Canadian Association of Palynologists
Association Canadienne des Palynologues

NEWSLETTER

Volume 18 Number 1 May 1995

From the Editor's desk

Over the years there are a number of individuals who play a key role in the life of any organization. For CAP, one of these key players has always been Bert Van Helden. Based in Calgary, Bert was one of the earliest members of the Association and has always been an enthusiastic participant in its activities. He has served the Association in many capacities, notably as President (1989-1990) and Newsletter Editor (1982-1985). I have especially appreciated his assistance over the last six years when he has quietly but efficiently dealt with the printing and mailing of the *CAP Newsletter*, an onerous but essential task.

Now I am sad to report that Bert has become the latest victim of "down-sizing", having been given "early retirement" from Chevron. Bert's retirement marks the end of an era in both palynology and the oil industry in Canada. I believe (and I know I'll be corrected if I'm wrong) that Bert was the last palynologist to be employed by an oil company in Canada. As Glen MacDonald points out in his President's Message, these are tough times for all branches of earth science.

Although retirement has come suddenly and perhaps unexpectedly, I am sure that the rest of the CAP membership will join with me in wishing Bert well for the future.

I am also sad to report the death of two well-known palynologists with very different backgrounds and careers: Norman Hughes and Warren Drugg. Two articles record their careers.

I am happy to note, however, that the outlook for palynologists is not all gloomy. On the positive side, this issue also records the continuing vitality of palynology, as numerous conference announcements and two job advertisements bear witness. Exploration of electronic communication is again a major theme in this issue with the launching of the CAP World Wide Web Page (a global first for the Association!), an update on Internet discussion lists, and information on MapPad, a new (and free) software item that many palynologists should find extremely useful. Book announcements, thesis abstracts, an update on the AASP meeting in Ottawa and assorted reports round out a packed issue.

Many thanks to all contributors to this *CAP Newsletter*: Vaughn Bryant, Ian Harding, Martin Head, Ted Irwin, David Jarzen, Susan Jarzen, Harold Kaska, Paul Karrow, John Keltner, Glen MacDonald, Florin Neumann, Pierre Richard, Ian Spooner, Bert Van Helden, and Jan Willem Weegink. My thanks also to Yves Beaudoin for technical assistance.

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CANADIAN PALYNOLOGY - CHALLENGES AND OPPORTUNITIES

I would like to start my tenure as President of the Canadian Association of Palynologists by thanking the nominating committee for bestowing this privilege upon me. I hope that I can serve the Association well. I would also like to thank the Past-President, Elliott Burden, and the Editor, Alwynne Beaudoin, for much encouragement and help.

This is a time of extreme challenge for Canadian scientists in any discipline. Industry has been down-sizing and this impacts on palynologists working in the private sector. Funding cuts have hit hard in the government and universities. Most troubling are the massive cuts proposed for the Geological Survey of Canada and the fourteen percent decrease in NSERC funding. In addition, research infrastructure in universities may be eroded by declines in federal transfer payments. In such times, the fates of small scientific disciplines can be placed in jeopardy.

Despite the financial crunch in Canada, this is also a time of remarkable opportunities for palynologists. I will speak from the examples of my own discipline, Quaternary palynology, where concern about global climate change due to the greenhouse effect has prompted many new opportunities. Although there is considerable uncertainty about the potential rates and magnitudes in future climate change, the dangers are real enough to warrant scientific scrutiny.

Climatologists are eagerly searching for long records of climate change. The instrumental climate records for Canada are simply too short and sparsely distributed to provide good baseline data on long-term temporal and spatial climate variability. In addition, climatologists are also interested in abrupt climate changes that have occurred in the late Pleistocene. Finally, there is much interest in mapping out the boundaries of past vegetation during the Quaternary to provide boundary conditions to parameterize and/or test climate models. Climate models are a key tool in predicting the impact of increasing greenhouse gasses. If a climate model can retrodict past conditions, we may have slightly more faith in its abilities to predict future conditions. This intense interest in climate change has led to exciting research opportunities employing palynological records as proxies for past climate and vegetation.

Ecologists, foresters and park managers are becoming increasingly aware of the need for long records of vegetation disturbance and change. This need is particularly acute in view of the fact that greenhouse warming may place severe strains on ecosystems. If it is a mandate of a

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park to preserve natural conditions, we must know what those natural conditions are and how much variability may exist over time. A similar problem exists for foresters who wish to use harvesting designs that mimic natural disturbance and succession regimes. Park and forestry resource managers must also be able to recognize the impact of progressive climate change over the noise of natural ecosystem variability. Observational records of vegetation are simply too short and sparse to do the job. Pollen and charcoal analysis can be powerful tools for reconstructing long records of vegetation disturbance and change that are directly relevant to vegetation management.

The examples I present above are specific to Quaternary palynology. However, they convey some general lessons for us. First, palynology remains an exciting discipline that often provides information on stratigraphy and palaeoenvironments that are unavailable from any other source. Second, many of the exciting research opportunities for palynologists will come from collaborative work. The need to work collaboratively is particularly acute in view of a decreasing base for research funding. Third, as palynologists must be skilled in the earth and life sciences we are in an excellent position to lead and contribute to interdisciplinary research collaborations. Finally, we must make every effort to advertise the power of our discipline for solving important questions of stratigraphy, sedimentology, ecology and climatology etc. at every chance we get. Both our colleagues in other disciplines, and the tax-paying public need to be kept aware of the truly exciting potential of our discipline. In this, the Canadian Association of Palynologists has a major role to play. I will do my best in this effort.

Glen MacDonald
CAP President
Hamilton, Ontario

From the bureaucrat's desk

WELCOME

On behalf of CAP, it is a pleasure to welcome Vaughn M. Bryant Jr. (Palynology Lab, Anthropology Department, Texas A&M University) and Kathryn Lease (Department of Ecology, Evolution & Behavior, University of Minnesota) as new members.

DUES DUE

If your name appears below, a gentle reminder that your membership subscription became due at the beginning of 1995 or at the beginning of the year indicated in parentheses:

T. Anderson, D. Batten (1994), A. Beaudoin, J. Bourgeois, W. Brideaux (1994), J. Bujak (1994), O. Colmenares, B. Cumming, L. De Verteuil, A. Fasola (1994), R. Fensome, H. Friebe (1994), M. Garneau, M. Geurts, P. Gunther (1994), G. MacDonald, J. Macpherson, H. Martin (1994), K. Matsuoka (1994), J. McAndrews, D. McIntyre, S. Mercier (1994), M. Partington (1994), N. Poulsen, C. Rodgers, W. Sarjeant, L. Satchell, J. Shane (1994), R. Stancliffe, C. Strauss (1994), H. Sullivan, R. Turner, R. Vance, H. Visscher (1994), R. Wicander, Zicheng Yu.

Please note that CAP membership dues are CAN$10 per year, payable annually or up to three years in advance. Please make cheques payable to "CAP". Please also see the revised membership form on the final page of this Newsletter. Lapsed members are removed from the CAP mailing list after two years. Funds should be sent to:

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MEMBERSHIP REPORT

On April 15, 1995, CAP had a total of 46 members in good standing, comprising 33 full members, 12 correspondents, and 1 institutional member. Please consult the Dues Due section of this newsletter (above) to see if your membership subscription is due. Membership figures are down 12 compared with this time last year, most of this drop being caused by non-renewal of full members. Fifteen members have been removed from the mailing list. If you are a lapsed member who would like to be put back on the mailing list, you need send me only your dues for this year. No outstanding charges or reinstatement fees will be levied.

Respectfully submitted by
Martin J. Head
CAP Secretary/Treasurer
April 15, 1995

Far and wide....

REPORT DE LA RÉUNION ANNUELLE DE L'AQQUA

L'AQQUA (Association québecoise pour l'étude du Quaternaire) a tenu sa réunion annuelle les 2-3 mars dernier au département de géographie de l'Université de Montréal. L'organisateur était Pierre Richard. Sous le thème des recherches en cours, 25 communications orales et 6 posters furent présentés. Parmi les sujets intéressant les palynologues, les communications suivantes:

Dates basales et chronologie de la déglaciation en Gaspésie: implications paléogéographiques et paléoécologiques, par P.J.H. Richard, A.C. Larouche, J. Veillette, B. Hétu, P. Gangloff, et J.T. Gray. On y apprend que la déglaciation finale de la Gaspésie se situe plutôt vers 9000 ans BP que vers 12 000 ans BP tel que suggéré par la carte de Dyke et Prest, 1987.

Fluctuations climatiques holocènes en Gaspésie et téléconnexions amphi-atlantiques, par P. Gangloff, P.J.H. Richard, J.T. Gray, et F. M'Pindy. On y apprend qu'au lac Dolbeau, les influx polliniques enregistrent un refroidissement abrupt bipartite vers 8300 et entre 8000 et 7500 ans BP. Cet événement apparu environ 2000 ans après le couple Killarney/Dryas récent semble l'ultime manifestation des cycles de Dansgaard-Oeschger. Un réchauffement durant

l'Holocène supérieur, entre 3500 et 1700 ans BP coincide avec l'apparition d'eaux interglaciaires dans la partie ouest du courant du Labrador, dans l'Atlantique nord. L'allure générale de la courbe de l'influx pollinique total au lac Dolbeau est trouvé aussi à Moulton Pond (Maine, R.B. Davis *et al.*, 1975) et à Rogers Lake (Connecticut, M.B. Davis, 1969).

La tourbière du Parc de Frontenac: un milieu indicateur de changements paléo-hydriques au Québec méridional, par M. Lavoie et P.J.H. Richard. On y apprend que l'étude pollinique, macrofossile et des Rhyzopodes de carottes multiples au sein de la tourbière révèlent une hausse importante de l'humidité régionale entre 6000 et 4200 ans BP et que des conditions sèches se sont instaurées entre 4000 et 1300 ans BP. Le problème reste toujours de décoder le signal climatique au sein des processus autogènes régissant le développement des tourbières.

Pierre J.H. Richard
Montréal, Québec

Canadian Museum of Nature

Musée canadien de la nature

PALYNOLOGY AT THE CANADIAN MUSEUM OF NATURE

Palynology at the Canadian Museum of Nature was established in 1973 and since that time has been under the direction of Dr. David M. Jarzen. Currently the research and laboratory functions include only one staff member (D. M. Jarzen) and one volunteer worker (S. A. Jarzen). Major research interests include palynology of Mesozoic and Cenozoic sediments, primarily from the Western Interior of North America and Australasia, paleoecological and paleoenvironmental interpretation, and spore morphology of selected pteridophytes.

The Palynology Laboratory boasts Canada's largest pollen and spore reference collection of nearly 20,000 plant taxa, including algae, hornworts, liverworts, bryophytes, pteridophytes, gymnosperms and angiosperms. The collection is catalogued on the Canadian Heritage Information Network or CHIN (http://www.chin.doc.ca) and is available for research use at the CMN laboratory. The Collection has proven an invaluable tool in supporting morphological information in plant systematics, as a tool in surveying plant family and/or generic distributions in time (fossil specimens) and space (fossil and extant) and in supporting other research techniques in elucidating the identity, affinity and stratigraphic significance of fossil pollen and spores.

