NEWSLETTER

Volume 2 Number 1 SUMMER, 1979

A NOTE FROM THE PRESIDENT, COLIN MCGREGOR

Just over a year ago a questionnaire was sent out to determine the extent of support for a Canadian palynological organization. The enthusiastic response led to the formation of the Canadian Association of Palynologists (C.A.P.). I take this opportunity on behalf of the members to thank the Steering Committee comprising Sedley Barss, Jon Bujak and Graham Williams, whose initiative resulted in C.A.P.

Our Newsletter has been launched, and in a sense is testing the need for enhanced communication amongst palynologists in this country. Editor Jon Bujak has done a superlative job in extracting useful information from the membership and elsewhere for the first three issues. However, in addition to facts and figures there are ideas and opinions to be aired. Most of us have pet points of view; one of mine is the need for more assertive participation by palynologists in the decision-making processes of the International Stratigraphic Commission. Some of your opinions were expressed in full colour on the questionnaires received by the Steering Committee. They would make interesting, even stimulating and useful reading in the Newsletter if you would take the time to send them to the Editor.

Since the beginning of 1979 the C.A.P. Executive has met three times and has taken the following actions. (1) University geology departments and other geological organizations across the country have been notified of the existence and aims of C.A.P.; the same information will soon go out to biological organizations. (2) In response to the wishes of a majority of our members, we have established an official link with the International Commission for Palynology and have a representative, John Utting, on the I.C.P. Council. (3) C.A.P. is co-sponsor, with the Canadian Botanical Association, of a symposium on "Landmark Events in the Evolution of Plants", to take place in Ottawa on June 21. (4) A draft of the Constitution and Bylaws has been prepared in both official languages; it is included with this issue of the Newsletter, and the Executive invites your comments on ways to improve it.

As I see it, our primary aim should be to promote palynology in ways that are appropriate to the needs of Canadian palynologists. Most members (and others) who have taken the time to communicate their opinions believe that we do not need annual meetings, elaborate programs, a journal, or a big budget at this time. Perhaps a role in supporting international palynological organizations and programs, a means of qualifying for financial grants for special occasions (such as A.A.S.P/ C.A.P. or I.C.P./C.A.P. sponsored meetings), a catalytic role in promoting communication among palynologists, and a focus for palynological public relations among non-palynologists in Canada are justification enough for our existence at present. At last count most thought so, a few thought not.

The next year or two will be a time of testing for this organization. We have a relatively low profile at the moment. Shall we keep it that way?

NOMINATIONS FOR 1980 C.A.P. EXECUTIVE NOW OPEN

The Nominating Committee for the Canadian Association of Palynologists announces its call for nominations from the membership, for the positions of (1) President-Elect, (2) Secretary-Treasurer, and (3) Newsletter Editor. David Jarzen, the present President-Elect, will automatically become President for 1980. Nominees and their nominator must be members of C.A.P. in good standing and each nomination must be supported by the signatures of four C.A.P. members. Please submit your nominations, to be received no later than AUGUST 15, 1979, to:

Paul Gunther, Petro-Canada Exploration Inc., P.O. Box 2844, Calgary, Alberta T2P 2M7.

The nominating committee expects to mail out ballots on September 3, 1979 and will have the results tabulated and available before the end of October, 1979.

Please do not nominate unsuccessful federal election candidates. The winning party will need them for the Senate.

PALYNOSCENE

CHEVRON STANDARD LTD., CALGARY
(received from Bert G.T. van Helden)

Huon S. Walton is involved in palynological investigations of Proterozoic to Triassic sediments with emphasis on Paleozoic rocks mainly in the western Canadian sedimentary basin and in the Sverdrup Basin, N.W.T.

Bert G.T. van Helden is conducting palynological studies on the Mesozoic-Cenozoic of Canada's east

coast basins, the Mackenzie Delta and the Sverdrup Basin, with emphasis on dinoflagellate biostratigraphy.

Geothermal studies are also carried out on the Thermal Alteration Index (colouration) and the classification of organic matter under transmitted light.

ESSO RESOURCES CANADA LTD., CALGARY
(received from Theodora C. Masran)

Mrs. Theodora Masran is conducting experimental research into the mechanical, biological and chemical breakdown of tissues of higher and lower land and marine plants under laboratory controlled conditions. A joint paper with S.A.J. Pocock on this study will be presented at the American Association of Stratigraphic Palynologists Organic Matter Symposium in Dallas.

The results of the above are being applied to a study of world-wide Recent sediments. The purpose of this is to define patterns of deposition for the various organic matter types in different geological and geographic areas.

(received from Stanley A.J. Pocock)

A manuscript, "Tertiary Climate, Beaufort-Mackenzie Delta Area, Canada", by Frank L. Staplin has been completed. Another, "Early Tertiary and Late Cretaceous paleontological correlation, surface to subsurface, Yukon Coastal Plain and Mackenzie Delta Areas", by F.L. Staplin, E.M. Gannon and S.A.J. Pocock is in the final stages of preparation. A third, related paper describing some foraminiferal and palynological species useful in Early Tertiary correlations, is also near completion. These three papers will be submitted for publication in the near future.

Jan Jansonius remains active in Tertiary service work in the Beaufort region. A certain amount of applied research is also being carried out. This includes the compilation of a catalogue of selected fungal spore species from Paleocene-Eocene samples, and an attempt to systematically speciate porate and col(por)ate pollen from Paleocene to Miocene assemblages. A detailed record is also being accumulated on species of *Wetzeliella* and associated dinoflagellates The third (1979) Supplement to the Genera File is being prepared with Len Hills for publication. It will contain about 90 new cards, of which a quarter are translations from recent Chinese publications.

Miss Pat M.D. Riggins is documenting Jurassic palynological assemblages from east coast and Arctic islands wells, with the object of improving the zonations established for these areas.

S.A.J. Pocock is carrying out a detailed study of gymnosperm pollen from Lower Tertiary sediments of the Beaufort Basin, both as environmental indicators and as a means of correlation with the Greenland-Spitsbergen area, and the Tertiary basins of Alberta, British Columbia and the northern United States of America. An annotated key to both fossil and extant gymnosperm genera is nearing completion; this will be submitted for publication within the next year. Work continues with Mrs. T.C. Masran on the characterization and classification of sedimentary particulate organic matter. This includes a study of organic matter deposition and diagenesis in tropical estuarine environments. A study of species assigned to the pollen genus *Rapanaea* has almost been completed with Miss Vasanthy George of the Institut Français, Pondichéry, India, and is being prepared for publication.

INSTITUT NATIONAL DE LA RECHERCHE SCIENTIFIQUE
(INRS-Pétrole, Québec)
(received from Aicha Achab)

My main field of interest is the Lower Paleozoic of eastern Canada. The objective of my current research is to zone the Ordovician of Quebec using chitinozoa, and to compare this zonation with those obtained from graptolites and conodonts. The work I am carrying out includes: Anticosti Island (assemblages from the Vaureal and the Ellis Bay Formations have been described); Saint Lawrence Lowlands (assemblages from the Lorraine, Utica, Trenton and the stratigraphic equivalents of these groups in Anticosti Island are under study); Quebec City area (a study of Tremadoc chitinozoa from Lauzon and Saint Michel de Bellechasse and Arenig assemblages from the Levis Formation is in progress).

INSTITUTE OF SEDIMENTARY AND PETROLEUM GEOLOGY, CALGARY
(received from Art Sweet)

Art Sweet is carrying out a palynological study of Mesozoic and Tertiary coal deposits from western and northern Canada. He is a contributor to the recently published Coal Resources of Southern Saskatchewan: "A model for evolution methodology" - a joint Geological Survey of Canada-Saskatchewan Government Report. His current work includes a palynological study of the Bonnet Plume Coal Basin and of the Maastrichtian-Paleogene deposits on the west side of the Mackenzie Delta. The latter is based on samples collected during the 1975 and 1976 field seasons.

MEMORIAL UNIVERSITY OF NEWFOUNDLAND, ST. JOHN'S
Department of Geography
(received from Joyce Macpherson)

Gillian Mellars (M.Sc. student) will examine sediment cores from within and beyond the presumed late-Wisconsinan glacial margin in the northern Avalon Peninsula.

Joyce Macpherson is working on a number of sediment cores from the vicinity of St. John's and from the interior of the Avalon Penisula. She recently published "Pollen chronology of the Glen Roy-Loch Laggan proglacial lake drainage", in the Scottish Journal of Geology, 14(2), 1978, 125-139.

NATIONAL MUSEUMS OF CANADA, OTTAWA
(received from David M. Jarzen)

David Jarzen continues his studies on Upper Cretaceous and Lower Tertiary floras of western Canada.

Recent work accepted for publication includes the fossil record of *Gunnera* pollen (*Biotropica*); Zygospores of Zygnemataceae in the Paleocene of southern Saskatchewan (*Rev. Palaeobot. Palynology*) and Spore morphology of some Anthocerotaceae and the occurrence of *Phaeoceros* spores in the Cretaceous of North America (*Pollen et Spores*).

Work in progress includes a recollection of Couper's (1953, 1960) mid-Waipara section in New Zealand (collected by DMJ in 1976) in order to re-examine and establish botanical affinities of the angiosperm flora; an examination of the pollen, spore and fungal component of Recent sediments from the Luangwa River (Zambia) in order to understand pollen deposition and preservation in Recent tropical environments, in order to recognize similar environments in the fossil record. Investigations have also been initiated on a palynofloral examination of the uppermost Jurassic rocks of the Tendaguru Hill Quarry (southern Tanzania), where collaboration between the Tanzanian Government and the National Museums of Canada has spurred an interest in re-opening the famous German Quarry, reknowned for its magnificent dinosaur fauna. Preliminary pollen work indicates a sparse, poorly preserved flora which may be adequate for species descriptions and correlations. Work continues on a study of the Upper Cretaceous(?) to Lower Tertiary sections collected in 1977 from Ellesmere Island, N.W.T.

