PALYNOS

Volume 23, No. 1 - June 2000

NEWSLETTER of the INTERNATIONAL FEDERATION of PALYNOLOGICAL SOCIETIES

MESSAGE FROM OUT-GOING PRESIDENT
OWEN DAVIS

I ask all of the councillors and officers to join me in welcoming ANNICK LE THOMAS as Seventh President of the International Federation of Palynological Societies. Annick has served IFPS for many years as Representative to IUBS, and as Councillor. I look forward to serving Dr. Le Thomas as Past President, and I especially thank the other candidates. Twenty five votes were received by the Secretary Treasurer in this election.

The following items are to be considered at the meeting in Nanjing. This announcement is being made in the future tense inasmuch as we are trying to get this newsletter out before the Congress convenes. In any case, we need to publicize the proposed constitutional amendment one more time.

Plenary Session: Saturday, June 24, 2000 5:00 PM Agenda:
- Introduction of Current IFPS Officers
- Explanation of IFPS and IPC History
- Voting on the *Amendments to the IFPS Constitution

*Article 17 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."

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 inaddition, 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."

NOTE FROM THE NEW PRESIDENT

As we enter the New Millennium, it is a great honor for me to have been chosen as

Therefore in accordance with the IFPS Constitution, the June 27, 1996 the New President of the International Federation of Palynological Societies, a Federation which has

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achieved a tremendous amount during almost 50 years. Greetings to all palynologists of our many IFPS affiliated societies! During my term of office I will endeavor to further the aims of our Federation, which have been outlined and developed over the years by my predecessors.

Our International Palynological Federation has grown through a slow evolutionary process. Now, for the first time, a woman has been elected. Is it a forewarning for the New Millennium? I cannot say, but I know it will be a serious commitment for me. Indeed, the New Century will have to develop a unified strategy to the study of biodiversity. Palynology is one of the many links in the chain of disciplines involved in a better appreciation of our Earth's resources. We must continue to ensure its status as a very important tool in integrated programs of Biodiversity Science. Our discipline provides a wide range of data that can help us to understand the biology and development of plants, the effect of biodiversity, plant-animal interactions, and of man's intervention on ecosystem functioning, the origins, phylogeny, origins and maintenance, and change of biodiversity, the conservation of biodiversity, the changes to climates during the past, and so on. Palynologists continue to have a large and important contribution to provide to the biological and geological sciences.

Now that we are at a significant scientific crossroad, we must look forward and embrace necessary changes in the way that we work and communicate. So, we need to continue to consolidate and further our channels of communication through the Councillors of our constituent national previously one of the three Vice-Presidents. You will find their addresses in this newsletter. With the new Presidency we experience a Transatlantic move from America to Europe. I am confident that during the next four years, with the new European collaboration, we will successfully maintain the health and future of our Federation at a high level.

Finally, my thanks to Owen DAVIS and to Scott ANDERSON for shepherding the IFPS so well through the past four years, and to Frederick RICH for the excellence of the PALYNOS newsletter.

I look forward to seeing many of you in Nanjing in June at what promises to be a very special and appropriate venue for the first International Palynological Congress of the New Millennium, and the 10th of our Congresses.

Annick Le Thomas, President of IFPS

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societies which comprise the International Federation. We have a powerful network that can enable greater involvement in international multidisciplinary projects. However, to get back to basics, PALYNOS remains our most valuable communication tool. To keep abreast of the international palynological scene it is necessary for each of the societies to continue to send us their regular newsletters, and/or communicate newsworthy items regarding research, meetings, conferences, individuals, etc. Send contributions directly to Anne-Marie LEZINE, the new PALYNOS Editor. The new Secretary-Treasurer will be Madeline HARLEY,

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The tenth Brazilian Meeting of Paleobotanists and Palynologists (X Reuniao de Paleobotanicos e Palino1ogos X RPP) will be held December 11-16, 2000, at the Guarulhos University in the Greater Sao Paulo metropolitan area.

As in all previous meetings in this series, this year's program offers a broad spectrum of activities, divided approximately equally between technical sessions (oral and poster presentations) and special events, including keynote addresses and round-table

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MEETING ANNOUNCEMENT

First Circular Announcing The Tenth Brazilia; Meeting Of Paleobotanists and Palynologists (X REUNIAO DE PALEOBOTANICOS E PALINOLOGOS), 11-16 December, 2000 Universidade Guarulhos, Guarulhos, Sao Paulo, Brazil

discussions on the following:

Phytostratigraphy of the *Glossopteris* flora.

