



PALYNOLOGICAL SOCIETIES

Volume 21, No. 2 - December, 1998

NEWSLETTER of the INTERNATIONAL FEDERATION of PALYNOLOGICAL SOCIETIES

2000, NEW CENTURY FOR PALYNOLOGY

Liu Gengwu, Secretary-general for IPC-10 announces that the first circular (reproduced below) was mailed September, 1998, to palynologists world wide. If you have not yet received the first circular you should contact Professor Liu at gwliu@jlonline.com. You may also consult the IPC-10 web page at

<http://members.spree.com/sip/spore/index.htm>

or you may register using the registration form that appears below. Deadline for registration is March 31, 1999, please send to:

gwliu@jlonline.com
or mail to:

Secretary of the Organizing Committee for 10th
International Palynological Conference
Nanjing Institute of Geology and Palaeontology
Academia Sinica
39 East Beijing Road
Nanjing, 210008
People's Republic of China

The second circular will be mailed June, 1999,
to those who have responded to the first circular.

FIRST CIRCULAR 10TH INTERNATIONAL PALYNOLOGICAL CONGRESS, NANJING, CHINA

Sponsored by the INTERNATIONAL FEDERATION
OF PALYNOLOGICAL SOCIETIES, AND THE
PALYNOLOGICAL SOCIETY OF CHINA

President of the Organizing Committee:

Song Zhichen

Vice Presidents:

Gao Reiqi, Wang Kaifa, Sun Xiangjun, Xin Yusheng,

Tang Lingyu

Secretary-general:

Liu Gengwu

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Vice Secretary-generals:

Zhao Chuanben, Yin Chongyu, Zhu Huaicheng

SCIENTIFIC PROGRAM and OFFICIAL LANGUAGE

The scientific program will include technical sessions, symposia and posters. The official Language will be English.

The Organizing Committee encourages all attendants to organize symposia and workshops as well as present lectures or posters. The scientific program will cover, but will not be limited to the following fields:

Morphology and Systematics, Ontogeny and Evolution, Palynoflora and Phytogeography, Ecology and Palaeoenvironments, Palynostratigraphy, Sequence Stratigraphy and Energy Exploration, Important Palynological Events and Stratigraphic Boundaries, Quaternary and Archaeological Palynology, Aerobiology and Medical Palynology, Melissopalynology and Forensic Palynology, Marine Palynomorphs, New Developments and Applications in Palynology, and Data Management and Computerization.

SOCIAL PROGRAM AND TOURISM

The social program will include a welcoming party, a closing banquet, a music performance and a tourist excursion. Instructions for accompanying members and other details will be given in the second circular.

ESTIMATED REGISTRATION FEE

US\$300 for participants
US\$160 for students.

ACCOMMODATIONS and CLIMATE

Different categories of hotels of international standard are available. Room rates (with 1 or 2 beds) are from US\$30 to US\$120 (mostly US\$40-US\$80) per night. Average temperature of Nanjing in late June is about 22 °C - 30 °C. All hotels and the convention center are well air-conditioned.

FIELD EXCURSIONS

Plans for the field excursions are not complete. The duration and costs of some excursions are subject to change in the second circular. Excursion costs include accommodations, meals, entrance fees, etc. Transportation fees between Nanjing and field sites are not included. The second circular will provide information needed for making travel arrangements to and from the excursion starting and ending locations, and suggestions made for your consideration.

