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IOS

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Front cover: *Mammillaria geminispina*

This issue of IOS Bulletin compiled and edited by the Secretary

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Message from the President

This year the 10th IOS Inter-Congress was held in Berlin, on 10–11 May. It was organized at the Berlin-Dahlem Botanical Garden and Botanical Museum in conjunction with the traditional Berliner Kakteentage and the annual meeting of EPIG (*Interessengemeinschaft Epiphytische Kakteen*). The IOS lectures were open to members of these organizations. On behalf of the Board, I would like to thank the garden's Director, Prof. Dr. Thomas Borsch, for his support to the organization of the event.

The organization of the 33rd IOS Congress to be held on 7–12 April, 2014 at the Desert Botanical Garden, in Phoenix, Arizona, is in progress. The Board is working closely with members of the DBG staff, particularly with Raul Puente and Andrew Salywon, and I express my sincere appreciation to the Director of the DBG, Mr Kenneth Schutz, for his enthusiastic support to the organization of our event.

As posted in the IOS website, the congress will have a keynote speaker, oral and poster presentations, exhibits and fieldtrips. In addition, a special one-day symposium dealing with the cactus subfamily Opuntioideae and the genus *Agave* will be organized. Members are asked to visit the IOS website for updated information on the congress.

As many IOS members will recall, this is not the first time our organization has held a Congress at the DBG. Previous Congresses were held in 1992 and 2002, and 2014 is a significant date for the Garden, as it marks the 75th Anniversary of its foundation. This congress is bound to be as excellently organized and intellectually stimulating as the previous Congresses held in Arizona, and it is encouraging that a substantial number of IOS members have already expressed interest to attend and it is hoped that many non-members from North America and elsewhere will be present as well. I hope to see many of you there.

As always, I wish that all IOS members will feel free to contact me or any other member of the Executive Board with suggestions and ideas regarding activities of our organization.

Héctor M. Hernández

***For details of the Congress Programme and a downloadable Registration Form
please see the IOSwebsite (iosweb.org).
Details are also given below on page 164 (back cover)***

Presentation of the Cactus d'Or 2012, Monaco, 27 April 2013



Dr Heidi Hartmann receives the *Cactus d'Or* from Monsieur Michel Roger, Monaco's State Minister.
(photo courtesy of Jean Marie Solichon)

Report of the 10th IOS Inter-Congress Meeting, Berlin, 10–11 May 2013 *Venue: Botanical Garden and Botanical Museum, Berlin (BGBM)*

This meeting, originally programmed in April 2013 for members of IOS and interested staff of the BGBM, was postponed to May following a request by the Director of BGBM to hold it in conjunction with the 'Cactus Days' (*Kakteentage*) organized biennially by the Berlin branch of the German Cactus Society (*Deutsche Kakteen-Gesellschaft*). It later transpired that the Epiphytic Plant Interest Group (*Interessengemeinschaft Epiphytische Kakteen*) would also be holding its annual meeting, but that the Conference Room in the Botanic Garden usually used for lecture sessions during the *Kakteentage* would not be available. A meeting with the local organizers was then convened at the request of the IOS Secretary and held in Berlin on 16 October 2012, at which it was agreed to open the IOS sessions to members of the other groups, but further logistical problems emerged later in the year leading to the eventual curtailment of the planned IOS programme and withdrawal of some of our speakers. In the event, the IOS Board met as scheduled on Friday 10 May (*see below*) but the morning session and part of the afternoon session on Saturday 11 May, held in the large lecture theatre in the Museum, were given over to speakers representing BGBM and EPIG. The afternoon session then concluded with short talks by the IOS President and other IOS members (*see Abstracts, p.*)

IOS attendees: Bauer, Dorsch, Hernández, Hunt, Klein, Korotkova, Larridon, Mecklenburg, I., Mecklenburg, R., Meve, Oldfield, Samain, Schröder, Supthut.

Report of the annual meeting of the IOS Executive Board, Berlin, 10 May 2013

Held in a private room at the Luise Restaurant, Königin Luise-Strasse, Berlin-Dahlem

Present: The President, Vice-President, Secretary, Treasurer and Assistant Secretary.

1. *Cactus d'Or 2012.* The Board received with pleasure the news that the award had been presented to Heidi Hartmann at the Jardin Exotique, Monaco, on 27 April.

2. *Inter-Congress.* The Secretary explained the problems that had led to the curtailment of the programme for this year's meeting (*see previous page*). The response by IOS members to the announcements in IOS Bulletin 15(5) was, however, disappointing, and no plans are envisaged for a meeting in the next inter-congress year (2015).

3. *Membership.* A paper by the Secretary listing current and lapsed IOS membership was discussed along with applications pending. It was agreed that applications from members unable to pay the membership fee because of currency restrictions could not be admitted unless sponsored.

4. *Financial matters.* The Board remained divided over the proposal to suspend the membership fee for a trial period that had been rejected at Havana. The Audit of the IOS accounts had not yet been completed. Dissatisfaction had been expressed by one of the Auditors with the information initially provided by the Treasurer, but this appeared to be due to a misunderstanding that could readily be rectified. That Auditor's precipitate action, supported by the Assistant Secretary, in using the IOS membership list to circulate his concerns to the membership in general, without first consulting the other Auditor or the President, was regretted.

5. *Research.* An update to the previous 'Review of current projects associated with IOS' (IOS Bull. 15(5) 136–139, 2012) had been circulated by the Secretary. The President proposed that IOS should be more generous in supporting research, say to a maximum of 2000 Euros per project per year (for a maximum of two years). This was agreed, as was his supplementary proposal for 'A maximum yearly amount to be allocated by IOS for grants' subject to a limit of 6000 Euros per annum. His suggestion that 'a formal "Call for Proposals" be posted on the website each year would improve the image of IOS' was also agreed.

6. *Website.* Prior to the meeting the Assistant Secretary had circulated an evaluation of website usage in the form of computer-generated statistical charts. These summarized the numbers of visitors from different countries/domains for 2012 and the first part of 2013 and the total number of visitors.