Recent herbarium collections of modern pollen from the Arnold Arboretum and Gray Herbarium (Cambridge, Massachusetts), Liberty Hyde Bailey Hortorium (Ithaca, New York), and the Hebrew University (Jerusalem, Israel), have added significant taxa to the Pollen and Spore Reference Collection of the National Museums of Canada which now approaches 8,000 specimens.

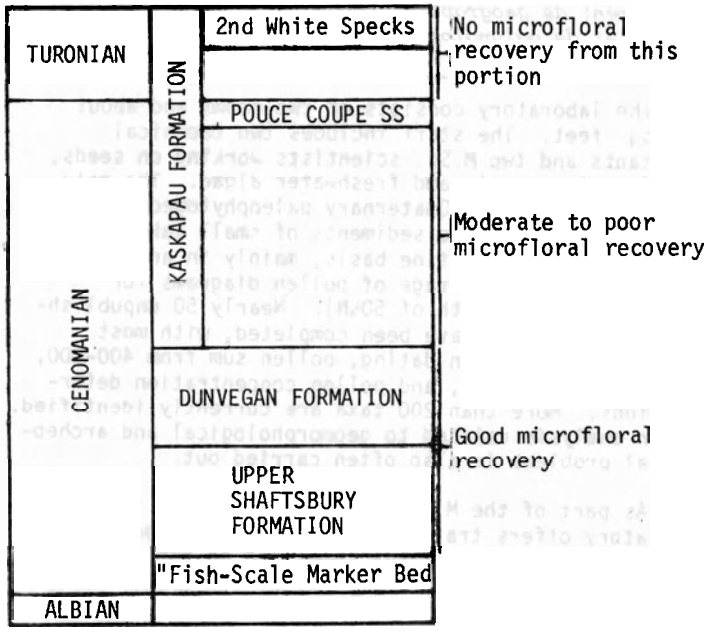
Preparations are now well underway for an early (September-October) trip to the Island of New Caledonia. The International Geological Correlation Program (under I.U.G.S.) has been working on several studies aimed at correlating the Mesozoic sequences between New Zealand and New Caledonia. Working closely with Dr. J.P. Paris of the Bureau de Recherches Géologiques et Minières, David Jarzen will collect samples for pollen analysis from Turonian to (?) Maastrichtian strata and correlate the results with established New Zealand pollen zones and international standards. Progress on the project to date can be found in the *Geol. Correl. Spec. Issue*, September 1978.

In early May, Dave attended a "Workshop" on Fungal Spore Morphology and Classification, organized by Bill Elsik and hosted by Alan Graham at Kent State University in Kent, Ohio (May 9-11, 1979). The few days' discussions centred on present methods of classification and description of fossil fungal elements.

RESEARCH COUNCIL OF ALBERTA, EDMONTON
(received from Chaitanya Singh)

Chaitanya Singh is working on the following projects: (1) Cenomanian microfloras of the Peace

(1) Cenomanian microfloras of the Peace River district. This project is part of a program to establish a microfloral zonation for the Cretaceous of Alberta. Approximately 165 outcrop and 238 subsurface samples have been collected from the upper Shaftsbury, Dunvegan and lower Kaskapau Formations in northwestern Alberta. An exclusively Cenomanian microfloral assemblage consisting of about 190 species of miospores, pollen, megaspores and microplankton, which make their first appearance above the "Fish-Scale" Marker Bed, will be described and illustrated in an Alberta Research Council Bulletin. Details of angiosperm pollen occurrences below the "Fish-Scale" Marker Bed have been published in "Stratigraphic significance of early angiosperm pollen in the mid-Cretaceous strata of Alberta", by C. Singh, 1975, Geological Association of Canada Special Paper Number 13.



(2) Palynological study of coal-bearing Upper Cretaceous strata in the Red Deer River Valley. 658 samples have been collected to determine the microfloral characteristics of the prominent coal seams in the Edmonton Group and Scollard Member of the Paskapoo Formation. Fifteen major coal seams have been correlated in the 27 sections measured along the Red Deer River from East Coulee to Ardley. A major microfloral break occurs in the Nevis Seam (in the Scollard Member), which corresponds to the regional and synchronous floral changes that occur at the Lance (Hell Creek)-Fort Union contact in the northwestern interior of the United States. These findings are likely to assist in an accurate delineation of the Maastrichtian-Paleocene boundary in Alberta and clarify the relationships with the Lance-Fort Union strata of the adjacent area of the United States. The results of this study will be published in an Alberta Research Council Bulletin. A previously published paper relating to this is, "The Cretaceous-Tertiary boundary in south-central Alberta - a reappraisal based on dinosaurian and microfloral extinctions", by D.A. Russell and C. Singh, 1978, Canadian Journal of Earth Sciences, vol. 15, no. 2, pp. 284-292.

(3) Late Cretaceous-Tertiary microfloras, west-central Alberta. Approximately 70 Upper Cretaceous and Paleocene samples from west-central Alberta have been examined and contain numerous Maastrichtian and early Paleocene miospores and pollen. These results will eventually be summarized in a short paper.

SHELL CANADA RESOURCES LTD, CALGARY
(received from Anton Audretsch)

Anton Audretsch and Frank Poeltl are working on the Upper Jurassic and Cretaceous in Alberta, mainly for correlation and environmental interpretation. Hassan Sabry is no longer in the palynological group. He is now doing stratigraphy with the northeast British Columbia group at Shell.

UNIVERSITÉ DE MONTRÉAL
Département de géographie, Laboratoire de paléobiogéographie et de palynologie
(received from Pierre Richard)

The laboratory consists of two rooms and about 1000 sq. feet. The staff includes two technical assistants and two M.Sc. scientists working on seeds, macrofossil analysis and freshwater algae. The main focus of research is Quaternary paleophytogeography. Pollen analysis of the sediments of small lakes and bogs is done on a routine basis, mainly in an attempt to get a uniform coverage of pollen diagrams for southern Québec (south of 50½N). Nearly 50 unpublished pollen diagrams have been completed, with most including radiocarbon dating, pollen sum from 400-600, pH, loss on ignition, and pollen concentration determinations. More than 200 taxa are currently identified. Pollen analysis related to geomorphological and archeological problems is also often carried out.

As part of the M.A. and M.Sc. programs, the laboratory offers training opportunities in pollen analysis. We are currently compiling an "Annoted illustrated key to Quaternary pollen and spores analysis".

Nine research projects are currently being undertaken.

(1) History of bog and bog vegetation development at Lanoraie, Québec. *M.Sc. thesis: Paul Comtois.*
(2) Botanical composition of peat in the Farnham area. *Research project: Alayn Larouche.*
(3) Macrofossil analysis of archeological remains at "Les forges du Saint-Maurice". ***Research project:*** *Alayn Larouche.*
(4) Quaternary paleophytogeography of the Gaspé Peninsula. ***Major research project: Pierre Richard.***
(5) Pollen morphology. *M.Sc. thesis: Hélène Jetté.*
(6) Pollen analysis and geomorphology in the eastern Ungava Bay area. *Ph.D. thesis: Louise Savoie.*
(7) Quaternary paleophytogeography of the eastern Ungava Peninsula. *Tuvaaluk project: Pierre Richard.*
(8) Pollen analysis of the Lake Abitibi area. ***Research project for archeology: Pierre Richard.***
(9) Isopol and paleo-isopol mapping. *Research project: Pierre Richard and Tom Webb III.*

Recently completed M.Sc. theses are:

(1) *Labelle, Claude, 1978.* Contribution à l'étude de la végétation tardiglaciaire au sud et à l'est du Parc des Laurentides, Québec. *M.A., Université de Montréal.*
(2) *Larouche, Alayn, 1978.* Histoire postglaciaire comparée de la végétation à Sainte-Foy et au mont des Eboulements, Québec, par l'analyse macrofossile et l'analyse pollinique. *M.Sc., Université Laval.*
(3) *Savoie, Louise, 1978.* Contribution à la paléophytogéographie de l'épisode de Saint-Narcisse dans la région de Sainte-Agathe. *M.A., Université de Montréal.*

Recent publications are:

Richard, P., 1978. Histoire tardiglaciaire et postglaciaire de la végétation au mont Shefford, Québec. *Géogr. phys. Quat.*, 32:81-93.
Richard, P., 1978. Aires ombrothermiques des principales unités de végétation du Québec. *Naturaliste can.*, 105.
Webb III, T., Yeracaris, Y. and Richard, P., 1978. Mapped patterns in sediment samples of modern pollen from southeastern Canada and northeastern United States. *Géogr. phys. Quat.*, 32:163-178.
Richard, P., 1977. Histoire post-wisconsinienne de la végétation du Québec méridional, par l'analyse pollinique. *Serv. de la rech., Dir. gén. des for. min. des Ter. et For. du Québec* (Publications et rapports divers). Tome 1, xxiv + 312 p., Tome 2, 142 p. 211 diagrammes polliniques. (Available from Québec Dept. of Lands and Forests, or from the author.)
Richard, P., 1978. Analyses polliniques dans la région de Lanoraie, Québec. *Research report, Québec Dept. of Cultural Affairs,* 20 pages, 1 pollen diagram.
Richard, P., 1978. Analyses polliniques en Jamésie. *Research report, Québec Dept. of Cultural Affairs,* 43 pages, 5 pollen diagrams.
Richard, P., 1979 (in preparation). Analyses polliniques au lac Abitibi. *Research report, National Museums of Canada, Archeological Survey.*
Dubois,J.-M. et Richard, P., 1979 (in preparation). Analyses polliniques à l'Île Nue de Mingan.
Richard, P., 1979 (in preparation). Histoire tardiglaciaire et postglaciaire de la végétation au Parc national de la Mauricie, Québec.

