



International Organisation of Palaeobotany

IOP NEWSLETTER 108

December 2015

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The views expressed in the newsletter are those of its correspondents, and do not necessarily reflect the policy of IOP.

Please send us your contributions for the next edition of our newsletter (March 2016) by February 29th, 2016.

President: Johanna Eder-Kovar (Germany)
Vice Presidents: Bob Spicer (Great Britain), Harufumi Nishida (Japan), Mihai Popa (Romania)
Members at Large: Jun Wang (China), Hans Kerp (Germany), Alexej Herman (Russia)
Secretary/Treasurer/Newsletter editor: Mike Dunn (USA)
Conference/Congress Chair: Francisco de Assis Ribeiro dos Santos

IOP Logo: The evolution of plant architecture (© by A. R. Hemsley)

FROM THE SECRETARY/TREASURER

Dear International Organisation of
Palaeobotany Members,

Please accept this December newsletter.

Thanks to everyone who submitted items for the Newsletter. I really appreciate the support of those who sent items in. The International Organisation of Palaeobotany is a Member-Centric Organization, and this Newsletter is an example of how great and meaningful we can be when the membership participates.

As I mentioned in the last newsletter, XIV IPC/X IOPC is set. We will meet 23-28 October 2016 at Salvador, Bahia, Brazil. Updated details are below. I certainly appreciate all of the hard work that the Francisco and the entire Organizing Committee have done to prepare what I am sure will be a great meeting. And don't forget that the generosity of the 2012 IOPC Committee is allowing us to offer financial support for students to attend the 2016 IOPC.

IOP President Johanna Eder-Kovar supplied a heartfelt invitation to join us at IOPC2016, Anita Roth-Nebelsick submitted a report on the 2015 Plant Taphonomy Meeting, Alexander Doweld submitted the First Year Report on The International Fossil Plant Names Index (IFPNI), and Chris Liu informs us about bad news surrounding the closing of The Illinois State Museum.

Sadly, Peter Wilf sent the obituary reporting the passing of Alfred Traverse.

Please feel free to contact me with questions, comments, or any information you would like passed on to the Membership. I can be reached at:

Mike Dunn
Department of Biological Sciences
Cameron University
Lawton, Oklahoma 73505
Ph.: 580-581-2287
email: michaeld@cameron.edu

And last but certainly not least:

**HAPPY HOLIDAYS TO YOU AND
YOURS**

FROM THE PRESIDENT

Dear colleagues,

The IOPC in Brazil will be the 10th international conference held by The International Organisation of Palaeobotany, and this milestone is definitely worth celebrating. As usual, this quadrennial event is the perfect forum to communicate directly with each other on scientific progress in our different fields, and to reacquaint ourselves with our colleagues from all over the World.

Under the guidance of Francisco de Assis Ribeiro dos Santos, our Brazilian colleagues are organizing this conference in the historical city of Salvador. And after the very successful conference in Tokyo in 2012, I have no doubt that the 2016 conference will be equally as productive, informative, and fun.

As in Tokyo, the IOPC2016 is held jointly with the International Palynology

Conference, and the information regarding registration and abstract submission is online at: <http://www.ipciopcbrazil.com/>. Please, have a look at the site. Our Brazilian organizers have put in a great deal of effort to make this conference a successful one. The venue is excellent and the field tips will be exciting. I certainly hope that all of you can join us in Brazil for XIV IPC/ X IOPC! When you planning your trip for next year, it is worth taking into account the differences in currencies. You will experience that the conference fees for Brazil are really moderate after the exchange rate is calculated.

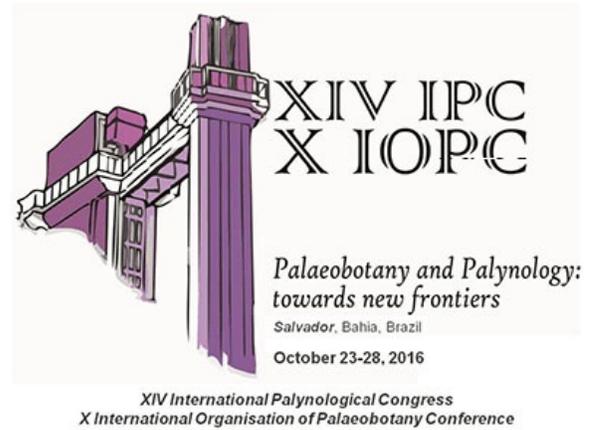
The deadline for submitting abstracts has been extended to 30 April 2016 and the deadline for student travel grant applications is now 1 March 2016. I hope and expect to have the same great line-up of talks that we had in Tokyo, so that Palaeobotany will be represented appropriately during this joint Palaeobotany and Palynology conference!

As usual, the election of the executive board will also occur during this conference. As Mike has already announced in the last newsletter, we are seeking candidates to stand for the positions of president, 3 vice presidents, secretary, and 3 members at large. Proposals for the different positions are warmly welcome.

