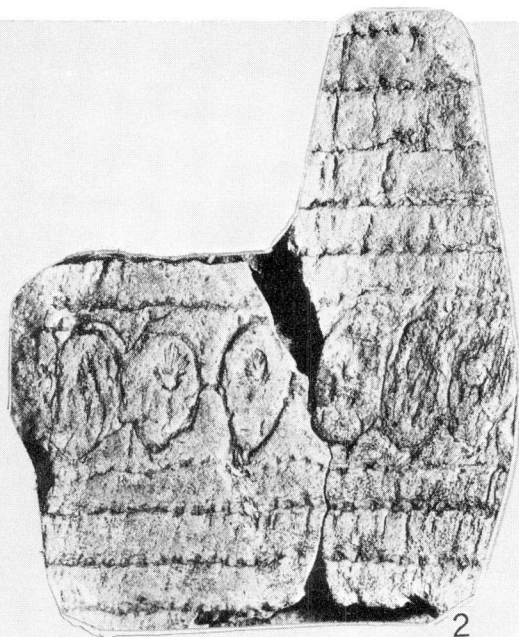
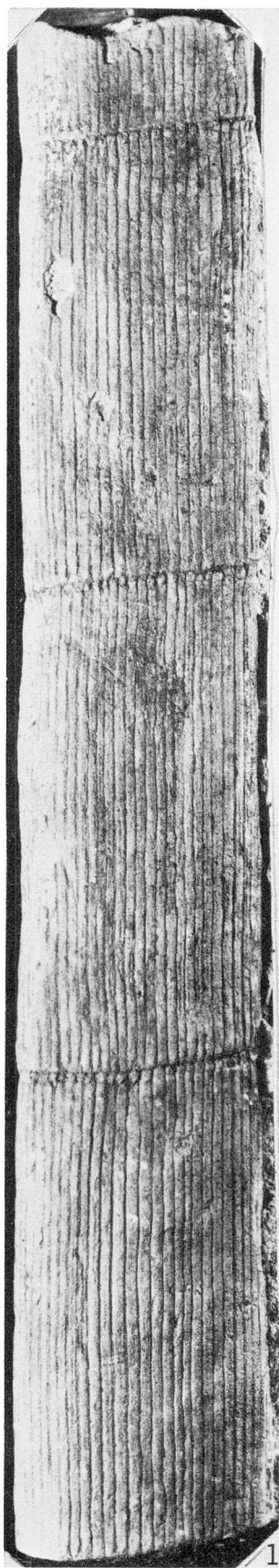
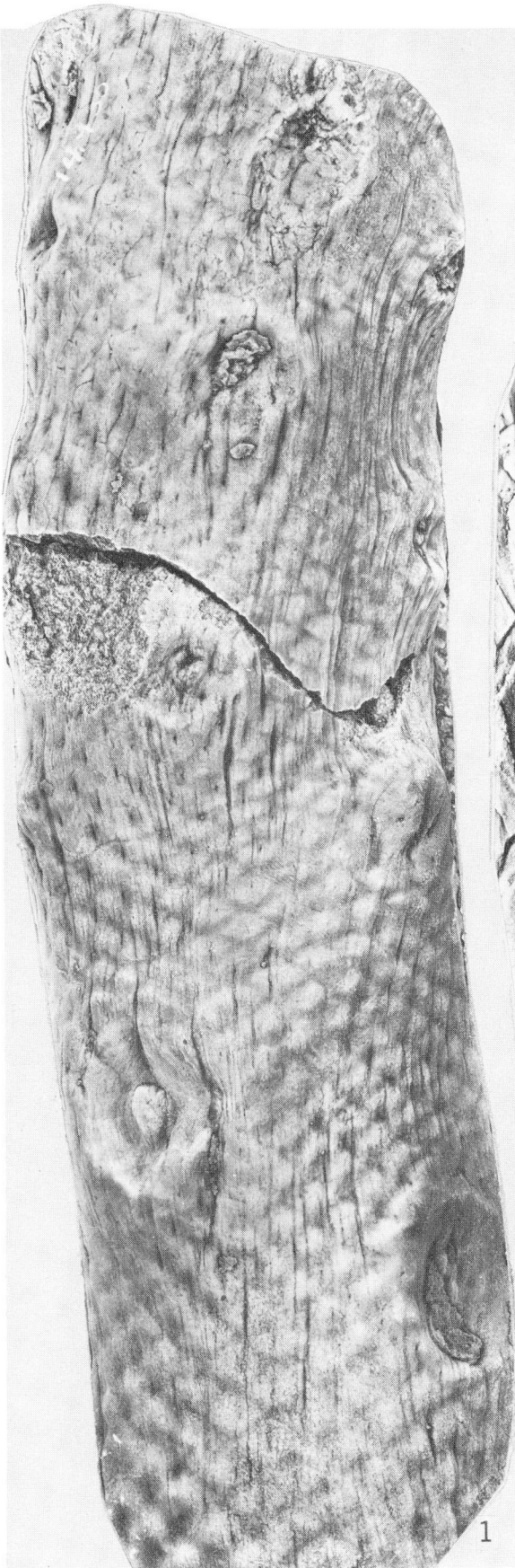


PLATE XII

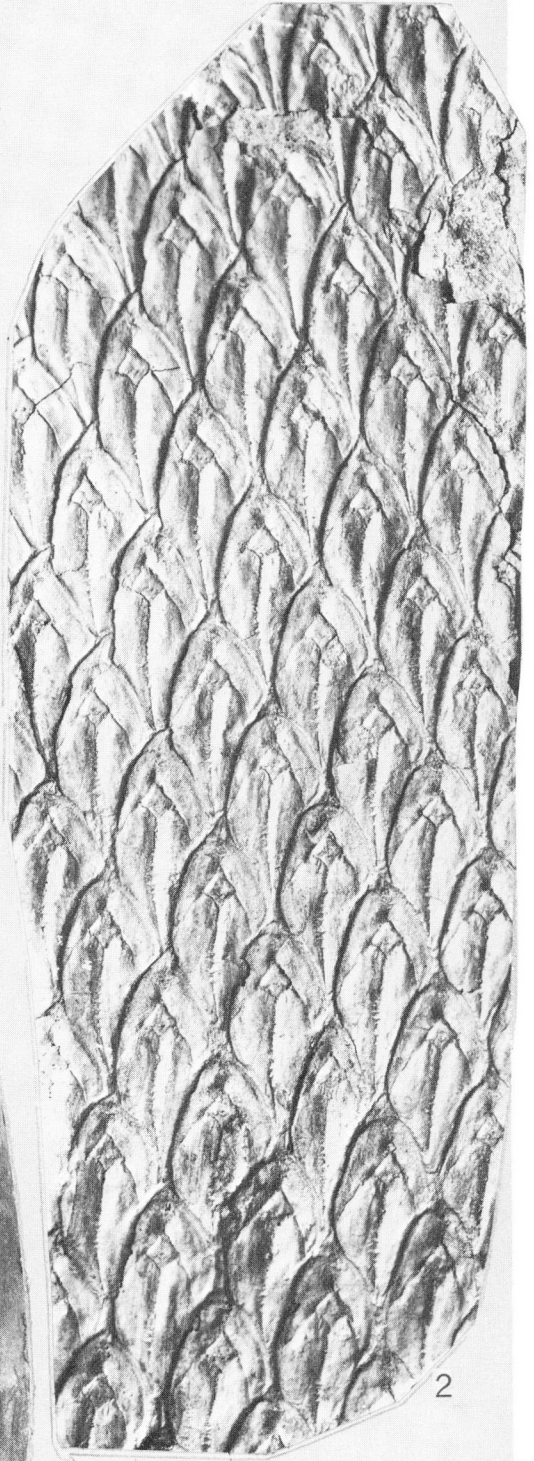
Pennsylvanian (Westphalian B)

FIGURE 1: Lepidophloios laricinus Sternberg forma Haloniatortuosa
Lindley and Hutton. Hypotype GSC No. 14930. Cumberland Group. South
Joggins, N.S., Joggins section, Division IV Logan, unspecified bed, GSC
loc. 1388. Collector, T.C. Weston.

FIGURE 2: Lepidodendron aculeatum Sternberg. Hypotype, GSC No.
14937. Cumberland Group. Springhill, N.S., from roof of unspecified
coal seam. Collector, unknown.



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PLATE XIII

Pennsylvanian (late Westphalian B and/or early C)

- FIGURE 1: Calamites waldenburgensis Kidston. Hypotype, GSC No. 7277. Morien Group (Lonchopteris zone). Roof McAuley coal seam, shore south of False Bay beach and in cove about 3,500 feet south of sandbar, GSC loc. 960. Collector, W.A. Bell.
- FIGURE 2: Linopteris muensteri (Eichwald) H. Potonié. Hypotype, GSC No. 14986. Morien Group (Lonchopteris zone). Shoemaker Cove, Mira Bay, N.S., roof Shoemaker coal seam, GSC loc. 893 (= 429). Collector, W.A. Bell.
- FIGURE 3: Lonchopteris eschweileriana Andrae. Hypotype, GSC No. 15004 x 2. Morien Group (Lonchopteris zone). Shoemaker Cove, Mira Bay, N.S., roof Shoemaker coal seam, GSC loc. 893 (= 499). Collector, W.A. Bell.
- FIGURE 4: Zeilleria avoldensis (Stur) Kidston. Hypotype, GSC No. 15049 x 3. Morien Group, N.S. (Lonchopteris zone). Shore south of False Bay Lake, between Tracy and Shoemaker coal seams, Sydney coalfield, GSC loc. 480 (= 478). Collector, W.A. Bell.

Pennsylvanian (early Westphalian C)

- FIGURE 5: Linopteris obliqua (Bunbury) Zeiller. Hypotype, GSC No. 14943. Morien Group. Pit on Ormond coal seam, about 1,300 feet southwest of Sydney reservoir, Sydney coalfield, GSC loc. 892. Collector, W.A. Bell.
- FIGURE 6: Neuropteris pseudogigantea H. Potonié. Hypotype, GSC No. 14983. Pictou Group (Minto Formation). Shaft on coal seam of Minto Coal Co., Minto, N.B., GSC loc. 977. Collector, W.S. Dyer.
- FIGURE 7: Neuropteris tenuifolia (Schlotheim) Brongniart. Hypotype, GSC No. 14965. Pictou Group (Minto Formation). King's coal mine. Minto, N.B., GSC loc. 979. Collector, W.J. Wilson.
- FIGURE 8: Sphenopteris striata Gothan. Hypotype, GSC No. 15047 x 2. Morien Group, Sydney coalfield, shore south of Wadden Cove, roof 7-inch coal seam, about 235 feet above Tracy seam, GSC loc. 484. Collector, W.A. Bell.

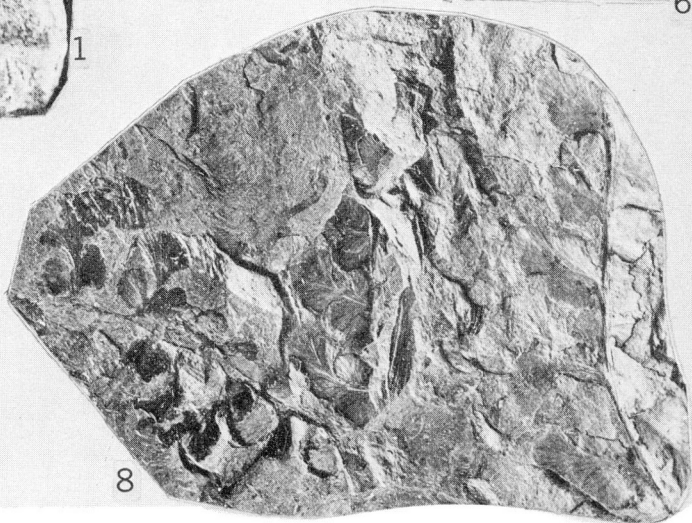
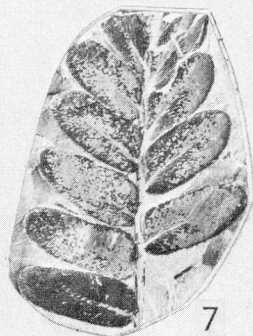
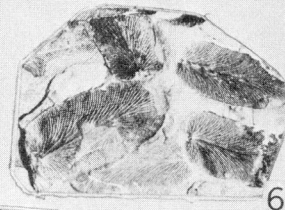
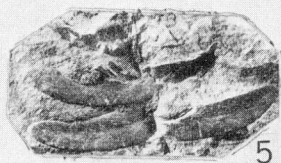
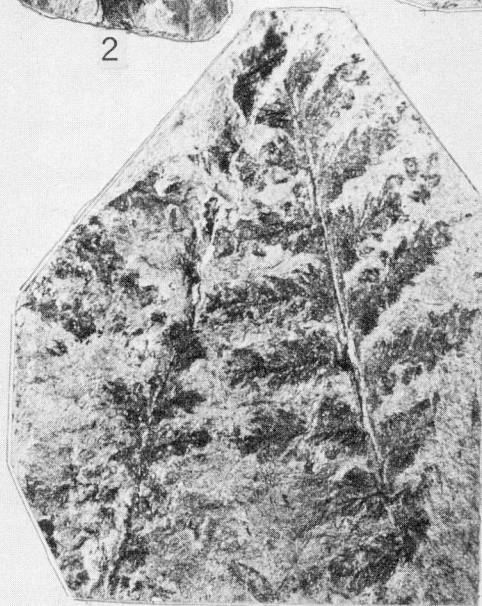
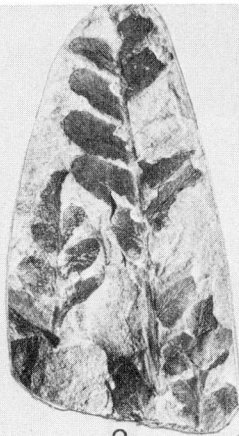
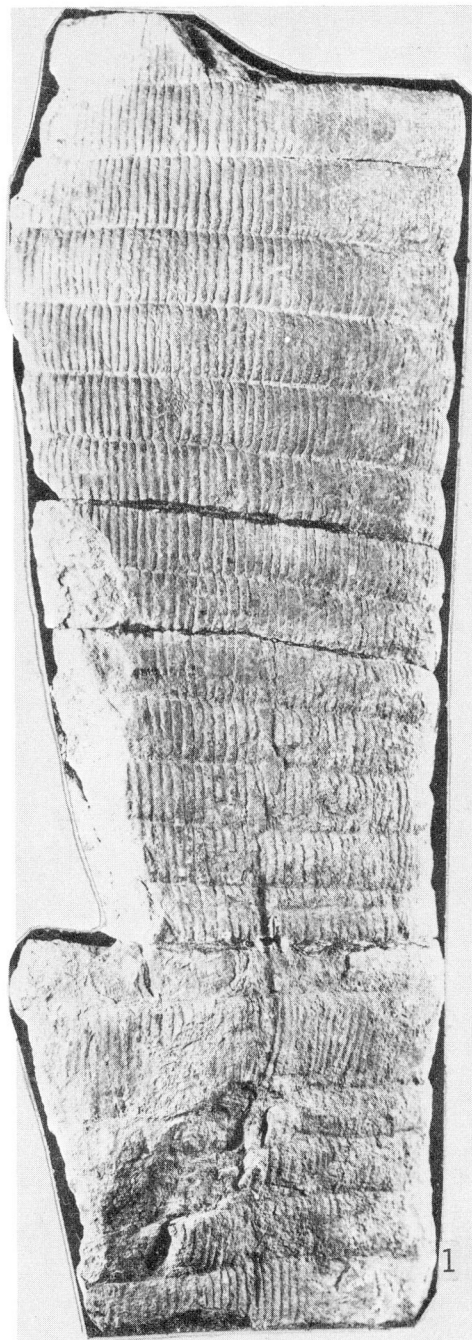