Research projects now underway include an examination and interpretation of marine and terrestrial palynofloras from three localities in east-central Saskatchewan of Cenomanian age (Carrot River, Bainbridge River and Wapawekka Hills sites). This work is in cooperation with Dr. S. Cumbaa (Canadian Museum of Nature) and Dr. D. J. McIntyre (I.S.P.G., Calgary).

Work with Dr. Mary Dettmann (University of Queensland, Brisbane, Australia) continues with an expansion of our southeastern, Australian Mesozoic work to earliest Paleocene subsurface sections from the Perth Basin, Western Australia. This work has provided valuable information on the history of the Proteaceae in Australia and

migration and subsequent extinction of some taxa from areas in New Caledonia and New Zealand.

S. A. Jarzen is beginning a general survey of the spore morphology in the fern genus *Pityrogramma*. The work is ongoing and represents only a fraction of the valuable work Susan is performing as a full-time volunteer at the Canadian Museum of Nature.

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IN MEMORIAM

Norman Francis Hughes 1918-1994

Norman Hughes, one of the founding fathers of academic palynology, passed away on the 18th September, 1994, after a short illness and his loss has been keenly felt by both his family and his colleagues.

I clearly remember my first meeting with Norman in July 1982 when in Cambridge for an interview for a research studentship. I confess I was rather overawed by his imposing presence as he appeared from behind masses of apparently randomly stacked piles of literature in his old office, conforming very much to my mental image of what a Cambridge don would be like. I had arrived with a mad whim about wanting to do a PhD on spores and pollen, but with no really clear idea of a research topic, so we sat down and started to work out a proposal together. However, at that stage I seem to remember that the only thing I could say in response to Norman's question 'What would you like from a PhD?' was a fatuous 'Well, I'd like to travel'. As he rocked his head back in response, that was probably the first time I heard the characteristic Norman chuckle, and I somehow realised that this was someone with whom I would enjoy working. Audrey MacDougall, James Penny and I all started working with Norman at the same time, and we all got on like a house on fire, but even so, such was Norman's presence that it was about 18 months before any of us could bring ourselves to call him by his Christian name.

I first became of aware of Norman's long academic association with the Department of Earth Sciences whilst whiling away a few minutes outside the Sedgwick Geology Library. Anyone who has visited the Department will probably be familiar with the corridor outside the Library, which proudly displays the photographs of the student geological society, the Sedgwick Club. For those with an eagle-eye, Norman can first be found on these group photographs as an undergraduate studying the Natural Sciences Tripos in 1938, proudly sporting a full head of hair. His studies were unfortunately interrupted by the war, during which he served in the Field and Survey Regiments of the Royal Artillery in the UK, North Africa and Italy. Norman's military connections were to continue until, as a Colonel, he left the Royal Engineer's Specialist Pool of Geologists in 1970. Following his war service Norman returned to Cambridge to continue his studies in 1946, when he again appears on the Sedgwick Club photographs, (although this time unfortunately minus the hair). A First Class degree and a Harkness Scholarship later, Norman began a lectureship in geology at Bedford College, London a position he held for several years.

It was in 1953 that Norman returned to Cambridge as a University lecturer in geology

with special responsibility for teaching palaeobotany, a subject that was to remain his over whelming research passion throughout his life. His first paper was published in 1955 complete with illustrations drafted by his wife, Pamela. This was to be the first in a prodigious repertoire of scientific publications, amounting to some 80 or so papers, articles and books, a total which is actually still increasing in number. As an acknowledgement of this tremendous research output, Norman was awarded the degree of ScD in 1977. Norman's academic career had given him not only a sound background in geology, but also in botany and this pedigree was to provide him with a unique insight into both the collecting and interpretation of fossils. By bringing new observation techniques such as electron microscopy to the investigation of the pollen of ancient flowering plants, Norman began to detect shortcomings in the conventional methodological approach to data collection and interpretation. It was these perceived shortcomings that led Norman to propose alternative approaches to recording such data.

Essentially the Hughesian 'biorecord' and 'palaeotaxon' concepts are rigorous and philosophically sound alternatives to more traditional Linnaean taxonomy. Unfortunately, these radical ideas have been interpreted by some perhaps less free-thinking scientists, not as a method to allow greater access to and interpretation of primary data, but as a challenge to their life-long work. I would like to make an impassioned plea to anyone who has not previously come across the biorecord concepts to take the time to read through the methodologies that Norman proposed (Hughes 1976, 1989, 1994), with an unbiased mind. Anyone who has ever tried to extract data published several years ago for interpretative purposes will undoubtedly have discovered shortcomings in the nature of the recorded data. Norman's proposals were primarily designed to combat such shortcomings. Whilst I would not claim to agree with *every* proposal myself, the clear, logical and above all honest method of

recording palynological data should be held up as an example to all scientists. Norman's personal crusade was to ensure that the maximum amount of information was recorded for the benefit of later workers, especially including statements regarding the type and degree of morphological comparison with other morphotypes. Records of this comprehensive nature can then be utilised by future workers, who will then be able to assess and compile data for other, as yet possibly unknown, purposes.

Unfortunately, Norman's forthright views in this area resulted in him becoming something of an anti-establishment figure. However, I feel that Norman himself in many ways revelled in playing the Devil's Advocate, thoroughly enjoying every opportunity to communicate his provocative and controversial ideas. Surely every field of research requires someone brave enough to stand by their convictions and to stimulate active, even heated discussion? Because of this, Norman was a very well known member of the palaeo-

botanical community, often being known by his nickname of 'The Bishop'. In his philosophical approach to research, Norman perhaps more than any other palaeontologist, fully foresaw the tremendous impact that new technology and computing would and will bring to the field of palaeontology and biostratigraphy and attempted to prepare the ground for these developments. In this respect he was far ahead of his time, and although he did not harness computing power himself, he would no doubt be very gratified by the personal tribute from Professor Bill Riedel (Scripps Institute) posted on the Internet, describing him as 'one of the most far-sighted paleontologists of our time'. Indeed, those of use who are beginning to make more use of powerful computational databases are increasingly finding that Hughesian concepts will provide a much more powerful research tool in this context: and encouragingly these concepts are finding great empathy with students new to the research field.

I myself employed many Hughesian ideas during my own PhD. In the final stages of writing up my thesis, Norman would read through drafts of my chapters. He would again chuckle at certain statements I'd made, saying that I couldn't possibly say that sort of thing about someone else's research at such an early stage in my career, adding with a glint in his eye however, that *he* would be able to get away with it as he had already firmly established *his* reputation in the field! James and I always found Norman to be totally unselfish, even lavish with his time, ideas and energy during the tenure of our PhD's, indeed I think that it would be difficult to find a better research supervisor. Both James Penny and I came to regard Norman with great warmth and affection and would regularly refer to him as a surrogate uncle rather than a supervisor. In fact, after two years unofficial post-doctoral work, were it not for being intercepted by Norman in the Departmental Coffee Room, and his persuasive reasoning, I would probably have decided to turn down the offer of the lectureship I now hold in Southampton. As an indication of the formative influence that Norman had on my own career, when I am discussing problems with my own research students, I regularly find myself thinking 'Now how would Norman have approached this situation?'.

Norman retired from his University teaching post in 1985, his career being honoured by the publication of a commemorative issue of *Special Papers in Palaeontology* written by his former research students and colleagues (Batten and Briggs 1986). It is another mark of Norman's stature that many of the 25 or more research students he supervised during his career have continued on in academia or other teaching capacities. Indeed following Norman's tutelage many have risen to great heights in the hierarchy, at the last count over half of this number had become either university lecturers (including several professors) or had joined the ranks of industry or geological surveys stretching across the globe from Australia and New Zealand via Nigeria to America and Canada. As a measure of the global impact of Norman's work, on a recent conference trip to Argentina, a great many South Americans familiar with his work expressed to me their great sadness over his passing. Norman was also a stalwart committee member in many capacities in the International Union of Geosciences, the International Geological Correlation Programme, and was one of the founding members of the Palaeontological Association.

However, there was much more to Norman than his Departmental career. In 1963 he was elected to a Fellowship here at Queens' College, and fulfilled many important roles with great dedication such as Keeper of the College Records. And certainly on his return to the Department in the afternoons after an arduous lunchtime wine-tasting, the rosy cheeks he sported indicated that the position of Wine Steward was one that gave him great satisfaction. Again I have many happy memories of the advice he provided to me on my several stints as Steward for the MCR (Middle Combination Room) when we were

organising feasts or tastings for the graduates. James and I always treasured being invited to dinner with Norman and Pamela, spending many a pleasant and cultured hour, discussing Pamela's fine artwork of which Norman was always so supportive, or their latest overseas visit and all the fascinating plants and birds that they had seen. Although I have to confess that after the excellent food and the many and varied alcoholic beverages such an evening presented, I always viewed the bicycle ride homewards with some trepidation!

Queens' have lost a dedicated and respected Fellow, palaeontology has lost an invaluable and stimulating scientist, we have all lost a valued friend and colleague and Pamela has lost a devoted and much loved husband after over fifty years of happy marriage, and our thoughts and support are with her. All of our lives have been enriched by being privileged to have known Norman.

The successor volume to Norman's *The palaeobiology of angiosperm origins* (Hughes 1976), was published shortly before his death. Entitled *The enigma of angiosperm origins* (Hughes 1994), Norman dedicated the tome to his one-time teacher Hugh Hamshaw Thomas with the statement that he 'solved a significant part of the problem in the context of knowledge seventy years ago, but ... was ahead of his time'. In another seventy years I believe people will be saying the same of Norman Francis Hughes.

Ian Harding
Southampton University
England, U.K.

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WARREN S. DRUGG
1929-1994

It is with a great deal of sadness that I record the passing of Warren S. Drugg in La Habra, California, on December 1, 1994, after a battle with a cancer that had only been diagnosed nine months earlier. His untimely death was a blow to his family and to all his friends in the palynological and geological community. Warren will be greatly missed by all those who had the privilege of knowing him.

He was born in Sitka, Alaska on January 29, 1929 to Nels E. Drugg, a commercial fisherman, and Edith Newhall. The family moved to Vermont in 1942 and then to Seattle, Washington in 1947, where Warren graduated from Ballard High School. In 1952 he received a BA in Geology from the University of Washington.

He then served as a First Lieutenant in the US Air Force in the Photo Radar Interpretation section of the Strategic Air Command in various locations (Topeka, Kansas, Japan, Guam and North Africa) and did much interpretative work in the Indo-China area in the early stages of the Vietnam war for which he received the Army Commendation Medal. He returned to the United States in 1956 and then obtained an MA in Geology in 1959 from his alma mater.

At this time he married Marlene Boivin, whom he had first met in 1944 through his friendship with her brother. The couple moved to San Francisco in 1958 where he worked as a palynologist for the California Exploration

Company with the late Benjamin H. Burma until 1957. It was during this time that I first met Warren.

In 1960 he and Marlene moved to La Habra, California where he had been transferred to the California Research Corporation as an Associate Research Geologist. He was assigned to the Paleontology Group to plan and conduct research and development on the applications of palynology to problem solving in hydrocarbon exploration.

