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# International Organization of Plant Biosystematists

Newsletter

No. 6

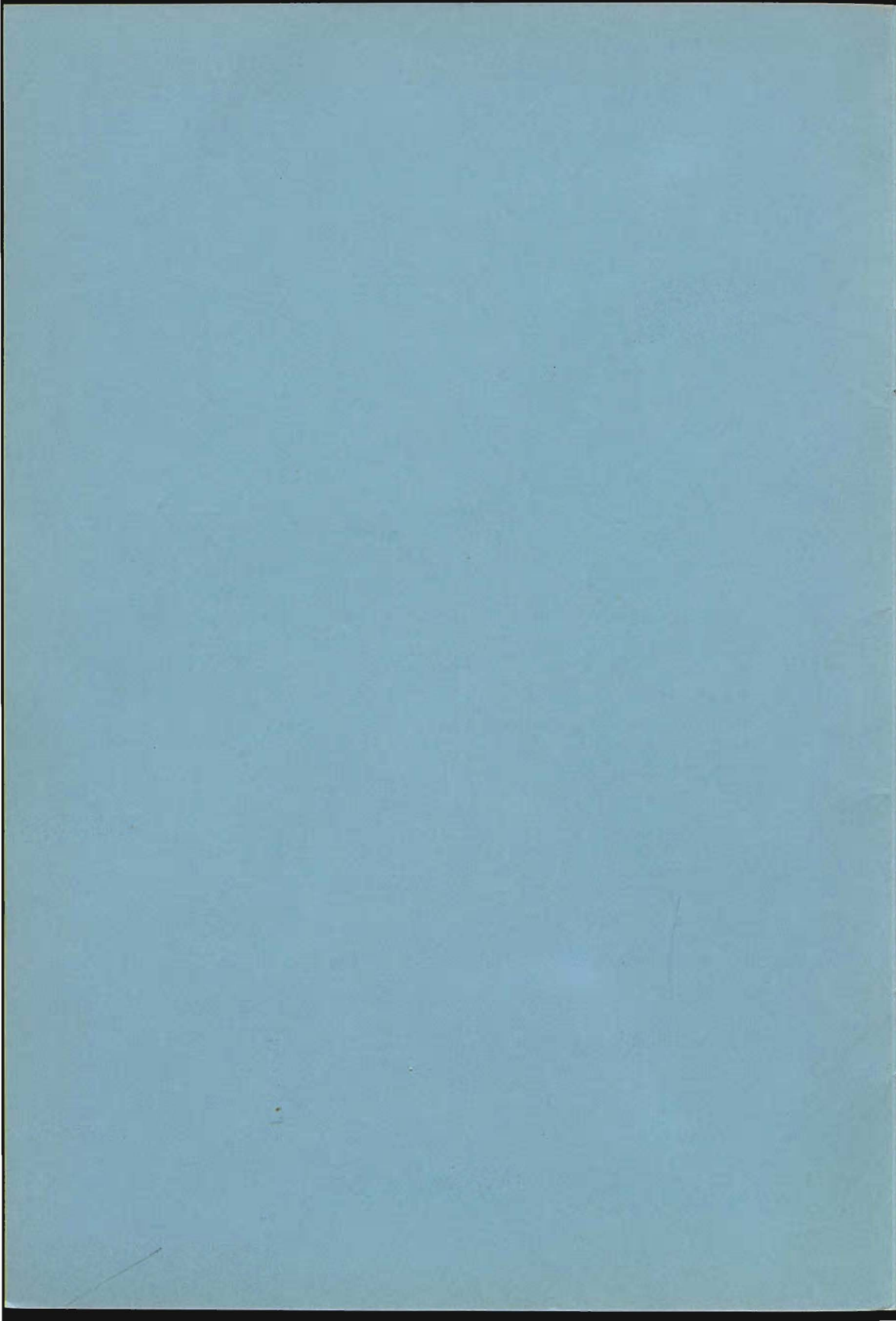
Edited by K. M. Urbanska



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Swiss Federal Institute of Technology

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Zürich 1986



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INTERNATIONAL ORGANIZATION OF PLANT BIOSYSTEMATISTS

NEWSLETTER No. 6

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REAL JARDÍN BOTÁNICO  
BIB.



Dear IOPB Members,

The sixth issue of our Newsletter is here. I'm grateful for your continuing interest and particularly pleased to have received numerous requests for material/information accompanying the personal research news forms (p. 9).

