

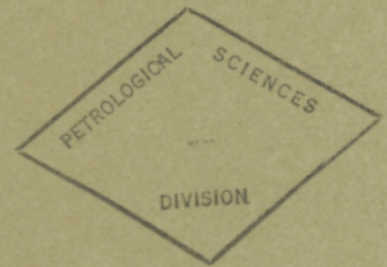
GEOLOGICAL
SURVEY
OF
CANADA

DEPARTMENT OF MINES
AND TECHNICAL SURVEYS

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PAPER 65-35



Illustrations of Canadian Fossils
UPPER CRETACEOUS AND PALEOCENE PLANTS
OF WESTERN CANADA

Report and 21 Plates

W. A. Bell



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PLANTS OF WESTERN CANADA**

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Abstract

Illustrates some of the more complete and recognizable megaplants from Upper Cretaceous and Paleocene of Western Canada. They represent four successive plant assemblages or floras, which, in conjunction with associated and intervening faunal assemblages, permit age correlations of rock units within a province or region, and generalized age assignments in the European geological time-scale, such as: Cenomanian; Santonian-Campanian; Maestrichtian; Danian-Thantian.

Illustrations of Canadian Fossils
UPPER CRETACEOUS AND PALEOCENE PLANTS
OF WESTERN CANADA

Introduction

This report is one of a series planned to provide illustrations of stratigraphically important Canadian fossils as an assistance to the general geologist.

Illustrated are some of the more complete and more easily recognizable megaplant remains that were collected by geologists from non-marine Upper Cretaceous and Paleocene rock units of Western Canada. They are representatives of four successive plant assemblages or floras, which, in conjunction with associated and intervening faunal assemblages, permit age correlations of rock units within a province or region, and generalized age assignments in the European geological time-scale, such as: Cenomanian; Santonian-Campanian; Maestrichtian; Danian-Thanetian.

Selected References

The following references deal with Canadian material only, and the least important of the older ones have been omitted. Lists of the most important reports on relevant fossil floras occurring in the United States and Europe can be found in References in the works cited here.

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- 1908: Report on Tertiary plants of British Columbia collected by Lawrence M. Lambe in 1906, together with a discussion of previously recorded Tertiary floras; Geol. Surv. Can., Publ. 1013, 167 pp., illus.

- PLATES -

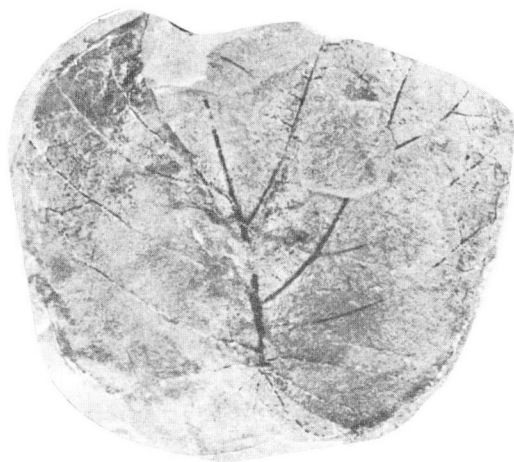
PLATE I

Genomanian

- FIGURE 1: Cephalotaxopsis heterophylla Hollick. Hypotype, GSC No. 14847. Dunvegan Formation. Torrens Creek, Alberta, 1 3/4 miles above junction with Hat Creek, GSC loc. 4466. Collector, H. Greiner.
- FIGURE 2: Protophyllum multinerve? Lesquereux. Hypotype?, GSC No. 5135. Dunvegan Formation. Coal Brook, Peace River, British Columbia, GSC loc. 4205 (= 290). Collector, G. M. Dawson.
- FIGURE 3: Sphenopteris stricta (Newberry) Bell. Hypotype, GSC No. 1049. Dunvegan Formation. Pine River, British Columbia, GSC loc. 4192. Collector, M. Y. Williams.
- FIGURE 4: Pseudocycas unjiga (Dawson) Berry. Syntype, GSC No. 5393. Dunvegan Formation. Pine River Forks, British Columbia, GSC loc. 285. Collector, A. R. C. Selwyn.
- FIGURE 5: Andromeda? spatulata Bell. Holotype, GSC No. 1077. Dunvegan Formation. Murray River, British Columbia, 3/4 mile above Perier River, GSC loc. 4177. Collector, M. Y. Williams.



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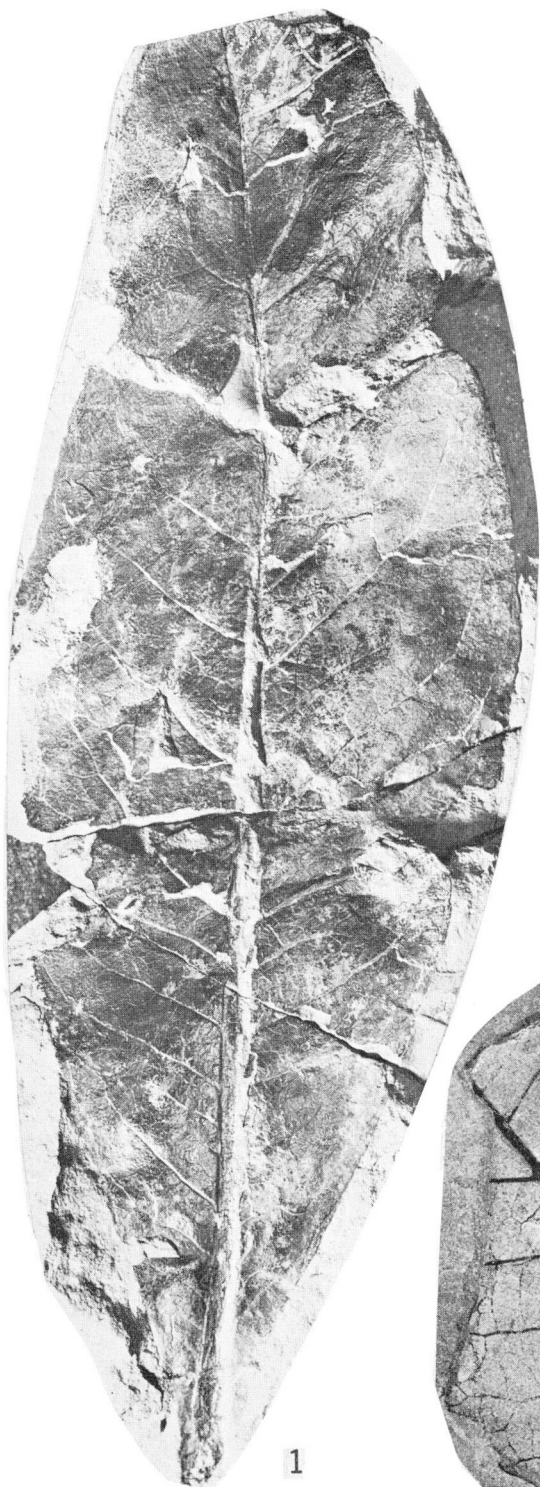


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PLATE II

Cenomanian

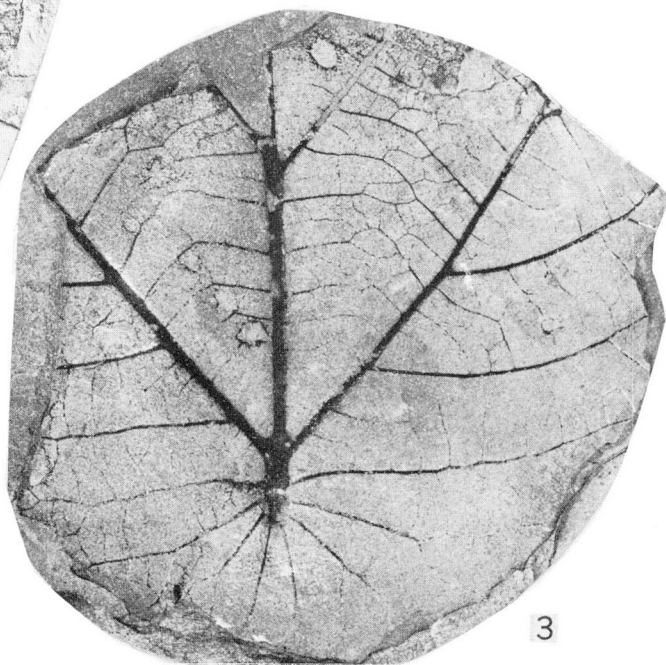
- FIGURE 1: Magnolia magnifica Dawson. Holotype, GSC No. 5133. Dunvegan Formation. Coal Brook, tributary to Kiskatinaw River, Peace River area, British Columbia, GSC loc. 290. Collector, G.M. Dawson.
- FIGURE 2: Ficus daphnogenoides (Heer) Berry. Hypotypes, GSC No. 1073 (left) and 1074 (right). Dunvegan Formation, Coldstream Creek, Peace River area, from mouth to 1/4 mile upstream, GSC loc. 4195. Collector, M.Y. Williams.
- FIGURE 3: Pseudoprotophyllum boreale (Dawson) Hollick. Holotype, GSC No. 5398. Dunvegan Formation, Coal Brook, tributary to Kiskatinaw River, Peace River area, British Columbia, GSC loc. 290. Collector, G.M. Dawson.



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PLATE III

Cenomanian

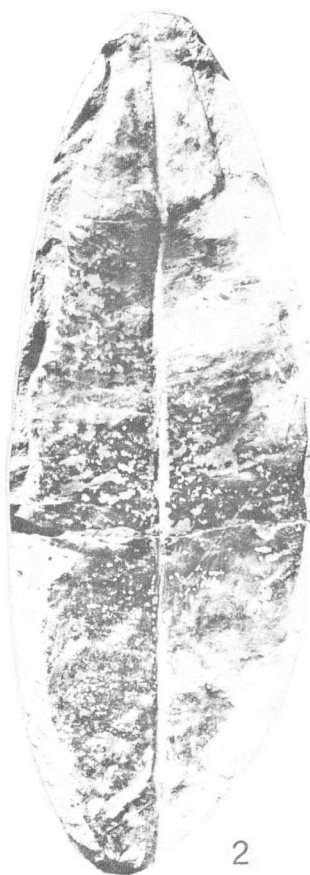
FIGURE 1: Liriodendron giganteum Lesquereux (pars). Hypotype, GSC No. 1185. Dunvegan Formation. Cripple Creek, Alberta, near Alberta - British Columbia boundary, GSC loc. 3623. Collector, O.A. Erdman.

FIGURE 2: Ficus glascoeana Lesquereux. Hypotype, GSC No. 1071. Dunvegan Formation. Pine River area, British Columbia, but unknown precise locality, GSC loc. 4196. Collector, M.Y. Williams.

FIGURE 3: Pseudoaspidiophyllum latifolium Hollick. Hypotype, GSC No. 1104, XI/2. Dunvegan Formation. Murray River, British Columbia, 3/4 mile above Perier River, GSC loc. 4197. Collector, M.Y. Williams.



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PLATE IV

Cenomanian

FIGURE 1: Nymphaeites exemplaris Hollick. Hypotype, GSC No. 14852. Tatonduk River, Yukon Territory, GSC loc. 6502. Collector, E. Mountjoy.

FIGURE 2: Credneria truncatodenticulata Bell. Holotype, GSC No. 1213. Dunvegan Formation. Kiskatinaw River at mouth of Mica Creek, British Columbia, GSC loc. 5703. Collector, L.D. Burling.

FIGURE 3: Pseudoaspidiophyllum latifolium Hollick. Hypotype, GSC No. 1200. Dunvegan Formation. Pine River, British Columbia, about 200 yards above bridge, GSC loc. 3780. Collector, C.M. Sternberg.



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PLATE V

Cenomanian

FIGURE 1: Pseudocycas unjiga (Dawson) Berry. Hypotype, GSC No. 15858. Dunvegan Formation. Pine River Forks, British Columbia, GSC loc. 285. Collector, A.R.C. Selwyn.