PLATE XIV

Pennsylvanian (early Westphalian C)

- FIGURE 1: Sphenopteris moriensis Bell. Hypotype GSC No. 15027. Morien Group (lower Linopteris obliqua zone). Baird Cove, Morien Bay, N.S., about 600 feet below Spencer (Emery) coal seam, Sydney coalfield, GSC loc. 504. Collector, W.A. Bell.
- FIGURE 2: Linopteris obliqua (Bunbury) Zeiller. Hypotype, GSC No. 14945. Morien Group (lower Linopteris obliqua zone). Pit on Ormond coal seam, about 2,000 feet south of Boutillier Lake, Sydney coalfield, GSC loc. 973. Collector, W.A. Bell.
- FIGURE 3: Linopteris obliqua (Bunbury) Zeiller. Hypotype GSC No. 14945 x 2.
- FIGURE 4: Linopteris neuropteroides Gutbier var. major H. Potonié. Hypotype, GSC No. 14982 in part, x 2. Morien Group (lower Linopteris obliqua zone). Pit on Ormond coal seam, south of Mira road, and east of trail to Middle Lake, Sydney coalfield, GSC loc. 897. Collector, W.A. Bell.
- FIGURE 5: Linopteris neuropteroides Gutbier var. major H. Potonié. Hypotype, GSC 14982, natural size.
- FIGURE 6: Linopteris obliqua (Bunbury) Zeiller. Hypotype, GSC No. 14943 x 2 (see Plate XIII Fig. 5).
- FIGURE 7: Neuropteris heterophylla Brongniart. Hypotype, GSC No. 14987. Pictou Group (Clifton Formation). Clifton, N.B., GSC loc. 1172. Collector, A.H. Foord.
- FIGURE 8: Neuropteris pseudogigantea H. Potonié. Hypotype, GSC No. 14983 x 3 (see Plate XIII Fig. 6).
- FIGURE 9: Neuropteris tenuifolia (Schlotheim) Brongniart. Hypotype, GSC No. 14957. Pictou Group (Minto Formation). Minto, N.B., at Miramichi Lumber Co. coal mine, GSC loc. 1130. Collector, W.S. Dyer.
- FIGURE 10: Pecopteris (Asterotheca) miltoni Artis. Hypotype, GSC No. 15000. Pictou Group (Minto Formation). Minto, N.B., Rothwell Coal Co. Mine, GSC loc. 945. Collector, W.J. Wilson.

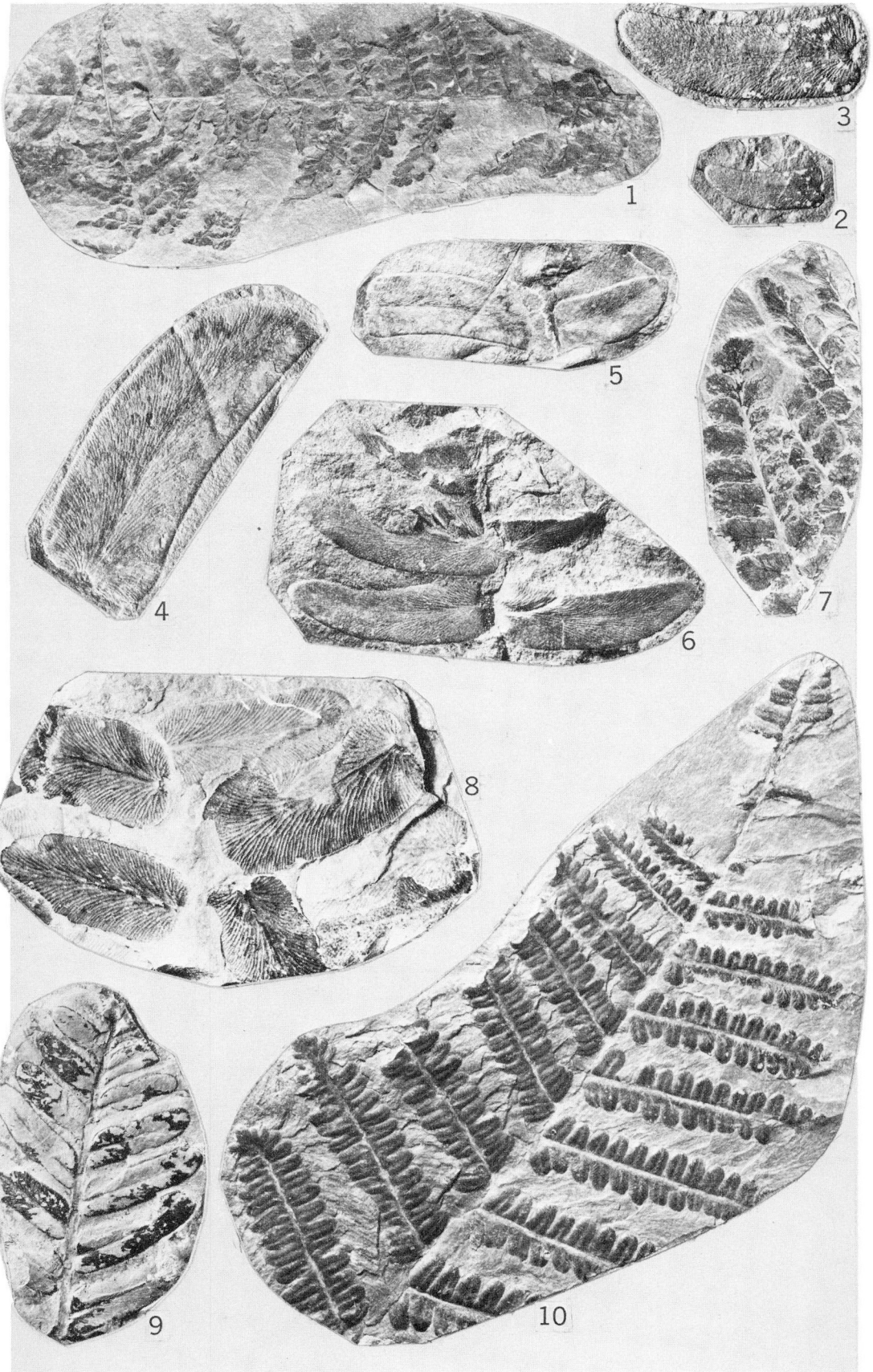


PLATE XV

Pennsylvanian (early Westphalian C)

FIGURE 1: Neuropteris (Bellopteris) corsini Radforth and Walton.
Hypotype, GSC No. 14951. Pictou Group (Minto Formation). Minto,
N.B., Weldon-Henderson coal mine, GSC loc. 1100. Collector, W.S.
Dyer.



PLATE XVI

Pennsylvanian (early Westphalian C)

FIGURE 1: Mariopteris hirsuta Corsin. Hypotype, GSC No. 15057. Pictou Group (Clifton Formation). Clifton, Gloucester Co., N.B., GSC loc. 1172. Collector, A.H. Foord.

FIGURE 2: Linopteris obliqua (Bunbury) Zeiller. Hypotype, GSC No. 14966. Morien Group (lower L. obliqua zone). Pit on Ormond coal seam, south of Mira road, and east of trail to Middle Lake, Sydney coalfield, N.S., GSC loc. 897. Collector, W.A. Bell.



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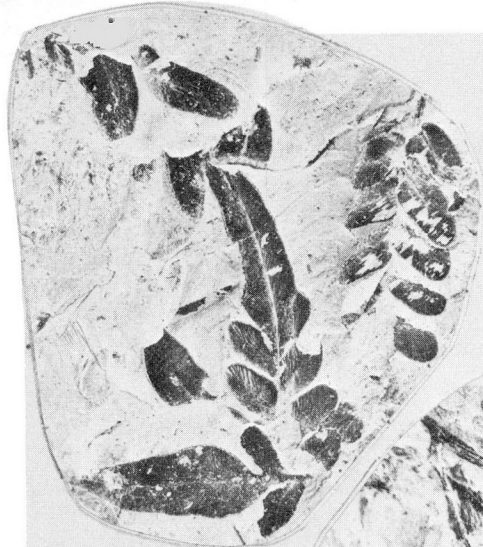
PLATE XVII

Pennsylvanian (early Westphalian C)

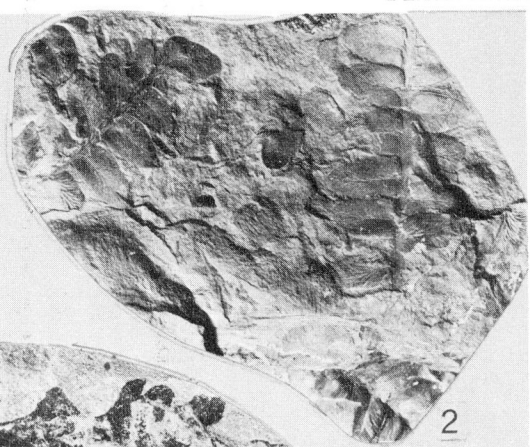
FIGURE 1: Neuropteris tenuifolia (Schlotheim) Brongniart. Hypotype, GSC No. 14962. Pictou Group (Minto Formation). Minto, N.B., Miramichi Lumber Co. coal mine, GSC loc. 1130. Collector, W.S. Dyer.

FIGURE 2: Neuropteris heterophylla Brongniart. Hypotype, GSC No. 14984. Morien Group (lower subzone of L. obliqua zone). Shore north of False Bay Lake, about 50 feet above Tracy coal seam, Sydney coalfield, N.S., GSC loc. 482. Collector, W.A. Bell.

FIGURE 3: Sphenopteris spiniformis Kidston. Hypotype, GSC No. 15037. Pictou Group (Clifton Formation). Clifton, N.B., GSC loc. 1172. Collector, A.H. Foord.



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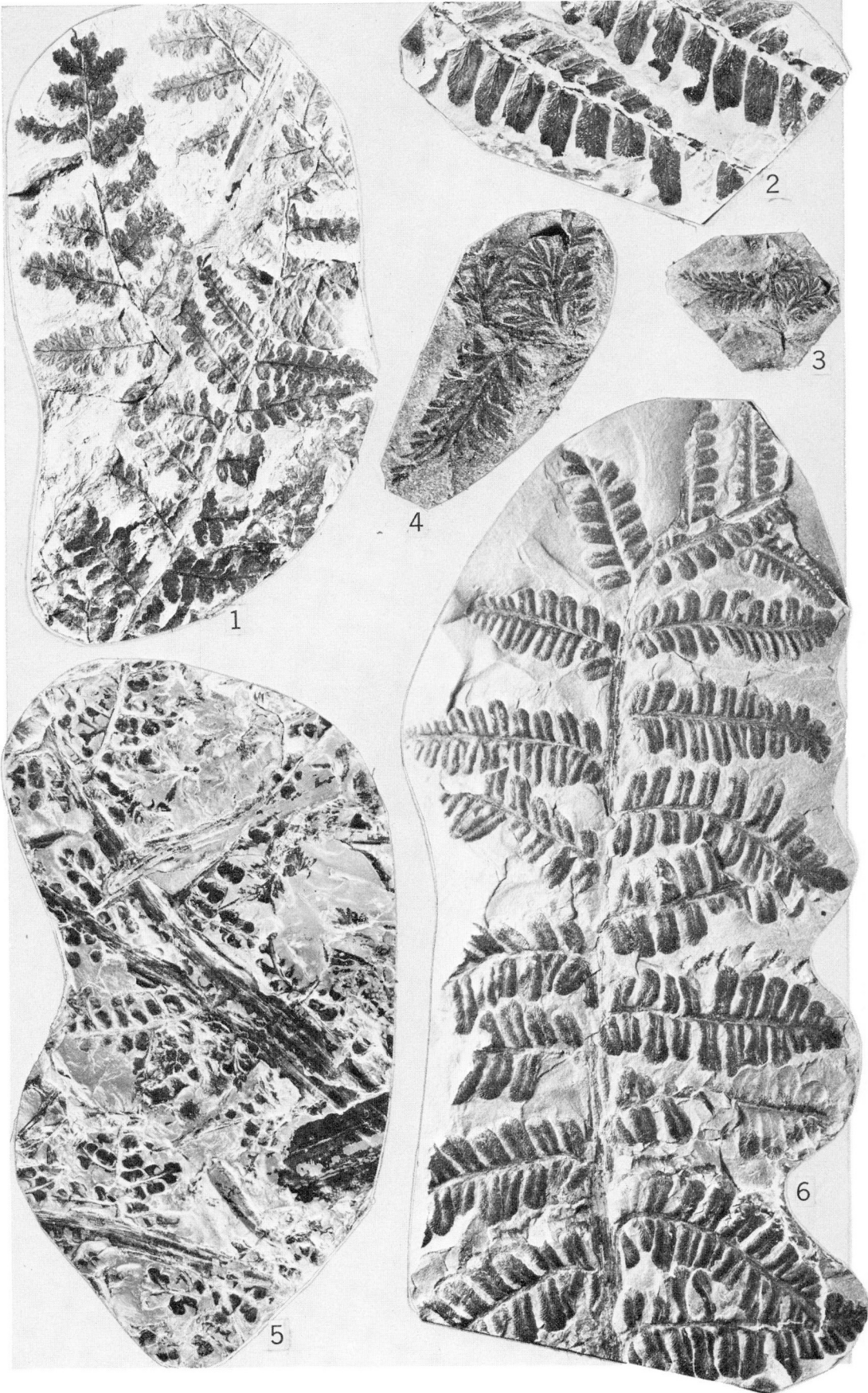