In this issue, we have two lead articles (p. 3-6). Either of them deals with a different subject, both are very interesting. Many thanks to Dr. Izmailov and Dr. Kuta for their excellent papers. Should anybody have any comments on those contributions or perhaps further data on Alchemilla or Viola, I'll be only too glad to publish them.

No 'Profile of a Lab' this time... Who will send it for the next issue? I'm positive that we all should like to hear more about research programmes from e.g. Japan. Dōmo arigatō in advance, Japanese colleagues.

Our President Dr. Grant has some interesting suggestions for the Newsletter (p. 9). Please let me know your opinion and send data for publication. I personally think that a column 'Reports on Genome' would fit just fine into the Newsletter.

By the time you receive this Newsletter, the IOPB Symposium in Zürich may well be under way. All the same, the very last news from the Organizing Committee (p. 8) are perhaps of interest for some members. Here in Zürich everything looks rather promising. Attending IOPB Members, please prepare for some days of hard work; staying-at-home IOPB Members, please wish us well.

Data for the next issue of the Newsletter should arrive here before November 31, 1986. More contributions should be appreciated.

Have a successful field season and a good summer holiday

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?



## 2. LEAD ARTICLES

By Romana Izmailow, Department of Plant Cytology and Embryology, Institute of Botany, Jagellonian University, Grodzka 52, 31-044 Krakow, Poland.

### Cyto-embryological studies on apomictic species of *Alchemilla*

European species of the genus *Alchemilla* belong to the earliest recognized apomicts. Simultaneously few sexual species of this genus have been discovered. The present state of knowledge on embryology of *Alchemilla* is based upon classical publications of MURBECK (1901, 1902) and STRASBURGER (1905) as well as few more recent works. Unfortunately, only about one sixth from more than 300 taxa described from Europe were studied embryologically till now. Not only in Europe but also in other parts of its large area of distribution has the genus *Alchemilla* not been studied adequately from embryological point of view.

A few years ago cytological and embryological studies on the series *Calycinae* (in western Carpathians and Sudety Mts.) have been started in Poland. Out of the 11 taxa, eight viz. *A. babiogorensis*, *A. giewontica*, *A. jasiewiczii*, *A. sericoneuroides*, *A. gorcensis*, *A. eugenii*, *A. pseudothmari* and *A. oculimarina* were given the rank of species by PAWLOWSKI (1952, 1954, 1955, 1957). Except for *A. gorcensis* occurring also on the Balkan Peninsula, the species are endemic of the Tatra Mts. and the High Beskid Mts. Three further species viz. *A. incisa*, *A. fissa* and *A. firma* studied from Poland are distributed also in parts regions of the geographical range of series *Calycinae*.

Karyological studies on the Polish representatives of this series revealed their very high chromosome numbers; apart from cytotypes  $2n=98-108$  most often met within the section *Brevicaulon*, still higher chromosome numbers up to  $2n=176$  were established (IZMAILOW 1981, 1982). In plants from the Alps, chromosome numbers  $2n=103-108$  were found for *A. incisa* and  $2n=142-152$  for *A. fissa* (WEGENER 1967); approximate chromosome numbers established for these species from Polish localities are  $2n=101-108$  for *A. incisa* from the Tatra Mts. and  $2n=145-156$  for *A. fissa* from the Sudety Mts. (IZMAILOW 1981).

Microsporogenesis and development of pollen were highly disturbed resulting in striking decrease of pollen viability (IZMAILOW 1984). However, in some species, e.g. *A. gorcensis*, *A. babiogorensis* and *A. giewontica*, the percentage of viable pollen was exceptionally high (from about 30% to about 40%). This observation stays in contrast to the generally accepted opinion of total degeneration of pollen and anthers in apomictic species of *Alchemilla*.

High chromosome numbers and to some extent disturbances in microsporogenesis support the hypothesis of hybrid origin of recent taxa of *Alchemilla*.

Studies on apomictic processes in ovules (IZMAILOW 1986, in press) have revealed the formation of two types of apomeiotic embryo sacs, aposporous type prevailing over the displosporous one. Embryological analysis as well as experimental studies carried out for the first time in *Alchemilla* (emasculatation and controlled pollination) confirmed data concerning the autonomous development of embryo and endosperm. In most flowers it starts already in closed flower buds. However, in some flowers at anthesis undivided egg cell and unfused polar nuclei could be discerned. Adventitious embryony and embryo development not from the egg cell but



from different cells of the egg apparatus are other forms of apomixis of the taxa studied. Their occurrence was usually connected with true as well as false polyembryony.