7. *Future meetings.* A formal invitation to hold the 33rd IOS Congress at the Desert Botanical Garden, Phoenix, Arizona, had been received and accepted. Programme arrangements were awaited. IOS had also been received to coordinate one of the symposia for the next Congress of the Sociedad Latinoamericana y del Caribe de Cactáceas y Suculentas (SLCCS), scheduled for November 2013 in Sucre, Bolivia [*Financial stringency in Bolivia has since forced the postponement of this meeting and another venue is being sought.*]

8. *Publications.* Repertorium Pl. Succ. (RPS): Compilation of no. 63 (for 2012) is in the hands of Dr Eggli as usual. Changes to the International Code of Nomenclature, effective from January 2012, have placed an increased burden on bibliographers and may delay its publication. To date the cost of the short print run for members and agencies requiring paper copies has been covered by the subscription price; IOS Bulletin: The Secretary had undertaken to produce the next issue; Succulent Plant Research (SPR): Though this is not an 'official' IOS publication, the authors and editors of these volumes are IOS members. The inclusion of the IOS logo among those of the sponsors and distributors was agreed. Text for two further volumes is currently in preparation, one for the second volume of '*Mapping the Cacti of Mexico*' (Hernández & Gómez-

IOS Accounts for the Year ending 31 December 2012

Summary Statement of Income, Expenditure and Balances

Central Reserve Fund (HSBC a/c opened 07/12/2009)	
	GBP
Interest received	17.00
Expenditure	
Payment re Cuba Congress	1840.00
Bank charges	42.00
Tfr to UK account	500.00
Total	2382.00
Balance b/f 01/01/2011	43828.65
Expenditure <i>less</i> interest received	2365.00
Balance c/f 31/12/2012	41463.65

Regional currency accounts

British Pounds (Account Holder: Dr D.R. Hunt)

Income	GBP
Subscriptions (10)	325.00
Rep. Pl. Suc.	216.00
Tfr from IOS HSBC a/c	500.00
Total	1041.00

Expenditure	
RPS 61 & 62 printing	307.00
Board (Newton)	400.00
Total	707.00

Biomaps Project subaccount (2011–2012)
No transactions during year

Balance brought forward 1/1 2012	3348.68
Balance carried forward 31/12/2012	3348.68

Reconciliation with main a/c	
Balance brought forward 31/12/11	2333.77
Income – Expenditure 2012	334.00
Balance Biomaps subaccount	3348.68
Balance carried forward 31/12/12	6016.45*

Euros (Account holder: Dr R. Bauer, Offenburg)

Income	Euros
Subscriptions (18)	718.00
Donation	300.00
Springer Verlag (IHSP)	156.17 [royalties]

Total	1174.17
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Expenditure	
Asst. Sec. trav. exp.	461.96
Bank charges	25.00

Total	486.96
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Balance brought forward 31/12/10	4939.50
Income – Expenditure 2011 (deficit)	687.21
Balance carried forward 31/12/12	5626.71*

US Dollars (Account holder: Dr R. Dorsch, Houston)

Income	US\$
Subscriptions (2)	198.96

Balance brought forward 31/12/11	2311.00
Income – Expenditure 2011	198.96
Balance carried forward 31/12/12	2509.96

Swiss Francs (Postcheck a/c, holder R. Deubelbeiss)

Income 2012	CHF
Subscriptions (3)	120.00
Donations (D. Supthut)	100.00

Total	220.00
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Expenses 2012

None	
Balance b/f 01/01 2012	1629.30
Income – Expenditure 2012	220.00
Balance c/f 31/12 2012	1849.30

Auditors' Reports

We the Audit Committee certify that we audited the books and accounts of the IOS and found no discrepancies. Dated 28 August 2013

(signed) Fred Kattermann

Having received the above report, the second Auditor (H. Wittner) submitted a further report to the IOS Board on 28 August 2013 confirming the accuracy of the figures but claiming that the money in the above accounts 'does not belong to IOS' and raising other issues to be considered by the Board prior to its next Meeting.

*The end of year balance in the British Pounds cash account held by the Secretary was transferred in full to the Central Reserve account on 18 September 2013, and (after payment of the grant of Euros 2000 to Dr Guerrero (Chile), an amount of Euros 3500 (= GBP 2863.22) from the Euro account was transferred to the Central Reserve Account on 2 October 2013. The balance in the Central Reserve Account, as of 21 October 2013, stood at GBP 50184.47.

Sara Oldfield, Hon. Treasurer

Hinostrosa), and the other provisionally entitled ‘*Recent Studies in the Opuntioideae*’, for which various contributions have been submitted.

David Hunt (IOS Secretary)

A note on our regional currency accounts

For many years, IOS members in the UK and the US have been able to pay their subscription (or ‘Membership Fee’) in their usual currency via a local member representative. This has not only been an easy and convenient way to pay but avoided or reduced costs in bank charges. More recently, with many of our members living in the Eurozone experiencing difficulties (and incurring bank charges) transferring money to Switzerland (see IOS Bull. 14(2): 20, 2007, and 15(1): 13, 2008), a Euro account was set up in Germany and (after the change of Treasurer and transfer of the IOS Reserve Fund to London) a Postcheck account in Switzerland for members paying in Swiss Francs.

These arrangements have been made simply for the convenience of members and have always worked well. Whilst interest rates worldwide have remained at an all-time low, the Treasurer has allowed the accumulated funds in the regional accounts to remain there and be used occasionally to pay research grants, travel expenses, printing and postage costs etc in the relevant currency, as will be apparent from the annual summaries published in the Bulletin (IOS Bull. 15(4): 107, 2011, 15(5): 134–135, 2012, and here, facing page). In view of the decision of the Havana Congress to retain the Membership Fee, however, and to facilitate future audits, funds accrued in the GBP and Euro regional accounts have been transferred to the Central Reserve Fund. The balance in the US \$ account remains available to meet costs which may be payable by IOS in connection with the forthcoming Congress in Arizona.