The proposed field excursions include the following:

A. PRE-CONGRESS:

A1, Louyang-Xi'An, N China, Archeology, 5 days, US\$640

A2, XingJiang, NW China, Mesozoic-Cenozoic, 6 days, US\$720

A3, Kunming-Xishuangbanna, SW China, Modern, 5 days, US\$680

A4, Shanwang-Shenli Oilfield, N China, Tertiary, 3 days, US\$290

A5, Lanzhou-Lhasa, Xizang(Tibet), Cenozoic, 9 days, US\$1240

A6, Nanjing-Yixing, E China, late Palaeozoic, 4 days,

US\$390

B. POST CONGRESS:

P1, Changbaishan, NE China, Modern-Holocene, 6 days, US\$720

P2, Jixian, Tianjing, N China, Precambrian, 3 days, US\$290

P3, XinJiang, NW China, Mesozoic-Cenozoic, 9 days, US\$1080

P4, Lhasa-Zhangmu-Gatmando, Xizang(Tibet), Cenozoic, 5 days, US\$680

P5, Yichang(Three Gorges of the Yangtse River), C China, Early Paleozoic, 4 days, US\$390

P6, W. Liaoning, NE China, Mesozoic, 3 days, US\$280

ATTRACTIONS OF THE CITY

Nanjing is the capital of its province, and has an urban population of about 3 million. The greater metropolitan area hosts many attractive historic and scenic spots. Among the more interesting are the following:

- 1) the 600 year old city walls, known as the world's longest;
- 2) the 800 m long Sacred Path at the Tomb of the First Emperor of the Ming Dynasty, lined with 12 pairs of exquisitely-sculptured stone animals and 4 pairs of official and officer statues;
- 3) the majestic Dr. Sun Yat-sen's Mausoleum;
- 4) the Confucius Temple and the surrounding houses in Ming and Qing style where the traditional Nanjing snacks attract tourists from home and abroad.

In eastern Nanjing the notable sites include the Cliff of A Thousand Buddhas constructed about 1500 years ago with 294 niches and 515 Buddha statues; and the 70 m Yangshan stone tablet carved from the surrounding mountain, the largest in the world. More features of the city will be described in the second circular, which will be distributed in May, 1999, to palynologists who respond to the first circular.

REGISTRATION FORM

Deadline March 31, 1999, please send to:
gwliu@jlonline.com

or mail to:
Secretary of the Organizing Committee for 10th
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A copy of the form appears toward the end of this newsletter.

PROPOSED CONSTITUTIONAL AMENDMENT

Article 17 of the IFPS Constitution states, "The Constitution may be amended only at a plenary session of the General Assembly. The text of any proposed amendment(s) shall be circulated to all members through the affiliated societies at least six months before the plenary session."

Therefore, as proposed during the June 27, 1996 meeting of the IFPS Council, I post the following proposed amendment to the IFPS Constitution, to be voted upon by the IFPS Members present at the Plenary Session at the opening of IPC 10, Nanjing, China, June 24-30, 2000.

The amendment to Article 16 reads:

"Up to \$6000 shall be made available to the organizing committee of the International Palynological Congress, upon their request, to assist with the expenses that may be incurred for organizing the Congress. The amount loaned shall be returned to the Secretary-Treasurer of the IFPS; and in addition, half of any profit accruing from the meeting shall be transmitted to the IFPS along with a detailed account of the financial status of the Congress".

It is to replace the last sentence of Article 16, which currently reads.

"Surplus funds remaining after the final settlement of financial affairs of each International Palynological Congress shall be sent in trust to the Secretary-Treasurer

of the IFPS for transmittal, if needed, to the organizing committee for the next congress."

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NEW PUBLICATION

Ricciardelli D'Albore G., 1997, Textbook of Melissopalynology. 308 p. 157 figs, 32 plates. Apimondia. ISBN 973-605-023-8. Available from APIMONDIA SECRETARIAT - Corso Vittorio Emanuele 101, I-00186 Rome, Italy. tel. and fax ++39 6 6852286 (30 US\$).

The Textbook of Melissopalynology by G. Ricciardelli D'Albore, Italy, is the first book written on this topic written in English in the last one hundred years. It consists of the following chapters: introduction, particulars on palynology, melissopalynology with some important associated topics, such as qualitative and quantitative honey pollen analysis, honeydews, botanical and geographical origin of pollen, propolis, royal jelly, pollen representation problems in melissopalynology, Italian unifloral and multifloral honeys, dichotomous keys of pollen sculptures, dichotomous keys of European pollen, etc. The book contains 157 figures (drawings and pollen spectra at 400x) and 32 plates with about 370 pollen photos at 1000x.

