



IOP NEWSLETTER 48

JANUARY 1993

CONTENTS

IOP NEWS.....	2
THE ORIGIN OF IOP.....	2
A LESSON FROM PARIS.....	3
RECENT PUBLICATIONS.....	4
BIRBAL SAHNI CELEBRATIONS.....	5
PALAEOBOTANICAL BIBLIOGRAPHIES.....	5
CORRELATION IN CENTRAL EUROPE.....	6
PALAEOONTOLOGICAL COLLECTIONS IN BERLIN.....	6
NEWS OF INDIVIDUALS.....	7
OBITUARIES.....	7
BOOK REVIEWS.....	8
IOP CONSTITUTION.....	11

PLEASE MAIL NEWS AND CORRESPONDENCE TO
YOUR REGIONAL REPRESENTATIVE OR TO THE
SECRETARY FOR THE NEXT NEWSLETTER 49.

ELECTION OF OFFICERS

To avoid the confusion that surrounded the election of officers at the last Botanical Congress in Berlin the IOP Constitution is reprinted at the end of this newsletter. It was revised after that Berlin Congress and contains clear instructions about who votes and when. The IOP secretary does now have an electoral roll as laid down in Articles 6.2 and 7.5 and the summer 1992 version was included in the last IOP Newsletter 47. Only people named on this list in summer 1993 can vote.

According to Article 7 of our new constitution the election of officers should take place during the International Botanical Congress in Tokyo next summer 1993. Nominations are sought for the following places on the Executive Committee and should be made in writing to the secretary before March 1st 1993.

- one President*
- three Vice Presidents*
- three Members at Large*
- one Secretary*
- one Congress Member*

Of the retiring members, J. Galtier is the Acting President; D.L. Dilcher and Z. Zhou are Vice Presidents; T.N. Taylor, N.F. Hughes and N. Snigirevskaya are Members at Large. K. Uemura is Congress member. The Secretary M.C. Boulter offers himself for re-election.

IOP GENERAL ASSEMBLY, Paris August 31st 1992

This was held in the main lecture theatre of the Ministère de la Recherche et de l'Industrie. The main items discussed during this 45 minute meeting of 79 members were:

- Presentation of Birbal Sahni IOP medal to Professor V.A. Krassilov, for services to palaeobotany and environmental understanding. The medal was given by the secretary of the Birbal Sahni Foundation, Dr Shyam K. Srivastava, and was accepted on behalf of Professor Krassilov by Dr Alexis Hermann.
- Palaeobotany at Japan IBC 1993 and at The Netherlands European Palaeobotany Conference September 1994
- The new European palaeobotany bibliography 1990-1
- Elections for the IOP Executive committee should happen at IOP Conferences, not Botanical Congresses, after Japan 1993
- Place of next IOP Conference.

THE LOCATION OF THE NEXT IPC AND IOP CONFERENCE 1996

The IOP General Assembly in Paris, August 31st 1992 agreed the following statement:

"We make two recommendations to the IFPS Council at their Aix-en-Provence meeting:

- 1. that detailed proposals be submitted to the secretaries of IOP and IFPS in October 1992 for executive decision by Christmas 1992
- 2. that the 1996 IOP Conference and IPC take place, one after the other, within close proximity."

The following week, at Aix, this statement was discussed. Although there appeared to be agreement that the palaeobotanical and palynological groups should work together closely, the first recommendation was strongly rejected. The Council wanted to decide in Aix where its next venue is to be.

The Council heard an eight minute presentation from Ms Mao and Prof Song Zhi-chen about the PSC's invitation for the 9th IPC in 1996. Then Doug Nichols spoke for eleven minutes about the AASP's invitation from Houston. He distributed written invitations from the AASP President, the Governor of Texas, the Mayor of Houston, and the President of the Houston Convention and Visitors' Bureau, as well as a tourist information pack and a 7 page proposal outlining plans for the proposed meeting. Two days later, by written ballot, the Councillors voted for Houston.

The IOP Executive Committee has been informed of this procedure and of the IFPS decision and has received only one invitation. That is from Steven Manchester and Bruce Tiffney at the University of Florida and the University of California Santa Barbara. The committee has accepted this invitation for the 1996 5th IOP Conference.

REGIONAL REPRESENTATIVE IN NORTH AMERICA

Edie Taylor has taken over as the representative for North America. Like all regional representatives she will distribute the newsletter there, collect dues and channel news through to the IOP secretary.

THE ORIGIN OF IOP

The following is a free translation of a report prepared by Prof. Edouard Boureau, and delivered on his behalf by W.G. Chaloner at the opening of the 4th IOP Conference in Paris, August 1992.

The need for close cooperation on a world scale has long been felt by palaeobotanists. In 1947 Professor Sahni of Lucknow proposed the creation of a "Subsection of Palaeobotany" within the "Section of Botany" of the International Union of Biological Sciences (IUBS). Unfortunately his death in 1949 prevented him from bringing this project to completion.

These ideas were none the less revived in 1950 at the time of the 7th International Botanical Congress in Stockholm, with the creation of an "International Association of Palaeobotanists".

The organising committee consisted of W.N. Edwards of London, H.N. Andrews, then of St. Louis,

Missouri, USA: R. Florin of Stockholm; W. Gothan, Berlin; and R. Sitholey of Lucknow.

In fact the development of an international organisation of palaeobotany became a reality in 1952 after the CNRS undertook to organise in Paris an "International Colloquium on the Evolution of Plants". Edouard Boureau was invited to organise this symposium under the presidency of Roger Heim, and this took place in the Museum national d'Histoire naturelles in Paris on the 15th May 1952. This meeting included various important lectures by Jean Augiers, Edouard Boureau, Marius Chadeaud, Pierre Chouard, C.D. Darlington, Yvette de Ferre, Ruldford Florin, Henri Gausen, Roger Heim, W.H. Hiesey, Thodore Just, H.L. Lam, Susanne Leclerc, George Mangenot, Henri Maresquelle, M.P. Martens, Robert Potonie, and John Walton. This noteworthy meeting, which was attended by an exceptionally large audience, was an important event in the history of the biological sciences and of plant evolution. It was a great success. It was the discussion which followed this colloquium which really laid the foundations of the International Organisation of Palaeobotany. In fact it was not until a year later, in 1953, after a meeting held in Nice to prepare for the 8th International Botanical Congress in Paris that an organisation of palaeobotanists began to take form under the aegis of the IUBS.