Many other regional accounts of pollen analysis are also in preparation.

UNIVERSITY OF MANITOBA
Department of Earth Sciences
(received from Vasu Nambudiri)

Vasu Nambudiri is working on the Quaternary paleoecology of Lake Manitoba basin sediments. This includes: (1) A paper on the late Pleistocene and Holocene vegetational history of Lake Manitoba basin sediments. This is in the final stages of preparation. (2) A detailed taxonomic study of pre-Quaternary microfossils from Lake Manitoba basin sediments.

Papers on Lake Manitoba sediments include: (1) Nambudiri, E.M.V., Shay, C.T. and Teller, J.T., 1979. Pollen stratigraphy of late Pleistocene and Holocene sediments from Lake Manitoba, Canada. Abstr. Geol. Soc. Amer., North-central section, Duluth, Minn., G.A.A.P.B.C. 11(5):253. (2) Nambudiri, E.M.V., Teller, J.T. and Last, W.W., 1979. Pre-Quaternary microfossils - a guide to errors in radiocarbon dating (submitted for publication).

Previous publications related to palynology by Vasu Nambudiri include: (1) Nair, P.K.K., Nambudiri, E.M.V. and Thomas, M.K., 1973. A note on pollen germination at various stages of development of flower buds of balsam (*Impatiens balsamina*). Journal of Palynology, 10:29-33. (2) Nambudiri, E.M.V. and Thomas M.K., 1974. Effects of chemicals on the

germination of pollen grains of *Torenia asiatica* Linn. Great Basin Natur., 34: 71-81. (3) Nambudiri, E.M.V. and Tidwell, W.D., 1977. Some remains of fungi from the Deccan Intertrappean beds of India. Abstracts of the Fourth International Palynological Conference, Lucknow: 116.

Department of Botany

Sproule, T.A., 1972. A paleoecological investigation into the post-glacial history of Delta Marsh, Manitoba. M.Sc. thesis, University of Manitoba.

UNIVERSITY OF SASKATCHEWAN
Department of Geological Sciences
(received from William A.S. Sarjeant)

The following palynological work is in progress:

(1) *Robert A. Fensome* (Ph.D. student). Studies of Jurassic pollen and spores from the beds spanning the Jurassic-Cretaceous boundary, Richardson Mountains, N.W.T.
(2) *Malcolm A. Wilson* (Ph.D. student). Paleoenvironmental studies on Quaternary pollen of northern Saskatchewan.
(3) *James D. Wheeler* (M.Sc. student). Studies of pollen, spores, dinoflagellate cysts and acritachs from the Jurassic and Cretaceous of the Alborz Mountains, Iran.
(4) *Mrs. Betty Klein* (independent research worker). Geochronological studies of Quaternary pollen from southern and central Saskatchewan.
(5) *William A.S. Sarjeant* (faculty). Studies of Middle and Upper Jurassic assemblages of dinoflagellate cysts and acritarchs from England, Scotland and northern France, and of lowest Cretaceous assemblages from Algeria.

I am indebted to W.A.S. Sarjeant for sending me a full list of his 1977-1979 publications, those he has in press, and those publications resulting from research supervised by him. These are all listed below.

W.A.S. Sarjeant Publications List, 1977-1979.

1977a: Geologists down under: personal notes on the 25th International Geological congress. *Geolog: Newsletter Geol. Assoc. Canada,* vol. 6, pt. 1, p. 29-30.
1977b: (with P.W. Currie). Dinosaur tracks from Cretaceous sediments of Peace River Canyon, near Hudson Hope, British Columbia. *A.A.P.G.-S.E.P.M. Program & Abstracts,* Washington, D.C., p. 68.
1977c: The status of microform as publication. *Bull. zool. Nomencl.,* vol. 34, pt. 1, p. 9-10.
1977d: (with M.D. Muir). *Palynology I. Spores and Pollen.* Benchmark Papers in Geology, vol. 46, xv + 381p., text-figs. + pls. numb. by chapter.
1977e: (with M.D. Muir). *Palynology II. Dinoflagellates, acritarchs and other microfossils.* Benchmark Papers in Geology, vol. 47, xiii + 414 p., text-figs. + pls. numb. by chapter.
1977f: (with M.D. Muir). *Antrosphaera* Sarjeant, 1961, is a Chenopodiacean pollen. *Pollen et Spores,* vol. XIX, no. 2, p. 309-311, 1 text-fig.
1977g: (with L.A. Riley). Age de quelques assemblages de dinoflagellés et acritarches du Kimmeridgian (jurassique supérieur) du Boulonnais, nord de la France. *Rev. Micropaléont.,* vol. 20, no. 1, p. 49-50, 2 tabs.
1977h: (with L.E. Stover & W.S. Drugg). The Jurassic dinoflagellate genus *Stephanelytron:* emendation and discussion. *Micropaleontology,* vol. 23, no. 3, p. 330-338, 3 text-figs., 1 pl.
1977i: The Cuckfield dinosaur. *The Illustrated London News,* vol. 265, no. 6953, p. 28.
1978a: (with D.J. Mossman). Vertebrate footprints from the Carboniferous sediments of Nova Scotia. A historical review and the description of newly discovered forms. *Palaeogeog., Palaeoclimatol., Palaeoecol.,* vol. 23, p. 279-306, figs. 1-10.
1978b: (with P. Stringer). Triassic reptile tracks in the Lepreau Formation, southern New Brunswick, Canada. *Can. J. Earth Sciences,* vol. 15, no. 4, p. 594-602, figs. 1-6.
1978c: (with M.D. Muir). The palynology of the Langdale Beds (Middle Jurassic) of Yorkshire and its stratigraphical implications. *Rev. Palaeobot. Palyn.,* vol. 25, p. 193-239, pls. 1-7, text-figs. 1-6, tab. 1.
1978d: William Howson Wilcockson, M.A., F.G.S. *Mercian Geologist,* vol. 6, no. 6, p. 307-308.
1978e: An identification guide to Jurassic dinoflagellate cysts. *Miscellaneous Publications, Dept. of Geology & Geophysics, Louisiana State University,* 107 p., 11 figs., 8 tabs.
1978f: Detectives and geology. *The Armchair Detective,* vol. 11, no. 3, p. 294-297, 2 text-figs.
1978g: (with U. Erkmen). *Xylochoarion,* new genus of dinoflagellate cysts from the Hackness Rock (Middle Jurassic: Callovian) of Yorkshire, England. *N. Jb. Geol. Paläont. Mh.,* (7), p. 400-407, 11 text-figs.
1978h: *Arpylorus antiquuus Calandra,* emend., a dinoflagellate cyst from the Upper Silurian. *Palynology,* vol. 2, p. 167-179, pls. 1-4, text-fig. 1, tab. 1.
1978i: Hundredth year memoriam. Christian Gottfried Ehrenberg 1795-1876. *Palynology,* vol. 2, p. 209-211, portr.
1978j: (with D.J. Mossman). *Peratodactylopus,* new name for the vertebrate footprint ichnogenus *Anticheiropus* Sarjeant and Mossman, 1978, *non* Hitchcock, 1865. *J. Paleont.,* vol. 52, no. 5, p. 1102.
1978k: (with G.L. Williams and E.J. Kidson). A glossary of the terminology applied to dinoflagellate amphiesmae and cysts and acritarchs: 1978 edition. *Amer. Assoc. Stratig. Palyn.,* Contributions Series no. 2A, 121 p., 15 pls.
1978l: (with L.E. Stover). *Cyclonephelium* and *Tenua:* a problem in dinoflagellate cyst taxonomy. *Grana,* vol. 17, no. 1, p. 47-54.

PAPERS IN PRESS

William Howson Wilcockson (1891-1976): His life and his geological achievements. Sorby Record.
(with J.B. Delair). An Irishman in Cuvier's laboratory. The letters of Joseph Pentland, 1820-1822. *Bull. Br. Mus. nat. Hist.* (Hist. ser.).
(with W.O. Kupsch). History of Concepts in Precambrian Geology. *Geol. Assoc. Canada,* Spec. Publ. no. 19.
(with A.P. Harvey). Uriconian and Longmyndian: A history of the study of the Precambrian rocks of Shropshire, England. *In* W.O. Kupsch & W.A.S. Sarjeant (eds.), History of Concepts in Precambrian Geology. *Geol. Assoc. Canada,* Spec. Publ. no. 19.
(with P.B. Basan, joint editor). Trace fossils in stratigraphy: Special Issue. *Palaeogeog., Palaeoclimatol, Palaeoecol.*

(with P.J. Currie). Lower Cretaceous dinosaur footprints from the Peace River Canyon, British Columbia, Canada. *Palaeogeog., Palaeoclimatol., Palaeoecol.*

Bibliography of works on the history of geology. New York: Arno Press (publication planned in an estimated 8 volumes).

Middle and Upper Jurassic dinoflagellate cysts: The World exclusive of North America. *A.A.S.P. 10th Anniversary Volume.*

Acritarchs: Anellotubulates: Dinoflagellates: Hystrichospheres: Melanosclerites: Tasmanitids. Six entries in R. Fairbridge (ed.), *Encylopaedia of Earth Sciences.*

(with Ugur Erkmen). The *Xanthidium pilosum* problem. *Géobios.*

PUBLICATIONS RESULTING FROM RESEARCH SUPERVISED BY WILLIAM A.S. SARJEANT (OTHER THAN THOSE CO-AUTHORED), 1977-1979

M.R. BRADFORD

1977: New species attributable to the dinoflagellate cyst genus *Lejeunia* Gerlach, 1961, emend. Lentin & Williams 1975. *Grana*, vol. 16, pp. 45-59, figs. 1-6.

