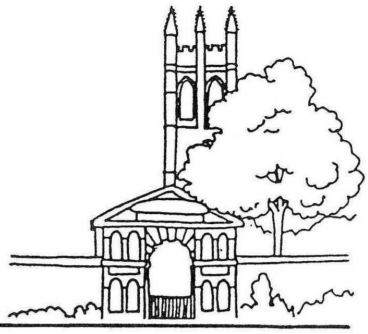
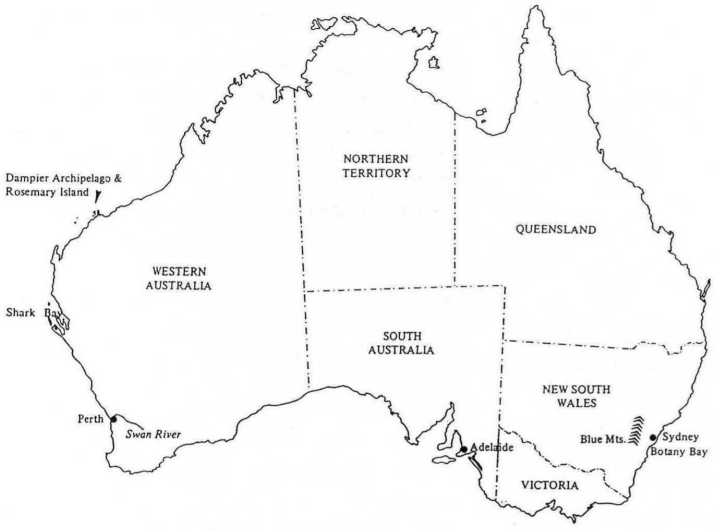
Oxford Plant Systematics



With news from Oxford University Herbaria (OXF & FHO), Department of Plant Sciences, Oxford

OPS 7 December 1999





Above: portrait of William Dampier engraved by Sherwin, Hope Collection, Ashmolean Museum, Oxford. This English buccaneer and explorer collected plant specimens from the coast of Western Australia 300 years ago. His specimens have remarkably survived and are held in the Sherardian Herbarium in OXF.
Map of Australia: Dampier's landing and collecting sites were in Shark Bay and in the Dampier Archipelago shown.

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Editorial

Relatively small university herbaria like our own are faced with difficult decisions concerning levels of funding to maintain important collections whilst carrying out mainstream systematic research. Balancing and integrating our herbarium collections with floristic and monographic research in the context of molecular phylogenetics remains our primary goal. Unlike our colleagues in the United States we have no research council funds specifically earmarked for systematics and therefore basic floristic and monographic research is increasingly difficult to maintain. It is therefore particularly gratifying that this year awards have been presented to Colin Hughes (Greenman prize from Missouri for his monograph of *Leucaena*) and Brian Styles and Aljos Farjon (Engler medal from IAPT for their monograph of *Pinus*). Congratulations to Professor Walter Lack from Berlin who completed his book on *The Flora Graeca Story* (see article this issue). This year we have had two successful D.Phil. defenses and we congratulate both Drs Carine and Chikuni. In this issue Serena Marner highlights the historic importance of our Australian collections of William Dampier. Compliments also to Denis Filer for the up and running Brahms web site which is very much worth checking out at 'www.brahms.co.uk'.

Robert Scotland

News Items

Prizes and awards

Colin Hughes was awarded the Jesse M. Greenman Award, 1999 for his *Leucaena* Monograph published in Systematic Botany Monographs in 1998. The prize is awarded annually by Missouri Botanical Garden for the best paper in vascular or bryophyte systematics based on a PhD dissertation.

Engler Silver Medal

An Engler Silver Medal was awarded each to **Brian Styles** and **Aljos Farjon** for the outstanding *Flora Neotropica Pinus* (*Pinaceae*) Monograph published in 1997. The medal is named after Adolf Engler (1844-1930), former Director of the Berlin Botanic Garden & Museum and of 'Engler & Prantl' fame. Silver medals are awarded to outstanding monographic publications by the International Association for Plant Taxonomy (IAPT), a maximum of one per year, and announced at major meetings. This award was announced at the International Botanical Congress held in Missouri this year. The medal was presented to Brian's widow, Cynthia, by Professor Peter Crane, Director of the Royal Botanic Gardens Kew, at a special celebration held at the Department on 18 October 1999.

Cynthia acknowledged the award as follows: "The news from Colin of this award came to me as a complete surprise and I am naturally delighted to receive this **Engler Silver Medal** on Brian's behalf. Without Brian's dedicated field work and data, over a period of some 25 years, there would not have been a Pine monograph, and without Aljos's expertise in writing up that data, there would not have been a **published** monograph. It is a final accolade to Brian's taxonomic career. My only sadness is that Brian did not live long enough to have seen the monograph through to its conclusion.

I would like to congratulate Aljos, for the splendid job that he did in writing up Brian's work - it could not have been an easy task, writing up someone else's work, but I am sure that he is, as proud as I am, to also be awarded with a silver medal. I hope that this medal will serve as an inspiration to future generations of the Styles family! Finally, I should like to thank Peter Crane for presenting this medal to me and to Ann and the Department for arranging this presentation party."

Rosemary Wise's book, *A Fragile Eden*, published by Princeton University Press in 1998, won the award from the Association of American Publishers for 'Excellence in Design and Production'.

General News

Biodiversity work for the Global Environment Facility, GEF of the World Bank

David Boshier, Colin Hughes and William Hawthorne carried out a short-term assignment for the Global Environment Facility of the World Bank to provide a general biological framework for the selection and design of biological corridors planned within the GEF *Mesoamerican Biological Corridor Project.* This involved two short visits to Mexico during the year and resulted in a report on *Biological criteria for corridor selection and design.*

New Research Project

There is currently pressure for production of new identification guides to tropical forest plants, but less understanding of what formats of guide are best for different users. William Hawthorne, Colin Hughes and Rosemary Wise, in collaboration with researchers and NGO's in Ghana, Grenada and Mexico, have obtained funding from the Forestry Research Programme of the Department of International Development, DFID for a new three-year research project entitled *Comparison and development of tropical forest plant guide formats with a handbook to assist future production of field guides.*

The project aims to investigate the usability, accuracy, efficiency, and value of different field guide formats for different types of users, through review of existing guide formats, preparation and empirical field testing of carefully designed guide formats, and analysis of resources required to prepare different products. The project will work closely with Dr. Anna Lawrence (University of Reading) to produce a Handbook (*How to produce useful guides to forest plants in the tropics*) which aims to stimulate and facilitate the production of new and appropriate field guides. In the process some actual field guides will also be produced in Ghana, Grenada and Mexico.