An organisation committee was set up under the IUBS with Ruldford Florin of Stockholm as chairman; Chester Arnold (Ann Arbor, Michigan, USA); E.S. Barghoorn (Cambridge, Mass. USA); Edouard Boureau and Paul Corsin (France); T.M. Harris (Great Britain); W.J. Jonmgmans (Heerlen, Holland); J.M. Schopf (U.S. Geological Survey, Columbus, Ohio, USA). It then awaited the International Botanical Congress in Paris to establish securely, and to confirm the status of what was to become the International Organisation of Palaeobotany, the IOP.

A preparatory committee then instructed Edouard Boureau to organise during the 8th International Botanical Congress in Paris, of July 1954, a colloquium presided over by Ruldford Florin, which would have to define clearly the aims and the structure of the IOP. This was to be the work of:

The Secretary (Edouard Boureau), who was charged with:-

- a. Elaborating the tri-lingual statutes of the IOP.
- b. Drawing up a list of the palaeobotanists of the world.
- c. Establishing a complete list of all the palaeobotanical works published.

It was also considered desirable that the Secretary General should be assisted on the onerous task by four commissions, which he would coordinate:

- a. The European and African commission: a function undertaken by the Secretary General of the IOP himself.
- b. The American Commission: The responsibility of C.A. Arnold.

c. The Asiatic Commission: The responsibility of K.R. Surange.

d. The Pacific Commission: The responsibility of I.C. Cookson.

In theory, each Commission was to publish an annual report, and in each country a sub-commission was to instruct a delegate to consolidate the information, and replay it to the Commission. Such a structure was too clumsy. At the end of the day, the entire activity of the IOP was on the Secretary General. He was much influenced by previous enterprises of this kind, most notably the "Reports of the Committee on Palaeobotany" published by the "National Research Council", by two "European Reports of Palaeobotany" edited by O.H. Selling from 1939 to 1949 and by the reviews published regularly under the title "Palaeobotany in India". The trouble with these works was that each one represented only one part of the world literature. What was needed was the bringing together of all the palaeobotanical work published in all languages, from the entire world, to be reassembled into a single publication.

A LESSON FROM PARIS

"At the 4th IOP Conference in Paris this summer my lecture entitled: "Higher and Lower land plants and the fauna from the Caradocian of the South Kazakhstan?" had a commentary in the Abstracts. When preparing my communication and looking through colour slides (made by M.B. Gurmanov) of the fossils collected by L.E. Popov and by myself (and originally identified as plant remains by Snigirevskaya, Popov, Zdebska, 1991, 1992) there was cause for thought. Consequently, I have changed the interpretation of these fossils, some of which appear to be *Tabulata*. Structural elements in the axes of *Akdalaphyton caradocki* Senk. identified with tracheids are very similar indeed in the structure to coralloliths with exact spines and bottoms of zooids, although the size of them is less in the order than in the known fossil *Tabulata*. "Stomata" on the surface of fossils may be interpreted as calicles with pseudooperculae known in *Favosites* for example from the Silurian of Gotland. Tubular elements are identical with intermediate tubes which are placed between coralloliths. Using the data it is possible to interpret them as *Tabulata* but not as non-vascular plants. There are also tubular remains of *Cosmochlains* as described by D. Edwards in 1986, from the Devonian of England. These discoid structures might be compared with calicles where it is possible to observe pseudoopercules and even the skeleton of zooids. But the size of the structures is also less in the order than in known fossil *Tabulata*. It is possible to classify the new group of Palaeozoic organisms in the *Tabulata*. Taking into account the interpretation of the material from the Caradocian of the South Kazakhstan it is very important to undertake the comparative chemical, morphological and anatomical studies, jointly with palaeontologists using

the traditional palaeobotanical techniques. So the cuticles, true faunal and also problematical remains from the Ordovician, Silurian and the Lower Devonian deposits should be taken into account. The task of the studies is the revision of the ancient remains identified with plants cuticles and tracheids, and of some taxa of plants and animals, important for the understanding of the early stages of the evolution of the land communities. It aims to find the true time of the appearance of the Higher land plants, and for the associated biostratigraphy. It was very important for land plants, and for the associated biostratigraphy.

"It was very important for me to know from Dr P. Gensel on the publication of the paper "Early land plants debris (Hooker's "Waifs" and "Strays?") by P.Gensel, N.G.Johnson, and P.K.Strother where the idea of the animal nature of some cuticles have been suggested.

"I would like to use this chance to express my deepest thanks to Professor C.Blanc, President of the 4th International Palaeobotany Conference, Professor J. Broutin and Doctor D. Pons, Secretaries of the Conference, Doctor J. Dejax, the Treasurer of the Conference, for the opportunity to take part in the Conference, listen to many important communications, and meet many colleagues and friends. I am very thankful to IOP and the Commission of the European Communities which sponsored several Russian palaeobotanists at the Conference in Paris. Most of them had the first chance to take part in the International Palaeobotanical Conferences. The meetings of Russian colleagues with palaeobotanists from different countries of the world have opened the new possibilities for the international cooperation. Many thanks to all people including colleagues - palaeobotanists and palynologists in the Palaeobotany Laboratory and the Palaeotology Institute of Museum National d'Histoire Naturelle, and Laboratoire de Paleobotanique et Palynologie Evolutives who did so much for the success of the Conference and help us establish fruitful contacts between participants of the Conference who were as a rule very happy indeed in such a beautiful place in the world - in Paris."

N. SNIGIREVSKAYA, Saint Petersburg, Russia

RECENT PUBLICATIONS

THE LYCOPSIDA: A SYMPOSIUM

Annals of the Missouri Botanical Garden 79(3) (Summer 1992) contains papers from a symposium on the Lycopsida organized by William A.DiMichele and Judith E.Skog and jointly sponsored by the Paleobotanical Society of America and the American Fern Society. The symposium was held on 8 August 1989 as part of the American Institute of Biological Sciences meetings held in Toronto, Canada.

A morphologically distinct lineage was present millions of years prior to the appearance of any other extant classes or orders of vascular plants. From simple

beginnings there appeared a great diversity of structural form and ecological specialization, reaching a zenith in the Late Carboniferous, which included the giant tree lycopsids of the coal forests. Today *Lycopodium* sensu lato is the most widely distributed of the lower vascular plants. The symposium discussed the unique phylogenetic position and morphological distinctness of the Lycopsida: these are used as vehicles to study convergent structural evolution in vascular plants or limits on structural solutions to common problems such as interception, propagule dispersal, and nutrient acquisition.

