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International Organization of Plant Biosystematists

Newsletter

No. 15

Edited by K. M. Urbanska and C. A. Stace

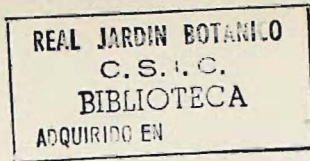


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MATASELLO: 1-2-91

Dear IOPB Members,

It seems to me that I just started my job as the Newsletter Editor and already we have No. 15. May you find it interesting and informative. Best thanks for all contributions.

The very first detail to comment on is the **unanimous** election of Dr. Clive A. Stace as Co-Editor of the Newsletter for the Chromosome Data column. I am positive that the whole IOPB Membership supports the Executive and Council in this matter. Cordial welcome, Clive. The chromosome Data column is entirely prepared at the University of Leicester so that some secretarial expenses can be saved here. The current data are to be found on p. 10. No Lead Article this time, but a comment on the Comment on the Lead Article from No. 14 of the Newsletter. Dr. Jonsell who commented on the Panarctic Floras Project and compared it with the current work on Nordic Flora obviously wanted to express a **positive coincidence** and used the word "interfering" in a good faith. It is the Editor's fault to let some not quite clear expressions appear in print - please do accept my sincere apology.

We have **two** interesting Profiles of Lab: our President (p. 3) and our Secretary/Treasurer (p. 5) contributed them. Shoichi, Hans - best thanks for this interesting information. It is always good to know what is going on at fellow scientists labs.

The book on the last IOPB Symposium just appeared. It is very well done - Shoichi Kawano put a lot of effort and patience into it, but the result is certainly worthwhile (p. 15).

The IOPB Symposium 1992 is approaching and the Organizing Committee is hard at work (p. 16). Thank you, Peter, for this important piece of news. Now it's time to think about possible contributions and to look slowly for travelling funds.

Last but not least, the same comment as in the previous issue. Unfortunately there are many IOPB Members who apparently stay in a prolonged hibernation or whatever, but anyway still have not paid their fees. The desperate note from our Treasurer is published on p. 18. Please pay you fees soon, otherwise we'll have soon some problems with the publication of the Newsletter. We do not want to drop some persons from the Newsletter mailing list, but may be forced to do so if the fees problem is not solved.

Data for Newsletter No. 16 should arrive here before May 31, 1991.

All the best wishes for the year 1991

The Editor

NOTE: Please write in **capital** letters or use **typewriter** while preparing your 'Research News' sheet for the Newsletter. You don't want to have some words misspelled in print, do you? **Please only use the new form.**

It would be a great help if contributions could be sent on RPS Microdiskettes (MC2HD 3.5 inch hard disks) as well as a printed copy.

2. Profile of a Lab

by Shoichi Kawano, Professor and Director of the Section Systematic Botany and Herbarium (KYO), Faculty of Science, Kyoto University, Sakyo-ku, Kyoto 606, and Professor of the Institute of Genetic Ecology, Tohoku University, Katahira, Sendai 980, Japan

Activities at the Department of Botany, Kyoto University, Kyoto

The Department of Botany, with Herbarium (KYO) founded in 1921 and storing ca. 1.2 million herbarium specimens, primarily from the Japanese Islands and adjacent Pacific as well as Southeast Asian regions, is one of the main centers of research in plant taxonomy, biosystematics and population biology in Japan. Our research deals for the most part with Japanese plants, but since 1955 we have been sending the Botanical Expeditions to Mid-East (including Pakistan, Afghanistan, etc.), Himalayan regions, Thailand, Java, Sumatra, Borneo and adjacent regions, and also to North America since 1988, and a considerable number of new herbarium collections and living materials have been accumulated. These materials are at present studied from various standpoints, such as taxonomy, floristic, phytogeography, ecology, cytotaxonomy, chemotaxonomy, molecular systematics, as well as life history characteristics.

Activities at the Institute of Genetic Ecology, Tohoku University, Sendai

The Institute of Genetic Ecology, Tohoku University (National) in Sendai was founded in 1988 as a new Institution with an aim of developing an integrated field between ecology and genetics.

The Institute has five Divisions: Division of Ecological Physiology, Division of Physiology, Division of Plant Variation and Adaptation, Division of Genetically Engineered Organisms, Division of Soil Environment, and Division of Ecosystem Analysis. The Institute also has a Biotron Center, where 16 phytotrons are in operation. By using this special facility, various control experiments concerning phenotypic plasticity of various vegetative and reproductive characters, structural as well as functional responses of plants to varying environmental regimes, i.e., adaptive mechanisms of plants to certain environmental factors, are now being conducted. The molecular genetic analysis of variations of natural populations is also conducted. At this Institute, we are trying to develop new genetical studies.

Current research projects

1. Demographic analysis of temperate woodland plants.
2. Comparative life history studies of northern temperate elements of Arcto-Tertiary origin.
3. Co-adaptive differentiations between plants and animals
 - Pollination biology of temperate woodland elements: analyses of chemical compositions and function of floral fragrance substances.

- Myrmecochory: analysis of chemical compositions and function of attractant substances contained in the elaiosome.
 - Structure and function of extrafloral nectary.
 - Reproductive biology and seed predation in deciduous and evergreen oaks by insects.
4. Parapatric differentiations of weeds and ruderals in cultivated fields and adjacent environments in Japan. Materials being studied are *Poa annua* and *Cardamine flexuosa*.
 5. Phenotypic plasticity and its regulatory mechanisms of vegetative and reproductive characters of various vascular plants. At present *Polygonum thunbergii*, *P. oreophyllum*, *Cardamine flexuosa* complex, *Oxalis corniculata* complex, etc. are studied by using phytotrons and glass house.
 6. Karyological research. Studies on chromosome numbers and karyotypes of various groups of *Liliaceae* (e.g. *Polygonatum*, *Disporum*, *Smilacina*, etc.), *Compositae* (e.g. *Ixeris*, *Ixeridium*, etc.), and several other taxa of higher plants, conducted in conjunction with monographic works of relevant taxa.

Recent publications

1989

- KATOH T., KASUYA M., KAGAMIMORI S., KOZUKA H. and KAWANO S., 1989a: Inhibition of shikimate pathway in the leaves of vascular plants exposed to air pollution. *New Phytol.* 112, 363-367.
- KATOH T., KASUYA M., KAGAMIMORI S., KOZUKA H. and KAWANO S., 1989b: Effects of air pollution on tannin biosynthesis and predation damage in *Cryptomeria japonica*. *Phytochemistry* 28, 439-445.
- KAWANO S., HAYASHI A., ARAI H., YAMAMOTO M., TAKASU H. and ORITANI T., 1989: Regulatory mechanisms of reproductive effort in plants. III. Plasticity in reproductive energy allocation and propagule output of two grass species, *Oryza sativa* cv. Akihikari et *Coix ma-yuen* cultivated at varying densities and nitrogen levels, and the evolutionary-ecological implications. *Plant Species Biol.* 4, 75-99.
- TAKAHASHI M. and KAWANO S., 1989: Pollen morphology of the *Melanthiaceae* with systematic implications. *Ann.Mo.Bot.Gard.* 76, 863-876.
- TAMURA M.N., 1989: Studies on genus *Chlorophytum* (*Liliaceae*) of Phu Kradung in Thailand. *Acta Phytotax.Geobot.* 40, 1-5.
- YONEZAWA N. and KAWANO S., 1989: *Gentiana* sect. *Pneumonanth*e (*Gentianaceae*) with special reference to their taxonomic status. (In Japanese, with English summary). *Acta Phytotax.Geobot.* 40, 13-30.