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PLATE XVIII

Pennsylvanian (early Westphalian C)

- FIGURE 1: Oligocarpia missouriensis D. White. Hypotype, GSC No. 4451. Pictou Group (Clifton Formation). Clifton, N.B., GSC loc. 1172. Collector, A.H. Foord.
- FIGURE 2: Linopteris muensteri (Eichwald) H. Potonié. Hypotype, GSC No. 14956. Pictou Group (Minto Formation). Minto, N.B., Miramichi Lumber Co. coal mine, GSC loc. 1130. Collector, W.S. Dyer.
- FIGURE 3: Hymenotheca dathei H. Potonié. Hypotype, GSC No. 15050. Morien Group (lower subzone of L. obliqua zone) shore north of False Bay Lake, about 200 feet above Tracy coal seam, Sydney coalfield, GSC loc. 482. Collector, W.A. Bell.
- FIGURE 4: Hymenotheca dathei H. Potonié. Hypotype, GSC No. 15050 x 2.
- FIGURE 5: Sphenopteris (Diplotmema) whitii Bell. Hypotype, GSC No. 15024. Pictou Group (Minto Formation). Rothwell coal mine, Minto, N.B., GSC loc. 990. Collector, W.S. Dyer.
- FIGURE 6: Pecopteris (Asterotheca) miltoni Artis. Hypotype, GSC No. 14998. Pictou Group (Minto Formation). Minto, N.B., GSC loc. 1020. Collector, W.J. Wilson.



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PLATE XIX

Pennsylvanian (early Westphalian C)

- FIGURE 1: Sphenopteris striata Gothan. Hypotype, GSC No. 15047. Morien Group (lower subzone of L. obliqua zone). Shore south of Wadden Cove, roof 7-inch coal seam, about 235 feet above Tracy seam, Sydney coalfield, GSC loc. 484. Collector, W.A. Bell.
- FIGURE 2: Sphenopteris striata Gothan. Hypotype, GSC No. 15047 x 2.
- FIGURE 3: Lepidostrobophyllum mintoensis Wilson. Hypotype, GSC No. 14926. Minto, N.B., King's coal mine, GSC loc. 856. Collector, W.J. Wilson.
- FIGURE 4: Oligocarpia brongniarti Stur. Hypotype, GSC No. 1648. Morien Group (lower subzone of L. obliqua zone). Roof Coalbrook coal seam, Sydney coalfield, GSC loc. 465. Collector, W.A. Bell.
- FIGURE 5: Calamostachys superba Weiss. Hypotype, GSC No. 14902. Morien Group (lower subzone of L. obliqua zone). Shore south of Wadden Cove, roof of 7-inch coal seam, about 235 feet above Tracy seam, Sydney coalfield, GSC loc. 484. Collector, W.A. Bell.
- FIGURE 6: Annularia pseudostellata H. Potonié. Hypotype, GSC No. 14908. Pictou Group (Clifton Formation). Baie de Chaleur, N.B., GSC loc. 1172. Collector, A.H. Foord.

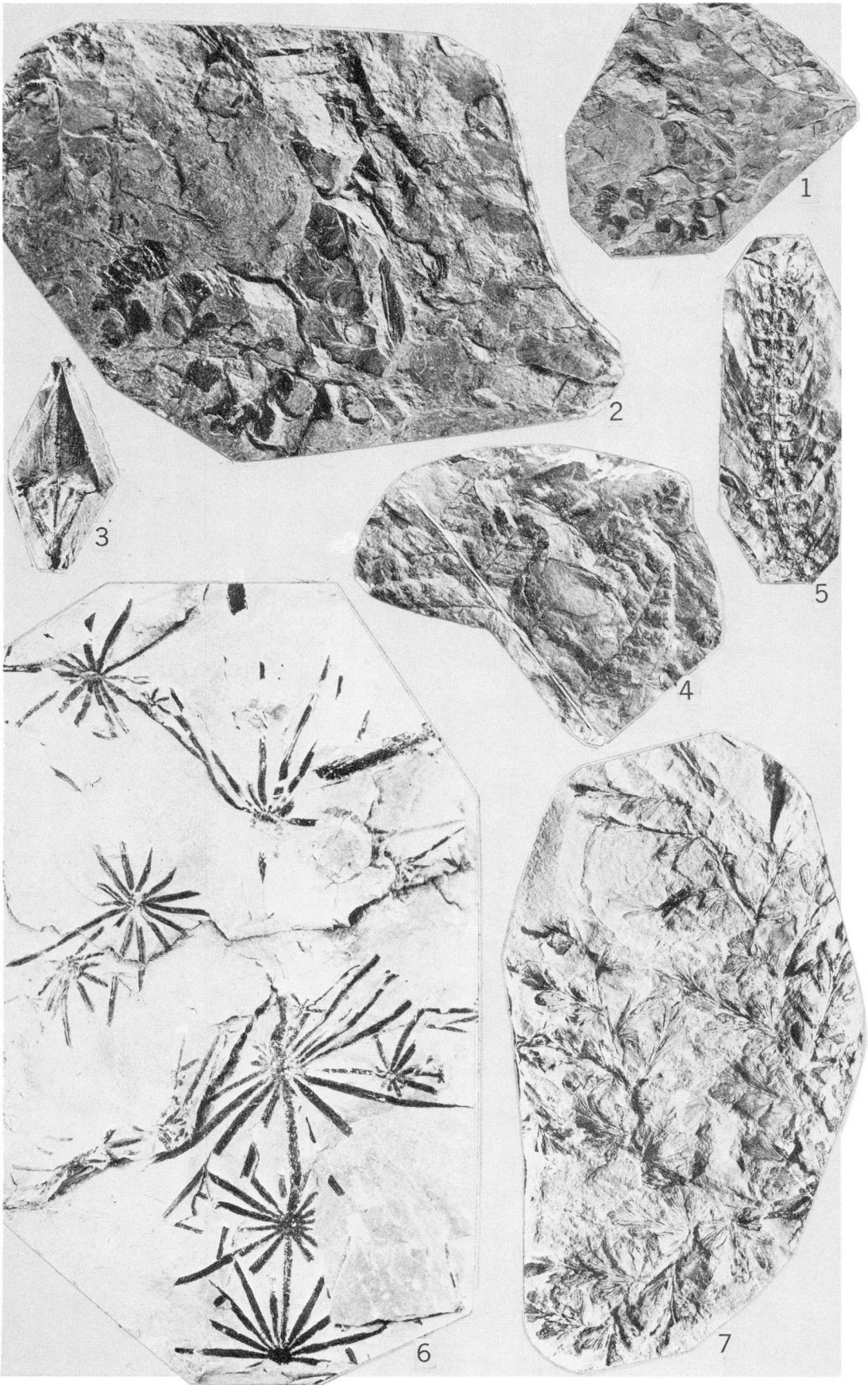


PLATE XX

Pennsylvanian (early Westphalian C)

- FIGURE 1: Lepidodendron ophiurus Brongniart. Hypotype, GSC No. 10449. Stellarton Group. Potter Brook, Pictou coalfield, N.S., roof McKay coal seam, GSC loc. 1107. Collector, W.A. Bell.
- FIGURE 2: Lepidostrobus variabilis? Lindley and Hutton. Hypotype? GSC No. 10663. Stellarton Group. South branch Marsh Brook near mouth, Pictou coalfield, N.S., GSC loc. 1153. Collector, W.A. Bell.
- FIGURE 3: Cordaitanthus rabdocarpi (Dawson) Bell. Hypotype, GSC No. 945. Pictou Group (Minto Formation). Newcastle Coal Co. Mine, Minto, N.B., GSC loc. 5074. Collector, D.C. McGregor.
- FIGURE 4: Lepidodendron bretonense Bell. Hypotype, GSC No. 14939. Pictou Group (Minto Formation). Rothwell coal mine, Minto, N.B., GSC loc. 990. Collector, W.S. Dyer.
- FIGURE 5: Lepidodendron bretonense Bell. Hypotype, GSC No. 14928 x 2. Pictou Group (Minto Formation) Minto, N.B., Miramichi Lumber Co. coal mine, GSC loc. 1130. Collector, W.S. Dyer.

Pennsylvanian (late Westphalian C)

- FIGURE 6: Neuropteris (Mixoneura) ovata Hoffmann. Hypotype, GSC No. 14981. Morien Group (upper subzone of L. obliqua zone). Shore east side Morien Bay, about 30 feet below Spencer (Emery) coal seam, Sydney coalfield, N.S., GSC loc. 486. Collector, W.A. Bell.
- FIGURE 7: Sphenopteris (Crossotheca) boulayi Zeiller. Hypotype, GSC No. 15048 x 2. Morien Group (upper subzone of L. obliqua zone). Pit on Mullins coal seam, 4,200 feet from its shore outcrop, Sydney Harbour, N.S., GSC loc. 752. Collector, W.A. Bell.
- FIGURE 8: Sphenopteris (Crossotheca) boulayi Zeiller. Hypotype, GSC No. 15048, natural size.

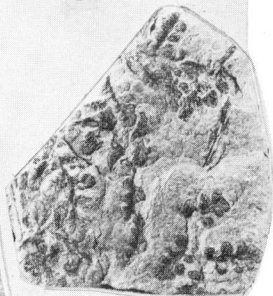
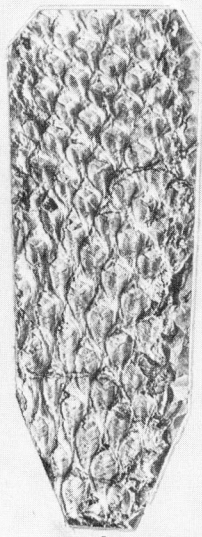
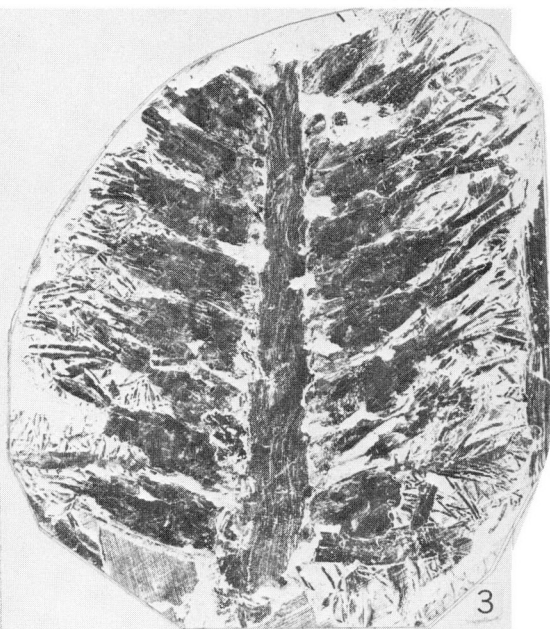
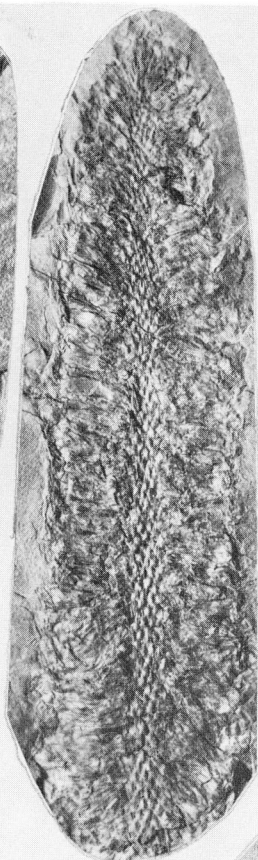


PLATE XXI

Pennsylvanian (late Westphalian C)

FIGURE 1: Cordaites principalis (Germar) Geinitz. Hypotype, GSC No. 4501. Morien Group (upper subzone of L. obliqua zone). One of old Cossitt pits near Sydney, N.S. Collector, A.J. Hill.

FIGURE 2: Pecopteris (Asterotheca) hemitelioides Brongniart. Hypotype, GSC No. 14999. Morien Group (upper subzone of L. obliqua zone). Pit on Mullins coal seam, 4,200 feet from its crop on shore of Sydney Harbour, Sydney coalfield, GSC loc. 752. Collector, W.A. Bell.

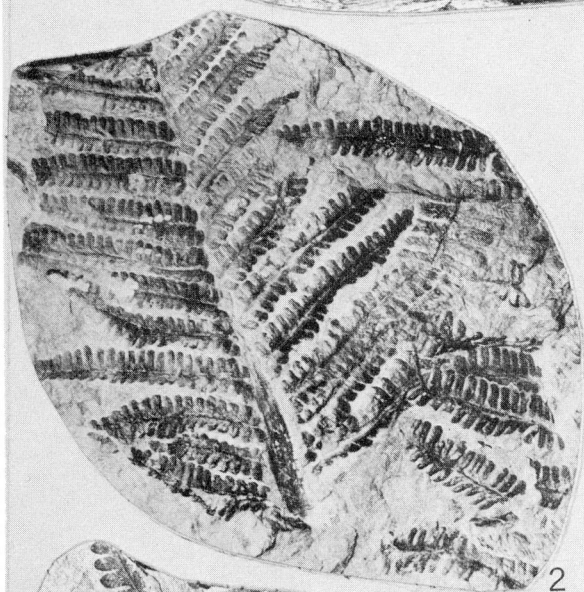
FIGURE 3: Alethopteris valida Boulay. Hypotype, GSC No. 14997 x 2. Morien Group (upper subzone of L. obliqua zone). Pit on LeCras coal seam at intersection of Reservoir Brook and Mira road, Sydney coalfield, N.S., GSC loc. 454. Collector, W.A. Bell.

