REPORT OF THE COMMITTEE ON PALEOBOTANY

May 2, 1942

(Appendix Q of Annual Report of Division)

with

Bibliography of Paleobotany
in North America
March 15, 1941 – March 15, 1942

Committee Members

Charles B. Beard, Chairman
Erling Dorf, Vice-Chairman
Harry D. MacGinitie
J. M. Schopf
APPENDIX 4

REPORT OF THE COMMITTEE ON PALEOBOTANY

May 2, 1942

The Committee on Paleobotany herewith presents its thirteenth annual report to the National Research Council and to the Paleobotanists working in America. The material in this report has been derived largely from replies to a questionnaire sent out in March.

Three meetings of paleobotanists have been held during the past year. In August 1941 a group concerned with Tertiary problems met in Berkeley, Calif. Such matters as nomenclature, stratigraphic problems, the specific status of certain fossils related to modern species, and the nature of future work were informally discussed. In attendance were D. I. Axelrod, R. W. Chaney, C. Condit, R. S. Lajotte, H. D. MacLain, H. L. Mason, E. Richardson, and B. B. Hilder.

Paleobotanical papers read before the Paleontological Society and the Geological Society of America at Boston, Mass., December 1941 (abstracts in Bull. Geol. Soc. Amer., vol. 52, no. 12, pt. 2, Dec. 1941) were as follows:

Chaney, Ralph W. Age of the Dalles formation.

Dorf, Erling. Plants from the Cretaceous Mesaverde group of Colorado and Wyoming.

Nichols, Robert L. Three rings in lava.

The Paleobotanical Section of the Botanical Society of America met at Dallas, Texas, December 29-31, 1941, at the meeting of the American Association for the Advancement of Science. Despite a somewhat smaller attendance than usual, a large number of excellent contributions was presented. The discussion following the papers was the liveliest yet enjoyed and speaks well for the future of the Section. The secretary has prepared the following report:

The program consisted of three half day sessions. One of these was devoted to miscellaneous paleobotanical papers as follows:

Sears, Paul B. Data concerning Post-Glacial migration routes.

Baschnagel, Raymond A. Some microfossils from the Chondaga chert of central New York.

Pannell, Eloise. The gametophyte and microsporangiate cones of a Lepidocarpon from southern Illinois.
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Andrews, Henry N. Some contributions to our knowledge of the coal ball flora of southern Illinois.

Bleekle, A. F. Probable marattiaceous compressions from the Pittsburgh coals and clays.

Reed, Frodda D. Some fossil plants found in coal balls from Texas.


Coal ball studies were well represented as usual. Mr. Cross reported a large number of species from Iowa and presented evidence of the many contributions that may be expected from that region in the future. A well preserved Lepidacarpus gametophyte bearing archegonia was described by Liss Pannell as well as evidence pertaining to the microsporangiate cones that this plant bore. Other papers based on petrifactions and compressions from the American Pennsylvanian indicate the abundance of well preserved material available.

A particularly interesting contribution was that of Mr. Baschnagel on certain algae from the Onondaga chert (middle Devonian). It is hoped that we shall hear more about these ancient and well preserved algal remains at future meetings.

The second session was devoted to a series of coal spore papers:

Cross, A. T. and Boone, D. L. Some characteristics of the Powellton coal of West Virginia.


Bentall, Ray. Application of spore studies to Pennsylvanian stratigraphic problems.

Schopf, J. H., Wilson, L. R. and Bentall, Ray. Paleozoic fossil spores; definition of generic groups.

Wilson, L. R. and Kosanke, R. H. The microfossils of the Angus coal of Iowa.

Wilson, L. R. and Webster, R. H. The Eocene vegetation of the Red Desert region of Wyoming.
The Paleozoic coal spore papers centered about the problems of nomenclature, summed up in the joint work of Schopf, Wilson and Bentall. Dr. Bentall also presented a particularly significant contribution relative to the practical application of spore studies in stratigraphy.

Certainly one of the most important papers was the one on Eocene spores and pollen delivered by Miss Webster. The highly distinctive characters displayed by these organs were clearly illustrated and it is safe to say that when more is known of the spore content of these coals our knowledge of Cretaceous and Tertiary floras will be greatly enhanced.