289 pages. Price \$30.00 plus postage.

THE BIOLOGY AND EVOLUTION OF FOSSIL PLANTS : Thomas N.Taylor and Edith L.Taylor, Ohio State University

This is the most current and comprehensive text available on the market today for courses in Paleobotany, Paleobiology, Plant Morphology, Plant Anatomy and Evolution. This text deals with the structure, biology and evolution of fossil plants, cyanobacteria, fungi and plant/animal interactions.

Key Features Include:

- * Global perspective, covering fossil plants from every continent, including Antarctica.
- * Extensive discussion of major biotic events (e.g. evolution of photosynthesis, origin of eukaryotic cells, origin of flowering plants...)
- * Extensive angiosperm chapter which incorporates a discussion of origins, evolution and Tertiary floras: discusses 43 families of flowering plants.
- * Includes more than 1600 photographs and line drawings, extensive bibliography (over 2200 references) and a comprehensive glossary and index.
- * Begins each chapter with a discussion of each group including extant members and life history to provide a framework for that chapter.
- * Ends each chapter (or section) with a summary that provides an evolutionary framework and discusses that particular group's evolutionary relationship to other groups.

PLANT FOSSILS IN GEOLOGICAL INVESTIGATION : THE PALAEOZOIC Edited by, C.J. Cleal, National Museum of Wales, Cardiff

This book looks at the contribution of plant fossils to geological investigations and examines how fossil plants can be used by geologists working in the Palaeozoic. The book brings together all available information on the distribution of Palaeozoic plant fossils allowing their potential for geological work to be properly evaluated.

Topics include the techniques for studying plant fossils, the problems of taxonomy relevant to palaeobotany, and the use of plant fossils for biostratigraphy, palaeoecology, palaeogeography and palaeoclimatology in the Palaeozoic.

ADVANCES IN LEGUME SYSTEMATICS: 4: THE FOSSIL RECORD. Edited by, P.S. Herendeen and D.L. Dilcher. The contents include:

- * A reevaluation of the fossil genus *Podogonium* Heer. **P.S. Herendeen**
- * Fruits of "*Pterocarpus*" *tertiarium* Weyland from the North - Bohemian Basin. Czechoslovakia. **C. Buzek**
- * Fossil *Acacia* flowers with attached anther glands from Dominion Republic amber. **D.L. Dilcher, P.S. Herendeen and F. Hueber**
- * Papilionoid flowers from the early Eocene of southeastern North America. **W.L. Crepet and P.S. Herendeen**
- * Early caesalpinoid fruits from the Palaeo- gene of southern England **P.S. Herendeen and P.R. Crane**.
- * A synopsis of the fossil record of mimosoid legume wood **J.P. Gros**
- * The fossil history of the Leguminosae from the Eocene of southeastern North America **P.S. Herendeen**
- * The current status of the legume fossil record in the Caribbean region. **A. Graham**
- * Distribution of legumes in the Tertiary of Hungary. **L. Hably**
- * Leguminosae species from the Tertiary of Abkhazia. **A.K. Shakryl**
- * The megafossil legumes from China. **Guo S.-x. and Zhou Z.-k.**
- * Indian fossil legumes. **N. Awasthi**
- * Fossils of Leguminosae from Miocene Manuhirika Group of New Zealand. **M. Pole**
- * Climatic pulses, a major factor in legume evolution. **D.I. Axelrod**
- * Fossil wood of the Leguminosae: a case study in xylem evolution and ecological anatomy. **E. Wheeler and P. Baas**
- * The fossil History of the Leguminosae: phylogenetic and biogeographic implications. **P.S. Herendeen, W.L. Crepet and D.L. Dilcher**

BIRBAL SAHNI INSTITUTE OF PALAEOBOTANY

LUCKNOW NOVEMBER 14, 1992 PROFESSOR BIRBAL SAHNI BIRTH CENTENARY CELEBRATIONS CONCLUSION.

The Birbal Sahni Institute of Palaeobotany concluded the year long Birth Centenary Celebrations of the Founder through a well-chalked out programme.

An exhibition "Years of Achievement" highlighting recent researchers and achievements was inaugurated by Dr. S. Varadarajan, Chairman, Consultancy Development Centre, D.S.I.R., New Delhi. It was followed by the Founder's Day function. Welcoming the distinguished gathering, Dr. B.S. Venkatachala, the Director appraised recent scientific contributions of the Institute. Professor H.Y. Mohan Ram, Chairman, Governing Body stressed on the importance of plant fossil studies in deciphering the evolutionary mechanism. Dr. S. Varadarajan emphasised the need

for multidisciplinary efforts in plant fossil study. He urged the scientists to make palaeobotany utility based and lauded the approaches made by the Institute. He also recalled the contributions of Professor Sahni who explored all possible avenues to make the science of palaeobotany versatile. On the occasion Dr. Varadarajan released the following publications of the Institute:

1. Plant Fossils - A link with the Past - by Drs. B.S. Venkatachala, Manoj Shukla and Mr. M. Sharma - An illustrated book dedicated to the Indian Children on the occasion of the Birbal Sahni Birth Centenary - Birbal Sahni Institute of Palaeobotany, pp. 63.
2. Four Decades of Indian Palaeobotany (Proceedings of the Symposium held on November 18-19, 1991) (Edited by Drs. B.S. Venkatachala & H.P. Singh) Palaeobotanist 40: pp. 545.
3. Essays in Evolutionary Plant Biology (Proceedings of the Symposium held on November 16-17, 1991) (Edited by Drs. B.S. Venkatachala, David L. Dilcher & H.K. Maheshwari) Palaeobotanist 41: pp. 239.
4. Archaeozoic - Proterozoic - Computer based Literature search available with the Birbal Sahni Institute of Palaeobotany Library. 1883 references are coded and indexed.
5. Inventory of Type & Figured specimens Part - II, 1992 Birbal Sahni Institute of Palaeobotany, Lucknow.

The following lectures were delivered:

1. 38th Sir Albert Charles Seward Memorial Lecture - "Himalayan Earthquakes" - Dr. Harsh K Gupta, Director, National Geophysical Research Institute, Hyderabad.
2. 22nd Professor Birbal Sahni Memorial Lecture: "Palaeozoic Biostratigraphy of Himalaya - a re-evaluation of Palaeoecology & Palaeogeography" - Professor S.K. Shah, Head, Department of Geology, University of Jammu.