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AASP FOUNDATION ANNOUNCES TWO NEW PUBLICATIONS

The latest Newsletter of the American Association of Stratigraphic Palynologists carried an announcement of the availability of the following publications:

AASP Contributions Series Number 33

Tips and traps of palynomorph sampling, processing, and analysis: an overview.

This volume was edited by Vaughn M. Bryant, Jr. and John H. Wrenn. It is comprised of 17 separate articles, and contains 158 pages and 13 photographic plates. The volume originated as a proceedings volume for a symposium on pollen sampling, analysis, and extraction techniques that was held during the Twenty-seventh Annual Meeting of AASP, College Station, Texas (1995). The contents have been expanded since the meeting, and cover a wide variety of topics ranging from pollen analysis of terebinth resin recovered from an ancient shipwreck, to ultramicrotomy and multiple microscopy techniques for single grain analysis. It would seem that there is something in this book for everyone. It is available for US\$12, postage paid by surface mail.

AASP Contributions Series Number 34

The Lentin and Williams index of fossil dinoflagellates - 1998 Edition.

This volume was edited by Graham L. Williams, Judith K. Lentin, and Robert A. Fensome. It is a large publication, consisting of 817 pages bound in a 3-ring notebook binder. At a cost of US\$47, postage paid by surface mail, this is a bargain publication.

A copy of the order form appears toward the end of this newsletter.



BOOK REVIEWS

Pollen Flora of the Philippines, Vol. 1. Lolita J. Bulalacao. Monographs in Systematic Botany from the National Museum, Philippines, 1997, 266 pages, including 106 plates. Bound, hardback, ISBN 971-718-099-7. Published by Technology Application and Promotion Institute, Special Projects Unit, Department of Sciences and Technology (DOST-TAPI-

SPU), Gen. Santos Avenue, Taguig, Metro Manila, Philippines.

This book can be ordered at Advocate Book Supply Co., 1805 Recto Avenue, cor. Quezon Blvd., Main P.O. Box 1190, Manila, Philippines: US \$ 95, excluding handling and postage. In Europe the volume is available from The Bentham Moxon Trust, Royal Botanical Gardens, Kew, Richmond, Surrey TW9 3AE, UK: UK pound 30 plus postage and packing.

This book represents the first regional pollen flora of the Philippines. The Philippine archipelago, with some 8000 higher plant species, is the eighth most plant-rich country in Asia (Groombridge, 1992). The Philippine flora belongs to the Malaysian phytogeographic region, and, according to recent data, 20-50% of the flora is endemic. Thus, this book on the Philippine pollen flora is relevant for the larger area characterized by the Malaysian flora. The pollen flora of Southeast Asia has been relatively well studied in China, Japan, and Taiwan. Only a few regional studies are available for the rich pollen flora of the Philippine and Indonesian archipelago (Hooghiemstra and Van Geel, in press). Therefore, this book is very relevant for palynological studies in Southeast Asia, and for the tropics generally. This book has been announced as the first in a series, which means there is a fair burden on the shoulders of the author, as well as the publisher, to continue these very welcome pollen morphological studies.

The pollen grains of 453 species, belonging to 264 genera, and 63 families, have been described and illustrated with light microscopy (LM) photographs, supplemented with occasional scanning electron micrographs (SEM). Except for a few large pollen grains, the photographs have been printed at the standard magnification of x 1000. Terminology of the pollen morphological descriptions follows Erdtman (1969), Feagri and Iversen (1989) and Punt et al. (1994).