The laboratory was headed by the late Dr. A. R. Loeblich who had been hired recently. He induced Warren to continue his education in the field of Paleobotany which was at that time considered to be a key to the relatively new science of applied Palynology, a subject in which many oil companies were interested for its potential for solving geological problems. Warren received his Ph.D. in 1965 from the Claremont Graduate School. He studied Russian as a minor and enjoyed using his facility in the language to sprinkle a few words in ordinary conversation "for effect".

Warren spent his entire thirty-two year career at CRC as a working palynologist making age and environmental determinations on samples from all over the world. I had occasion to consult with him many times and it was through these meetings as well as many inter-company Paleontological Meetings and Seminars and the American Association of Stratigraphic Palynologists Annual Meetings that I had the good fortune to get to know Warren. We always immediately gravitated toward each other and because we had so many common interests and opinions we could immediately pick up where we had left off a year earlier.

I first really got to know Warren in 1962

when we drove from La Habra to Tucson to attend the first International Conference on Palynology. He navigated; I drove. His confidence (misplaced) in his unerring sense of direction led us to leave El Centro, basically located on a single east/west major highway, in the direction of Mexico (south). A similar incident occurred at the Dallas AASP meeting, where I, the driver was informed that Fort Worth, over in the blackness was our real destination (Warren said he was "familiar with the area" because he had been stationed at Love Field). Marlene mentioned that once when trying to leave La Habra for Seattle, on vacation, it took him five hours to get out of town.

Warren's problem with directions did not prevent him from making substantial contrib-

utions to palynology including his published studies on the Moreno Formation of California, Some Jurassic Dinoflagellate Cysts from England, France and Germany, Some Eocene and Oligocene Phytoplankton from the Gulf Coast, USA and Some New Genera, Species and Combinations of Phytoplankton from Lower Tertiary of USA. There were also many useful unpublished company reports. I have one separate on *Glyphanodinium* which reads "To my field assistant, H. V. Kaska, with condescension, Warren", another "To my good friend, from '*Ammobroma*' Drugg". Warren could always inject some of his mischievous sense of humour into almost any situation, no matter how unfunny.

By the time he retired on January 1, 1991, he had been advanced to Senior Research Associate in the Geology Division and had, in recent years, mostly worked on Saudi Arabian palynology for Aramco.

Because of his Norwegian heritage he liked to compare himself favorably with the Vikings and he particularly admired their success in "looting and sacking" endeavors. He was also interested in the Northwest Indians and collected their paintings and carvings as well as having an impressive collection of his own carvings of masks and totems.

I was in Southern California last year for Thanksgiving Day. I called Warren the day after and wanted to drive to La Habra to visit, but he said he was too weak to see me. I knew that he had been suffering terribly from the effects of chemotherapy, but I was not prepared for the news from Marlene three days later that he was gone.

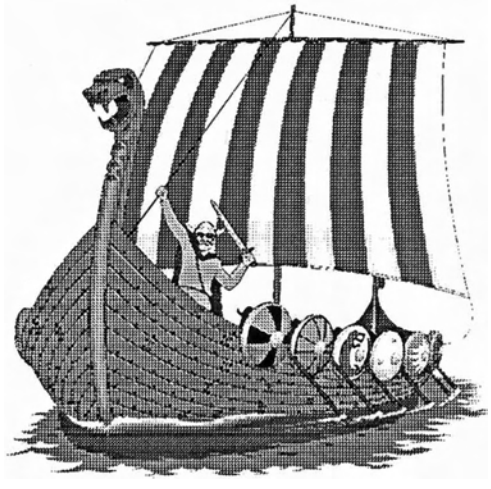
He wrote me a letter in 1992 after I had a heart attack which said "I am sorry that you have been struck down much as Sir Bors was unseated in a tournament, only to rise again and go on to greater triumphs" and then went on to wish for my speedy recovery. He then later, in vintage Warren style, informed me that he expected me to do the decent thing and die first. Thus I did not expect to be writing his Memorial, which has stirred many other pleasant memories of our times together, so soon and sadly. If it contains much of Warren the person, rather than an abstract of his work, it is because of the way I knew him, as a friend.

Warren leaves behind, besides his wife, three children: Martin, Gordon and Karen, all in Southern California, three grandchildren and his sister Virginia of Seattle, Washington.

We are all going to miss him.

I would like to thank Marlene, Floyd Sabins, Betty Froman and Bert Van Helden for assistance in the preparation of this Memorial.

Harold V. Kaska
Clayton, California
February 2, 1995



PALYNOLOGIST IN THE NEWS

Congratulations to CAP President Glen MacDonald who has been receiving considerable media attention recently. *Affaires Universitaires* (April 1995, p. 23) featured an article, entitled "Breaking Boreal Barriers", with Glen discussing the PACT (Paleoecological Analysis of Circumpolar Treeline) project, of which he is project manager and principal investigator. Glen has long been known for his research in Canada's western boreal forest, and this project builds on and extends that expertise to northern Russia. The article describes a field trip Glen made last summer with a team of Canadian and Russian scientists to examine the forest-tundra transition in northern Russia.

Closer to home, the *Globe and Mail* (May 6, p. A7) included an article discussing Glen's work on tree-rings and drought history from Alberta. With one of his graduate students, Rosalyn Case, Glen has examined the tree-ring width patterns from 154 limber pines, the oldest living tree being at least 526 years old, in southwest Alberta. Calibration of the ring-width patterns against instrumental climate data showed that the trees' growth was influenced by precipitation. This allowed Glen and Rosalyn to reconstruct an annual proxy precipitation measure extending back over 500 years. The ring-widths suggested the occurrence of periodic droughts, with, on the average, a drought every 20 to 30 years. This work has important implications for assessing agricultural viability on the Canadian Prairies.

On the shelf

RECENT PUBLICATIONS BY CANADIAN PALYNOLOGISTS - 3

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Campbell, I. D., and C. Campbell, 1994. The impact of late woodland land use on the forest landscape of southern Ontario. *Great Lakes Geographer* 1:21-29.

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Jarzen, D. M., 1994. Evolutionary perspectives on biodiversity. In: Biodiversity Science Assessment Team. *Biodiversity in Canada: a science assessment for Environment Canada*. Environment Canada, pp. 5-8.

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Kuhry, P., 1994. The role of fire in the development of *Sphagnum*-dominated peatland in western boreal Canada. *Journal of Ecology* 82:899-910.

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Szeicz, J., G. M. MacDonald, and A. Duk-Rodkin, 1995. Late Quaternary vegetation history of the central Mackenzie Mountains, Northwest Territories, Canada. *Palaeogeography, Palaeoclimatology, Palaeoecology* 113(2-4):351-371.

NEW BOOKS

The Royal Tyrrell Museum of Paleontology, 1994. *The Land Before Us: The Making of Ancient Alberta*. Discovery Books, Red Deer College Press. 96 pp. ISBN 0-88995-118-7 (bound), 0-88995-123-3 (pbk). $19.95 (pbk.)

Written for the general public and perhaps especially children, this book comprises an introduction to the geologic history of Alberta. The story begins in the PreCambrian and ends with Quaternary glaciation with geologic events set into a continental perspective. The varied flora and fauna of the geologic intervals are also described and illustrated. In fact, the book has abundant illustrations, photos, maps and drawings. The book is attractive, well laid-out and designed. The text is clear and concise. CAP member Dennis Braman, on staff at the Tyrrell Museum, is one of the contributors.

Cleal, C. J. and B. A. Thomas, 1994. *Plant Fossils of the British Coal Measures*. Field Guide to Fossils No. 6. Palaeontological Association. Price £15, includes p+p outside UK.

This book is aimed at people interested in Coal Measure plants, but would also interest those concerned with the North American Pennsylvanian or the European Upper Carboniferous. It contains abundant pictures and identification keys for Carboniferous plants. Non-members of the Palaeontological Association can order it from:

Dr. L. Cherns
Department of Geology, College of Cardiff
University of Wales
Cardiff, Wales, CF1 3YE, U.K.

[Editor's note: This information was posted to the sci.geo.geology newsgroup by Tim Palmer (tjp@aber.ac.uk)]

Jones, G., V. M. Bryant Jr., M. Lieux, S. Jones and P. Lingren, 1995. *Pollen of the Southeastern United States: With Emphasis on Melissopalynology and Entomopalynology.* AASP Foundation Contributions Series Number 30. ISSN 0160-8843. $27 USD.

This volume is a pollen atlas covering 450 plant taxa that grow in the southeastern United States. It will contain over 1,000 photomicrographs. This book is in press and should be available in May 1995. It can be obtained from:

Secretary, AASP Foundation
Palynology Laboratory
Texas A&M University, College Station
Texas 77843-4352, U.S.A

palyno bytes

DINOSYS? DINOSYS! PART 2 NOT JUST A SOFTWARE SHELL, BUT SOLID DATA AND FREE DEMO-DISKETTE

WHY AND WHAT

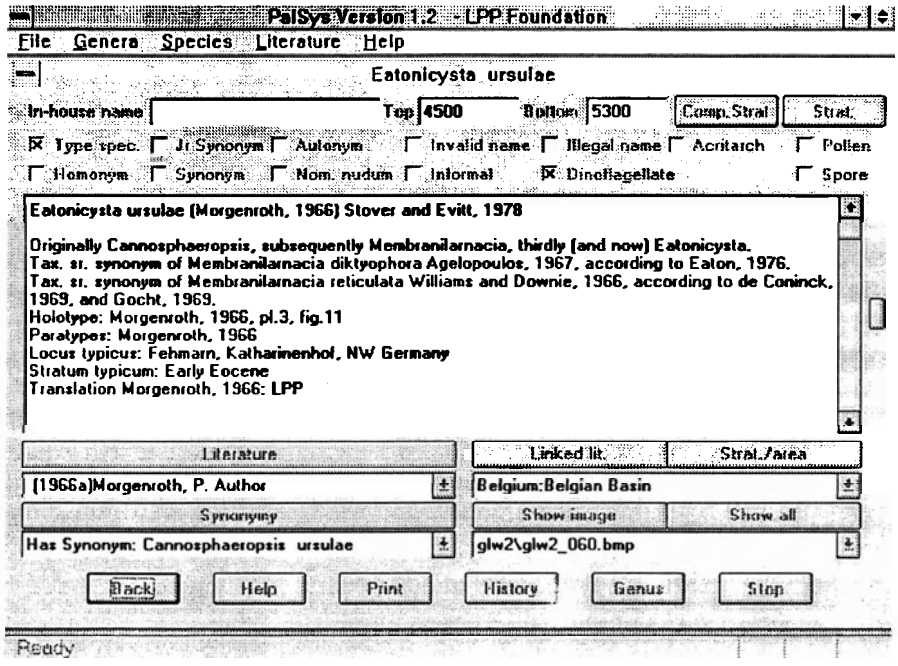
During the last decades, rapid developments in dinoflagellate palynology have led to a dramatic increase in taxonomic and stratigraphic data. Hundreds of genera and thousands of species have been described up to now. The number of taxa will continue to increase, including taxa from as yet uncovered areas. To keep up with these developments, in 1990 LPP started the development of an electronic data- and imagelibrary on dinoflagellate cysts, a relational database for the IBM-compatible PCs, the "DinoSys" database project.