As a sequel to the symposium on Four Decades of Indian Palaeobotany held in November, 1991 a two day Group Discussion on the "Thrust Areas in Palaeobotany" was also held in October, 1992. Several Thrust Areas have been identified for future research programming.

PALAEOBOTANICAL BIBLIOGRAPHIES

1989-1990 BIBLIOGRAPHY OF O.F.P. (Organisation Francaise de Paleobotanique)

From 1984 until last year when it was agreed to set up a European bibliography of palaeobotany at the Vienna Conference (September 1991), the O.F.P. used to publish a bibliography every one or two years. The last booklet (1989 - 1990) is the sixth of a series and consists of 20 pages including 190 references. Each volume is available for 20 FF, including postage, and the whole series for 100 FF. For those interested, please write to:

Dr. Lea GRAUVOGEL-STAMM, Institut de Geologie,
Universite Louis Pasteur, 1 Rue Blessig, France 67084
Strasbourg Cedex.

REPORT ON BRITISH PALAEOBOTANY AND PALYNOLOGY 1988 - 1989 ISSN 0266 - 4755

This is still available from Dr. B.A. Thomas (see
address below) for £2.00 (including postage and
packing).

BIBLIOGRAPHY OF EUROPEAN PALAEOBOTANY & PALYNOLOGY 1990-1991

The first of the planned bi-annual European
bibliographies is now available. Europeans may obtain
copies from their regional representative who will be
contacting them directly. Other interested people may
obtain copies for £6.00 or \$12 (U.S. cheques payable to
Dr. B.A. Thomas please) including postage from: Dr.
B.A. Thomas, Botany Department, National Museum of
Wales, Cathays Park, Cardiff CF1 3NP, UK

THE PHYTOSTRATIGRAPHIC CORRELATION PROJECT IN CENTRAL EUROPE

Within the Symposium "Paleofloristic and
Paleoclimatic Changes during Cretaceous and Tertiary"
held in Bratislava, 14-19 September 1992 the working
group concerned with the project "Evaluation of
Tertiary phytostratigraphically relevant floras of the
Paratethys and adjacent areas in respect to
biogeographical, vegetational, and climatic changes"
met together.

A data-base (in MICRO-ISIS) was presented that is
suitable for the evaluation of the data concerning
macro-floras gathered since 1989. The data concern
questions from the name of the floras, the basin of
deposition, facies, lithology of the embedding sediment,
method of age determination, species list, etc. Most
essential is the method of age determination. Gathered
are mainly data of floras that have been dated by
independent means as radiometric dating,
nannoplankton, etc (but not by palynology or
macro-floras).

The suitability of the data-base was discussed and
decided:

1. to continue to use it for further evaluation for
leaf-floras.
2. to continue to gather data and enlarge the data input
of leaf-floras
3. if possible to include fruit- and seed-floras as well as
pollen-floras.

The interpretation of the gathered data shall include:

1. recognition of migration routes for characteristic
species through time
2. recognition of floristic provinces and timing of
floristic changes
3. reconstruction of climatic changes.

The first step of evaluation shall be done within the
next months when for some most characteristic
leaf-species stratigraphic and palaeogeographic
distribution tables (maps) shall be drawn tentatively.

These shall be discussed and questionable fossils
shall be investigated in 1993 in Krakow where the next
meeting of this working group is planned to take place.
We thank Prof. Leon Stuchlik and his team who have
invited the working group to meet at the W.Szafer
Institute of the Polish Academy of Sciences presumably
in September 1993.

J. KOVAR-EDER, Vienna, Austria

A SUMMARY OF PALAEOLOGICAL COLLECTIONS IN BERLIN.

Brandenburg, Mecklenburg - Vorpommern,
Sachsen-Anhalt, Freistaat Sachsen, and Thüringen was
published by Hans Prescher and Harald Walther in May
1991 (Paläontologie aktuell Heft 23). This brief
accounting was to present information about curated
collections to paleontologists in German-speaking
countries. The following is a list of institutions of the
former-GDR and the paleobotanical collections curated
therein.

Museum für Naturkunde der Humboldt Universität
zu Berlin Invalidenstr. 43 0-1040 Berlin

The amber collection of Künow. Extensive
Carboniferous and Permian collections (type and
original material) of SCHLOTHEIM, BEYRICH, V.
BUCH, GOTHAN, V. RICHTHOFEN,
SCHWEINFURTH, RUHLE-LILIENSTEIN, REMY,
DABER, BARTHEL, SAPPER, MENZEL, etc.

Niederlausitzer Museum der Natur und Umwelt in
Niederlausitzer Landesmuseum

Schloß Branitz 0-7500 Cottbus. Extensive collection of
macrofossil plants of the Miocene of Niederlausitz,
originals of STRIEGLER and MAI. Pleistocene
macrofossils of Niederlausitz including STRIEGLER,
BÖHME, HEINRICH, FISCHER.

Geologische Landessammlung an der
Ernst-Moritz-Arndt-Universität Friedrich - Ludwig -
Jahn - Straße 17a 0-2200 Greifswald. Liassic collections
as well as large pieces of amber.

Geiseltalmuseum der Martin - Luther - Universität
Halle - Wittenberg Domstraße 5 0-4020 Halle/Saale.
Extensive collections of the Eocene flora of Geiseltal
with original and type material. Tertiary floras from
Lausitz, Nordböhmen, Kreide des Subherzyns.
Permian Kupferschiefer flora from Mansfeld: Plants
from the Permosiles of Wettin and Löbejün.

Museum für Naturkunde Theaterplatz 1 0-9001
Chemnitz. Extensive paleobotanical collection of the
Lower Rotliegende of Chemnitz-Hilbersdorf: type and
original material of STERZEL: Carboniferous floras of
Zwickau. Exhibition of the fossil forest of Chemnitz.

Staatliches Museum für Mineralogie und Geologie
(Forschungsstelle) Augustus-straße 2 0-8010 Dresden.
Carboniferous, Permian, Cretaceous and Tertiary floras

of Sachsens. including collections of GEINITZ. ENGLEHARDT. MAI. MENZEL. WALTHER. BARTHEL. CORDA. DEICHMÜLLER. GOEPPERT. BUTBIER. STENZEL. STERZEL and WEISS.