The book starts with an introduction to the pollen flora, methods used and terminology (pages 1-9). Methods are presented at such a level of detail that it is possible to repeat the total preparation procedure. Unfortunately, a survey of the main vegetation types of the Philippines and the dominant arboreal, shrub and herb taxa, is missing in this book. The section following the introduction comprises the keys to the morphological types (pages 10-26). It is not clear which strategy the

author has followed to decide which taxa should be included in this book, and which ones are scheduled to be included in the following volume(s). Noteworthy are the special keys to the Cyperaceae, Poaceae, Amaranthaceae, Euphorbiaceae, and the Leguminosae. Cyperaceae and Poaceae are mainly keyed out based on size characteristics; use of these criteria will determine if this leads to reliable identifications. If not, this attempt much resembles the curious key in the book Pollen grains of Japan by Ikuse (1956) which is based on size only. The third section in Pollen Flora of the Philippines comprises the pollen morphological descriptions of the pollen taxa; most pollen material came from the Philippine National Herbarium and Kew Herbarium (pages 27-119). All 453 species studied were examined by light microscopy.

For 64 species SEM was also used to study morphological characteristics. Both groups are listed in section four and five on pages 120-139. A glossary of terms is given on pages 140-146, and references on pages 147-154. The author also provides a helpful index of taxonomic names, as well as specific terminology (pages 155-160). However, it is a pity that the index is placed in the middle of the book instead of at the end. On pages 161-266, 106 plates including LM and SEM photographs are shown. The quality (contrast, visible detail on the photographs) varies considerably and is in several places insufficient. The photographs of several families suffer from being dark (e.g. Cycadaceae and Ginkgoaceae) or too light (e.g. Palmae). Each plate has its caption at the bottom which is comfortable to decode the photographs which have not been arranged in a logical way from the top to the bottom. The quality of the plates benefit from the use of glossy paper. The text has been printed with so much space that a number of pages and weight could easily have been avoided.

This book forms a welcome contribution to the documentation of the pollen flora of the Malaysian phytogeographic realm. It is hoped that a second volume will be published within a few years, and some of the points raised in this review will be considered. This book should be present in the library of every pollen laboratory dealing with tropical vegetation.

reviewed by:

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Ikuse, M., 1956. Pollen grains of Japan. Hirokawa Publishing Co., Tokyo: 278 pp + 76 plates.

Punt, W., Blackmore, S., Nilsson, S. and Le Thomas, A., 1994. Glossary of the pollen and spore terminology. LPP Contribution Series, 1: 1-71. LPP Foundation, Utrecht, Netherlands.

Editor's note: I, too, was asked to review this book. Prof. Hooghiemstra has done an excellent job, so I will add only a couple of comments. Plates 58-64 were printed without letters to identify the grains that are illustrated. Consequently, the lists of names that are associated with letters are, to someone unfamiliar with this flora, of limited use. My copy of the book contained a corrigendum that provides a key to the missing letters. Purchasers should be sure that this "key to the key" is present with their copies. On another note, I could hardly overlook a remark on page 2; a single-sentence paragraph reads "In addition, pollen grains may be used to date coal seams." This is a powerful understatement that might have drawn comment from Schopf, Wilson, and Benthall.

IN MEMORIAM

The last issue of PALYNOS carried the biographies of two palynologists who had passed away recently, Julian Szeicz and Anna Dibner. Yet another palynologist has, sadly, departed. Many people will already know of the

passing of L.R. Wilson, but Aureal Cross' memorial is printed here in any case. Similar obituaries appeared in the latest AASP and CAP newsletters. Younger palynologists who never knew this kind, soft-spoken, and remarkably intelligent man should know that L.R. Wilson was the kind of person we should model ourselves after. Ed.



Leonard Richard Wilson, 1906 - 1998

Leonard Richard Wilson was born in Superior, Wisconsin, July 23, 1906. He died at his home in Norman, Oklahoma, July 15, 1998 at the age of 92. He was the elder of two sons of Ernest and Sara Jane Cooke Wilson. He is survived by his wife Marian De Wilde whom he married September 1, 1930. Their son, Richard Graham Wilson, of West Fork, Arkansas, and daughter Marcia Graham Wilson Roe of Norman, Oklahoma, 11 grandchildren and 7 great-grandchildren also survive.