1978: An annotated bibliographic and geographic review of Pleistocene and Quaternary dinoflagellates cysts and acritarchs. *Amer. Assoc. Stratig. Palyn.*, Contribution Series, no. 6, 192 p., tab.

R.A. FENSOME

in press: Dinoflagellate cysts and acritarchs from the Middle and Upper Jurassic of Jameson Land, east Greenland. *Grønlands geol. Unders. Bulletin.*

M.A. WILSON

1978: Palynology of three sections across the uppermost Cretaceous-Paleocene boundary in the Yukon Territory and District of Mackenzie, Canada. *Palaeontographica*, vol. 166, p. 99-183, 12 pls., 3 figs., 4 tabs.

UNIVERSITY OF WATERLOO
Departments of Biology and Earth Science
(received from Richard J. Hebda)

The following palynological research is carried out at the University of Waterloo:

(1) *Chris Earle* (Biology): Palynology and paleoecology of Second Marsh, Oshawa, Ontario.
(2) *Bill Fitzgerald* (Earth Science): Palynology and Quaternary geology of the Minesing Swamp area, Simcoe County, Ontario.
(3) *Richard Hebda* (Biology and Earth Science): Palynology of sediments associated with ancient Maya raised fields and terraces of Belize, Central America. Palynology of modern sediments of the Fraser River Delta, British Columbia. Non-glacial late Quaternary deposits of the Fraser Lowland, British Columbia. Palynology of interstadial deposits at Guelph, Ontario. Pollen and Spores of British Columbia.
(4) *Jocelyne Legault* (Earth Science): Palynomorphs of the Upper Ordovician Red River, Stony Mountain and Stonewall Formations of Manitoba. Palynomorphs of the Early Paleozoic Road River Formation, Yukon Territory.
(5) *John K. Morton* (Biology): Atlas of pollen of the trees and shrubs of eastern Canada and the adjacent United States.
(6) *Barry Warner* (Biology): Palynology and paleoecology of northeastern Manitoulin Island, Ontario.

OTHER CALGARY NEWS
(received from Wayne Brideaux)

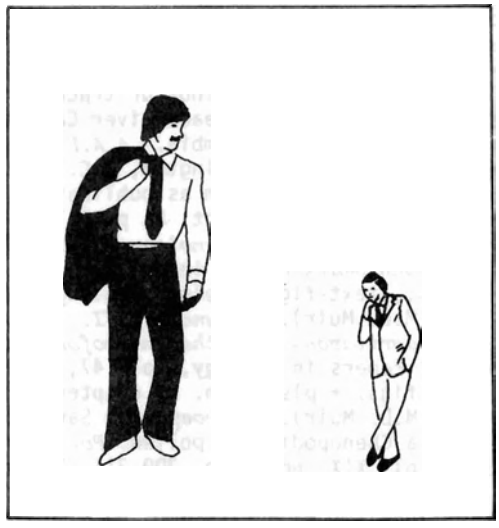
Kathy Chi continues to win competitions at the Calgary Kiwanis Music Festival. Johannes Jansonius (Jan Jansonius' son) won the National Provincial String Competition and will now compete in the National Final later in 1979. Wayne Brideaux recently was awarded his Grade One piano on condition that he not use this dangerous weapon in public. He was also asked to turn in the outer 36 keys in either direction of Middle C and was restricted to playing in C Major.

A cry from Canadian Ron Turner who is now with the U.S.G.S. in Anchorage, Alaska: ".....the one thing I presently envy you in Calgary is a T.V. network that carries the N.H.L. I read the results in the newspaper...." **Ron Turner would also appreciate reprints** of papers dealing with high latitude Mesozoic assemblages as his library facilities are severely limited. His address is: Ronald F. Turner, Geological Survey Conservation Division, Office of the Area Geologist, P.O. Box 259, Anchorage, Alaska, 99510.

OTHER NEWS

Maria Boyko-Diakonow (Penticton, B.C.) completed her Master's Degree in 1973 under John McAndrews at the University of Toronto. **She is currently working** with John McAndrews on a joint paper entitled, "Pollen stratigraphy and European settlement around Lake Ontario" which includes a major part of her thesis.

C. Anne Noakes (Bedford, N.S.) completed her M.A. Degree in 1973 under Len Hills at the University of Calgary. **She is currently working with Len Hills on** a paper entitled, "Recent palynology of Goat Lake and Lost Lake, Waterton Lakes National Park" which includes a major part of her thesis.



PALYNOLOGIST TALKING TO A MICROPALEONTOLOGIST

SOCIETIES

AFRICAN COMMITTEE FOR PALYNOLOGY (A.C.P.)

The following is abstracted from the second newsletter of the A.C.P., March, 1979.

The society now has 27 members engaged in palynological research on various regions of Africa. The palynological research reported in the newsletter covers a time-span from the Permian to Holocene. Together with results from related disciplines such as geology, geomorphology, archeology, paleontology and studies of oceanic sediments, a fascinating picture of the biological and climatological evolution of the continent is being revealed. A synthesis of data available so far for the Quaternary has resulted in the setting up of a climatic model which may serve as a basis for future research (van Zindern Bakker, Palaeoecology of Africa 9).

The newsletter lists the projects and recent publications of 16 palynologists working on African material, as well as new and noteworthy publications in related disciplines. For more details please contact the C.A.P. Newsletter editor.

AMERICAN ASSOCIATION OF STRATIGRAPHIC PALYNOLOGISTS. INC.

A.A.S.P. was founded on December 8-9, 1967, at Tulsa, Oklahoma and had its first annual meeting on October 17-19, 1968, at Louisiana State University. Membership in the association has subsequently risen to over 550, with about 55% of members residing in the United States. A.A.S.P., Inc., distributes four newsletters each year, an annual membership directory and holds an annual meeting, the proceedings of which were initially published in Geoscience and Man and are now published in the journal Palynology.

ARBEITSKREIS FÜR PALÄOBOTANIK UND PALYNOLOGIE (received from Dr. F. Schaarschmidt, Frankfurt-am-Main, West Germany)

The "Arbeitskreis für Paläobotanik und Palynologie" was started nine years ago for German-speaking paleobotanists and palynologists. One, two-day meeting is held each spring at various locations. Membership is presently about 160 and no dues are charged. An annual report is published which includes a bibliography and other short contributions. This is available to members at a cost of 7.50 DM.

ASSOCIATION DE PALYNOLOGUES DE LANGUE FRANÇAISE

Circulars for January and March 1979 and the 1979 Annuaire have been distributed and indicate approximately 250 members in the Association. The association has the following officers: **President**, Ph. Guinet; Vice-President, H. Straka; Secretary, C. Caratini; Treasurer, J.J. Chateauneuf; Members, R. Bonnefille, M.Th. Cerceau, J. Renault-Miskovsky, E. Roche, M. Schuler, J. Tougourdeau. Presidents d' Honneur are M. van Campo and C. Sittler.

Annual membership in the Association is 20 French francs sent to J.J. Chateauneuf, B.R.G.M., B.P. 6009, 45018 Orleans Cedex, France.

BRITISH MICROPALAEONTOLOGICAL SOCIETY

The ninth newsletter of the B.M.S., "The British Micropalaeontologist", was distributed in February, 1979, and included a comprehensive history of the society which was founded in 1970.

The Society membership is now 314, and the following 1978-1979 Committee was elected at the Annual General Meeting on November 15, 1978: Chairman, J.W. Murray; Secretary, A.C. Higgins; Treasurer, R.H. Bate; Editor, M.D. Brasier; Palynology Section, W.L. Diver, G.C. Wilkinson; Microplankton Section, G.A. Booth, K.J. Dorning; Foraminifera Section, D.G. Jenkins, S.S. Radford; Ostracods Section, C.W. Haskins, A. Lord; Conodonts Section, W.J. Varker, M.J. Reynolds.

Membership in the B.M.S. is now £ 2.00 to North American members, with the newsletter sent airmail three times a year. Details from Kenneth J. Dorning, Secretary O.W.M.G., c/o Palynology Department, Pallab Research, 58 Robertson Road, Walkley Bank, Sheffield S6 5DX, England.

INDIAN ASSOCIATION OF PALYNOSTRATIGRAPHERS (reprinted from the A.A.S.P. Newsletter, vol. 12, no. 2)

Indian Palynologists have formed the Indian Association of Palynostratigraphers (I.A.P.). The Association is devoted to the augmentation and dissemination of palynological data as a tool for biostratigraphical studies. The Association supports projects of general interest to palynostratigraphers, provides a platform for the presentation of research studies before a competent and critical audience, and furnishes avenues for publication of research studies.

The I.A.P. plans to publish a journal of an internationl standard and wishes to bring out the inaugural number by January 1980. Enquiries in this connection may be made to Dr. Hari K. Maheshwari, Birbal Sahni Institute of Palaeobotany, 53 University Road, Lucknow 226 007, India.

Managing Council of I.A.P. for 1979: President, Dr. D.C. Bharadwaj; Vice-President, Dr. S.C.D. Sah; Secretary, Dr. K.P. Jain; Treasurer, Dr. R.S. Tiwari; Business Manager, Dr. H.P. Gupta; Editor, Dr. Hari K. Maheshwari; and Councillors, Dr. S.K. Dutta, Mr. H.M. Kapoor, Dr. C.G.K. Ramanujam, Dr. S.K. Srivastava, and Dr. B.S. Venkatachala.