The third session was devoted to invitation papers and certain other contributions:

Berry, Willard. Notes on Triassic plants from North Carolina.
Axelrod, Daniel I. Succession of Late Tertiary vegetation in west-central Nevada.
Chaney, Ralph W. Notes on field studies in the Miocene of the Columbian Plateau.

The Section is particularly indebted to Dr. Radforth for his discussion of the Schizaeaceae and to Dr. Elias for a summary of his work on Tertiary herbs. It is hoped that more papers of this type can be arranged for in the future in order to attract the attention of botanists in general.

A demonstration session on the last day completed the program.

Business Transactions:

1) A Sectional Constitution was tentatively drawn up which is now in the hands of a committee for revision. It is planned to send copies to all members later in the year for their consideration, following which it will receive formal action at the December, 1942, meetings.

2) A nominating committee was appointed to select a permanent committee to consider paleobotanical taxonomic problems.

3) Officers elected for 1942:

   Chairman: J. H. Hoskins, University of Cincinnati.
   Secretary: H. N. Andrews, Washington University, St. Louis.
Paleobotanical papers presented before the Systematic Section of the Botanical Society at Dallas were as follows:

Axelrod, Daniel I. The paleobotanical aspects of the vegetation bordering desert areas in western North America.

Wiggins, Ira L. The development of the flora of the Sonoran desert.

Also, before the joint session of botanical sciences and affiliated societies at Dallas, the following invitation paper was presented:

Chaney, Ralph W. Plant distribution during the past fifty million years.

The abstracts of all papers presented at the Dallas meetings are published in the American Journal of Botany, suppl. to vol. 28, no. 10, Dec. 1941.
PUBLISHED AND UNPUBLISHED WORK IN AMERICAN PALEOBOTANY

(An asterisk * indicates a published paper.)

General

Arnold, C. A.
   The current textbook explanation of petrifaction, that the process
   is a "molecule for molecule replacement of the wood substance by
   mineral matter in solution" is contrary to all observed facts, and
   presupposes reactions which are probably chemical impossibilities.
   The entire mineral content of petrified wood can often be removed
   without disintegration of the tissues, and moreover, analyses often
   reveal the presence of cellulose and lignin. Petrifaction is a
   process of infiltration, hence essentially physical. In petrified
   woods where no organic substances can be detected, their disap-
   pearance is to be accounted for by hydrolysis and oxidation, and
   not by any reaction involving direct replacement.

Barkley, Fred A.
Fossil representatives of the genera of Anacardiaceae (in press,
   Amer. Midland Naturalist).

Brown, Roland W.

Conzatti, C.
   El probable origen de las Monocotiledoneas, Oaxaca, Mex., 1941.

Croneis, Carey.
   vol. 25, no. 7, July, 1941. Mentions the use of microscopic or
   semi-microscopic plants, such as diatoms, charophytes, spores, etc.

Dachnowski-Stokes, A. P.
   89 pp., illus., 1941.—A description is presented with respect to
   the origin and formation of natural, undisturbed areas of peat
   which have been classified as "slope" muskegs, "raised" muskegs,
   and "flat" muskegs. The names refer to real differences in
   topographic features, developmental conditions, vegetation cover,
   and vertical profile characteristics of peat deposits in the
   territory. Evidence points to recent sinking of the shore line
   and the subemergence of slope muskegs in certain places along
Prince William Sound. Among the qualifying factors that affect muskegs in the interior of Alaska are layers of volcanic ash, windblown silt, and a permanently frozen condition. The line of permanent frost appears to be rising. Four superimposed deposits of peat have been found buried under many feet of stratified silt, gravel, and ice in the valleys excavated near Fairbanks. They represent, it seems, interglacial periods in contrast to the present muskeg on the surface of the valleys; the latter contain two buried forests, developed since the last glacial period, and show certain relationships to northern European peat deposits.

The moss peat situation in relation to national emergency needs. In preparation.

Darrah, William C.

Glock, Waldo S.