In young embryo sacs developmental disturbances were sporadically observed. They may be taken into consideration as one of the possible ways leading to karyological differentiation in some *Alchemilla* species, e.g. *A. babiogorensis* ( $2n=131-141$  and  $2n=145-156$ ) and *A. oculimarina* ( $2n=98-106$  and  $2n=150-161$ ).

Further investigations are required to elucidate the mechanisms of intraspecific karyological differentiation as well as the possibility of facultative apomixis in recent *Alchemilla* species.

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By Elzbieta Kuta, Department of Plant Cytology and Embryology, Institute of Botany, Jagellonian University, Grodzka 52, 31-044 Krakow, Poland.

Cyto-taxonomical studies on subsect. Stolonosae of the genus Viola L. from Poland

Subsect. Stolonosae /Palustres) of the sect. Plagiostigma is the object of intensive taxonomical and cytological investigations (BAMFORD and GERSHOY 1920, CLAUSEN 1929, 1964, GERSHOY 1934, RUSSELL 1954, 1955, SORSA 1965, 1968).

In Poland, subsect. Stolonosae is represented by two species only viz. the diploid *V. epipsila* ( $2n=24$ ) and the tetraploid *V. palustris* ( $2n=48$ ). The present study dealing with these two species and their mixed populations forms part of investigations on differentiation of Polish populations of the genus *Viola* L. (KUTA 1978, 1981). It should be emphasized that nowadays *V. epipsila* is rather rare in Poland and seems to be restricted to the non-disturbed habitats mainly in the northern part of the country. On the other hand, *V. palustris* has a wider area of distribution and can be found all over the country. Morphological as well as karyological and embryological analysis of 26 natural Polish populations has been performed till now. It is evident that *V. epipsila* hybridizes easily with *V. palustris* in nature. Triploid hybrids ( $2n=36$ ) were recognized in six populations. In four populations tetraploid specimens ( $2n=48$ ) showing some morphological characters of *V. epipsila* have been identified. They are supposed to be also of hybrid origin.

The pattern of differentiation of Polish mixed populations of *V. epipsila* and *V. palustris* is to some extent different from that presented by SORSA (1965) for Finnish populations. In hybrid populations of these two species, SORSA found very variable chromosome numbers resulting from introgressive hybridization. It is fairly possible that such a phenomenon does occur in Polish populations, too.

The results of embryological study of the parent species *V. epipsila* and *V. palustris* as well as of the triploid intermediate forms supported the hypothesis of their hybrid origin. Most important were the results of analysis of microsporogenesis. Both *V. epipsila* and *V. palustris* showed a regular meiosis resulting in a high percentage of viable pollen grains (80-100%). In the triploid hybrid ( $2n=36$ ), meiosis was disturbed and most frequently 12 bivalents and 12 univalents could be observed in the first metaphase. The percentage of viable pollen grains oscillated from 6% to 60%.

In the further study we will concentrate mainly on the problem of origin and taxonomical status of the tetraploid ( $2n=48$ ) intermediate forms. Series of experimental interspecific crosses are planned, too.

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### 3. RESEARCH NEWS

- A. AFRICA  
No report
- B. ASIA

#### India

Dr. HIREMATH S.C., Reader, Botany Department, Karnatak University, Dharwad 580003, India.

#### Recent publications:

HIREMATH S.C., 1982: Cytogenetical studies in wild and cultivated species of *Eleusine* (Gramineae). *Caryologia* 35, 57-69.

HIREMATH S.C. and MURTHY H.N., 1986: Structure, stability and meiotic behaviour of B chromosome in *Guizotia scabra* ssp. *scabra* (Compositae). *Caryologia* (in press).

Projects started: Biosystematic studies in genus *Guizotia* (Compositae) is in progress. Recently, work on genome homologies and species differentiation in *Eleusine* (Graminae) has been undertaken.

#### Japan

Dr. KOBAYASHI Mikio, Associate professor, Faculty of general Education, Utsunomiya University, Mine-machi 350, Utsunomiya 321, Japan.

#### Recent publications:

1985: *Sasa kurilensis* and other sasa plants on Hachijojima and Miku-rajima, Izu Islands, Japan. (In Japanese). *J. Phytogeogr. and Taxonomy* 33(2), 59-70.

1986: Motor cell-silica bodies of *Sasa* and allied genera from Hachijojima, Izu Islands, Japan, with special reference to the origin of *Sasa kurilensis* in the Izu Islands. (In Japanese). *J. Phytogeogr. and Taxonomy* 34(1), 31-35.