Student progress

Jonathan Bennett (D.Phil., third year). Systematics of *Strobilanthes* Blume (Acanthaceae). Supervisors Dr. Robert Scotland and Dr. Alan Paton (Kew). BBSRC funded.

Species delimitation of *Strobilanthes* from Java is now nearing completion and a large database of herbarium specimens and nomenclatural information has been assembled using BRAHMS. Work is focusing on molecular and morphological investigations of *Strobilanthes* from a wider geographic region. An investigation into the diversity of pollen morphology of *Strobilanthes* species from outside of southern India and Sri Lanka is ongoing. A three month molecular study has recently been undertaken at the University of Washington in collaboration with Dr. Richard Olmstead. The trnL/F region of the chloroplast genome has been sequenced for a range of species of *Strobilanthes* to provide evidence on the monophyly of *Strobilanthes* s.l. Species relationships

within *Strobilanthes* are being investigated using the nuclear internal transcribed spacer (ITS) region.

Elizabeth Moylan (D.Phil., second year). Systematics of *Hemigraphis* Nees in relation to *Sericocalyx* Bremekamp and *Strobilanthes* Blume (Acanthaceae). Supervised by Robert Scotland (Oxford), Paula Rudall (Kew) and Toby Pennington (Edinburgh). Druce Scholarship.

Hemigraphis comprises approximately 90 species with a distribution from peninsular India across Malesiana to Australia. Species delimitation of *Hemigraphis* in the Philippines, the centre of diversity for the genus, is continuing; approximately 25 species are thought to occur. Fieldwork in the Philippines in conjunction with the National Herbarium, Manila (PNH), was undertaken during February this year. Collections of *Hemigraphis*, *Strobilanthes* and Acanthaceae were made from the islands of Luzon, Mindanao and Palawan. DNA sequence data will be used in conjunction with morphological data to resolve relationships between species within the genus and between *Hemigraphis* and related genera in the Acanthaceae. Molecular work will begin in January 2000.

Julian Starr (D.Phil., third year). A systematic study of the genus *Uncinia* Pers. (Cyperaceae). Supervised by Stephen Harris and David Simpson (Kew). Commonwealth Scholarship.

Sequences for the ITS region of over 70 *Cariceae* taxa are now complete; however, additional data will be needed to properly resolve generic relationships with the tribe. Expansion segments of the 26S gene of rDNA are presently being assessed to determine whether they are appropriate to address relationships at the generic level. A reduced ITS analysis suggests, however, that *Carex* is paraphyletic with respect to *Uncinia*, and surprisingly that *Carex kingii* (Boott) Reznicek (=*Uncinia kingii* Boott) is sister to *Uncinia s.s.* Sequences from all four transcribed spacers of the rDNA array are now being used to assess relationships in the genus. All data sets appear to be congruent and point to two major clades in *Uncinia s.s.* Micromorphological investigations of fruit silica bodies have revealed a considerable amount of variation among species. This data will be added either to the existing molecular data or used as an external data set to assess relationships inferred from molecules. The recent success of a haploid chromosome count for *Uncinia paludosa* holds promise that further counts for other species will be obtained.

Abstracts of systematic theses submitted in 1999

The following two D.Phil. abstracts by Drs. Mark Carine and Augustine Chikuni were submitted during this year and were successfully defended.

Mark Carine
Pembroke College
A systematic study of the southern Indian and Sri Lankan Strobilanthinae (Acanthaceae)

Abstract

Three aspects of Strobilanthinae systematics are addressed in this thesis. A taxonomic revision of *Stenosiphonium* Nees is provided, species relationships among the southern Indian and Sri Lankan Strobilanthinae are investigated and generic delimitation within the subtribe is re-evaluated.

Three species of *Stenosiphonium* are recognised. *S. cordifolium* (Vahl) Alston is widespread and morphologically variable. *S. wightii* Bremek. and *S. setosum* T. Anderson are both restricted endemics from the southern Western Ghats. All three species are thought to be semelparous and this may explain the apparent rarity of *S. wightii* and *S. setosum*.

A survey of the morphology of southern Indian and Sri Lankan Strobilanthinae has identified thirty two characters for a cladistic analysis including sixty nine species. Sixty six species included in the analysis have a unique combination of characters which is indicative of a high level of character conflict. However, in spite of the character conflict and low character:taxon ratio, the strict consensus tree from the analysis is well resolved with most of the cladistic structure provided by homoplasies. Homoplasy may therefore be viewed as an asset for achieving resolution in cladistic analysis of plant groups such as the Strobilanthinae, although this is dependent upon dense sampling of taxa and an efficient search protocol.

Bootstrap and Bremer support values for the results of the morphological analysis are limited which is indicative of a weak hierarchical signal ordering the data. However, a parametric bootstrap study using a model tree based on the results of the Strobilanthinae analysis suggests that given data sets of this type most of the nodes in a well resolved strict consensus tree will be accurate. On the basis of this result, there are no grounds to suggest that the Strobilanthinae results are simply artefact. Cladistic analysis of ITS sequence data suggests that the southern Indian and Sri Lankan Strobilanthinae are non-monophyletic. The results of both the morphological and molecular cladistic analyses highlight the inadequacies of earlier classifications of the Strobilanthinae and demonstrate the difficulty of providing a generic classification of the group which is consistent with the aims of cladistic classification. *Stenosiphonium* is shown to be nested within the southern Indian and Sri Lankan Strobilanthinae and the results suggest that the most satisfactory approach to generic delimitation in this group is to place all taxa within an expanded *Strobilanthes*.

Augustine Charles Chikuni
Wolfson College
A taxonomic study of *Brachystegia* Benth. (Caesalpinioideae - Leguminosae)

Abstract

Brachystegia is a tropical African genus of medium-sized to large trees distributed throughout the miombo woodlands of southern tropical Africa and the rainforests of West Africa. Previous taxonomic studies of *Brachystegia* emphasized the production of regional Flora accounts which are often inconsistent in their treatment of species. This research was initiated to undertake a revision of *Brachystegia*, specifically addressing issues of species and generic delimitation, and hybrid detection.

Comparative morphology of *Brachystegia* was undertaken to define and partition character states explicitly. Analysis of morphological characters showed that most characters are continuously variable and overlap between species. The data were analysed using cladistic methods to assess the monophyly of *Brachystegia* and this was the basis for the recognition of infrageneric groups. Morphometric measurements collected in those species that formed polymorphic alliances were analysed using multivariate statistical procedures as objective means of species delimitation. Hypotheses of hybridization were tested using field evidence, phenotypic intermediacy and RAPD marker additivity.