Phytogeographic patterns: Paleoenvironmental implications of present and past distributions of plants.

Palynostratigraphy of Mesozoic sequences applied to petroliferous systems: Methods of high-resolution study and perspectives.

Palynostratigraphic correlations of the Late Paleozoic of Gondwana.

We enthusiastically invite all interested persons to attend. The registration fee is U$70, payable by check to Antonio Roberto Saad. Abstracts for oral presentations (15 minutes plus 5 minutes for discussion) and posters should be mailed by 30 June, 2000 in hard form and 3.5" diskette (WORD 97 or 98 format using Times New Roman 12 font and 1.5 spacing). All text, title, author's names and affiliations, etc, should fit within a single A4 page (210 x 297mm) with 3.5 cm upper margin, 2.0 cm right margin, 3.0 cm left margin, and 2.5 cm lower margin.

Information on accommodations and how to get to the meeting will he available in the Second Circular to be sent out in July. For further information, contact:

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MEETING PROCEEDINGS

IX Russian Palynological Conference

Intersectional seminar on computer analyses of palynological data (convenors M. V. Oshurkova, K. V. Kremenetski, P. E.

The IXth Russian Palynological Conference was held at the Institute of Geology and Development of Fossil Fuels (Moscow) from 13 to 17 September, 1999. One hundred forty specialists gathered from 33 cities of Russia (Moscow, St. Petersburg, Voronezh, Tomsk, Saratov, Vyatka, Kazan', Ekaterinburg, Novosibirsk, Tyumen', Ulan-Ude, Chita, Petropavlovsk-Kamchatski, Yakutsk, Magadan, Vladivostok, etc.) as well as from the countries of Baltia and CIS.

The theme of the Conference was announced as "Urgent problems of palynology before the Millennium". Its scientific programme was suc- cessfully realized due to the active work in planning plenary and sectional meetings. The following sections and seminars were organized:

Palynology and ecology congeners O. F. Dzyuba and V. F. Tarasevich).

Precambrian and Lower Palaeozoic (convenors N. A. Volkova and I.K. Chepikova).

Devonian and Carboniferous, (convenors T. V. Byvsheva, V. V. Menner, and L. N. Peterson)

Permian and Triassic (convenors A. V. Gomankov, O. P. Yaroshenko, and A. A. Tsaturova)

Jurassic and Lower Cretaceous (convenors L. V. Rovnina and S. B.Smirnova)

Neogene and Pleistocene (convenors N. S. Bolikhovskaya, I.A. Karevskaya, V.V. Pisareva, V. S. Volkova)

Holocene and modern deposits (convenors Y. K. Elovicheva, E. S. Pleshivtseva, and V. I. Khomutova)

Microalgae (convenors M. A. Akhemetiev, N. I. Zaporozhets, V. I. Ilyina, V. A. Fedorova)

Tarasov)

Intersectional seminar on paleophytogeography (convenors M. A. Akhmetiev,V. A. Krasilov, M. P. Doludenko)

One hundred ten reports were presented and discussed. They concerned a number of topics including detailed stratification and correlation of oil and gas bearing rocks, paleogeography, environmental state and other urgent problems. Significant interest was aroused by the report of corresponding member of Russian Academy of Sciences A. M. Zhamoida on the history of the Academy.

The participants of the conference noted the high scientific level of the presented reports, a great deal of data and the use of new methods for their interpretation. The results obtained demonstrate that palynology today retains its leading role among the biostratigraphic research methods in such directions as detailed stratigraphy, correlation of events in space and time, and paleogeographic reconstructions based on precise chronological information.

The coincidence of boundaries and units recognized by means of palynology, paleozoology and other methods was mentioned in many cases. This allows us to confidently correlate natural events and reveal both global and local factors that caused the changes in vegetation, climate, biogeocoenoses, and rhythms of sedimentation.

The extremely high level of some studies is noteworthy. Particularly, we note the investigations of the coloniality among Precambrian microorganisms and the stratigraphic applications of data on the evolution of their co unities as well as studies in the biostratigraphy of the Upper Cambrian and Lower Ordovician. It was clearly demonstrated that the acritarchs have considerable biostratigraphical potential in the Cambrian and Ordovician, providing zonation which can rival and

Diatoms (convenors Z. I. Gleser and L. V. Rasumovski)

supplement the traditional scales based on such groups of fauna as

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conodonts and trilobites.