Projects started: Silica body of the phylogeny or systematics of Genus *Sasa* and allied genera, the Japanese dwarf bamboos.

- C. AUSTRALIA  
No report.



D. EUROPE

England

Mr. HEATH P.V., 9 Hazeldene Meads, Brighton, England BN1 5LR, is Editor of "Sussex Cactus and Succulent Year Book" (2nd series).

France

Mr. MONNIER Paul, Maître Conférences Biologie Végétale, Institut de Botanique, 163, rue A. Broussonet, F-34000 Montpellier, France, works and publishes papers on Spargularia (*S. marginata*, *S. rubra*, *S. salina*, *S. fimbriata*).

Germany

Mr. ADOLPHI Klaus, Kolpingstrasse 36, D-5461 Rossbach/Wied, FRG.

Recent publications:

ADOLPHI K. and NOWACK R., 1983: *Spiraea alba* Du Roi and *Spiraea x billardii* Hering, zwei häufige mit *Spiraea salicifolia* verwechselte Arten. Göttinger Florist, Rundbr. 17, 1-7.

Projects completed: Identification of *Spiraea* species naturalized in Germany.

Projects started: Taxonomic studies on *Spiraea*; identification and taxonomy of *Aster* species naturalized in Central Europe; field investigations of cultivated plants naturalizing in Central Europe.

Italy

Dr. ANZALONE Bruno, Professeur at Dipartimento di Biologia vegetale, Università "La Sapienza", Città Universitaria, I-00100 Roma, Italy.

Recent publications:

1984: Prodrómo della Flora Romana (Elenco preliminare delle piante vascolari spontanee del Lazio).

Projects completed:

- *Pastinaca sativa* L. complex in Italy
- The bank flora of the Tiber river and of its tributaries in Rome

Projects started:

- The species of gen. *Seseli* in Central Italy
- Flora of Castellporziano and of National Park of Circeo (Lazio)

Spain

Dr. BLANCHE Cesar, Assistant Professor, Department de Botanica, Facultat de Farmacia, Universitat Barcelona, Diagonal S/N, 08028-Barcelona, Spain.

Projects completed: Biosystemic revision on Ibero-Balear species of *Delphinium* L. and *Consilida* S.F. Gray.

Projects started: Biosystematics of North-African species of the same genus.

Prof. Dr. CARDONA M. Angels, Department de Botanica, Facultat de Ciències, Universitat Autònoma de Barcelona, Bellaterra (Barcelona), Spain.

Recent publications:

CARDONA M.A., 1984: Caryosystematique et différenciation évolutive de

quelques Rubias méditerranéennes. Webbia 38, 513-529.  
CARDONA M.A. and CONTANDRIOPOULOS J., 1984: Caractère originale de la flore endémique des Baléares. Bot.Helv. 94, 102-132.  
CARDONA M.A., 1984: El coneixement floristic de l'illa de Menorca. Butll.Inst.Cat.Hist.Nat. 50, 125-133.  
CARDONA M.A. et al., 1984: La biosistemática, amb especial atenció a la citotaxonomia, als Països Catalans. Butll.Inst.Cat.Hist.Nat. 50, 327-334.

Projects completed:

Caryological survey of the genus *Fedia* (Valeriaaceae), together with N. XENA and J. MATHEZ.

Dr. FERNANDEZ LOPEZ Carlos, Colegio Universitario "Santa Reino", 23071 JAEN, Spain.

Recent publications:

1983: Fuentes para la flora de Jaen. 142 pp. (see OPTIMA Newsletter 65, 14-16.

1985: Blancana 3, ISSN 0212-8314: 11 papers on flora of Jaen.

E. NORTH AMERICA

No report.

F. MESOAMERICA

No report.

G. SOUTH AMERICA

Venezuela

Mr. RAMIREZ Nelson, Universidad Central de Venezuela, Fac, Ciencias, Esc. Biología, Dpto. Botánica, Apto. 21201, Caracas, Venezuela.

Projects completed:

- Biología de polinización de un arbustal de las altas Guayanas Venezolanas

- Vegetación de un arbustal de la Guayana Venezolana

Projects started:

Biología reproductiva en una vegetación xerofila.

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4. IOPB SYMPOSIUM 1986: Very last news from the Organizing Committee

The programme has been mailed to all participants. About 70 persons attending the Symposium represent 23 (yes) countries - we are very pleased about it. Altogether, there should be 58 contributions: 16 invited papers and 42 Poster Papers.