A cladistic analysis of *Brachystegia*, using *Librevillea*, *Monopetalanthus* and *Julbernardia* as outgroups, showed that *Librevillea* and *Brachystegia* were closely related and this supported subsuming *Librevillea* into *Brachystegia*, rendering the presence of a reduced perianth as diagnostic

of *Brachystegia*. 28 species of *Brachystegia* and three subspecies of *B. tamarindoides* have been recognized. Descriptions, synonyms and a key to all species are provided. A revised infrageneric classification of *Brachystegia* is proposed, comprising two Sections: Section Brachystegia, defined by sessile leaflets and coarsely reticulate pollen; and Section Librevillea, defined by the presence of petiolulate leaflets and absence of granulate pollen apocolpial region.

Previously, putative *Brachystegia* hybrids have been intuitively described based on environmentally plastic characters. Analyses of RAPD markers, field studies and morphometric characters showed no conclusive evidence supporting the occurrence of hybridization in *Brachystegia*. Thus identification of hybrids in *Brachystegia* remains to be confirmed using independent sources of data, such as artificial recreation of hybrids.

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Expeditions and visits

Colin Hughes visited Quintana Roo and Oaxaca, Mexico and the USA to attend the XVIth International Botanical Congress in St. Louis, Missouri.

Robert Scotland also attended the International Botanical Congress in St. Louis and presented a paper entitled "An Overview of Acanthaceae Systematics and Classification".

Julian Starr attended the International Botanical Congress in St. Louis this August where he presented a poster entitled "Phylogeny of *Uncinia* (Cyperaceae) based on ITS and ETS sequences", and gave an invited talk entitled "Molecular systematics of the Asteroideae based on chloroplast spacer sequences", as part of symposium 3.9, "Phylogenetic relationships in Asteraceae subfamily Asteroideae: evidence from morphological and molecular sources". In May and June he went collecting in Ecuador, visiting the herbarium of the Universidad Catolica del Ecuador (QCA) and the herbarium of the Museo Nacional de Ciencias Naturales (QCNE) which are both in Quito. A visit was also made to the herbarium of the Universidad Nacional Mayor de San Marcos (SMF) in Lima Peru.

Rosemary Wise again accompanied botanists from the Royal Botanic Gardens, Kew on the third expedition to Irian Jaya, this time concentrating on coastal, mangroves, swamp forest and lowland rain forest habitats. En route she ran a four day course on techniques of botanical illustration in Singapore Botanic Gardens.

BRAHMS 4.8 web site

[www.brahms.co.uk]

This year, BRAHMS has undergone extensive development and re-structuring, linked to the rapidly looming transfer to Visual FoxPro. The recent system improvements and additions for data editing, extraction and processing are documented on the BRAHMS web site - published in October 1999. The web site summarises key system features and it includes a range of sample projects and recent database products and publications. The BRAHMS software and newly completed reference manual can be freely downloaded along with a series of getting-started exercises in the 'BRAHMS for beginners' tutorial guide.

Also included on the web site are comprehensive monographic data sets for the genera *Inga*, *Leucaena* and *Pinus*. These include detailed nomenclatural information (synonyms, protologues, types, *etc.*) as well as the fully geo-referenced specimen data, suitable for mapping. Mapping functions have been more closely integrated with BRAHMS 4.8. Map style (point colours, symbols and size; base map area and other map features) can be set using the new map library and style setting functions which operate on any extracted collection data. The mapping software MUSICA can be downloaded via the web site.

This year, BRAHMS training courses were held at the KEP herbarium in Malaysia and at the Singapore National Botanical Gardens (funded through a FRIM fellowship award); the Smithsonian Tropical Research Institute in Panama; and the MAPR herbarium in Puerto Rico (funded through the US Fish and Wildlife Service). Additional project linked visits were made to the IAN and MG herbaria in Belém, Pará, Brazil, and Leiden and Wageningen in The Netherlands.

Denis Filer

The botanical legacy of William Dampier 1699 - 1999 and Western Australia re-visited

Many years before Joseph Banks and Captain Cook stepped ashore in Botany Bay on the eastern coast of Australia, an Englishman by the name of William Dampier discovered plants on the shores of Western Australia quite unlike any known before to European eyes back home. Only two scraps of plants had been gathered there two years earlier by a Dutchman, but these specimens were not properly recorded in any journal. Precisely 300 years ago Dampier made a scientific 'voyage of discovery', recording and collecting flora and fauna from 'Terra Australis Incognita' or New Holland as it was then known. To commemorate this event the Western Australian Museum in Perth together with the Department of Conservation and Land Management organized an exhibition featuring Dampier's plant collections which opened in August 1999, exactly 300 years to the month since the plants were plucked from Australian soil.

The herbarium specimens, now part of the special collections in the Fielding-Druce Herbarium, required courier service to return to Western Australia and I was very fortunate in having this enviable task. Although the plants had been gathered in August 1699, they did not arrive back in England until August 1701 after a hazardous journey by sailing ship when they were almost lost. Impossible for Dampier himself to imagine, the plants took just less than 24 hours to return quite safely by 747 jumbo jet! There were strict quarantine regulations governing the arrival of the specimens and they were taken immediately to the W.A. Herbarium for freezing - also something not envisaged three centuries ago. A few days later they were taken to the Western Australian Museum in Perth where the exhibition was set up. The official opening of "*Voyage of Discovery. William Dampier Tricentennial Exhibition*" took place on Friday 6 August and was launched jointly by The Hon. Cheryl Edwardes, Minister for the Environment, and The Hon. Peter Foss, Attorney General and Minister for Justice: The Arts. As part of Western Australia's history, about 90 years before European settlement had taken place in eastern Australia, there was a tremendous amount of interest in Dampier's expedition and about 200 people attended the opening of the exhibition.

Further events were to take place at Shark Bay commemorating William Dampier's landing on Dirk Hartog Island by the West Australian Government. I was invited to join an official party from the W.A. Museum on a trip to Shark Bay, now a World Heritage site, where three days of events took place. The trip included a mission for me, together with the botanist Alex George, to recollect a duplicate set of 'Dampier species' from Dirk Hartog Island. On 17 August at Denham, Shark Bay, a ceremony took place where a plaque was unveiled by the Minister for The Arts, Hon Peter Foss. The site where Dampier had set foot on Dirk Hartog Island exactly 300 years ago to the day was named 'Dampier Landing'. A book written by Alex George entitled "*William Dampier in New Holland. Australia's first natural historian*" was also launched by the Minister at the ceremony, the book being an excellent companion guide to the exhibition in Perth.