FIGURE 4: Pecopteris (Asterotheca) acadica Bell. Hypotype, GSC No. 15002. Morien Group. Undesignated coal mine, Sydney coalfield. Collector, A.H. Foord.

FIGURE 5: Lepidodendron bretonense Bell. Hypotype, GSC No. 15059 x 2. Morien Group (upper subzone of L. obliqua zone). Baird Cove, shore of Morien Bay, about 600 feet below Spencer (Emery) coal seam, Sydney coalfield, N.S., GSC loc. 504. Collector, W.A. Bell.



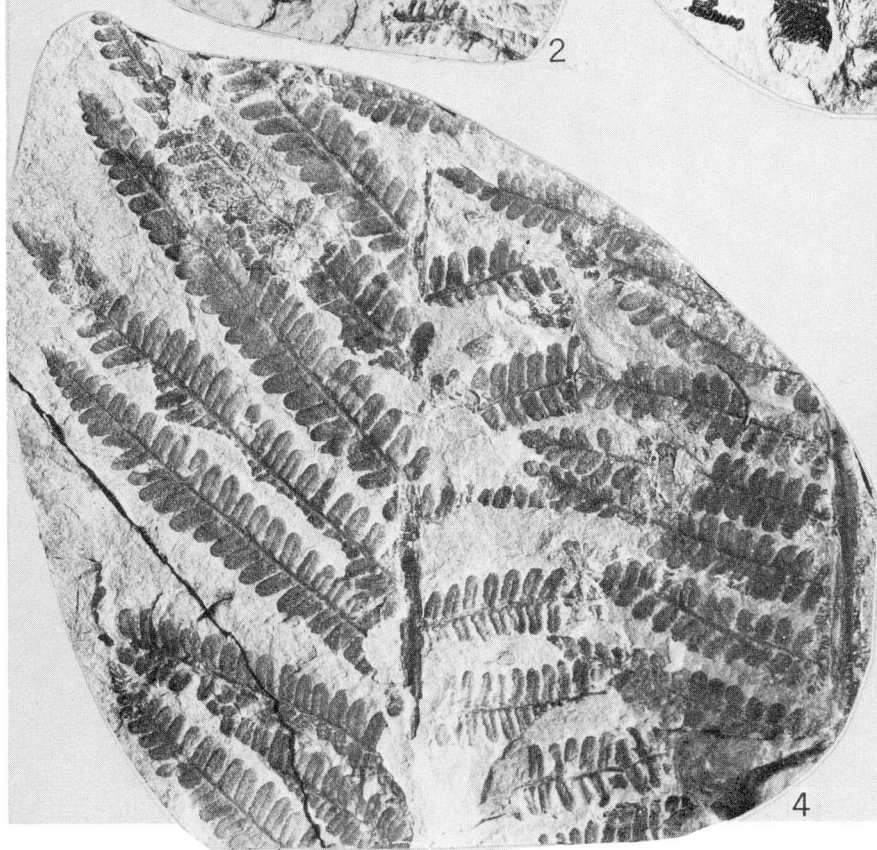
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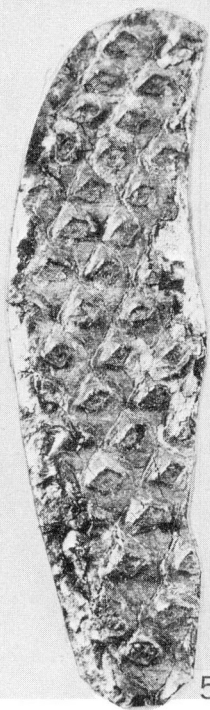
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PLATE XXII

Pennsylvanian (early Westphalian D)

- FIGURE 1: Ptychocarpus unitus (Brongniart) Zeiller. Hypotype, GSC No. 1379. Morien Group. Shore of Long Beach, Morien, N.S., roof Spencer (Emery) coal seam, Sydney coalfield, GSC loc. 532. Collector, W.A. Bell.
- FIGURE 2: Ptychocarpus unitus (Brongniart) Zeiller. Hypotype, GSC No. 4466a. Morien Group, Sydney coalfield, N.S., stratigraphically higher than Emery coal seam, but precise horizon unknown. Collector, A.H. Foord.
- FIGURE 3: Ptychocarpus unitus (Brongniart) Zeiller. Hypotype, GSC No. 1370. Morien Group, Sydney coalfield, N.S., above Emery coal seam, but precise horizon unknown. Collector, A.H. Foord.
- FIGURE 4: Ptychocarpus unitus (Brongniart) Zeiller. Hypotype, GSC No. 1370 x 2.
- FIGURE 5: Linopteris obliqua (Bunbury) Zeiller var. bunburii Bell. Hypotype, GSC No. 14942 x 2. Morien Group. Shore east of Long Beach, Morien, roof of Spencer (Emery) coal seam, Sydney coalfield, GSC loc. 529. Collector, W.A. Bell.
- FIGURE 6: Neuropteris (Mixoneura) flexuosa Sternberg. Hypotype, GSC No. 14948. Morien Group. Dominion No. 11 colliery, roof of Emery coal seam, Sydney coalfield, N.S., GSC loc. 1331. Collector, W.A. Bell.
- FIGURE 7: Linopteris muensteri (Eichwald) H. Potonié var. dawsoni Bell. Hypotype, GSC No. 14977. Morien Group. Shore east of Langan bar, between crops of Emery and Phalen coal seams, Sydney coalfield, N.S., GSC loc. 1338. Collector, W.A. Bell.
- FIGURE 8: Linopteris muensteri (Eichwald) H. Potonié var. dawsoni Bell. Hypotype GSC No. 14977 x 3.
- FIGURE 9: Neuropteris (Mixoneura) ovata Hoffmann. Hypotype, GSC No. 14949. Morien Group. Dominion No. 16 Colliery, roof Langan (Phalen) coal seam, Sydney coalfield, N.S., GSC loc. 1312. Collector, W.A. Bell.
- FIGURE 10: Linopteris neuropteroides Gutbier var. major H. Potonié. Hypotype, GSC No. 14989. Morien Group. Shore at Dominion, N.S., roof of thin cannel coal seam above Emery seam, Sydney coalfield. Collector, W.A. Bell.
- FIGURE 11: Linopteris neuropteroides Gutbier var. major H. Potonié. Hypotype No. 14989 x 3.
- FIGURE 12: Neuropteris (Mixoneura) flexuosa Sternberg, forma magna. Holotype, GSC No. 14974. Morien Group. Dominion No. 11 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.
- FIGURE 13: Neuropteris (Mixoneura) flexuosa Sternberg. Hypotype, GSC No. 14947. Morien Group. Dominion No. 11 Colliery, roof of Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.

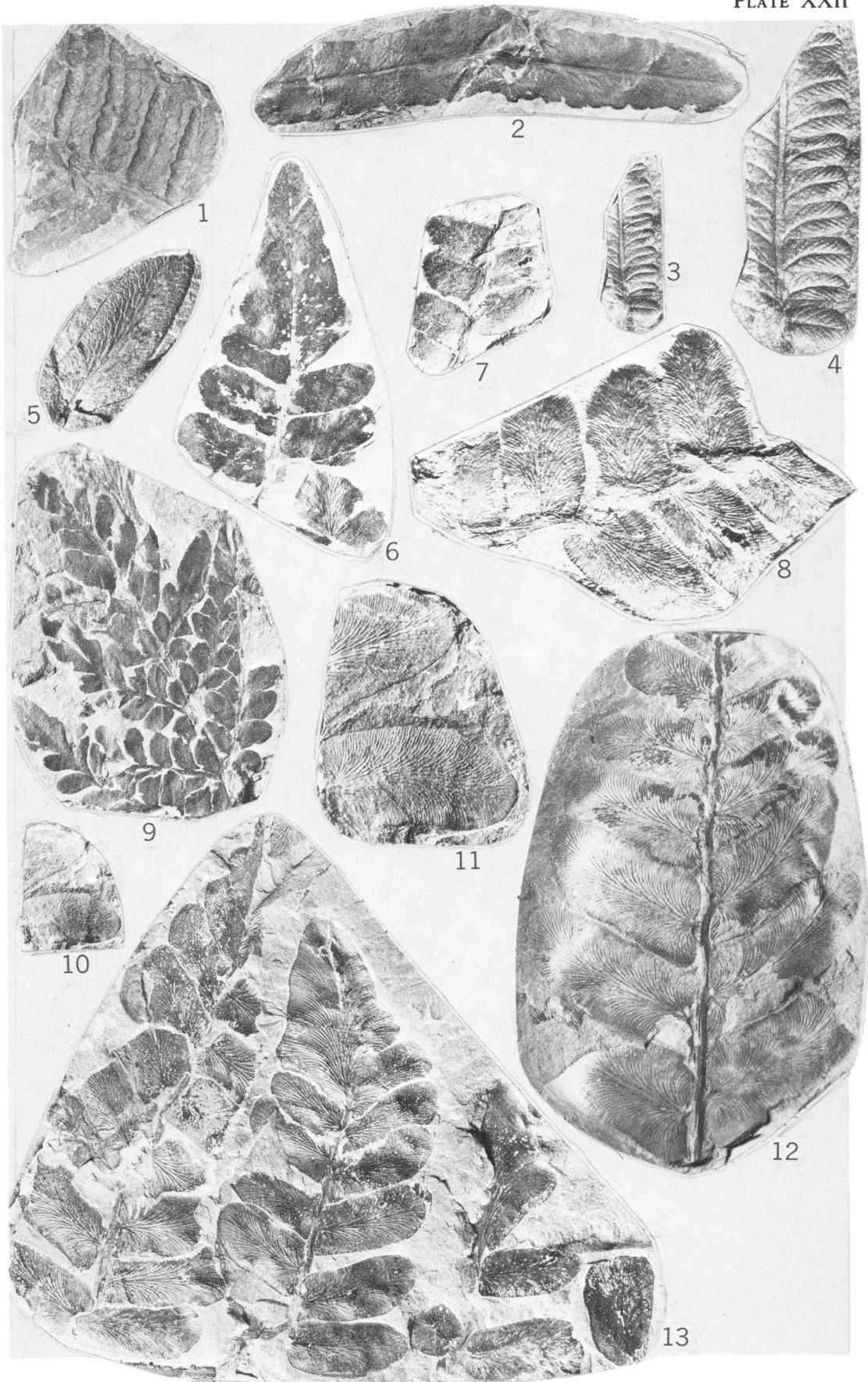


PLATE XXIII

Pennsylvanian (early Westphalian D)

FIGURE 1: Rhodea sp. GSC No. 15041. Morien Group. Dominion No. 22 Colliery, roof Gowrie (Phalen) coal seam, Sydney coalfield, GSC loc. 5879. Collector, W.A. Bell.

FIGURE 2: Adiantites bondi Kidston. Hypotype, GSC No. 15054. Morien Group. Big Bras d'Or shore, south of Blackrock Point, roof Collins coal seam, Sydney coalfield, GSC loc. 733. Collector, W.A. Bell.

FIGURE 3: Telangium? potieri (Zeiller) Kidston. Hypotype, GSC No. 15034. Morien Group. Dominion No. 11 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.



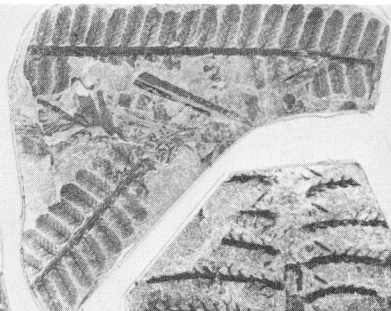
PLATE XXIV

Pennsylvanian (early Westphalian D)

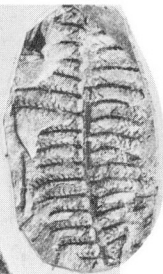
- FIGURE 1: Acitheca polymorpha (Brongniart) Schimper. Hypotype, GSC No. 15009. Morien Group. Roof of Emery coal seam, Dominion No. 10 Colliery, GSC loc. 1322. Collector, W.A. Bell.
- FIGURE 2: Pecopteris (Asterotheca) hemitelioides Brongniart. Hypotype, GSC No. 15003. Morien Group. Dominion No. 11 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.
- FIGURE 3: Alloiopteris (Corynepteris) sternbergi (Ettingshausen) H. Potonié. Hypotype, GSC No. 15044. Morien Group. Shore section east of Lingan bar between Emery and Phalen coal seams, Sydney coalfield, GSC loc. 1338. Collector, W.A. Bell.
- FIGURE 4: Alloiopteris (Corynepteris) sternbergi (Ettingshausen) H. Potonié. Hypotype, GSC No. 15044 x 2.
- FIGURE 5: Sphenopteris (Crossotheca) denticulata Bell. Hypotype, GSC No. 15056 x 2. Morien Group. Shore east of Schooner Pond Cove, roof of Ross (Emery) coal seam, Sydney coalfield, N.S., GSC loc. 518 (= 443). Collector, W.A. Bell.
- FIGURE 6: Sphenopteris (oligocarpia?) crenatodentata Bell. Hypotype, GSC No. 15029. Morien Group. Shore south of Port Morien, roof of Gowrie (Phalen) coal seam, Sydney coalfield, GSC loc. 512. Collector, W.A. Bell.
- FIGURE 7: Tetrameridium caducum H. Potonié. Hypotype GSC No. 15005 x 2. Morien Group. Shore east of Schooner Pond Cove, roof Ross (Emery) coal seam, Sydney coalfield, GSC loc. 518 (= 443). Collector, W.A. Bell.
- FIGURE 8: Sphenopteris neuropteroides (Boulay) Zeiller. Hypotype, GSC No. 14964. Morien Group. Shore east of Schooner Pond Cove, roof of Ross (Emery) coal seam, GSC loc. 518 (= 443). Collector, W.A. Bell.