INTERNATIONAL ASSOCIATION FOR AEROBIOLOGY

The International Aerobiology Newsletter, number 10, was circulated in April, 1979 and included the following articles and reports:

"A study of pollen release in *Betula* and *Pinus* in relation to prevailing temperature and relative humidity", by Leelal Pathirane;

"Predicting the length of the main pollen season for *Betula* in the Stockholm area", by Leelal Pathirane; "Pollen in Eskilstuna, Sweden and publishing a 'Pollen-bulletin' 1978", by Kjell Arne Larsson; "Intermediate report from the I.A.A. Working Group: The teaching of aerobiology", by Walter K.R.E. Winger den.

INTERNATIONAL COMMISSION FOR PALYNOLOGY

Volume 1, number 2 of the I.C.P. Newsletter was circulated in December, 1978. This included details of the forthcoming Fifth International Palynological Conference to be held in Cambridge from June 29 to July 6, 1980, with a tentative list of 25 topics proposed for special sessions and 13 proposed field trips.

The newsletter also gave details of other future meetings and symposia, news from other palynological societies and a report taken from a comprehensive 29 page manuscript written by Dr. J. William Schopf (Department of Earth & Space Sciences, University of California, Los Angeles) entitled "On Paleobiology, Palynology and Related Studies in China, 1978".

PALYNOLOGISCHE KRING

(received from C.R. Janssen, State University of Utrecht 2506, The Netherlands)

The Palynologische Kring was founded on October 4, 1968, under the umbrella of the Royal Geological and Mining Society of the Netherlands in order to create a platform for discussion of paleo-oriented scientists, especially palynologists including fields as diverse as geography, biology, geology and archeology. Palynology in the Netherlands is being carried out at 14 Institutes and present membership in the Kring is 75.

The executive consists of the Chairman, C.R. Janssen; Secretary, G.W.F. Herngreen, Treasurer, B. van Geel; and three members, C.C. Bakels, W.A. Casparie and D. Teunissen.

Meetings are held three or four times a year and often take the form of symposia. Symposia in the last few years included topics such as floral provinces, vegetation history of the Mediterranean, palynology and geomorphology, and palynomorphs other than pollen. An annual meeting is held in early spring each year.

The newsletter is circulated annually to members and includes (1) progress reports on research at various institutions; (2) the annual report of the state of affairs of the Kring; (3) the general program planned for the upcoming year; (4) personalia; and (5) information on congresses and symposia.

The Kring also takes care of the continuation of the "Belgium-Dutch palynological days", which is a two-day event each year organized in turn by the palynological institutes in Belgium and Holland, including talks and an excursion around sites recently under investigation.

RECENT PUBLICATIONS

Barss, M.S., Bujak, J.P. and Williams, G.L., 1979, "Palynological zonation and correlation of sixty-seven wells, eastern Canada", Geological Survey of Canada, Paper 78-24, p. 1-118. (Catalogue number M44-78/24.) Order from the Canadian Government Publishing Centre, Supply and Services Canada, Hull, Québec, K1A 0S9. Price in Canada is $3.00 and to other countries is $3.60.

Bujak, J.P. and Williams, G.L., 1978, "Cretaceous palynostratigraphy of offshore southeastern Canada", **Geological Survey of Canada, Bulletin 297.** (Catalogue number M42-297.) Available as for Barss *et al.* above. Price in Canada is $5.00 and to other countries is $6.00.

"Distribution of biostratigraphically diagnostic dinoflagellate cysts and miospores from the northwest European continental shelf and adjacent areas", 1978, edited by Bindra Thusu, Continental Shelf Institute Publication Number 100, 111 p. This book includes contributions by D.J. Batten, R.J. Davey, R.E. Dunay, S. Duxbury, R. Harland, S.J. Morbey, L.A. Riley and B. Thusu. It is published by the Continental Shelf Institute, P.O. Box 1883, N-7001, Trondheim, Norway.

Drugg, W.S., 1978, "Some Jurassic dinoflagellate cysts from England, France and Germany", Palaeontographica, volume 168B, p. 61-79.

Jansonius, J., 1978, "A key to the genera of fossil angiosperm pollen", Review of Palaeobotany and Palynology, vol. 26, p. 143-172.

PALINOLOGIA, núm. extraord. 1, December 1978, edited by F.H. Cramer, M. del Carmen, R. Díez and M. Gutierrez, published by the Instituto Palinológico, Apartado 244, Léon, Spain. This volume contains 42 papers presented at the Coloquio Internacional de Palinologiá, Léon, September 5-10, 1977.

Playford, G., 1978, "Lower Carboniferous spores from the Ducabrook Formation, Drummond Basin Queensland", Palaeontographica, volume 167B, p. 105-160.

COMPOSITION OF SCIENTIFIC WORDS

(reprinted from the Palaeontological Association Circular, number 95)

Many members will be pleased to hear that this book was reprinted in 1978: the revised edition first **appeared in 1956. It is a manual of methods and a** lexicon of materials for the construction of words from classical roots, compiled by R.A. Brown.

Copies may be ordered from the Smithsonian Institution Press, P.O. Box 1579, Washington, D.C. 20013, U.S.A. The price of the book is $12.50 U.S. Prepaid orders may have the book shipped by special 4th class rate - book rate - anywhere in the United States and Canada for a $1.00 handling charge. Any order which is not prepaid will be billed actual costs for postage and handling. **Prepaid foreign orders may have the** book sent by surface mail - book rate - anywhere in the world for a $1.50 handling charge.

GENERA FILE OF FOSSIL SPORES

A Special Publication of the Department of Geology, University of Calgary by J. Jansonius and L.V. Hills. Since the Genera File now has several Supplements, details of these and their prices are given below.

	Institution	Individual
Original set (cards 1-3287)	$130 (1st set) $100 (additional sets) plus postage	$60 (per set) plus postage
Supplement 1977 (cards 3288-3431)	$7.50	$7.50
Supplement 1978 (cards 3432-3520)	$6.50	$6.50
Supplement 1979 (cards 3521-	To be announced	

Postal rates are $7.00 in Canada, $10.00 to the U.S.A. and $19.00 to all other countries. Order forms can be obtained from Dr. L.V. Hills, Department of Geology, University of Calgary, Alberta T2N 0Z7.

GÉOGRAPHIE PHYSIQUE ET QUATERNAIRE

(The following is taken from a circular distributed by the journal)

"Géographie physique et Quaternaire succeeds to the Revue de géographie de Montréal. This change of name became essential in view of better defining its range of studies to its authors and readers. The journal thus publishes works dealing with the various processes by which are formed the physical features of the earth's surface (geomorphology, climatology, hydrology, pedology and biogeography). It is also a medium for the results of field work on the Quaternary, an era studied by many, different specialists, geologists, biologists, archaeologists and others.

Although the official language of the journal is French, we do accept manuscripts written in English. Moreover, all articles are preceded by abstracts written in French, in English and in a third language at the author's choice.

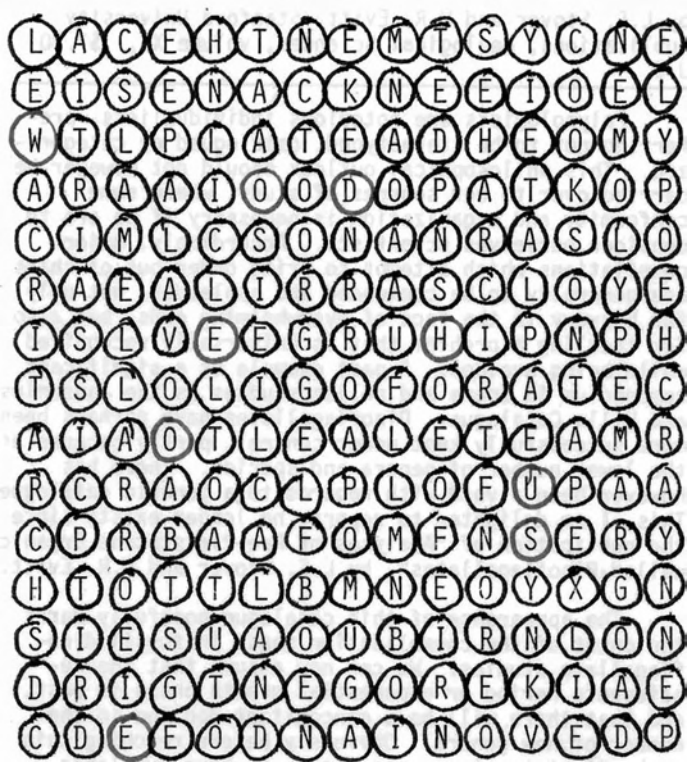
The unique geographical position of Québec on the North American continent may be the occasion for our journal to bring forward new links between French and English speaking specialists from all parts of the world."

The journal is issued quarterly for a yearly subscription of $20.00 for individuals and $25.00 for institutions, from Les Presses de l'Université de Montréal, C.P. 6128, Succ. "A", Montréal, Québec H3C 3J7.

A special issue dealing with the First International Symposium on the Geological Action of Drift Ice, and edited by Jean-Claude Dionne is available for $12.00 (Revue de géographie de Montréal, 1976, vol. XXX, nos. 1-2, 240 pages, paperback).

PALYPUZZLE

Here is a puzzle to keep you occupied until the next newsletter.



All of the words and names in the list below are to be found in the above puzzle, in a horizontal, vertical and diagonal direction. Some letters are used in more than one word. Find the words and circle each letter individually. When complete 9 letters will remain unused which will spell the name of a well known palynologist.

