

NEW GUINEA, the largest tropical island, is divided into Papua New Guinea and Irian Jaya (Indonesia). It is one of the few remaining places with extensive tropical rain forests, still little known and undisturbed. Kew's first expedition to Irian Jaya (February - June 1994) began a new collaborative project on the flora and vegetation of NE Kepala Burung (the 'Vogelkop', named after the resemblance of this part of New Guinea to a bird's head). This and future expeditions are being funded by The John D. & Catherine C. MacArthur Foundation.

On the expedition were Robert Johns (Project Co-ordinator) and Martin Sands who were joined in the field for one month by Indonesian botanists Dr Johanis Moge (Director, Herbarium Bogoriense) and Soejipto Muliano (from the Herbarium in Manokwari, University of Cenderawasih). Staff from the Manokwari campus also participated in field studies, collecting and training. Twelve trips were made into Kepala Burung.

These visited vegetation types ranging from lowland tropical rain forest, montane forest and grassland, to sub-alpine forest and shrubbery on Mt Koebre (2,200 m).

Over 1,300 species were collected including many new to science. Several specimens are so different from anything previously known from New Guinea that they have not yet been placed to family.



EXPLORATION IN IRIAN JAYA

Above. The Irian Jaya expedition camp in lowland rain forest near the Wariari River.

Left. Possible new species in the family Annonaceae

Estimates from a database of existing collections (being prepared at Kew) and the new collections indicate that the flora of Kepala Burung might contain over 7,000 species of vascular plants. Three more expeditions into the area are planned and these will, no doubt, yield more important discoveries.

Contact: Robert Johns (0181-332 5293)

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Lower montane forest in the Arfak Mountains.



The expedition collected four wild species of banana (*Musa*); three appear to be undescribed species.



FERN FINDS

Thysanosoria pteridiformis

The expedition's fern collections are particularly exciting. The monotypic genus *Thysanosoria* and a rare endemic species of *Thayeria* were recollected. Both were first collected in Kepala Burung by Odoardo Beccari in 1862 and, whilst *Thysanosoria* was recollected by Lilian Gibbs in 1912, *Thayeria* remained known only from the single, original and incomplete specimen from the Arfak Mountains. Other significant fern finds include the first record of *Christensenia* from mainland New Guinea and several new species of *Asplenium*, *Pteris* and *Diplora*.

Director's Message: Conserving Biodiversity



Biodiversity is a word that has permeated Kew and has also become well known by many lay people because of the 1992 'Earth Summit' in Rio de Janeiro. At Kew we have been involved in the issues of the protection of biodiversity long before the term was coined by Walter G. Rosen in 1985 for a National Forum on Biodiversity held in Washington in September 1986. Deputy Director for Science, Dr Charles Stirton, who represented Kew at the Rio meeting, has just returned from a follow-up meeting in Mexico, where he was part of the UK delegation at the scientific and advisory meeting on the

Biodiversity Convention. In addition to this important political work at meetings, we are involved in promoting the conservation of biodiversity in many other ways. Dr Phillip Cribb (as Chairman of our new Conservation Co-ordinating Committee) explains our role in the UK Action Plan for Biodiversity, but we are also very involved in promoting and developing biodiversity action plans overseas and in building the capacity for countries to produce plans through education programmes. For example, the recent course on Plant Conservation Techniques, attended by students from nine nations, has action planning as a major part of its curriculum. This course is co-ordinated by the Education and Marketing Department but receives much input from many parts of the Gardens such as the Conservation Unit of LCD and the Seed Conservation Section of the Jodrell Laboratory.

Within the last two years, the LCD Conservation Unit and botanists in the Herbarium and the Jodrell Laboratory have been involved in developing action plans and recovery programmes for threatened species in several different countries. We have helped the Turkish authorities with a Global Environmental Facility (GEF) project on the *in situ* conservation of crop relations, with species recovery and habitat restoration of St Helena, and with the National Parks and Conservation Service of Mauritius, to name but a few of our involvements. Herbarium botanists have played a major role in obtaining GEF funds for the National Herbaria in both Kenya and Cameroon, and LCD has advised the Plant Conservation and Propagation Unit of the National Museums of Kenya. These and other activities reported in this issue show that we are extremely active in fulfilling our mission to ensure better management of the Earth's environment by increasing knowledge and understanding of the plant kingdom.