Many interesting and new ideas were presented in the reports treating the morphology and ecology of pollen grains in the light of their ultrastructure, viz. the communication by I. I. Gabaraeva entitled "Exine substructure: direct and reversal approach"; by V. F. Tarasevich entitled "Specialization features within the family Araceae in connection with the electron microscopic investigation of exine"; and by O. F. Dzyuba entitled "Pollen as a model of control over the animal, human and plant male generative sphere state under conditions of industrial centers and cities".

There is interest in creating regional and personal palynological data bases with the broad participation of palynologists from Russia and CIS in the international programmes.

The conference testified to the increase in international contacts among palynologists, as well as higher levels of investigations both in palynology and adjacent branches of science, and the use of modern technologies in palynological studies. The presented reports confirmed the leading role that palynology occupies in the research into the floristic and vegetational history of the Earth as well as in biostratigraphy, paleoecology and environmental analyses, and clarified the development of the theory and practical aspects of palynostratigraphy, paleofloristics., paleoclimatology, paleoecology, and environmental sciences.

The next Xth Russian Palynological Conference "Methodical aspects of palynology" will be held at the same Institute of Geology and Development of Fossil Fuels (Moscow) in 2002.

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NEW (OLD) PUBLICATIONS SOON TO BE BACK IN PRINT AND A AVAILABLE AGAIN

Textbook of Pollen Analysis, 4th. edition by Knut Faegri, Johs. Iversen, Peter Emil Kaland and Knut Krzywinski. ISBN 1-930665-01-6 This book is a reprint of the fourth edition of the Textbook of Pollen Analsis and is unique in its approach as it discusses both the practical and theoretical aspects of palynology. It uses palynological techniques as tools for solving problems in Quaternary geology, ecology and archeology. This edition of this standard reference has the same objectives as the earlier ones but the objectives have been widened, particularly the archaeological aspects. There are over 130 illustrations and the identification keys have been thoroughly revised and are now illustrated.

"...will certainly benefit all in understanding the principles of pollen analysis. All students, palynologists and libraries should have it as a textbook for reference." Marine Geolology.

"Classic and much-used text book... will remain an indispensable book for those interested in paleoecology and practicing pollen analysis." The New Phycologist

"...unsurpassed in its restriction to basic principles, breadth of coverage, clarity of expression and emphasis on ecology." Review of Paleobotan and Palynology

The Seed Identification Manual by

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Alexander C. Martin and William D. Barkley. ISBN 1- 930665-03-2

This title was first published by the University of California Press and is an attempt to deal with the long-standing need for a reference work dealing exclusively with seed identification. The imediate aim of the manual is to help agriculturists, foresters, wildlife

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biologists and others interested in land-use programs to identify the seeds in their particular fields of interest. The authors have, in the main, restricted the content of the description to those characteristics useful for identification. The descriptions are, to the extent possible, nontechnical and therefore useful to a broader range of interests and skills.

For further information on these publications, point your browser to http://www.blackburnpress.com

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APOLOGIA

In the previous edition of this Newsletter, I thanked various individuals for their contributions to paleobotanical aspects of the nomenclatural sessions at the Botanical Congress in St Louis. However, I omitted mention of Bill Chaloner, who was certainly very much involved in the discussions. I here thank Bill for his continuing significant contributions and

Desert Research Institute, University of Arizona, Tucson for several years, where she continued her work on Tertiary pollen and spores. She then moved to the Museum of Natural History, University of Oregon, Eugene. Subsequently she joined the Department of Biology at the University of Oregon where she served until her death. She taught both undergraduate students and graduate students in biology, geology, geography, and anthropology.

Her research career, supported in large part by the National Science Foundation and the Whitehall Foundation, included a number of outstanding discoveries. Her work on the early evolution of land plants showed that higher land plants first appeared in the Middle Ordovician 40 million years earlier than had been previously thought. This discovery, which faced great opposition, is widely accepted today and used in many textbooks. Her masterful book- length monograph on nonmarine paleoecology is widely used as a synthesis of what was known in this area up through 1988.