Bergakademie Freiberg Paläontologische Sammlung 0-9200 Freiberg. Collections contain material from SCHLOTHEIM. COTTA. GUTBIER. STERZEL. GEINITZ. etc. A type catalog was published in 1976; in 1980 there were 530 holotypes curated in the collection.

Haus der Heimat Freital - Burgk Burgker Straße 61 0-8210 Freital. Fossils of the Freital coal-bearing strata of the Lower Permian.

Museum der Westlausitz Pulsnitzer Straße 16 0-8290 Kamenz Tertiary collections from Hasenberg bei Wiesa (the *Mastixia* flora) of BERGER.

Heimatmuseum Seifhennersdorf Nordstraße 21a 0-8812 Seifhennersdorf. Collections and an exhibit of the plant fossils of the Polierschiefer from Seifhennersdorf. see: Walther, H. 1988. Museum Seifhennersdorf - Geologie - Paläontologie - Bergbau - 2. Aufl., 43 S.

Städtisches Museum Zwickau Lessingstraße 1 0-9950 Zwickau. Collections of the Carboniferous flora of Zwickau. original specimens of DABER and STORCH. Eocene macrofossils from Mosel near Zwickau with original and type specimens of FISCHER and MAI & WALTHER.

Naturkundliches Museum "Mauritium" Schloßgarten 0-9306 Altenburg Tertiary macrofossils with originals of MENZEL along with an exhibition of the Tertiary of the Weißer Elster basin.

Naturhistorisches Museum Bertholdsburg 0-6065 Schleusingen Collections of ANHARDT and BICKEL of the Rotliegende of the Thüringian Wald from Schloß Wilhelmsburg, Schmalkalde. Extensive collections of the Rotliegende of South Thüringia with original specimens of FLORIN.

Nationale Forschungs- und Gedenkstätten der klassischen deutschen Literatur in Weimar Am Frauenplan 1, 0-5300 Weimar. A suite of specimens from SCHLOTHEIM and palaeobotanical elements from GRAF V. STERNBERG. see: Barthel, M. 1982. Klassische paläobotanische Sammlungen aus dem Thüringer Wald. *Gleditschia* 9:45-57.

NEWS OF INDIVIDUALS

DAVID BATTEN has been awarded a personal chair at the University of Wales, Aberystwyth.

PETER CRANE has been appointed Vice-President of the Center for Evolutionary and Environmental Biology at the Field Museum of Natural History, Chicago. This has more than 16 million specimens and 26 faculty staff in the departments of Botany, Zoology and Geology. There are students as well with a more generous ratio to the staff.

SERGEI VIKULIN is a Tertiary palaeobotanist at the Komarov Institute in Saint Petersburg and is working in London during the autumn.

OBITUARIES

CESTMIR BUZEK 24th January 1933 - 1st November 1992

Palaeobotanical science lost another man, fully devoted all his life to the study of Tertiary plants, small in size but great in his knowledge. Cestmir worked long years at the Geological Survey in Prague. With his notorious care he produced various regional and systematic works and gathered huge material of fossil plants.

Soon after his birth his mother of German origin left him. In his childhood he nearly died of pneumonia. And his fate was accomplished under the same circumstances in five cold days this autumn. As a student he lived in the North Bohemian mining area and became interested soon in the Tertiary and its plant content. He graduated at the Charles University in Prague in 1958 under the supervision of Prof. F. Nemejc. In 1969 he submitted the CSc. thesis on the Tertiary flora of the Petipsy area. But still before he started close cooperation with the late Frantisek Holy on the palaeocarpology of the North Bohemian Tertiary. In the early 1960's a team including BUZEK - HOLY - KVACEK began to produce several taxonomical revisions (*Platanus neptuni*, *Doliosirobus*, *Buxus*) and regional monographs (Volcanogenic Series at Markvartice, Vildstejn Pliocene Complex). In the last years Cestmir cooperated with many other colleagues, also from abroad - Hungary, Poland, Germany, U.S.A., England, France and Greece.

It is most unfortunate that he was unable to accomplish all that he had in mind. Many palaeofloristic and systematic manuscripts have been left unpublished or unfinished on his overfilled table. ZLATKO KVACEK, Prague, Czech Republic.

HSU JEN (HSU J XU REN)

Professor Hsu Jen, a venerable and celebrated scholar in China died in November 18, 1992, after a long illness.

He was born on August 22, 1910 in Wuhu, Anhui Province. He graduated in 1933 from the Department of Botany, Chinghau University and received his PhD degree there in 1946. In 1948-1952, he visited Lucknow where he collaborated with Professor Birbal Sahni and other Indian palaeobotanists. From 1953 onwards, he was a research professor of Nanjing Institute of Geology and Palaeontology, and afterwards was appointed Head of Palaeobotany Department, Institute of Botany, Beijing, Academia Sinica. He was elected a member of Chinese Academy of Sciences and a honorary executive member of China Association of Palaeobotany. He was an excellent teacher and a versatile botanist with a wide range of knowledge. In China, he was generally acknowledged father of palynology and one of the founders of palaeobotany.

We all, who knew and held him in great esteem, feel he is still with us.

ZHO ZHIYAN, Nanjing, China.

PLANT COMMUNITY HISTORY: LONG-TERM CHANGES IN PLANT DISTRIBUTION AND DIVERSITY. Tallis, J.H. 1991. Chapman & Hall, London. 398pp.

From the title of this book it would appear as if the author has attempted to concisely present data relevant to long-term vegetational change in response to abiotically driven processes. I think that the definition of "long-term" conjures up a variety of time-scales in each of our minds. As primarily a Paleophytic paleobotanist, I tend to think of "long-term" as those changes that occurred over a period of several hundred million years or so, give or take a millennium. Such "long-term" data sets have been presented recently in the publication of the Evolution of Terrestrial Ecosystem's workshop results (Behrensmeyer et al., *Terrestrial Ecosystems Through Time*, University of Chicago Press). Other workers who concentrate on a particular systematic group may restrict their definition of "long-term" to the time of first appearance of the taxon to its last appearance in the fossil or subfossil record. Such an approach may encompass an interval of a hundred million years or less. This book purports to take this definition of "long-term" because it is aimed at describing community diversification and distribution since the appearance of angiosperms, a change over 118 million years. But it is, in fact, primarily focused on the Pleistocene and Holocene with a minimum devoted to pre-Pleistocene data. Even though chapters are focused on **The Development and Diversity** of angiosperm floras (Chapter 7) and **The Forested World of the Tertiary** (Chapter 9), these play a minor role in the author's overall thesis.