Kew botanists, Brian Stannard and Eimear NicLughadha, making collections.

Because of the threat to biodiversity, the study of which is the very reason for our existence, it is likely that the issues of biodiversity and conservation will play an increasingly important role in our programmes at Kew.

Prof. Ghilleen T. Prance, Director

Fen Orchid Re-established in UK

THE Sainsbury Orchid Conservation Project is working with English Nature on a Species Recovery Programme funded project to save the fen orchid, *Liparis loeselii* (right). The Norfolk Naturalists Trust and the Broads Authority aim to safeguard and increase the existing populations by appropriate management of sites in addition to re-establishing populations using material produced *ex situ*. The Sainsbury Orchid Conservation Project has already germinated seeds from the Norfolk sites with a symbiotic fungus in the laboratory and approximately 20 seedlings have been offered for a re-establishment trial in November 1994.

Seedlings of *Orchis laxiflora* raised symbiotically from Jersey seed will also be available this autumn for a re-introduction programme by the National Trust for Jersey. These projects form part of the UK Action Plan for Biodiversity.

Contact: Margaret Ramsay (0181-332 5559)



Kew & the UK Action Plan

- When the Royal Botanic Gardens were founded in 1759, Kew was a quiet country village. Nowadays, Kew lies well within the Greater London conurbation but still provides a sanctuary for wildlife.

- The survival of areas of conservation value in urban settings is one of the concerns of the Government report *Biodiversity: the UK Action Plan*, published in January, which Kew has helped to develop. The 1992 Convention on Biological Diversity required all signatories to produce national biodiversity action plans.

- Of particular interest to Kew, the UK Action Plan recommends the development of management plans for all Sites of Special Scientific Interest (SSSIs). We are already implementing management plans for both the Queen's Cottage conservation area at Kew and the important Loder Valley Reserve at Wakehurst (designated a SSSI). The number of insects, animals and plants recorded in these protected areas has already increased.

- The UK Action Plan encourages increased public awareness of the need to conserve biodiversity. Kew's educational programmes, presentation in the media and exhibitions, and display signing, are all part of Kew's efforts to sell conservation to our visitors and the public at large.

- The Species Recovery Programme that is advocated by the Action Plan has formed a major part of Kew's UK conservation work for over a decade. Several endangered British species have been propagated at Kew for re-establishment into the wild. The notable success of the Sainsbury Orchid Project, which has worked closely with the County Naturalists' Trusts and English Nature, has given renewed hope that rarities such as the lady's slipper orchid will survive as a native species. At Wakehurst, the Seed Bank is working within the Programme to collect and conserve seed of species listed in Schedule 8 of the Wildlife and Countryside Act.

- Our involvement with the Biological Diversity Convention and the UK Action Plan has brought into stark focus both the interlinking of our conservation activities and the high level of cross-departmental working which has evolved over the years. Kew's Corporate Strategic Plan now recognizes conservation as one of the major scientific programmes.

- Recently, the Conservation Co-ordinating Committee has been established to strengthen and speed the network of Kew's conservation actions, both inside and outside the institute, in the UK and overseas. This network is essential, for none of Kew's conservation programmes would be possible, or indeed desirable, without the partnership of numerous national and international institutions, organisations and scientific colleagues.

Dr Phillip Cribb
Chairman, Conservation Co-ordinating Committee

The opening of the new Mycology Building earlier this year maintains a long tradition of research into the kingdom Mycota (Fungi) at Kew and provides a firm base for continued expansion well into the next century.