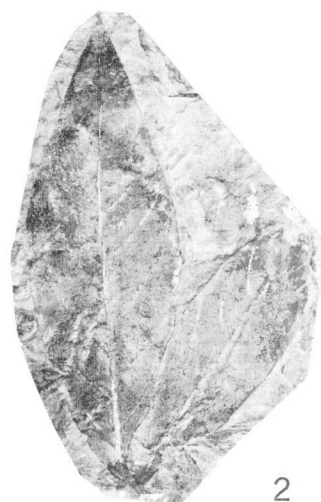
FIGURE 2: Hymenaea fayettensis Berry. Hypotype, GSC No. 5132. Dunvegan Formation. Pine River Canyon, British Columbia, GSC loc. 288. Collector, G.M. Dawson.

FIGURE 3: Araliaephyllum rotundiloba (Newberry) Fritel. Hypotype, GSC No. 1214. Dunvegan Formation. Just below creek that enters left bank Peace River at long. 118°16'W, Alberta, from beds well down in formation and 470 feet below base of Kaskapoo Formation, GSC loc. 3664. Collector, L.D. Burling.

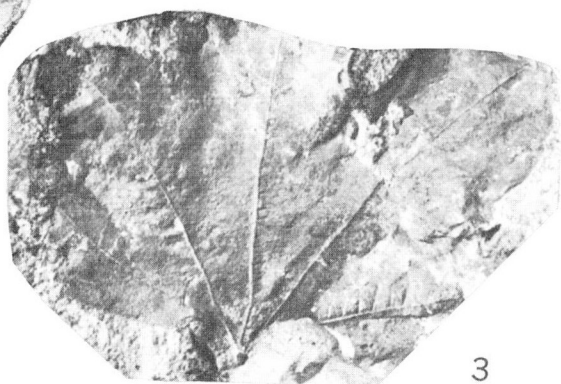
FIGURE 4: Palaeonuphar nordenskiöldi (Heer) Bell. Hypotype, GSC No. 1221. Dunvegan Formation. Peace River, west bank, between Dunvegan and mouth of Montagneuse River, Alberta, GSC loc. 1197. Collector, F.H. McLearn.



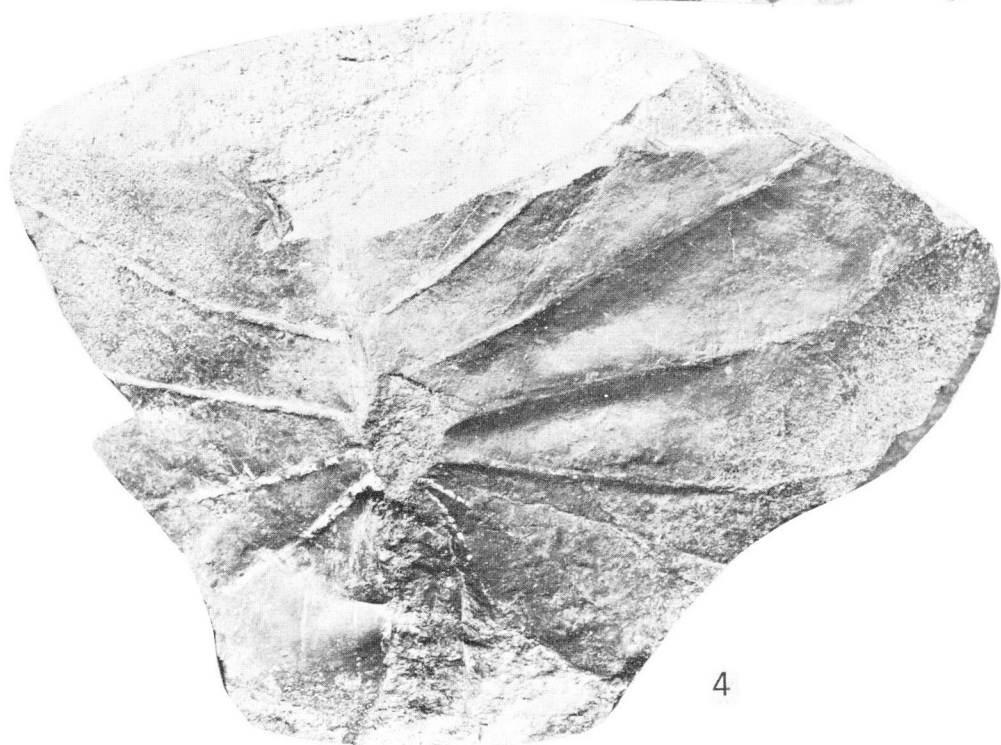
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PLATE VI

Santonian - Campanian

- FIGURE 1: Alnus perantiqua (Dawson) Bell. Hypotype, GSC No. 14876. Comox Formation. Roof No. 2 coal seam, No. 8 mine, Cumberland Coal (1) Ltd., Cumberland, British Columbia, GSC loc. 3768. Collector, J.L. Usher.
- FIGURE 2: Sequoia sp. GSC No. 5092. Oldman Formation. Red Deer River, 2 miles south of Sand Creek, Steveville area, Alberta, GSC loc. 2292. Collector, C.M. Sternberg.
- FIGURE 3: Geinitzia formosa Heer. Hypotype, GSC No. 5152, X2. Milk River Formation. NE 1/4 sec. 2, tp. 3, rge. 15, W 4th Mer., Alberta, GSC loc. 1282. Collector, M.Y. Williams.
- FIGURE 4: Thuites corpulentus Bell. Hypotype, GSC No. 14879. Comox Formation. Roof No. 2 coal seam, No. 8 mine, Cumberland Coal (1) Ltd., Cumberland, British Columbia, GSC loc. 3768. Collector, J.L. Usher.
- FIGURE 5: Geinitzia formosa Heer. Hypotype, GSC No. 5155. Milk River Formation. NE 1/4 sec. 2, tp. 3, rge. 15, W 4th Mer., Alberta, GSC loc. 1282. Collector, M.Y. Williams.
- FIGURE 6: Glyptostrobus comoxensis Bell. Hypotype, GSC No. 6427, X2. Comox Formation. Roof No. 2 coal seam, No. 8 mine, Cumberland, British Columbia, GSC loc. 3768. Collector, J.L. Usher.
- FIGURE 7: Artocarpus sp. GSC No. 5048. Oldman Formation. Two miles south of mouth of Sand Creek, Steveville area, Alberta, GSC loc. 1649. Collector, C.M. Sternberg.
- FIGURE 8: Menispermites sp. GSC No. 14849. Oldman Formation. Red Deer River, Steveville area, Alberta, GSC loc. 1236. Collector, C.H. Sternberg.
- FIGURE 9: Thuites corpulentus Bell. Hypotype, GSC No. 14878. Comox Formation. Roof No. 2 coal seam, No. 8 mine, Cumberland, British Columbia, GSC loc. 3768. Collector, J.L. Usher.

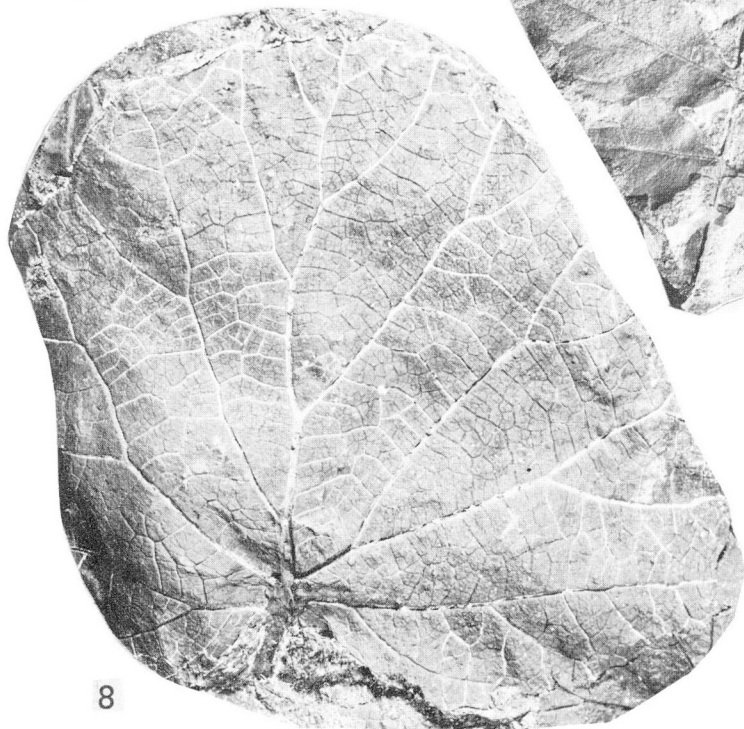
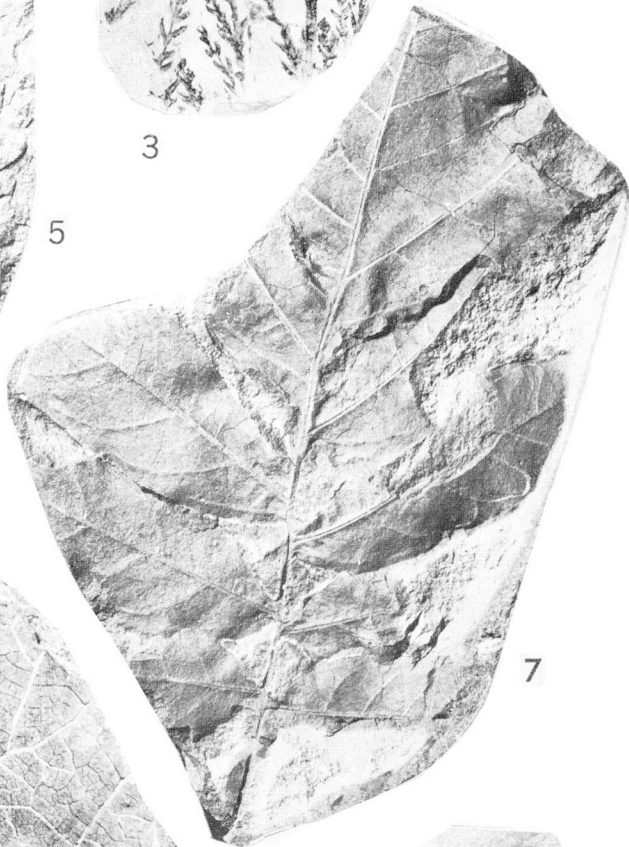
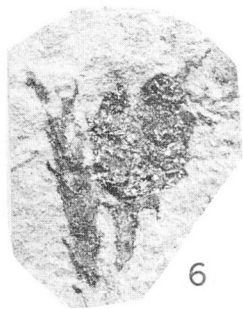
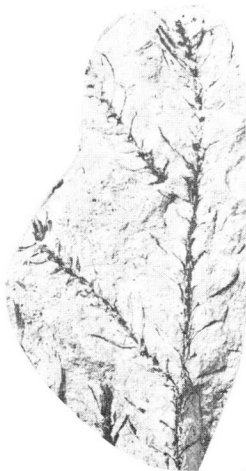
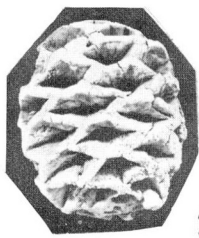
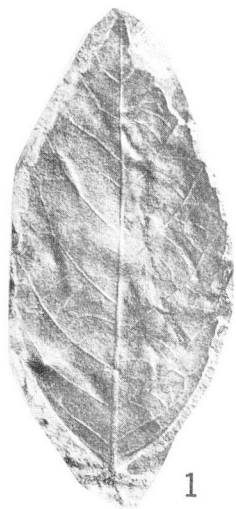


PLATE VII

Santonian - Campanian

FIGURE 1: Elatocladus albertaensis Bell. Hypotype, GSC No. 14864. Oldman Formation. Red Deer River, Alberta, GSC loc. 328. Collector, C.H. Sternberg.

FIGURE 2: Dombeyopsis nebrascensis (Newberry) Bell. Hypotype, GSC No. 5073. Oldman Formation. Red Deer River, south side, 5 miles below Matzhiwin Creek, Alberta, GSC loc. 3262. Collector, L.M. Lambe.

FIGURE 3: Dammarites robinsi (Dawson) Bell. Hypotype, GSC No. 1267. Bad Heart Formation. Belcourt Creek, 1/8 mile above junction with Huguenot Creek, British Columbia, GSC loc. 5188. Collector, D.F. Stott.