At the time of her death she was investigating the nature of atmospheric carbon dioxide present since the Cambrian. Her compilation and correlation of a massive amount of botanical and geological data will substantially revise previous

apologize for inadvertently omitting his name.

Rob Fensome

IN MEMORIUM

Professor Jane Gray, Department of Biology, University of Oregon, Eugene, died January 9, 2000 of cancer. She was born in Nebraska on April 19, 1929 to Muriel Barrett Gray and Col. Ernest Gray, a West Point Graduate. Jane Gray received her B.S. degree from Radcliffe College in 1951 and her Ph.D. from the University of California, Berkeley in 1958. Her dissertation dealt with fossil pollen and spores of the Miocene in eastern Oregon. She served as an Instructor in the Department of Geology, University of Texas, Austin, for several years until marrying a fellow professor in the Biology Department, which automatically lead to her dismissal owing to nepotism rules in force at the time. Following this she held a position in the

estimates. This work will be completed by her colleagues. She was also working on a groundbreaking amount of evidence for a widespread Precambrian nonmarine biota, chiefly at the bacterial level.

She taught and mentored many students who found her work and ideas highly original. Her enthusiasm encouraged many to forge ahead in their respective areas. Her death deprives the scientific community of a highly original and innovative worker who undoubtably would have provided even more significant contributions had time permitted. She will be sorely missed by many colleagues, students, and friends.

Dr. Gray was devoted to animal rights and welfare. Memorial contributions may be made to Greenhill Humane Society. http://www.green-hill.org/ There was no memorial service at her request.

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Compiled by Mark Turner and other University of Oregon Scientists, with a bibliography submitted by Owen Davis.

BOOK REVIEWS

Flora of the Shroud of Turin. Avinoam Danin, Alan D. Whanger, Uri Baruch, and Mary Whanger, 1999, Missouri Botanical Garden Press. 52 pages, 25 B&W; figures. US $14.95

Late last year a new book published by the Missouri Botanical Gardens became the latest entry into the controversy surrounding the authenticity of the Shroud of Turin. The book focuses mostly on the evidence of the Shroud's floral remains and presents new interpretations as to why the four authors believe the floral remains confirm that the Shroud's origin comes from a period earlier than the eighth century AD, that it originally came from a place in the vicinity of Jerusalem, and that the Shroud was first used during the spring months of March and April (Easter?). So, I ask a question that has plagued devoted Christians and scientists for centuries. Is been the burial cloth of Jesus of Nazareth and shows a full-length front and back image of what appears to be a crucified man. It is made of fine linen and is 4.35 x 1.1 meters in size. The history that some associate with the Shroud begins with the writings of an early Christian historian, Eusebius, who reported that in the year AD 30, Thaddeus, one of Jesus' disciples, gave a "cloth with an image on it" to king Abgar V, whose palace was in Edessa, Turkey. At the time Abgar V was very ill with what modern scholars believe may have been leprosy. However, after Abgar V looked at and touched the cloth, he was miraculously healed. The news of his cure spread rapidly and soon many pilgrims flocked to Edessa to see and touch the cloth. In A.D. 944 Romanus I, Emperor of the Byzantine Empire, wanted the "magic" cloth, which by then was being called the *Mandylion*. This cloth is mentioned by Byzantine historians but they say that the "*Mandylion*" contained only a facial view of Jesus. If the *Mandylion* and the Shroud are supposed to be the same item (as stated by Wilson in his 1978 book) then I fail to understand why the early Byzantine historians did not mention that the cloth contained both a facial and full-body image of Jesus.

When the city of Edessa refused to give up their sacred cloth relic, Romanus I laid siege to the city until they surrendered the *Mandylion*. The cloth was then taken to the Byzantine capital of Constantinople by the victors. In AD 1204, an organization called the Knights of the Temple reportedly took the *Mandylion* (Shroud?) to France after the end of the Fourth Crusade. From France the *Mandylion* (Shroud?) reportedly went to England and then back to France. In AD 1453, the cloth (Shroud?) was given to the King of Savoy who took it to Turin where it has remained in the Chapel of the

the Shroud of Turin actually the linen cloth that covered the body of Jesus after he was crucified, and can its authenticity be proven by the physical evidence that still exists?

For those who are not familiar with the Shroud of Turin, a bit of background information might be helpful. The Shroud is purported to have Cathedral of St. John the Baptist ever since.