1990

- KAGAMIMORI S., KATO T., NARUSE Y., KAKIUCHI H., MATSUBARA I., KASUYA M. and KAWANO S., 1990: An ecological study on air-pollution: changes in annual ring growth of the Japanese Cedar and prevalence of respiratory symptoms in school children in Japanese rural districts. *Environ.Res.* 52, 47-61.
- KAKEHASHI M. and KINOSHITA E., 1990: An application of the sex allocation theory to *Arisaema serratum*. *Plant Species Biol.* 5, 121-129.
- KAWANO S., HARA T., HIRATSUKA A., MATSUO K. and HIROTA I., 1990: Reproductive biology of an amphicarpic annual *Polygonum thunbergii*: Spatio-temporal changes in growth, structure and reproductive components of a population over the environmental gradient. *Plant Species Biol.* 5, 97-120.
- KINOSHITA E. and HARADA Y., 1990: Sex change and population dynamics in *Arisaema serratum* (*Araceae*). II. An examination on the evolutionary stability of sex changing

- schedule of *A. serratum* (Thunb.) Schott. Plant Species Biol. (in press)
- OHARA M., KAWANO S. and UTECH F.H., 1990: Differentiation patterns of reproductive systems in the genus *Trillium*. Plant Species Biol. 5, 73-81.
- PAK J.H. and KAWANO S., 1990a: Biosystematic studies on the genus *Ixeris* (*Compositae-Lactuceae*). I. Fruit wall anatomy and its taxonomic implications. Acta Phytotax.Geobot. 41, 43-60.
- PAK J.H. and KAWANO S., 1990b: Biosystematic studies on the genus *Ixeris* (*Compositae-Lactuceae*). II. (in press)
- PAK J.H. and KAWANO S., 1990c: Biosystematic studies on the genus *Ixeris* (*Compositae-Lactuceae*). III. Fruit wall anatomy and karyology of *Crepidistrum* and *Paraixeris*, and their taxonomic implications. Acta Phytotax.Geobot. 41 (in press).
- TAMURA M.N., 1990a: *Agavaceae* and *Amaryllidaceae*. In: KOYAMA H. and TAKASHAKI H. (eds.), A preliminary check list of Phanerogams of Phu Kradung in Thailand. I. Sci.Rep.Fac.Educ. Gifu Univ. (Nar.Aci.) 14, 19.
- TAMURA M.N., 1990b: *Agavaceae* and *Apostasiaceae*. In: KOYAMA H. and FUKUDA N. (eds.), A preliminary check list of Phanerogams of Doi Inthanon in Thailand. I. Shoei Jun.Coll.Ann.Rep.Stud. 22, 302-303.
- TAMURA M.N., 1990c: Biosystematic studies on the genus *Polygonatum* (*Liliaceae*). I. Karyotype analysis of species indigenous to Japan and its adjacent regions. Cytologia 55, 443-466.
- TAMURA M.N., 1990d: Studies on the genus *Ophiogopon* (*Liliaceae*) of Phu Kradung in Thailand. Acta Phytotax.Geobot. 41, 1-6.
- TAMURA M.N., 1990e: Biosystematic studies on the genus *Polygonatum* (*Liliaceae*). II. Morphology of staminal filaments of species indigenous to Japan and its adjacent regions. Acta Phytotax.Geobot. 42 (in press).
- YOSHI F., ARAI H., NAKAJIMA H. and KAWANO S., 1990: Seasonal changes in nitrogen fractions of *Pachysandra terminalis*, a forest evergreen chamaephyte. Physiol.Plant. 79, 7-14.

Laboratory of Evolutionary Botany, Hugo de Vries Laboratory, University of Amsterdam, Kruislaan 318, NL-1098 SM Amsterdam

by Konrad Bachmann and Hans den Nijs

The laboratory of Evolutionary Botany is one of the research units at the Department of Systematics, Evolution and Paleobiology of the Faculty of Biology, University of Amsterdam.

The EB group has teaching tasks in evolution, systematics and genetics for undergraduate and graduate students. The research programme includes several aspects of the patterns of genetic variation: the generation and maintenance of diversity, and also the (possible) decline of variation, especially in rare and endangered species.

Our special attention have patterns of generation and maintenance of genetical variation in the genera *Microseris* and *Taraxacum* (*Asteraceae*).

Intensive biotaxonomic research on *Microseris* and related taxa has been started by K.L. Chambers (1955 ff). All 16 species have n=9 chromosomes and are either diploid or (al-

lo)tetraploid. Chromosome size and nuclear DNA content vary considerably among, and in some cases within, the species, and this difference can be correlated with life history and autecological characteristics of the plants (H.J. Price, Texas A and M University, 1988). The species occur in Western North America with the exception of the allotetraploid *M. scapigera* with a wide distribution in Australia and New Zealand and the small annual diploid *M. pygmaea* of central Chile. Both disjunct species are probably the result of single episodes of long-distance dispersal, and we try in each case to reconstruct the ancestral genome and follow its differentiation during the establishment of the species. We have used isoenzyme alleles as markers for genes determining morphological differences among populations and species, but the available variation is limited. Molecular methods were therefore applied during the last years to obtain markers in the genomic DNA. These markers are usually restriction fragment length mutants (RFLPs), labelled with homologous genomic DNA probes, either single-copy or repetitive, or with DNA fingerprint probes. Probe development is the main part of the Ph.D project of Wim van Houten (and the senior thesis of Michiel van Eijk), whereas DNA fingerprint techniques are part of the post-doc project of Sjaak van Heusden (and the senior thesis of Jeroen Roupe v.d. Voort). Identifying and characterizing repetitive DNA is the topic of the post-doc project of Jürgen Rohwedel. We are accumulating a set of markers for genomic variability at various levels from the individual (inbred strain) to the species. These markers are used for two purposes: they form the basis for a molecular cladistic analysis of relationships at various levels, and they are used as genetic cosegregating markers when we analyse the genetic basis of morphological and physiological differences between plants from various populations or species. For the cladistic analysis we also refer to the large set of chloroplast restriction site mutations mapped by Wallace and Jansen (1990) at the University of Connecticut. Our nuclear markers are informative for other *Lactuceae* (e.g. for clone identification in *Taraxacum*) and are being tested with other Asteracean groups.

The phylogenetic relationships among the taxa of *Microseris* provide the background information for the detailed study of their morphological evolution. We are especially interested in the evolution of numerically canalized meristic characters. Composite capitula with different numbers of involucral bracts, florets, and pappus parts per achene provide a very rich source of natural variation for this analysis (Ph.D project of Liesbeth Vlot). In order to bridge the gap between the allele in the genome and the adult character, we have recently started a comparative study of capitulum development in selected inbred strains and their recombinant offspring using scanning electron and light microscopy (Ph.D project of Johannes Battjes).