FIGURE 4: Elatocladus albertaensis Bell. Hypotype, GSC No. 5077. Belly River Group. Sec. 16, tp. 22, rge. 4, W 5th Mer., Alberta, GSC loc. 1641. Collector, G.S. Hume.

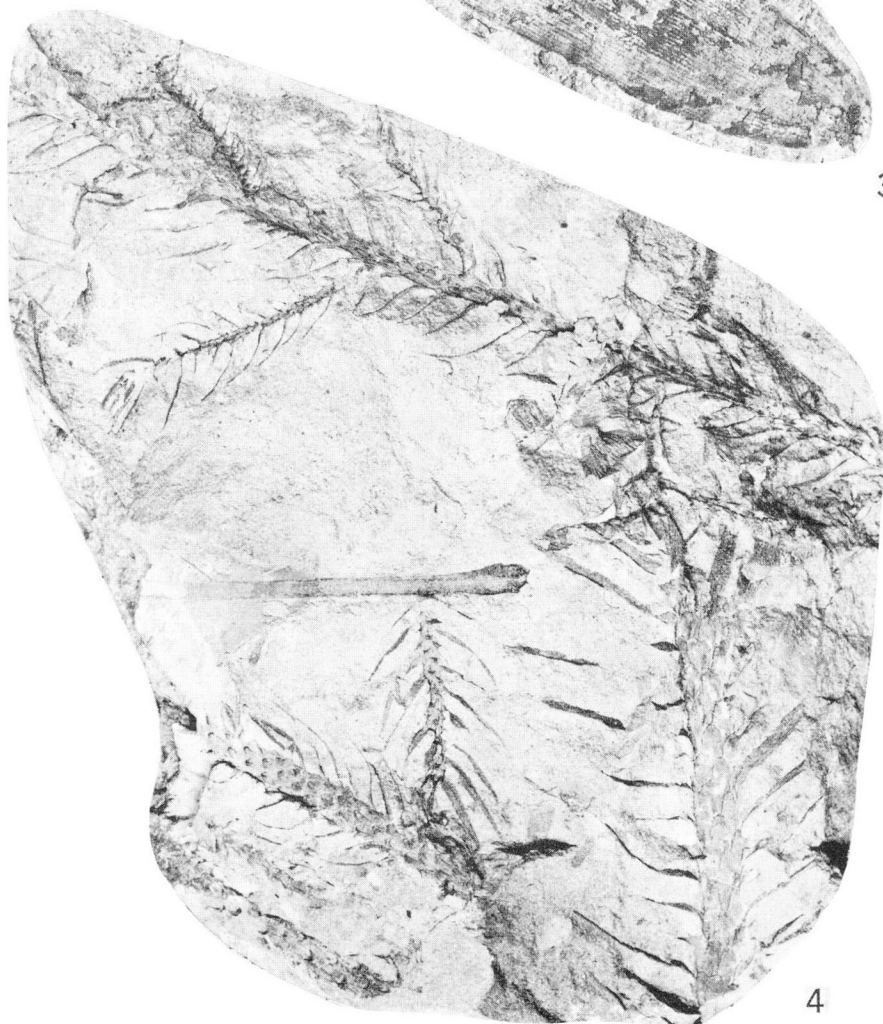
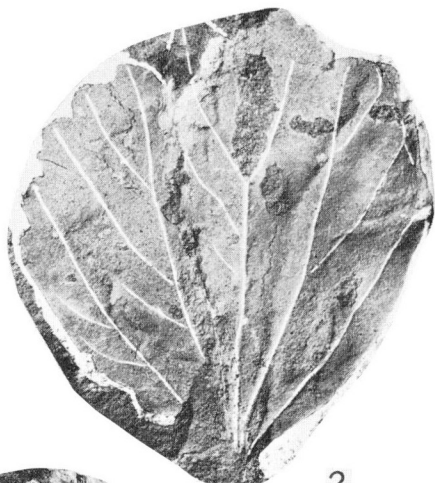


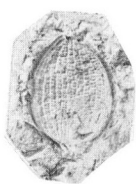
PLATE VIII

Santonian - Campanian

- FIGURE 1: Zizyphus cretaceus (Dawson) Bell. Hypotype, GSC No. 14877. Comox Formation. Roof No. 2 coal seam, No. 8 mine, Cumberland, British Columbia, GSC loc. 3768. Collector, J.L. Usher.
- FIGURE 2: Carpites sp. GSC No. 5098. Belly River Group. Bow River, Alberta, GSC loc. 2251. Collector, C.S. Evans.
- FIGURE 3: Vitis stantoni (Knowlton) Brown. Hypotype, GSC No. 5028. Belly River Group. Near Steveville, Alberta, GSC loc. 2171. Collector, C.H. Sternberg.
- FIGURE 4: Ilex? mammillata Bell. Holotype, GSC No. 1249. Belly River Group (base). Formation immediately above Wapiabi Formation and apparently equivalent to Milk River Formation. Tough Creek, Mountain View area, GSC loc. 3934. Collector, R.J.W. Douglas.
- FIGURE 5: Platanus latiloba Newberry forma heeri. Hypotype, GSC No. 5935. Oldman Formation. Head of south branch Sand Creek, Alberta, GSC loc. 328. Collector, C.H. Sternberg.



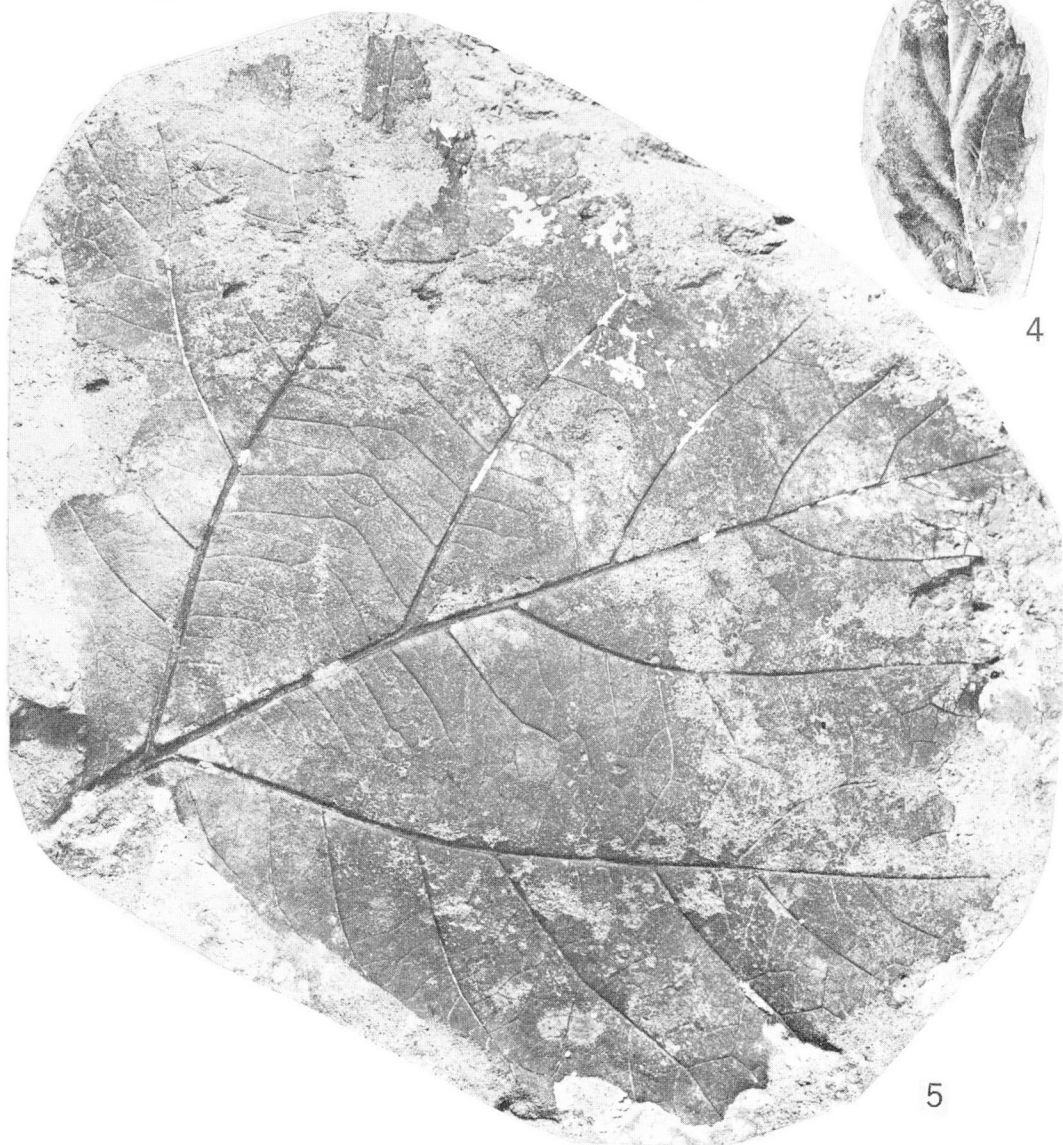
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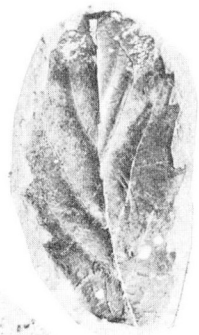
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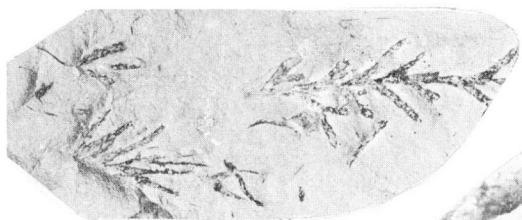


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PLATE IX

Santonian - Campanian

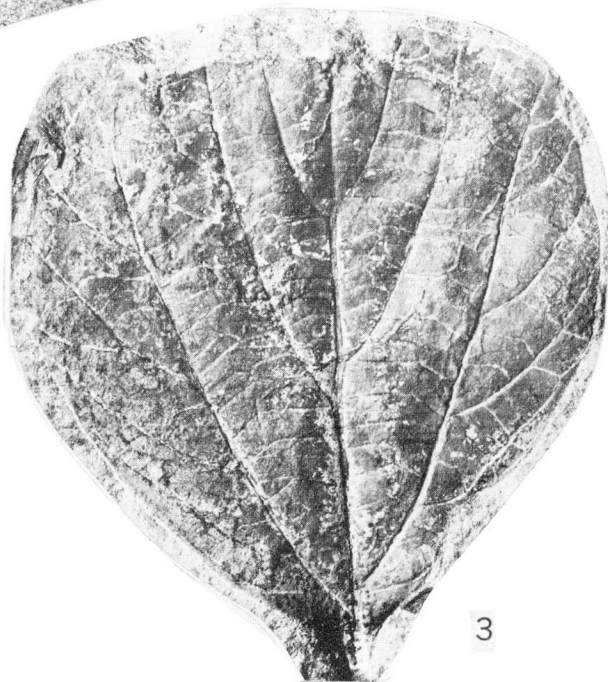
- FIGURE 1: Brachyphyllum (Athrotaxites?) douglasi Bell. Hypotype, GSC No. 14867. Beds above Wapiabi Formation and apparently equivalent to Milk River Formation. Tough Creek, Mountain View area, Alberta, GSC loc. 3934. Collector, R.J.W. Douglas.
- FIGURE 2: Platanus affinis Lesquereux. Hypotype, GSC No. 5033. Oldman Formation. Head of south side of Sand Creek, Alberta, GSC loc. 328. Collector, C.H. Sternberg.
- FIGURE 3: Platanus affinis Lesquereux. Hypotype, GSC No. 5044. Oldman Formation. Head of south branch of Sand Creek, Alberta, GSC loc. 328. Collector, C.H. Sternberg.



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PLATE X

Santonian - Campanian

FIGURE 1: Glyptostrobus comoxensis Bell. Hypotype, GSC No. 6378, X2. Comox Formation. Roof No. 2 coal seam, No. 8 mine, Cumberland, British Columbia, GSC loc. 3768. Collector, J.L. Usher.