DinoSys is a relational database on fossil dinoflagellate cysts. It is not merely a software shell, but documents fossil dinocyst genera and species on the basis of published and specialist information: taxonomy, synonymy, stratigraphy, geography, images and literature. All text is in English.

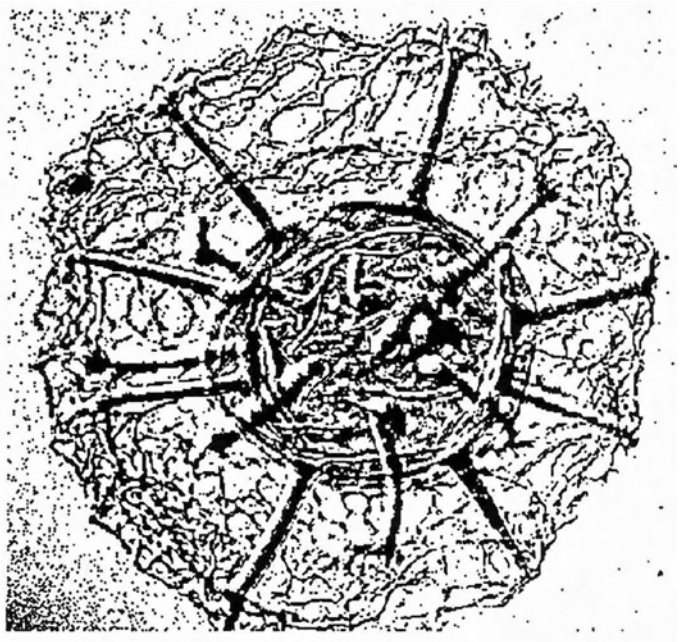
In order to guarantee its continuity, and to be able to provide future updates and upgrades, DinoSys is offered for sale to the palynological community: exploration companies, consultants, geological surveys, academic institutions and individuals.

DEVELOPMENT

DinoSys software is developed by LPP. Whenever necessary, software is upgraded (e.g., Windows 95 and ODBC - "Open DataBase Connectivity", for access to data on e.g., Unix machines) and will be further modified in order to accomodate new developments and concepts. Data are compiled by LPP. Images are provided by LPP and palynologists worldwide (Jonathan P. Bujak, Sarah P. Damassa, Rob Fensome, Hans Gocht, Martin J. Head, Judith K. Lentin, Walter Riegel, Bruce Tocher, Laurent de Verteuil, Graham L. Williams, Graeme J. Wilson, and a bunch of people at LPP, and more is in store). Major sponsors so far have been



The *Eatonicysta ursulae* taxon main window, from where various links can be used to access more information.



Sample image, *Eatonicysta ursulae*, original provided by Graham Williams to the DinoSys project

NORSK HYDRO, STATOIL, AMOCO, SIPM, and LPP.

FREE DEMO DISKETTE

A free demo-diskette is now available. It includes some genera, species, literature references and images, and allows in-house data to be entered and retrieved, integrated with published (demo) data. Please contact LPP for your free copy (see also requirements). A demonstration tour will be planned through Europe and America. Serious candidates can contact LPP for a schedule.

IN-HOUSE DATA & CUTOMIZATION? YES!

Although DinoSys can be used purely as a dinocyst reference system, it offers many possibilities to enter and integrate in-house data, e.g., company wells, in-house ranges, company taxa and images, and in-house reports, basically the same type of data that is already in DinoSys. These personal/company additions do not conflict with future updates.

LPP can also customize the software for data on dinocysts and other fossil groups, and accomodate them within the database. For quotes, please contact LPP at the address below.

REQUIREMENTS

IBM-compatible from 486 DX(2) up. Windows accelerator (1 MB or up), colour VGA, 8 MB RAM or up. DinoSys now takes nearly 45 MB of your hard disk for program and data, and over 1.5 GB of images are presently available. Eventually these numbers may double. DinoSys now runs under Windows 3.1, and can be used in a network. In the near future it is expected that images can be accessed directly from CD.

More information on subscription fees and specifics can be obtained at the address below. Please state the nature of your (company's) activities, e.g., exploration, consulting, or academic/educational.

Jan Willem Weegink
LPP Foundation
Laboratory of Palaeobotany and Palynology
Heidelberglaan 2
3584 CS Utrecht
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Tel: 31 -(0)30-531909
FAX: 31 -(0)30-535096
E-mail: jweegink@inter.nl.net.

[Editor's note: Part of the above text has previously appeared in a modified form in the *AASP Newsletter* 27(4): 21, November 1994.]

MORE INTERNET DISCUSSION LISTS OF INTEREST TO PALYNOLOGISTS

The following is an addendum to the listing that appeared in *CAP Newsletter* 17(2):27-29, 1994. The complete listing is available on the CAP WWW page or by ftp from:

ftp://ftp.nhm.ac.uk/paleonet/General_Paleo./palaeo-discussion-lists.txt

If you know of additional lists that should be included in this document, please contact the compiler:

Florin Neumann
Department of Geology
University of Toronto

E-mail: florin@quartz.geology.utoronto.ca

ALGAE-L

"Digest information on botany."

LIST ADDRESS: algae-l@irlearn.ucd.ie
MODERATOR: Michael D. Guiry (mike.guiry@ucg.ie)
HOW TO SUBSCRIBE: Algae-L is not open to automatic subscription. You can either send an e-mail request to join the list to its moderator or to adviser@irlearn.ucd.ie, or send to listserv@irlearn.ucd.ie an e-mail message (no subject) containing only the following line:

SUBSCRIBE ALGAE-L YourName

(Replace the string YourName with your real name, e.g., John Smith. This applies to all subsquent occurrence in this compilation.) Your request will be forwarded to the list owner automatically.

C14-L

"A list for discussion of anything related to research and applications in radiocarbon dating and related fields (other radioisotope measurement, archaeometry and scientific dating in general, intersections with dendrochronology and palynology, etc.)."

LIST ADDRESS: C14-L@listerv.arizona.edu
MODERATOR: David Sewell (dsew@packrat.aml.arizona.edu)
HOW TO SUBSCRIBE: Send to listserv@listserv.arizona.edu an e-mail message (no subject) containing only the following line:

SUBSCRIBE C14-L YourName

COASTNET

Coastal Management and Resources; Geology and Marine Geology.

LIST ADDRESS: coastnet@uriacc.uri.edu
MODERATOR: Robert H. Puffer (RPUF4584@uriacc.uri.edu)
HOW TO SUBSCRIBE: Send to listserv@uriacc.uri.edu an e-mail message (no subject) containing only the following line:

SUBSCRIBE COASTNET YourName

DDDNET

Taphonomy and Other Fossil Preservation Issues.

LIST ADDRESS: dddnet@uicvm.cc.uic.edu
MODERATOR: Roy Plotnick (plotnick@uic.edu)
HOW TO SUBSCRIBE: Send to listserv@uicvm.cc.uic.edu an e-mail message (no subject) containing only the following line:

SUBSCRIBE DDDNET YourName

HISTORICAL-GEOLOGY

"Mail Server offered by the American Heritage Center, University of Wyoming. During the initial stages of this product, the use will be limited to assisting historians in locating archive collections of value to writing mining histories."

LIST ADDRESS: Historical-Geology@uwyo.edu
MODERATOR: unknown

HOW TO SUBSCRIBE: Send to mailserv@uwyo.edu an e-mail message (no subject) containing only the following line:

SUBSCRIBE HISTORICAL-GEOLOGY YourName

ISOGEOCHEM

"The aim of the IsoGeochem list is to promote the exchange of news and information between anyone with an interest in stable isotope geochemistry. The list is intended not only as a discussion forum for isotope geochemists but also as a source of information and help for researchers from other fields interested in applying stable isotopes as an additional tool in their own studies."

LIST ADDRESS: isogeochem@moose.uvm.edu
MODERATOR: Andrea Lini (alini@moose.uvm.edu)
HOW TO SUBSCRIBE: Send to listproc@moose.uvm.edu an e-mail message (no subject) containing only the following line:

SUBSCRIBE ISOGEOCHEM YourName

ORG-GEOCHEM

Aims to promote the exchange of news, views and information between anyone with an interest in organic geochemistry. Includes petroleum geochemistry and environmental geochemistry.

LIST ADDRESS: org-geochem@mailbase.ac.uk
MODERATOR: Bryn Jones (org-geochem-request@mailbase.ac.uk)
HOW TO SUBSCRIBE: Send to mailbase@mailbase.ac.uk an e-mail message (no subject) containing only the following line:

SUBSCRIBE ORG-GEOCHEM YourName

STAT-GEO

Forum of quantitative methods in geosciences.

LIST ADDRESS: stat-geo@lci.ufrj.br
MODERATOR: Hugo Richard (IGG02001@lci.ufrj.br)
HOW TO SUBSCRIBE: Send to listserv@lci. ufrj.br an e-mail message (no subject) containing only the following line:

SUBSCRIBE STAT-GEO YourName

CAP WORLD WIDE WEB PAGE

The World Wide Web (WWW) is the fastest-growing segment of the electronic information field and allows data, including text, graphics and sounds, on any particular topic from many sites to be linked into a kind of electronic encyclopaedia. WWW documents are usually read with a browser, such as Mosaic or Netscape. Web documents can include "links" to information that resides at other sites, thus allowing information to be combined and presented in many different ways. It is an extremely powerful and versatile means of presentation. Each Web document is referenced by its URL or "Uniform Resource Locator", such as the one given below for the CAP WWW page. If you have not already had a chance to explore the Web, I urge you to do so. *Mosaic Quick Tour for Windows: Accessing and Navigating the Internet's Word Wide Web* (by Gareth Branwyn, Ventana Press, 1994) is a good introduction to the concepts and operation of the Web.

With the launch of its WWW page on March 8 1995, CAP became the first national palynological organization to take advantage of the new technology. In its first day of operation, the CAP Web page received 34 visitors. The CAP page has been accessed by visitors from sites worldwide, including USA, UK, Autralia, Sweden, Japan, Turkey, and Germany. To date (5/5/95), the page has been accessed at least 387 times, demonstrating its effectiveness and potential for

the world-wide distribution of palynological information.

The CAP WWW presentation consists of a "home page" which contains a directory of information and links to various other components or subsiduary pages. Among other items, these subsiduary pages contain information on the Association, a membership form, announcements of upcoming conferences (including details and a registration form for the AASP meeting in Ottawa), a list of recent papers in palynology, a recent article on palynology from the *CAP Newsletter* archive, a guide to internet resources (including links to many other Web pages), news of Departments and Government Agencies with palynology programmes, and some information on laboratory equipment and supplies. These pages are being updated almost daily.

One item in this presentation comprises an on-line "Directory of Palynologists"; all palynologists, including those who are not CAP members, are eligible for entry in this listing. The revised CAP Membership Form (p. 32) includes a new category for research interests and a request for permission to include information in the on-line Directory. However, no information will be included in the Directory unless permission is explicitly granted to do so.

A very recent addition to the presentation is "A Dictionary of Quaternary Acronyms and Abbreviations" which so far contains over 300 entries. It includes abbreviations for societies (e.g., CAP, GSA), projects (e.g., PAGES, PALE), Agencies (e.g., ARC, USGS), and laboratories (e.g., ETH, BGS). It also includes "terms in common use", such as time or climate-stratigraphic units (e.g., LIA, YD), dating methods (e.g., AMS, TL), and technical terms (e.g., VGP, PAR).