William Dampier (1651-1715), formerly a buccaneer/privateer, was rather an unlikely character not only to have made a collection of plants, but to have been made a captain of a Royal Navy ship. However he was a keen observer and competent natural history writer, keeping a detailed journal of all his experiences on his travels. He circum-navigated the world, not just once, but three times. He was not only a navigator, a map maker, a natural historian, an author, but made detailed observations about tides, currents and winds. It has been said that he was 'a pioneer in descriptive meteorology'.

It was therefore with excitement that we set out early on the morning of 16 August from Denham, which is about 600 km north of the city of Perth, by small boat to cross the water to Dirk Hartog Island. The boat trip took about four hours to reach Dampier's landing site on the north eastern part of the island. Dampier had named the whole area Shark(s) Bay because of the large number of sharks he had encountered there when he came to anchor his ship in the bay. Shark Bay is at the northernmost point of the South Western Australian Botanical Province which has one of the richest floras anywhere in the world. The Province boasts between 8000 - 9000 plant species, many unique to this area of the continent. The climate of the south-west has cool wet winters and hot dry summers. The conditions were perfect for our visit to the island, there was warm winter sunshine and a continuous sea breeze under a blue sky scattered with white cloud. There had been enough rain before our visit to bring shrubs and annuals into flower. It was with some trepidation that I climbed into the dinghy in the "shark-infested waters" that was to take us to the beach. However the water was so sparklingly clear and the most beautiful colour of turquoise, that I soon forgot about the possibility of capsizing! Jumping out of the dinghy we waded through the water on to soft white sand. Further back the beach turned into sand dunes covered with mounds of low growing shrubs. Alex George said that, apart from a few four-wheel-drive tracks, the pristine waters and low scrub on the sand dunes would have been just as Dampier had found the island. Today most of island is leased for sheep grazing but there is virtually no grazing at the northern end of the island where Dampier landed. There is also now a lighthouse at Cape Inscription in the north on reserved land. We proceeded to find all the species Dampier was thought to have collected from the island in flower or fruit except for one species, *Trachymene elachocarpa*. We re-collected all these species into plastic bags, and later when returning to Denham on the boat, put all our collections into a plant press.

One of the first species we came across that Dampier had collected was the small leguminous herb *Lotus cruentus* with brilliant cerise pink flowers growing in the white sand. Just like Dampier had himself observed, we saw flowering shrubs and herbs with red, white, yellow and blue flowers. He commented that the flowers were mainly blue, such as those of the herbaceous plant *Dampiera incana*, since named after him. However only three of the species he pressed have blue flowers, the other two being *Brachycome* aff. *cheilocarpa* and *Solanum orbiculatum*. Like us, he would have seen other blue or purple flowering species in the vegetation near his landing site, eg. the Boraginaceous shrub *Halgania littoralis*, and in the family Goodeniaceae, *Scaevola crassifolia* and *S. holosericea*. Penetrating further into the island the sand turned red but still supported a scrub or heathland type vegetation. Many of the plants appeared to have greyish-green foliage eg. *Acacia coriacea, Diploleana grandiflora* and *Hannafordia quadrivalvis*. A number of the plants he collected were endemic to Western Australia, eg. the wild rose, *Diploleana grandiflora*, *Beaufortia sprengelioides* and the reflexed panic grass, *Paractaenum novaehollandiae*. We also took the opportunity of collecting the seaweed *Cystoseria trinodis* which was floating in the water in the bay, though not particularly close to the shore.

Dampier not only described the plants he saw on his 1699 visit to Shark Bay, but gave descriptions and illustrations in his book *A Voyage to New Holland etc...*(1703) of a number of birds, several species of marine animals and a number of land animals. He gave a vivid description of a Bobtail Lizard and decided that the animal was unpalatable owing to its looks as well as the offensive smell of its insides! We rescued a Bobtail Lizard at Denham from the road but instead of running away from us the ungrateful animal faced us with its mouth wide open in a display of aggression! This is characteristic of this species of lizard and even Dampier made a note of this trait. Dampier also encountered Bottle-nosed Dolphins as a drawing of one appears on plate 2, fig 2 in his book (1703). In recent years these dolphins have been swimming into the bay at Monkey Mia, on the Peron Peninsula, to be fed by humans and have become a tourist attraction here.

The plant specimens William Dampier collected are a lasting legacy from his explorations as the first Englishman to set foot on Australian soil. His published journals including vivid accounts of foreign lands also influenced further explorations of 'Terra Australis Ingognita' as well as the imagination of a number of fictional writers. Johnathan Swift and Daniel Defoe were thought to have used some of Dampier's experiences as material in their books *Gulliver's Travels* and *Robinson Crusoe* respectively. I feel privileged to have followed in a few of his footsteps at Shark Bay, and to have had the opportunity to be present when a further memorial was unveiled to this extraordinary man. It was exciting to find all, except one, of the plant species again on the island 300 years later and to know that the species still survive. Our newly collected specimens are to be deposited in OXF and CALM. It is of comfort to know that the species in the wild are now protected as being part of a World Heritage site along with some of the oldest organisms on Earth, marine stromatolites.

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The following is based on the text of a talk given by the author to an audience at Shark Bay on 15 August 1999 and again to members of the botanical community at the Herbarium in Perth, adapted for the reader.

William Dampier and the history of his botanical collections

A small but remarkable collection of dried plants made by the English buccaneer and circumnavigator William Dampier in August 1699 are part of the Sherardian Herbarium at the Department of Plant Sciences at Oxford University. They were given to William Sherard who bequeathed his herbarium and library to Oxford in 1728. We are now celebrating the 300th anniversary of the collection of these plants from the coasts of Western Australia. This was 71 years before Sir Joseph Banks and Captain Cook made their collections of plants from eastern Australia. Dampier's collection consists of 23 Australian plant species. He did however collect other botanical specimens from Brazil, Java, Timor and New Guinea.

Dampier was commissioned by the Admiralty in the reign of King William III to circumnavigate the globe and to map the coast of New Holland. He was made Captain of H.M.S. Roebuck, a rather old and by all accounts not a very seaworthy vessel!

Most of the 'New Holland' plants Dampier collected came from Dirk Hartog Island in Shark Bay. He collected a specimen of the wild rose *Diplolaena grandiflora* from very near his landing site. The plant is a member of the Rutaceae, the orange and lemon family. He also collected the species *Sida calyxhymenia,* probably from Dirk Hartog Island. It is a plant in the Hibiscus family and has yellow flowers. It grows in sandy and rocky soils. Dampier collected a few other plants from what he called Rosemary Island in the Dampier Archipelago. He made an additional landing at La Grange Bay but there is no evidence that he collected any plants from that locality, although a couple of the preserved specimens have uncertain localities.