We are very much interested in extended cooperation, especially in field projects involving *Microseris*, for which we can supply genetically marked strains or to which we can contribute by characterizing field-collected material. Virtually nothing is known about the adaptive significance of most of the variation which we analyse. We can now obtain good indirect evidence on genotype (i.e. achene) dispersal by comparing genotype relatedness and geographical origin, but we know little about natural demography and phenology, pollen flow, selection, seed banks etc.

In some sections of the taxonomically extremely complicated genus *Taraxacum*, we studied the evolutionary dynamics, which might be responsible for the amazing array of the morphology in the fields. Particular attention was paid to the section *Ruderalia* (= *Taraxacum* = *Vulgaria*), also, we were able to extend the research to the Asian group *Mongolica* by the cooperation with Dr T. Morita (Japan). Distribution of cytotypes of sections *Ruderalia* and *Erythrosperma* has been established in larger part of Europe: contrary to the assumed exclusive occurrence of agamosperously reproducing polyploid plants, we also found remarkable amounts of sexual diploids. The distribution patterns of these exhibit correlations with overall phytogeography as generated by Pleistocene macroclimatic fluctuations.

Greenhouse experiments of Dr A. Sterk and Dr Marie-Josée Jenniskens showed that all diploid forms of *Ruderalia* can freely hybridize, and that diploids and triploids also can produce offspring which is partly diploid and sexual, partly polyploid and agamosperous. Triploid specimens which are facultatively agamosperous apparently occur at least in some regions of Central Europe. Dr. Morita found, too, that the self-incompatibility of the diploid *Ruderalia* can be broken down by pollination with polyploid *Mongolica* pollen.

In cooperation with Dr S. Menken and using allozyme techniques to establish allele frequencies and genotype distributions in the diploid and the triploid component of series of populations, we found evidence that considerable gene exchange between both cytotypes occurs in nature. We therefore conclude that in several sections of the genus some kind of a cyclic evolutionary process is at work: according to the macroclimatic conditions, at one time or place the sexual diploid taxon has a selective advantage, at an other time the asexual polyploid is favoured. There obviously exists a flexible balance between the cytotypes in a population: as a result of particular events related to meiosis and pollination, each cytotype can produce the other as (part of) its offspring. Given the close genetic relations between the cytotypic components in the populations, it is questioned whether the microtaxonomic concept for the treatment of agamosperous microspecies can be applied in the regions where diploids and triploids grow or recently grew together.

Using the same techniques an investigation has been made in the rare groups of *Palustria* and *Celtica*, growing in endangered habitats such as non-fertilized moist meadows. The clonal structure of these reputedly asexual taxa is being investigated: some microspecies are uniform over thousands of kilometres, others show intraspecific differentiation. On the other hand, the level of diversity in samples of *Palustria* from Slovakia strongly suggest influence of some sexuality in the populations. This pattern would coincide with the overall distribution of sexuality within the other sections in Europe. This part of the project develops in close cooperation with Dr J. Kirschner and Dr J. Stepanek (Prague, Czechoslovakia).

In our recently started study of "extinction biology", particular attention is being paid to a possible loss of genetical variation and the reproductive constraints in small populations of rare and endangered species. We focus on the Dutch representatives of the genera *Gentiana* and *Gentianella* (6 species, some perennials, others shortlived: *pneumonanthe*, *cru-*

ciata, ciliata, germanica, amarella and campestris). For example, demography is studied in detail in about 20 plots of *G. pneumonanthe* where population size shows a wide variation range (5 to 100,000 flowering specimens). Obviously, the rate of recruitment depends on the stage of succession of the vegetation which is strongly influenced by acid deposition and its fertilizing effects, and on the type of management of the reserves (senior thesis report by Ron van 't Veer). Reproduction output strongly decreases quantitatively and qualitatively in the smallest populations (Erasmus work by Dr Th. Petanidou, Thessaloniki, Greece). This may be related to unsuitable ecological circumstances, to a lack of pollinator effectiveness, and also to the effects of inbreeding depression.

Allozyme analysis demonstrated the allele distributions and the impoverishment in some of the smallest plant groups, and helps to assess the rate of selfing in such sites and to establish the inbreeding effects. A more detailed study of inbreeding will be performed by our Ph.D student Drs G. Oostermeijer.

In close cooperation with our group, a similar research project on *G. pneumonanthe* is carried out by Miss Hanne Hvatum in Norway under the supervision of Dr. Liv Borgen (Oslo).

References and recent publications

- BACHMANN K., VAN HEUSDEN A.W., CHAMBERS K.L. and PRICE H.J., 1987: Genetic variation for the onset of flowering in *Microseris bigelovii* (Asteraceae, Lactuceae). Beitr. Biol.Pflanzen 62, 23-41.
- BACHMANN K. and CHAMBERS K.L., 1990: Heritable variation for heterocarpy in *Microseris bigelovii* (Asteraceae-Lactuceae). Beitr.Biol.Pflanzen 65, 123-146.
- BACHMANN K. and CHAMBERS K.L., 1990: Genetic variation for the timing and site of trichomes on the leaves of *Microseris bigelovii* (Asteraceae: Lactuceae). Biol.Zbl. 109, 151-158.
- BATTJES J., MENKEN S.B.J. and DEN NIJS J.C.M., (in press): Clonal diversity in some microspecies of *Taraxacum* sect. *Palustria* (Lindb. fil.) Dahlst. from Czechoslovakia. Bot. Jahrb.Syst.
- BACHMANN K., 1955: A biosystematic study of the annual species of *Microseris*. Contrib. Dudley Herb. Stanford 4, 207-312.
- VAN HEUSDEN A.W., 1990: Genetic analysis of natural variation in *Microseris pygmaea* (Asteraceae) in crosses with *M. bigelovii* C93b. Ph.D Thesis, Univ. Amsterdam.
- VAN HEUSDEN A.W., BACHMANN K. and CHAMBERS K.L., 1989: Variation in time and place of trichome appearance in *Microseris* hybrid J05 (*M. pygmaea* x *M. bigelovii*, Asteraceae). Biol.Zbl. 108, 153-161.
- VAN HOUTEN W.H.J., RAUJMAN L.E.L. and BACHMANN K., 1990: Nuclear DNA markers for the evolution of the *Microseridinae* (Asteraceae: Lactuceae). New Trends in Genetics 1990, 53 abstr.
- JENNISKENS M.-J.P.J., DEN NIJS J.C.M. and HUIZING E.A., 1984: Karyogeography of *Taraxacum* sect. *Taraxacum* and the possible occurrence of facultative agamospermy in Bavaria (GFR) and north-west Austria. Phytion (Austria) 24, 11-34.
- , -- and STERK A.A., 1985: Crossability and hybridization of taxa of *Taraxacum* sect. *Taraxacum* from central and western Europe. Proc.Roy.Acad.Sci.Ser.C, 88, 297-338.
- MENKEN S.B.J., SMIT E. and DEN NIJS J.C.M., (in prep.): Population structure dynamics in plants: gene exchange between diploid sexual and triploid asexual *Taraxacum* section *Ruderalia*.
- , -- and VLOT L., 1987: Gene flow in a di-triploid mixed stand of *Taraxacum* (Asteraceae).