Héctor Hernández, President; David Hunt Secretary; Sara Oldfield, Treasurer

Summaries of Inter-Congress Presentations

Mapping the Cacti of Mexico

Héctor M. Hernández and Carlos Gómez-Hinostrosa

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We presented the first product of a long-term project aimed at mapping all the species of Mexican cacti. Detailed maps of the global distribution of 33 genera and 114 species of cacti occurring in Mexico were included in the first publication. All maps were built with the best available set of documented information derived from herbarium specimens. We used a subset (5,783 geographically referenced records) of a large database of herbarium specimens of Cactaceae, primarily from North and Central America, and the West Indies, containing relevant information of 68 institutional herbaria. Examination of the maps and their associated data let us formulate some generalizations regarding the biogeography of the Cactaceae in the Northern Hemisphere: 1) In North America cactus populations are distributed from sea level to 3,250 m, but the majority of records occur in areas of moderate altitude. In Central America populations prefer lowland areas below 500 m altitude. In turn, in South America cactus populations are established over a much wide elevation range, with 29% of the records corresponding to localities found between 2,000 and 4,500 m. 2) The analysis of the 122 species mapped here confirms previous findings that globally the richest assemblage of cactus species occurs in the southern portion of the Chihuahuan Desert. 3) Geographic disjunctions at different scales are always present in the distri-

bution of cactus species. 4) The distribution size (area of occupancy) of cactus species is extremely variable, with a great number of species occurring in exceptionally small areas. 5) Closely related cactus species have prevalently segregated, allopatric distributions, suggesting that allopatric speciation has been the dominant mode of evolution.

Molecular phylogenetic studies in *Sempervivum* and *Jovibarba* (Crassulaceae)

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Sempervivum and *Jovibarba* (Crassulaceae) are two prominent members of the European mountain flora. They can easily be recognized in the field by their polymorous flowers and rosettes of succulent leaves which often are patchily distributed as a result of clonal propagation. A family-wide phylogenetic analysis placed them together in a well-supported clade, but relationships within that clade remained unresolved. By sequencing two nuclear (ITS and parts of IGS) and three chloroplast DNA markers (atpI-atpH, rps16-intron, trnQ-rps16) for all species, we derived the first molecular phylogenetic hypothesis on relationships within and among these genera. Our analyses showed that *Sempervivum* and *Jovibarba* are monophyletic sister genera. Molecular dating estimates showed that although the two genera diverged from each ca. 5-7 mya, most of the diversification within *Sempervivum* took place roughly within the last ca. 1-2 my. Although one might expect the genera to have originated in the Alps, as they are the main centre of species diversity, our ancestral area reconstruction analysis showed that they rather originated in the Balkan Peninsula. Lowland taxa are derived in our phylogeny which suggests their origin from mountain taxa. Several taxa were found to be polyphyletic. Hybridization poses a serious challenge to inferring phylogenetic relationships within *Sempervivum*. Three well supported but conflicting clades were found when comparing the nuclear and chloroplast trees in spite of the low resolution of the chloroplast data. On the other hand, the geographical distribution of hybrids and hybrid taxa allow us to partially reconstruct the past distribution of parental species.

Towards a protocol for management of genetic variation of *ex situ* living cactus collections

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Worldwide about one third of all plant species is threatened with extinction. Botanical gardens play a key role in conservation of plant diversity, and as is stated in Target 8 of the GSPC, at least 75 % of threatened plant species should be present in *ex situ* collections. However, only about 30 % of globally threatened plant species are currently held in living collections. These have to be genetically representative, but information about the genetic diversity present in such collections is scarce, even for horticultural significant plants like cacti, although it is estimated that diversity is low in numerous species. Moreover, our knowledge about genetic diversity of threatened plant species in general is quite restricted. This lack of insight in genetic diversity of

threatened plant species heavily contrasts with the broad knowledge about crops and their wild relatives. We still have a long way to go to study genetic diversity in threatened plants, conserve an important part of this diversity in ex situ collections, define which percentage of genetic diversity might be feasible and/or desirable to aim for, and finally, make this available for conservation and restoration projects.

One of the aims of our PLAN(E)T project is the comparison of genetic diversity between wild populations and ex situ collections of the three Chilean cactus genera *Copiapoa*, *Eriosyce* and *Eulychnia*. A range of genomic tools (barcoding, microsatellites, AFLP, RAD sequencing) will be applied to wild and ex situ individuals of nine selected species to enable rapid characterization of genetic variation, providing: (1) support for specific conservation actions, and (2) general guidelines and a protocol on genetic management for acquiring accessions for ex situ collections, to be used by collectors and botanical gardens worldwide in the framework of achievement of Target 8 of the GSPC. As a first step in the project, botanic gardens worldwide were queried for detailed information about their entire *Copiapoa*, *Eriosyce* and *Eulychnia* collections. This will allow us to investigate the global extent of living ex situ collections of these genera, to assess and discuss their usefulness for cultivation and restoration programs and inform priority actions for conservation of their threatened taxa

Diversity and evolution of succulent *Peperomias* (Piperaceae) from the Neotropics

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The genus *Peperomia* is with approximately 1650 species one of the largest angiosperm genera. It is characterized by an amazing morphological diversity, reflected by the wide range of habitats in which species occur, both terrestrial and epiphytic. Several monophyletic clades restricted to the Neotropics consist of exclusively terrestrial species which are often highly endemic. We will focus here on the diversity and evolution of two of these groups with succulent species, for which we have performed taxonomical, phylogenetic, phylogeographical and/or dating studies, based on material from our field work throughout their distribution area.

The first clade consists of approximately 60 tuberous species growing in seasonal habitats of high altitude mountain areas from northern Mexico to Argentina. This subgenus is nearly equally diverse in the northern hemisphere (Mexico and Guatemala) as in the southern hemisphere (Peru and Bolivia), with only a few from a limited number of localities between these two hotspots. There is a strong correlation between diversification within this clade and orogenic events in the respective distribution centres.