Many thanks for all your contributions,
Cordially

Johanna Eder
IOP President

IPC XIV/IOPC X 2016



The 2016 joint meeting of the International Palynological Congress and the International Organization of Palaeobotanists will be held 23-28 October 2016 at Salvador, Bahia, Brazil. The venue is The Bahia Othon Palace.

The homepage with registration details is up and running. Be sure to note the substantial savings for early registration.

The Website is:

<http://www.ipciopcbrazil.com/>

The site is very easy to use, but if your Institution has a robust Firewall the site may be blocked as it was for me. I simply registered from home and had no problem.

The payment form is in Portuguese, but credit cards are credit cards in any language, so that was no problem either. Google translator is available on the site, but I didn't need it.

As Johanna noted, the date for abstract submission has been moved back to 30 April

2016, and the due date for submission of Student Travel Awards has been extended until 1 March 2016.

STUDENT TRAVEL AWARDS TO IOPC 2016

Thanks to the generosity of The Organizing Committee for IOPC 2012, we are able to give several travel awards for student travel to IOPC 2016. The awards are competitive and must include:

1. Title and abstract of talk (no posters).
2. C.V. of no more than two pages.
3. Letter of support from their advisor (may be submitted separately: if submitted separately include the name of the advisor with the original application).

One award of \$3000, three awards of \$2000, and two awards of \$1000 (US Dollars) will be awarded by an international committee, and the winners will be announced in the July 2016 Newsletter

Applicants may be undergraduate or graduate students, and must be members of The International Organisation of Palaeobotanists.

Applications must be received by 1 March 2016, and should be submitted to:

Michael T. Dunn
Department of Biological Sciences
Cameron University
Lawton, Oklahoma 73505
ph: 580-581-2287
email: michaeld@cameron.edu

Submissions may be emailed as PDF

(preferred), Word, or WordPerfect attachments.

IOPC 2020

At this time we have no bids to host IOPC2020. Please be thinking of where you want to meet next, and spread the word about what a fun bunch we are when we break out of our labs, holster our rock hammers, and let down our hair.

MEETING REPORT

24th International Workshop on Plant Taphonomy 2015, November 26 - 27, 2015, Stuttgart, Germany .

The International Workshop on Plant Taphonomy 2015 was held at the State Museum of Natural History, Stuttgart. The meeting was attended by 36 participants from Brazil, the Czech Republic, Germany and the United Kingdom. After the welcome note provided by Johanna Eder, nine lectures were presented during the first day of the meeting, dealing with various topics related to plant taphonomy, reaching from the Permian to the Eocene. The first day closed with the poster session and an “open discussion chill-out” which continued into the meeting dinner at a brewery. The second day was devoted to special aspects of leaf taphonomy, including information provided by experiments, evaluation of site conditions, cuticular analysis, digital reconstruction of leaves and stratigraphic questions. More information can be found on <http://www.plant-taphonomy-2015.naturkundemuseum-bw.de/>. The meeting ended with lively discussions and the announcement of

the 25th International Workshop on Plant Taphonomy 2016 which will be hosted by the Steinmann Institute, University of Bonn, Germany.



Participants of the 24th International Workshop on Plant Taphonomy 2015, November 26 - 27, 2015, Stuttgart, Germany

Submitted by Anita Roth-Nebelsick

SPECIAL REPORT

THE INTERNATIONAL FOSSIL PLANT NAMES INDEX (IFPNI):

First Year Report

The INTERNATIONAL FOSSIL PLANT NAMES INDEX (IFPNI) was first launched in May, 2014 as a data base of fossil names of plants, algae, fungi, allied prokaryotic forms (formerly treated as algae and Cyanophyceae in particular), algae-related protists and fossil microproblematica (so-called ambiregnal organisms) published in using binary nomenclature. The goal of the IFPNI was also to compile and maintain a comprehensive literature based record of

these fossil scientific names and bank of author names in palaeobotany. In modern plant science there was no previously comprehensive united index of recorded fossil forms of algae, cyanobacteria and related prokaryotic microorganisms (interpreted in the past as algae), fungi and plants, which were all described since early XIX century up to our days.

IFPNI was constructed as a platform to provide an authoritative online, open-access, and community-generated registry of fossil plant nomenclature as a service to the very global scientific community. Dynamic data base aims to document all nomenclatural novelties (new scientific names of extinct organisms) and associated data, including registry of the scientific publications (taxonomic literature) containing nomenclatural acts and authors in palaeobotany and palaeontology in general, and allied geological disciplines. The idea was to settle a working group of systematists to process retro data from old palaeobotanical literature and to invite also actively working palaeobotanists to become sole contributors and invited specialized editors in contributing new nomenclatural and bibliographic data by means of their on-line registration. As a result for one year of active work, at present we have registered 32110 names from 3555 publications from 968 journals and 399 books authored by 2550 authors [statistics on 09 Dec 2015]. The data base is not yet complete, and more work should be done on some remained to verified and analyzed uploaded data. We expected faster growth of the data base, but the result as such is still modest. The inhibitory obstacles were: lack of bibliographic database of registered fossil plant taxonomic literature, which is a main

base for extracting and referencing of fossil plant names, lack of journal data base, lack of palaeobotanist author names data base.