Remarkably Dampier saved the dried plants when his ship sprang a leak in the vicinity of Ascension Island on the journey home. Dampier and his crew had to abandon the ship and watch it sink. His collection of herbarium specimens are the possibly the only ones in history that have survived shipwreck! The specimens also survived the elements along with Dampier's journals for several weeks while he and his crew had to live 'rough' on the Island before they were rescued. There is always a possibility that there were more specimens than exist today that did not survive these ordeals.

When Dampier finally returned to England in 1701 he passed his collection of plants on to Dr. John Woodward. Woodward was by all accounts a colourful character in intellectual circles in London. He was appointed Professor of Physick at Gresham College London although he was a practising physician. He amassed a very large collection of fossils and minerals and created his own geological museum. He was the founder of the Woodwardian Chair of Geology at the University of Cambridge. He was also a Fellow of the Royal Society. In 1696 John Woodward had published some very useful notes entitled "*Brief instructions for making observations in all parts of the world: as also for collecting, preserving and sending over natural things*" with a sub-title indicating it was for the "*promotion of natural history, in all parts of the world*". Dampier may have read this pamphlet before he embarked on his circumnavigation in 1699 and therefore thought that John Woodward was a good person to pass his specimens on to when he returned to England.

Tracing the sequence of events of the fate of the botanical specimens after they were given to Woodward appears to be as follows. Before they were given to William Sherard, Woodward lent a number of them to John Ray. John Ray was considered to be the '*supreme naturalist of the 17th century*'. He was a Cambridge botanist and made up a classification system for the plant kingdom. Ray named and described eleven of Dampier's plants from New Holland in the Appendix to his *Historiae Plantarum* Volume III which was published in 1704. They were described on pages 225-226. All but one of the plants described survive in Oxford today. One of them named *Hannafordia quadrivalvis,* in the family Sterculiaceae, was collected from Dirk Hartog Island in Shark Bay. It was unknown as a species before Dampier collected it. It is a small shrub which has very thickly velvety hairy leaves.

In Dampier's own publication "*A voyage to New Holland etc. in the Year 1699*"

published in 1703, a number of descriptions of the plants appear in print. John Woodward probably helped Dampier by supplying him with John Ray's names for some of the species, as the same names appear in the *Historiae Plantarum*. However Dampier's book had the added advantage to the reader of line drawings of some of the plants - at least nine of the Australian plants he collected were illustrated. Dampier had a man *'skill'd in drawing'* aboard the Roebuck. However it appears the draughtsman drew the plants from the dried specimens as many of them are a very good match to the specimens, for example the illustration of *Solanum orbiculatum* on Tab. 2, figure 4. It is a very thorny shrub, with the thorns being well depicted in the illustration. There is also an illustration of the seaweed *Cystoseira trinodis* on Tab.2, figure 2. This seaweed was described in Dampier's book as *'Fucus foliis capillaceis brevissimus, vesiculis minimus donatis'*.

Dampier also collected the plant today called *Conostylis stylidioides* from Dirk Hartog Island. It is a plant in the Kangaroo Paw family (Haemodoraceae) and the species is endemic to Western Australia. It is depicted on Tab. 3, figure 1 in Dampier's *"A voyage to New Holland etc. ..."*

Woodward also lent a few of Dampier's plant specimens to Leonard Plukenet who was Queen's botanist to Mary II. Plukenet described and illustrated six of the New Holland plants in the Appendix of his publication of 1705 known as *'Amaltheum Botanicum'*. The descriptions of these plants appear on pages 215-216 and various plants were figured. A copy of this work from the Department of Plant Sciences has been annotated by William Sherard. An example of one of the plants described is *Acacia ligulata,* previously named *Acacia rostellifera,* which was collected from Shark Bay. An illustration of the plant appears on Plate 450, figure 7.

A scientifically important specimen is included in those described by Plukenet, that of a plant now called *Dampiera incana.* It is the isolectotype specimen for the species. Robert Brown, who became the first Keeper of Botany at the British Museum in London, named the genus *Dampiera* in the family Goodeniaceae in honour of William Dampier. He examined the collection in the early 19th century after having returned from the Flinders Expedition to Australia. There is a duplicate specimen in the Sloane Herbarium at the British Museum as well as a specimen collected by Captain Baudin from Shark Bay which are cited by Robert Brown. The flowers of the plant are a deep blue in colour. Dampier commented on the Shark Bay flora saying that "the blossoms of the different sorts of trees were of several colours, as red, white, yellow etc. but mostly blue", so it is fitting that a plant named after him should have blue flowers.

John Woodward promised Dampier's specimens to William Sherard in a letter written in 1710 but could not have actually passed them on to Sherard until early 1718 or shortly thereafter. Sherard returned to England from Smyrna, Asia Minor in December of the previous year. He had been appointed Consul there in 1703. Sherard was also elected a Fellow of the Royal Society in 1718 but had previously had correspondence with Woodward. There are two letters at the Royal Society written by John Woodward to Sherard in which he offers to give Dampier's specimens in exchange for fossils from Asia Minor. The first letter is dated 19 November 1705 and this reached Sherard in Smyrna six months later. The second letter is dated 24 August 1710 and took five months to reach Sherard. Again Woodward asked Sherard for samples of fossils, he had obviously not received any to date. Woodward says in the second letter "All my dryed Plants, from America, China, East India, Nova Hollandia & the rest, are reserved for you.". The two men probably met up some years later at meetings of the Royal Society but it is not known whether Sherard ever gave any fossils to Woodward in exchange for the plant specimens!

Dampier collected a very eye-catching plant from East Lewis Island in the Dampier Archipelago, although he only pressed flowers and not the leaves. The plant, now commonly known as Dampier



Page showing Tab. 3 from William Dampier's "A Voyage to New Holland in the Year 1699 etc." (1703) reproduced from Sherard 439, Plant Sciences Library. These 'New Holland' plants figured are today named *Conostylis stylidioides* (fig. 1), *Sida calyxhymenia* (fig. 2), *Diploleana grandiflora* (fig. 3) and *Beaufortia sprengelioides* (fig. 4).

pea in W.A. or Sturt pea in the eastern States, was given the scientific name of *Swainsona formosa* in 1990 but was formerly known as *Clianthus formosus.* It has recently been proposed by Alex George (1999) that it be re-named in a new genus *Willdampier* as *Willdampier formosa.* One can see from the labels on the herbarium sheet that a number of people have studied the specimen. By looking at various annotations and deciphering handwriting one can work out who has examined the Dampier specimens over the last three centuries. The sheet of the Dampier (or Sturt) pea serves as a good example.