The second clade consists of approximately 40 so-called window-leaved species, mainly occurring in the seasonally dry tropical forest in the rain shadowed inter-Andean valley of the Río Marañón of northern Peru. In this clade we detect a very strong geographic pattern, probably combined with processes such as hybridization and introgression, as well as the evolution of cryptic species.

Werner Rauh's Centenary and the Werner Rauh Heritage Project

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Werner Rauh (1913–2000), one of the most famous German Botanists of the 20th century, was a member of IOS from 1959 until his death, Vice-President 1976–1982, President 1982–1984 and first recipient of the *Cactus d'Or* (1978). His enormous scientific assets, archived at Heidelberg and Bonn, are being opened up systematically by the 'Werner Rauh Heritage Project' (Koch et al. 2013), generously funded by the Klaus Tschira Foundation. On the occasion of the 10th IOS Intercongress Meeting at Berlin this brief presentation of recent results of research on his biography was given, a few days before the centenary of Rauh's birth.

Werner Rauh was born on May 16th 1913 at Niemegk (Bitterfeld District, eastern Germany) the son of elementary teacher Ernst Rauh (1888–1968) and his wife Emma (née Beyer, 1882–1971). After attending the elementary school at Niemegk (1919–1923) he received his 'Abitur' (high-school examination) at Mackensen-Reform-Realgymnasium at Bitterfeld (1923–1932). Rauh's first scientific interest was not botany, though the country around his home was characterized by a rich riparian meadow landscape, but archeology. His father's colleague Albert Querfurth (1896–1955), still remembered in Bitterfeld District as a local historian, had a strong influence on Rauh's youth. They both excavated a number of graves from bronze-age and slavic times in the region of Bitterfeld, the finds from which are kept in the District Museum Bitterfeld and in the State Museum of Prehistory Halle (Saale). Beyond that Querfurth opened the eyes of the boy to the rich and untouched nature of the Mulde meadows.

After grammar school he decided to study archeology but he realized that this subject was strongly influenced by a nationalistic ideology, which he found distasteful. So he decided to study a subject which was less susceptible to nationalistic propaganda: 'Rerum naturarum', which means botany, zoology, chemistry and geology. He commenced his studies at Leipzig University (Saxony, Germany) in autumn 1932 but attended only one course for two semesters: 'Spiel- und Wanderkurs' (games and hiking), taught by the founder of sports science Hermann Altrock (1887–1980), an excellent preparation for his later studies and field work. After the assumption of power by the National Socialists every student had to become member of a NS organization. As Rauh wanted to avoid any contact with the Nazis he decided to leave Germany and continued his studies from the summer term 1933 at Innsbruck University (Tyrol, Austria). Here he received a very important influence on his scientific life from Helmut Gams, Adolf Sperlich and Arthur Pisek (alpine botany and plant physiology) as well as Bruno Sander and Raimund Klebelsberg (geology and mineralogy). It was at Innsbruck as well that he met his lifelong friend Hermann Meusel (1909–1997, fig. 1), later Director of the Botanical Garden Halle (Saale). When all Germans were dismissed from Austria in the summer of 1934 Rauh returned to his home together with Meusel and continued his studies at Halle University. Here plant morphologist Wilhelm Troll (1897–1978, fig. 1) became his most important teacher, with whom he kept in contact until Troll died. At Halle he also met Theo Eckhard (1910–1977, fig. 1), later Director of the Botanical Garden and Botanical Museum Berlin. In March 1937 he finished his studies with a thesis on hypocotyle- and root-offsprings (Rauh 1937) and qualified as a grammar school teacher in June 1937, which gave him the chance to earn some money. He continued his scientific work with research on cushion plants, a result of his passion for alpine flora. In the same year he received an offer from Wilhelm Schäfer (1912–1981) to take part as botanist with an zoological expedition to Tibet. But there was a condition: he would have had



Fig. 1. from left: Meusel, Rauh, Troll (4th) and Eckhard (7th), ca. 1936.

Photographer unknown, reproduced by permission of the Botanical Garden Halle (Saale)

to a become member of the SS. Unwilling to take part in the national socialist regime Rauh declined Schäfer's offer, which might have been a great chance to study high mountain vegetation not only in the herbarium or garden. Consequently he had to restrict his fieldwork to Europe (Corsica and the Swiss Alps, in 1938).

As Troll had no position for Rauh, Rauh moved to Heidelberg University and was appointed a Scientific Assistant by August Seybold (1901–1965), which allowed him to marry Hilde Dietze (1912–1997) in January 1939. Later in the year he finished his Habilitation on cushion plants (Rauh 1939), with more than 80 morphological drawings from his own hand (fig. 2). On January 11th 1940 Rauh was appointed a university teacher, but only two months later called up to serve in the German navy as a meteorologist. During his military service he had a lot of time to study the vegetation and climate of different regions, e.g. Ukraine, Scandinavia and Greece. (There he found his first new species: *Crocus athous* Bornm.!) In spite of all that he managed to complete his work on the morphology of crop plants (Rauh 1941). Shortly before the end of World War II Rauh was dismissed from army service and returned to Heidelberg, where he was one of the most active teachers in regenerating the University after the war. In June 1947 he was appointed 'non regular extraordinary Professor of Botany'.

In 1951 he had his first chance of a longer expedition outside Europe, so he travelled to the High Atlas in Morocco. The next expedition led him to Peru in 1954, where he stayed for about nine months (fig. 3). In total he undertook at least 66 expeditions (map 1) and stayed in the field for at least 120 months until 1994! The countries he visited most often were Peru (12 times) and Madagascar (11 times) (Koch et al. 2013). On December 28th 1955 Rauh was appointed extraordinary Professor, with a salary of 8,200 DM – per year.

During his first expedition to Madagascar (1959/60) he received an invitation from Berlin, which he refused, because Seybold and the faculty at Heidelberg founded a new Institute for Systematic Botany and Plant Geography, of which Rauh became Director and Professor in



Fig. 3. *Saxifraga moschata*, original drawing for Rauh (1939) p. 330, Abb. 23.