The author has written this book mainly for the "non-specialist." Therefore, he has tried to present a broad and generalized discussion on **Global Plant Cover** (Chapter 2) and **Global Climate** (Chapter 3) as an introduction to subsequent discussion. He acknowledges that the plant fossil record (Chapter 2) can provide the basis for an understanding of changes in plant cover through time, "a palaeoecological perspective". But he appears to dismiss a good part of the fossil record because it provides an inaccurate and biased data set, "features of the preservation process raise problems with the interpretation of fossil assemblages." Yes, I will be the first to acknowledge that there are taphonomic biases in plant fossil assemblages, and we recognize that different depositional environments are prone to preserving different types of data sets. But, it is exactly this particular point that allows us to "track" vegetation through time by comparing assemblages from the same depositional environment at various point throughout the stratigraphic record. The author doesn't take into consideration or even present a minor discussion on recent advances in macrofloral taphonomic data and what we've been able to learn about original community representation in subfossil assemblages. Because

macrofloral data sets are fraught with biases (see 9.2.1 Imperfections of the floristic data), the author can relegate these data to a secondary position and rely, almost exclusively, on the fossil pollen record to substantiate his arguments.

And what are his arguments? One leading thesis is that major biomes are located within major climate belts, and as climatic patterns have changed through time (Eocene to Recent) biomes have responded accordingly. Environmental data relevant to the Paleogene are insufficient when compared with data presented for the Neogene (Chapter 4). Neogene data are scant when compared with the Pleistocene (Chapter 5) and Holocene (Chapter 6). Based only on the presentation of the global continental configuration of the Cretaceous (Fig. 4.1), the author proceeds to discuss **The Development of Diversity** of angiosperms in Chapter 7 as the basis for the rise of angiosperm dominance in the Cenophytic. A broad discussion of global vegetational change is presented from the Cretaceous to the end of the Paleogene in four pages, and modernization (essentially Neogene patterning) in 3 1/2 pages. Mechanisms and reasons for such global modification are provided in **Plant Migration and Survival** (Chapter 8), which is well presented in a minimum number of pages. The Eocene is chosen as one datum point (the thermal maximum) from which global deterioration begins; the next datum point in the deterioration series is the Miocene. Then, for some reason - because previously discussed trends (in both the Palaeogene and Neogene) are well documented in this area, an independent data set is provided for the Tertiary of western North America. The specific regional example may have been better utilized to introduce the trends prior to their discussion on a global scale. Data demonstrating vegetational deterioration is concentrated in the Pleistocene (Chapter 10) of the northern hemisphere, and the "transformation of this Ice-Age plant cover into the contemporary" (Holocene) "one" forms the basis of the subsequent four chapters. The topics include forest (Chapters 11-12), dryland community (Chapter 13), and coldland community (Chapter 14) responses to climatic oscillations and perturbations on a "short-term" glacially-influenced basis. The author tries to establish patterns of responses for these particular biomes (?) to changes in environmental parameters, particularly climate.

All of the foregoing examples, discussions, and pattern developments of vegetational response through time are meant to be the basis for the author's second argument. That argument has to do with the "relevance of the paleoecological perspective to basic ecological theory, conservation issues, and predictions" for vegetational change in the next century (Chapter 15). His contention that there has been constant flux over the past 65 million years (the differences in rates of global and/or regional community flux and/or responses of localized vegetation to changes in abiotic parameters adjacent to depositional environments are not really presented) substantiates the hypothesis that flux will

continue into the future. Boreal mires are used as the example that demonstrates this idea, and changes within community structure of this biome are attributed to their 'resilience'. With the author acknowledging the fact that mires are a particularly good system which demonstrate "sensitivity to climatic change, ongoing structural development, and sensitivity to perturbation" it is curious that he has not chosen this particular biome to track through time as the basis for his data. Predictions as to what changes may occur (the underlying premise is that there is an increase in pressures placed upon the global system by one of its recent inhabitants) are relegated to a brief discussion of the JABOWA computer model and its predictive capacity for forest communities following perturbation. The modelled predicted changes conform to "the evidence from the fossil record of the transitory nature of many plant communities," and it is then suggested that some ecological concepts are inapplicable for developing global management strategies. Unfortunately, global management strategies are never provided and only several implications derived from the data are presented for biome conservation. The author believes that parallels do exist in biome alterations related to a climatic increase of the present and those during the altithermal period of 8-5 ka ago ("long-term" change or "short-term" perturbation). But, due to unforeseeable environmental conditions in the next century, community reorganization will probably never replicate the previous pattern.

So, what's the final verdict on this book? I found it disappointing. After I read the Preface I was anticipating a global synthetic work on the development and diversification of plant communities beginning in the Palaeogene brought to the Recent. I believed, from the Preface, that a balanced treatment of 65 million years of plant community history would be presented. The author did admit that there would be an unevenness of treatment, but I had not expected the unevenness I encountered. I had hoped that the compiled data set would well demonstrate how retrodiction of terrestrial vegetational community history can be used as a basis for potential prediction (Chapter 15). Neither was this prospect realized. The book is an honest compilation of primarily palynological data sets for the Pleistocene and Holocene. Although documentation of a truly "long-term" approach to the subject was not realized, I believe that the discussions presented in these chapters are worth reading some afternoon you have devoted to library research.

R.A. GASTALDO, Alabama, USA

THE BIOLOGY AND EVOLUTION OF FOSSIL PLANTS. Taylor, T.N. & Taylor, E.L. 1992. Prentice Hall, New Jersey 07632. 982pp. ISBN 0-13-651589-4 Cloth \$95.00.

When two of the leading textbooks in paleobotany (Taylor, 1981, and Stewart, 1983) went out of print almost simultaneously, choices of books in the field were drastically narrowed. The excellent book by

Thomas and Spicer (1986), fortunately, was still available, but some readers prefer halftone illustrations to exclusive use of line drawings (Meyen's 1987 book also falls in that category). So it was an auspicious event when this new book by T N & E L Taylor appeared.