Richard (Dick) Wilson was proud of his roots as a Viking. He traced his forebears back through three centuries to Viking communities in the Orkney Islands and Thurso, Scotland, which borders the strait that separates the Orkneys from the mainland of Scotland, and into northern England.

Richard grew up in Superior, Wisconsin. There, a physician neighbor, Dr. George Conklin, first introduced Dick to the great world of the natural sciences. Conklin was an expert on bryophytes and was curator of the Sullivant Moss Society's worldwide collections of mosses and liverworts. Dr. Conklin also

conducted research on freshwater sponges. Wilson later utilized these invertebrates in his studies of Wisconsin's freshwater lakes. Conklin also led Wilson through scouting to become the first Eagle Scout in Superior. Dick had a paper route that included several of the faculty of Superior State Teachers College (now University of Wisconsin - Superior). Prof. J.A. Merrill, who taught geology and geography at the college was one of his customers. Merrill had studied at Harvard and his doctoral thesis was on a Cretaceous problem in Texas. Merrill, who had also published the first paper on hystriospheraeids in the United States, taught Dick to recognize those microorganisms. Wilson's fascination with these grew through his years as he worked with freshwater lakes and later whenever he examined marine rock samples.

Richard enjoyed outdoor activities as a boy, including skiing cross-country. He later became a down-hill skier but broke his back preparing for Olympic tryouts. He liked biking and he once took a one-thousand-mile tour in England. Also, in college, he joined the fencing team and later he coached fencing at Coe College. This broad background in botany and geology impressed the various professors with whom he studied at the University of Wisconsin, Madison. He became field assistant to Norman C. Fassett (systematic botany). He also caught the attention of William H. Twenhofel (geology, sedimentology), F.T. Thwaites (glacial geology) and E.A. Birge (zoology and limnology). Professor Birge, who was director of the Wisconsin Geological and Natural History Survey, engaged Wilson to assist in some of his own research on the biology of freshwater lakes. Later, as president of the University of Wisconsin, Birge, who was then studying the physics of light as it affects plant growth in lakes, became a lifelong friend and continued some research with Wilson for several years.

Wilson's family desired that he should have some education in England, so he went to Leeds University in Yorkshire for his junior year. Leeds is only about 100 km south of his grandparents' home at Stockton-on-Tees, England, near Newcastle. There he studied with W.H. Burrell, director of the University Herbarium. Burrell has been credited with publishing the first paper on pre-Pleistocene palynology in England in 1924. During Wilson's year at Leeds, Gunnar Erdtman, Swedish pioneer in pollen analysis, presented several lectures there which initiated Burrell's and Wilson's interest in the palynology of peat and coal. This interest grew rapidly in Wilson's mind and was applied first in

his masters' and doctoral research on Wisconsin's peat deposits. Fred Thwaites and Norman Fassett directed Wilson's study of the vegetation and geology of the Two Creeks Forest bed, which became an internationally recognized focal point for Late Wisconsin glacial deposits.

Wilson's doctoral dissertation, an analysis of plant microfossils in 10 bogs, Douglas County, Wisconsin, was used to determine the history of the several stages in the shorelines of the Nipissing Great Lakes and Lakes Algonquin and Duluth. This information enabled Wilson to demonstrate several stages of plant succession over the glacial terrain and the vegetation's control of soil type, certain other edaphic factors, and effects of fire. He also prepared another extensive report, equivalent to another Ph. D. dissertation, on lake development and plant succession in the Highland District, Muskellunge Moraine, and the outwash area of Vilas County, Wisconsin.