Drawing: W. Rauh (Archives BG and Herbarium HEID)

ordinary in 1960, in addition to the post of Director of the Heidelberg Botanical Garden, which he held until his retirement in 1982.

He travelled a lot until his last expedition to Madagascar in 1994 and was regularly present in the Botanical Garden until a few weeks before his death. By the time he passed away on April 7th 2000, he had discovered about 1,200 taxa. About 700 of them he described himself and about 195 taxa were named in his honour, e.g. *Rauhia* Traub. (Amaryllidaceae) and *Rauhocereus* Backeb. (Cactaceae) from Peru, *Rauhiella* Pabst & Braga (Orchidaceae) from Brazil, the species *Tillandsia rauhii* L.B.Sm. (Bromeliaceae) and, most recently, *Peperomia wernerrauhii* Pino & Samain (Samain et al. 2011). His collection in the Herbarium HEID contains approximately



Map 1. Countries visited by Rauh; for countries in dark green with names there are field books existing; countries in paler green are documented by herbarium vouchers or other documents only.

(Map: Chr. N. Schröder)

25,000 specimens, and the Botanical Garden has 2,100 accessions, among them representatives of the 1,200 taxa he collected himself. Further biographical information has been published by Drüll (2009), Hagemann (1978, 1988) and Schröder (2013).

The collection resources at the Heidelberg Botanical Garden and Herbarium and the Nees Institute Bonn referring to Rauh's fieldwork comprise not only plant material (living or herbarium vouchers) but a lot of note books (at Bonn 97 field books with ca. 10,000 hand written pages, and at Heidelberg 94 field diaries with about 8,000 pages). There are also innumerable other documents, such as photographs (ca. 91,000 in Bonn), correspondence, hand-written drafts of protologues etc. Since 2009 this material has gradually been made accessible within the 'Werner Rauh Heritage Project' by scanning the field books and entering their data (gathering numbers, date, locality, taxon etc.) into a relational database (MySQL, JavaScript- & PHP-Scripts on a Linux-driven Apache web server), available free for everyone (Koch et al. 2013). At the moment more than 33,000 datasets with original Rauh numbers are stored in the database. An additional 27,000 accessions brought or sent to the Botanical Garden Heidelberg by a third party and not directly contributed by Rauh, were subsequently assigned 'pseudo-Rauh-numbers' by him using numbers following the last number used for the last finished expedition.

Within the next academic triennial (2013–2016) the project will focus on Rauh's herbarium collections housed around the world (e.g. B, DPU, GH, HB, HEID, HUH, K, M, MO, MPU, NY, P, PRE, SEL, TAN, USM, W, ZSS ...). A 'Virtual Rauh Herbarium' will be built up with the particular objective of completing datasets for type collections. We hope to succeed in finding funding to scan the field diaries as well, which contain a lot of first descriptions of new taxa and, most important, very detailed locality data. Beyond that we will complete the data for three typical expeditions (all localities and taxa), one from Madagascar, one from Peru and one from southern Africa.

Acknowledgments

I greatly acknowledge funding provided by the Klaus-Tschira Foundation gGmbH (KTS in Heidelberg). I thank Marcus Koch, Director of the Botanical Garden and Herbarium HEID and Director of the Centre for Organismal Studies (COS) for leading the project, and all my col-

leagues at COS, BG and Herbarium HEID for their continuous support. I gratefully acknowledge support and loan of field books from Emeritus Professor Wilhelm Barthlott and Dr Daud Rafiqpoor (Bonn). For very fruitful scientific discussions I am grateful to Dr Urs Eggli (Zurich). My thanks for information on Rauh's biography are due to the Botanical Garden Halle (Saale), the University Archives at Heidelberg, Innsbruck and Leipzig, the University Library Heidelberg, District Museum Bitterfeld and State Museum of Prehistory Halle (Saale). Last but not least I thank the IOS for approving the Werner Rauh Heritage Project and all members for helpful discussions and information.

Some examples of vivid datasets

Aloe alfredii Rauh [Rauh & Alfred Razafindratsira 68690, Type-collection]

Cassytha baccifera J.S. Muell. [Rauh 37133]

Ceropegia simoneae Rauh [Rauh 73313, Type collection]

Euphorbia cylindrifolia Marn.-Lapost. & Rauh [Rauh 74343]

References

- DRÜLL, D. (2009). Rauh, Werner. Heidelberger Gelehrtenlexikon 1933–1986. Springer, Berlin, pp. 484–485.
- HAGEMANN, W. (1978). Herrn Professor Dr. Werner Rauh zum 65. Geburtstag. Bot. Jahrb. Syst. 99: 139–142.
- HAGEMANN, W. (1988). Herrn Prof. Dr. Werner Rauh zum 75. Geburtstag. Beitr. Biol. Pflanzen 63: 1–16.
- KOCH, M.A., SCHRÖDER, C.N., KIEFER, M., SACK, P. (2013). A treasure trove of plant biodiversity from the 20th century: the Werner Rauh Heritage Project at Heidelberg Botanical Garden and Herbarium. Plant Syst. Evol. 299: 1793–1800. DOI 10.1007/s00606-013-0835-5
- RAUH, W. (1937). Die Bildung von Hypocotyl- und Wurzelsprossen und ihre Bedeutung für die Wuchsformen der Pflanzen. Nova Acta Leopold. NF 4(24): 396–553.
- (1939). Über polsterförmigen Wuchs. Nova Acta Leopold. NF 7: 268–508.
- (1941). Morphologie der Nutzpflanzen. Quelle und Meyer, Leipzig.
- SAMAIN, M.ST., MATHIEU, G., PINO, G., SYMMANK, L. et al. (2011). The geophytic *Peperomia* subgenus *Tildenia* (Piperaceae) in the Andes with the description of new species in a phylogenetic framework. Pl. Ecol. Evol. 144(2): 148–176. DOI doi:10.5091/plecevo.2011.470
- SCHRÖDER, C.N. (2013): Von den Mulde-Auen zur Cordillera Blanca — Zum 100. Geburtstag des Botanikers Werner Rauh (*16.05.1913 †07.04.2000). Die Bromelie 2013(2): 63–69 (part 1); l.c. 2013(3): 123–128 (part 2).