This book certainly cannot be regarded as a newer edition of T N Taylor's earlier book. It has been completely rewritten with an abundance of new illustrations provided. The book is encyclopedic, with 982 pages and more than 1600 illustrations, more than 2000 literature citations, and a glossary of 24 pages. Arrangement of the material is in the traditional sequence with an introductory chapter, one on Precambrian life, followed by non-vascular cryptogams, vascular cryptogams, and seed plants. A strong feature of the book is the extensive treatment of the angiosperms, with about 10% of the body of the text devoted to them. A fascinating chapter on plant-animal interactions as reflected in the fossil record is a novel addition. Very little of the relevant fossil plant literature has escaped the sleuthing talents of the authors and included in the bibliography is a compendium of an astounding number of references, including many with a 1992 publication date. The substantial incorporation of non-North American literature makes this book especially valuable.

It is probably natural to compare this book with the earlier one by T N Taylor. I find the descriptions in the new book much clearer and more complete. The sharp and abundant illustrations are welcome: they add spice to the book. Quality of halftones is superb: some of the line drawings have suffered during reproduction. It is fair to indicate, however, that the authors were not given an opportunity to examine the final appearance of line drawings in proof. The authors tend to demonstrate their personal biases in matters of classification or of interpretation, but they have been extremely sensitive to alternative ways of looking at things.

This book is a Seward's **FOSSIL PLANTS** volume. It is all meat. Abundant citations of original work injected throughout the text make it easy to delve further into the subject if necessary. The effort that the authors made striving for completeness is evident from the list of colleagues who were contacted to provide illustrative material, or who voluntarily offered use of pictures. It certainly was a generous gesture on the part of fellow paleobotanists to have so willingly contributed to the success of the book. Another human touch is the inclusion of portraits of paleobotanists deceased or, happily, still with us but retired.

Would I use this for a textbook in my class? Probably not. Its greatest strength is its completeness, and I fear that a student in a first course in paleobotany would be overwhelmed. The price is prohibitive for a student with only a passing interest in the field. But a copy should be available for serious students to consult.

I am impressed with the tone of the book. It conveys the excitement and dynamism of the field of

paleobotany. It reflects the vitality of our discipline and of the history of high quality work done by paleobotanists. It is unfortunate that university and museum administrators are blind to the contributions of paleobotany to science and to the long-term evolutionary overviews that emanate from these studies.

I predict that this book will long remain a classic in the field. It is the kind of book that should not be on every paleobotanist's bookshelf. Rather, it should be on his or her desk, available for ready and constant reference.

T. DELEVORYAS. Texas, USA.

This edition of the IOP Newsletter was prepared by Dr Sorin Filipescu from the Geology Department, University of Cluj-Napoca, Romania. He is working in London for three months as part of an EEC Tempus project. It is the first newsletter to be assembled by a software package called Ami Pro, marketed by Lotus.

IOP CONSTITUTION

IOP STATUTES

This December 1987 version supercedes all previous versions.

Article 1. Name

The name of the organisation is INTERNATIONAL ORGANISATION OF PALAEOBOTANY (IOP).

Article 2. Affiliation

The IOP shall be affiliated to the International Union of Biological Sciences.

Article 3. Aim

The aim of IOP is to promote international cooperation in the study of palaeobotany including palaeopalynology. This includes:

3.1 Publication of an informative Newsletter that will announce all palaeobotanical meetings, report on their proceedings, describe regional bibliographies and how to obtain them, as well as other pertinent information of wide interest. Some articles of topical interest will also be included from time to time. These will not be refereed and will not have any formal status, either nomenclaturally or as a formal publication.

3.2 Collaboration with officers responsible for programmes of International Botanical Congresses to ensure the inclusion therein of items of palaeobotanical interest. To organise and sponsor other Conferences from time to time at the discretion of the Executive Committee.

3.3 The encouragement of the work of regional groups of palaeobotanists and of groups of specialists within the broader field of palaeobotany.

3.4 Cooperation with other international organisations having interests allied to palaeobotany, such as the International Palaeontological Association, the International Association for Plant Taxonomy, the Commission Internationale de Microflore du Paléozoïque and the International Federation of Palynological Societies.

3.5 Any other activities considered appropriate by the Executive Committee or warranted by interest shown by the membership. When financial support is available, publications such as a world bibliography of palaeobotany and palaeopalynology should be encouraged.

Article 4. Officers.

The officers of IOP form the Executive Committee

4.1 The officers of IOP shall be: President; three Vice-Presidents; Secretary; three Members at Large; Conference/Congress Member.

4.2.1 The President shall chair meetings of the Executive Committee and the General Assembly

4.2.2 If the Office of President becomes vacant, one of the Vice-Presidents shall be elected by the Executive Committee to succeed to the office for the remainder of the term.

4.3.1 The Secretary is the driving force behind the Organization. He/she shall transmit suggestions from the membership to the President and Executive Committee, maintain contact with regional and local groups of palaeobotanists, maintain contact with IUBS by the assistance of one of the Vice Presidents, control the income and expenditure of IOP, transmit decisions of the Executive Committee and President to the membership. The Newsletter shall be the secretary's chief medium of communication.

4.3.2 The Secretary may be re-elected.

4.4 The Conference/Congress Member is chosen by the Executive Committee. He/she shall be responsible for coordinating with the appropriate authorities concerning the palaeobotanical programme at the next IOP conference or International Botanical Congress. He/she shall normally be a

resident of the country in which that conference or congress is to be held.

4.5 One of the three Vice Presidents is selected by the Executive Committee to take special responsibility for the committee with IUBS affairs. He/she will instigate creative projects, in consultation with the Executive Committee, which will be part of the activities of IUBS relevant to the aims of IOP.

4.6 The three Members at Large must be from different countries; they may not serve more than two consecutive terms of office.

4.7 One term of office is from the end of one International Botanical Congress (or its equivalent as defined by the Executive Committee) to the end of the next.

4.8 If any office other than that of President becomes vacant, the Executive Committee, is empowered to select a replacement.

Article 5. Regions, Independent Regions and Regional Representatives

5.1 To help produce the newsletter, the Secretary is empowered to select, invite, and appoint as many and as diverse Regional Representatives and Correspondents as are required to ensure effective coverage of world palaeobotany. The Correspondents may include the persons who are responsible for such regional or topical newsletters or bibliographies as currently exist or that are initiated in the future. Regional Representatives and Correspondents will serve at the pleasure of the Secretary, and their appointment is open to review on a regular basis.

5.2 The role of each Regional Representative is to:

5.2.1 Maintain a full list of names and addresses of members in that region, and to transmit these to the Secretary each year.