The CAP WWW page may be found at:

http://www.ualberta.ca/~abeaudoi/cap/cap.html

The CAP WWW page forms a good starting point for an exploration of the Web because it contains links to many other earth science and botanical sites that may be of interest to palynologists. I welcome your comments on this presentation and your suggestions for additional information that should be included.

Alwynne B. Beaudoin
Archaeological Survey
Provincial Museum of Alberta
E-mail: abeaudoi@gpu.srv.ualberta.ca

AASP WORLD WIDE WEB PAGE

This is to announce that the Web site of the American Association of Stratigraphic Palynologists is now online at:

http://www.geology.utoronto.ca/AASP

The site has information about the Association, its publications, its activities, and how to join. It also carries the April issue of the *AASP Newsletter*.

Martin J. Head
AASP Newsletter Editor and Webmaster
NEW Email address: head@quartz.geology.utoronto.ca

MAPPAD: MAP-BASED INFORMATION MADE EASY

If you use Microsoft Windows 3.1+ (Windows NT, or soon, Windows 95); and your interests involve sites that can be plotted on a map; and you have text or image information that is associated with your sites; and you wish you had a simple, easy-to-use (and very reason-

ably priced) piece of software that would allow you to show the world what you've been doing all these years: Read On!

Step One - Acquisition

Unfortunately, MapPad is not utterly without obstacles or cost. You must get on to the information superhighway (the Internet) and drive (ftp) down to the National Geophysical Data Center in Boulder, Colorado (ftp.ngdc.noaa.gov) and properly identify yourself (anonymous + your email address as a password) to get (binary mode of course) your copy (mappad11.exe in /paleo/softlib/mappad). (If you have access to the World Wide Web then you can have the chauffeur take you to http://www.ngdc.noaa.gov/paleo/paleo.html — follow the side-road marked **Free Software!**)

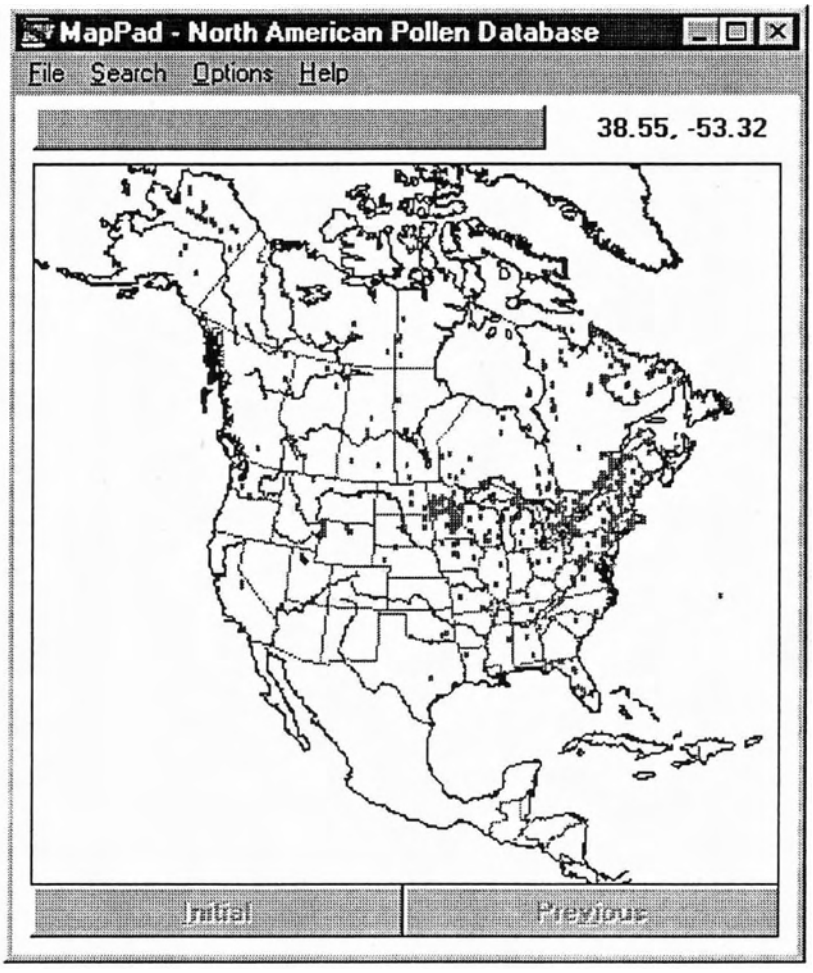

Figure 1. MapPad's main window showing the sites in the Sample datafile (note that this screen is Windows 95).

Step Two - Setup

Now **clear** your desk **so** that you can begin the installation process. Find or create an empty directory on your harddisk (mine's called C:\SETUP) and copy or move mappad11.exe into that directory. Now you have to get to the venerable DOS prompt, and get into that previously empty directory you made, and do a little typing (i.e., in the C:\SETUP directory type *mappad11.exe*). The result of all this is that you now have some 20-odd more files in that once empty directory, but wait, you are not done.

Now get back to Windows, and select Run from the Program Manager's File menu and this time type: *c:\setup\setup.exe* (assuming you followed my example and extracted the setup files into a directory on the C: drive named \SETUP) and click the Ok button. MapPad's setup program will ask you a few simple questions and almost before you know it, MapPad will be installed. Your Program Manager should now have a new program group called MapPad with two icons in it: one for MapPad itself and one for a read-me file that mostly just tells you to use MapPad's Help to find out more about using MapPad.

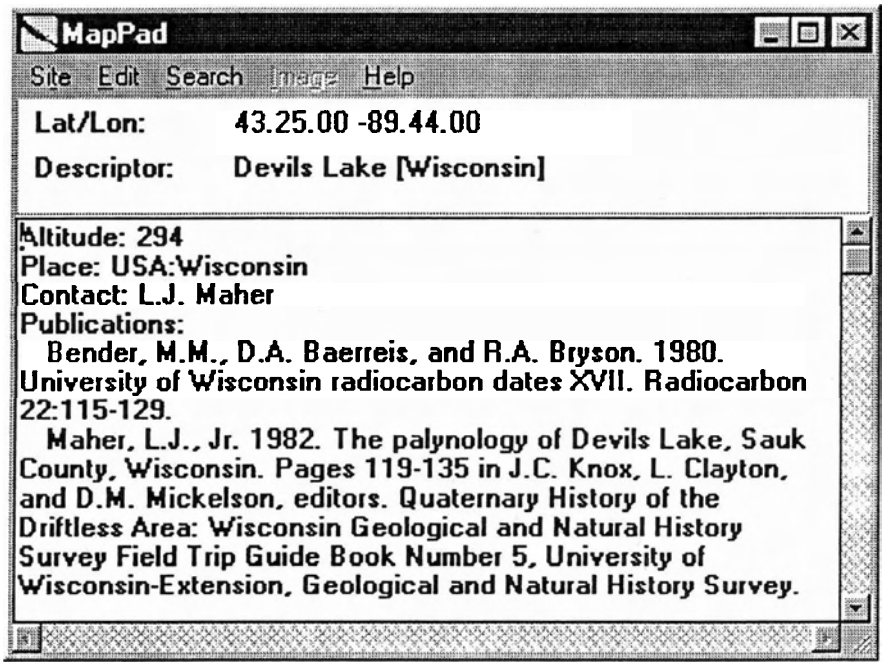

Figure 2. MapPad's NotePad window.

to display the area you outlined. You can repeat this action to zoom further, or you can click the **Previous** button to undo the last zoom. If you click the **Initial** button MapPad restores the original map.

If you click on one of the sites shown on the map (this is made somewhat easier by first zooming), the name of that site appears in the button that is located over the map. If you then click that button, MapPad opens up a NotePad-style window (Figure 2) with the text information associated with that site (double-clicking the site opens the NotePad at once).

Step Three - Test Drive

Now that the hard part is over, let's see what MapPad looks like and how it works. Double-click the MapPad icon and behold the Sample datafile (Figure 1, a bibliography from the North American Pollen Database - NAPD). The Sample datafile was included for you to explore MapPad's features and capabilities. Let's do that.

MapPad is very simple indeed to operate. Place your mouse cursor over the map. Now click and drag the mouse to draw out a box. Release the mouse button. MapPad zooms the map

From the NotePad window you can add, edit, delete, or print information about the site. You can also search for or search and replace text. If there are any images (pictures, sound, movies) associated with the site you can display them by selecting the image in the Image menu (see Help for more information on referencing and displaying images).

Step Four - Personalization

Learning something about the work of the North American Pollen Database is all well and good, but MapPad was really designed for you to add your sites and your information to a map. In the File menu you can select **New Datafile** to create your own datafile (give it a path and filename, pick the map you want to use, perhaps give your new datafile a title). To add one of your

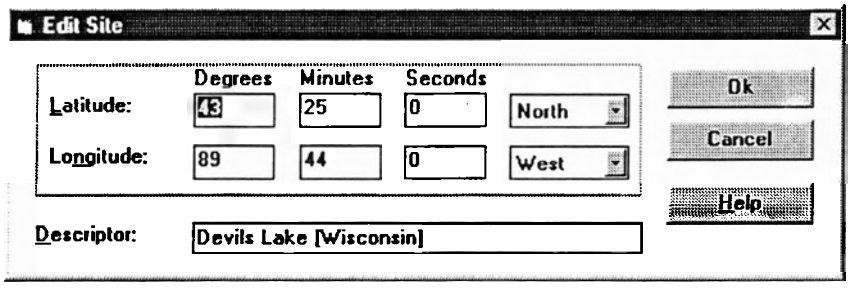

Figure 3. Edit Site dialog box (same as the New Site dialog box).

sites to your new datafile, select **New Site** (Figure 3) from the File menu. Type in the site's latitude and longitude, enter its name, and click Ok. Your site is drawn on the map, and an empty NotePad window opens for you to add whatever text information you like.

If you create more than one datafile (or have traded MapPad datafiles with your friends) you can switch between them by selecting **Open Datafile** from the File menu.

Step Five - Euphoria

So now that you've added your sites to your datafile, and you've shown everyone at home and at work the results (and they are impressed), what about the rest of the world? Well, one nice thing about MapPad datafiles is that they are just ASCII text files (with a few formatting rules), so you can email them to almost anyone and they will be able to read them. You can also print the map (zoomed if you so choose) with your sites on it to create an overhead; or save it as a Windows metafile for importation into a graphics package like Corel Draw to add nice captions or labels.

If at this point you are looking around for someone to thank, then drop Lou Maher a line (maher@geology.wisc.edu), MapPad was his idea. If on the other hand, the unthinkable has happened and setup died or MapPad is not behaving as advertised, then send that message to me. (And if you noticed blank space on the NAPD map where your pollen sites should be, then by all means contact Eric Grimm, grimm@museum.state.il.us, to find out how to contribute your data!)

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Spooner, I. S., 1994. Quaternary Environmental Change in the Stikine Plateau Region, Northwestern British Columbia, Canada. Ph.D. dissertation, Department of Geology and Geophysics, University of Calgary, Calgary, Alberta. 333 pp.