Almost from the first appearance of the cloth, (*Mandylion*?, Shroud?) questions were raised about its authenticity. Many aspects of the Shroud make it a challenging religious icon to examine and to try to validate. Add to the numerous careful scientific studies of the Shroud the element of religious faith and immediately a problem develops. Some believe the Shroud is authentic and view any attempt to disprove the Shroud's origin as the work of

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"Satan" and other non-believers who will do anything to destroy or challenge Christian faith. Thus, during the past four decades when any specialist has attempted to use scientific or forensic techniques to examine the Shroud all positive results have been accepted by the faithful, but all negative restlts have been met with immediate skepticism and challenges by those same faithful who then question the accuracy and technical validity of the scientific methods. For example, during the 1980's small portions of the Shroud were removed and sent to different laboratories for radiocarbon dating. Radiocarbon labs at Oxford University dated the Shroud to AD 1322+ 50, labs at the University of California (Berkeley) dated the Shroud to AD 1340+ 50, and other Shroud fragments were dated by labs at the University of Arizona and the Zurich Institute for Middle Energy Physics as being an average of AD 1325 + 65. All of these dates were immediately challenged by the faithful who argued: 1) that the Shroud fragments that were dated were pieces of linen used to "repair" the Shroud during the 1300's, 2) that recent bacteria and fungi inside the examined fibers provided a younger date, and 3) that the heat of a fire in AD 1532 [that scorched but did not burn the Shroud may have increased the ^{14}C content of the linen.

Turin Shroud, McCrone reports that in 1981, Frei made a second lecture presentation in Turin in which he stated that a reexamination of the pollen on the original 1973 and the later 1978 tape samples (he collected 26 additional Scotch tape samples in 1978) revealed not 34, but a total of 54 different types of pollen each of which could be traced to plants growing exclusively in areas of Palestine and Turkey.

The authors of the current book on the Shroud of Turin report slightly different numbers for the various pollen studies conducted by Frei. Nevertheless, the numbers of tapes and pollen taxa listed in both accounts (McCrone's book and this current book) are fairly similar, and I admit that I do not know which report is accurate because I do not have access to some of the original German and Italian notes, manuscripts, and obscure newsletter-type publications attributed to Frei and cited in both books. In an article Frei published in the late 1970's (Frei-Sulzer 1979) he says that he identified 48 (not 44) pollen types to the genus, and in some cases to the species level from the 1973 and 1978 sticky tapes.

Regardless of the actual number of different pollen taxa, the important issue is whether or not the pollen alone can verify

The radiocarbon dates and the many other scientific tests performed on the Shroud are numerous, but those data are not the focus of this book, nor my review. Instead, I want to concentrate on the botanical evidence - associated with the Shroud, about which t these authors have written. The botanical investigation of the Shroud began in November 1973, when Dr. Max Frei, Director of the Zurich Police Scientific Laboratory was allowed to use Scotch tape to collect "tape pulls" from the surface of the Shroud. According to Walter McCrone (1996), on the sticky surface of the 1973 tapes Frei collected slightly more than 100 pollen grains, many of which Frei then stated "made an unassailable case" for the Shroud's origin having been in the area of Israel/Turkey. Frei first reported these findings during a lecture presented in October of 1978, at The Congress of Turin. Of the 44 pollen types Frei reported, he claimed 34 types were from plants that grow only in Palestine (Israel) or Turkey. In McCrone's 1996 book, *Judgment Day for the* that the Shroud had ever been in the region of Jerusalem, lsrael. One of the authors of the current book, Uri Baruch, reexamined the pollen still stuck to the original sticky tapes, slides, and other materials collected by Frei in 1973 and 1978 that were donated in 1986 to the Association for Scientists and Scholars International for the Shroud of Turin (ASSIST) by Max Frei-Sulzer's widow. However, I can find no mention in any book, article, or personal letter indicating how the sticky tape samples or other pieces of evidence collected by Frei were stored and protected between the time of their collection and the most recent reexaminations conducted during the late 1990s.