ACRITARCHS
ALETE
APEX
ARCHEOPYLE
ARCI
ASPIS
COOKSON
CRETACEOUS
DEUNFF
DEVONIAN
DINOFLAGELLATE
DISTAL
EISENACK
ENCYSTMENT
GLOBOID
GRANA
GROOT
ICP
KEROGEN
KNEE
KREMP
LAMELLAR
LOBATE
MARGO
MONO
NODE
OLIGOFORATE
OVAL
PALYNOLOGICAL
PENNY
PFLUG
PLATE
PLATEA
PYLOME
RIB
STRATIGRAPHIC
THECAL
TRIASSIC

W O O D E H O U S E Solution 9 letters

REVIEWS

Analyses of Pre-Pleistocene Organic-walled Dinoflagellates

by L.E. Stover and W.R. Evitt, Stanford University Publications, Geological Sciences, volume XV, $7.50 U.S.

Palynologists are notorious individualists, preferring not to be stereotyped, catalogued or categorized. This philosophical outlook should not however be carried over to our spheres of study, where some conformity and organization is necessary if we are to consider ourselves scientists. Accordingly, major compilations which attempt to bring order out of chaos are generally to be commended and applauded, not only for bravery in the face of overwhelming odds, but also for tackling a problem that is universally recognized while being avoided. A past example of a significant compendium in spore and pollen studies is the Jansonius and Hills Catalogue. Dinoflagellates have perhaps been more successfully kept under control, partly because of the lower number of genera and species. There has however been a void with regards to a generic catalogue. This, I am delighted to report, no longer exists since the publication of "Analyses of Pre-Pleistocene Organic-walled Dinoflagellates", by L.E. Stover and W.R. Evitt.

The appearance of this catalogue hopefully marks the onset of the consolidation phase in fossil dinoflagellate studies. We can now assume that the Renaissance Period or exponential growth phase is past, and that there will be a concomitant decline in the number of new genera. Obviously before reaching this euphoric state, it was necessary to have available, not only a listing of genera with accompanying original diagnoses, but also an appraisal of their status and validity. The appeal would be increased by standardized descriptions and adoption of recent terminology. This is where the Stover and Evitt compilation succeeds For the first time 279 dinoflagellate genera are evaluated and, where found wanting, are gently discarded. It is inevitable that in any such study there arises a need for new genera, so that one has to remember 17 new names. This is a small price to pay for the suppression of 22 others. All the above genera are listed in the Summary and are readily identified. It is only by painful search however that the 17 emended genera are determined, a list of which I can supply upon request.

The major part of the catalogue, I use the term because it seems an apt title, is devoted to a discussion of each genus. Invariably the original diagnosis, a synopsis, modified or emended description, comparison and a list of species are provided. The species within a genus are included under one of four subheadings: type species, other accepted species, provisionally accepted species and problematical species. This compartmentalization will cause some confusion especially with future authors of indices, but does provide an insight into the philosophy and thinking of the two authors. The genera are arranged alphabetically within five major categories. These are delineated according to archeopyle types so that we have the three obvious groups, apical, intercalary and precingular, with two less clearly defined subdivisions. These are genera with combination archeopyles, and other genera. This causes problems since it separates species with the same basic paratabulation or even "species" of the same genus. I personally prefer a strictly alphabetical listing since I can remember my A, B, C, more readily than archeopyle differences. I also have misgivings concerning the present tendency to place undue emphasis on the archeopyle. This is a minor criticism, especially since the indexing and cross-referencing of the catalogue are superb.

The remaining pages of the catalogue are largely devoted to Appendices A through J, each of which highlights specific problems. The discussion of the *Gonyaulacysta* complex is particularly valuable since it is illustrated. I also appreciated the tabular presentation (or should I have said paratabular presentation) of selected generic characteristics both in this group and the peridiniaceans. The value of the appendices however is limited by the reader's familiarity with this section. With this in mind it is perhaps regrettable that reference is not made under individual genera to the appendix or appendices in which they are discussed. This would have drawn attention to several discussions of importance in differentiating genera and also to explaining the authors' beliefs.

The major impact of this work is in the style of presentation and standardization adopted for generic descriptions. Morphology is presented under the following subheadings: shape, wall relationships, wall features, paratabulation, archeopyle, paracingulum, parasulcus and size. Once the order is indelibly imprinted on one's mind, it is very easy to check salient morphological features and compare genera. It is also advantageous to other workers adopting the same format since it forces standardized observations. Whether the world of palynology is ready for this is another matter. It is however worth serious consideration and deserves constructive, rather than the more frequently encountered destructive, comment.

The appraisals of individual genera are extremely thorough and erudite. Only in very few instances do I disagree with the authors' interpretations, and then it is generally minor. I am impressed by their detailed morphological observations and their subdivision of the gonyaulacacean complex. They also draw attention to some subtle differences in the peridiniacean genera. Throughout there is a serious attempt to retain existing genera, a commendable trait in today's world.

I have never written a totally salutory review and intend to preserve my record. I originally hoped that the Stover and Evitt compilation would be self-sustaining. This however cannot be since there is a dearth of illustrations. I consider it essential in any generic catalogue to illustrate each genus, especially if new genera are erected. Unfortunately there are only two text-figures, both extremely useful and informative but lamentably hidden in Appendix F. This oversight causes misunderstanding in interpretation of genera and should be rectified by the publication of a supplement.

The ability of a publication to stand on its own will often be reflected in its wide acceptance. Although the present work will become a standard it cannot be used without constant reference to previous works. This is a mixed blessing especially for the beginner, since he must obtain prior publications often of an obscure nature. For instance it is not possible to use the catalogue without reference to

Evitt *et al.*, 1977, or Lentin and Williams, 1977. This helps to increase the demand for these papers, no small consideration, but places considerable onus on the individual to upgrade his reprint collection. Perhaps this is as it should be, although the inclusion of a glossary and more information on individual species would have been helpful.

As stated earlier I would have preferred a strictly alphabetical listing of the genera. This would make the catalogue universally accessible while not placing the "whole" of the emphasis on the archeopyle. It would also be beneficial to have more discussion of suppressed genera, even perhaps including them in the main text. I would have appreciated a generic range chart which would have highlighted an increasing trend towards differentiation on age. These points however are minor criticisms.

The Stover and Evitt compendium is an impressive achievement, representing several years study. The two authors deserve every commendation for their perseverance which has helped to resolve several ambiguous situations. The catalogue is a necessity for all dinoflagellate workers who wish to be conversant with their science, and who for once cannot excuse their ignorance because of a high purchase price. The value is excellent, the printing of the highest order and the proof reading almost faultless. I recommend that every student of dinoflagellates purchase at least one copy of this standard work which hopefully will not be referred to as Blue Book II.

Graham L. Williams

References

Evitt, W.R., Lentin, J.K., Millioud, M.E., Stover, L.E. and Williams, G.L. 1977. Dinoflagellate cyst terminology. *Geological Survey of Canada Paper* 76-24, pp. 1-11.

Lentin, J.K. and Williams, G.L. 1977. Fossil dinoflagellates - index to genera and species, 1977 edition. Bedford Institute of Oceanography Report Series BI-R-77-8.

The following review is reprinted from the British Micropalaeontologist, number 8.

Haq, B.H. and Boersma, A. (eds.) 1978. *Introduction to Marine Micropaleontology*. Elsevier, New York, 376 pp., hardback, $U.S. 24.00.

At last, here is a book that substantially achieves what it sets out to do. Planned to provide a well-illustrated, concise, introductory account of the main groups of microfossils used in the study of the marine environment, this is essentially what it is.

Using a variety of types of illustration: scanning and transmission electron micrographs, reflecting and transmission light micrographs and line and stipple hand-drawn figures, this volume sets out to cover all the principal marine microfossil groups. Although the editors are best known for their work in oceanic and palaeoceanographic micropalaeontology, in which there has been such a major expansion in the last two decades, in this volume they have brought together specialists for all groups of marine microfossils to contribute chapters on: foraminifera, calcareous nannoplankton, ostracodes, pteropods, calpionellids, calcareous algae, bryozoa, radiolaria, diatoms, silicoflagellates and ebridians, conodonts, dinoflagellates and acritarchs, spores and pollen, and chitinozoa. All contributors have been required to conform to a standard (but not too standard) outline emphasising biology, classification, stratigraphic range, and use in palaeoenvironmental problem-solving, and playing down such topics as taxonomy, preparation techniques, etc. on which a plethora of information is readily available from the up-to-date lists of Suggested Further Reading.

The result is a successful, interesting-looking book that should appeal to students, and to others wishing to get an overview or introduction to this subject. For once the price, especially in view of the very numerous half-tone and line illustrations, is not too steep by modern standards.

On the debit side, in spite of the impressive lists of acknowledged specialists that reviewed or provided materials for individual chapters, the text cannot ultimately be regarded as authoritative. Without deliberately looking for errors, I noted some rather curious definitions of the CCD (Calcite Compensation Depth), some rather dogmatic and potentially misleading statements about the interpretation of oxygen isotope ratios, and small errors like the repeated use of 'Opistobranch' for 'Opisthobranch' in the chapter on Pteropods. I suspect this may be only the tip of an iceberg. No doubt some of the less satisfactory sections, e.g. on biology and ecology, have suffered particularly from the requirement to write so concisely. Nonetheless some treatment is consistently given, and in any case, is it not almost a boon for an instructor if a college text is not quite perfect, as it leaves legitimate scope for him or her to exert his or her own authority? Also it teaches the student not to believe too implicitly everything they see in print.

In summary, a well worthwhile book, whose editors will, I expect, be well pleased if it succeeds in attracting a wider circle of students and scientists into the closer study of the individual marine microfossil groups and their definitive literature.