Records of Quaternary environmental change have been resolved on the Stikine Plateau of northwestern British Columbia.

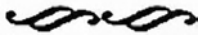
Glacial sediment has been preserved between Early Pleistocene basalt flows on Mt. Edziza and underneath Middle Pleistocene basalt flows in the Stikine River valley. The Mt. Edziza record indicates that regional ice advanced from the southwest and west of Mt. Edziza and inundated the plateau. Radiometric and paleomagnetic dating indicates sediment deposition occurred during isotope stages 24 to 26. Paleomagnetic sampling resulted in the resolution of the Jaramillo normal polarity event within the section. The Stikine River valley section indicates that river blockage and glaciolacustrine sediment deposition occurred at about 330 $\pm$ 30 ka (isotope stage 10). The blockage was a result of early ice advance in the Coast Mountains and eventual regional ice cover is indicated by till overlying the glaciolacustrine sediment.

Advance-phase glaciolacustrine sediment deposited in the Stikine River valley is a record of blockage of the Stikine River by alpine glaciation during early Fraser glaciation time. The extent and thickness ($>$ 150 m) of the section indicates that a considerable lag occurred between alpine and Cordilleran ice advances into the region. Boulder lags, perched meltwater paleochannels and extensive scouring indicate that post-glacial fluvial incision was swift and

that stagnant ice may have resided in the valley during deglaciation.

A palynological investigation of Susie Lake, eastern Boundary Ranges, Coast Mountains, has yielded a comprehensive Late Quaternary biostratigraphic record. Paleovegetational zones record initial colonization (by 10,000 - 7800 BP), establishment of a spruce and fir forest ecotone established by warming climate (about 7800-4200 BP), gradual cooling and precipitation increase accompanied by migration of lodgepole pine into the region (about 4200 - 2100 BP) and moist and cool conditions and a lowering of treeline (about 2100 BP - Present).

Late Holocene oral history records are powerful tools for the resolution of physical environmental change in remote, isolated areas. Landslides have produced river blockage and flooding; the landslides occur in unstable lacustrine deposits and failure is triggered by concentrated spring runoff. Volcanic activity may have occurred as little as 160 years ago. Although subsequent verification is desirable, oral histories may provide the initial evidence of past geological events.



Irwin, T. E., 1994. Development of A Blanket Bog At St. Shotts, Avalon Peninsula, Newfoundland. Ph.D. dissertation, Department of Geography, University of Toronto, Toronto, Ontario. 267 pp.

Blanket bog vegetation at St. Shotts, Newfoundland is composed of four major communities — *Abies balsamea* stands, heath, Bog, and Fluvial. Heath, Bog, and Fluvial communities are divisible into subcommunities. Ordination by Detrended Correspondence Analysis and Canonical Correspondence Analysis suggests that water table depth determines community distribution.

The vegetation communities of the blanket bog are distinguishable by contemporary pollen from Local producers: *Abies balsamea* stands are dominated by *Abies* pollen, heath by Ericales, *Betula* <25 μm pollen and some *Myrica*, Bog by Cyperaceae with modest Ericales and *Sphagnum*, and Fluvial by a combination of Cyperaceae, Ericales, Gramineae, *Betula* <25 μm, *Sphagnum*, and *Osmunda cinnamomea*. There are also identifiable differences in the vegetation subcommunities but, as with the vegetation itself, these are not as pronounced. Surface samples are dominated by Local producers with the Regional component less than 10% and extra-Regional, long distance transport insignificant. Canonical Variates Analysis successfully classified 31 of 32 surface samples into the four vegetation communities and 28 of the 32 into the subcommunities.

Paludification at St. Shotts began about 6,000 radiocarbon years after deglaciation, a period of maximum warmth on the Avalon Peninsula. Initial peat accumulation was in water-collecting depressions and spread slow until 4,000 to 3,200 BP when the bog slope was rapidly covered. Gleying in sites of inhibited drainage is more related to initiation of peat accumulation than podzolization on slopes.

Pollen analysis of eight cores suggests that peat formation began under heath vegetation like that on elevated areas of the interfluve today. The heath was rapidly replaced by Bog vegetation with sedges and *Sphagnum*. Six and perhaps seven of the cores show a Local pollen pattern of lower sections dominated by Cyperaceae, mid-sections by moderate to very high Ericales and substantial *Myrica*, and upper sections again dominated by Cyperaceae. However, there is limited radiocarbon control on these changes; the change from Cyperaceae to Ericales pollen is dated at $2,090\pm50$ (GSC-5058) in Core III and $2,380\pm 60$ (GSC-5059) in Core VIII and the reversion to Cyperaceae is dated at $1,170 \pm 70$ BP (GSC-5057) in Core II.

The pattern of Cyperaceae-Ericales-Cyperaceae in the Local pollen in six and perhaps seven of the eight cores is due to a climatic oscillation to drier and then wetter conditions. Inter-core consistency suggests that climatic change affects blanket bog vegetation in the same way that it affects forest vegetation. Despite similarities to European blanket bogs, pedogenic and anthropogenic influences on development reported there are not relevant at St. Shotts.

Announcements

CAP NEWSLETTER: SPECIAL ISSUE

As announced in the last *CAP Newsletter* 17 (2):37, 1994, I will be assembling a Special Issue of the *CAP Newsletter* for the AASP Meeting in Ottawa. It will be distributed to all conference registrants and mailed to other CAP members who are not able to be at the AASP Meeting. This Special Issue provides an opportunity to showcase Canadian palynology to our colleagues from AASP and to take stock of the status of the discipline within Canada.

Through this announcement, I am requesting CAP members to submit short articles or long abstracts (up to two typed pages) outlining recent or ongoing research projects. These abstracts may include illustrations (diagrams or photographs). Members may submit several abstracts on different projects. Reports of work-in-progress from graduate students are also welcome. I hope to include articles on many aspects of Canadian palynology, to highlight the breadth and diversity of the field. The issue will also include a history of CAP (assembled by David Jarzen) and a listing of Departments and Institutions where palynology is carried out. Ideas for other articles and contributions are welcome

The firm deadline for submissions is September 1 1995. General submission requirements (text and disk format, etc.) are the same as those for a regular issue of the *CAP Newsletter*. Please address any enquiries or send items for the Special Issue to the *CAP Newsletter* Editor (address below, p. 30).

IGCP 374 SESSION - CANQUA 1995

Invitation for Poster Presentations

This is a last minute (literally) reminder that a half day session of IGCP 374 - "Paleoclimatology and Paleoceanography From Laminated Sediments" will be held June 5 1995 as part of the CANQUA-CGRG joint meeting in St. John's, Newfoundland. Conference registrations and abstracts were due April 1, 1995.

The six oral presentations in this session will focus on the theme of the Canadian IGCP 374 working group: physical sedimentology as an indicator of paleoenvironmental change. Talks will serve to illustrate the diverse range of lacustrine and marine environments in Canada and their potential for high resolution Holocene paleoenvironmental records.

A 2 hour poster session for IGCP 374 will be held following the talks in which we hope the broader perspectives of the international initiative are well represented. The five international working groups are: coring methods, micropalaentology, sedimentation, geochemistry, chronology.

In addition, particular interest is attached to specific timeslices, including: the last 2000 years; deglaciation; and interglacial/glacial transition. We encourage contribution of posters on any of these topics. While the focus is on Holocene and Pleistocene high resolution sedimentary sequences, presentations need not be restricted to continuously laminated records. Contributions from graduate students concerning work in progress are strongly encouraged.

If you plan to present a poster as part of this session, or would like additional information, contact:

Dr. Don Lemmen
Geological Survey of Canada
3303-33rd St NW
Calgary, Alberta T2L 2A7

E-mail: lemmen@gsc.emr.ca

Ottawa Canada
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SCHEDULE AND CALL FOR PAPERS 1995 AASP ANNUAL MEETING

October 10-14, 1995
Ottawa, Ontario, Canada

Abstracts are now being requested for the American Association of Stratigraphic Palynologists meeting, sponsored by CAP, to be held in Ottawa, Canada, on October 10-14, 1995. The following SPECIAL SESSIONS will be offered at this meeting:

Quaternary Palynology in Canada will be convened by Dr. Pierre J.H. Richard (Université de Montréal, Montréal, Québec, H3C 3J7). This is an opportunity for Quaternary palynologists to illustrate the role of pollen analysis in environmental reconstructions of the "recent" past, and also examine the contribution of paleopalynology as an independent sub-discipline for reconstructions at the plant population and community levels, not only climatic reconstructions but other aspects as well. Dr. Richard can be reached by FAX at (514) 343-8008 or by E-mail at richard@ere.umontreal.ca.

A second Special Session entitled Dinoflagellates and Acritarchs of Mesozoic-Cenozoic Oceans and Marginal Seas will be convened by Dr. Geoffrey Norris and Dr. Martin Head (Department of Geology, University of Toronto, Toronto, Ontario, M5S 3B1). Dinoflagellates have become established as sensitive chronostratigraphic and paleoenvironmental indicators in epicontinental seas and oceans. This symposium will explore the contributions of extinct and extant cysts and associated acritarchs to magneto-biogeochronology, paleoceanography, and paleoecology of neritic through bathyal sedimentary sequences. Integration of data from shallow and deep water environments is anticipated. The convenors would appreciate hearing from intending participants as soon as possible (preferably by FAX at (416) 978-3938 or E-mail to norris@mica.geology.utoronto.ca; please preface subject header AASP DINOS).

The Third Special Session will be SELECTED papers from the AASP Volumes, Palynology: principles and applications. The session will be convened by Dr. Graham Williams and Dr. Rob Fensome of the GSC, Bedford Institute of Oceanography, Dartmouth, Nova Scotia.

A field trip to Eardley, Quebec (Quaternary nodule site) and surroundings is scheduled which will be led by Dr. Richard Harington of the Canadian Museum of Nature.

The abstract deadline is July 15, 1995. The registration fees for this symposium are: professional Can$105; Student/Retired Can$80 which includes the luncheon and ice breaker. A late registration fee of Can$30 is requested after August 15, 1995. The Field Trip will be held on the Saturday, October 14, and will cost Can$50 which includes transportation and a box lunch.

For information on the AASP meeting, or to request a registration or abstract form, please contact:

S. A. Jarzen,
AASP 28
Canadian Museum of Nature
P.O. Box 3443, Station D
Ottawa, Ontario
K1P 6P4

Tel: (613) 954-0355
FAX: (613) 954-4724
E-mail: sjarzen@mus-nature.ca

CAP ANNUAL GENERAL MEETING 1995

The 1995 CAP Annual General Meeting will be held in Ottawa, Ontario, during the AASP Meeting. The AGM will be held in the Palladian Room of the Chateau Laurier, on Thursday, October 12, 1995, from 6-9 p.m. Anyone having items they wished placed on the agenda for this meeting should contact Martin Head (CAP Secretary/Treasurer) prior to the meeting. All CAP members and correspondents are invited to attend. Other interested palynologists and earth scientists are also welcome to attend the AGM.