BUILDING FOR THE FUTURE

FOLLOWING years of limited space availability, the Mycology Section has taken over a building adjacent to the Herbarium vacated by the CABI International Mycological Institute. The building underwent major structural alterations and extensive refurbishment before it became available in January 1994. By the end of February, the Herbarium mycologists had completed moving the collections, equipment and offices.

The new building houses the mycological herbarium, reference library and a fully-equipped suite of laboratories. The previously dispersed herbarium collections have now been brought together under one roof, recurated to reflect current phyletic thinking, and stored on purpose-built compactor shelving. With over 700,000 specimens, including many thousands of 'type specimens', it is one of the largest and most important reference collections of fungi in the world. It is proposed to prepare a database of all the type and authentic collections, with a view to making the information available world-wide through Internet.

The library has been reorganised on a geographical basis and there are separate rooms for illustrations, reprints and the library of the



David Pegler outside the new Mycology Building.

British Mycological Society. The laboratories will enable living material to be cultured; work on temperate and tropical wood-rotting fungi is underway and further research on the order Ceratobasidiales, which contains many well-known plant pathogens, is about to begin.

With their programme of existing and future projects, plus the new building to house them, Dr David Pegler and his colleagues, Dr Brian Spooner, Peter Roberts, Gill Butterfill and Dominic Hilton, are confident of maintaining Kew's international reputation as a leading centre for mycological research.

Contact: Dr David Pegler (0181-332 5257)

New Classification for Higher Fungi

At the 5th International Mycological Congress in Vancouver (14-20 August 1994), Dr David Pegler proposed a new general purpose classification of the Basidiomycotina, the subdivision of fungi (referred to in the past as 'basidiomycetes') containing the mushrooms and toadstools, bracket fungi, puffballs, and jelly-fungi. This is based on ultrastructural differences in the apparatus of the hyphal septum, upon which three classes, Basidiomycetes, Teliomycetes and Ustomycetes, are proposed. The Basidiomycotina may now be divided into 44 orders and 162 families. The classification will be utilized early next year in the new 8th edition of *Ainsworth & Bisby's Dictionary of Fungi*.



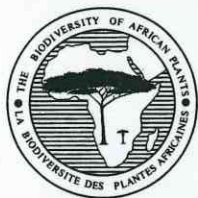
Action for British Fungi

The biodiversity of fungi in Britain is still incompletely understood. Kew holds the British national mycological collections and a major part of the Mycology Section's remit concerns taxonomic studies of British mycota. Current work includes the 'Ascomycetes of Great Britain & Ireland' project that will produce a critical survey of, and an identification guide to, over 5,000 species of native non-lichenized ascomycetes. The project, financed by NERC, is being undertaken jointly with the Liverpool John Moores University and the CABI International Mycological Institute. Dr Brian Spooner is the chief investigator at Kew, and the project's research assistant, Dr Yi-Jian Yao, is

based full-time in the Section. A further project has been proposed to establish a UK national database and reference checklist for the Basidiomycotina in co-operation with the Royal Botanic Garden, Edinburgh. Already completed is a revised account of the British gasteroid fungi ('gasteromycetes'), *Puffballs, Earthstars, and Stinkhorns* (by D.N. Pegler, B.M. Spooner and T. Laessøe) which will appear in book form as a Kew publication. These projects on British fungi will provide a substantial input into the UK contribution to Agenda 21 of the Biodiversity Convention.

Contact: Dr Brian Spooner (0181-332 5256)

Gymnopilus junonius: a common British basidiomycete.



AETFAT

The theme of the XIVth Congress of the Association for the Taxonomic Study of the Flora of Tropical Africa (AETFAT), hosted by Wageningen Agricultural College, was 'Biodiversity of African Plants'. Almost half the 220 delegates were from Africa, a higher proportion than at any previous European meeting. Twenty-three delegates were from Kew, including Prof. Gren Lucas (Keeper, Herbarium) who gave the keynote address on strategic planning of Floras and databases for tropical Africa. The main part of the meeting was on lowland rain forest, savannas and arid regions, and informal discussions were valuable for formulating ideas for future work. Kew's contingent made considerable input into a symposium on generic delimitation in flowering plants. The next congress will be hosted at the University of Zimbabwe.