Brian M. Funnell, School of Environmental Sciences, University of East Anglia.

The following review is reprinted from the International Aerobiology Newsletter, number 10.

Bassett, J.J., Crompton, C.W. and Parmelee, J.A. 1978. *An Atlas of Airborne Pollen Grains and Common Fungus Spores of Canada*. Research Branch Canada, Department of Agriculture, Monograph No. 18, 1978. 321 pp. Price $12 Canadian (in Canada), $14.40 Canadian (other countries).

With the new pollen and spore atlas written by three well-known scientists, aerobiology has received another important piece of work. The book contains descriptions of more than 140 airborne pollen and several spore types. These descriptions are accompanied by photographs (light micrographs, usually at X1000 and scanning electron micrographs). Part one, dealing with pollen grains, includes introductory chapters on the sampling method used (Durham sampler)

and collections at Ottawa during 1952-1974. Ragweed pollen air indices for Canada, a distribution map and a table showing flowering and relative abundance of hay-fever plants in the different Canadian provinces are given. The pollen grains were taken from herbarium specimens, acetolysed and mounted in silicone oil. Voucher slides are deposited at the Biosytematics Research Institute in Ottawa.

Keys are given to pollen grains and spores (cormophytes) of 145 Canadian taxa arranged, in principle, in accordance with Pollen Classes of Faegri and Iversen (1964) and McAndrews (1973). The species names are consistently given in Latin and English and are followed by descriptions based on light microscopy and S.E.M. studies. The fruiting or flowering periods are given, as is plant distribution. Invaluable notes on morphological similarities, data on pollination, allergenecity, etc. are also presented. Pollen keys to genera or species are often included. A glossary of terms and reference list conclude the first part.

The second part of the book deals with airborne fungus spores. In an introductory chapter, characteristics of fungi, e.g. ontogeny, spore liberation, seasonal and daily variations, etc., are presented. The fungus spore descriptions also are very consistent, including data on fructification, mode of release of spores, distribution and substrate. Informative notes are added. A glossary and list of references are presented at the end.

The new Canadian atlas contains rich and logically presented information on pollen and spore morphology. The illustrations, however are not always up to the same high level. Morphological details are not clearly shown and the contrast is often too low, probably because of the poor quality of paper chosen. Occasionally references to figures in the text are missing. The list of references, although extensive, omits some recent atlas works, such as Charpin, Surinyach and Frankland (eds.): Atlas of European Allergenic Pollens (1974); Nilsson, Praglowski and Nilsson: Atlas of Airborne Pollen Grains and Spores in Northern Europe (1977); and Markgraf and D'Antonio: Pollen Flora of Argentina (1977)[1].

An Atlas of Airborne Pollen Grains and Common Fungus Spores of Canada deserves to be included among the ranks of other authoritative works covering regional pollen and spore floras. Moreover the inclusion of airborne fungus spores makes it a pioneer work of its kind.

Siwert Nilsson,
Palynological Laboratory,
Swedish Museum of Natural History, S-104 05 Stockholm, Sweden.

[1]John Bassett has informed me that reference to the two European atlases was omitted because the Canadian atlas was with the editor for about two years before publication.

Editor

DINOFLAGELLATE CYST TYPE IS A POINTER TO WATER DEPTH

(reprinted from The British Micropalaeontologist, number 8)

I am indebted to Mr. S. Duxbury for bringing to my attention some confidential, but outstanding, research 'of prime importance to British scientists'. The singular, short extract will not, I hope, inflame Mr. R.K. O'Pile to fight? (Editor of The British Micropalaeontologist).

Dear Sir, - This establishment is at present concerned with research into water depth/dinoflagellate cyst-type correlation with a view to the practical employment of such knowledge in the Fisheries Industry. For four years, our senior scientists have been working on this subject and have established three basic rules, each of which are of paramount importance in understanding the workings of a marine circum-ecosystem. I have listed the three basic rules below and I would welcome any criticisms or otherwise.

(1) This is a fundamental principle which must always be applied when considering marine environments. The team led by Prof. N. Docile of Kerry has been considering the occurrence in some sediments of only proximate dinoflagellate cysts associated with flat acritarchs such as *Pterospermella*. In other deposits, long-processed, spheroidal cyst types such as *Oligosphaeridium* occur. It is the opinion of Prof. Docile's team that such variations in assemblages may be used to indicate water depth. Prof. Docile points out that the proximate assemblage is composed of flat forms, no more than 20 microns in thickness. On the other hand, species of *Oligosphaeridium* are at least 60 microns across. It is the contention of Prof. Docile's team that an association of proximate cysts with *Pterospermella* but without *Oligosphaeridium* must indicate a water depth of between 20 and 60 microns (most probably 40 microns). With progressively greater water depth, progressively thicker dinoflagellate cysts may be found.....

R.K. O'Pile, (Director),
Dept. Mines and Fisheries,
Solanum tuberosum House,
Peel Street, Dublin.

CALENDAR OF EVENTS

1979

June 21: Paleobotanical Symposium on "Landmark Events in the Evolution of Plants", Carleton University, Ottawa. The symposium, co-sponsored by the Canadian Botanical Association (C.B.A.) and the Canadian Association of Palynologists, will be part of the program of the fourteenth annual meeting of the C.B.A. Early evolution of land plants, origin and evolution of conifers, and early evolution of phytoplankton will be among the topics presented. Further information may be obtained from D.C. McGregor, Geological Survey of Canada, Ottawa, Ontario, K1A 0E8 (phone 613-995-4680).

August 12-17: Meeting of the Paleobotanical Section of the Botanical Society of America, Oklahoma State University, Stillwater. Includes a field trip and special symposium on pteridosperms. Details from Charles Miller, Department of Botany, University of Montana, Missoula, Montana 59801.

September 21: Joint meeting of the British Micropalaeontological Society and the Palaeontological Association on "Evolutionary Lineages and Selection Pressure", Sheffield University, England. Details from Dr. S.S. Radford, Magpie Cottage, Weston Green Road, Thames Ditton, Surrey KT7 0JN, England.

October 16-18: Fourth Symposium of the Association de Palynologues de Langue Française on "Palynologie et climats", Paris. Details from Dr. Y. Reyre, compte no. 088 342/27, BNP, 31 rue Jussieu, 75005 Paris. Note - the date of this symposium is as shown above and not October 8-11 as indicated in the previous C.A.P. Newsletter.

October 29-November 3: Twelth Annual Meeting of the American Association of Stratigraphic Palynologists, Dunfey's Inn, Dallas, Texas. October 29-30: Fluorescence Microscopy Workshop(s), conducted by Dr. Pieter Van Gyzel. October 31: Symposium on Kerogen - Visual and Chemical Relationships, chaired by Dr. Frank Staplin. November 1-2: Technical Sessions. November 3: Field Trip led by Dr. Wann Langston Jr. and Dr. Bob Perkins, featuring dinosaur tracks, invertebrate fossils and reefs.

1980

June 29-July 6: Fifth International Palynological Conference (V.I.C.P.), Cambridge, England. Details from Mrs. G.E. Drewry, Department of Geology, Sedgwick Museum, Downing Street, Cambridge CB2 3EQ, England.

July 19-25: British Micropalaeontological Society Symposium on "The Micropalaeontology of Shelf Seas, Fossil and Recent", Hull University, England. Details from Dr. M.D. Brasier, Geology Department, The University, Cottingham Road, Hull HU6 7RX, England.

1982

August: Second International Conference on Aerobiology, Seattle. Details from Dr. R.L. Edmonds, College of Forest Resources, University of Washington, Seattle, Washington 98195, U.S.A.

NIGHTCAP

Here are two articles ŧø/ɛłøśɛ/WiŧH.with which to close.

BAD GRAMMAR DON'T HELP AGENCY'S IMAGE

"What's SUP" is a newsletter put out by the Naval Supply Systems Command (NAVSUP). A recent issue lists the following rules for good writing - good for the Navy, DOE staffers and civilians.

1. Don't use no double negative.
2. Make each pronoun agree with their antecedent.
3. Join clauses good, like a conjunction should.
4. About them sentence fragments.
5. When dangling, watch your participles.
6. Verbs has to agree with their subject.
7. Just between you and I, case is important to.
8. Don't write run-on sentences they are hard to read.
9. Don't use commas, which aren't necessary.
10. Try to not oversplit infinitives.
11. Its important to use your apostrophe's correctly.
12. Proofread your writing to see if any words out.
13. Correct spelling is esential.

U.S. Department of Energy
Energy Insider, v.1, no. 25
September 18, 1978

THERMOGRAPHY NOTICE

Heaven is Hotter than Hell

The temperature of Heaven can be rather accurately computed from available data. Our authority is the Bible: Isaiah 30:26 reads, "Moreover the light of the Moon shall be as the light of the Sun and the light of the Sun shall be sevenfold, as the light of seven days". Thus Heaven receives from the Moon as much radiation as we do from the Sun and in addition seven times seven (49) times as much as the Earth does from the Sun, or fifty times in all.

The light we receive from the Moon is one-ten-thousandth of the light we receive from the Sun, so we can ignore that. With these data we can compute the temperature of Heaven. The radiation falling on Heaven will heat it to the point where the heat lost by radiation is just equal to the heat received by radiation. In other words, Heaven loses fifty times as much heat as the Earth by radiation. Using the Stefan-Boltzmann fourth-power law for radiation

$\frac{H^4}{E} = 50$ where E is the absolute temperature of the Earth - 300K.
This gives H as 798K (525 degrees C).