FIGURE 2: Amentotaxus sp. cf. campbelli (Gardner) Florin. GSC No. 14880. Comox Formation. Roof No. 2 coal seam, No. 8 mine, Cumberland, British Columbia, GSC loc. 3768. Collector, J.L. Usher.

FIGURE 3: Metasequoia cuneata (Newberry) Chaney. Hypotype, GSC No. 14866. Protection Formation. Protection Island, British Columbia, GSC loc. 3858. Collector, J.L. Usher.

Maestrichtian

FIGURE 4: Dombeyopsis nebrascensis (Newberry) Bell. Hypotype, GSC No. 14873. Edmonton Formation. North branch Burnt Timber Creek, about 3 miles west of its confluence with south branch, Alberta, GSC loc. 6482. Collector, N.C. Ollerenshaw.

FIGURE 5: Vitis stantoni (Knowlton) Brown. Hypotype, GSC No. 6310. Edmonton Formation. NE 1/4 sec. 10, tp. 34, rge. 22, W 4th Mer., Alberta, GSC loc. 3679. Collector, C.M. Sternberg.

FIGURE 6: Nymphaeites angulatus (Newberry) Bell. Hypotype, GSC No. 14831. St. Mary River Formation. Glenwoodville area, Alberta, GSC loc. 3870. Collector, R.J.W. Douglas.

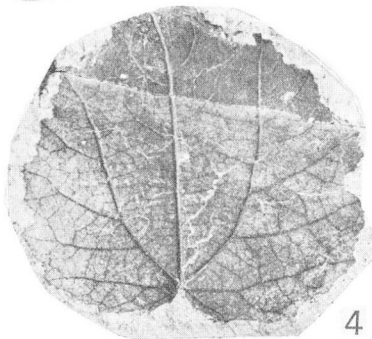
FIGURE 7: Nymphaeites striatus (Berry) Bell. Hypotype, GSC No. 14860. St. Mary River Formation. Waterton River, Alberta, GSC loc. 3867. Collector, R.J.W. Douglas.



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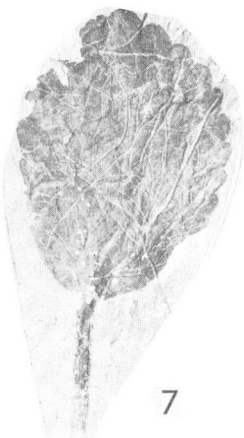
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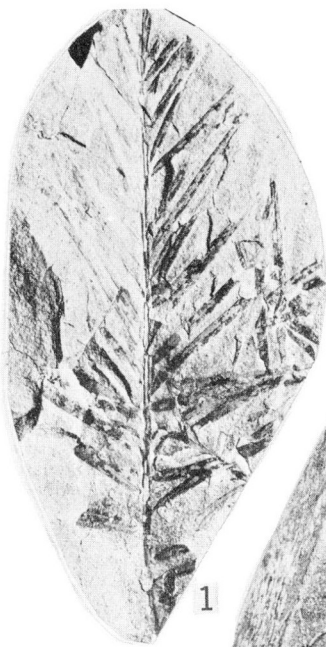


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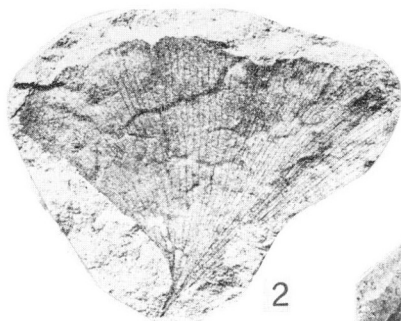
PLATE XI

Maestrichtian

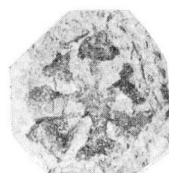
- FIGURE 1: Elatocladus intermedius (Hollick). Hypotype, GSC No. 14848. Wapiti Group. Mistanusk River, about 5 miles north-northwest of where British Columbia - Alberta boundary crosses river, GSC loc. 3674. Collector, L.D. Burling.
- FIGURE 2: Ginkgo adiantoides (Unger) Heer. Hypotype, GSC No. 14863. St. Mary River Formation. Glenwoodville area, Alberta, GSC loc. 3861. Collector, R.J.W. Douglas.
- FIGURE 3: Sequoia dakotensis Brown (probably cone of S. artus Bell). Hypotype, GSC No. 14875. Edmonton Formation (lower part), opposite mouth of Kneehill Creek, Alberta, GSC loc. 3677. Collector, C.M. Sternberg.
- FIGURE 4: Carpolithes (Cycadinocarpus?) ceratops (Knowlton). Hypotype, GSC No. 14861. Frenchman Formation. About 4 miles southwest of Eastend, Saskatchewan, GSC loc. 4173. Collector, C.M. Sternberg.
- FIGURE 5: Filicites knowltoni Dorf. Hypotype, GSC No. 14855. St. Mary River Formation. Pincher Creek, Alberta, GSC loc. 3885. Collector, R.J.W. Douglas.
- FIGURE 6: GSC No. 14855, X2.
- FIGURE 7: Artocarpus sp. GSC No. 14857. St. Mary River Formation. Glenwoodville area, Alberta, GSC loc. 3861. Collector, R.J.W. Douglas.
- FIGURE 8: Araucarites longifolia (Lesquereux) Dorf. Hypotype, GSC No. 14854. St. Mary River Formation. Glenwoodville area, Alberta, GSC loc. 3861. Collector, R.J.W. Douglas.



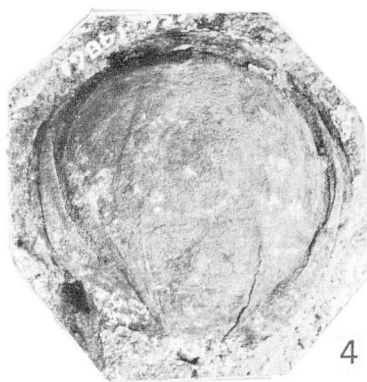
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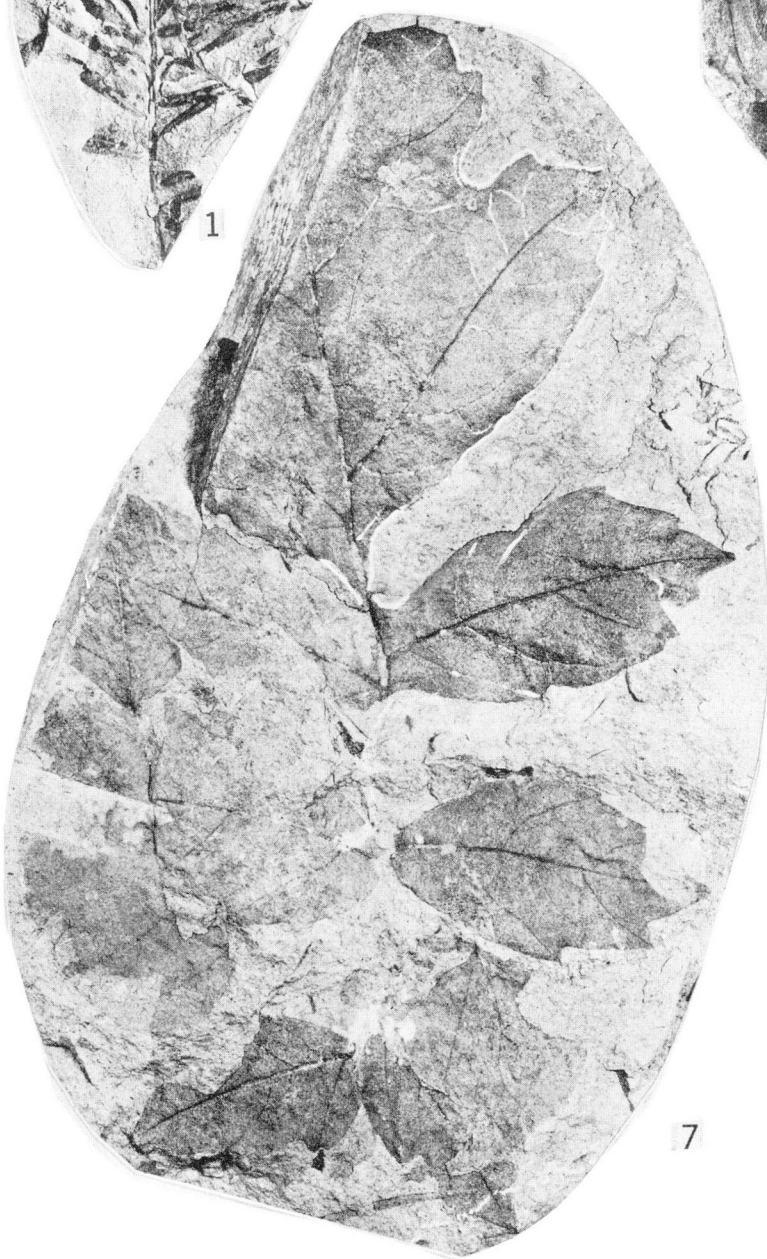
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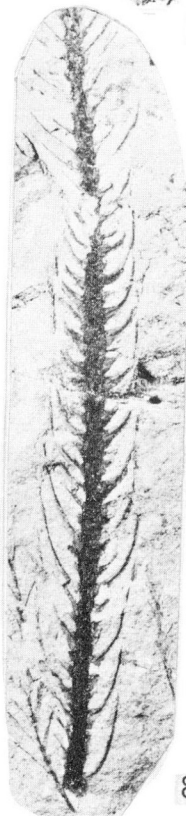
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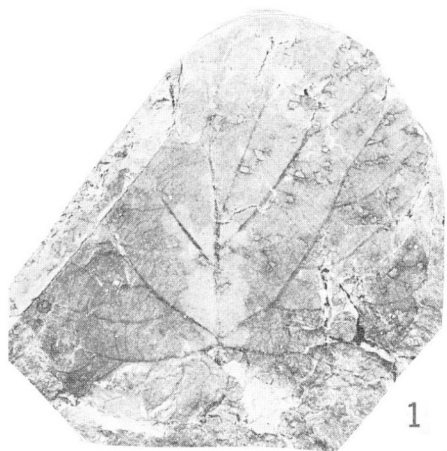


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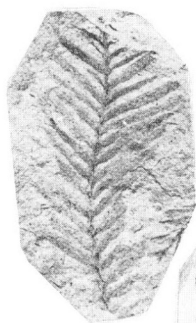
PLATE XII

Maestrichtian

- FIGURE 1: Vitis dakotana Berry. Hypotype, GSC No. 14851. Whitemud Formation. Wood Mountain Creek. NW 1/4 sec. 15, tp. 5, rge. 3, W 3rd Mer., Saskatchewan, GSC loc. 4129. Collector, F.H. McLearn.
- FIGURE 2: Metasequoia cuneata (Newberry) Chaney. Hypotype, GSC No. 14882. St. Mary River Formation. Glenwoodville area, Belly River, sec. 3, tp. 4, rge. 27, W 4th Mer., Alberta, GSC loc. 3861. Collector, R.J.W. Douglas.
- FIGURE 3: Metasequoia sp. GSC No. 14884 (probably cone of M. cuneata). St. Mary River Formation. Glenwoodville area, Belly River, sec. 3, tp. 4, rge. 27, W 4th Mer., Alberta, GSC loc. 3861. Collector, R.J.W. Douglas.
- FIGURE 4: Metasequoia sp. GSC No. 14883 (probably cone of M. cuneata). St. Mary River Formation. Glenwoodville area, Belly River, sec. 3, tp. 4, rge. 27, W 4th Mer., Alberta, GSC loc. 3861. Collector, R.J.W. Douglas.
- FIGURE 5: Metasequoia cuneata (Newberry) Chaney. Hypotype, GSC No. 14859. St. Mary River Formation. Glenwoodville area, Alberta, GSC loc 3861. Collector, R.J.W. Douglas.
- FIGURE 6: Viburnum antiquum (Newberry) Hollick. Hypotype, GSC No. 14850. Whitemud Formation. Wood Mountain Creek. NW 1/4 sec. 15, tp. 5, rge. 3, W 3rd Mer., Saskatchewan, GSC loc. 4129. Collector, F.H. McLearn.
- FIGURE 7: Jenkinsella arctica (Heer) Bell. (Probably fruit of Cercidiphyllum arcticum.) Hypotype, GSC No. 14862. St. Mary River Formation. Glenwoodville area, Alberta, GSC loc. 3861. Collector, R.J.W. Douglas.
- FIGURE 8: Sequoia artus Bell. Hypotype, GSC No. 14881. St. Mary River Formation. Glenwoodville area, Alberta, GSC loc. 3861. Collector, R.J.W. Douglas.
- FIGURE 9: Sorbus? sp. GSC No. 14896. Sustut? Group. West shore Takla Lake, lat. 55°30'N, long. 126°W, British Columbia, GSC loc. 3347. Collector, J.S. Armstrong.
- FIGURE 10: Artocarpus sp. GSC No. 14856. St. Mary River Formation. Glenwoodville area, Alberta, GSC loc. 3861. Collector, R.J.W. Douglas.