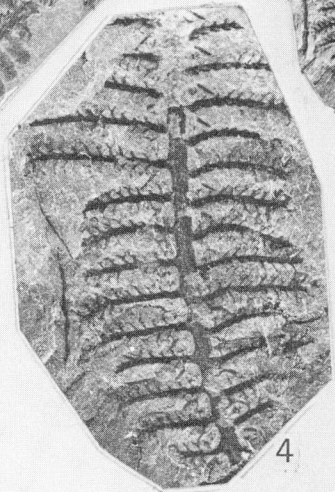
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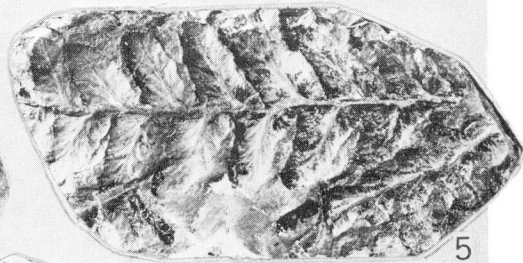
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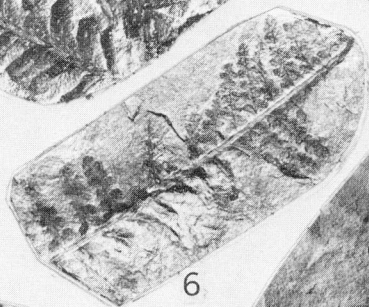
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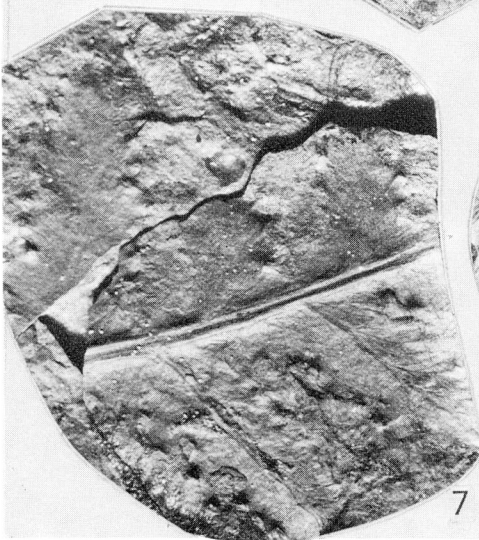
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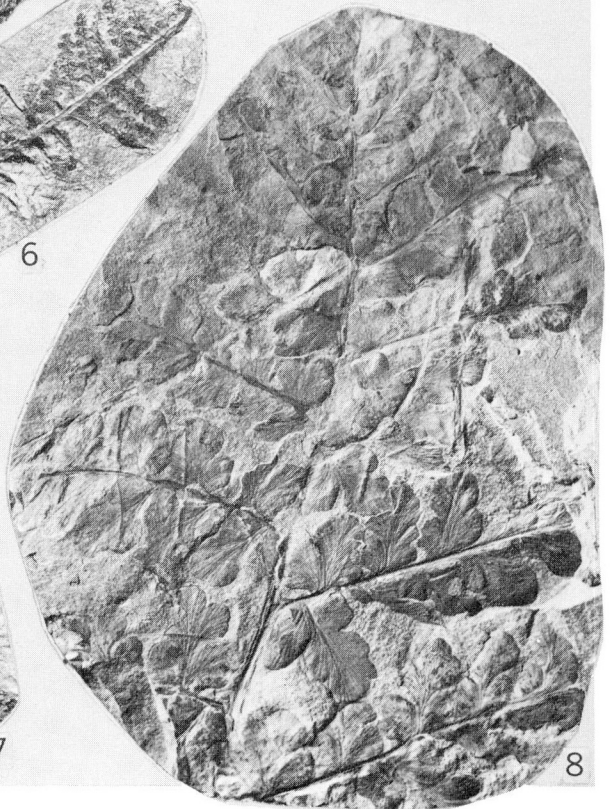
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PLATE XXV

Pennsylvanian (early Westphalian D)

FIGURE 1: Odontopteris subcuneata Bunbury. Hypotype, GSC No. 14990. Morien Group. West shore Morien Bay, N.S., north of Millbrook Cove, roof Trunnelshed (Backpit) coal seam, Sydney coalfield, GSC loc. 508 (= 506). Collector, W.A. Bell.

FIGURE 2: Sphenopteris aculeata Bell. Hypotype, GSC No. 15042. Morien Group. Sydney Harbour, shore between North Sydney and Sydney Mines, Sydney coalfield, GSC loc. 1314. Collector, W.A. Bell.

FIGURE 3: Sphenopteris aculeata Bell. Hypotype, GSC No. 15042 x 2.

FIGURE 4: Mariopteris sphenopteroides (Lesquereux) D. White. Hypotype, GSC No. 2831. Morien Group. South of Port Morien, N.S., roof of Spencer (Emery) coal seam, Sydney coalfield, GSC loc. 536. Collector, W.A. Bell.

FIGURE 5: Mariopteris carnosa Corsin. Hypotype, GSC No. 15020. Morien Group, Dominion No. 10 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 1322. Collector, W.A. Bell.

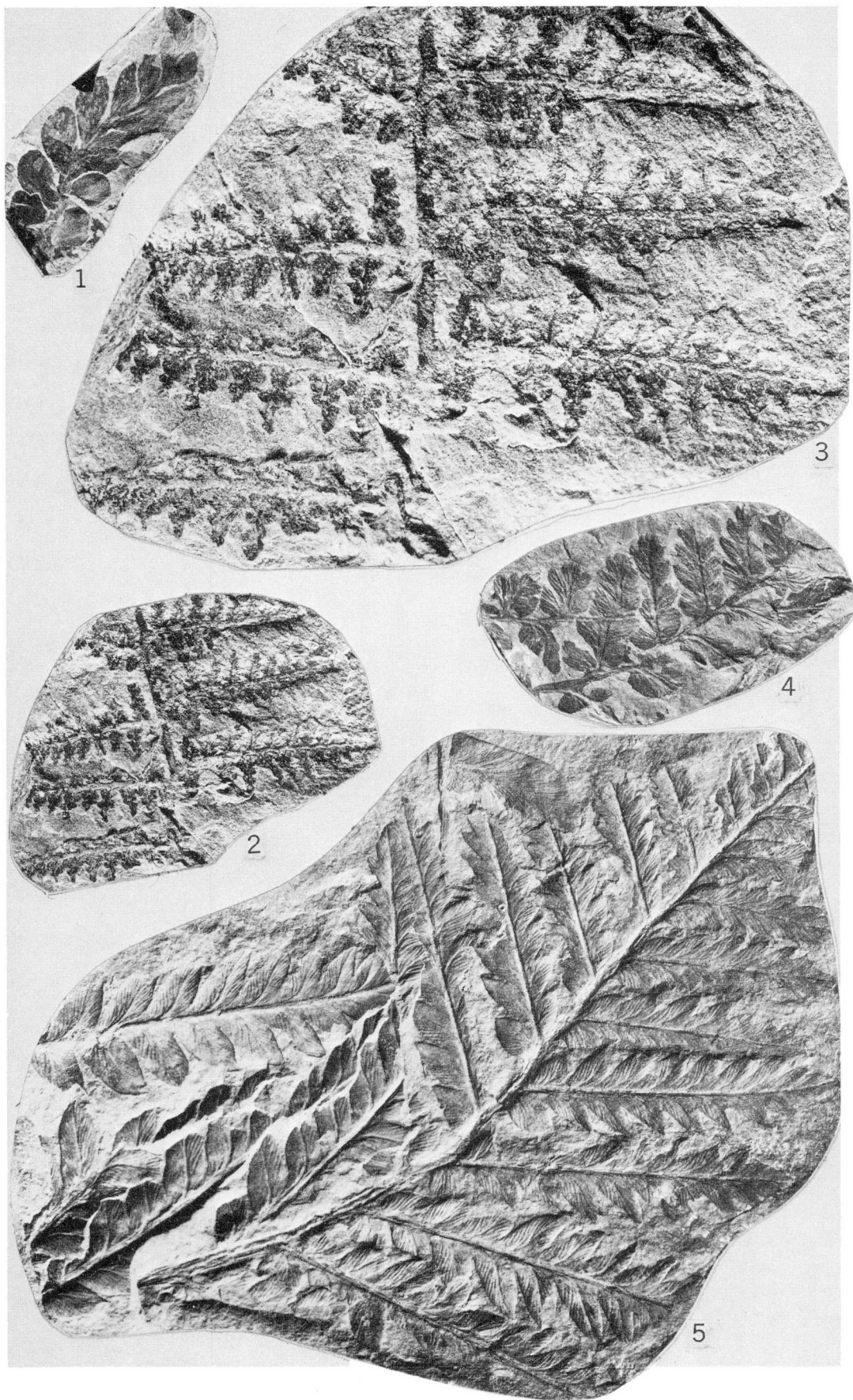


PLATE XXVI

Pennsylvanian (early Westphalian D)

- FIGURE 1: Alethopteris valida Boulay. Hypotype, GSC No. 14992. Morien Group. Dominion No. 10 Colliery, roof Emery coal seam, Sydney coalfield, N.S., GSC loc. 557. Collector, W.A. Bell.
- FIGURE 2: Mariopteris? ribeyroni (Zeiller) Bell. Hypotype, GSC No. 15023. Morien Group. Dominion No. 16 Colliery, roof Langan (Phalen) coal seam, Sydney coalfield, GSC loc. 561. Collector, W.A. Bell.
- FIGURE 3: Neuropteris (Mixoneura) ovata Hoffmann. Hypotype, GSC No. 14981. Morien Group. Glace Bay, N.S., roof Emery coal seam, unspecified Colliery, Sydney coalfield, GSC loc. 134. Collector, A. J. Hill.
- FIGURE 4: Alethopteris davreuxi (Brongniart) Göppert. Hypotype, GSC No. 14993. Morien Group. Dominion No. 11 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.
- FIGURE 5: Odontopteris subcuneata Bunbury. Hypotype, GSC No. 14972. Dominion No. 10 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 557. Collector, W.A. Bell.
- FIGURE 6: Acitheca polymorpha (Brongniart) Schimper. Hypotype, GSC No. 15008. Morien Group. West shore Morien Bay, north of Millbrook Cove, roof Trunnelshed (Backpit) coal seam, Sydney coalfield, GSC loc. 5081 (= 506). Collector, W.A. Bell.
- FIGURE 7: Neuropteris (Mixoneura) ovata Hoffmann. Hypotype, GSC No. 14950. Morien Group. Dominion No. 16 Colliery, roof Langan (Phalen) coal seam, Sydney coalfield, GSC loc. 1312. Collector, W.A. Bell.
- FIGURE 8: Odontopteris subcuneata Bunbury. Hypotype, No. 14970. Morien Group. Dominion No. 11 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.
- FIGURE 9: Neuropteris cf. heterophylla Brongniart. GSC No. 15058. Morien Group. Roof Emery coal seam, Dominion No. 11 Colliery, GSC loc. 1331. Collector, W.A. Bell.
- FIGURE 10: Neuropteris scheuchzeri Hoffmann. Hypotype, GSC No. 14973 (cyclopterid axial and ordinary leaves). Morien Group. Dominion No. 11 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.



PLATE XXVII

Pennsylvanian (early Westphalian D)

- FIGURE 1: Mariopteris tenuis Bell. Hypotype, GSC No. 15022. Morien Group. Shore east of Schooner Pond Cove, roof of Ross (Emery) coal seam, Sydney coalfield, GSC loc. 518. Collector, W.A. Bell.
- FIGURE 2: Lepidostrophyllum lanceolatum (Lindley and Hutton) Hirmer var. constrictum Bell. Hypotype, GSC No. 14924. Morien Group. Dominion No. 11 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.
- FIGURE 3: Lepidostrobophyllum jenneyi (D. White) Bell. Hypotype, GSC No. 3329. Morien Group. Shore south of Long Beach, Morien, N.S., roof of Spencer (Emery) coal seam, Sydney coalfield, GSC loc. 532 (= 461). Collector, W.A. Bell.
- FIGURE 4: Lepidodendron dawsoni Bell. Holotype, GSC No. 3520. Morien Group. Dominion No. 16 Colliery, roof Lingan (Phalen) coal seam, Sydney coalfield, N.S., GSC loc. 561. Collector, W.A. Bell.
- FIGURE 5: Lepidodendron dawsoni Bell. Holotype No. 3520 x 2 (in part).
- FIGURE 6: Annularia radiata Brongniart. Hypotype, GSC No. 14911. Morien Group. Cape Morien, shore east side Morien Bay roof of Gowrie (Phalen) coal seam, Sydney coalfield, GSC loc. 516. Collector, W.A. Bell.
- FIGURE 7: Mariopteris latifolia (Brongniart) Zeiller. Hypotype, GSC No. 2834. Morien Group. Shore east of Schooner Pond Cove, shales 25 feet above Ross (Emery) coal seam, Sydney coalfield, GSC loc. 528 (= 527). Collector, W.A. Bell.
- FIGURE 8: Alethopteris valida Boulay. Hypotype, GSC No. 15001. Morien Group. Dominion No. 11 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.
- FIGURE 9: Alethopteris serli (Brongniart) Göppert. Hypotype, GSC No. 14996. Morien Group. Dominion No. 11 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.