The IFPNI Platform was developed on the basis of MongoDB data base; it is hosted on the Digital Ocean virtual servers in Europe and easily and freely available to users worldwide with no restrictions in access. In contrast to the International Plant Names Index (<http://www.ipni.org/>), covering just extant taxa of vascular plants at present, IFPNI was constructed in a similar manner to Zoobank database (<http://zoobank.org/>) with analogous tools of registration of taxonomic literature, scientific names, and type specimens. IFPNI currently does not incorporate fossil record data; it is an aim of the future development. In addition to mentioned indices, IFPNI first provides comfortable platform and tools for uploading of original photos and inventory numbers of the type specimens which currently housed in Museums and Palaeontological Collections worldwide, to aggregate a valuable specimen documentation.

ALEXANDER B. DOWELD

National Institute of Carpology (Gaertnerian Institution), 21 Konenkowa Street, RUS-127560, Moscow, Russian Federation; e-mail: sekretariat@doweld.pro.

The full text of this report is included as Appendix A at the end of this mailing.

OBITUARY

Alfred Traverse, September 7, 1925- September 15, 2015

Alfred Traverse, 90, died after an extended illness, on September 15, 2015, at Juniper Village, State College. Alfred was born on Labor Day, 1925, in Port Hill, Prince Edward Island, Canada. His family moved to the United States in 1928. He got his public education in St. Joseph, Michigan, where he graduated from high school as valedictorian in 1943.



Alfred Traverse: undated, uncredited photo.

He entered Harvard University in June of the same year and graduated in June, 1946, SB magna cum laude, elected to Phi Beta

Kappa, and soon left for England, having won a Lady Julia Henry Fellowship for a year of study as a research student at the Botany School of Cambridge University. For his work there, he received a Certificate in Botany. In August 1947, Alfred returned to Harvard and resumed graduate work there, concentrating on fossil pollen and spore studies, a field now called palynology. He received a Masters degree in 1948, and a Ph.D. in 1951. His dissertation on the palynology of the Brandon lignite of Vermont was published later by the U.S. Bureau of Mines. In June, 1951, Alfred married Elizabeth Jane (Betty) Insley. That same year, he was hired by the U.S. Bureau of Mines to do research on petrology of lignite-coal in Grand Forks, North Dakota. Then, in 1956, the USBM transferred him to the Federal Center in Denver, Colorado, to be head of the coal microscopy lab, but he almost immediately accepted an offer from Shell to set up a palynology lab at their Bellaire research headquarters in Houston, Texas. Soon after his employment with Shell, he was sent to their international headquarters in The Hague, Netherlands, to learn about the company's palynological methods and previous research. During his years with Shell, his most significant contribution was study of the distribution of palynomorphs in sediments offshore from the Bahamas and the significance of this for sedimentation in general. Alfred resigned at Shell in 1962, and enrolled at the Episcopal Theological Seminary of the Southwest. He graduated with a degree of Master of Divinity in 1965 as the top-ranked student. For the academic year 1965-66, he was Assistant Professor of Geology at the University of Texas, and assistant clergyman at a nearby Episcopal church, having been ordained deacon. In May, 1966, Alfred was

ordained priest, and in June that same year moved to State College to become Associate Professor of Palynology in the departments of Geosciences and Biology at Penn State. He also took up duties as assistant to the rector of St. Paul's Episcopal Church in Philipsburg. In 1967, he was one of the co-founders of AASP, now known as The Palynological Society. He was the first secretary-treasurer of the organization and later was elected president. Beginning in 1950, he became active in the Botanical Society of America, in which he served several years as secretary and chairman of the Palenobotanical Section. He was a member and fellow from 1950 until his death of both the American Association for the Advancement of Science and the Geological Society of America. In 1975, the Traverses moved from State College to Huntingdon, Pennsylvania. Alfred became priest-in-charge of St. John's Episcopal Church while continuing his work as professor at Penn State. He also served as Adjunct Professor at Juniata College in Huntingdon, where he gave occasional lectures. From 1980-81, Alfred and Betty were in Zürich, Switzerland, on sabbatical. Alfred was associated with the geology department of the Swiss Federal Technical Institute, where he gave a course on Cenozoic palynology. While in Zürich, he also served as assistant priest in a parish of the Old Catholic Church, a denomination in communion with the Anglican Church. This was his last church connection, because upon his return to the U.S. and after much deliberation, he came to realize that he had actually become a secular humanist, more in tune with his scientific present than with his religious past. However, he has remained positive about his deep association with the Church and has never felt it appropriate to