The specimens have been of interest not only to William Sherard in the early 18th century, but to a number of former Sherardian Professors of Botany at Oxford. A large label on the left hand side of the above sheet with handwriting in black ink is by William Sherard. One line at the bottom of this label has been added by Johan Jacob Dillenius, the first Sherardian Professor of Botany at Oxford, who took up his appointment in 1734. He was a friend of William Sherard and also a Fellow of the Royal Society. A small label with the reference to Dampier's book was written by the second Sherardian Professor of Botany at Oxford, Humphrey Sibthorp, who succeeded Dillenius in 1747. Unfortunately Humphrey Sibthorp is not known to have published any scientific work and he only delivered one lecture during almost 40 years of his professorship! He was however very interested in the Herbarium and Botanic Garden. These two former professors at Oxford were correspondents of Linnaeus, the great Swedish naturalist who invented the modern day binomial system of naming plants. There are yet two other Sherardian Professors who have annotated the sheet - one is Marmaduke Alexander Lawson, the 6th Professor who was appointed in 1868, and Theodore George Bentley Osborn, the 11th Professor who was an Australian. Osborn took up the post in Oxford in 1937. He had previously been Professor of Botany in Adelaide and Sydney. There is also a note on the sheet by Ronald Melville, a Kew Botanist who saw the specimen in 1958.

Another specimen collected by Dampier was named as *Beaufortia dampieri*, with a specific name commemorating the buccaneer/explorer. However recent taxonomic studies have shown it to be the species *Beaufortia spengelioides*. Again the specimen has been annotated by a number of people over the last three centuries - W. Sherard, H. Sibthorp, T.G.B. Osborn, C.A. Gardner. Charles Gardner was Government Botanist and Curator of the Western Australian Herbarium earlier this century. He saw the Dampier specimens 60 years ago in 1938 and wrote a paper about them jointly with Professor Osborn. *Beaufortia sprengelioides* is endemic to Western Australia. It is a relative of the bottle brushes in the eucalypt family Myrtaceae. It has very pale coloured flowers, either very pale pink or white.

Several other specialists have seen various specimens during the course of this century including the world grass expert, Charles Hubbard, from the Royal Botanic Gardens Kew who saw the two grasses Dampier collected from Shark Bay - *Triodia danthonioides* (formerly recognized as the species *Plectrachne danthonioides*) and *Paractaenum novaehollandiae.*

Plate 4, figure 3 from "*A voyage to New Holland etc..*" shows a plant Dampier found when he landed on an island in the Dampier Archipelago. He records in his journal that he called the island 'Rosemary Island' after the plant he found there which reminded him of the Rosemary plant which grew back home in England. However Dampier also records that the plant he collected had no smell and it turns out to be a species in the genus *Olearia* which is a member of the family Asteraceae (not Labiateae like Rosemary). The specimen was mistakenly labelled as the type of *Eurybia dampieri* and it appears that Allan Cunningham who described *Eurybia dampieri* only saw the illustration in Dampier's book, not the actual specimen when he was describing the species. The plant in fact is soon to be given a new specific name by a botanist in Western Australia (N.S. Lander, pers. comm.). The island from which it was collected by Dampier is now thought be East Lewis Island in the Dampier Archipelago.

Amongst the Dampier specimens is a moss named *Leucobryum candidum.* This was said to have been collected in New Holland in early literature. When Alison Downing, a bryophyte expert from Sydney, visited Oxford in 1996 we looked at this collection more carefully and asked whether it was the first moss to be collected from Australia. An interesting note was attached to the sheet by Dalby in 1958 when the specimen was on loan to the Herbarium at the Royal Botanic Gardens Kew. The note by Dalby states "it is clearly the type of *Leucobryum candidum*" and he thought it matched an illustration in *Historia Muscorum* published by Dillenius in 1741. Dalby noted that 'a specimen was missing from the Dampier sheet' 'judging by the fragments adhering to the sheet ...' and so we decided to look for it in the Dillenian Herbarium. There we found the missing specimen attached to a sheet in Dillenius's own collection. It had the same descriptive name of "*Bryum candidum fragile, folius recurvis*" "*The white brittle Bryum, with crooked Leafes*" and this is the type specimen for this species. Dillenius must have taken a specimen from Sherard's Herbarium. It is an important taxonomic collection. This moss however is usually found in much moister habitats than those found on Dirk Hartog Island or in the Dampier Archipelago, so the collection was probably made from Timor or New Guinea. It is probably the first bryological collection from South East Asia to be preserved as a herbarium specimen. However it is hoped that on further investigation the species may still be found in a more sheltered spot at one of Dampier's landing sites in Australia.

A few years ago there was another hazardous event in the history of Dampier's botanical specimens. In 1988 several of the Dampier sheets were displayed in an exhibition at the University Museum in Oxford entitled "Australia in Oxford" for the Australian Bicentennial celebrations. The central court of the University Museum has a glass roof and two display cabinets under this portion of the roof housed the botanical specimens. The exhibition remained in place for some time. In January 1990 hurricane force winds swept through Oxford. During the hurricane tiles were blown from the towers on either side of the central glass roof which proceeded to come crashing through the glass straight into the display cabinets below. The driving rain started pouring in and the Dampier specimens had to be rescued for a second time in their existence by one of the technicians in the Museum who risked life and limb amongst the shattering glass.

Dampier's specimens, when not on exhibition, are housed in the Fielding-Druce Herbarium at Oxford University in a recently made special archival box. Dampier's plant collections are of great historical significance as they provide the first properly documented record of Australian flora. They were of interest to the leading botanists of the day 300 years ago, to Ray, Plukenet, Sherard, Dillenius and Woodward and have continued to be of interest throughout three centuries to principal taxonomists. The collection also has added scientific value as it contains two type specimens. It is hoped that the collection will of course survive for *at least* another three centuries.

Serena Marner

Hemigraphis (Nees) Acanthaceae from the Philippines: An example of species delimitation

When *Hemigraphis* was first described by Nees (1847) it comprised two species from southern India. Since then, as the number of botanical collections has increased and as the tropics have been further explored, the number of species recognised within *Hemigraphis* has also increased. In 1998, *Index Kewensis* recorded 146 published species names (a 70-fold increase) that have been used to describe variation within *Hemigraphis* across peninsula India, Myanmar, Indo-China, Thailand, Malesia, Celebes and Australia.

Given that many species names have been published by several authors working in isolation in different countries (with limited access to living material, critical herbarium collections and prior publications), levels of synonymy are high. Of 146 published species names in *Hemigraphis,* it is currently impossible to predict how many represent defined species and how many are in effect species-aliases or synonyms. Without this basic information further predictions concerning species biodiversity, species distribution and levels of endemism are meaningless.