Green, Jesse R.
* The mineralization of organic tissue. The Mineralogist, vol. 9, p. 157, 1941. Treats the mineralization of organic tissue with special reference to the petrifaction of wood. Describes the various mineral species concerned with the petrifaction of wood, with three analyses of wood petrified with dolomitic material. Various theories pertinent to the petrifaction of wood are given in detail.

Johnson, J. Harlan
Little known or used fossils: Calcareous Algae. For presentation at meetings of the Amer. Assoc. of Petr. Geol., in Denver, Colo., April 21, 1942.

Knox, Arthur S.
* The use of bromoform in the separation of noncalcareous microfossils. Science, vol. 95, pp. 307-308, March 20, 1942. Bromoform with a standard specific gravity of 2.3 can be successfully used in separating diatoms, pollen grains, spores, and other noncalcareous fossils from unconsolidated deposits in which these remains are preserved. The method has been used successfully in the investigation of sediments ranging in age from Cretaceous to the Present.

Lee, Henry E.
* The story of fossil wood. The Mineralogist, vol. 9, p. 367, 1941. Describes the petrified woods of South Dakota, with a history of their first discovery in 1811.
Moldenke, Harold M.
* The known geographic distribution of the members of the Verbenaceae and Avicenniaceae, New York. Includes fossil forms, their ages, and localities.

* An alphabetic list of invalid and incorrect scientific names proposed in the Verbenaceae and Avicenniaceae, New York. Includes several fossil names.

Patterson, J. M.

Schopf, J. M.
Plant microfossils from coal.

Type variation in Illinois coal with particular reference to domestic stoker fuels.

(With Andrews, H. N.)
Study of fossil Filicinean fructifications.

(With Brokaw, A. L.)
A preparation schedule for plant microfossils.

Sears, Paul B.


Thiessen, R., and Sprunk, George C.

Wilson, Carl L.

**CENOZOIC**

**Pleistocene and Recent**

Berry, Willard.
Pleistocene Flora, Wilson Landing, Santee River, South Carolina.
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Cobbe, Thomas.

Pollen study of Livingston bog, Cheboygan County, Michigan. (In press).

A new type of peat borer. (In press).

Cooper, William S.


Dachnowski-Stokes, A. P.


Hansen, Henry P.


A pollen study of an alpine bog in the Blue Mountains of north-eastern Oregon. Submitted to Ecology.


Post-Pleistocene forest succession on Orcas Island, San Juan Islands, Wash.

Pollen studies of post-Pleistocene peat deposits in southwestern Washington.

A pollen study of Pleistocene peat on the Oregon coast.

Knox, Arthur S.
The pollen analysis of the sediments and the tentative dating of the Fishweir. In F. Johnson, "The Bolyston Street Fishweir"; in press, Robert S. Peabody Foundation for Archaeology.

Investigation of recent changes in sealevel along the Massachusetts coast.

Pollen analysis of the Nashaquitsa clays, Martha's Vineyard, Mass., and the Gardiner's clay, Gardiner's Island, N.Y.

Investigation of the micro-paleontology of the Pleistocene of Martha's Vineyard and Nantucket.

Pollen analyses of several peat deposits on Nantucket and Martha's Vineyard.

Pollen analysis of the glacial brick clays of the Boston, Mass. area.

Pollen analyses of deep sea deposits of the N. Atlantic.

Patrick, Ruth

* Diatoms. In Sayles and Antevs, The Cochise Culture, Appendix VIII, 1941. This flora indicates fresh water which might be classified as hard or slightly alkaline or brackish in reaction. It also indicates standing water, perhaps a lake, rather than moving water. The flora is quite similar to that, described by the writer, found at Clovis, N. Mex., and those which have been found by others in geologically recent deposits in western U. S.

A study of diatoms from Linsley Pond. In press.
Appendix 9

Sears, Paul B.
* Postglacial vegetation in the Erie-Ohio area. Ohio Jr. Sci., vol. 41, no. 3, pp. 225-234, 1941.-- Discusses the evidence from pollen analysis which establishes the existence of a postglacial warm dry period in eastern North America. This period has been an important factor in the pattern of present day native vegetation. The migrations within the glacial area of Quercus, Tsuga, Fagus, Carpen, and Tilia are also traced. In general terms, the advance of Quercus and Fagus was northerly; Tsuga was dispersed from the northeast; Carpen and Tilia from the west.