make a public disavowal of his religious connections. Alfred is the author of Paleopalynology (Unwin Hyman, 1988), the first comprehensive textbook in English on the subject, and countless other scientific articles published in periodicals all over the world. He loved to travel and spent much of his free time studying various languages so he could interact with the people he met. In 1995, Alfred retired from teaching at Penn State. His personal herbarium of about 5,000 specimens was given to Penn State Herbarium in Whitmore Lab, of which Alfred was Voluntary Curator from 2007-2015. A point of interest is that the original collection for the Herbarium was brought back from Europe by Penn State's first president, Evan Pugh. Dr. Pugh believed a herbarium to be an essential asset for research at what was the "Farmers' High School" renamed by him to be "Pennsylvania College of Agriculture." Alfred was proud to be integral in the continuance of this legacy and important collection for Penn State. Alfred is survived by his beloved wife, companion and colleague of nearly 65 years, Dr. Elizabeth Insley Traverse, their four children, Paul Whitney Traverse, M.D., Martha Jane Traverse, John Insley Traverse and Celia Elizabeth Traverse Lerner; one daughter in-law, Kathy Lynne Traverse; seven grandchildren; one great-grand-child; two step-grandchildren and two step-great-grandchildren.

Published in Centre Daily Times on Sept. 20, 2015

Submitted by Peter Wilf

REPORT FROM THE NORTH AMERICAN REGION

Closing of the Illinois State Museum

Illinois Governor Bruce Rauner has ordered the closing of the Illinois State Museum (<http://www.museum.state.il.us>) and has fired the Museum staff, effective September 30th. The closure includes the 138-year-old Illinois State Museum and four related sites. Researchers know the museum as the home to the largest collection of mastodon fossils in the world, databases used by international scientists, and artifacts from native Midwestern tribes. Its collection includes some 13.5 million objects, including 8.5 million anthropological and archaeological artifacts. The museum also hosts a relatively small but active research program, run by a staff of 10 curators and scientists.

The fate of the Museum collections is uncertain. Neither the governor, his staff, nor members of the state legislature have ever visited the Museum and have no idea of the size, scope or significance of the collections. One member of the Museum staff will continue at the Museum to oversee collections at the two locations in Springfield (Museum building itself and the Research and Collections Center) and Dickson Mounds Museum in Lewistown, Illinois. The buildings will, presumably, continue to be heated and air conditioned to protect the collections. Dr. Richard Leary, Geology Curator emeritus, will maintain a presence for a little while longer. Obviously, this is a sad chapter in the education of the public and scientific research in Illinois.

By Richard Leary (compiled and submitted by Chris Liu)

IOP EXECUTIVE COMMITTEE: CALL FOR NOMINATIONS

Please consider this the official call for nominations for Officers of the Executive Committee of The International Organisation of Palaeobotany.

This cycle we need to nominate and elect:

President

Secretary/Treasurer

Three Vice Presidents

Three Members at Large

I am re-publishing the rules and regulations below, but in general:

Johanna cannot run again for President. I will not run again as Secretary/Treasurer (or as President). Vice Presidents, Bob Spicer, Harufumi Nishida, and Mihai Popa are not eligible for re-election. Members-at-Large Jun Wang (China), Hans Kerp (Germany), and Alexej Herman (Russia) are eligible for re-election, but must be re-nominated. Alternative Members-at-Large may be nominated, but the members must all be from different countries.

A nomination form is attached to this email. Please fill out the form and send it to:

Mike Dunn
michaeld@cameron.edu (Preferred);
or by snail mail to the address at the end of this newsletter.

From Article 4 of the IOP Constitution:

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

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

The position of President is up for election and needs a nominee.

4.3.1 The Secretary/Treasurer is the driving force behind the Organisation. He/she shall transmit suggestions from the membership to the President and Executive Committee, maintain an IOP web site on the internet, 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 and maintain a central treasury, transmit decisions of the Executive Committee and President to the membership. The newsletter shall be the Secretary/Treasurer's chief medium of communication.

The position of Secretary/Treasurer is up for election and needs a nominee. Although this position is eligible for consecutive terms, I am not running and will not accept a nomination. Therefore I will act as a neutral election monitor.

4.5 Vice presidents shall not serve more than one consecutive term of office. 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 the IOP.

The three Vice-President positions are all up for election and need nominees.

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

The three Members at Large: Jun Wang (China), Hans Kerp (Germany), and Alexej Herman (Russia), are all eligible for re-election, however must be re-nominated. Other nominations will also be accepted.

The Conference/Congress Member will be selected by the Executive Committee once the venue for IOPC 2020 is selected.

UPCOMING MEETINGS

The first Joint Northeast-MidContinent Paleobotany Meeting, Cornell, May 20-22, 2016 (a.k.a., the 33rd Midcontinent Paleobotanical Colloquium).

A schedule and call for participants will be forthcoming.

Botany 2016 – “Celebrating Our History, Conserving Our Future” Savannah, Georgia, July 30-August 3, 2016.