- ceae*) in the Odenwald, BRD as measured by isozyme analysis. Abstr XIV Int.Bot. Congr., Berlin. 307.
- and MORITA T., 1989: Uniclinal population structure in the pentaploid obligate agamosperm *Taraxacum albidum* Dahlst. Plant Spec.Biol. 4: 29-36.
- , WANDENAAR E.C.P. and BOERSMA A., 1989: Genetic interpretation in sexual and agamospermous taxa of *Taraxacum* sections *Vulgaria* and *Mongolica*. Genetica 78, 111-119.
- MORITA T., STERK A.A. and DEN NIJS J.C.M., 1990: The significance of agamospermous triploid pollen donors in the sexual relationships between diploids and triploids in *Taraxacum* (*Compositae*). Plant Spec.Biol 5 (in press).
- DEN NIJS J.C.M. and VAN DER HULST, 1988: Cytogeography of *Taraxacum* section *Erythrosperma*: diploid sexuals in SE and SW Europe. Bot.Jahrb.Syst. 110, 83-93.
- and KIRSCHNER J., STEPANEK J. and VAN DER HULST A., 1990: Distribution of diploid plants of *Taraxacum* sect. *Ruderalia* in east-Central Europe, with special reference to Czechoslovakia. Pl.Syst.Evol. 170, 71-84.
- and STERK A.A., 1984: Cytogeography of *Taraxacum* sect. *Taraxacum* and sect. *Alpestris* in France and some adjacent parts of Italy and Switzerland, including some taxonomic remarks. Acta Bot.Neerl. 33, 1-24.
- OOSTERMEIJER J.G.B and DEN NIJS J.C.M. (Submitted): Population biology and management of the Marsh Gentian (*Gentiana pneumonanthe*), a rare species in The Netherlands. J. Linn.Soc.
- PETANIDOU Th., DEN NIJS J.C.M. and ELLIS-ADAM A.C. (in press): Comparative pollination ecology of two rare Dutch *Gentiana* species, in relation to population size. Acta Horticulturae
- STERK A.A., 1987: Aspects of the population biology of sexual dandelions in the Netherlands. In: HUISKENS (ed.), Population biology: its significance for phytosociology. Den Haag. Proc.Roy.Acad.Sci.Ser.C, 88, 297-338.
- OD J.L., SCHURING F. and BERG C., 1988: The karyotypes of *Microseris bigelovii*, *M. douglasii*, and *M. pygmaea* (*Asteraceae*). Pl.Syst.Evol. 168, 249-256.
- PRICE H.J., 1988: DNA content variation among higher plants. Ann.Mo.Bot.Gard. 75, 1248-1257.
- VLOT E.C. and BACHMANN K., 1990: Genetics of the proportion of peripheral yellow achenes on the capitula of *Microseris douglasii* strain D37 (*Asteraceae*, *Lactuceae*). Acta Bot.Neerl. 39: 229-240.
- WALLACE R.S. and JANSEN R.K., 1990: Systematic implications of chloroplast variation in the genus *Microseris* (*Asteraceae*: *Lactuceae*). Syst.Bot. (in press)

3. Research News

ALBERS F., Prof. Dr., Institut für Botanik, Westfälische Wilhelm-Universität Münster, Schlossgarten 3, D-4400, Münster, West Germany.

Publication in 1990:

MEVE U. and ALBERS F., 1990: The species concept in *Duvalia* (*Asclepiadaceae*) - a preliminary revision of the genus. Mitt.Inst.Allg.Bot. Hamburg 23b, 595-604.

MEVE U. and ALBERS F., 1990: Die Stipularrudimente der *Stapelieae* (*Asclepiadaceae*). (In German with English abstract). Beitr.Biol.Pflanzen 65, 99-107.

MEVE U., ALBERS F. and KUSCH G., 1990: The outer epidermal wall structure of African (*Asclepiadaceae*). Nord.J.Bot. 9(5), 519-523.

VAN DER WALT J.J.A., ALBERS F. and GIBBY M., 1990: Delimitation of *Pelargonium* sect. *Glaucophyllum* (*Geraniaceae*). *Pl.Syst.Evol.* 171, 15-26.

STRID A., Professor, Botanical Laboratory, University of Copenhagen, 140 Gothersgade, DK-1123 Copenhagen, Denmark.
Mountain Flora of Greece, vol. 2 (c. 940 pp.) (in press).

4. IOPB Chromosome Data 2

edited by Clive A. Stace, Department of Botany, University of Leicester, Leicester LE1 7RH, England.

Please send contributions to Professor Stace at the above address, using the exact format of the present list and stating whether or not you are a member of IOPB. Neither proofs nor reprints will be made available, but the editor will acknowledge receipt of contributions and raise queries with authors if necessary.

It would be a great help if contributions could be sent on RPS Microdiskettes (MC2HD 3.5 inch hard disks) as well as a printed copy. If in doubt about suitability of disks, please write to enquire first.

Reports by A. ABOUCAYA and R. VERLAQUE, Laboratoire de Biosystématique et Ecologie méditerranéenne, Université de Provence, Centre St Charles, Place Victor Hugo, 13331 Marseille Cédex 3, France. Vouchers in MARS. All localities in France unless otherwise stated.

ARACEAE

Arisarum vulgare Targ.-Tozz. 2n=56. N.-W. Corse: Cap Cavallo, AA.85-214, 85-215. Var: Saint-Clair-du-Lavandou, AA.85-201; La Croix-Valmer, AA.85-207; île de Porquerolles, AA. 85-204, 85-205, 85-211; île de Port-Cros, AA.85-206, 85-218; île du Levant, AA.85-217, 85-219.

ARISTOLOCHIACEAE

Aristolochia rotunda L. 2n=12. Var: île de Port-Cros, AA.85-90. n=6. Var: île de Porquerolles, AA.86-225.

ASTERACEAE

Ptilostemon casabonae (L.) Greuter 2n=32. Var: île du Levant: Le Grand Avis, AA.84-6, 84-7; near Maupertuis, AA.85-154; Phare du Titan, AA.85-150.

Hedypnois cretica (L.) Dum.-Courset 2n=8. Pyrénées-Orientales: Banyuls, RV.86-265. Var: La Croix-Valmer, AA.86-253; îles d'Hyères (Porquerolles, Port-Cros, Le Levant), Aa.86-249, 86-244, 86-254. S. Corse: Santa Manza, AA.87-2.

CRASSULACEAE

Sedum rubens L. 2n=60. Var: île de Porquerolles, Les Mèdes, AA.84-42. N.-W. Corse: near Galeria, AA.85-131.

CUPRESSACEAE

Juniperus phoenicea L. 2n=22. Var: Bormes-Les-Mimosas, AA.85-79; Saint-Clair-du-Lavandou, AA.85-82; île de Porquerolles, AA.85-75, 85-76; île de Port-Cros, AA.85-92. N.-W. Corse: near Calvi, AA.85-121.