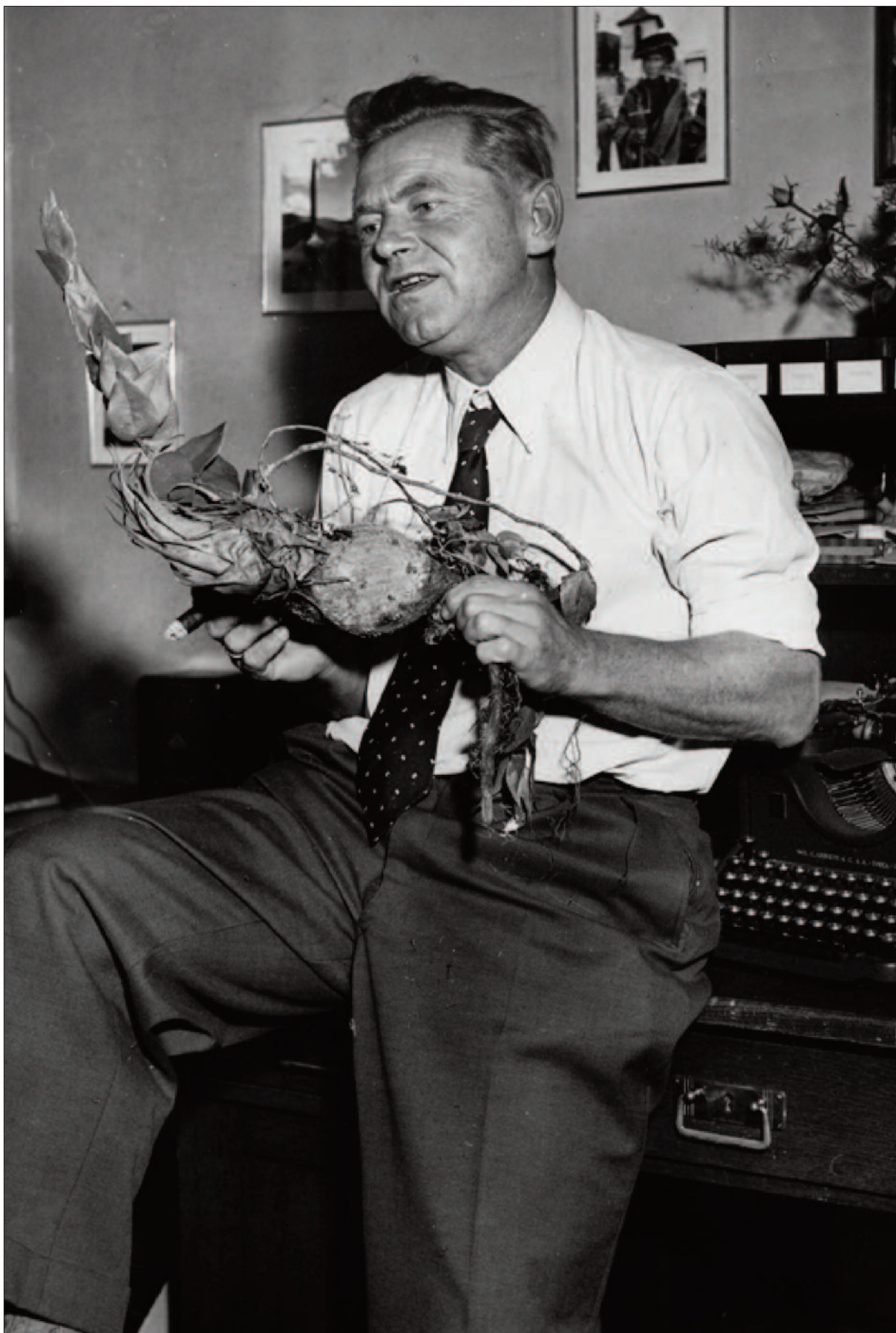


Fig. 3. Werner Rauh the day after his return from Peru in November 1954.

Photo: Voss jr. (Archives BG and Herbarium HEID)

Secretary's Notices

Election of IOS Executive Board 2014–2016

In accordance with IOS Statutes Art. 11, written nominations, proposed and seconded by members of IOS and bearing the consent of the member nominated, are invited prior to the Congress for the posts of President, Vice-President, Secretary, Treasurer and Assistant Secretary (Website Manager). Nominations must be in the hands of the IOS Secretary not less than three months before the Congress, that is, not later than 7 January 2014. If more than one nomination is received for any post, there shall be a postal ballot of all members, to be decided by a simple majority.

Members' attention is also drawn to Art. 17 (Amendments to Statutes) and reminded that proposals to amend the Statutes must also be in the hands of the IOS Secretary not less than three months before the Congress, that is, not later than 7 January 2014.

Proposal by the Executive Board to amend the IOS Statutes

Art. 10. Board Meetings. *Proposed re-wording:*

The Executive Board shall meet in person biennially prior to and/or after the Congress. Further meetings of the Board may be held at the discretion of the President.

Rationale: Now that much of the business of the Executive Board can be done by e-mail, the statutory requirement that the Board shall meet at least once per year is no longer a necessity. Reducing the frequency of meetings in person would also reduce the annual liability for IOS to offer a contribution to the expenses to Board members attending a meeting, currently the Organization's largest annual expense, by 50%. In practice, it is customary for the retiring Board to hold a meeting before the commencement of each Congress, and for the new Board re-convene after the Congress if it is wished to discuss matters in person before dispersing.

And a change of wording

Membership Fee. The decision of the Havana Congress to replace the term 'subscription' with 'Membership Fee' implies that the new term should replace the old in several of the Statutory Articles: **Art. 5**, paragraphs 3 and 6; **Art. 12**; **Art. 13**; **Art. 16** and Byelaws 2 and 3.