Societies participating in Botany 2016 will include the: American Bryological and

Lichenological Society, American Fern Society, American Society of Plant Taxonomists, International Association for Plant Taxonomy, Society for Herbarium Curators, and The Paleobotanical Section of the Botanical Society of America.
www.botanyconference.org

The 10th European Palaeobotany and Palynology Conference



EUROPEAN PALAEOBOTANY & PALYNOLOGY CONFERENCE

The 10th European Palaeobotany and Palynology Conference will be held in Dublin on the 12th to 19th of August 2018 at University College Dublin. Partner organizations include Trinity College Dublin and the National Museum of Ireland. We look forward to welcoming you in 2018

Jennifer McElwain, Earth Institute,
University College Dublin
Chair of EPPC organizational committee

CALL FOR NEWS AND NOTES

Please send submissions for the next news letter by 29 February 2016 to:

Mike Dunn
Department of Biological Sciences
Cameron University
Lawton, Oklahoma 73505
Ph.: 580-581-2287
email: michaeld@cameron.edu

THE INTERNATIONAL FOSSIL PLANT NAMES INDEX (IFPNI):

First Year Report

ALEXANDER B. DOWELD

National Institute of Carpology (Gaertnerian Institution), 21 Konenkowa Street, RUS-127560, Moscow, Russian Federation; e-mail: sekretariat@doweld.pro.

The INTERNATIONAL FOSSIL PLANT NAMES INDEX (IFPNI) was first launched in May, 2014 as a data base of fossil names of plants, algae, fungi, allied prokaryotic forms (formerly treated as algae and Cyanophyceae in particular), algae-related protists and fossil microproblematica (so-called ambireginal organisms) published in using binary nomenclature. The goal of the IFPNI was also to compile and maintain a comprehensive literature based record of these fossil scientific names and bank of author names in palaeobotany. In modern plant science there was no previously comprehensive united index of recorded fossil forms of algae, cyanobacteria and related prokaryotic microorganisms (interpreted in the past as algae), fungi and plants, which were all described since early XIX century up to our days.

IFPNI was constructed as a platform to provide an authoritative online, open-access, and community-generated registry of fossil plant nomenclature as a service to the very global scientific community. Dynamic data base aims to document all nomenclatural novelties (new scientific names of extinct organisms) and associated data, including registry of the scientific publications (taxonomic literature) containing nomenclatural acts and authors in palaeobotany and palaeontology in general, and allied geological disciplines. The idea was to settle a working group of systematists to process retro data from old palaeobotanical literature and to invite also actively working palaeobotanists to become sole contributors and invited specialized editors in contributing new nomenclatural and bibliographic data by means of their on-line registration. As a result for one year of active work, at present we have registered 32110 names from 3555 publications from 968 journals and 399 books authored by 2550 authors [statistics on 09 Dec 2015]. The data base is not yet complete, and more work should be done on some remained to verified and analyzed uploaded data. We expected faster growth of the data base, but the result as such is still modest. The inhibitory obstacles were: lack of bibliographic database of registered fossil plant taxonomic literature, which is a

main base for extracting and referencing of fossil plant names, lack of journal data base, lack of palaeobotanist author names data base.

The IFPNI Platform was developed on the basis of MongoDB data base; it is hosted on the Digital Ocean virtual servers in Europe and easily and freely available to users worldwide with no restrictions in access. In contrast to the *International Plant Names Index* (<http://www.ipni.org/>), covering just extant taxa of vascular plants at present, IFPNI was constructed in a similar manner to *Zoobank* database (<http://zoobank.org/>) with analogous tools of registration of taxonomic literature, scientific names, and type specimens. IFPNI currently does not incorporate fossil record data; it is an aim of the future development. In addition to mentioned indices, IFPNI first provides comfortable platform and tools for uploading of original photos and inventory numbers of the type specimens which currently housed in Museums and Palaeontological Collections worldwide, to aggregate a valuable specimen documentation.

What's done

Author's names.—Author names of palaeobotanists were mostly compiled (registered) by one of the managing editors, Valentina Nazarenko: now more than 2535 names with full names and, more importantly, standardized abbreviations and transliterations (for Cyrillic and Eastern languages) are available. They were compared to the *International Association for Plant Taxonomy* (IAPT) standard of the authors of plant names Brummitt & Powell's *Authors of Plant Names* (1992); however, at present IFPNI has more than 37% unique records of authors (palaeobotanists and palaeontologists) contributing to systematic palaeobotany, which escaped from either 1992 author's compilation or on-line author database of the *International Plant Names Index* (<http://www.ipni.org/>).

Author names were standardized against Brummitt & Powell's *Authors of Plant Names* (1992) with minor changes and alterations reflected priority of author's original spelling used in their taxonomic publications. Transliteration of the author names in Cyrillic and Eastern languages are mostly done on the basis of the accepted author's original spelling in their taxonomic works. When the alphabet of the language was changed (for example, Azerbaijani alphabet is currently based on Latin, although being originally based on Cyrillic in taxonomic publications), both versions of the spelling were registered, but in database IFPNI accepts only modern form of alphabet (Latin in case of Azerbaijani). Pinyin (formally Hanyu Pinyin) is the official IFPNI phonetic system for transcribing the Chinese characters into the Latin alphabet, which is also adopted by the International Organization for Standardization (ISO). We provide also registration of surname change of female palaeobotanists.