Contact: Prof. Gren Lucas (0181-332 5211)

FUELWOOD WORKSHOP

COLLECTION of fuelwood from native trees is having devastating effects on the fragile ecosystems of dry woodland in southern Africa. Several successive drought years have made the problem worse and there is a strong wish in Africa to reverse the process. During a workshop at the Forestry Commission Research Station, Harare (5-7 July), delegates from Botswana, Malawi, Mozambique, Namibia, Zimbabwe, the Netherlands and the UK identified the need for research on improving the quality and quantity of fuelwood in the semi-arid natural woodlands of mid-latitudinal southern Africa. There was a clear consensus that the effects of a range of management techniques should be tested at several representative African sites. The workshop organizers, Dr David Cutler and Dr Juliet Prior, are drawing up an application for funding from the European Union to this end. The workshop was jointly sponsored by Glaxo Holdings plc and the European Union.

Contact: Dr David Cutler (0181-332 5323)



Over-cutting of mopane for domestic use leads to habitat degradation at Chidyamakono, Zimbabwe.

Kew and the National Herbarium & Botanic Gardens of Malawi are to seek funding jointly for research in Malawi. The first proposal is for a field station on the Niyika Plateau at Chelinda to base botanical and ecological surveys.

Contact: Dr Dick Brummitt (0181-332 5247)

AFR

Two of the many faces of Africa: non-sustainable use of dry woodland for African scientists recognize the value of the flora to local people and have invited Kew continent's plant biodiversity. That 23 Kew botanists attended the

Scientific Exchanges Aid Flora



Patrick Masinde (left) and Abraham Muasya.

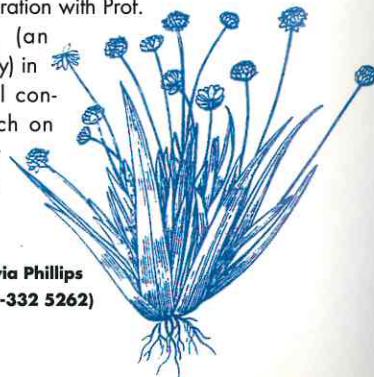
THE Global Environmental Facility (GEF) of the World Bank is funding scientific exchange visits between Kew and the National Museums of Kenya as part of its programme for the 'Institutional Support for the Protection of East African Biodiversity'. Two Kenyan botanists visited Kew this summer: Abraham Muasya worked on *Fuirena* and related genera of Cyperaceae with Dr David Simpson, and Patrick Masinde worked on Asclepiadaceae (particularly *Ceropegia*) with Dr David Goyder. The Kew botanists will soon make return visits to Nairobi and others will participate in the scheme over the next couple of years. The taxonomic studies achieved will contribute to the *Flora of Tropical East Africa* and, as envisaged by the GEF project, give it an important new impetus. Patrick has already helped the *Flora's* editor by assessing material in the Nairobi Herbarium.

Contact: Dr Roger Polhill (0181-332 5233)

African Pipeworts

THE Leverhulme Trust has granted £61,000 for Kew to undertake a two-year taxonomic study of Eriocaulaceae (pipeworts) for the *Flora of Tropical East Africa* and *Flora Zambesiaca*. Sylvia Phillips will undertake the study; she has already prepared an account of the family for the *Flora of Ceylon*. Pipeworts occur mostly in damp places and their variability has led to considerable taxonomic confusion. Species identification depends on the complexities of the tiny flowers, the profusion of structures in the flower heads, and fine patterning on the seeds. The project will involve some fieldwork in East Africa and collaboration with Prof. Thomas Stützel (an expert on the family) in Germany. It will contribute to research on wetland ecology and conservation in tropical Africa.

Contact: Sylvia Phillips (0181-332 5262)



Eriocaulon annuum (x 0.6)

THE MOUNT CAMEROON PROJECT



New species of *Impatiens* from Etinde.