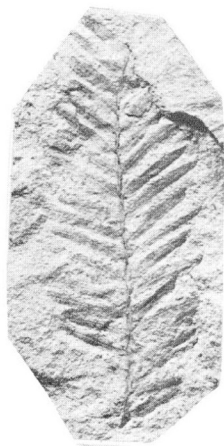
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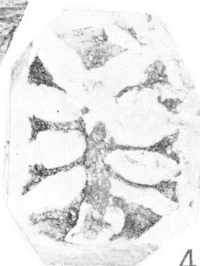
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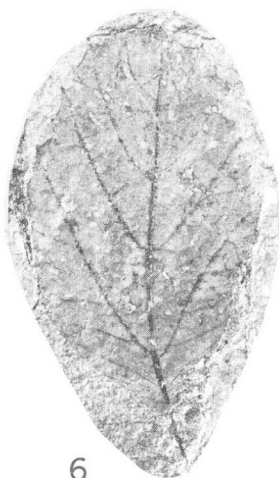
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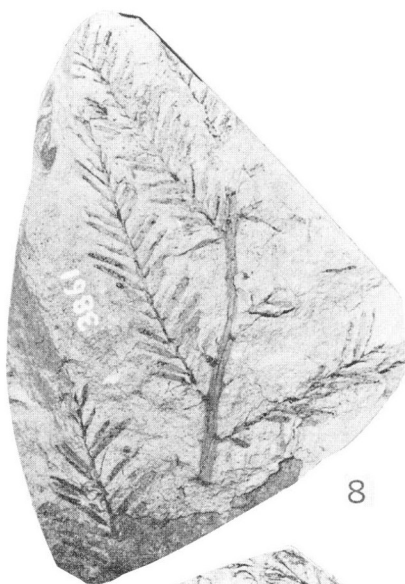
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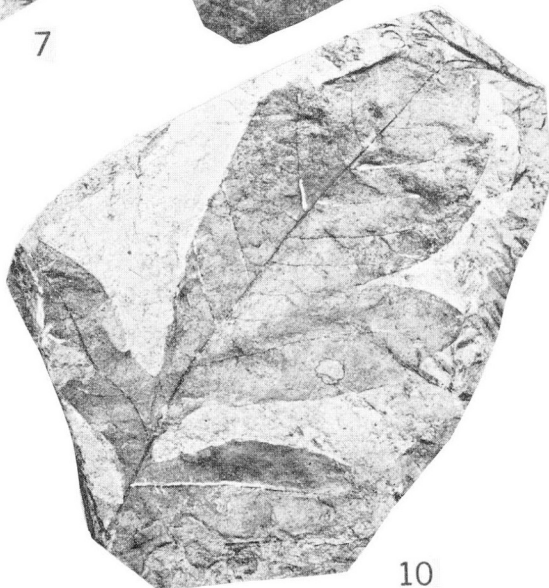
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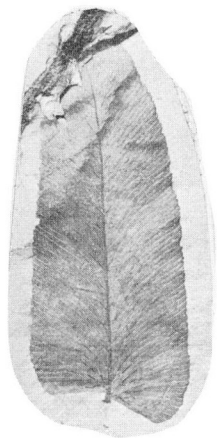


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PLATE XIII

Danian - Thanetian

- FIGURE 1: Osmunda macrophylla Penhallow. Hypotype, GSC No. 14885. Paskapoo Formation. Blindman River, about 1,000 feet upstream from confluence with Red Deer River, Alberta, GSC loc. 3441. Collector, W.A. Bell.
- FIGURE 2: Dennstaedtia blomstrandii (Heer) Hollick. Hypotype, GSC No. 14836, X2 (fertile specimen). Ravenscrag Formation. Porcupine Creek, Saskatchewan, GSC loc. 4091. Collector, G.M. Dawson.
- FIGURE 3: Dennstaedtia blomstrandii (Heer) Hollick. Hypotype, GSC No. 14835, X2 (fertile specimen). Ravenscrag Formation. Porcupine Creek, Saskatchewan, GSC loc. 4091. Collector, G.M. Dawson.
- FIGURE 4: Dennstaedtia blomstrandii (Heer) Hollick. Hypotype, GSC No. 14892. Paleocene beds, Ellesmere Island, 18 miles from Eureka, Franklin District, Northwest Territories, GSC loc. 4714. Collector, N.J. McMillan.
- FIGURE 5: Cladophlebis groenlandica (Heer) Bell. Hypotype, GSC No. 14846. Paskapoo Formation. Burnt Timber Creek area, sec. 8, tp. 31, rge. 8, W 5th Mer., Alberta, GSC loc. 6861. Collector, N.C. Ollerenshaw.
- FIGURE 6: Onoclea hebridica (Forbes) Bell. Hypotype, GSC No. 14891. Paskapoo Formation. Burnt Timber Creek area, lsd. 5, sec. 8, tp. 31, rge. 8, W 5th Mer., Alberta, GSC loc. 6861. Collector, N.C. Ollerenshaw.
- FIGURE 7: Cryptomerites lambii Bell. Hypotype, GSC No. 14865. Paskapoo Formation. Lsd. 5, sec. 8, tp. 31, rge. 8, W 5th Mer., Alberta, GSC loc. 6433. Collector, N.C. Ollerenshaw.
- FIGURE 8: Cryptomerites lambii Bell. Holotype, GSC No. 6259. Paskapoo Formation. Blindman River, about 1,000 feet above confluence with Red Deer River, GSC loc. 3441. Collector, W.A. Bell.
- FIGURE 9: Cryptomerites lambii Bell. GSC No. 6259, X2.



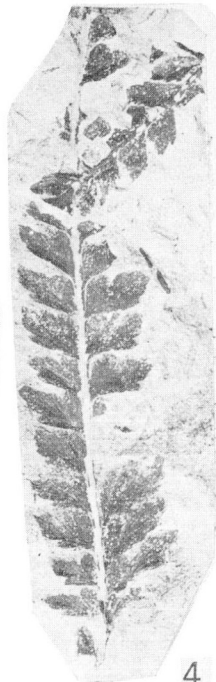
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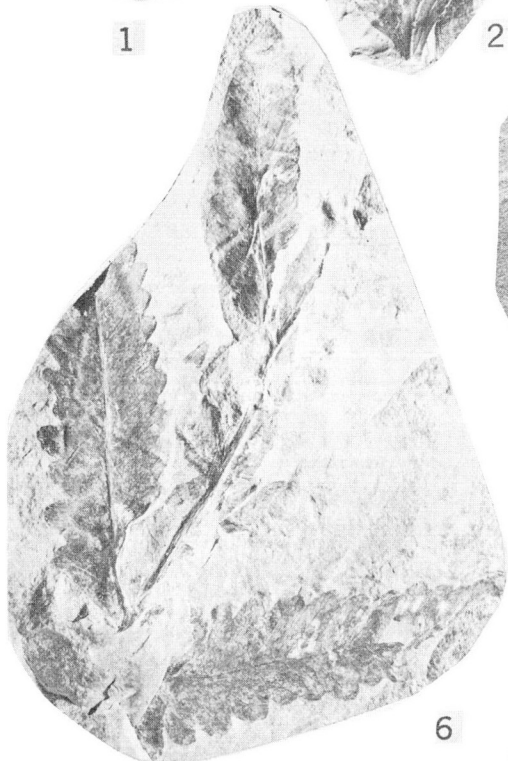
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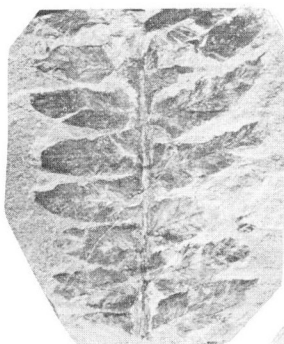
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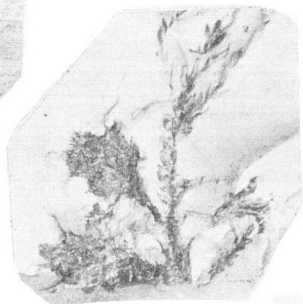
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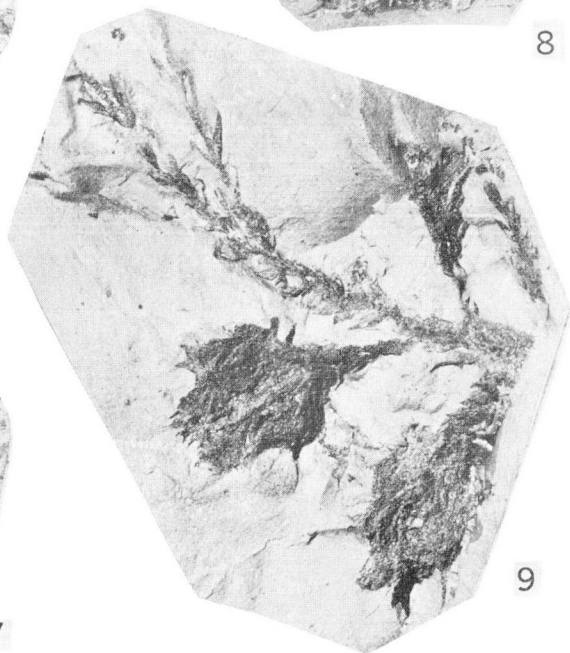
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PLATE XIV

Danian - Thanetian

Elatocladus (Cryptomerites?) nordenskiöldi (Heer) Bell. Hypotype, GSC
No. 6200. Ravenscrag Formation, Eastend, Saskatchewan, GSC loc.
2301. Collector, H. Jones, Eastend, Saskatchewan.