Wilson held many positions during his life, as follows: he went from instructor to professor of geology at Coe College, Cedar Rapids, Iowa, 1934 - 47; professor and head of the geology and mineralogy department, University of Massachusetts, 1947 -56; professor of geology, Graduate School of Arts and Science at New York University; geologist, Oklahoma Geological Survey 1957 - 77; professor of geology, University of Oklahoma 1957 - 62; curator of micropaleontology and paleobotany, Sam Noble Museum of Science and History (now Oklahoma Museum of Natural History); and the George Lynn Cross Research Professor of Geology and Geophysics, University of Oklahoma, 1969 - 77, when he became professor emeritus of geology and curator emeritus of micropaleontology and paleobotany. Dick was Melhaupt Scholar, Ohio State University 1939 - 1940 working on pollen-analysis of Ohio prairies and woodlands of the Postglacial Xerothermic Interval with the eminent ecologist, Prof. E.N. Transeau of Ohio State University. He was director of the Greenland Ice Cap project, "Mint Julep", 1952 - 1953. He worked with Robert Shrock at the Massachusetts Institute of Technology field camp in Nova Scotia during the summers of 1950 - 1955. Wilson also applied his knowledge of biostratigraphy and palynology to professional contract work for several oil companies in the United States and South America from 1945 to 1972.

Wilson was a serious, dedicated teacher. He demanded much from his students in reports and notebooks. He

gave very tough examinations over reading material and the identification of the page and source, and history of various samples of rocks. He also included a great deal of botanical information in his geology lectures and field trips. At the fiftieth anniversary of the National Association of Geology Teachers (NAGT), Dr. Rudolph Edmund, in a presentation to Wilson in 1988 wrote, "L.R. Wilson championed the field as the best way to teach earth processes students followed him into the field, into the lab, and into research." Wilson had been one of five founders of the Association of College Geology Teachers in 1938, the forerunner of the National Association of Geology Teachers. Wilson worked diligently with James M. Schopf in the preparation of the landmark paper "An annotated synopsis of Paleozoic fossil spores and the definition of generic groups", published by the Illinois State Geological Survey in 1944. In that paper, which was a major factor in bringing order to the presentation of palynological information of pre-Pleistocene palynological studies in North America, they elucidated seven guiding principles for classifying and defining the then-existing genera of fossil pollen and spores. Wilson, together with one of his former part-time students, Ruth Webster, as an assistant, completed an exhaustive study of the palynology of the strata in two wells in Texas for Carter Oil Company (early subsidiary of Exxon Production and Research Company). These analyses, with over 9500 photomicrographs, were published in five volumes. Distribution of these tomes was limited to a few specialists and museums. However, this extended study contributed importantly to the application of palynological techniques to the exploration for oil by several companies immediately following World War II.

Professor Wilson directed about 50 masters and doctoral theses. Many of those students constituted the nuclei of the staffs of several oil company palynological laboratories. Several became teachers, some worked for various geological surveys, and a few entered other areas of geological research, exploration or administration. Wilson published about 200 research reports, notes and abstracts.

Wilson received numerous honors and awards. He was a Fellow in the Geological Society of America (GSA) and a member of the Botanical Society of America (BSA) and the American Association for the Advancement of Science (AAAS) for over 50 years. He was elected as an Honorary Member of the American Association of Stratigraphic Palynologists (AASP), and was a founding

member of the National Association of Geology Teachers (NAGT). In addition, he was recognized as an Erdtman International Medalist for Palynology by the Paleontological Society of India. He was a longtime member of various other societies and several state academies of science. Wilson served on the Commission Internationale de Microflora du Paleozoic, and the editorial board for Micropaleontology. He was elected to the Order of Mark Twain on the basis of research in Greenland and Pleistocene to Recent deposits in North America. He was a member and sometime president of the Oklahoma Chapter of the Society of Sigma Xi and the Oklahoma Chapter of the Phi Beta Kappa honorary scholastic fraternity. He was adviser to the University of Massachusetts chapter of the honorary geologic fraternity, Sigma Gamma Epsilon.