Serial names.—Journal and serial data base was quite necessary for comfortable registration of new articles published in journals and wide serials. More than 968 such titles were registered in the IFPNI by providing full and recommended and standardized abbreviated form in accord with the *Botanico-Periodicum-Huntianum, Supplement* (BPH/S) (1991) (http://fmhibd.library.cmu.edu/fmi/iwp/cgi?-db=BPH_Online&-loadframes) and *Taxonomic Literature* (TL-2) (<http://www.sil.si.edu/digitalcollections/tl-2/search.cfm>) (1976-1988) and its Supplements (TL-2/S) (1992-2000) with a few exceptions. More than 217 serial titles, new for BPH, were registered and contributed to BPH Staff for addition and improving their records to achieve uniform standardization between IFPNI and BPH.

Taxonomic literature (palaeobotany).— Formation of the comprehensive Taxonomic Literature (Palaeobotany) as a result of registration of the scientific publications containing nomenclatural acts and scientific names was based on the format used in Stafleu's *Taxonomic Literature II* (<http://www.sil.si.edu/digitalcollections/tl-2/index.cfm>), including full bibliographic description of publications on the basis of the *International Standard Bibliographical Documentation* (ISBD) and providing working links to available digitized literature (BHL, JSTOR, JSTAGE, Elsevier, Springer, Taylor & Francis, CNKI, etc.). Retroactive scanning of the principal botanical and geological journals and serials, once registered in IFPNI, as for new fossil plant names and nomenclatural acts, is doing regularly by the IFPNI Staff on the base and facilities of the Fundamental Botanical Library of the National Institute of Carpology (Gaertnerian Institution), Moscow, and either uploaded into Google Books for further reading or to independent platform (<https://yadi.sk>). 1087 newly digitized books and serial monographs with new for science fossil plant names were uploaded into Google Books for the period of 2012-2015; IFPNI is served as an aggregator only of the direct links to this taxonomic literature bearing protologues with illustrations. Currently IFPNI has registered literature in 45 languages, viz. Abkhazian, Afrikaans, Armenian, Azerbaijani, Byelorussian, Bulgarian, Chinese, Croatian, Czech, Danish, Dutch, English, Estonian, Finnish, French, Georgian, German, Greek, Hungarian, Irish, Italian, Japanese, Kazakh, Korean, Latin, Latvian, Lithuanian, Moldavian, Norwegian, Persian, Polish, Portuguese, Romanian, Russian, Serbo-Croatian, Slovak, Slovenian, Spanish, Swedish, Tajik, Turkish, Turkmen, Ukrainian, Uzbek, and Vietnamese.

IFPNI Staff continued bibliographic searches for missing in TL-2 precise publication dates of taxonomic literature as well as registration of newly published taxonomic publications beyond the coverage of TL-2 (1753-1940). For the purposes of data standardization, IFPNI accepts only original titles in

native language, not their Latin, Cyrillic or other counterparts or parallel titles. Transliteration of books and serials in Cyrillic and Eastern languages is done in accord with the *International Organization for Standardization* (ISO) special standards.

Geography and Palaeogeography. — The names of counties or their equivalents have been standardized using the *Times Atlas of the World* (12th ed., 2013) or *Webster's New Geographical Dictionary* (3rd ed., 1997). Place names have been converted to their modern country equivalents, but the original name is retained in a comment field [example: Bögendorf-Liebichau, Waldenburg, Silesia, Germany = Witoszów Dolny, Lubiechów, Wałbrzych, Lower Silesian voivodeship, Poland]. Names of palaeocontinents, geological terranes, tectonic plates, palaeo oceans and seas, mountain systems, palaeogeographic provinces were extracted from the available geological literature. Palaeogeographic names are used in IFPNI as well as modern geographical names in the correct describing of the distribution of fossil plant taxa in the geological history. A revised *Synopsis of Palaeogeographic Names in Palaeobotany* is planned to be produced in 2017 as a separate publication and special tool for advanced searches of the taxonomic database and palaeogeographical distribution of extinct plant taxa. Standardization of palaeogeographical names would be a separate subproject of the IFPNI to be planned in 2015-2017 to allow further mapping of the taxonomic record on the available reconstructed palaeomaps and palaeoatlases; this work is being done in collaboration with wide geological community of The International Union of Geological Sciences (IUGS).

Stratigraphy. — Names of global stratigraphic units (systems, series and stages) of the International Chronostratigraphic Chart and the subordinate units (periods, epochs, and age) of the International Geologic Time Scale are only used when accepted by the International Commission on Stratigraphy (ICS) (<http://www.stratigraphy.org/>). When different names of stratigraphic units were used in the protologues of fossils in the past, these are to be changed for the use in IFPNI in accord with modern International Geologic Time Scale (<http://www.stratigraphy.org/index.php/ics-chart-timescale>). Regional and outdated old stratigraphic units are mostly rejected or mentioned in a comment field when their precise age is still unknown or doubtful.