In an effort to confirm the pollen taxa reportedly found by Frei on his two sets of sticky tape samples, Baruch reexamined the various tapes and used comparative modern pollen reference material he collected in Israel and other pollen reference samples originally collected by Frei and some that were collected by botanist Avinoam Danin. After his reexamination,

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Baruch produced a pollen list, with most listed to the species level, for the current book that shows he was able to confirm 18 of the 47 original pollen taxa Frei reported as being found on the sticky tape samples he collected from the Shroud in 1973. Baruch also reexamined the pollen that was stuck on 26 additional sticky tape samples that Frei collected from the Shroud in 1978. Baruch reports that the 1978 sticky tapes contain a total of 313 pollen grains. Of those, Baruch says he could make a "...positive identification on 44.6%." As with his reexamination of the 1973 tapes, Baruch is again able to report most pollen identifications from the tapes to the species level. In the 1978 sticky tape "positive ID" group Baruch lists 91 pollen grains of *Gundelia tournefortii* L., which the authors assemblage... and...its phenology is also indicative for chronology of the Shroud; *Gundelia tournefortii* blooms in Israel between March and May." Finally, the authors seal their claims for the Shroud's authenticity by saying that the image of "...the bouquet containing *Zygophyllum dumosum* appears on the body image's upper chest. Here, two young but well-developed succulent leaves are visualized..... The only species of *Zygophyllum* in Israel and its neighboring countries that sheds its pair of leaflets annually is *Z. dumosum*." The authors then refer the reader to a map in their book showing the distribution of this plant. According to the map the plant grows "only" in a very restricted region of the Sinai Desert and in a narrow band around

later claim, "...becomes not only a temporal indicator but also a geographical one." In the book's discussion section, the authors continue by saying, " It (*Gundelia tournefortii*) also grows at the center of the Mediterranean territory of Israel in bathas or shrubby formations that develop as seral communities in old fields succession."

Aside from the pollen data, the authors also rely upon other floral evidence to authenticate the Shroud. The other floral evidence consists of over 100 purported images of plant flowers, leaves, seeds, and stems on the Shroud, which they admit are, "Plant images (that) are rather difficult to see directly on the Shroud." The authors point out that, "...photographically enhanced photos (of the Shroud from negatives made by Enrie (in 1931) are excellent tools for discovering plant images on the Shroud." In all, the authors report finding 14 specific plant taxa that are revealed as faint "images" in photos taken of the Shroud. From the enhanced photos the authors again note that most images are distinct enough for the plants to be identified to the level of both genus and species. Some of the plant images the authors show in photos are ones they claim represent: *Chrysanthemum* (cf. *C. coronarium* L.), *Pistacia atlantica* Desf., *Pistacia lentiscus* L., *Gundelia tournefortii* L., and Zygophyllum dumosum Boiss. Of these five taxa the authors report that, "...*Chrysanthemum coronarium* is only suggestive and is not a conclusive geographical indicator for the Shroud." However, for other plant images they say, "*Gundeliatou fortii* may serve as an indicator plant for the entire

the Dead Sea in western Jordan and eastern Israel.

As a botanist, I have been trained to be skeptical, and as a palynologist I am especially skeptical of pollen data that are not convincing. This is why I remain skeptical about the pollen evidence reported in this new book on the Shroud of Turin. I also do not believe that the current pollen studies can be used to authenticat the Shroud, mostly for the following reasons. First, I must assume that the authors based their precise (i.e., down to the species level) identifications of most of the pollen species mentioned in their new book on studies they made using only light microscopy because there is no mention of using SEM or TEM techniques. Second, the authors report that the basis for their pollen grain identifications was based on new studies they made of the original pollen trapped on the sticky tapes personally collected by Max Frei from the surface of the Shroud in 1973 and 1978. I have been conducting and teaching palynology for more than 30 years and for more than a decade have been conducting forensic studies using pollen. When doing forensic pollen studies I have sometimes used sticky tape pulls to collect surface pollen and dust from a crime scene. I find that making pollen identifications from such sticky tapes is often problematical at best. Fresh pollen trapped on sticky tapes, especially pollen from insect-pollinated taxa, often has surface lipids and waxes that obscure surface morphological features. In addition, fresh pollen contains cytoplasm that makes precise studies using L-0 analysis and detailed