Kew has prepared a \$450,000 contract for the GEF Cameroon Biodiversity & Conservation Management Project, administered by the World Bank. The grant will help the National Herbarium of Cameroon to maintain its collections and assist with field surveys and the publication of *Flore du Cameroun*. The Mount Cameroon Project is also expected to benefit from this GEF Programme.

Contact: Dr Roger Polhill (0181-332 5233)

THE ODA and the Government of Cameroon approved, in August, another three years' funding for the Mount Cameroon Project. Mt Cameroon is a centre of plant diversity in an area with possibly the richest tropical rain forest in Africa. The Project, based at the Limbe Botanic Garden, was set up in 1988 with the advice of Kew botanist Nigel Hepper to protect two areas of forest: the 300km² Etinde Reserve on the main massif and the 36km² Mabeta-Moliwe Reserve in the eastern foothills.

During the first term of the Project, Kew advised on the management of the Botanic Garden and helped undertake botanical inventories in the forests (with funding from ODA and Earthwatch). About 9,800 specimens were gathered in a series of four inventories; in the first, about one in 70 fertile collections were species new to science. Over 50 new species have been discovered so far, with specimen identification still incomplete. Stuart Cable is assisting with the naming on a one-year ODA contract. Kew has also trained several Cameroonian Project staff; for example, the Project Director, Nouhou Ndam, worked at Kew from 1989-90, and this summer Christopher Fominyam and Joseph Nkefor attended the Botanic Garden Management and Plant Conservation Techniques courses.

The Project's next phase will be more broadly based and operate alongside long-term GTZ (German Overseas Aid) support for conservation work. Parallel support from GEF is likely to be forthcoming. The prospect is for a unified project that will include the whole mountain.

Contact: Dr Martin Cheek (0181-332 5431)

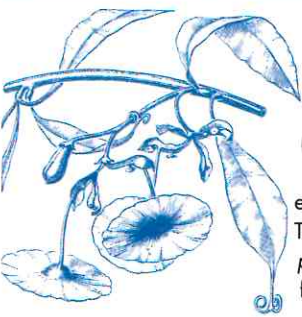


Forest in the Etinde Reserve. Mt Cameroon contains 50 strictly endemic and 50 near endemic species.

ICA

Wood in Zimbabwe; biodiversity conserved in the forests on Mt Cameroon. help in several projects to document, conserve and manage the sustainable use of the recent AETFAT Congress indicates the extent of this co-operation.

Clues to Carnivory



Triphyophyllum peltatum, fruits (x 0.3)

DNA analysis of the curious carnivorous plant from West Africa, *Triphyophyllum peltatum* (Diocophyllaceae), has placed it near to Droseraceae and Nepenthaceae. The juvenile plant of *T. peltatum* forms a rosette of fly-paper traps, similar to *Drosera*. However, the mature plant is a liana, like *Nepenthes*, but without traps. Leaf tissue from the botanic garden in Abidjan, Ivory Coast (sent by Prof. Laurent Ake Assi), allowed Dr Mark Chase to sequence the *rbcL* gene. Previous studies by Mark and co-workers demonstrated that Nepenthaceae and Droseraceae are closely related. The new results provide taxonomic support to the view that *Drosera* and *Nepenthes* represent fixations of juvenile and adult phases of a *Triphyophyllum*-like ancestor.

Contact: Dr Mark Chase (0181-332 5364)

DARWIN INITIATIVE PROJECTS

Forest Regeneration Mount Cameroon

This three-year project in Cameroon started in March and is studying regeneration both in lowland forest after small-scale timber extraction, and on abandoned fallow farmland. The project will also produce an identification guide to the principal forest seedlings. Nouhou Ndam (Mount Cameroon Project), Dr John Healey (Univ. North Wales at Bangor) and Dr Martin Cheek (Kew) are the principal investigators, and Penny Fraser has been appointed as a full-time research officer, working with Nouhou and local assistants at the Mount Cameroon Project, Limbe. A Land-Rover and metering equipment have been purchased and Nouhou plans to write up part of the work for a PhD.