TEMPORARY EMPLOYMENT

Quaternary palynologist, experienced in pollen and plant macrofossils. Interstadial and post-glacial projects. Three months work (summer-fall 1995); some possibility of extension. Send CV and names of three referees to:

P. F. Karrow
Department of Earth Sciences
University of Waterloo
Waterloo, Ontario, N2L 3G1

Tel: (519) 885-1211 X3731
FAX: (519) 746-0183
E-mail: pfkarrow@sciborg.uwaterloo.ca

WATER RESOURCES AND CLIMATE CHANGE IN SOUTH-WEST EUROPE

Applications are invited for the post of post-doctoral research assistant at the Department of Geography, University of Newcastle upon Tyne, U.K., for an 18 month program of research in co-operation with the Department of Ecology, Autonoma University, Madrid.

The project aims to provide a long term basis for evaluating recent climatic anomalies in south-west Europe and in particular, the dramatic decline in water supplies in the light of accelerating water demand in the region. The changing availability of water resources over the last 10,000 years will be investigated through the reconstruction of changes in lake level and terrestrial vegetation from closed-basin lakes (lakes without a surface outflow) across Spain and Portugal. Palaeoclimate reconstruction will involve sediment core analysis using multi-proxy palaeoecological techniques (diatoms, macrofossils, ostracods, pollen, cladocera, chironomids, charcoal, geochemistry and sediment structure), combined with surface sample data sets and statistical analysis.

The project has the following detailed aims: 1) To examine the long-term interaction and influence of the Atlantic-Mediterranean climate system across the region through comparison of lake-level and regional vegetation at sites throughout Iberia; 2) To investigate seasonal shifts in precipitation patterns by comparing lake-level changes in neighbouring lakes with contrasting hydrology (groundwater/run-off controlled), as well as changes in vegetation; 3) To develop a quantifiable multi-proxy model (including geochemical, biological and physical indicators) for lake level reconstruction based on a surface sample data set and statistical analysis; 4) To compare the palaeoclimate record with that of anthropogenic activity to determine the role of human impact on the environment.

We are currently seeking a palynologist to work within the project. Applicants should have experience of palynology to PhD standards and preferably experience of Mediterranean pollen, although this is not essential. The appointee will be responsible for much of the pollen analysis undertaken on cores and surface samples. In many cases, the results will represent the first detailed evidence of Holocene vegetation devel-

opment from large areas of the semi-arid Iberian Peninsular. The project therefore offers an exciting opportunity to provide new insights into the vegetation development of this poorly studied region, together with an international research perspective.

The appointment will be from July 1995 for a fixed term of 18 months, on the salary range £13,941-£15,556 per annum depending on qualifications and experience. No forms of application are issued. Three complete copies of applications, including full CV with present salary and the names and addresses of three academic refereees should be sent to Ms Shiela Spance, Department of Geography, University of Newcastle, Newcastle Upon Tyne, NE1 7RU, U.K. Application deadline: Friday 19th May. Informal enquiries can be made to:

Dr Basil Davis
Tel: 0191 222 6453 (direct line)
FAX: 0191 222 5421
E-mail: B.A.S.Davis@ncl.ac.uk

FIRST-AID FOR HF BURNS

A recent *AASP Newsletter* (28(1):14-15, 1995) contained the harrowing account of the death of a laboratory technician in Australia following a hydrofluoric acid (HF) burn. The amount of acid involved was quite small, estimated to be about 100 ml. This account stimulated a good deal of conversation subsequently on the POLPAL discussion list, mainly concerning the proper first-aid and medical treatment for HF burns. From the discussion, it became clear that there was a good deal of confusion and contradictory information about the appropriate action to be taken in the event of an accident with HF acid. One comment that I found particularly disturbing was a report that hospital emergency personnel may not be familiar with the correct treatment of such burns. One contributor suggested keeping a HF safety sheet in the lab. near the work area which could be taken to the hospital with the injured person. This would be a sound practice in my view. For lack of anything better, the MSDS sheet supplied with HF acid shipments would provide at least some minimal information. I will be researching this topic further and hope to have additional information in a future *CAP Newsletter* issue.

In the meantime, Martin Head (*AASP Newsletter* Editor) included an extract from the Ontario Geological Survey laboratory safety manual dealing with the emergency treatment of HF burns (see *AASP Newsletter* 28(1):15, 1995) and a follow-up article (*AASP Newsletter* 28(2): 13-14, 1995). These articles included the information that burns can be treated effectively with an aqueous solution or a gel preparation of calcium gluconate.

I thought readers might be interested to learn of a commerically-manufactured product designed for the First-Aid treatment of HF burns. The product is known as "Calcium Gluconate Gel". It is manufactured by Industrial Pharmaceutical Services Ltd, Altrincham, England, U.K., and is distributed in Canada and the US by Pharmascience Inc. (address below). The gel is supplied in tubes of 25 g. Prices, as of March 1995, are $27.55/tube or $165.30 for a 6-tube pack. According to information from Pharmascience, at normal room temperature, the gel has a recommended shelf-life of not more than five years.

Note that this is a First-Aid treatment only and is not a substitute for proper medical attention. All HF burns, no matter how seemingly trivial, should be considered serious and proper medical treatment sought. For more information on this product, contact:

Pharmascience Inc.
8400 Darnley Road
Montreal, Quebec
H4T 1M4

Tel: (514) 340-1114

NINTH INTERNATIONAL PALYNOLOGICAL CONGRESS (9th IPC)

Houston, Texas
23-28 June 1996

The 9th IPC will be held at the J.W. Marriott Hotel in Houston, Texas, 23-28 June 1996. The meeting is sponsored by the International Federation of Palynological Societies (IFPS) and hosted by the American Association of Stratigraphic Palynologists (AASP).

The meeting will consist of fieldtrips, symposia, theme and general sessions, and special events. Both poster and oral presentations are welcome. Theme sessions are expected to include: Computerization and Data Storage, Morphology and Genetics, Paleoclimatic Studies, Paleoenvironmental Reconstruction, Palynological Miscellanea, Palynostratigraphy and Sequence Stratigraphy, Preparation Techniques, SEM and TEM Applications in Palynology, Statistical Methods, Systematics, Ontogeny and Evolution, Teaching and Professional Training, and the Future of Palynology.

A Special Session on the latest book to be published by the AASP Foundation, *Palynology — Principles and Applications*, will be convened by J. Jansonius, D.C. McGregor, and G.L. Williams. Invited speakers, authors of chapters in the two-volume work, will discuss their contributions in a workshop setting, providing insights and updates.

Twenty-five symposia are planned, comprising: Aerobiology (organized by M.K. O'Rourke, E. Levetin and M. Hjelmroos), Antarctic Palynology (A. McMinn and J.H. Wrenn), Archaeological Palynology (O.K. Davis, J.W. Gish and K. Edwards), Aspects of Palynology of the ODP (B.A. Tocher, S.P. Damassa and J.V. Firth), Biased Pollen Assemblages (M. Evron), CIMP Symposium on Paleozoic Palynology (R. Wicander), Cryptospores and the Origins of the Terrestrial Flora (P.K. Strother), Entomopalynology (G. Jones and V.M. Bryant), Forensic Palynology (D.C. Mildenhall), Intertropical Last Glacial-Holocene Climatic Change (H. Hooghiemstra), Last Interglacial/Glacial Transition: Patterns and Causes of Change (C. Whitlock), Melissopalynology (G. Jones), Modern Dinocysts: Distribution, Ecology and Taxonomy (J.H. Wrenn), Neogene-Quaternary Dinocysts (M.J. Head and J.H. Wrenn), Neogene Vegetation (R. Taggart), New Frontiers and Applications in Palynology (W. Boyd), Paleozoic Palynology (A.T. Cross), Palynology of Recent and Ancient Delta Systems (D.T. Pocknall and E. Williams), Palynology of Grasslands (S.A. Hall), Palynology of Key Boundary Sections (D.J. Nichols and D.T. Pocknall), Palynomorph Distribution Patterns and Their Interpretation (G.L. Williams, M. Boulter and R.A. Fensome), Phytoliths and Pollen (J.G. Jones and D. Piperno), Quaternary Palynostratigraphy of the Himalayas (C. Sharma and M.S. Chauhan), Role of Palynology in Hydrogeological and Environmental Studies (R.S. Van Pelt and J. Lucas-Clark), and Survivorship Following Migration and Extinction Events (N.O. Frederiksen). If you wish to participate in one of these symposia, please notify the organizer(s).

Three pre- and four post-conference field trips are planned, depending on the level of

interest expressed. Places on the trips are limited but trips may be cancelled unless minimum registration is obtained. Pre-conference fieldtrips include: A1. Cretaceous-Tertiary Boundary in the Raton Basin (organized by R.F. Fleming, estimated cost $250 USD), A2. Geology and Palynology of Wyoming (D.J. Nichols, D.T. Pocknall and R. Flores, $850 USD), and A3. Palynology of Wetland Environments of the Southern US (F.J. Rich, G.L. Chmura and R.A. Gastoldo, $650 USD). Post-conference field trips include: B1. Brazos River, Southeast Texas (J. Anderson and D.T. Pocknall, $50 USD), B2. Eocene Fossils of Whiskey Bridge (C. Cunningham, $50 USD), B3. K-T Boundary and Eocene Localities in Central Texas (J. Stein, J.A. Gennett and A. Raymond, $250), and B4. Palynology of the American Southwest (O.K. Davis, $850). If you wish to attend any of these trips, please notify the organizer(s) as soon as possible. Fieldtrip costs do not include airfare to the starting point or to Houston.

Other events to be held in conjunction with the conference include the "Fourth Workshop on Neogene and Quaternary Dinoflagellates" convened by M.J. Head and J.H. Wrenn (June 23), a short course entitled "Morphology, Taxonomy, Classification, and Geologic Occurrence of Fungal Palynomorphs" presented by W.C. Elsik (June 22-23), and an informal half-day "Workshop on Identification of Unknown Airborne Pollen and Spores" convened by M.K. O'Rourke. Please notify the organizers of these workshops and short course if you are interested in participating.

The 29th Annual Meeting of AASP will be held concurrently with the IXth IPC. A business lunch is planned. There will not be a separate AASP meeting in 1996.

Two Plenary Sessions at IX IPC will be the formal quadrennial business meetings of IFPS. All registered participants at the Congress are entitled to attend and vote. IFPS officers for 1996-2000 will be installed. Each Plenary Sesssion will be preceded by a formal meeting of the IFPS Council.

Social events during the meeting will include the Opening Ceremonies and Reception, the Conference Banquet (included in the registration fee), and a half-day excursion to the NASA "Space Center Houston" (included in registration fee).

AASP will be publishing the IX IPC Proceedings Volume. A copy will be sent to all meeting registrants, about 18-24 months after the Congress. The volume will contain summaries of up to about 100 papers presented during the meeting. Papers to be included will be selected by the editors (D.K. Goodman and R.T. Clarke).

Each registered participant at the IX IPC will also receive the Second Edition of the *World Directory of Palynologists*. Changes to listings in the World Directory must be submitted no later than March 15 1996 to Owen Davis, FAX: (602) 621-2672, E-mail: palynolo@ccit.arizona.edu

The second circular and call for papers, including the abstract and registration form, has been mailed out. The circular includes additional details including accommodation and transportation information, and the names and addresses of the organizers of the various symposia, fieldtrips and other special events. The abstract deadline is March 31 1996. Registration fees are $350 USD (regular) and $150 USD (student with certification of status). After March 31 1996, a late fee of $50 USD will be assessed.