Wilson's role as an educator was outstanding. His contributions to the application of palynology to the exploration for oil, and interpretation of environments of deposition of ancient sedimentary rocks have been preeminent. He was a gentleman of high character and scholarly pursuits. He was an indefatigable teacher and firm disciplinarian in classroom, laboratory, and field studies, and a pioneer in several areas of his research. He continued to publish short papers almost to the time of his death. He was a true "Viking" through 65 years of the highest order of professional contribution to teaching and research in biological and geological sciences. He was the major player in the rise of palynological science in the middle of the 20th Century.

written by:

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Pollen and Spores: Morphology and Biology, 1998

The fourth in an occasional series of palynological conferences organized under the auspices of the Linnean Society, in collaboration with the Royal Botanic Gardens, Kew, the Natural History Museum, London, and the Systematics Association was held at the Royal Botanic Gardens, Kew, and The Natural History Museum, London from 6-9 July. The scientific program included two special sessions: Pollen development, commemorating Prof. Jack Heslop-Harrison, and Pollen-pollinator and pollen-stigma interactions, commemorating Prof. Bruce Knox. The other sessions represented a wide range of subjects within the range of pollen and spore studies: Experimental and living systems; Systematics and evolution (Pteridophytes, Gymnosperms, and Angiosperms); Evolutionary trends and phylogeny; Pre-Cretaceous; Cretaceous and Tertiary; Quaternary; plus a small session on pollen variability and anther development in the genus *Nelumbo*. Approximately 140 delegates attended the meeting, and represented 22 countries. Ninety-two contributions were given. The meeting was timed to coincide with the retirement from Kew of Keith Ferguson, founder and first Secretary of the Linnean Society Palynology Group, and founder and Head of the Palynology Unit of the Royal Botanic Gardens.

The conference proceedings, *Pollen and Spores: Morphology and Biology*, edited by Madeline Harley, Cynthia Morton, and Stephen Blackmore, will be published by the Royal Botanic Gardens, Kew, with a pre-Millennium publication goal.

New Masters Degree Program Announced

Dr. Dallas Mildenhall of the Institute of Geological and Nuclear Sciences in Lower Hutt, New Zealand, has brought the following information to the editor's attention. Students who are interested in Applied Biostratigraphy of Asia-Pacific Basins should pay particular attention.

Massey University and the Institute of Geological and Nuclear Sciences (GNS) are accepting applications for enrollment in a Master's level course of study in advanced biostratigraphy (Masters of Applied Science). Enrollment is limited to 15 students who can undertake the study between July 1 and June 30 of the following year. This postgraduate program of study is especially suitable for those seeking a career in the exploration

industry, as well as those already employed in the industry and who wish to develop their careers. The degree offers a formal specialized postgraduate education program which includes skills and techniques demanded by modern hydrocarbon exploration. Collaboration between Massey University and the GNS provides focus on the biostratigraphy of Southeast Asia and the Pacific, as well as the opportunity for overseas students to perform research on their own choice of material under the expert supervision so as to maximize the relevance of the course. The program goals are to provide knowledge of modern stratigraphic analytical techniques and biostratigraphic concepts, as well as to promote study and research related to the exploration industry in the Asia-pacific region.

Interested parties should contact the following person:

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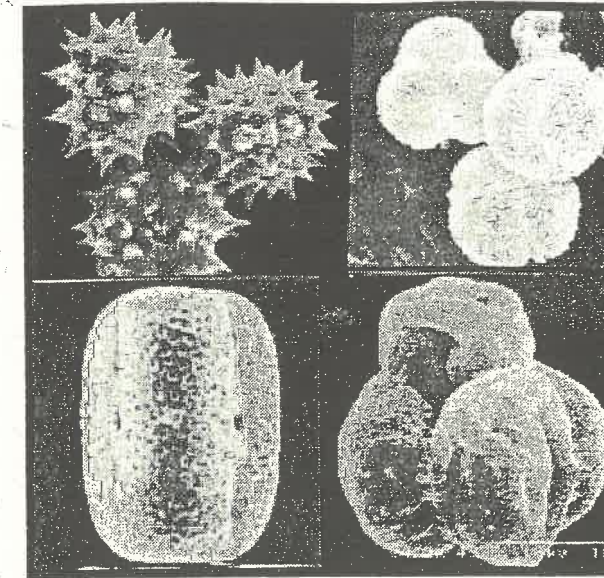
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