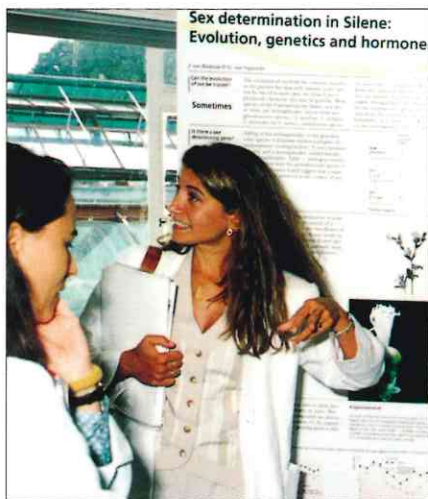
Rheophyte Survey Ghana



Collecting rheophytes.

Rheophytes are plants adapted to flowing water. Some tropical plant families, such as Podostemaceae, are obligate rheophytes often with highly localized species. This project will examine the correlation between rheophyte diversity, water quality and forested/deforested areas in Ghana. The researchers are Gabriel Ameka and James Adamoko (Univ. Ghana), K.A.A. 'Diggy' De Graft-Johnson (Ghana Inst. Aquatic Biology, Accra), Dr Mike Swaine (Univ. Aberdeen) and Dr Martin Cheek (Kew). A Land-Rover and boat have been acquired and fieldwork started in April. The project plans to produce a guide to Ghanaian rheophytes.

Contact: Dr Martin Cheek (0181-332 5431)



Conferences are a traditional means of communicating research findings and each year Kew hosts and organizes international meetings of strategic interest, such as this summer's Compositae and Chromosome Conferences. At the same time, computer technology is being used increasingly in all the research programmes to make Kew's expertise and knowledge available in forms that are useful and needed.

COMPOSITAE

SYSTEMATICS BIOLOGY UTILIZATION

AN international conference, 'Compositae: Systematics, Biology and Utilization', held at Kew (25 July to 5 August) attracted some 240 scientists from 48 countries, including many from Developing World and former Communist countries. Being a wide-ranging survey of a taxonomic group rather than a meeting devoted to a particular discipline or approach, it brought into contact workers who otherwise would not have met to exchange ideas and information.

The first week was a multidisciplinary and synthetic consideration of the systematics and evolution of the family and its major component taxa. The impact of molecular systematics and cladistics has produced a current state of flux in classification at these ranks. While some tribes, subtribes and major genera have had their standing reaffirmed (although sometimes with considerable cir-

cumscription), it became clear that the recognition of additional taxa will be needed before a more powerfully explanatory classification of the family can be attained.

In the second week, more applied aspects were discussed. Major themes included the biology of invasion, relationships between hosts and insect predators, and biological control in weed management programmes. The medicinal use of Compositae, the technological and commercial problems in the development of new crops as sources of oils and resins, the improvement of the sunflower and its utilization, and the ecology and commercial use of fructans (the characteristic storage carbohydrates of the family) also emerged as important areas of current research.

Contact: Charles Jeffrey (0181-332 5236)

Charles Jeffrey, head of the Compositae subsection in the Herbarium and co-organizer of the conference, retires this autumn after 34 years at Kew. However, colleagues will not be surprised if they still see Charles continuing his research in the Herbarium.

***Helichrysum manni*, a composite endemic to Mt Cameroon, flowering in the refrigerated tropical montane section of the Alpine House this year.**

CHROMOSOME CONFERENCE

THE 4th Kew Chromosome Conference (30 August - 2 September) was hosted in the Jodrell Laboratory. It was well attended and highly international, with 182 delegates from 27 countries, of whom 115 were from overseas. There were 108 poster papers, and 37 oral papers (including four by Kew personnel).