The distribution of published species names in *Hemigraphis* across the tropics reveals that the Philippines, a country comprising over 7000 islands, is the centre of diversity for the genus with a maximum of 45 published names. The most recent accounts of *Hemigraphis* from the Philippines are those of Merrill (1923) who recognised **20** species and Bremekamp (1944, 1952 & 1957) who recognised **32** species.

What is the problem?

There are a number of reasons why the regional account of Merrill and the near-monographic work of Bremekamp differ; it is not simply the case that Bremekamp described 12 species in addition to those previously documented by Merrill.

First, conflict can occur in different accounts if authors are unaware of prior work and describe 'new' species which have already been recognised and named elsewhere. Secondly, disagreement in the number of species recognised by different authors can result if widely different samples of variation are observed (Hughes 1997). For example, if a limited number of specimens are examined any differences observed in morphological characters may be perceived as discrete and a number of different species recognised. In the presence of more data i.e. a denser sample of specimens, intermediates may be found which form an overlapping continuum between species previously described as distinct.

Finally, missing data or mis-interpretation of minor variation, (especially if living specimens have not been observed) can lead to many species being optimistically or provisionally proposed. In *Hemigraphis* *'over estimation of detail of individual specimens has led to a host of new species names based on single collections'* (van Steenis, 1957). This is evidently the case where sparse sampling and limited herbarium collections reinforce differences between specimens in the absence of further data.

Current research in *Hemigraphis* is addressing the problem of species delimitation in the Philippines. The species concept used is that of Nelson & Platnick (1981): 'species are the smallest detected samples of self-perpetuating organisms that have unique sets of characters'. This definition is practical (when research is based on dried herbarium specimens) and operational; specimens which share a unique combination of characters are recognised and ranked at species level. Characters used to delimit species are fixed (Nixon & Wheeler, 1990) i.e. they are not polymorphisms of a population (for example, flower colour) or characteristics of a lifecycle (for example, hairyness of leaf surfaces). Characters may be discrete (for example, number of seeds in the fruit capsule) or continuous (for example, bract dimensions) providing the variation used to distinguish species is non-overlapping. One example of species delimitation is illustrated here.

The variation pattern of *H. bakeri* Merrill

H. bakeri was first described by Merrill (1923) from the Philippine islands of Luzon and Samar. Three morphologically similar species (including two varieties) were later described by Bremekamp (1944): *H. mindorensis* Bremek. from Mindoro, *H. panayensis* Bremek. var. *angustifolia* and var. *merrilli* from Panay and *H. tenuispica* Bremek. from the Catanduanes. Characters used to distinguish these species are listed in Table 1, the critical characters being the presence or absence of bracteoles, differences in leaf size and shape, and differences in seed number.

However, by simultaneously examining all specimens representing these different species from Luzon, Samar, Bohol, Mindoro, Panay and the Catanduanes and observing living specimens on fieldwork, a number of characters were found common to all four species. For example, every specimen examined, (including type material) has a spicate inflorescence, linear bracts shorter than the calyx, glabrous filaments and carunculate pollen grains. Furthermore, the characters formerly used to describe distinct entities, namely bracteoles, leaf size and leaf shape, have been shown to be problematic.

Bracteoles

The observation that bracteoles are confined to *H. bakeri* and lacking from *H. mindorensis*, *H. panayensis* (including varieties) and *H. tenuispica* (see Table 1) is

Species	*H. bakeri*	*H. panayensis* var. *angustifolia*	*H. panayensis* var. *merrilli*	*H. tenusipica*	*H. mindorensis*
Author	Merrill	Bremekamp	Bremekamp	Bremekamp	Bremekamp
Date	1925	1944	1944	1944	1944
Leaf shape	Oblong-obovate	Linear-oblong or linear-lanceolate	Oblong or elliptic-oblong	Linear-oblong	Lanceolate or oblong
Leaf l/mm	10-25	30-50	40-100	40-65	50-140
Leaf w/mm	4-8	8-20	17-50	9-14	22-45
Bracteoles	Present	Absent	Absent	Absent	Absent
Seeds	12	10-12	10-12	14-16	12
Geography	Luzon & Samar	Panay	Panay	Catanduanes	Mindoro

Table 1. Morphological variation and geographic localities of four species (including two varieties) previously recognised in the Philippines

not precise. From examination of living and herbarium specimens bracteoles appear to be a trait characteristic that is correlated with development. For example, bracteoles can be present along the length of the inflorescence or occur at the base of a spike only. Occasionally, bracteoles are found on some but not all spikes of a single specimen and sometimes bracteoles are not found at all. Thus bracteoles show a more complex pattern of variation to that previously documented: it is an over-simplification to record bracteoles as merely 'present' or 'absent'.

Leaf morphology

The use of leaf size and shape to distinguish species is inaccurate. As illustrated in Figure 1, leaf size represents a highly variable continuum. Leaf apices also vary from rounded to acute both within and between specimens. By measuring the smallest and largest leaves on each specimen it is possible to demonstrate that leaf size is overlapping, not only across all specimens, but across taxa previously recognised as distinct species. Figure 2 further confirms that leaf size cannot be used to recognise individual species because there are no absolute gaps in leaf length which correlate with distinct taxa. Moreover, observation of living specimens from the Philippines and habitat descriptions recorded on herbarium specimens, reveals that leaf size is a plastic phenotypic trait associated with particular localities. Small leaves are found on specimens growing near streams whilst larger leaves are found on specimens growing on clay loam in forests.

In summary, re-interpretation of existing data together with recent observations from fieldwork, has demonstrated that bracteole and leaf characters (the only morphological features separating 'species') are variable *characteristics* of populations not fixed characters of different species *per se*. On this basis, four previously described species each with narrowly restricted island distributions cannot be distinguished. One widespread species is now recognised throughout the Philippines under the oldest name of *H. bakeri* Merrill.

The fact that additional sampling can resolve conflict between species recognised by different authors has further implications for biodiversity assessment in the Philippines. For example, the high degree of local endemism credited to the Philippine flora (Merrill, 1923-1926) may be artifactual if many species are simply described from inadequate material. Table 2 compares genera described by Merrill (1923-26) with their recent revision in Flora Malesiana (a geographic region extending across the Philippines, Indonesia, Malaysia, Singapore, Brunei Darussalam and Papua New Guinea).