Postglacial migration of five forest genera.

Steere, W. C.

Wilson, L. R., and Webster, Ruth.

Tertiary - General

Axelrod, Daniel I.

Elias, Maxim K.

Axelrod, Daniel I.
Late Tertiary floras from California and Oregon. These include the Pliocene Lulholland, Oakdale, Black Hawk Ranch, Sonoma, and Alturas floras of California and the Alvord Creek flora of southern Oregon; also a summary paper on the Pliocene sequence of southern Oregon. To be published by Geol. Soc. of Amer.

Pliocene floras from California and Nevada (Petaluma, Jacalitos, Etchegoin, San Joaquin, Avaverde, Mt. Eden, and Truckee).

Chaney, Ralph W.
The flora of the Dalles formation.
The Troutdale flora of western Oregon.
The Ellensburg flora of Washington.

Stewart, B. K.
Paleocology of the Creede Valley, Colorado.
Revision of the flora from Creede, Colorado.

Miocene

Axelrod, Daniel I.
Miocene floras from California and Nevada (Lint Canyon, Coal Valley, and Copper Basin).

Berry, Edward W.

Chaney, Ralph W.
Study of the Liascall flora of the John Jay Basin and adjacent areas.

Condit, Carlton.
The Remington Hill flora.
The Table Mountain flora.

Dake, H. C.
Petrified wood showing borings by "worms" have been reported from few localities. The paper describes a number of localities not previously recorded, including localities in central Washington, central Oregon, and southwestern Idaho. The "worm" bored woods described are from the Middle Miocene. Two new localities in Wyoming and Texas are described. Two types of "worm" bored petrified woods are recognized by the writer: marine "worm" borings (Teredo) and the dry land termite. Silicified fossil conifer cones from Oregon, Idaho, Wyoming, and Nevada are also described.

Lugn, A. L.
* The origin of Daemonelix. Jour. Geol., vol. 49, no. 7, pp. 673-696, 1941. Discusses the problem of the origin of Daemonelix, the so-called "Devil's Corkscrew" of the Harrison formation of Nebraska. These are compared to lianas of the modern tropical jungle.

Smith, Helen V.

Oligocene

Dake, H. C.
Teredo bored fossil wood. From a new locality west of Kelso, Washington.

Eocene

Arnold, C. A.
Eocene flora from Bellingham, Washington.

Barnhardt, Carl H.
The Eocene flora of the Middle Park formation.

Berry, Edward W.

MacGinitie, Harry D.

Wilson, L. R.
Microfossils of the Wamsutter Wyoming coals.
Paleocene

Brown, Roland W.
Spent field season of 1941 making further collections from the Fort Union and associated formations.

Dorf, Erling.
A Fort Union flora associated with the late Paleocene Bear Creek mammalian fauna of southern Montana.

* Cretaceous-Tertiary boundary problem. (See under Cretaceous).

MESOZOIC

Cretaceous

Andrews, Henry N., and Pearsall, Cortland S.
* On a flora of the Frontier formation of southwestern Wyoming.

Arnold, C. A.
Silicified ferns, palms, and other plants from the Cretaceous and Tertiary of the western states.

Dorf, Erling.
* Application of paleobotany to the Cretaceous-Tertiary boundary problem.
  Trans. N. Y. Acad. Sci., ser. II, vol. 4, pp. 73-78, January, 1942. Summarizes the floral evidence for the late Cretaceous age of the type Lance and its equivalents in the Rocky Mountains and Great Plains. The Tullock and Ludlow formations, until recently regarded as an upper member of the Lance formation, are florally of early Paleocene age (Fort Union). This view has recently been substantiated by the discovery of a Paleocene foraminiferal fauna in the Cannonball formation, which interfingers with the Ludlow in the Dakotas. On floral evidence the following units are likewise shown to be late Cretaceous equivalents of the type Lance: Laramie, Arapahoe-lower-Denver, lower Dawson, Medicine Bow, upper Vermejo-lower Raton, and the "Laramie" of Black Buttes, Wyoming.