On-Line Registration, Processing and Evaluation of Fossil Plant Names

Generic Names. — IFPNI now incorporates data from the previously compiled, but outdated *Index of Generic Names of Fossil Plants, 1820-1965* (Andrews,

1955 & 1970), *Index of generic names of fossil plants*, 1966-1973 (A.M. Blazer, 1975), *Index of generic names of fossil plants*, 1974-1978 (A. D. Watt, 1978), and *Index of generic names of fossil plants*, 1979-2000 (J. Schultze-Motel, 2003). Generic entries were revised and processed as for their validity in accord with the modern revised versions of the *International Code of Nomenclature for Algae, Fungi, and Plants* (formerly *International Code of Botanical Nomenclature*) and the *International Code of Zoological Nomenclature* (when applied). The final upload and nomenclatural processing of old generic names (published prior 2012) is expected by June, 2016. Generic names of extant organisms were uploaded into IFPNI when their extinct species were assigned taxonomically to extant genera. Infrageneric names were and are used intermittently in the developing taxonomic classifications of fossils; their input is expected to be done bit by bit when they would be recovered from the available taxonomic literature. At present IFPNI recorded 11897 generic names (accessed on 9 Dec 2015).

Suprageneric Names. — Suprageneric names of fossil and extant algae, cyanobacteria, fungi and plants were extracted from Doweld's *Prosyllabus Tracheophytorum* (2001) and published parts of the *New Syllabus of Plant Families* (2005+). Suprageneric names of extant vascular plants (incomplete record of names when used in IFPNI) were also verified against James Reveal's *Indices Nominum Supragenericorum Plantarum Vascularium* (<http://www.plantsystematics.org/reveal/pbio/fam/allspgnames.html>) and *International Index of Plant Names* (IPNI) (<http://ipni.org/>), algae (including fossils) against *Index Nominum Algarum* (<http://ucjeps.berkeley.edu/INA.html>), bryophytes and hepatics against *Bryophyte Names Authority List* (<http://www.mobot.org/mobot/tropicos/most/bryolist.shtml>). At present IFPNI recorded 549 suprageneric names (accessed on 9 Dec 2015).

Species and Infraspecies Names. — The fossil species are the main component of the IFPNI. Once generic names, both fossil and extant, were uploaded and registered into IFPNI, the retro registration of fossil plant species was started. At present time, IFPNI recorded 19664 species names (accessed on 9 Dec 2015). We have found unexpectedly the high amount of homonyms among registered species names (ca 1,5 %). IFPNI Staff regularly notifies IPNI, AlgaeBase, Mycobank and Index Nominum Algarum about homonym cases to update their own records.

In addition to registration of the original author's data, the spelling of species names is re-checked against modern rules of orthography outlined in ICN (Arts. 60-61), and the corrected spelling is recorded too along with improper author's terminations. For example, *Ginkgoites patagonicus* (E.W. Berry) de Seoane, Cúneo, Escapa, Wilf & Gandolfo (in *Int. J. Pl. Sci.* 176: 349. 2015) was originally e-published with improper termination "*patagonica*", about which the authors were notified by the IFPNI Staff in e-mailing; although the authors later provided correct spelling in Erratum to their publication (in

Int. J. Pl. Sci. 176: 364. 2015), both spellings are nevertheless recorded in the IFPNI (<http://fossilplants.info/names/493E3B21-0D1C-41B1-947B-656045757158>).

IFPNI also registered invalidly published names (when author failed to designate holotype, provide illustration, or indicate repository for holotype, etc.); these names are annotated with invalid status by listing of concrete infringement reasons of ICN rules. For example, Dorofeev failed to designate holotype for proposed *Magnolia uralensis* Dorof. (Tret. Fl. Zap. Sibiri: 43), but later the omission was fulfilled and the fossil species has been validated: *Magnolia uralensis* Dorof. in Takhtajan, Iskop. Tsvetk. Rast. SSSR 1: 17. 1975 (“1974”); both entries, invalid (with nomenclatural status as invalid) and valid, are interconnected by cross-reference for the comfortable use.

Now the online registration allows authors and/or publishers to easily register their own new fossil species before publishing, and to use the permanent unique IFPNI lsid codes under each newly proposed new or recombined name in their publications before their printing (see e.g. Doweld in Phytotaxa 227: 299–300. 2015 & 236: 86–90. 2015). This new tool provides unique cross-reference to fossil plant species in further searches through publications in web.

Fossil Spore and Pollen Names. — The fossil spore and pollen taxonomic names are expected to be added in 2015-2017; the registration of not validly published sporomorph names and distinct Group (Turma) names of artificial system of classification of spores and pollen is processed at the same time as the registration of validly published taxonomic names. The processing of the Jansonius & Hills’ *Genera File of Fossil Spores* (1976-2002) is expected to be finished in 2017 only. IFPNI will continue registration of fossil fungal sporomorphs, once described and earlier interpreted as spores of plants. At present IFPNI recorded 5972 fossil spore/pollen species names.