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examinations of exine wall structure nearly impossible. Another point is that when pollen remains on sticky tape too long the individual grains begin to sink into the glue. Depending on the size and surface ornamentation of the pollen, part or most of

list of the techniques and criteria they used to do this. Fourth, even the authors admit that the ecological range of *Gundelia tournefortii* includes Israel as well as most of Turkey. There is purported evidence that the Shroud may have been in

the grain may sink to a point where the surrounding glue obscures essential morphological features. Third, much of the current authors' case for the authenticity of the Shroud rests on the precise identification of pollen from a single taxon, *Gundelia tournefortii* L. I obtained a vouchered reference sample of *Gundelia tournefortii* from one of the book's authors (Avinoam Danin). I used some of the fresh pollen from that sample and dusted it on cotton paper and then using Scotch tape (as Frei did) I made a tape pull. I also processed some of the flowers using acetolysis and then measured 50 of the processed pollen grains. I found that the equatorial diameter of *Gundelia* pollen ranged from a minimum of 35 microns up to a maximum of 49 microns (these measurements were made of the gain's body and excluded the spines and the spine bases). The average diameter for all 50 measured pollen grains was 43.92 microns. I admit that this size makes this pollen taxon among one of the larger ones in the Asteraceae. Nevertheless, I believe that size alone should not be used as the criterion to identify this pollen taxon to the species level. *Gundelia tournefortii* L. is only one of over 920 different plant genera and only one of over 19,000 separate species found in this large plant family (ASTERACEAE). Using only the optical resolution of a light microscope, some of the pollen types in this plant family can be separated to the genus level. However, less than a small fraction of one-percent of them can be correctly identified to the species level even at the highest levels of optical resolution possible when using a light microscope. Although I have not looked at all 19,000+ species of composites, I do not believe that *Gundelia tournefortii* is so unique that it could be included in that small fraction of one-percent of types that are absolutely unique at the light microscope level. If *Gundelia tournefortii* pollen were associated with evidence in a forensic case, I would not be willing to state under oath that I could confidently separate it from all other composites. If the authors of this current new book can do this, and can identify this pollen taxon to Constantinople, Turkey, at one time. If so, could the pollen, identified as being *Gundelia tournefortii*, have been introduced at that time instead of centuries earlier in Israel? Some authors who have written about the Shroud even speculate that these pollen grains are contaminants that could have been added on purpose at a much later time.

In addition to pollen, there are more than 100 plant images purportedly found on the Shroud that can only be seen in photographs with negative enhancements. These are supposed to be the images of flowers and plants used as grave offerings, and were placed on, or in the Shroud at the time it was used when Jesus died. Of the 28 different plant taxa that the authors claim can be identified from these faint images, most are identified to both the genus and species level. Nevertheless, the only evidence the authors provide the readers of this new book are some faint B&W; pictures that are supposed to be the images left by impressions of plant parts on the Shroud. A couple of the images are impressive, but many are not. My lack of training in photographic processes makes me ill- equipped to judge the reliability of the photographic process through which these plant images appeared after being enhanced from the original 1931 negatives. Nevertheless, I know that there are many new photographic techniques now available and there are a variety of new ways to use digital enhancements of faint images. I wonder why none of those newer techniques were mentioned or attempted. $o where does this leave the controversy about the authenticity of the Shroud of Turin? I suspect not much has changed. Those who believe in the authenticity of the Shroud as a matter of their Christian faith will be happy to learn that this new book "confirms" what they have always believed. Those who have doubts about the age and purpose to which the Shroud is attributed will not have their doubts changed by the information in this new book. As skeptics, this second group will be able to find fault with the procedures that were used and the

species, as they claim, then they should provide convincing evidence and a conclusions that were reached by the authors of

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this book. As a final comment, I want to mention that rarely have I found such total disagreement among so many people as to the possible authenticity of something. After initially reading this short, new book on the Shroud of Turin I had too many unanswered questions to write a competent book review. Therefore, during the next several months I read four more published books about the Shroud (*The DNA of God: The True Story of the Scientist who Reestablished the Case for the Authenticity of the Shroud of Turin and Discovered its Incredible Secrets; Unlocking the Secrets of the Shroud; The Shroud of Turin: the Burial Cloth of Jesus Christ?,and Judgment Day for the Turin Shroud*). Next, I contacted a scientist who for more than 30 years has worked on scientific aspects surrounding the Shroud. Finally, I found and read a number of articles, notes, and personal letters that were written about the Shroud. After finishing all of that research, I remain skeptical and note that rarely have I seen so many try to cast so much doubt on the personal character and professional integrity of others working on this project! In short, because I do not personally know most of the people who are still working on, or who originally worked on the analysis of the Shroud, I have no way of assessing which ones are the "good guys" and which ones are the "bad guys!" Regardless, one thing is certain. The mystery, authenticity, and, controversy surrounding the Shroud of Turin are not yet resolved. This leaves room for more research and more books on this topic, which still captures the interest and fascination of many people.