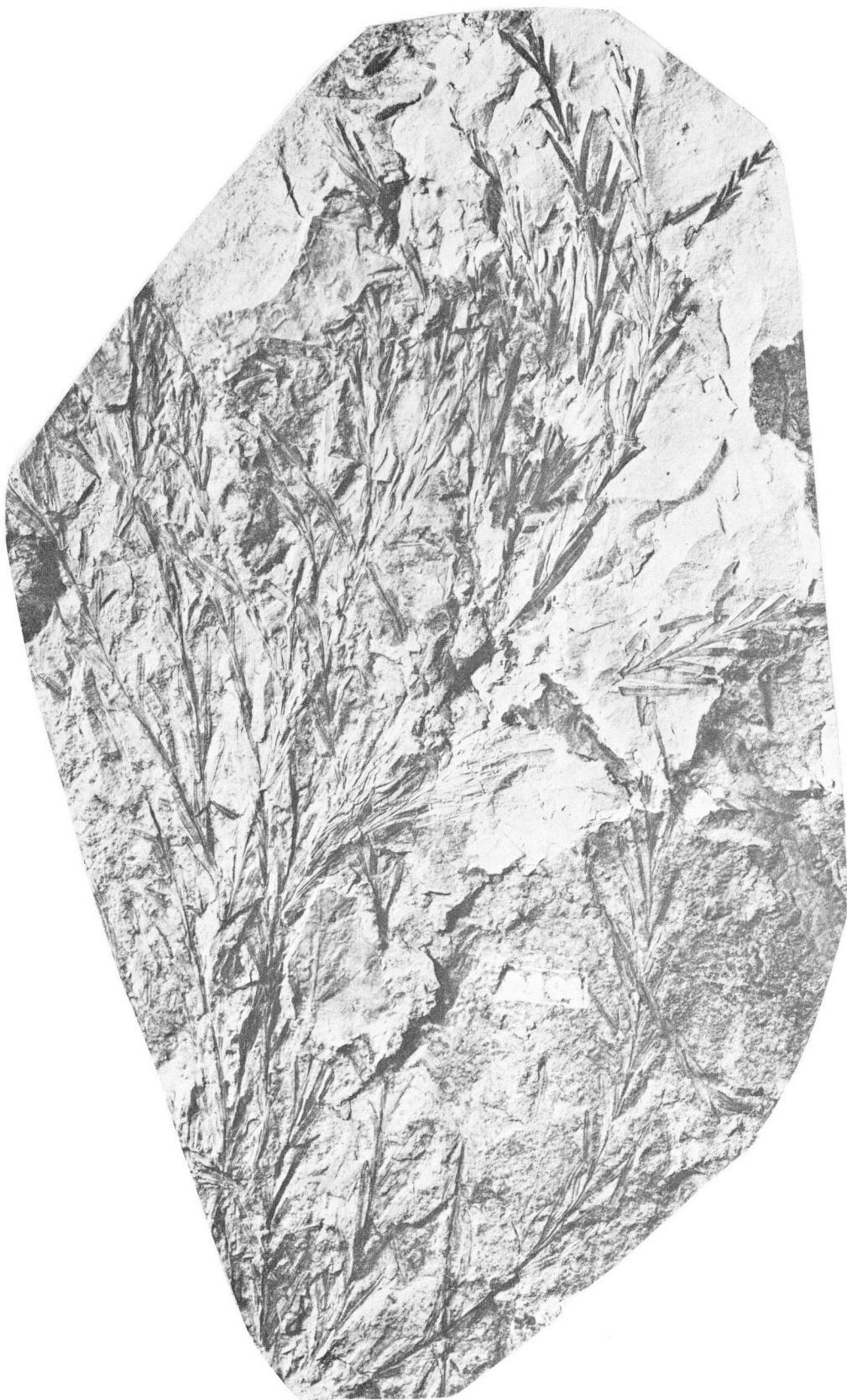


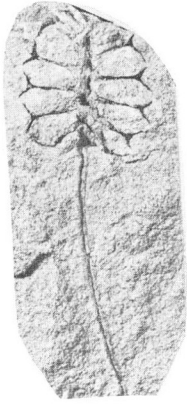
PLATE XV

Danian - Thanetian

- FIGURE 1: Androvetia catenulata Bell. Paratype, GSC No. 6347. Willow Creek Formation (upper part). SW 1/4 sec. 1, tp. 13, rge. 28, W 4th Mer., Alberta, GSC loc. 3700. Collector, W.A. Bell.
- FIGURE 2: Metasequoia sp. (cone probably of M. occidentalis). GSC No. 5162. Paleocene beds, North Saskatchewan River, 28 miles west of Rocky Mountain House, Alberta, GSC loc. 1640. Collector, D.B. Dowling.
- FIGURE 3: Metasequoia occidentalis (Newberry) Chaney. Hypotype, GSC No. 14886. Paleocene post-Brazeau beds. Coal Valley, Sterling open-cut, roof of Mynheer coal seam, Alberta, GSC loc. 3440. Collector, W.A. Bell.
- FIGURE 4: Cryptomerites lambii Bell. Hypotype, GSC No. 14874. Paskapoo Formation. Burnt Timber Creek, 1/2 mile upstream from Red Deer River, lsd. 9-10, sec. 5, tp. 31, rge. 8, W 5th Mer., Alberta, GSC loc. 6465. Collector, N.C. Ollerenshaw.
- FIGURE 5: Viburnum castrae Knowlton. Hypotype, GSC No. 6204. Ravenscrag Formation. Eastend, Saskatchewan, GSC loc. 2301. Collector, H. Jones, Eastend.
- FIGURE 6: Cryptomerites lambii Bell. Paratype, GSC No. 6259a. Paskapoo Formation. Blindman River, about 1,000 feet above confluence with Red Deer River, GSC loc. 3441. Collector, W.A. Bell.



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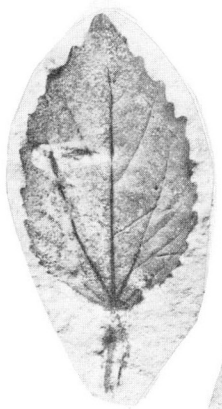
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PLATE XVI

Danian - Thanetian

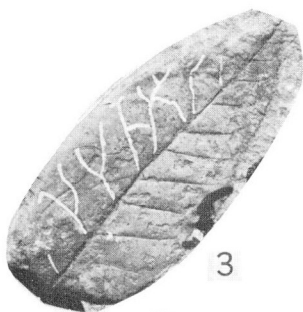
- FIGURE 1: Laurophyllum laraminum (Dawson) Bell. Hypotype, GSC No. 7442. Ravenscrag Formation. Sec. 1, tp. 1, rge. 22, W 2nd Mer., Saskatchewan, GSC loc. 4144. Collector, F.H. McLearn.
- FIGURE 2: Thuja interrupta Newberry. Hypotype, GSC No. 14895. Post-Brazeau Paleocene beds. Alexo area, tributary Shunga Creek, tp. 40, rge. 13, W 5th Mer., Alberta, GSC loc. 3428. Collector, W.A. Bell.
- FIGURE 3: Sapindus grandifoliolus Ward. Hypotype, GSC No. 14830. Ravenscrag Formation. Above Willowbunch Member, sec. 1, tp. 1, rge. 22, W 2nd Mer., Saskatchewan, GSC loc. 4144. Collector, F.H. McLearn.
- FIGURE 4: Nymphaeites angulatus (Newberry) Bell. Hypotype, GSC No. 14832. Ravenscrag Formation. Just above Willowbunch Member, NE sec. 13, tp. 3, rge. 24, W 2nd Mer., Saskatchewan, GSC loc. 4141. Collector, F.H. McLearn.
- FIGURE 5: Elatocladus (Cryptomerites?) nordenskiöldi (Heer) Bell. Hypotype, GSC No. 14869. Paskapoo Formation. Burnt Timber Creek, 1/2 mile upstream from Red Deer River, lsd. 9-10, sec. 5, tp. 31, rge. 8, W 5th Mer., Alberta, GSC loc. 6465. Collector, N.C. Ollerenshaw.
- FIGURE 6: Spirodela scutata Dawson. Hypotype, GSC No. 14833. Ravenscrag Formation. Grey facies below Keogh coal seam, SW sec. 35, tp. 1, rge. 22, W 2nd Mer., Saskatchewan, GSC loc. 2143. Collector, F.H. McLearn.



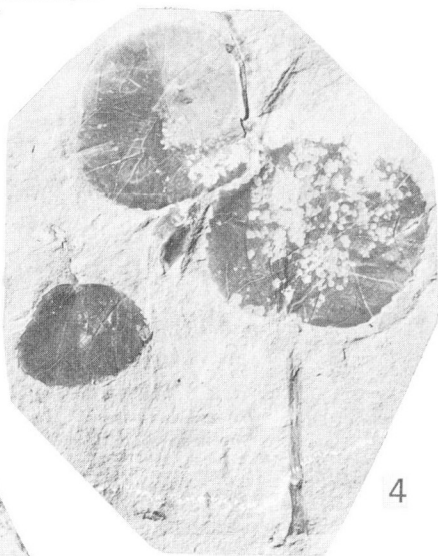
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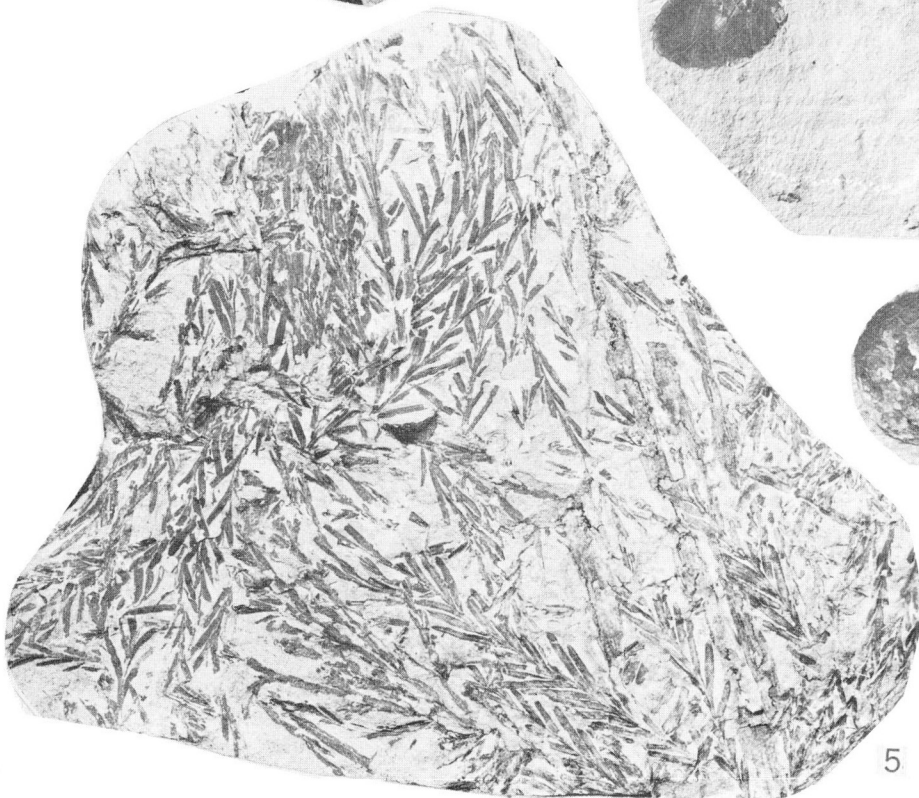
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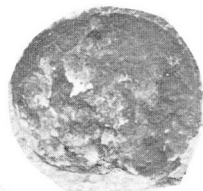
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PLATE XVII

Danian - Thanetian

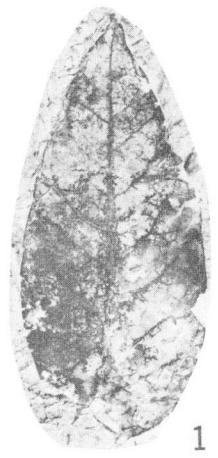
FIGURE 1: Sapindus grandifoliolus Ward. Hypotype, GSC No. 14834. Ravenscrag Formation. Buff facies, sec. 33, tp. 2, rge. 30, W 2nd Mer., Saskatchewan, GSC loc. 4131. Collector, F.H. McLearn.

FIGURE 2: Prunus mclearnii Berry. Holotype, GSC No. 7427. Ravenscrag Formation, SE sec. 29, tp. 3, rge. 24, W 2nd Mer., Saskatchewan, GSC loc. 4125. Collector, F.H. McLearn.

FIGURE 3: Platanus basilobata. Hypotype, GSC No. 14890 (fruit). Paskapoo Formation. Brickburn, NE 1/4 sec. 23, tp. 24, rge. 2, W 5th Mer., Alberta, GSC loc. 3446. Collector, W.A. Bell.

FIGURE 4: Rhamnites ovatus (Penhallow) Bell. Hypotype, GSC No. 5700. Paskapoo Formation. Red Deer River at mouth Blindman River, Alberta. GSC loc. 1202. Collector, T.C. Weston.

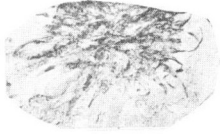
FIGURE 5: Platanus basilobatus Ward. Hypotype, GSC No. 14889. Paskapoo Formation. Brickburn, NE 1/4 sec. 23, tp. 24, rge. 2, W 5th Mer., Alberta, GSC loc. 3446. Collector, W.A. Bell.