EUPHORBIACEAE

Euphorbia veneta Willd. 2n=20. Alpes-Maritimes: near Sainte-Agnès, AA.85-176, 85-177; near Peille, AA.85-178, 85-179.

FABACEAE

Anthyllis barba-jovis L. 2n=14. S. Corse: near Bonifacio, AA.83-210. Var: île de Porquerolles, AA.84-34, 84-50, 84-73; île de Port-Cros, AA.84-3, 84-4

Calicotome spinosa (L.) Link 2n=24. Var: between Signes and Méounes, RV.84-327. 2n=50. Var: La Croix-Valmer, AA.86-231. 2n=50-52. Pyrénées-Orientales: Cap Béart. RV.86-660.

Lotus cytisoides L. 2n=14. Var: île de Porquerolles, AA.84-40, 84-49, 85-159; île de Port-Cros, AA.84-9, 85-87, 85-94; île du Levant, AA.85-143; La Croix-Valmer, AA.86-234.

Teline linifolia (L.) Webb & Berth. 2n=48. Var: Canadel-sur-Mer, AA.85-105; île de Porquerolles, AA.84-18, 84-19, 84-29, 84-37, 85-71. n=24. Var: île de Port-Cros, AA.85-86.

LAMIACEAE

Lavandula stoechas L. subsp. *stoechas* 2n=30. N.-W. Corse: near Galeria, AA.85-117. Var: La Londe-des-Maures, AA.85-77; Le Lavandou, AA.85-83; île de Porquerolles, AA.84-10, 84-12, 84-35, 84-38, 84-72; île de Port-Cros, AA.84-7, 84-8, 84-16.

Teucrium marum L. 2n=30. Var: île du Levant, AA.79-198; île de Port-Cros, Palud Bay, AA.85-191. N.-W. Corse: Balagne, AA.85-134, 85-123. W. Corse: Calanche de Piana, AA.85-196. C. Corse: Restonica, AA.82-197. Italie: W. Sardaigne: Oristano, Sinis Peninsula, AA.86-262, 86-264.

Teucrium massiliense L. 2n=32. Var: île du Levant, vallon des Grottes (S.-W.), AA.85-151.

OLEACEAE

Fraxinus ornus L. 2n=46. Var: île de Porquerolles, AA.85-155. N.-W. Corse: near Galeria, AA.85-116. N.-E. Corse: Orezza Forest, near Piedicroce, AA.85-173.

RUBIACEAE

Galium minutulum Jordan 2n=44. Var: île de Port-Cros, Ménage Notre-Dame, AA.86-241. 2n=66. Var: île de Port-Cros, Fort Port-Man, AA.86-238.

SOLANACEAE

Hyoscyamus albus L. n=34. Corse: Bonifacio, AA.87-3, 87-4. 2n=68. Var: île de Porquerolles, Fort Ste-Agathe, AA.86-227. île de Port-Cros, Fort Port-Man, AA.86-237.

Reports by F. ALBERS, M. AUSTMANN und U. MEVE, Institut für Botanik, Westfälische-Wilhelms-Universität Münster, Schlossgarten 3, D-4400 Münster, Deutschland.
Vouchers in Institut für Botanik, Universität Münster.

ASCLEPIADACEAE

Brachystelma gracile E. Bruce 2n=22. Zimbabwe: 1 km E. Kyle Dam Wall, Erwee, Liede & Meve 574.

B. plocamoides Oliver 2n=22. Zimbabwe: 20 km N. Guruwe, Albers, Liede & Meve 501.

Caralluma acutangula Decne. 2n=22. Sudan: Jebel Elba (Egypt border), Red Sea Hills, Plowes 7650.

C. baldratti White & Sloane 2n=22. Kenya: near Mutomo, Rauh 786.

C. chrysostephana (Deflers) A. Berger 2n=22. Yemen: Dhala (Amiri Highlands), Lavranos s.n. sub Plowes 4560.

- C. deflersiana* Lavranos 2n=22. Yemen: 10 km S. Lodar (Hadramaut), Lavranos 1904.
C. dummeri (N.E.Br.) White & Sloane 2n=22. Kenya: 50 km S.E. Nairobi, Mua Hill, Plowes 6505. 2n=22. Kenya: 150 km W. Nairobi, Loita Hills airstrip, Aikmann s.n. sub Plowes 7714.
C. europaea (Guss.) N.E.Br. var. *judaica* M. Zohary 2n=22. Israel: Judea Mt near Jerusalem. Chaouat s.n.; Arad, Bruyns 2482.
C. foetida Bruce 2n=22. Kenya: 25 km S. Marigat, Plowes 6528.
C. kochii Lavranos 2n=22. Somalia: 25 km W. Carin, Lavranos 7348.
C. lugardii N.E. Brown 2n=22. Namibia: Ruacana airfield, Kunen, Plowes 6424; Gobabis to Leonhardville, 22 km N. Aranos crossing, Liede & Meve 602.
C. meintjesiana Lavranos 2n=22. Saudi-Arabia: 15 km E. Abha, Lavranos & Collette 18348.
C. sinaica (Decne) A. Berger 2n=22. Israel: Ein Gedi (Dead Sea), Chaouat s.n.; Dragot shore (Dead Sea), Bruyns 2484.
C. sprengeri (Schweinf.) N.E. Br. ssp. *laticorona* Gilbert 2n=22. Ethiopia: S.E. Addis Abbaba, Rift Valley, Majo, Edwards s.n. sub Plowes 6677.
C. subulata (Forssk.) Decne. 2n=22. Sudan: Darfu: 120 km W. Nyala, S. of Jebel Mara, Plowes 7481.
C. wissmanii O. Schwartz 2n=22. Yemen: 58 km N. Sanaa, Kawkaban, Frank 70.
Ceropegia aristolochioides Decne. ssp. *deflersiana* Bruyns 2n=22. Yemen: N. Ybb: Dailil, Lavranos 16262.
C. madagascariensis Decne. 2n=22. Madagascar: Andringitra, Liede 2853.
C. multiflora Bak. subsp. *multiflora* 2n=22. Zimbabwe: 5 km N. Plumtree, Erwee, Liede & Meve 549.
C. multiflora Bak. subsp. *tentaculata* (N.E.Br.) Huber 2n=22. Namibia: Steinhausen: Farm Wunderland, Grabow s.n. sub As 126.
C. dichotoma Haw. subsp. *dichotoma* 2n=22. Islas Canarias: Tenerife: Punta del Teno, Meve s.n.
C. fusca Bolle 2n=22. Islas Canarias: Gran Canaria: Barranco de Fataga, E. Schröder s.n.
C. rendallii N.E.Br. 2n=22. Zimbabwe: Bulawayo: Hyde Park, Albers & Meve 539; 3 km N. Plumtree, Erwee, Liede & Meve 555.
Huernia brevirostris N.E.Br. subsp. *intermedia* (N.E.Br.) Leach 2n=22. South Africa: E. Cape: W. Pearston, "Cranemere", Meve 436.
H. campanulata (Masson) Haw. 2n=22. South Africa: E. Cape: 19 km S.E. Oudtshoorn, Meve 405; S.W. Willowmore, Vergelegen, Gerbaulet & Struck Hbg. 24014.
H. clavigera (Jacq.) Haw. 2n=22. South Africa: E. Cape: 19 km S.E. Oudtshoorn, Meve 408.
H. hislopilii Turrill subsp. *hislopilii* 2n=22. Zimbabwe: 16 km W. Murewa, Albers, Liede & Meve 510.
H. hislopilii Turrill subsp. *robusta* Leach & Plowes 2n=44. Zimbabwe: Bulawayo: Hyde Park, Albers, Liede & Meve 535.
H. humilis (Masson) Haw. 2n=22. South Africa: E. Cape: W. Hanover, Hanekom 2104.
H. keniensis R.E.Fries var. *keniensis* 2n=44. Kenya: N. Lake Baringo, 54 km in Marsalah direction, Hartmann & Newton Hbg. 21321.
H. levyi Oberm. 2n=22. Zimbabwe: 2 km S.W. Hwange, Lukosi River, Albers, Liede & Meve 526.
H. longii Pillans 2n=22. South Africa: E. Cape: W. Uitenhage, Bruyns 1824.
H. namaquensis Pillans 2n=22. South Africa: N.W. Cape: Richtersveld: Hellskloof, Albers & Meve 26.
H. occulta Leach & Plowes 2n=22. Zimbabwe: Kyle Dam Wall, Albers, Liede & Meve 567, 568 et 569.
H. penzigii N.E.Br. 2n=22. Sudan: Jebel Aulini near Erkovit, Hartmann Hbg. 21504.