Is the book worth the price? I suspect it is. If you are one of the faithful and are interested in the controversy that surrounds the Shroud of Turin, you will want this

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Sampling the Layer Cake that Isn't: The Stratigraphy and Paleontolo of the Type - Cincinnatian, 1998, Richard A. Davis and Roger J. Cuffey, editors, Guidebook No. 13, Ohio Department of Natural Resources, Division of Geological Survey, 194 pages, two appendices, US $16 plus handling.

I (the Editor) intended to have a formal review of *Sampling the Layer Cake* in time for this issue of PALYNOS. Since a

book for your library shelf. If you are a palynologist who wants to use this study as an example of what pollen data can, and can't tell us about past events and geographical places, then you also need a copy. If you are a skeptic, however, this book is unlikely to convince you that the Shroud of Turin is authentic.

comprehensive review isn't available to me, I bring this informal analysis to your attention for your own review. *Sampling the Layer Cake* is the formally published version of a field guide that was written for a field trip that was held in conjunction with the annual meeting of the

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Geological Society of America in 1992. The meeting was held in Cincinnati, Ohio, so the field trip was certainly appropriate to the venue. I myself am not a "Friend of the Ordovician", so to speak, but the content of the field trip and the volume that has followed from it deserve some mention because this has made the Ordovician very interesting indeed.

For those readers who may not be familiar with the English idiom "layer cake", the term is used, or misused in geology as a metaphor for the supposedly orderly stacking of strata that appear to occupy such places as the American Midwest. "Layer cake" stratigraphy carries with it the suggestion of homogeneity and boredom in the most strictly interpreted sense of Steno's Principle of Lateral Continuity. The authors of the many articles in *Sampling the Layer Cake* have done a marvelous job of illustrating, literally and figuratively how mistaken that notion is. Paleoenvironmental descriptions based upon careful analysis of fossils, stratigraphy, and petrology reveal a dynamic world of tropical super-storms, quiet coral reefs, and constantly shifting communities of invertebrates. The text is clearly written and easily understood, a *tour de force* when it comes to making carbonate stratigraphy and paleontology understandable. The illustrations of specimens and field localities are clear, and even the reproduction of topographic maps is remarkably good. inasmuch as this is a field guide that is indeed intended to guide the willing geologist to the many localities

I have rarely seen fieldguides of this quality, and I urge readers of PALYNOS to give this publication serious consideration as an addition to your libraries. *Sampling the Layer Cake That Isn't: The Stratigraphy and Palenotology of the Type Cincinnatian* can be purchased from the Division of Geological Survey, Ohio Dept. of Natural Resources, 4383 Fountain Square Drive, Columbus, Ohio 43224-1362, e-mail geo.survey@dnr.state.oh.us

submitted by:

Frederick J. Rich
Editor, PALYNOS

One final word: It has been my pleasure to serve as editor of this newsletter since December 1996. I have enjoyed hearing from the many contributors as it has helped me to stay abreast of events in this s science as they take place around the world. I wish to express my thanks to i immediate past editor John Wrenn for his help in getting me started. I also wish to thank all of you readers who submitted material for inclusion in this publication. Without your help, of course, my job would have been impossible. Please show the same helpful consideration to the new editor, Anne-Marie Lezine. FJR

PALYNOS (ISSN 0256-1670) is published semiannually (June and December) and is distributed to all individual members of the scientific organizations affilated with the International Federation of Palynological

that are discussed, the map quality is important. Additionally, the 1ine drawings and stratigraphic sections are as clear and crisp as any I've seen in much more expensive books.

I estimate that there are over 1000 bibliographic citations in Appendix B alone. That, plus the wealth of information that is available elsewhere in this guide book make it well worth the very modest cost. I refer to the new interpretations concerning Ordovician stratigraphy and environmental analysis in introductory classes, and will surely turn to this publication as I try to explain Paleozoic carbonates in my stratigraphy class. I am confident that those palynologists who work in the early Paleozoic section will find this publication very instructive for technical reasons.

Societies (IFPS). News items, photos, member and society activities are welcome. (Scientific papers will not be published in PALYNOS.) Please forward materials for PALYNOS to the Editor:

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