The programme recognized the unifying role of chromosomes in biology, bringing together scientists working on different kingdoms, but emphasized plant chromosome work, which constituted about 70% of the papers. The sessions had a strong focus on the science programmes in Kew's Corporate Strategic Plan - including Systematics, Conservation, and Economic Botany.

This conference series has become the world's major gathering for plant chromosome workers, providing a unique forum to discuss all aspects of plant chromosome research, including some unfashionable and neglected elsewhere.



Chromosome painting workshop.

Never before have chromosomes been so colourful. Chromosome painting techniques, including those which Kew has played a leading role to develop, clearly have many important biosystematic applications.

The Conference was followed (from 5-8 September) by a highly successful training workshop on 'In situ hybridization to plant chromosomes - a practical introduction to its uses in biosystematics' attended by 10 participants from six countries, and sponsored by Kew and NERC.

Contact: Prof. Mike Bennett (0181-332 5322)

& WORKSHOP

Colleagues at Kew were saddened by the death, on 1 September, of Kew cytogeneticist Dr Ann Kenton.

The Conference proceedings, to be published by summer 1995, will be dedicated to her memory.



Collections

THE management of Kew's Living Collections is being aided by a powerful new mapping system (KewScape). For the first time this provides a graphic representation of the Gardens and collections. The system, which is integrated with the Living Collections Database, combines a portable screen-based data collection unit, Gridpad, and the Autocad CAD (Computer Aided Design) package. Initially the tree collections have been entered into the system. A wide range of future applications is planned, including tree maintenance records, habitat management at Kew and Wakehurst Place, and direct entry of field information on expeditions.

Contact: John Lonsdale (0181-332 5543)

Conservation

FOLLOWING Seed Bank consultancies in Svalbard, the SADC countries, Turkey and Morocco, for various international agencies, the Seed Conservation Section has established methods to size seed drying and long-term storage facilities. During 1994, the International Plant Genetic Resources Institute (IPGRI) funded the section to formalize this information into a computer program for modelling the likely requirements of any facility. With the aid of Fir Tree Computer Systems of Billingshurst, the program has been completed and IPGRI is now running trials.

Contact: Simon Linington (0181-332 5075)

The Micropropagation Unit and the LCD Conservation Unit are jointly developing a database system based on BG-Base (developed by Dr Kerry Walter) for the storage and maintenance of references, micropropagation protocols, contacts and projects, funded by a donation from the Esmée Fairbairn Charitable Trust. Both units have a large volume of reference material and to date over 2,000 references have been entered. The database is also used to store contact information and manage mailing lists. The LCD Conservation Unit is maintaining a bibliography database primarily relating to plant conservation, particularly re-introductions, restorations and recovery programs, in collaboration with the WCMC and the Re-introduction Specialist Group of the IUCN.

Contact: Pete Atkinson (0181-332 5570)

Interpretation

PLATO, Kew's joint project with the National Poisons Unit (Guy's Hospital) to produce an image-based computerized system for poisonous plant identification, has recently completed its first evaluation phase in 12 hospitals and one Poisons Information Centre. High levels of user confidence were reported with 96% indicating that they would be "always" or "usually confident" of an identification made by PLATO. Recently the system has been recorded onto CD-ROM to facilitate beta-testing that is currently underway in a number of hospitals. Negotiations with publishers are continuing.

STOP PRESS: PLATO has just received an Information Technology Award for 1994 from the British Computer Society.

Contact: Christine Leon (0181-332 5702)



Pete Atkinson entering data into the Micropropagation and Conservation Database.

Systematics



THESE computer-drawn pollen grains illustrate three of the 95 morphological character states being used by Madeline Harley to describe the pollen of palms in a new computer database, written using the ALICE biodiversity database system. Data are being compiled from over 10 years of light and electron microscope studies on palm pollen by the Palynology Unit; so far, species data for two of the six subfamilies have been entered. The database will link to the palm database (also written using ALICE) and provide an important tool for systematic, pollination and fossil pollen studies both within the palms and within the wider context of the monocotyledons.