- H. plowesii* Leach 2n=22. Namibia: ca. 29 km E. Aus, Farm Plateau, Meve & Struck 180.
H. saudi-arabica D.V. Field 2n=44. Saudi-Arabia: N. end of Tanunma Plain, Lavranos & Colletette 18403.
H. tanganyikensis (Bruce et Bally) Leach 2n=22. Tanzania: Arusha Distr.: Ormutonyi-plain, Ricd 24944.
H. thuretii Cels var. *thuretii* 2n=22. South Africa: E. Cape: Kaffir drift, Bayer 705.
H. volkartii Peitsch. ex Werderm. & Peitsch. var. *volkartii* 2n=44. Zimbabwe: near Great Zimbabwe (Morgester Mission), Erwee, Liede & Meve 576.
Huerniopsis atrosanguinea (N.E.Br.) White & Sloane. 2n=22. Botswana: Gabarone, Plowes 6660.
H. decipiens N.E.Br. 2n=22. Namibia: Steinhausen: Farm Wunderland, Liede & Meve 590; Gobabis to Leonhardville, 22 km N. Aranos crossing, Liede & Meve 601. South Africa: N. Cape: 11 km E. Kuruman, Liede & Meve 580.
Matelea reticulata (Gray) Woods 2n=22. USA: Texas: Big Bend Nat. Park, Oak Springs Trail, Liede & Meve 2500.
Notechidnopsis tessellata (Pillans) Lavranos & Bleck 2n=22. South Africa: W. Cape: ca. 13 km N. Nieuwoudtville, "Uithoek", Meve 255, Meve 256.
Orbea cooperi (N.E.Br.) Leach 2n=22. South Africa: E. Cape: Asbestos Mts. Kloof, Bruyns 2833.
Orbeanthus hardyi (R.A. Dyer) Leach 2n=22. South Africa: Transvaal: Strijdom Tunnel, Bruyns 2030.
Orbeopsis caudata (N.E.Br.) Leach subsp. *rhodesica* (Leach) Leach 2n=22. Zimbabwe: N. Harare: Tsatsa Quarry, Albers, Liede & Meve 502; 19 km N. Plumtree, Erwee, Liede & Meve 552.
O. lutea (N.E.Br.) Leach subsp. *lutea* 2n=22. Botswana: 10 km N. Rakops, Plowes 7444. Zimbabwe: 32 km N.E. Bulawayo, Bembesi, Plowes 3308.
O. lutea (N.E.Br.) Leach subsp. *vaga* (N.E.Br.) Leach 2n=22. Namibia: ca. 30 km S. Warmbad, Farm Eendoorn, Meve & Struck 192.
Orthanthera albida Schinz 2n=22. South Africa: N.W. Cape: Richtersveld: Grasdrif, Jürgens Hbg. 28034.
Pachycymbium carnosum (Stent) Leach 2n=22. South Africa: Transvaal: 5 km E. Marken, Rossouw 61; Rustenberg, Mogul Nature Reserve, Jacobsen s.n. sub Plowes 6571; Magaliesberg, Breedts Nek, Hardy s.n. sub Plowes 6715; N.E. Vaalwater, Melkrivier, Petzer s.n. sub Plowes 7589.
P. keithii (R.A. Dyer) Leach 2n=22. Zimbabwe: 55 km S.W. Mutare: Maranke, Plowes 4757. 2n=44. South Africa: Natal: Kwazulu: Ingwavama, eastern foothills, Strey 7332.
P. lancesteri Lavranos 2n=22. South Africa: Krüger National Park: Skukuza, Hardy 5434. Transvaal: Giyani Distr.: Makuba's Location, N. Letaba River, Lancaster 1431.
Quaqua acutiloba (N.E.Br.) Bruyns 2n=22. Namibia: 33 km N. Rosh Pinah, Albers & Meve 104.
Q. incarnata (L.f.) Bruyns subsp. *aurea* (Luckh.) Bruyns 2n=22. South Africa: W. Cape: Tanqua Karoo: 7 km S.E. Soutpan, Meve 272.
Stapelia divaricata Masson 2n=22. South Africa: S.W. Cape: 40 km E. Swellendam, Zuurbraak, Bruyns 1182.
S. erectiflora N.E.Br. var. *erectiflora* 2n=22. South Africa: W. Cape: Pakhuispass, Hartmann & Liede Hbg. 11257.
S. gigantea N.E.Br. 2n=22. Zimbabwe: near Kyle Dam Wall, Albers, Liede & Meve 570.
S. leendertziae N.E.Br. 2n=22. South Africa: Transvaal: Kaapmuiden, Van Jaarsveld 1134.
S. obducta Leach 2n=22. South Africa: E. Cape: Groot Winterhoekberge, Mullens 78.
S. vetula Masson 2n=22. South Africa: S.W. Cape: Du Toit's Kloof, Bruyns 1701.
Stapelianthus insignis Descouings 2n=22. Madagascar: 12 km N. Betsioky, Barad & Liede 11772.

S. keraudrenae Bosser & Morat 2n=22. Madagascar: Bezar Mahafaly, near Betioky, Barad & Liede 11765.

S. madagascariensis (Choux) Choux 2n=22. Madagascar: 73 km W. Ampanithy, Barad & Liede 11771.

Stapeliopsis exasperata (Bruyns) Bruyns 2n=22. South Africa: S.W. Cape: Barrydale, Bruyns 2820.

Tenaris schultzi (Schltr.) Phillips 2n=22. Namibia: Steinhausen: Farm Wunderland, Grabow s.n.