Hotel rooms are booked, briefcases for the Symposium participants are being completed, the chamber music programme for the after-dinner concert (Thursday, July 17) is ready. The Town of Zürich begins with preparations to her 2000th anniversary. Everything is fine, we are waiting for you.

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## 5. SUGGESTIONS FOR THE NEWSLETTER

Writes the IOPB President, Dr. William F. Grant:

'It occurred to me that we should do more than just report chromosome numbers of species and hybrids in the IOPB Newsletter. We could also report DNA density measurements from cytophotometry, report species in which chromosome banding is being carried out, and report species in which restriction mapping is being carried out and possibly other aspects. We could give this column a title such as 'Reports on genome'.

I'm expecting comments from the IOPB Members.

The Editor

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## 6. PUBLISHING NEWS

PLANT SPECIES BIOLOGY is a new scientific journal published twice a year by the Society for the Study of Species Biology recently founded in Japan. It is published in English. The first volume is planned for 1986. For subscription/membership of the Society, available back issues etc. please contact the Secretary, Mr. Motomi ITO, Department of Botany, Kyoto University, Kyoto, 606 Japan. Address all manuscripts and correspondence concerning editorial matters to Prof. Dr. Schoichi KAWANO, Managing Editor and President of the Society. His address is: Department of Botany, Kyoto University, Kyoto, 606 Japan.

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## 7. REQUESTS FOR MATERIAL AND INFORMATION

Mr. ADOLPHI Klaus, Kolpingstrasse 36, D-5461 Rossbach/Wied, FRG, would appreciate viable seeds of *Spiraea salicifolia*, *S. alba* and *S. latifolia* from the natural areas of distribution of the species.

Dr. ANZALONE Bruno, Professore at Dipartimento di Biologia vegetale, Universita "La Sapienza", Citta Universitaria, I-00100 Roma, Italy, would appreciate seeds and dried plants of *Seseli montanum* and its allied species.

Dr. BLANCHE Cesar, Assistant Professor, Department de Botanica, Facultat de Farmacia, Universitat Barcelona, Diagonal S/N, 08028-Barcelona, Spain, would appreciate seeds and floral buds fixed of *Delphinium* and *Consolida* from the mediterranean area.

Mr. HEATH P.V., 9 Hazeldene Meads, Brighton, England BN1 SLR, is Editor of "Sussex Cactus and Succulent Year Book" (2nd series). Contributions concerning the culture, systematics, phytoeny, nomenclature or hybridization of the Cactaceae and other succulent xerophytes are invited.

Dr. HIREMATH S.C., Reader, Botany Department, Karnatak University, Dharwad 580003, India, would appreciate small samples of seed material of *Guizotia arborescens*, *G. villosa* (Compositae) and *Eleusine semisterilis*, *E. intermedia*, *E. kegeziensis* and *E. jaegeri* (Graminae).

Dr. KOBAYASHI Mikio, Associate professor, Faculty of general Education, Utsunomiya University, Mine-machi 350, Utsunomiya 321, Japan., would appreciate dried herbarium specimens of the culm with old leaves of the diminutive or herbaceous bamboos of *Arundinaria*, *Pariana* or *Olyraea*.

Mr. MONNIER Paul, Maître Conférences Biologie Végétale, Institut de Botanique, 163, rue A. Broussonet, F-34000 Montpellier, France, would appreciate seeds of *Spergularia* of all countries (also from North and South America).

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#### 8. MISCELLANEOUS NOTES

##### Personal News

Prof. Dr. CARDONA M. Angels, Department de Botanica, Facultat de Ciències, Universitat Autònoma de Barcelona, Bellaterra (Barcelona), Spain, has become First member of the section of Natural Sciences of the Institute Menorça d'Estudis of the Consell Insular de Menorca (Minorca, Balearic Islands).

##### Changes of Address

Dr. Gregory K. Brown is currently working at:  
Department of Botany  
University of Wyoming  
Laramie, Wyoming 82071, USA

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Please write legibly  
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P E R S O N A L   D A T A   C O L L E C T I O N

For the International Organization of Plant Biosystematists Newsletter  
(IOPB Newsletter)

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Last name                      First name (Mr., Mrs.)                      Title

Address:

Personal News:

Recent publications:

Projects completed:

Projects started:

Request for research material:

Articles and longer reports, reports of meetings, etc., to be attached:

Please return to: Dr. Krystyna M. Urbanska, Editor, IOPB Newsletters  
Geobotanisches Institut ETH  
Zürichbergstr. 38  
CH-8044 Zürich  
Switzerland