Fungal Names. — The fossil fungal taxonomic names, published between XIX century-2012, are expected to be added in 2014-2015 after verification against original taxonomic literature and new provisions of the International Code of Nomenclature for Algae, Fungi, and Plants (formerly International Code of Botanical Nomenclature). At present IFPNI recorded 1377 fossil fungal names.

Fossil Cyanobacteria and allied Prokaryotic Names. —Registration of fossil cyanobacteria and related prokaryotic microorganisms is continued along with registration of fossil algae and related protist-like forms; however, it is planned in further to segregate all names of prokaryotic microorganisms into a separate *International Index of Fossil Prokaryotes* in 2015. At present time the revised version of the *International Code of Nomenclature of Prokaryotes* (formerly *International Code of Nomenclature of Bacteria*) does not contain nomenclatural

regulations for the fossil prokaryotic taxa. At present IFPNI recorded 3483 cyano- and prokaryotic names.

'Ambiregnal' Fossil Microorganisms and Microproblematica.— IFPNI registers all previously described fossil taxa, once described or once interpreted as of plant nature, irrespective their current taxonomic position and reference to animal (protistan) or prokaryotic taxa. Special groups of fossil algae, which are considered simultaneously as fossil protists and therefore sometimes referred to animal kingdom (Chloromonada, Chrysomonada, Dinoflagellatae, Euglenomonada, Haptomonada, Prasinomonada, etc.), are registered with additional checking of their availability (validity) as for the homonymy and other provisions of the International Code of Zoological Nomenclature. At present IFPNI recorded 2842 'ambiregnal' names.

Type Specimens. — IFPNI provides registration of lectotypes, neotypes, epitypes and other permissible typification for the fossil plant taxa. Since this type of registration of nomenclatural acts is sensitive as for correct application of the names in systematics, IFPNI Staff scrupulously evaluated users' changes and additions to the database; erroneous or superfluous typification actions are not permissible and deleted from the main system records into the comments. At present IFPNI focuses on the registration of holotypes and designated lectotypes, the cooperation and consultations on the holotype barcoding and verification of their existence with principal palaeobotanical repositories, such as Museum für Naturkunde (Berlin), Chernyshev Central Scientific-Research Geological Exploration Museum (S.-Petersburg, Russia); Komarov Botanical Institute (S.-Petersburg, Russia); National Museum of Natural History (Washington, USA), Muséum National d'Histoire Naturelle (Paris) and numerous others.

What's tomorrow?

Establishing IFPNI as a register of fossil plant names will largely provide an opportunity to introduce unprecedented stability into botanical nomenclature. Not only will taxonomic data be freely available, but also an alerting-service targeting taxa of interest to particular user groups will be provided. Completeness of the fossil plant species register will be achieved by having registration of new names as a possible ICN requirement for availability (to be discussed and worked out at the Special Committee on Registration of Plant and Algal Names established by last Melbourne International Botanical Congress), along with retrospective registration of existing names. With Code-compliance built into the registration process, we will avoid creation of homonyms, nomenclaturally superfluous names, invalid names or names with incorrect orthography. IFPNI will enable the tracking of names and hence

facilitate the correction of many problems prior to publication and name availability. The IFPNI interface will provide automatic checking for Code-compliance, and thus prevent new homonymy, stabilize spellings, fix genders and stems, and provide stability in gender agreement.

A possible additional benefit of IFPNI would be universal availability of new original descriptions and partially original descriptions from retro literature. Comments field is provided for the possibility to upload newest and revised descriptions and diagnoses of registered fossil taxa. Making the inclusion of original descriptions mandatory would be very difficult to achieve, partly for reasons of current copyright laws. However, IFPNI will provide a voluntary field for original descriptions, with links to the original papers, along with additional inclusion of holotype and/or lecto/neotype illustrations. As a result, a comprehensive photo bank of principal specimens serving types of fossil species might be in further constructed.

The standardization of input data on palaeogeography and further implementation of geographical map tools will provide the possibility to get a list of taxa for palaeofloristic analysis for specified period of time and locality. Tools on the site also let users generate palaeomaps, data summary tables, lists of taxa, first appearances, time scale confidence intervals, stratigraphic confidence intervals, synonymy lists for taxa, and finally the IFPNI will provide comprehensive Fossil Record for registered taxa. The building of such a comprehensive Index is achieved to the next International Botanical Congress in Shenzhen in 2017, which will solve the problems of registration of new names as a possible ICN requirement for availability, and hence a data base of previously validly and invalidly published taxa (retro registration) should be done with a maximum. This goal might be achieved by a broad cooperation of palaeobotanists worldwide, which are invited to actively participate as data contributors of their own taxa (authors) and/or taxa under study (users) of IFPNI.