Trichocaulon cactiforme N.E.Br. 2n=22. Namibia: ca. 29 km E. Aus, Farm Plateau, Meve & Struck 178; 30 km N. Rosh Pinah, Albers & Meve 78.

T. perlatum Dinter 2n=22. Namibia: Lorelei (Orange River), Albers, Kusch & Meve K 1361. South Africa: N.W. Cape: Richtersveld: Numees, Albers, Kusch & Meve K 1343.

Reports by **L. BORGEN**, Botanical Garden and Museum, University of Oslo, Trondheimsveien 23B, 0562 Oslo 5, Norway. Vouchers in O. All localities in Norway.

ORCHIDACEAE

Dactylorhiza cruenta (Müll.) Soó 2n=40. S-Trondelag: Roros, Solende, Borgen 86-28, Borgen 86-29 & Borgen 86-31.

D. fuchsii (Druce) Soó 2n=40. S-Trondelag: Roros, Solende, Borgen 86-1, Borgen 86-2, Borgen 86-7, Borgen 86-8, Borgen 86-9 & Borgen 86-10; Mfre og Romsdal: Surnadal, Nordmarka, Tågdalen, Borgen 86-20.

D. incarnata (L.) Soó 2n=40. S-Trondelag: Roros, Solende, Borgen 86-33, Borgen 86-34 & Borgen 86-35.

D. lapponica (Laest. ex Hartm.) Soó 2n=80. S-Trondelag: Roros, Solende, Borgen 86-36, Borgen 86-37 & Borgen 86-41.

D. maculata (L.) Soó 2n=80. S-Trondelag: Roros, Solende, Borgen 86-42, Borgen 86-44, Borgen 86-45 & Borgen 86-47; Mfre og Romdal: Surnadal, Nordmarka, Tågdalen, Borgen 86-15.

D. cruenta x *lapponica* 2n=60. S-Trondelag: Roros, Solende, Borgen 86-23 & Borgen 86-25.

D. incarnata x *lapponica* 2n=70. Mfre og Romsdal: Surnadal, Nordmarka, Tågdalen, Borgen 86-22.

Report by **D.E. JOHNSON**, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166, U.S.A. Vouchers in UC.

ASTERACEAE

Trichoptilium incisum (A. Gray) A. Gray n=13. U.S.A.: California: Riverside County: W. Orocopia Mountains, Johnson 221; San Diego County: near mouth of Hellhole Canyon, Johnson 219.

Reports by **Thomas N. KAYE**, Department of Botany and Plant Pathology, Oregon State University, Corvallis, Oregon, 97331, U.S.A. Localities in the Olympic Mountains of Washington, U.S.A. Vouchers in Oympic National Park herbarium.

ASTERACEAE

Crepis nana Rich. ssp. *ramosa* Babc. n=7. Mount Angeles at First Divide, 1700 m a.s.l., Kaye 7/2/87-1.

Senecio flettii Wiegand n=20. Mount Angeles at North Cirque, 1700 m a.s.l., Kaye 7/23/87-1.

CAMPANULACEAE

Campanula piperi Howell n=17. Blue Mountain, 1650 m a.s.l., Kaye 7/1/88-1.

FABACEAE

Astragalus australis (L.) Lam. var. *olympicus* Isely n=8. Blue Mountain, 1700 m a.s.l., Kaye 6/27/87-1.

ROSACEAE

Petrophytum hendersonii (Canby) Rydb. n=9. Mount Angeles at First Divide, 1700 m a.s.l., Kaye 7/2/87-2.

SCROPHULARIACEAE

Pedicularis bracteosa Benth. var. *atrosanguinea* (Pennel & Thoms.) Cronq. n=8. Hurricane Hill at Elwha River Trail, 1585 m a.s.l., Kaye 7/11/87-1.

Reports by G.F. SMITH, Department of Plant Sciences, Potchefstroom University for Christian Higher Education, Potchefstroom 2520, Republic of South Africa. Vouchers in PRU.

LILIACEAE

Chortolirion angolense (Baker) A. Berger 2n=14. South Africa: C. Transvaal: Brummeria N. of Pretoria, Smith 8.

Poellnitzia rubriflora (L. Bolus) Uitewaal 2n=14. South Africa: S.W. Cape: 5 km W. of Bonnievale, Smith 9.

5. Publishing News

Kawano S. (ed.), 1990: Biological approach and evolutionary trends in plants. Acad.Press, London.

The book containing the papers presented at our Symposium in Tokyo just appeared. Please contact Dr. Kawano if you are interested in the purchase at a discount price as a Member of IOPB. Shoichi Kawano, Department of Biology, Faculty of Science, Kyoto University, Kyoto 606, Japan. Phone: 075-751 2111, Fax: 075-751 6149.

Canadian Government, 1990: Fescue grasses of Canada. Agriculture Canada. Identification of the economically important genus *Festuca*.

This well-illustrated publication brings together the result of recent biosystematic research on the fescue grasses of Canada and presents different points of view concerning taxonomy. Accurate means for identification include: character evaluation, literature surveys, a dichotomous key, species descriptions, full-page illustrations of all species, species ranges, maps showing distributions in Canada. Paperbound 20x25 cm, 28 illustrations. Available in English only. CGPC Code: 019801, ISBN: 0-660-13483-7. Price: \$22.95 (Canada), US\$27.55 (Outside Canada). Available at: Canadian Government, Publishing Centre, Otta-

wa, K1A 0S9, Canada. Please enter the CGPC Code 019801 on your order form.

6. IOPB Symposium 1992 - News from the Organizing Committee

IOPB Symposium 1992, Missouri Botanical Garden, St. Louis, Missouri, U.S.A., 12-15 June 1992.

Program:

The Symposium will comprise four **non-concurrent** all congress symposia (1/2 day each), **concurrent sessions** for contributed papers (3 or 4 half-days), and poster sessions. The broad topics will be determined by the conveners, speakers by invitation).

1. DNA and Plant Biosystematics
(Convenors: Barbara A. Schaal and Michael Clegg)
2. Plant Growth Patterns and Biosystematics
(Convenor: James White)
3. Plant Reproductive Strategies
(Convenor: Andrew G. Stephenson)
4. On the Analysis of Patterns
(Convenor: Michael J. Donoghue)

Field trips

Tentative plans have been made for four field trips for Symposium participants, two before and two after the meetings in St. Louis, each lasting 2-4 days.

Pre-congress trips will be to

- 1) the Great Plains of the west-central US (leader: Ralph Brooks) and
- 2) the Ozard Plateau (leader: Paul Redfarn).

Post-congress trips will be to

- 3) the Central Lowlands of southern Illinois (leader: Robert Mohlenbrock) and
- 4) the Rocky Mountains (leader: William Weber).