5.2.2 Collect membership dues from each member, and after deduction of postal and duplication expenses, to transfer the surplus to the Secretary (except for Representatives of Independent Regions - see Article 5.3 below)

5.2.3 Stimulate contributions to the newsletter from members in the region. Contributions should include announcements and reports of national meetings, news of individuals and their projects, obituaries, and articles of general interest. Books for review should be solicited from publishers in the region and their reviewers appointed in consultation with the Secretary.

5.2.4 Receive one master copy (or several copies, if the regional membership is small or if duplication is politically difficult) of each IOP newsletter from the Secretary, and arrange for duplication and distribution to members in the region.

5.3 Some regions have difficulties in exchanging currency internationally. For the purposes of this Constitution, such regions are called "Independent Regions". These are determined by the Executive Committee and named in the By-Laws. Their Regional Representatives are not required to send surplus funds to the Secretary.

Article 6. Membership.

6.1 Any palaeobotanist who subscribes to the aims of IOP is eligible for membership.

6.2 The Secretary shall maintain a roll of members' names and institutional addresses. This will comprise information received from all Regional Representatives, including those of Independent Regions. It will be revised at least once each year. It will serve as an electoral roll for the election of officers to the Executive Committee, as well as a useful world list of palaeobotanists.

6.3 Membership takes effect immediately upon receipt of membership dues by the appropriate Regional Representative.

except for Independent Regions where membership takes effect upon registration of the names and addresses by the Regional Representative with the Secretary.

6.4 Membership gives voting rights, the privilege of holding office, and one copy of each Newsletter.

6.5 Institutions such as libraries and publishers may receive the newsletter by paying the annual dues set out in the By-Laws. They may not vote at elections or nominate candidates for election to office, and shall not be regarded as members.

6.6 The amount to be paid for annual dues shall be laid down from time to time by the Executive Committee and incorporated in the By-Laws. The amount of dues so specified shall not apply to members in Independent Regions whose Representative may determine the level of annual dues, if any, to be collected.

6.7 Membership may be terminated for non-payment of dues extending over two years. In Independent Regions continuity of membership is maintained by annual registration of the members' names with the Secretary by the Regional Representative.

Article 7. Elections

The election of officers should take place at each General Assembly during the International Botanical Congress (or its equivalent as determined by the Executive Committee.)

7.1 The Executive Committee shall seek nominations for eight of its places (See Article 4) by advertising in the Newsletter.

7.2 Nominations may be made in writing, by any member of IOP.

These must be received by the Secretary no later than six months before the Congress at which the election shall take place.

7.3 All candidates must be current members of IOP, defined by their inclusion on the membership/election roll (see Article 6.2 above).

7.4 The Executive Committee shall determine the status of the nominees, ascertain that they are prepared to stand for election, and shall publish a list, in the form of a ballot, in the Newsletter at least one month before the start of the Congress.

7.5 Each member whose name appears on the electoral roll (Articles 6.2 and 6.3) may vote. Members voting must have paid their membership dues to their Regional Representative for the year of the election. Voters from Independent Regions must have been validated as active IOP Members for the year of the election by the appropriate Regional Representative. Thus, all voting members must be individually registered on the Electoral Roll with the Secretary.

7.6 Any member who wishes to vote by mail may send their ballot to the Secretary, to be received before the time of the meeting of the General Assembly at the Congress. Each ballot paper should be enclosed in a sealed envelope with the voters name clearly written on the reverse side of the envelope. Members who plan to attend the Congress may prefer to vote in person at the General Assembly.

7.7 Election of the President and of the Secretary shall be declared for the respective candidates who receive a simple majority of the votes cast.

7.8 Election of the three Vice-Presidents and of the three Members at Large of the Executive Committee shall be awarded to the candidates in each category who receive the largest number of votes.

Article 8. Administration.

8.1.1 The General Assembly consists of all Individual Members. Meetings of the General Assembly shall be held at each meeting of the International Botanical Congress and at

such other International Conferences as may be designated, with adequate prior notice, by the Executive Committee.

8.1.2 Meetings will be conducted in accordance with the customary Rules of Order (Encyclopaedia Britannica 19: 721, 1970).

8.1.3 The agenda of a General Assembly shall be determined by the Secretary and the Executive Committee and published in a Newsletter in advance of the meeting.

8.2.1 The Executive Committee undertakes such business as may be delegated to it by the Constitution and By-Laws or by decisions of the General Assembly, or by requests of the President or Secretary.

8.2.2 The Executive Committee should meet at least once at each International Botanical Congress, prior to the meeting of the General Assembly. Otherwise, much of its business will be conducted by mail.

Article 9. Finances

Membership dues shall be determined by the Executive Committee and laid down in the By-Laws. Dues are payable to the appropriate Regional Representative on January 1st each year. Any surplus money, after payment of postal and duplication costs should be forwarded to the Secretary by the Regional Representatives. (See 5.2.2 and 6.6 for special provisions for members in Independent Regions.)

Article 10. Amendments

10.1 These statutes of the IOP may be amended only at a meeting of the General Assembly.

10.2 Amendments may be proposed by the Executive Committee or may be submitted to that committee by any member.

10.3 The Secretary will cause the proposed amendments to be published in the Newsletter at least six months before the next General Assembly together with any comments the Executive Committee offers.

10.4 Amendments shall be effective if ratified by a two-thirds majority of members present at a General Assembly.

Article 11. Language

The Official Languages of IOP will be those of IUBS. The use of English is advocated.

IOP BY-LAWS

1. Membership dues - Dues for Individual and Corporate members are US\$ 10.00 or GBP5.00 per year, payable on 1 January.

2. Dues are payable to the appropriate Regional Representative and thence to the Secretary, who will use them in the production of the Newsletter and for the business of the organization.

3. A computer print-out of members' names and addresses is available to members from the Secretary, upon payment of a fee to cover costs determined by the Secretary.

4. A series of informal leaflets, name of IOP Circulars, may be produced from time to time, with the authority of the Executive Committee. Production costs shall be paid by the author, from whom members may obtain free copies, though postal charges are discretionary.

5. The Executive Committee has agreed that from January 1993 the following regions have the status of "Independent Regions" for the purposes of Article 5.3.

East Europe

CIS

P.R. China

6. These By-Laws may be amended by a two-thirds majority of the Executive Committee provided that the proposed amendments have been circulated to the Committee at least three months before a vote is taken.

January, 1993