Johnson, J. Harlan.
Algal material from the Edwards limestone of Gillespie County, Texas.
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Algal material collected from the Austin formation in the Terlingua district, Brewster County, Texas.

Knox, Arthus S.
Study of the pollen flora of the Cretaceous lignites of Martha's Vineyard.

MacNeal, Donald L.
New collections of leaves and fruits from the Woodbine sand of Denton County, Texas.

Peck, Raymond E.
* Lower Cretaceous Rocky Mountain nonmarine microfossils. Jour. Paleontology, vol. 15, pp. 285-304, pls. 42-44, May 1941. Charophyte oogonia and ostreocods from the upper Kootenai formation of Montana and the Garnett group of western Wyoming and eastern Idaho are described and illustrated. The charophyte genera Atopochara Peck, heretofore known only from the Trinity of Texas and Oklahoma, Clavator Reid and Groves, and Perimneste Harris, heretofore known only from the Purbeck of England, are abundant in the Kootenai and the Garnett. Acistochara Peck is represented by two species.

Discovery of the charophyte genera Atopochara, Clavator, and Perimneste in the Limewaste limestone and in a black shale immediately underlying the Lakota sandstone in the southern Black Hills region.

Smith, Betty Ruth.

Wieland, G. R.

Jurassic

Lee, Henry E.
* Cycads—past and present. The Linerossilist, vol. 9, p. 205, 1941. A popular discussion of the fossil cycads found in the Jurassic and Triassic of South Dakota. Describes various specimens recently found by the writer, and makes a comparison between the extinct types and the modern. Includes photographs of rough exterior of specimens, and polished surfaces of cross sections.

Wharton, J. R.
Collection of Jurassic leaves from the Duck Mountain district, Douglas County, Oregon, for Cornell University.
Triassic

Berry, Willard.
Triassic spores, the Deep River coal field, North Carolina.

PALEozoIC

Permian

Johnson, J. Harlan.

The Permian algal genera *Ottonisia* and *Osasia* Tweenhofel.

Collected several hundred specimens of algal limestone from the Upper Permian of the Apache I. S. of Texas.

Johnson, J. Harlan and Dorr, K. E.

Stewart, P. R., and Stewart, B. K.
Studies in the Dunkard series.

Pennsylvanian

Andrews, Henry N., Jr.
* Dichophyllum Hoorei and certain associated seeds. Am. J. Bot. Garden, vol. 28, pp. 375-384, 1941.—During the summers of 1939-40 collections of fossil plants were obtained from the upper Pennsylvanian shales six miles northwest of Garnett, Kansas. Particular attention was devoted to *Dichophyllum Hoorei* Elias of which a number of well preserved specimens were obtained. The possibility that this plant may be ancestral to the Whiteroot group is discussed, with special reference to the leaf morphology in these two genera. A new genus of seeds, *Diceratosperma*, is also described.
Contributions to our knowledge of American Carboniferous floras.

1. _Scleropteris_, gen. Nov., _Nesoxylon_ and _Amyelon_. Ann. Mo. Bot. Gard., vol. 29, pp. 1-18, 1942.---A considerable number of coal-balls containing well preserved fossil plants have been collected from the Pyramid Coal Mine, Perry Co., Illinois. These are from the Mcleansboro formation of middle Pennsylvanian age. A fern stem, _Scleropteris illinoisensis_, is described. The most distinctive features of this species are a weak development of secondary xylem, the tracheids of the latter possessing nearly circular bordered pits, and abundant sclerotic nests in the cortex. It is also demonstrated that roots of the _Amyelon_ type occur in organic connection with the stems of _Nesoxylon_ species.

Andrews, Henry N., Jr., and Panhell, Eloise.