Program Committee: Peter H. Raven
W. Hardy Eshbaugh
Peter C. Hoch
Sterling C. Keeley
Meredith A. Lane
Barbara A. Schaal

7. Meetings, Past and Future

Tenth Meeting of the Willi Hennig Society

The Tenth Meeting of the Willi Hennig Society will be hosted by the Royal Ontario Museum and the University of Toronto in Toronto, Canada, 16-19 August, 1991. The following symposia are planned:

- Randomization and Measures of Consistency (M.J. Donogue)
- Phylogenetics and Heterochrony (R.J. Mooi)
- Phylogenetics and Evolution (D.R. Brooks)
- Biogeographic Consequences of an Expanding Earth (H. Owen)
- The Impact of Species Concepts and Hybrids on Phylogenetics (J. Lynch)
- The Use of Cladistics in the Reconstruction of Past Diversities (J. Gauthier)

As usual, contributed papers and posters are welcome. Further symposia can also be proposed, although this will mean doubling up of some sessions. Housing (with breakfast) in student residences will be available (about Can\$ 45S, \$70D). Registration fee Can\$ 70 (Can\$ 35 for students), banquet Can\$ 30.

Registration and housing forms may be obtained from R. Winterbottom, Dept. of Ichthyology and Herpetology, Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario, Canada M5S 2C6.

The Meeting of the Society for the Study of Evolution will be held at Berkeley, California, June 17-21, 1992.

For more information, please contact Dr. Peter Hoch or Dr. Peter Raven, Missouri Botanical Garden, P.O.Box 229, St. Louis, Missouri 63166-0299, U.S.A., Phone: 314-577-5100

8. Requests for Material and Information

STRID A., Professor, Botanical Laboratory, University of Copenhagen, 140 Gothersgade, DK-1123 Copenhagen, Denmark, would appreciate reprints and all other information concerning taxonomy and biosystematics of vascular plants in Greece.

9. Note from our treasurer

Membership fees for 1990-1992

Writes Dr. Hans C.M. den Nijs:

My request for payments in the last issue of the Newsletter was not as successful as I would like to have seen it! There are still about 90 members who did not pay their fees for the current period.

I realize that some of our members may feel uneasy about the ways of payment I had to suggest trying to avoid a great loss of money due to the new banking regulations in Europe.

The Executive will try to create a more flexible and cheaper system of collecting the fees as soon as possible. This especially will concern members who only can pay with US currency! I will send these members a special reminder.

All members who are able to pay by one of the ways of payments indicated below are again kindly but also urgently requested to do as soon as possible.

It does not mind that International Postal Money Orders take a long time, for IOPB holds that it is better to have the complete amount after 4 weeks than half of it within a week!

Special thanks are again due to those members who took the banking charges for their own account by paying US\$ 10.- extra, such grants help to keep the IOPB finances from the red.

Recommended ways of payments, **free** of banking **charges** for IOPB:

- Sending an **Eurocheque**, amounting **DFL 50.-**, made payable to J.C.M. den Nijs - IOPB
- Sending an **International Postal Money Order**, amounting **DFL 50.-**, made payable to J.C.M. den Nijs - IOPB

The membership fee for **Institutional** members amounts DFL 60.- for the three-year period, postage not included.

Thank you very much for your cooperation.

IOPB Executive and Council members

Executive:

President:

Shoichi Kawano

Department of Biology, Faculty of Science
Kyoto University
Kyoto 606, Japan
Phone: 075-753-4133
Fax: 075-753-4122

Vice President - President Elect:

Peter H. Raven

Missouri Botanical Garden,
P.O. Box 229
St. Louis, Missouri 63166-0299, USA
Phone: 1-314-577 5110
Fax: 1-314-577 9595

Past President and Editor Newsletter:

Krystyna M. Urbanska

Geobotanisches Institut ETH, Stiftung Rübel
Zürichbergstrasse 38
CH-8044 Zürich, Switzerland
Phone: 41-1-256 3877 (direct line: -256 4308)
Fax: 41-1-252 3404

Co-Editor Newsletter for IOPB Chromosome Data:

Clive A. Stace

Department of Botany
University of Leicester
Leicester LE1 7RH, England
Phone: 0533-523381 (direct line)
Fax: 0533-471001

Secretary-Treasurer:

Hans C.M. den Nijs

Hugo de Vries Laboratory, University of Amsterdam
Kruislaan 318
1098 SM Amsterdam, The Netherlands
Phone: 31-20-525 7660
Fax: 31-20-525 7715

Member ex officio for 1992 Symposium:

W. Hardy Esbaugh

Department of Botany, Miami University
316 Biological Sciences Building
Oxford, Ohio 45056, USA
Phone: 1-513-529 4212
Fax: 1-513-529 4243

Council:

M.T.K. Arroyo, Laboratorio de Sistemática y Ecología Vegetal, Departamento de Biología, Facultad de Ciencias, Universidad de Chile, Casilla 653, Santiago, Chile.
Phone: 56-271-2983

Liv Borgen, Botanical Garden and Museum, University of Norway, Trondheimsveien 23B, N-0562 Oslo 5, Norway.
Phone: 47-2-686 960; Fax: 47-2-571 437

D. Cartier, Laboratoire de Biologie Végétale B, Université de Paris XI, Centre d'Orsay, Bâtiment 362, F-91405 Orsay-Cédex, France.
Phone: 33-69-417 222

Hsu Ping-shang, Department of Biology, Fudan University, Handan Lu 220, Shanghai, P.R. China

Kunio Iwatsuki, Director of the Botanical garden, University of Tokyo, 3-7-1 Hakusan, Bunkyo, Tokyo 112, Japan
Fax: 03 8140139

B.E. Jonsell, Bergianus Botanic Garden, P.O. Box 50017, S-10405 Stockholm, Sweden.
Phone: 46-8-156 896; Fax: 46-8-612 9005

Meredith A. Lane, Director Herbarium, University of Kansas, 2045 Constant Avenue, Lawrence, Kansas 66047, U.S.A.
Phone: 1-913-864 4493; Fax: 1-913-864 5298

John McNeill, Associate Director Curatorial, Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario M5S 2C6, Canada.
Phone: 1-416-586 5515; Fax: 1-416-586 8044

Arne Rousi, Department of Botany, University of Turku, SF-20500 Turku 50, Finland.
Phone: 358-21-633 6101; Fax: 358-21-331 167

Suzanne I. Warwick, Biosystematics Research Center, W. Saunders Building, Central Experimental Farm, Ottawa, Ontario K1A 0C6, Canada.
Phone: 1-613-996 1665; Fax: 1-613-995 1823

MEMBERSHIP APPLICATION FORM

International Organization of Plant Biosystematists

The International Organization of Plant Biosystematists (IOPB) was founded in 1960 to promote international cooperation in the study of biosystematics. The IOPB acts on several levels, from coordinating and publishing information on biosystematics to organizing conferences. The IOPB is open to all persons working or interested in biosystematics which is interpreted in a broad sense (see symposium volume "Plant Biosystematics", edited by W.F. Grant, 1984).

An IOPB Newsletter is sent to all members. Such items as current research, requests for material and information, meeting reports, publications, etc. are reported. The Editor is Prof. Krystyna M. Urbanska, Geobotanisches Institut ETH, Zürichbergstrasse 38, CH-8044 Zürich, Switzerland.

At present, Membership is for the three year period between Symposia. The next Symposium will be held in U.S.A. in 1992.

Membership fee 1990-1992: US\$ 25.00.

Make cheques or money orders payable to the International Organization of Plant Biosystematists (IOPB).

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