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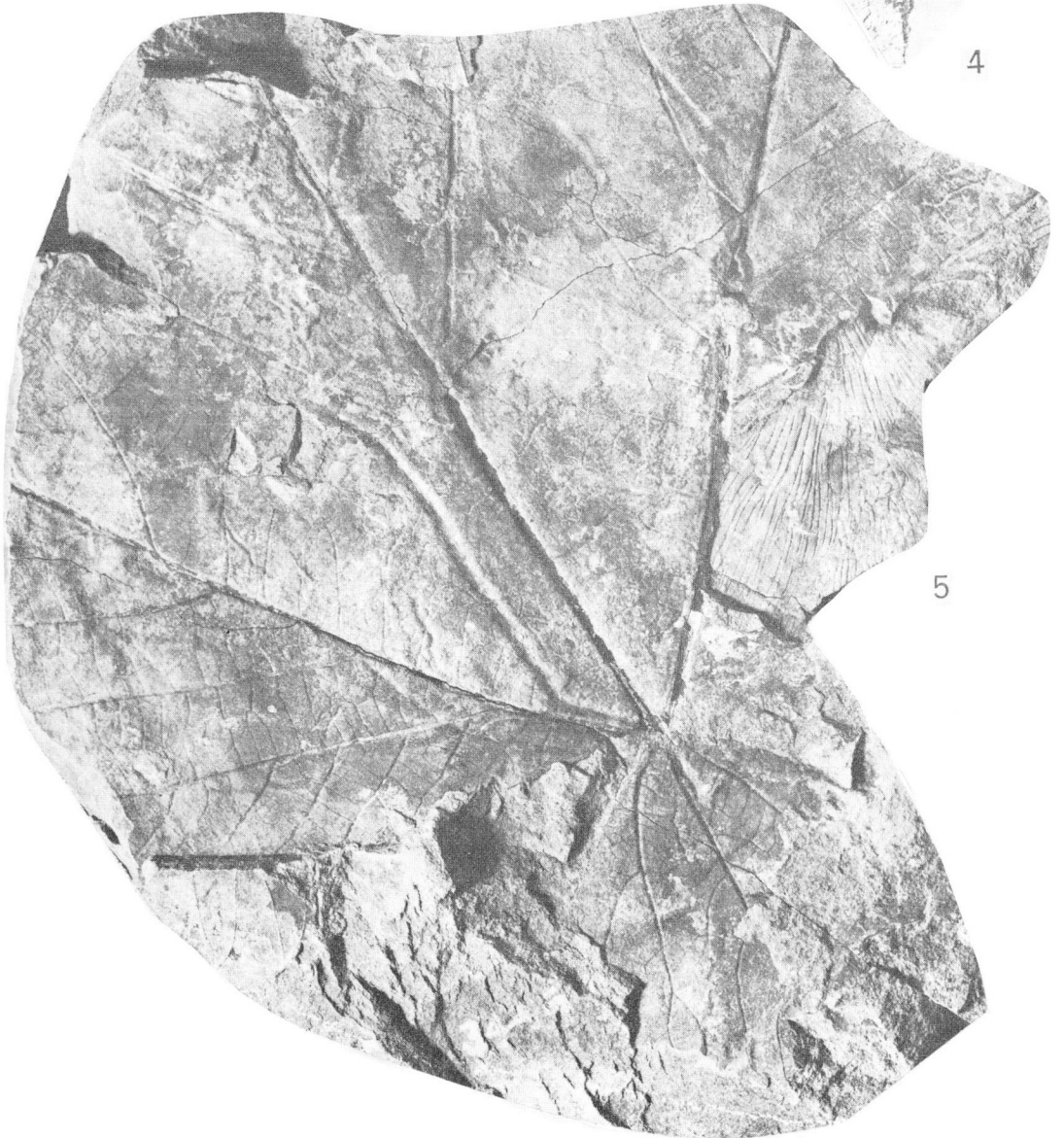
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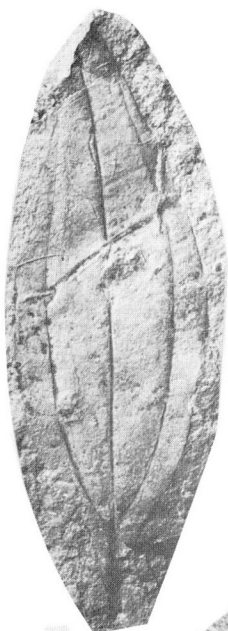


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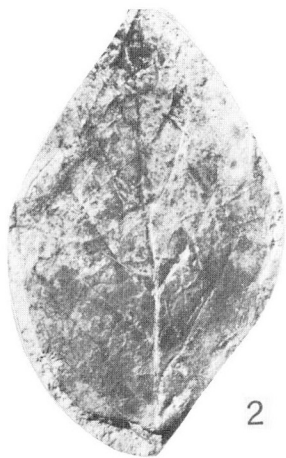
PLATE XVIII

Danian - Thanetian

- FIGURE 1: Cinnamomum sp. cf. C. affine Lesquereux and C. postnewberryi Berry. GSC No. 6203. Ravenscrag Formation. Eastend, Saskatchewan, GSC loc. 2301. Collector, H. Jones, Eastend.
- FIGURE 2: Cornus impressa Lesquereux. Hypotype, GSC No. 14828. Ravenscrag Formation. Above Willowbunch Member, sec. 1, tp. 1, rge. 22, W 2nd Mer., Saskatchewan, GSC loc. 4137. Collector, F.H. McLearn.
- FIGURE 3: Viburnum asperum Newberry. Hypotype, GSC No. 14838. Ravenscrag Formation. Just over Willowbunch Member, sec. 18, tp. 4, rge. 2, W 3rd Mer., Saskatchewan, GSC loc. 4149. Collector, F.H. McLearn.
- FIGURE 4: Platanus raynoldsii Newberry. Hypotype, GSC No. 14893. Paskapoo Formation. Red Deer River, north side, cut-bank 50-60 feet high, SW 1/4 sec. 14, tp. 31, rge. 9, W 5th Mer., Alberta, GSC loc. 5284. Collector, R.T.D. Wickenden.



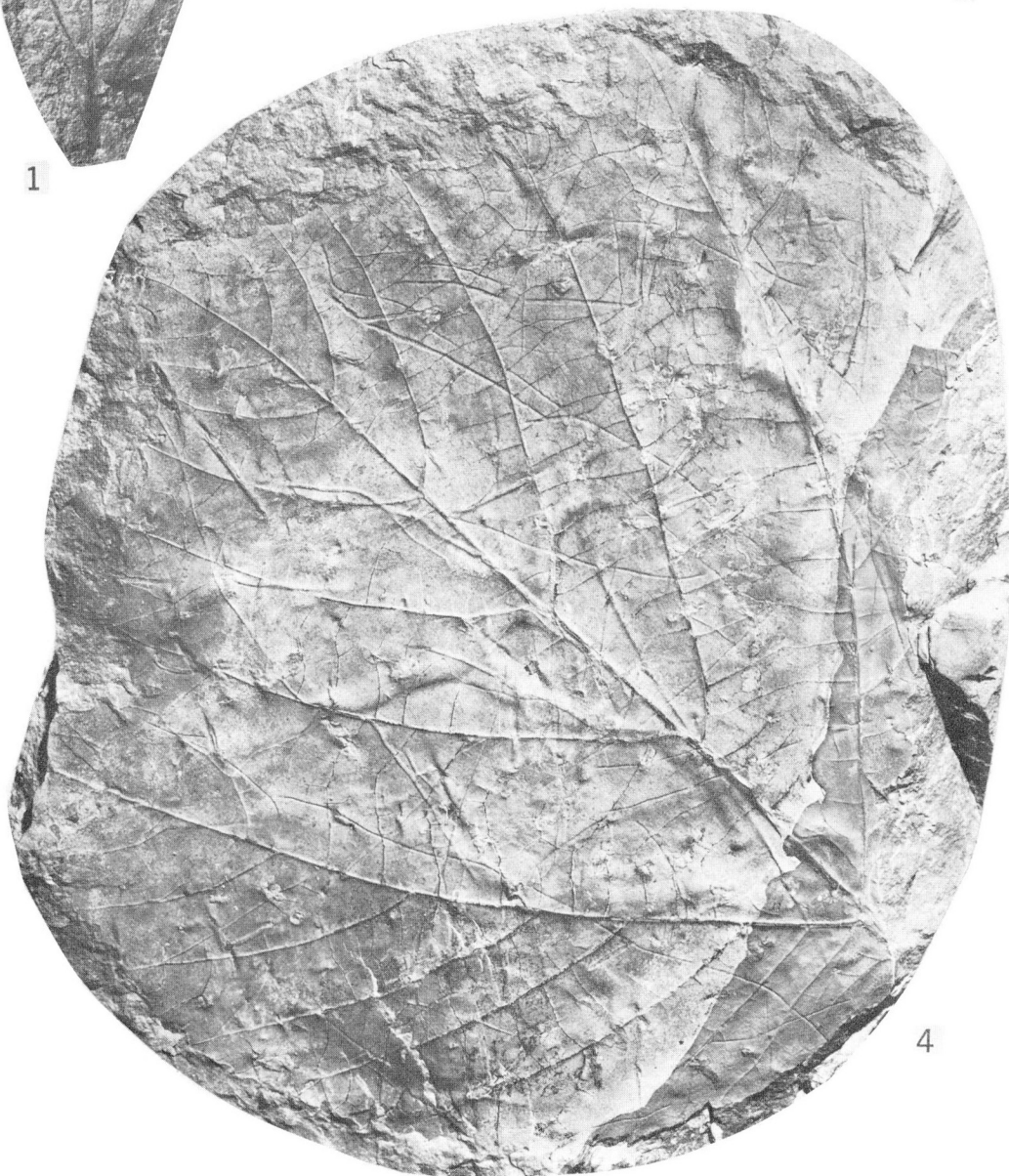
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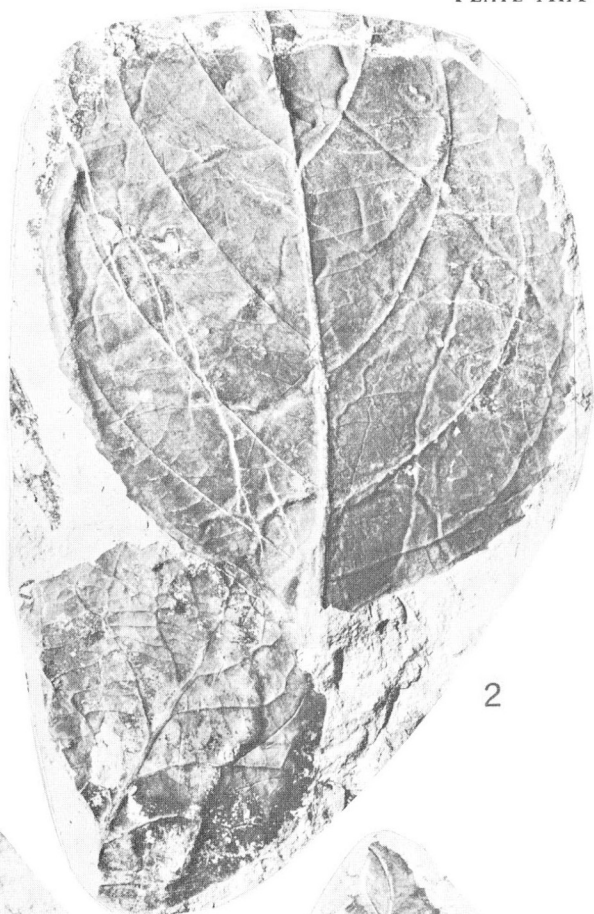
PLATE XIX

Danian - Thanetian

- FIGURE 1: Rhamnus sp. GSC No. 14826; at top Ginkgo adiantoides (Unger) Heer. Hypotype, GSC No. 14827. Ravenscrag Formation. Near base Willowbunch Member, sec. 19, tp. 1, rge. 22, W 2nd Mer., Saskatchewan, GSC loc. 4128. Collector, F.H. McLearn.
- FIGURE 2: Populus carnea (Newberry) Bell. Hypotypes, GSC No. 14887 and at bottom No. 14888. Paskapoo Formation. Red Deer River, north side, about 1 1/2 miles upstream from mouth Blindman River, at 3-inch coal seam, Alberta, GSC loc. 3444. Collector, W.A. Bell.
- FIGURE 3: Viburnum asperum Newberry. Hypotype, GSC No. 14837. Paskapoo Formation. Red Deer River, south side, near Red Deer. SE 1/4 sec. 18, tp. 38, rge. 27, W 4th Mer., Alberta, GSC loc. 3464. Collector, W.A. Bell.
- FIGURE 4: Celastrinites insignis (Heer) Bell. Hypotype, GSC No. 14871. Paskapoo Formation. Burnt Timber Creek area, lsd. 5, sec. 8, tp. 31, rge. 8, W 5th Mer., Alberta, GSC loc. 6861. Collector, N.C. Ollershaw.