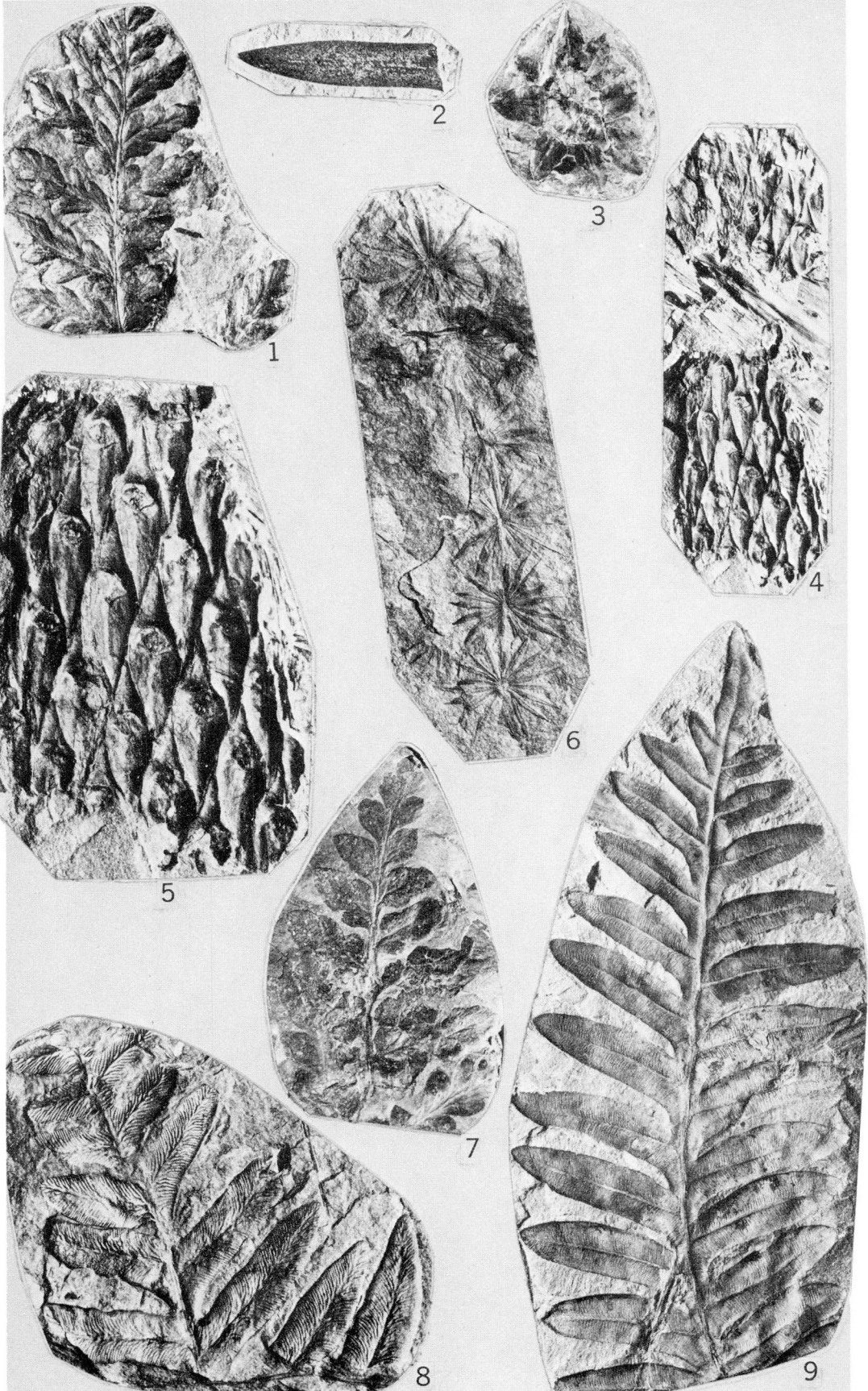


PLATE XXVIII

Pennsylvanian (early Westphalian D)

- FIGURE 1: Samaropsis sp. Bell. GSC No. 15061. Morien Group. Dominion No. 10 Colliery, roof Emery coal seam, Sydney coalfield, GSC loc. 1322. Collector, W.A. Bell.
- FIGURE 2: Samaropsis cornuta Dawson. Hypotype, GSC No. 3175. Morien Group. Shore, east side Morien Bay, roof Gowrie (Phalen) coal seam, Sydney coalfield, GSC loc. 489. Collector, W.A. Bell.
- FIGURE 3: Samaropsis cornuta Dawson. Hypotype, GSC No. 3175 x 2.
- FIGURE 4: Lepidophloios laricinus Sternberg. Hypotype, GSC No. 14935. Dominion No. 11 Colliery, roof Emery coal seam, Glace Bay, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.
- FIGURE 5: Sphenophyllum majus Bronn. Hypotype, GSC No. 14917. Morien Group. Dominion No. 11 Colliery, roof of Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.
- FIGURE 6: Annularia stellata (Schlotheim) Wood. Hypotype, GSC No. 14906. Morien Group. Dominion No. 11 Colliery, roof of Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.
- FIGURE 7: Asterophyllites equisetiformis (Schlotheim) Brongniart. Hypotype, GSC No. 14922. Morien Group. Shore east of Schooner Pond Cove, roof of Ross (Emery) coal seam, Sydney coalfield, GSC loc. 518 (= 443). Collector, W.A. Bell.

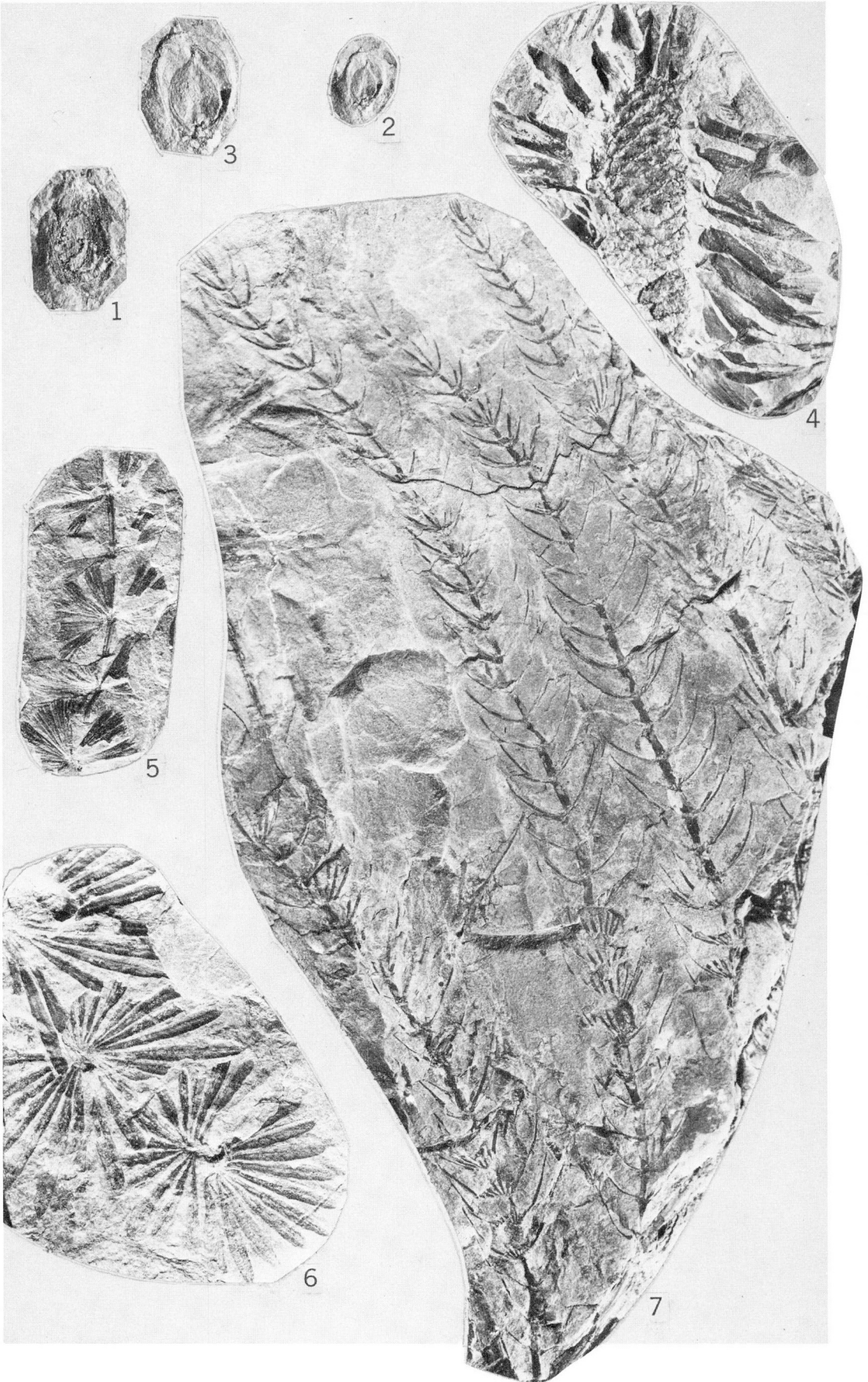


PLATE XXIX

Pennsylvanian (early Westphalian D)

- FIGURE 1: Lepidodendron pictoense Dawson (= ? Lepidodendron ophiurus Brongniart). Hypotype, GSC No. 14933. Morien Group. Little Bras d'Or, Sydney coalfield, GSC loc. 2547. Collector, J.E. Hyde.
- FIGURE 2: Sphenophyllum emarginatum Brongniart. Hypotype, GSC No. 14914. Morien Group. Shore east of Schooner Pond Cove, roof of Ross (Emery) coal seam, Sydney coalfield, GSC loc. 518. Collector, W.A. Bell.
- FIGURE 3: Calamites sp. Bell. GSC No. 14921 (imprint of exterior of stem). Reserve, N.S., Sydney coalfield, roof of Emery coal seam, Dominion No. 10 Colliery, GSC loc. 3421. Collector, H.M. Ami.
- FIGURE 4: Asterophyllites equisetiformis (Schlotheim) Brongniart. Hypotype, GSC No. 14907. Morien Group. Dominion No. 11 Colliery, roof of Emery coal seam, Sydney coalfield, GSC loc. 1331. Collector, W.A. Bell.

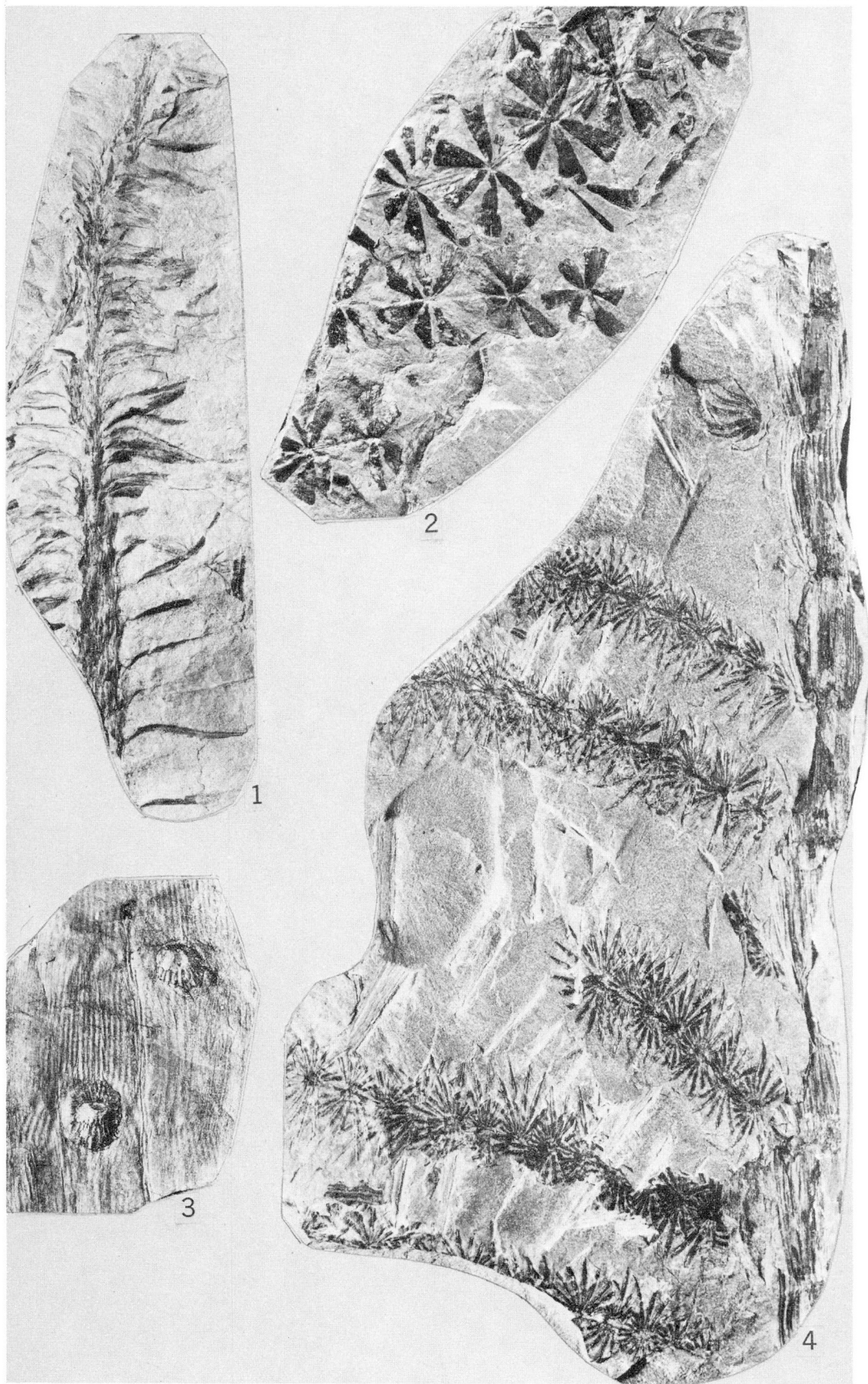


PLATE XXX

Pennsylvanian (early Westphalian D)

FIGURE 1: Asolanus camptotaenia Wood. Hypotype GSC No. 14927. Morien Group. Shore south of Port Morien, roof of Gowrie (Phalen) coal seam, Sydney coalfield, GSC loc. 512. Collector, W.A. Bell.

FIGURE 2: Asterophyllites longifolius (Sternberg) Brongniart. Hypotype, GSC No. 14909. Morien Group. Sydney Harbour, shore between North Sydney and Sydney Mines, above Boutilier coal seam, Sydney coalfield, GSC loc. 1146. Collector, W.A. Bell.

FIGURE 3: Lepidostrobophyllum lanceolatum (Lindley and Hutton) Hirmer var. constrictum Bell. Hypotype, GSC No. 14923. Morien Group. Dominion No. 16 Colliery, roof Lingan (Phalen) coal seam, Sydney coalfield, GSC loc. 1312. Collector, W.A. Bell.