Review of current projects associated with IOS

Updated from IOS Bull. 15(5): 136–139 (2012)

[1] ***IOS Repertorium Plantarum Succulentarum*** (compiler Urs Eggli)

Issue no. 63 (for 2012) is now available 'open access' on the IOS website. It has been delayed this year by the flood of new names and all the problems (not unanticipated) relating to digital publication, coupled with the long wait for the new International Code of Nomenclature (ICN), governing nomenclature from 1 January 2012, that only became available late in the year, and has had to be considered retroactively, giving a large amount of additional work.

[2] ***IOS and Conservation*** (Chair of the IUCN-SSC Cactus & Succulent Plants Specialist Group)

The former IOS Conservation Section provided the basis for the formation of this IUCN-SSC group in 1984 and the majority of its members today are IOS members. The Group has been strongly involved in the *Global Cactus Assessment* project led by Dr Bárbara Goettsch, whose report is expected to be published early next year.

[3] ***Partnership with BGCI and Collections Survey*** (Sara Oldfield, Secretary General, BGCI)

Sara Oldfield and Kirsty Shaw are continuing to receive data from botanic gardens and are collaborating with our new members at the University of Ghent in their DNA studies to determine the genetic diversity of *ex situ* collections of the Chilean cactus genera *Copiapoa*, *Eriosyce* and *Eulychnia*.

4] **CITES Cactaceae Checklist ed. 3** (compiler David Hunt, Royal Botanic Gardens, Kew)

At the CITES Conference of the Parties ('CoP 16', Bangkok, March 2013) approval was duly given to the compilation of a new edition, entrusting it, as before, to the collaboration of numerous IOS member-sand other specialists. The content, though basically in the same format as previous editions, must first satisfy the CITES Plants Committee, as the Parties wish changes to the previous edition to be kept to a minimum, to avoid costly updates of their permit systems and confusion among traders, enforcement agencies and users generally. A full draft text is to be produced and approved by the Plants Committee for submission to the next Conference of the Parties in 2015, so publication cannot be expected before 2016. Though the intended role of the Checklist is advisory, not mandatory, it is possible that the new edition will be designated by the Convention as a 'Standard Reference'.

[5] **New Cactus Lexicon** (compiler David Hunt)

A new edition of the sought-after 'Atlas' volume of illustrations was published in August this year. As the first edition has been used alongside the previous edition of the CITES Checklist by some Parties to the Convention, the changes made in the new edition are mainly corrections and updates.

[6] **Illustrated Handbook of Succulent Plants** (editor Urs Eggli, SSZ)

Dr Eggli reports that the preparation of the Monocots volume is progressing well, with some 30% of the manuscripts in hand (June 2013) and in an advanced stage of editing.

[7] **Ritter's Cacti in Colour** (David Hunt, Paul Hoxey, Urs Eggli)

Publication of this work as a series of fascicles rather than a single, necessarily expensive, volume is now proposed. The first fascicle will be devoted to illustrations of *Copiapoa* and other Chilean genera, in which Ritter had a particular interest. An initial pre-print of the *Copiapoa* illustrations has been distributed to enthusiasts of the genus for their comments.

[8] **Phylogeny of the Andean Opuntioideae** (Christiane Ritz, Senckenburg Museum Görlitz, et al.)

Initial results have been published in *Molecular Phylogenetics and Evolution*, and taxonomic and nomenclatural notes in *Cactaceae Systematics Initiatives* no. 25 (2011). DNA extracted from additional samples of *Maihueniopsis* spp. by Laura Las Peñas at the University of Córdoba in 2011 proved degraded. The study is being continued with material provided by new members Norbert and Elisabeth Sarnes from their *ex situ* collection in Germany. Meanwhile, in Córdoba, Laura Las Peñas has obtained chromosome counts for several of the samples surviving from 2011.

[9] **Molecular systematics and phylogeny of Opuntia series Armatae and Aurantiacae**

The manuscript by the UBA group mentioned in the previous update was submitted to a leading European journal in 2012, but initially rejected. When in Buenos Aires in March this year, the Secretary held meetings with the authors to discuss the reasons for its rejection and the further work needed and agreed to help with improvements. The authors are handicapped by lack of finance for laboratory consumables. An application from them for supplementary support from IOS which has been granted.

[10] **Biodiversity and Biogeography of Cacti** (Wilhelm Barthlott, Nees Institute, Bonn)

In June 2012, Professor Barthlott indicated that the manuscript would 'go into print in the very near future'.

[11] **Mapping the Cacti of Mexico** (Héctor Hernández & Carlos Gómez-Hinostrosa, IBUNAM, Mexico)

Good progress has been made with the mapping of all species of *Mammillaria* for the second volume in this series.

[12] **Phylogeny of the Hylocereeae (Cactaceae)** (Thomas Borsch & Nadja Korotkova, BGBM)

The initial grant offered by IOS in February 2012 was not claimed. In a personal message to the Secretary dated 21 December 2012, Professor Borsch commented that "all supplies for doing the molecular work involved in this proposal" had been paid by BGBM itself.

[13] **Molecular systematics of *Eriosyce* (Cactaceae)** (Pablo Guerrero & Helmut Walter, Chile)

In response to the proposers' application for funds for sequencing of two additional markers, a grant of Euros 2000 was agreed and paid earlier this year. This amount was sufficient for one marker only, but we understand a grant for the second marker has been provided by a Cactus Society in the U.S.A.

Membership matters

Obituary

DR WERNER HOFFMANN (1925–2 April 2013)

It is with great regret we record the death of Werner Hoffmann, one of our most well-loved and distinguished members, after a most varied and productive life. Son of a nurseryman, he became interested in cacti as a schoolboy, and trained and worked as a horticulturist until his early forties, before becoming a student and later teacher at the technical college in his home town of Geisenheim. There he soon became known as the “Kakteenpabst” (Cactus Pope) after giving talks on the cacti he had studied in numerous trips to Peru, Chile, Argentina and Bolivia. It was in Argentina that he earned his better-known soubriquet “Potato Hoffmann” or “Kartoffel-Hoffmann” for his well-known project (1969–71) to promote the cultivation of potatoes in the Andes. He had a delightful personality and wide-ranging interests and achievements, and for German readers at least, his biography *Glücksklee, Wildkartoffeln und Kakteen* (2007) should be an entertaining read.