Contact: Madeline Harley (0181-332 5266)

Kew's anatomy literature database was the source for Mary Gregory's *Bibliography of Systematic Wood Anatomy of the Dicotyledons*, published by IAWA in August (ISBN 90 71236 22 6, price \$ 60). Containing over 2,400 annotated references and indexed by family, it is the only publication of its kind and will be indispensable to plant anatomists, taxonomists, forest botanists, palaeobotanists and archaeologists.

Contact: Mary Gregory (0181-332 5325)



Gridpad being used by Steve Ruddy.

ROYAL OPENING FOR ROCK GARDEN



The Duke and Kew's Director talking to Mike Sinnott and the Curator, John Simmons (in front).

HRH THE DUKE OF KENT opened the new American section of the rock garden on 26 April 1994. This culminated a five-year project to improve the area, both aesthetically and through thematic interpretation. The new section was designed to create the diverse habitats, ranging from dry free-draining scree to wetland and aquatic, that are required to cultivate the collection of North American species. It allows drifts of phlox to be displayed close to rare natives, such as *Penstemon haydenii*, and even a bristle cone pine, *Pinus aristata*. A cascade waterfall, constructed from 250 tonnes of Sussex sandstone, dominates the section together with the large pool that supplies it with 100,000 litres of water per hour. High moisture levels in the surrounding wetland area are maintained by a lining of low-density reinforced polyethylene geomembrane. In the next few years, other sections of the 112-year-old rock garden will be organized geographically to give a theme through which the collections can be interpreted to the public.

Contact: Charles Shine (0181-332 5528)

FLOWERING OF ROBINSON CRUSOE PLANTS

THE handsome bromeliad, *Ochagavia elegans*, endemic to Robinson Crusoe Island in the Juan Fernández Archipelago, flowered for the first time at Kew in early June. Although very rare in cultivation it is not uncommon on the island where it inhabits rocky places at all altitudes, often forming dense colonies on sunny cliff faces. Kew's plant, now established in a vertical rock crevice in the Alpine House, was germinated from seed by the Micropropagation Unit in 1987. It survived severe frost damage in 1990 when the glasshouse heating failed and has now produced several side shoots. These root easily and material has been distributed to the Conservatoire Botanique National de Brest.

A much rarer species endemic to Robinson Crusoe Island also flowered in the Alpine House this summer. *Lactoris fernandeziana* is confined to temperate rain forest above 500m. It has minute polygamous and monoecious flowers and is of no horticultural merit. However, it is of great scientific importance, being the only mem-



Ochagavia elegans.

ber of the Lactoridaceae. The taxonomic affinities of the species are uncertain, but *rbc* L sequencing at Kew and in the USA supports a proposed relationship with the Aristolochiaceae.

Contact: Tony Hall (Fax 0181-332 5553)

New Kew Scientists

DR HEW PRENDERGAST has just taken on the newly-established post of Leader of the Centre for Economic Botany (CEB) which is to be based eventually in the Sir Joseph Banks Building. Included under CEB's umbrella are the Survey of Economic Plants for Arid and Semi-Arid Lands, Plantas do Nordeste (Kew's joint initiative with local authorities in north-east Brazil), the Economic Botany Bibliography Database, Kew's unique collection of 75,000 botanical artefacts, and an enquiry unit on useful and poisonous plants. Hew was previously the first full-time seed collector for the Seed Bank at Wakehurst Place, working in mainly arid and semi-arid countries from Morocco to Namibia and Australia.

The appointments of Drs Renée Grayer and Nigel Veitch to the Biological Interactions Section (Jodrell) will strengthen Kew's work in chemical systematics. Renée will be working on the chemical systematics of the Labiatae using Kew's living collections. Nigel will provide the expertise required to identify the chemicals discovered in this and other projects.

KEW SCIENTIST

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Tel: 0181-940 1171
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Published twice yearly in
April and October.

Editor
Production Editor
Design

Printed by

Prof. M. Bennett
Dr G. Kite
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RBG, Kew
Reprographic Centre,
Brighton

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