Pennsylvanian (late Westphalian D)

FIGURE 4: Neuropteris macrophylla Brongniart. Hypotype, GSC No. 14985. Morien Group. Shore at Point Aconi, roof Point Aconi coal seam, Sydney coalfield, GSC loc. 922 (= 428). Collector, W.A. Bell

FIGURE 5: Linopteris obliqua (Bunbury) Zeiller var. bunburii Bell. Hypotype, GSC No. 14941. Morien Group. Shore west of Cranberry Head, roof of Lloyd Cove coal seam, Sydney coalfield, GSC loc. 1324. Collector, W.A. Bell.

FIGURE 6: Linopteris obliqua (Bunbury) Zeiller var. bunburii Bell. Hypotype, GSC No. 14941 x 2.

FIGURE 7: Neuropteris rarinervis Hoffmann. Hypotype, GSC No. 14969. Morien Group. Sydney Mines shore, roof of Sydney Main (Harbour) coal seam, Sydney coalfield, GSC loc. 1307. Collector, W.A. Bell.

FIGURE 8: Neuropteris rarinervis Hoffmann. Hypotype, GSC No. 14952. Morien Group. Cranberry Head, above lowest coal seam, Sydney coalfield, GSC loc. 1326. Collector, W.A. Bell.

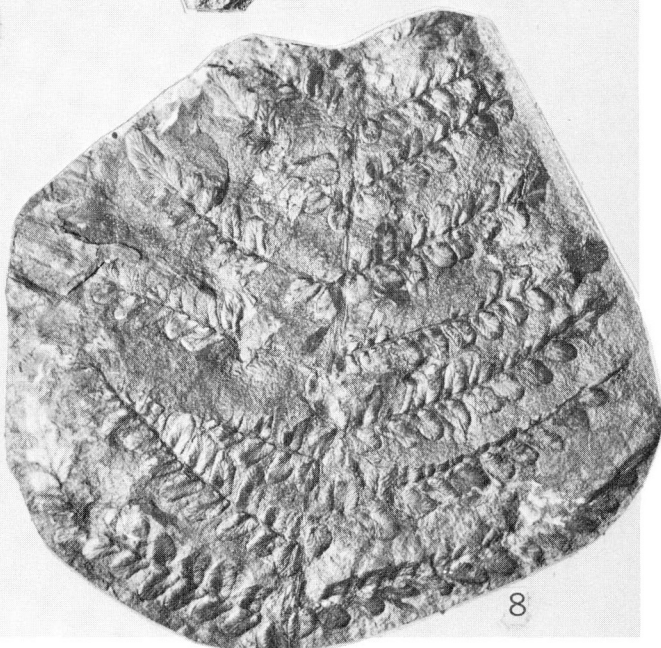
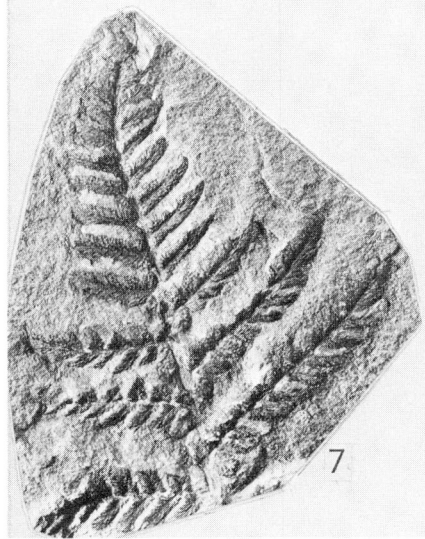
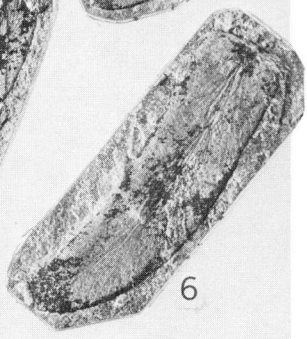
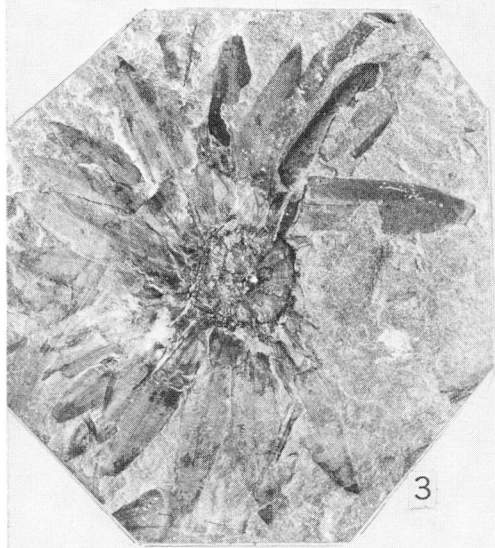
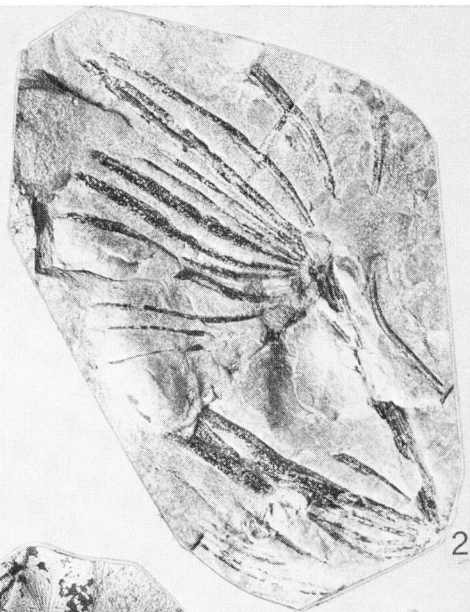
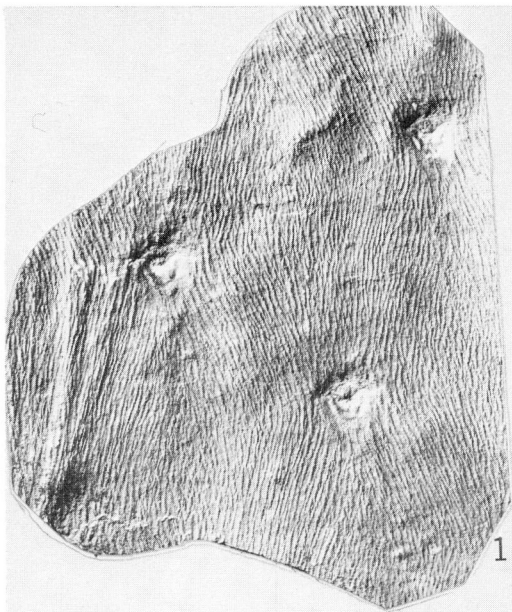


PLATE XXXI

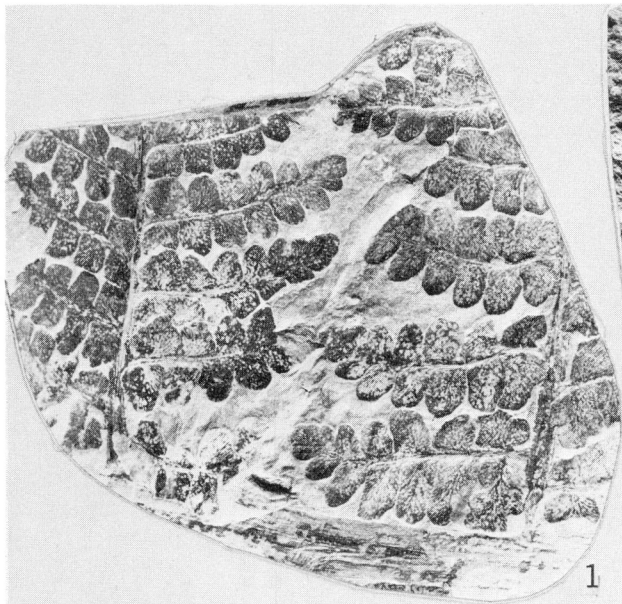
Pennsylvanian (early Westphalian D)

FIGURE 1: Sphenopteris neuropteroides (Boulay) Zeiller. Hypotype, GSC No. 15035. Morien Group. Dominion No. 4 Colliery, roof Phalen coal seam, Sydney coalfield, GSC loc. 556. Collector, W.A. Bell.

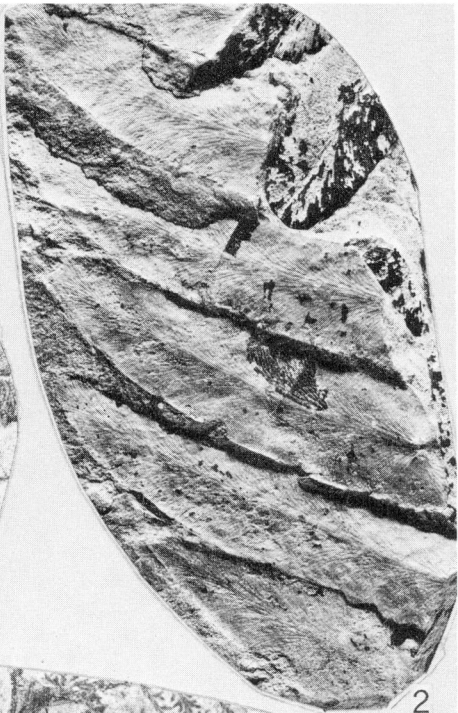
Pennsylvanian (late Westphalian D)

FIGURE 2: Neuropteris macrophylla Brongniart. Hypotype, GSC No. 14963. Morien Group. Shore, Point Aconi, roof Point Aconi coal seam, Sydney coalfield, GSC No. 922 (= 428). Collector, W.A. Bell.

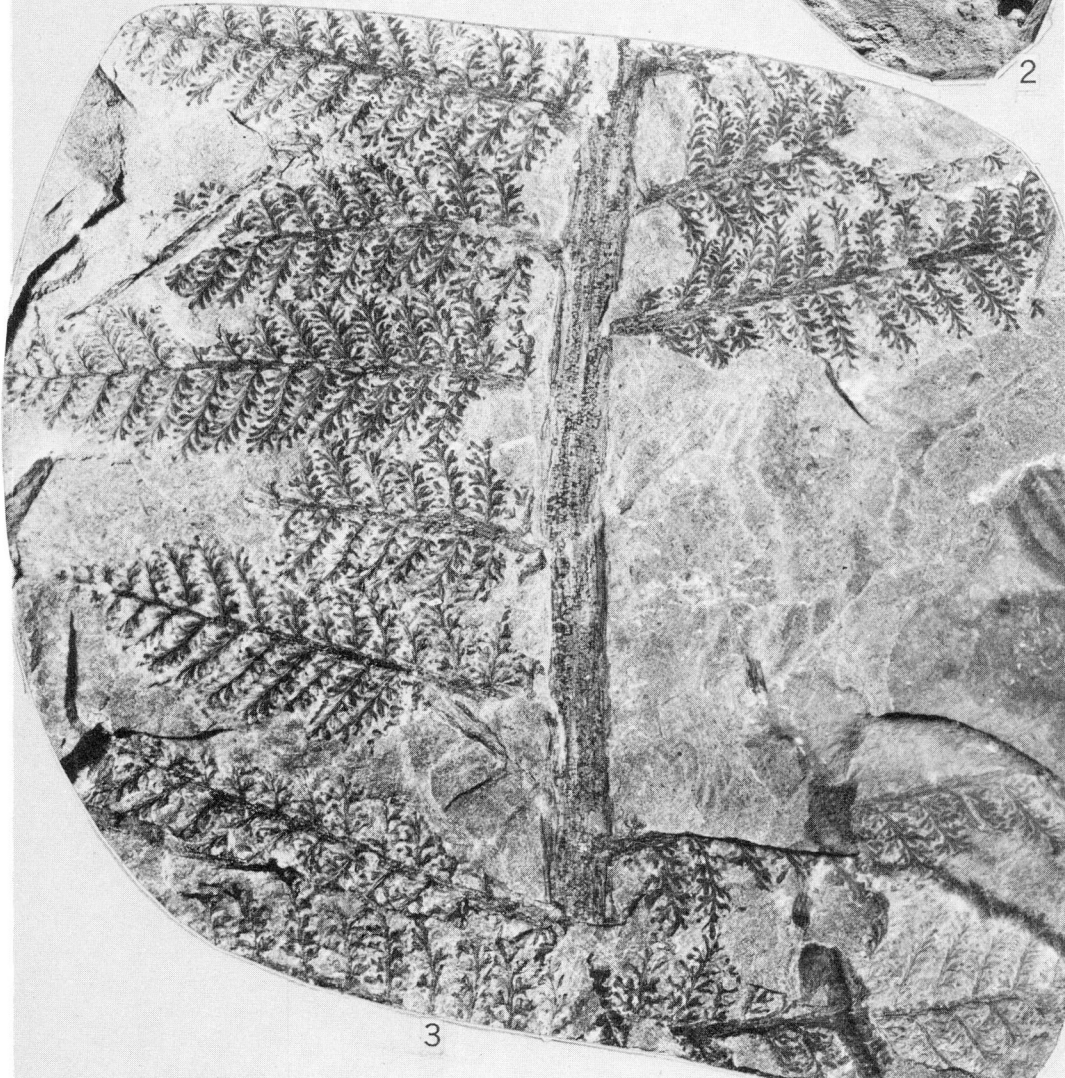
FIGURE 3: Zeilleria delicatula Sternberg. Hypotype, GSC No. 15026. Morien Group. Dominion No. 7 Colliery, roof Hub coal seam, Sydney coalfield, GSC loc. 1519. Collector, W.A. Bell.



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PLATE XXXII

Pennsylvanian (late Westphalian D)

FIGURE 1: Neuropteris rarinervis Bunbury. Hypotype, GSC No. 14940. Morien Group. Sydney Mines, roof of Sydney Main (Harbour) coal seam, Sydney coalfield, GSC loc. 1307. Collector, W.A. Bell.