I

New Members of IOS 2013

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[O] **Changes to members' e-mail addresses**
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if you change your e-mail address!*

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Payment of Membership Fee for 2013–2014

The IOS membership fee for this two-year term was due on 1 January 2013. A minority of members have not yet paid and will receive a final reminder with the e-mail accompanying this issue of the Bulletin. Members who are in arrears will not be entitled to vote if there is a postal ballot for nominees to the Executive Board.

The Membership Fee for members with internet access is Euros 30.- or the equivalent in other currencies, payable as follows:

Payments in Euros via Dr Ralf Bauer

Please send your payment (**30 Euros**) to Dr Bauer's IOS account as follows:

For bank transfers within Germany: Volksbank Offenburg 66490000 Konto Nr.: 9043020

For transfers from elsewhere in the Euro zone the international codes are:

BIC: GENODE61OG1 IBAN: DE20 6649 0000 0009 0430 20

When paying by bank transfer, don't forget to give your name and address for identification!

Payments in US dollars (\$40) via Dr E.R. Dorsch (e-mail: cubuff8@aol.com)

Please make checks payable to: 'Ernst R. Dorsch' (**NOT** to IOS) and mail to him at:

13011 So. Jennywood, Cypress, TX 77429-2273, USA

NB: Checks must be drawn on a clearing bank in the USA

Payments in British Pounds (£25 GBP) via Dr D.R. Hunt

Please make cheques payable to: Dr D.R. Hunt (IOS account) and send to him at:

The Manse, Chapel Lane, Milborne Port, Sherborne, DT9 5DL, UK

NB: Cheques or money orders must be drawn on a London clearing bank

Payments in Swiss Francs (CHF 36) via René Deubelbeiss (rdeubi@sunrise.ch)

Members in Switzerland may make payment in Swiss Francs. Please contact René Deubelbeiss for method of payment.

Payments by PayPal or with Credit Card via PayPal

If you wish to pay electronically via Paypal, please contact the Secretary (secretary@iosweb.org) for instructions. A supplement to cover PayPal's commission will be payable.

IOS Publications

Repertorium Plantarum Succulentarum 63

The latest issue 'RPS', number 63 (for 2012), compiled by Urs Eggli & Reto Nyffeler, is now available 'open access' on the IOS website (iosweb.org). To quote the Compilers, 2012 was a very prolific one, both for new names (466) and literature references (527), and the issue runs to 48 pages plus cover. A small stock of paper copies has been printed for distribution to members requesting them, and these (also back numbers from no. 58), are available from the Secretary. A small charge will be made towards printing and postage costs.

IOS Bulletin volumes 14 and 15

Paper copies of all issues published from 2006 onwards, including the present issue, are also available from the Secretary while stock lasts. As for RPS, a small charge will be made towards printing and postage costs.

Please send enquiries to: secretary@iosweb.org

33rd IOS Congress 7–12 April, 2014

Venue: The Desert Botanical Garden, Phoenix, Arizona

Programme

The conference will have a keynote speaker, oral and poster presentations, exhibits and fieldtrips. A special one-day symposium dealing with the subfamily Opuntioideae and the genus *Agave* will be held during the conference. Tours of the Garden's exhibits will be conducted by DBG staff, in both English and Spanish.

Monday 7 April: Registration. IOS Board Meeting

Tuesday 8 April: Welcome, lecture session and welcome reception

Wednesday 9 April: Lectures and Opuntioideae and *Agave* Symposia

Thursday 10 April: Mid-conference field trip

Friday 11 April: Lectures, poster session and farewell ceremony and dinner

Saturday 12–Monday 14 April: Post-congress field trip

Registration: Please download the Registration Form, fill it out, save it, and send it as an e-mail attachment to the organizers: rpunte@dbg.org and asalywon@dbg.org

Accommodation

Accommodation will be at nearby hotels. Transportation to and from the meetings will be provided to selected hotels. You will be asked to book your own reservations directly with the motel or hotel.

Mid-Congress Fieldtrip: A one-day trip with a walk in the Sonoran Desert. This will provide participants with an opportunity to see natural Sonoran Desert plants including cacti and succulents such as *Carnegiea gigantea*, *Ferocactus cylindraceus*, *Mammillaria grahamii*, *Opuntia engelmannii*, *O. phaeacantha*, *Cylindropuntia acanthocarpa*, *C. spinosior*, *Agave verdensis*, *Agave chrysantha* and *Yucca baccata* as well as numerous wildflowers.

Post Conference Fieldtrip: A three-day excursion (3 days and 2 nights), exact itinerary to be determined. It will include sites in central and northern Arizona. Approximate cost per person, including hotels and meals, to be announced. A minimum of 15 participants will be needed.

Congress fees (to be announced). These will include: 1. Congress bag with program and abstracts book, t-shirt, notebook, and pen; 2. Welcome reception and entertaining; 3. Coffee and snack during breaks, 4. Lunches during lecture days, 5. Mid-conference Fieldtrip (includes lunch bag) and 6. Farewell dinner and entertainment.

Contact address and questions

Inquiries should be sent to the organizers: Raul Puente-Martinez & Andrew Salywon
Desert Botanical Garden, 1201 N Galvin Parkway, Phoenix, AZ 85008
Email: rpunte@dbg.org and asalywon@dbg.org
Tel: (480) 481-8110 Mobile: (602) 327-3235

If you are planning to attend the Congress and would like to take part in either of the symposia on Opuntioideae and the genus *Agave*, give a lecture on any of the following topics: Conservation, Morphology, Plant physiology, Molecular Biology, Systematics, Ecology, Propagation and Landscape Uses or contribute to the poster session

**please contact the IOS Secretary (David Hunt)
secretary@iosweb.org**