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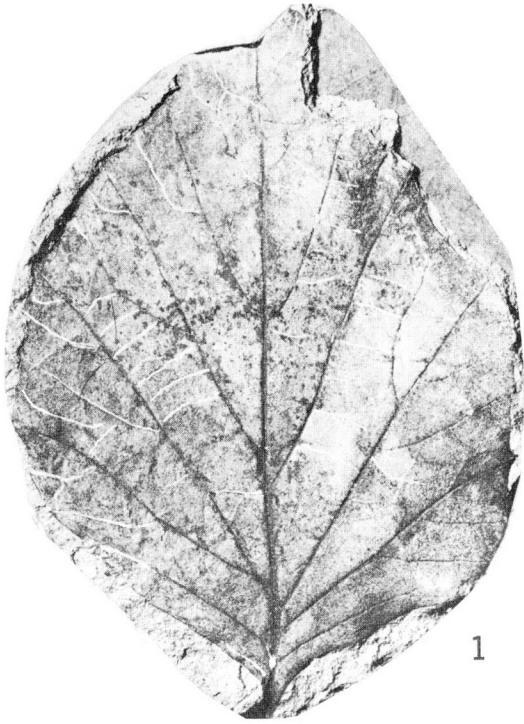


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PLATE XX

Danian - Thanetian

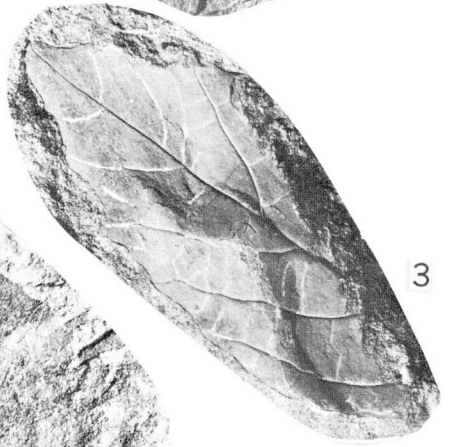
- FIGURE 1: Viburnum antiquum (Newberry) Hollick. Hypotype, GSC No. 6151. Paskapoo Formation. Brickburn, NE 1/4 sec. 23, tp. 24, rge. 2, W 5th Mer., Alberta, GSC loc. 3446. Collector, W.A. Bell.
- FIGURE 2: Trochodendroides (Cercidiphyllum?) arctica (Heer) Berry. Hypotype, GSC No. 14894. Paskapoo Formation. Red Deer River, north side, 1/4 sec. 14, tp. 31, rge. 9, W 5th Mer., Alberta, GSC loc. 5284. Collector, R.T.D. Wickenden.
- FIGURE 3: Fraxinus septentrionale (Hollick). Hypotype, GSC No. 14829. Ravenscrag Formation. Above Willowbunch Member, sec. 30, tp. 1, rge. 21, W 2nd Mer., Saskatchewan, GSC loc. 4144. Collector, F.H. McLearn.
- FIGURE 4: Platanus raynoldsii Newberry. Hypotype, GSC No. 14872. Paskapoo Formation. Burnt Timber Creek, 1/2 mile upstream from Red Deer River, 1sd. 9-10, sec. 5, tp. 31, rge. 8, W 5th Mer., Alberta, GSC loc. 6465. Collector, N.C. Ollerenshaw.
- FIGURE 5: Juglans rugosa Lesquereux. Hypotype, GSC No. 14842. Ravenscrag Formation. About base Willowbunch Member, sec. 19, tp. 1, rge. 22, W 2nd Mer., Saskatchewan, GSC loc. 4128. Collector, F.H. McLearn.



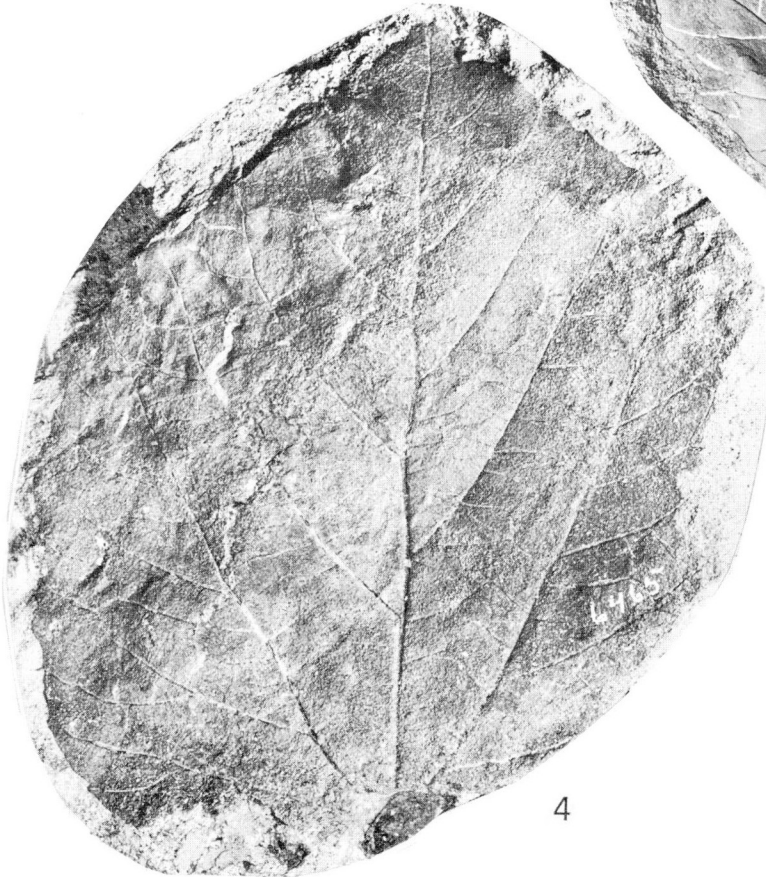
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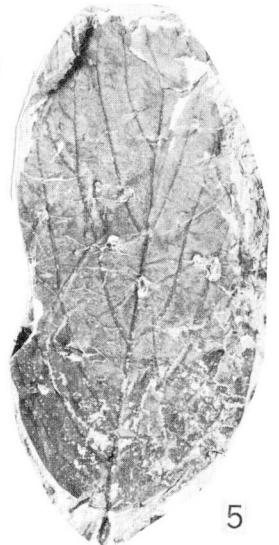
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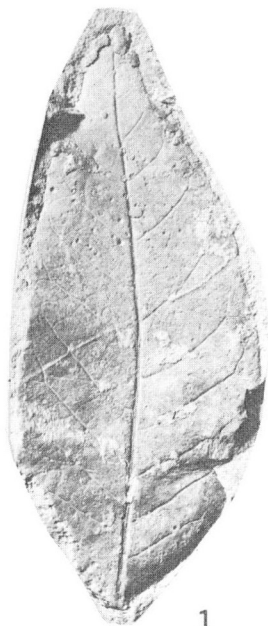


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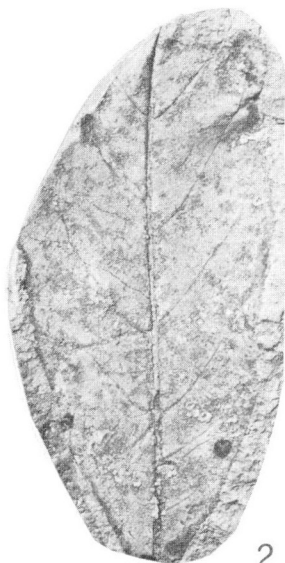
PLATE XXI

Danian - Thanetian

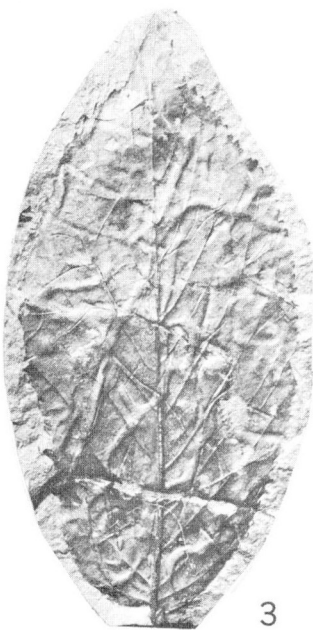
- FIGURE 1: Sapindus grandifoliolus Ward. Hypotype, GSC No. 14843. Ravenscrag Formation. SE sec. 29, tp. 3, rge. 24, W 2nd Mer., Saskatchewan, GSC loc. 4125. Collector, F.H. McLearn.
- FIGURE 2: Cornus newberryi Hollick. Hypotype, GSC No. 14840. Ravenscrag Formation. Above Willowbunch Member, sec. 1, tp. 1, rge. 22, W 2nd Mer., Saskatchewan, GSC loc. 4137. Collector, F.H. McLearn.
- FIGURE 3: Hicoria antiquorum (Newberry) Knowlton. Hypotype, GSC No. 14844. Paskapoo Formation. Burnt Timber Creek area, Alberta, sec. 8, tp. 31, rge. 8, W 5th Mer., GSC loc. 6861. Collector, N.C. Ollerenshaw.
- FIGURE 4: Celastrinites insignis (Heer) Bell. Hypotype, GSC No. 14870. Paskapoo Formation. Burnt Timber Creek area, lsd. 5, sec. 9, tp. 31, rge. 8, W 5th Mer., Alberta, GSC loc. 6433. Collector, N.C. Ollerenshaw.
- FIGURE 5: Juglans nigella Heer. Hypotype, GSC No. 14839. Ravenscrag Formation. Ravenscrag Butte, Saskatchewan, GSC loc. 2181. Collector, M.Y. Williams.
- FIGURE 6: Aralia taurinensis (Ward) Sanborn. Hypotype, GSC No. 14841. Paskapoo Formation. Pedley Creek, near highway bridge, Alberta, GSC loc. 3272. Collector, A.H. Lang.



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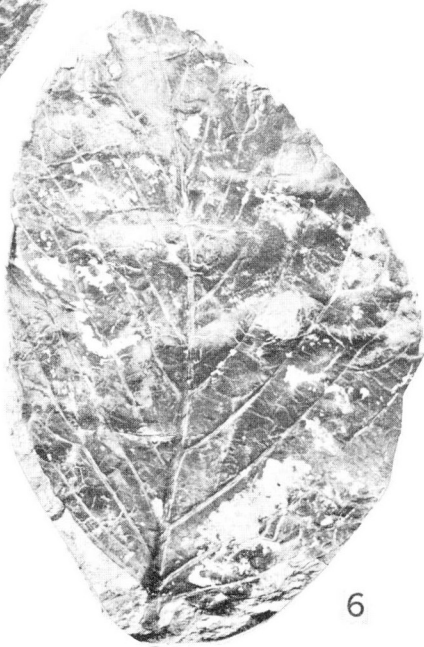
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Illustrations of Canadian Fossils

The following Geological Survey Papers have already been issued under this general title:

- Devonian of Western Canada,
Invertebrates - D.J. McLaren and A.W. Norris
Plants - D.C. McGregor
GSC Paper 62-4
- Cambrian, Ordovician and Silurian of the Western Cordillera
- B.S. Norford
GSC Paper 62-14
- Triassic of Western and Arctic Canada
- E.T. Tozer
GSC Paper 62-19
- Jurassic of Western and Arctic Canada
- H. Frobald
GSC Paper 63-4
- Early Lower Cretaceous (Berriasian and Valanginian) of the Canadian
Western Cordillera, B.C.
- J.A. Jeletzky
GSC Paper 64-6
- Lower Cretaceous marine index fossils of the Sedimentary basins of
Western and Arctic Canada
- J.A. Jeletzky
GSC Paper 64-11
- Triassic, Jurassic, and Lower Cretaceous Spores and Pollen of Arctic
Canada
- D.C. McGregor
GSC Paper 64-55
- Lower Cretaceous Floras of Western Canada
- W.A. Bell
GSC Paper 65-5