If you require more information or a copy of the circular and registration form, please contact:

Vaughn M. Bryant Jr.
Palynology Laboratory
Texas A&M University
College Station, Texas 77843-4352, U.S.A.

Tel: (409) 845-5242
FAX: (409) 845-4070
E-mail: vbryant@tamu.edu

ENGLAND FINDER

An England Finder is a specially-engraved microscope slide that allows a palynologist to relocate a palynomorph on a slide with any microscope. The England Finder consists of a glass slide marked with a co-ordinate reference system. Once an object of interest is found on a pollen slide, it is brought beneath the cross-hairs. The England Finder is placed on the stage and the co-ordinates for the centre of the field of view are read off. Then, when the pollen slide is taken to another microscope, the England Finder is used to set the recorded co-ordinates. When the pollen slide is placed on the stage, the item of interest should be re-located beneath the cross-hairs.

An England Finder costs £60 (UK), as of March 1995. As an example, packing and postage costs from England to Canada are £3 (UK). Graticules Ltd. also supplies a variety of other stage graticules, eyepiece micrometers, etc. Further details may be obtained from:

Graticules Ltd.
Morley Road
Tonbridge, Kent
TN9 1RN
U.K.

Tel: 0732 359061
FAX: 0732 770217

CUSTOM CORING EQUIPMENT

Greenfield Machine Works in Old Town, Maine, is a source for custom coring equipment and coring supplies. The company can supply or make hard-to-find items such as cables, metric drive rods, T-handles, casings, specialty thread adapters, and replacement doors and pistons. The company's strength, however, is in manufacturing custom sampling equipment.

Greenfield Machine Works are the primary supplier of research corers and equipment and repairs for the Institute of Quaternary Studies at the University of Maine and have supplied corers to researchers at Colby College and Duke University. The company has extensive experience with Russian corers, Wright-type hydraulic piston corers, and Davis reconnaissance corers.

Greenfield Machine Works is prepared to manufacture practically any type of coring equipment you can devise. They regard each custom coring system as a unique design, reflecting specific research interests. Making a finished research tool from a back-of-an-envelope sketch is a skill the company is proud of. Frequently, the company is asked to produce metric replacement parts for European-made equipment. Prices charged are just a little over cost; the company regards this work as "good cause" rather than "good business".

Dr. John Erdman, the owner of Greenfield Machine Works, is a scientist refugee from a Fortune 500 company where he spent a career doing research and designing and building specialty scientific equipment. With early retirement and a desire for a simpler life in the north woods, he has built a business that designs and builds specialty manufacturing equipment.

For more information, please contact:

Dr. John Erdman
Greenfield Machine Works
Greenfield Road
Costigan, Maine 04423
U.S.A.

Tel: (207) 827-5557
E-mail: jperdman@aol.com

[Editor's note: A version of this article has appeared in *AASP Newsletter* 28(1):14, 1995. This and the previous article are also included in the CAP WWW presentation.]

CHANGE OF ADDRESS

Please note the following change of address. Bert Van Helden can now be reached at:

427-53rd Avenue SW
Calgary, Alberta
T2V 0B8

Tel: (403) 258-2874

DEADLINES

Please submit items for the *CAP Newsletter* Special Issue (Volume 18, Number 2, October 1995) by September 1 1995 and for the next regular *CAP Newsletter* (Volume 18, Number 3, December 1995) by November 15 1995. I prefer to receive material on disk using MS-DOS WordPerfect 5.1 or 6.0; MS-DOS or Macintosh text files or Word files are also fine. Either 5.25" or 3.5" disks (low or high density) are acceptable. Each item should also be submitted as hardcopy. Articles may include diagrams and photos; for photographs, please provide a glossy black-and-white print (3" x 5" or 6" x 4") from a picture with good contrast. Illustrations may be submitted on disk in CorelDraw 4.0 format. Text and illustrations may be submitted by e-mail. Please send material to:

Alwynne B. Beaudoin
CAP Newsletter Editor
Archaeological Survey
Provincial Museum of Alberta
12845-102nd Avenue
Edmonton, Alberta
T5N 0M6

Tel: (403) 431-2391
FAX: (403) 432-1376
E-mail: abeaudoi@gpu.srv.ualberta.ca

Meeting calendar

1995

May 28-June 1: Walter A. Bell Symposium on Paleobotany and Coal Science: Sydney, Nova Scotia. Details: Dr. Erwin L. Zodrow, University College of Cape Breton, P.O. Box 5300, Sydney, Nova Scotia, B1P 6L2. FAX: (902) 562-0119.

June 5-7: CANQUA-CGRG Joint Meeting. St. John's, Newfoundland. Featuring a palaeoenvironmental session in honour of Dr. Joyce B. Macpherson, see *CAP Newsletter* 17(2):34, 1994. See also announcement, p. 23. Details: Dr. Norm Catto, Department of Geography, University of Newfoundland, St. John's, Newfoundland, A1B 3X9. Tel: (709) 737-8413, FAX: (709) 737-4000, E-mail: dgl@zeppo.geosurv.gov.nf.ca (Dr. David Liverman). For more information, see CANQUA 1995 WWW page at http://www.mun.ca:80/~liverman/circular.html

August 3-10: XIV INQUA Congress. Berlin, Germany. Details: Congress Partner GmbH, Emmastr. 220, 28 213 Bremen, Germany. Tel: 04 21 21 90 73, FAX: 49 421 21 64 19, or Dr. E. Derbyshire, Royal Holloway and Bedford New College, London University, Egham, Surrey, TW20 0EX, England, U.K. FAX: 0273-748919. For more information, see INQUA '95 WWW page at http://www.uni-hohenheim.de/~pkdb/inqua/

August 13-16: 1st SEPM Congress on Sedimentary Geology. Theme: "Linked Earth Systems". Fieldtrips, symposia, workshops. St. Pete Beach, Florida, USA. Details: Ms. Myralee Rogers, SEPM Meeting Co-ordinator, SEPM, 1731 E. 71st Street, Tulsa, Oklahoma 74136, U.S.A. Tel: (918) 743-9765, Toll-free (US): (800) 865-9765.

August 27-30: 12th Annual Meeting, The Society for Organic Petrology. Houston Texas. Abstract deadline: June 30 1995. Details: John R. Castaño, DGSI, 8701 New Trails Drive, The Woodlands, Texas 77381, U.S.A. Tel: (713) 363-2176, FAX: (713) 292-3528, E-mail: dgsi@aol.com

August 28 - September 2: XIII International Congress on Carboniferous-Permian. Krakow, Poland. Details: Prof. dr. hab. Sonia Dybova-Jachowicz, Państwowy Instytut Geologiczny, Oddział Górnośląski, 1 Królowej Jadwigi, 41-200 Sosnowiec, Poland. Tel: 48 32, 66 20 36 (38), FAX: 48 32, 66 55 22.

September 29 - October 2: Fifth Canadian Paleontology Conference and International Symposium on the Paleobiology and Evolution of the Bivalvia, Joint Meeting. Royal Tyrrell Museum of Palaeontology, Drumheller, Alberta. Details: Dr. Paul A. Johnston, 5th Canadian Paleontology Conference, Royal Tyrrell Museum of Palaeontology, P.O. Box 7500, Drumheller, Alberta, T0J 0Y0. Tel: (403) 823-7707, FAX: (403) 823-7131.

October 10-14: 28th Annual Meeting of the American Association of Stratigraphic Palynologists. Ottawa, Ontario. Comprises Symposia, including CAP Special Session, Technical Sessions, Posters, Field Trip. See announcement, p. 24. Details: Ms. Susan A. Jarzen, Canadian Museum of Nature, P.O. Box 3443, Station "D", Ottawa, Ontario, K1P 6P4. FAX: (613) 954-4724.

November 6-9: Geological Society of America Annual Meeting. New Orleans, Louisiana. Details: GSA Headquarters, Box 9140, 3300 Penrose Place, Boulder, Colorado, CO 80301, U.S.A. Tel: (303) 447-2020.

November 18: British Micropalaeontological Society, Silver Julilee Meeting. University College London, U.K. Details: James B. Riding, Secretary, BMS, British Geological Survey, Keyworth, Nottingham NG12 5GG, England, U.K. Tel: 01159-363447, FAX: 01159-363437.

1996

May 19-22: American Association of Petroleum Geologists Annual Meeting. San Diego, California. Details: AAPG Meetings, Box 979, Tulsa, Oklahoma 74101, U.S.A. Tel: (918) 584-2555, FAX: (918) 584-0469.

May 27-29: GAC-MAC Joint Annual Meeting. Winnipeg, Manitoba. Details: Dr. G.S. Clark, General Chair, Department of Geological Sciences, University of Manitoba, Winnipeg, Manitoba, R3T 2N2. Tel: (204) 474-8857, FAX: (204) 261-7581.

June 9-12: North American Paleontological Convention VI. Smithsonian Institution, Washington, DC. The Organizing Committee welcomes suggestions for symposia topics and format. To receive the next circular or more details, contact: M. A. Buzas, Chair, NAPC-VI, Department of Paleobiology, NMNH MRC-121, National Museum of Natural History, Smithsonian Institution, Washington DC 20560, U.S.A.

June 22-29: 9th International Palynological Congress (IPC). Houston, Texas, U.S.A. Symposia, technical session, fieldtrips, special events. See announcement, p. 27. Details: Dr. Vaughn M. Bryant Jr., Texas A&M University, College Station, Texas 77843-4352, U.S.A. Tel: (409) 845-5242, FAX: (409) 845-4070, E-mail: vbryant@tamu.edu

June 30-July 5: International Organization of Paleobotany. University of California, Santa Barbara, California, U.S.A. Details: Bruce H. Tiffney, Department of Geological Sciences, University of California, Santa Barbara, California 93106, U.S.A. FAX: (805) 893-2314, E-mail: tiffney@magic.ucsb.edu.

CAP MEMBERSHIP FORM

Canadian Association of Palynologists (CAP) membership is open to all members of the palynological community in Canada. The Association is devoted to promoting the exchange of information among palynologists in Canada. Palynologists from outside Canada may become corresponding members for the same dues, with no voting rights. Membership dues include two issues a year of the *CAP Newsletter*, to which all members are invited to contribute. CAP is also affiliated with the International Federation of Palynological Societies (IFPS) and CAP members receive two issues of the IFPS newsletter (*PALYNOS*) each year.

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CAP membership dues are $10 per year in Canadian funds payable at the beginning of the year. Lapsed members are removed from the mailing list after two years. Members may, if they wish, pay for up to three years in advance. Please send a cheque or money order payable to CAP to:

Martin J. Head, CAP Secretary/Treasurer, Department of Geology, Earth Sciences Centre, University of Toronto, 22 Russell Street, Toronto, Ontario, M5S 3B1, Canada.

Name and title:_____

Affiliation:_____

Address:_____

_____

_____

Tel:_____FAX:_____E-mail:_____

Research interests:_____

_____

_____

Indicate: Renewal:_____New membership:_____Amount enclosed:_____

May we include your name/address/research interests in the on-line "Directory of Palynologists" in the CAP World Wide Web page? Yes:_____ No:_____