The exact temperature of Hell cannot be computed but it must be less than 444.6°C, the temperature at which brimstone or sulphur changes from a liquid to a gas. Revelations 21:8, "But the fearful and unbelieving....shall have their part in the lake which burneth with fire and brimstone". A lake of molten brimstone means that its temperature must be below the boiling point, which is 444.6°C (above this point it would be a vapour, not a lake).

We have, then, temperature of Heaven, 525°C. Temperature of Hell, less than 445°C. Therefore, Heaven is hotter than Hell. (Ref: Applied Optics, II A14(1972).

Reprinted from C.C.R.S.

NEW MEMBERS

J. Chris Earle, U. of Waterloo, Marie Anne Geurts, U. d'Ottawa, and Barry G. Warner, U. of Waterloo joined C.A.P. since publication of last newsletter. Full details will be given in the next issue.

CANADIAN ASSOCIATION OF PALYNOLOGISTS

ASSOCIATION CANADIENNE DES PALYNOLOGUES

CONSTITUTION

Name

The name of the association will be "The Canadian Association of Palynologists".

Objectives

The objectives of the Association will be to advance and encourage all aspects of palynology in Canada, and to promote cooperation between palynologists and those engaged in related fields of study.

Membership

The Association will consist of members. A member may be any person having a scientific interest in palynology.

Officers

The Officers of the Association will be the Executive Committee, consisting of a President, a President-Elect, a Secretary-Treasurer, and a Newsletter Editor.

Bylaws

Bylaws, not inconsistent with the Constitution, will be adopted as required.

Amendments

Notices of motion for amendments to the Constitution and Bylaws, signed by at least four members of the Association, will be submitted to the Secretary-Treasurer in writing.

Amendments will be effected by a majority vote of the members, provided that at least two-thirds of the members participate in the vote. Ballots must be mailed to members at least twenty-eight days prior to tabulation of the votes.

BYLAWS

Membership

Membership in the Association, by application to the Secretary-Treasurer, is subject to approval by the Executive Committee, and becomes effective on receipt of annual dues in full by the Secretary-Treasurer.

Only persons residing in Canada are eligible for membership.

Membership may be terminated not less than sixty days after notification by the Secretary-Treasurer that dues are in arrears.

Dues

The Executive Committee may determine from time to time the amount of the annual dues payable in Canadian currency to the Association by members. Dues will be payable on or before the first day of the calendar year.

3. Executive Committee

(a) The Executive Committee will be elected by mail vote of the members of the Association, before January 1, and will serve for one calendar year.

(b) An interim vacancy in the Executive Committee will be filled by a member in good standing selected by the remaining members of the Executive Committee. Such a replacement will serve for the unexpired term of his predecessor. Members serving a replacement term are eligible for renomination the following year.

(c) The President-Elect will not be eligible for re-election to that office until three years have elapsed.

(d) An officer may be expelled from office, after an appropriate hearing, by a vote of two-thirds of the membership.

(e) Advance notice of Executive Committee meetings will be given to all Officers by the Secretary-Treasurer. The accidental omission of notice of any Executive Committee meeting, or non-receipt of notice by an Executive Committee member, will not invalidate any resolution passed or any proceedings taken at such a meeting, providing there is a quorum. Members may attend, but will not vote, at any meeting of the Executive Committee.

(f) Three Officers will constitute a quorum at Executive Committee meetings.

(g) The President will call all meetings of the Executive Committee, will preside at meetings of the Executive Committee, and will have a casting vote in the event of a tie vote.

(h) The President-Elect will automatically succeed to the Presidency for the next regular term of office. He will assume the powers and duties of the President when the President is unable to perform executive duties.

(i) The Secretary-Treasurer will keep the records of the proceedings of the Executive Committee, notify Committee members of their election or appointment, issue notices of all meetings, and keep a complete list of members' names and addresses. He will collect and disburse funds and have custody of all funds, securities and other investments of the Association. He will keep records of all receipts and disbursements of funds and other financial transactions. The Secretary-Treasurer will be responsible to the Executive Committee. He will submit annually to the membership a report of the financial status of the Association.

(j) The Newsletter Editor will produce, and distribute to the members, at least two issues of the Newsletter in each calendar year. He will be responsible to the Secretary-Treasurer for financial transactions involving the newsletter.

4. Nominating Committee

The Nominating Committee will be appointed by the Executive Committee, and will consist of two members not presently holding office in the A Association. They will nominate candidates for office, and may receive additional nominations

signed by at least four members of the Association. The Nominating Committee will include all valid nominations on a ballot that will be mailed to every member, at least forty-five days prior to counting of the votes. They will tabulate the vote and submit a list of the elected Officers to the Newsletter Editor for inclusion in the Newsletter.

5. Other Committees

Other Committees may be appointed by the Executive Committee for the purpose of transacting any business, or investigating any subject related to the objectives of the Association.

ASSOCIATION CANADIENNE DES PALYNOLOGUES

CANADIAN ASSOCIATION OF PALYNOLOGISTS

CONSTITUTION

1. Nom

L'association s'appellera "Association canadienne des palynologues".

2. Objectifs

L'association aura pour but de favoriser l'avancement de tous les aspects de la palynologie au Canada, et de promouvoir la coopération entre les palynologues et les chercheurs oeuvrant dans des disciplines connexes.

3. Adhésion

L'association sera constituée de membres. Toute personne ayant un intérêt scientifique en palynologie peut être membre de l'association.

4. Bureau

Les membres du bureau de l'association constitueront le comité exécutif, formé du président, du futur président, du secrétaire-trésorier et de l'éditeur du bulletin.

5. Règlements

Des règlements pourront être adoptés au besoin, en autant qu'ils ne contreviennent pas à la constitution.

6. Amendements

Les avis de motion visant à amender la constitution ou les règlements, signés par au moins quatre membres de l'association, devront être soumis par écrit au secrétaire-trésorier.

Les amendements devront être approuvés par la majorité des votes, le quorum étant fixé aux deux-tiers du nombre total des membres. Le scrutin doit être posté aux membres au moins vingt-huit jours avant le dépouillement des bulletins.

REGLEMENTS

1. Adhésion

L'adhésion à l'association, sujette à l'approbation du comité exécutif, est adressée au secrétaire-trésorier et prend effet sur réception de la totalité de la cotisation par le secrétaire-trésorier.

Seules les personnes résidant au Canada peuvent devenir membres de l'association.

L'adhésion peut cesser si la cotisation annuelle reste impayée soixante jours au moins après réception de l'avais de non paiement, de la part du secrétaire-trésorier.

2. Cotisation

Le comité exécutif peut fixer de temps en temps le montant de la cotisation annuelle pour ses membres payable à l'association en monnaie canadienne. Ce montant sera acquittable au début de chaque année ou avant la date prévue.

3. Comité exécutif

(a) Le comité exécutif devra être élu par scrutin postal auprès des membres de l'association avant le premier janvier, pour un mandat d'une année civile.

(b) Toute vacance au sein du comité exécutif devra être comblée par un membre en règle choisi par les membres restants du comité exécutif. Le remplaçant exercera sa fonction jusqu'à la fin du mandat de son prédécesseur. Les membres remplaçants sont éligibles au mandat suivant.

(c) Le futur président ne saurait être éligible à une ré-élection à ce même poste avant une période de trois ans.

(d) Un membre du comité exécutif pourra être destitué par un vote des deux tiers des membres, après un examen approprié du litige.

(e) Un avis de réunion du comité exécutif devra êtra donné à tous les membres du comité par le secrétaire-trésorier. L'omission accidentelle ou la non-réception de cet avis, pour toute réunion du comité, ne saurait invalider les résolutions ou les compte-rendus d'une telle réunion à la condition qu'il y ait quorum. Tout membre peut participer à ces réunions, sans droit de vote.

(f) Trois membres du bureau constitueront le quorum aux réunions du comité exécutif.

(g) Les réunions du comité seront convoquées et présidées par le président, qui jouira d'un vote prépondérant dans le cas d'un partage des voix.

(h) Le futur président succédera automatiquement au président pour le prochain mandat. Il devra assumer les charges et devoirs du président lorsque celu-çi ne pourra le faire.

(i) Le secrétaire-trésorier devra prendra charge des procès-verbaux des réunions du comité exécutif, aviser les membres de ce comité de leur élection ou nomination, émettre les avis de toute réunion et tenir une liste complète des membres et de leur adresse. Il recevra et déboursera les fonds et aura la garde de tous les fonds, valeurs et autres investissements de l'association. Il devra tenir un livre de toutes les entrées et sorties de fonds et autres transactions financières.

Le secrétaire-trésorier es responsable devant le comité exécutif. Il devra soumettre aux membres, annuellement, un rapport sur les états financiers de l'association.

(j) Le rédacteur du bulletin devra produire, et distribuer aux membres au moins deux numéros du bulletin par année civile. Il doit répondre au secrétaire-trésorier pour toute transaction financière touchant le bulletin.

4. Comité d'élection

Le comité d'élection sera composé de deux membres n'occupant pas de poste dans l'association, lors de leur nomination par le comité exécutif. Il devra effectuer les mises en candidature pour combler les postes du comité exécutif, et pourra recevoir toute candidature appuyée par au moins quatre membres de l'association ayant apposé leur signature. Le comité d'élection devra inscrire toutes les candidatures valides sur un bulletin de vote posté à chaque membre au moins quarante-cinq jours avant le dépouillement du scrutin. Il devra compter les voix et soumettre au rédacteur du bulletin la liste des membres du bureau, pour publication dans la prochaine édition du bulletin.

5. Autres comités

D'autres comités peuvent être constitués par le comité exécutif pour prendre charge de toute activité ou enquête liée aux objectifs de l'association.

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