FIGURE 2: Neuropteris rarinervis Bunbury. Hypotype, GSC No. 14967. Morien Group. Sydney Harbour, shore at Sydney Mines, roof of Sydney Main (Harbour) coal seam, Sydney coalfield, GSC loc. 1307. Collector, W.A. Bell.



PLATE XXXIII

Pennsylvanian (late Westphalian C)

- FIGURE 1: Neuropteris scheuchzeri Hoffmann. Hypotype, GSC No. 14968 x 2. Morien Group. Pit on Mullins coal seam, 4,200 feet from its shore outcrop, Victoria Mines, Sydney coalfield, GSC loc. 752. Collector, W.A. Bell.

Pennsylvanian (late Westphalian D)

- FIGURE 2: Neuropteris scheuchzeri Hoffmann. Hypotype, GSC No. 14953. Morien Group. Dominion No. 7 Colliery, roof Hub coal seam, Sydney coalfield, GSC loc. 1335. Collector, W.A. Bell.
- FIGURE 3: Odontopteris subcuneata Bunbury. Hypotype, GSC No. 14975. Morien Group. Oxford Point, roof of 1.1 foot coal seam north of Florence beach, Sydney coalfield, GSC loc. 1306. Collector, W.A. Bell.
- FIGURE 4: Alethopteris davreuxi (Brongniart) Göppert. Hypotype, GSC No. 14991. Morien Group. Shore south of Chapel Point, Sydney Mines, roof third coal seam from base of Chapel Point group of seams, GSC loc. 1333. Collector, W.A. Bell.
- FIGURE 5: Dicksonites pluckeneti (Schlotheim) Sterzel. Hypotype, GSC No. 15007. Morien Group. Shore, 6,100 feet south of Point Aconi, roof Upper Bonar coal seam, Sydney coalfield, GSC loc. 609 (= 430). Collector, W.A. Bell.
- FIGURE 6: Neuropteris macrophylla Brongniart. Hypotype, GSC No. 14988. Morien Group. Roof of Upper Bonar coal seam at shore crop, GSC loc. 430. Collector, W.A. Bell.
- FIGURE 7: Neuropteris rarinervis Bunbury. Hypotype, GSC No. 14978. Morien Group. Sydney Mines shore, roof Sydney Main (Harbour) coal seam, Sydney coalfield, GSC loc. 1307. Collector, W.A. Bell.

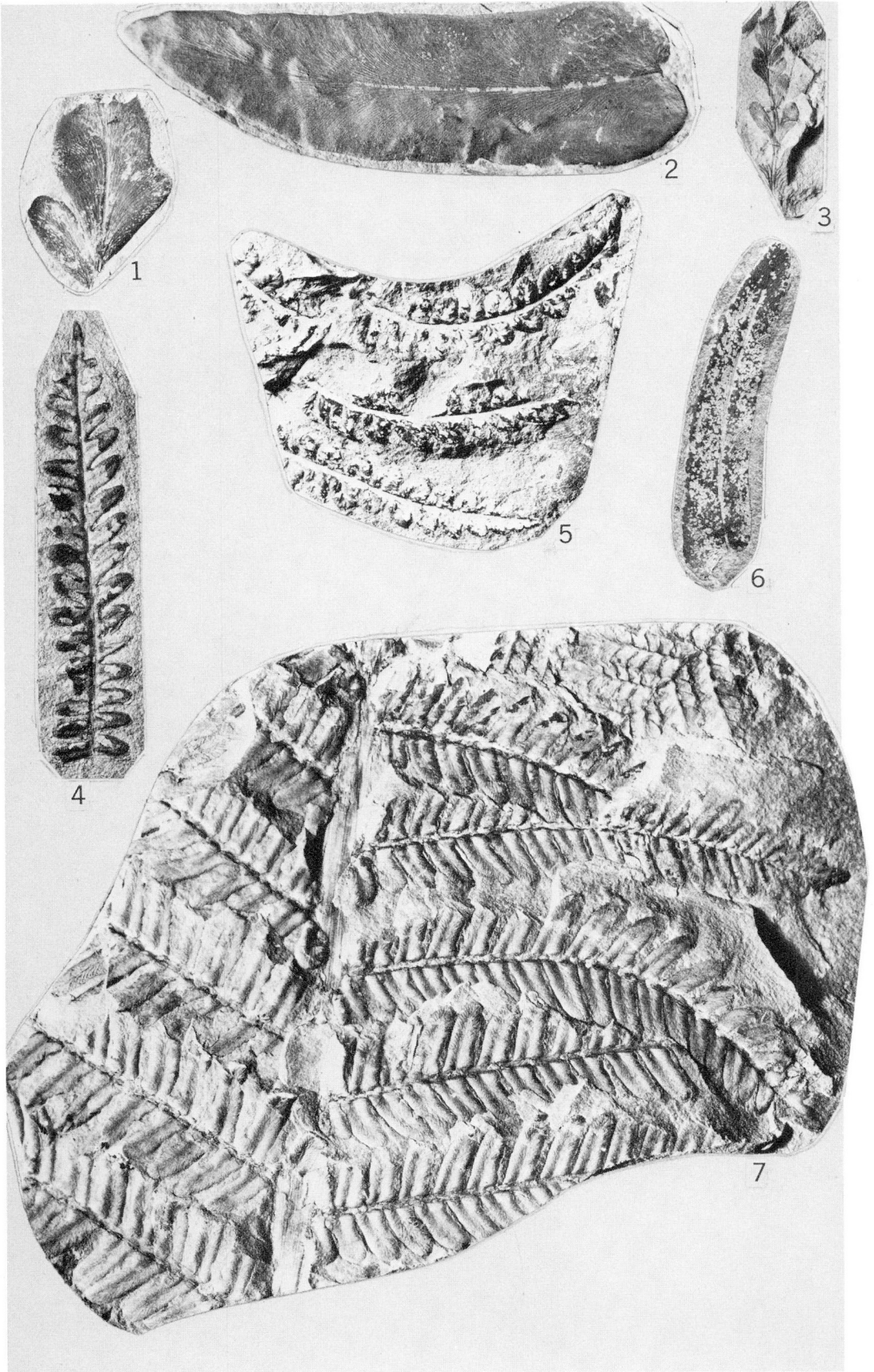


PLATE XXXIV

Pennsylvanian (late Westphalian D)

FIGURE 1: Hymenophyllites quadridactylites (Gutbier) Kidston. Hypo-
type, GSC No. 15043 x 2. Morien Group. Dominion No. 7 Colliery,
roof Hub coal seam, Sydney coalfield, GSC loc. 1335. Collector, W.A.
Bell.

FIGURE 2: Hymenophyllites quadridactylites (Gutbier) Kidston. Hypo-
type, GSC No. 15038. Morien Group. Dominion No. 7 Colliery, roof
Hub coal seam, Sydney coalfield, GSC loc. 1335. Collector, W.A. Bell.

FIGURE 3: Hymenophyllites quadridactylites (Gutbier) Kidston. Hypo-
type 15038 (in part) x 3.



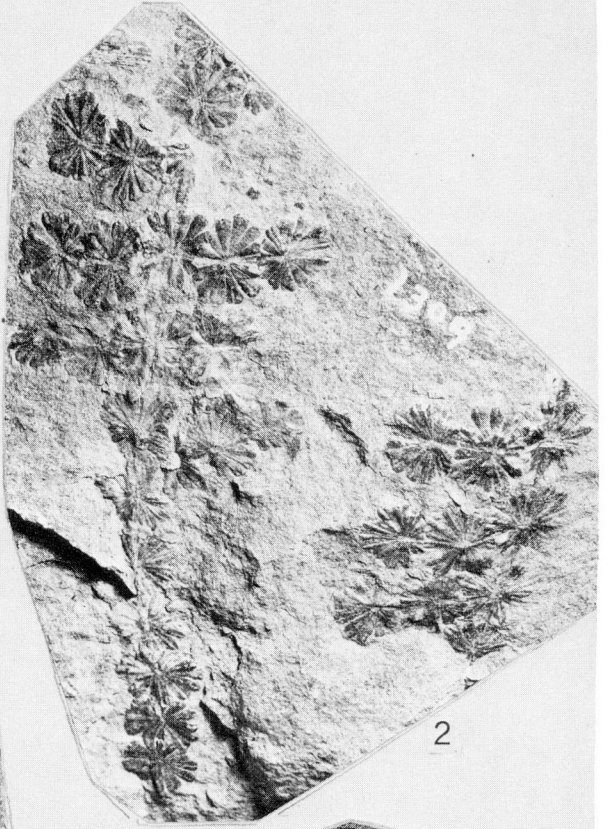
PLATE XXXV

Pennsylvanian (late Westphalian D)

- FIGURE 1: Lepidostrobophyllum triangulare (Zeiller) Bell. Hypotype, GSC No. 14938. Morien Group. Sydney Mines shore, 55 feet above Sydney Main (Harbour) coal seam, Sydney coalfield, GSC loc. 1313. Collector, W.A. Bell.
- FIGURE 2: Annularia sphenophylloides (Zenker) Gutbier. Hypotype, GSC 14913. Morien Group. Shore Sydney Mines, roof of Sydney Main (Harbour) coal seam, Sydney coalfield, GSC loc. 1309. Collector, W.A. Bell.
- FIGURE 3: Mariopteris carnosa Corsin. Hypotype, GSC No. 15021. Sydney Mines, unspecified beds, but probably roof of Sydney Main (Harbour) coal seam. Collector, A.H. Foord.
- FIGURE 4: Neuropteris rarinervis Bunbury. Hypotype, GSC No. 14976. (cyclopterid pinnules on rachis). Morien Group. Sydney Mines shore, roof Sydney Main (Harbour) coal seam, Sydney coalfield, GSC loc. 1307. Collector, W.A. Bell.



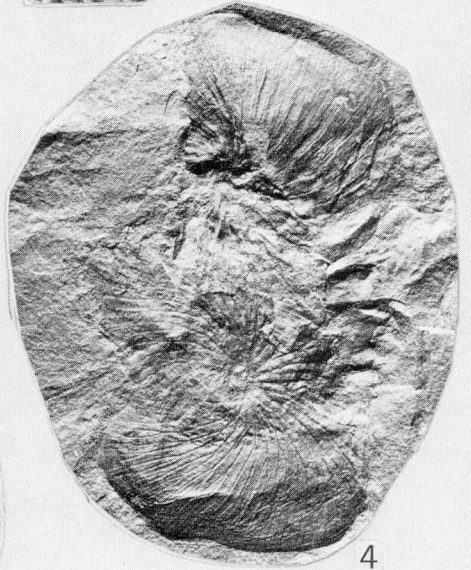
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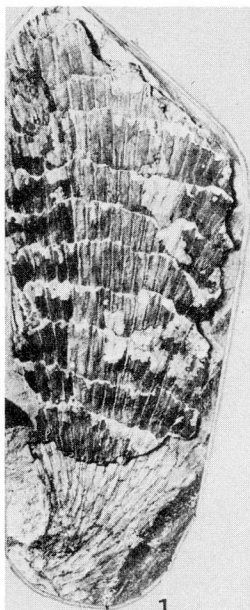


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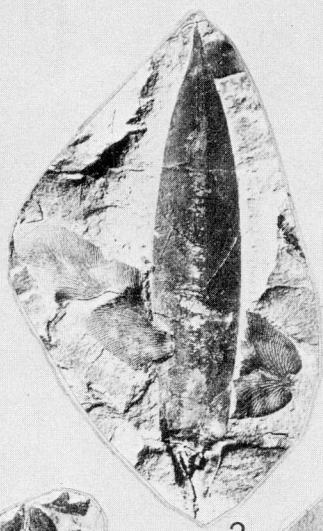
PLATE XXXVI

Pennsylvanian (late Westphalian D)

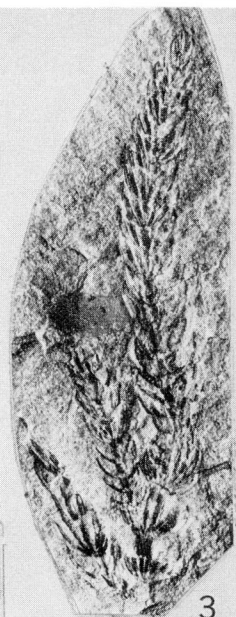
- FIGURE 1: Macrostachya infundibuliformis Brongniart. Hypotype, GSC No. 3100. Morien Group. Shore at Point Aconi, roof of Point Aconi coal seam, Sydney coalfield, GSC loc. 786. Collector, W.A. Bell.
- FIGURE 2: Lepidostrobophyllum majus (Brongniart) Hirmer. Hypotype, GSC No. 14925. Morien Group. Florence, roof of 1.1 foot coal seam north of Florence beach, Sydney coalfield, GSC loc. 1306. Collector, W.A. Bell.
- FIGURE 3: Asterophyllites equisetiformis (Schlotheim) Brongniert. Hypotype, GSC No. 14918. Morien Group. Shore at Point Aconi coal seam, Sydney coal seam, GSC loc. 922. Collector, W.A. Bell.
- FIGURE 4: Sphenophyllum oblongifolium Germar and Kaulfuss. Hypotype, GSC No. 14904. Morien Group. Shore at Point Aconi, roof of Point Aconi coal seam, Sydney coalfield, GSC loc. 922. Collector, W.A. Bell.
- FIGURE 5: Sphenophyllum emarginatum Brongniart. Hypotype, GSC No. 14915. Black Point, below sandstone of point, between upper coal seams, Sydney coalfield, GSC loc. 1330. Collector, W.A. Bell.
- FIGURE 6: Sphenophyllum emarginatum Brongniart. Hypotype, GSC No. 14903. Morien Group. Shore at Point Aconi, roof of Point Aconi coal seam, Sydney coalfield, GSC loc. 922. Collector, W.A. Bell.
- FIGURE 7: Calamites ramosus Artis. Hypotype, GSC No. 14905. Morien Group. Dominion No. 12 Colliery, roof of Harbour coal seam, Sydney coalfield, GSC loc. 1310. Collector, W.A. Bell.



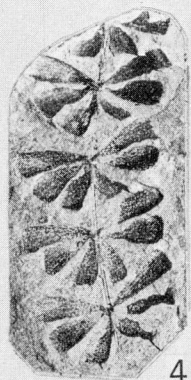
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