* Contributions to our knowledge of American Carboniferous floras. II—_Lepidocarpon_. Ann. Mo. Bot. Gard., vol. 29, pp. 19-34, 1942.---The fossils described here are from the same locality as given in Part I of the "Contributions." Seeds of _Lepidocarpon_ are abundant in the coal balls from the Pyramid mines. One specimen was found containing a well preserved gametophyte bearing structures that are, in all probability archegonia. Two large microsporangiate cones were also collected. The sporangia of one cone retain many of their microspores and since spores of the same type have been found abundantly within the seeds these cones are referred to the _Lepidocarpon_ species.

Arnold, C. A.

* Some Paleozoic plants from central Colorado and their stratigraphic significance. Contrib. Mus. Faeont. Univ. Mich., vol. 6, pp. 59-70, 1941.---Plant remains are described from the Weber, Arapahoe, Battle Mountain, and McCoy formations in central Colorado, principally from Eagle, Fremont, and Chaffee Counties. The Weber contains a typical Pottsville flora, but the higher beds contain genera and species found elsewhere generally in the late Pennsylvanian and Permian. However, on the basis of marine invertebrates, stratigraphers place the Walchia beds of the Battle Mountain and McCoy formations in the Des Moines series. The following plants are described: _Calamites gigas_, _Ondopteris moccensis_ (new), _Cordaites angulosostriatus_, _Samaropsis hesperius_ (new), _Lecrosia Gouldi_ (nov), _Walchia stricta_, and _Walchia_ sp. The discrepancy between the plants and animals as age indicators is briefly discussed.

Michigan coal flora.

Bull, Walter A.


Darrab, William C.


Elias, Maxim K.
Study and review of Pennsylvanian and lower Permian conifers.

Johnson, J. Harlen.
Calcereous algae of the Pennsylvanian and Lower Permian of Kansas.
Based on approximately 1000 specimens and 250 thin sections from about 200 localities.

Read, Charles B.

Reed, Fredda D.

Schopf, J. H.
* Notes on the Lepidocarpaceae. Amer. Midland Nat., vol. 24, no. 3, pp. 548-563, 1941. Records of species assignable to this family are discussed; *Lepidophloios* is suggested as a possible member of the alliance. Familial and generic characteristics are reviewed with emphasis on those which appear to have special significance for the group. At least twenty-one species are now assignable to the family.*

* *Nanocraspedon* pedipternum sp. nov., and sigillardian relationships. Ill. Geol. Surv. Rept. Inv. 75, pp. 1-53, 1941. The age relationships of coal ball deposits, particularly those which have provided specimens of *Nanocraspedon*, are discussed. A new species including both mega- and microsporangiate forms is described. Megagametophytes with single archegonia are present. Some of the prominent biocharacters linking sigillardian fructifications with stems and their differences from the fructifications of other lycopod groups are discussed.


Wilson, L. K., and Tillapaugh, Iola.
Appendix Q

Wilson, L. R.
Microfossil studies of Iowa coal deposits.

Mississippian

Bell, Walter A.
Flora of the Mississippian Horton group.

Johnson, J. Harlan.
Algae and other organisms from the Leadville (Mississippian) limestone of central Colorado; prepared under auspices of U. S. Geol. Survey.

Devonian

Arnold, C. A.
* Psilophyton and Aneurophyton in the Devonian of eastern North America. 
Chron. Bot., vol. 6, pp. 375-376, 1941. In eastern N. A., Aneurophyton is more widely distributed and abundant than Psilophyton, and the former is often mistaken for the latter. Psilophyton is rare, having been authentically identified from only a few localities. Aneurophyton lacks the dichotomous habit of Psilophyton, the branching is more complex, and although small, curved, leaflike appendages are present, spines are absent. There is ample reason to believe that the Gilboa trees known as Eospermatopterus belong to Aneurophyton.

* Observations on fossil plants from the Devonian of eastern North America. V. Hyenia Banksii, sp. nov. Contr. ins. Paleont. Mich. Univ., vol. 6, pp. 53-57, 1941.—The specimen came from the Bellvale flags of the Hamilton group in Orange County, N. Y. It consists of a short, upright, leafy stem bearing two side branches. The leaves are smaller than those of any of the European forms.

Baschnagel, Raymond A.

Erling Dorf
Vice-Chairman, proc. tem.

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Charles B. Read, Chairman
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