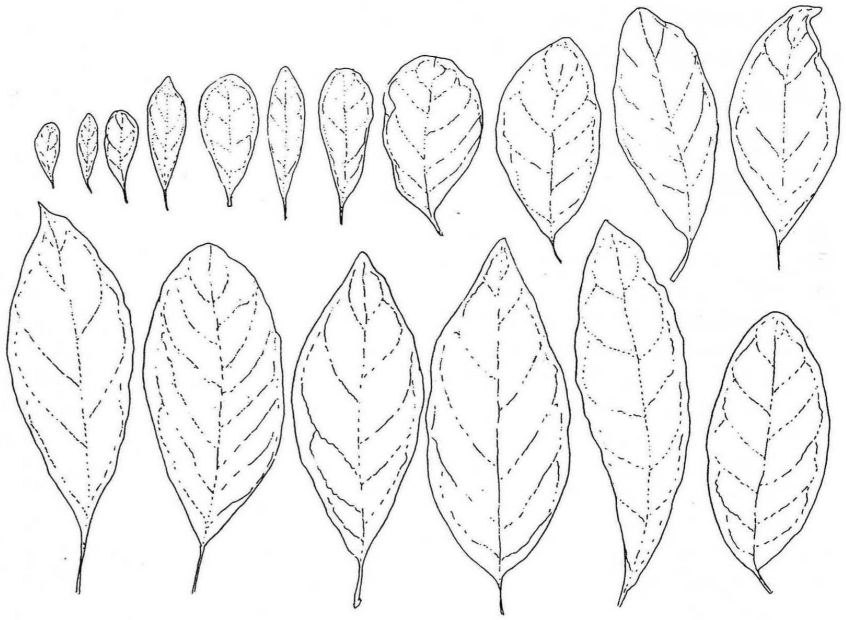


Figure 1. Observed variation in leaf size and shape within *H. bakeri* is variable and continuous across all specimens examined.

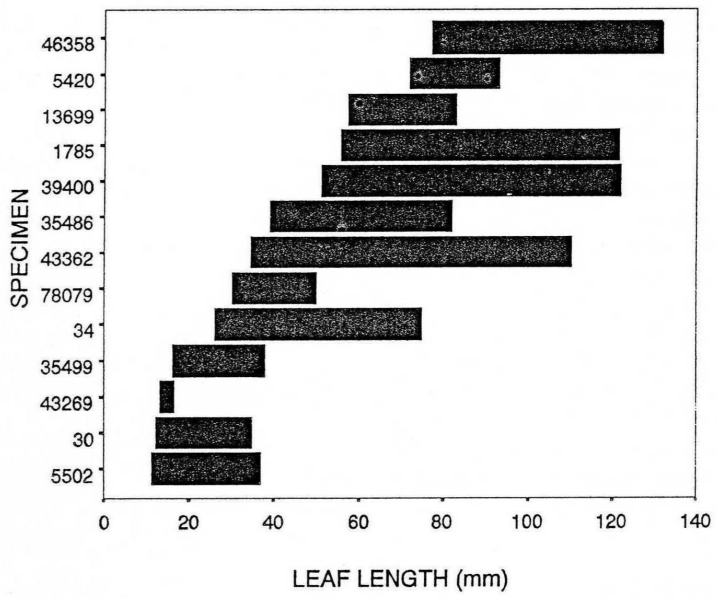


Figure 2. Barchart to illustrate overlapping variation in leaf length across 13 specimens. No gaps can be found to recognise more than one species on the basis of leaf size.

It can be seen that:

1. the total number of species described within Philippine genera decreases as species are discovered to be aliases of species previously described and named elsewhere.

2. the number of recognised endemics also decreases either due to 1 (above) or because their geographic distribution has been extended throughout Malesia.

In conclusion, the pattern emerging with *Hemigraphis* in the Philippines - that numerous isolated endemic species are part of a single widespread and variable species - is part of a more general finding repeated in numerous genera across Malesia. It is

Table 2. The distribution of species within genera recognised in Merrill's Enumeration of the Philippines, (1923-1926) compared with the status of species following recent revision in Flora Malesiana.

Genus revised		Endemic species	Non-endemic species	Total species	% of endemic species
Carex L. Cyperaceae	Merrill (1923-26)	11	18	29	38
	Kern & Nooteboan (1972)	2	23	25	9
Cordia L. Boraginaceae	Merrill (1923-26)	1	2	3	33
	Riedl (1997)	0	3	3	0
Dillenia L. Dilleniaceae	Merrill (1923-26)	13	2	15	87
	Hoogland (1951)	10	2	12	83
Illicium L. Illiciaceae	Merrill (1923-26)	2	0	2	100
	Saunders (1997)	0	1	1	0
Albizzia Durazzini Mimosaceae	Merrill (1923-26)	2	7	9	22
	Nielsen (1992)	1	5	6	16

only with a dense sampling strategy to encompass species diversity across and beyond the Philippine Flora region that species delimitation can be accurate and biodiversity and conservation assessment effective.

Acknowledgements

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Elizabeth Moylan

The *Flora Graeca* Story: An Exhibition at the Bodleian Library Oxford 19 July – 25 Sept 1999

On arriving in Oxford from Berlin for the preview of **The *Flora Graeca* Story** exhibition, Walter Lack admitted he felt he had been "living" in Oxford over the last few years; and indeed only this level of dedication could have made possible the first public exhibition of the *Flora Graeca* materials since their deposit in Oxford over 200 years ago. Celebrating more than a decade of detailed study, the exhibition at the Bodleian Library marked the publication by Oxford University Press of *The Flora Graeca Story: Sibthorp, Bauer, and Hawkins in the Levant* (1999), and was a resounding success, attracting over 15,000 visitors over the summer.

The preview of the exhibition took place in the Divinity School, Bodleian Library on a warm and sunny evening on 30th June 1999, and was arranged jointly by the Department of Plant Sciences and the Friends of the Bodleian Library. Welcoming well over 100 guests, Mr Reg Carr [Director of University Library Services and Bodley's Librarian] said that since his arrival in Oxford in 1997 he had been frequently amazed and delighted to discover the wonderful "treasures" held in the various departments of the University. The *Flora Graeca* collections rated amongst the most splendid and well deserved their first-ever major public exhibition. Professor Leaver [Head of the Department of Plant Sciences and Sibthorpian Professor] elaborated on the details of these collections, now in his care. Presented to the University by John Sibthorp (1758-1796), Sherardian Professor of Botany, they comprise 966 coloured botanical engravings, published in 10 monumental volumes issued between 1806 and 1840, as well as the 966 original botanical drawings, 293 *Fauna Graeca* drawings, 131 landscape *Mediterranean Scenes* and a wealth of associated material including 2500 herbarium specimens, plus diaries and notes. The *Flora Graeca* was considered to be one of the most beautiful and costly books ever published and had been described as "Oxford's finest botanical treasure"; however, the collections had never been studied in detail. It was thus a very great pleasure that Professor Dr Walter Lack [of the Free University, Berlin and Director of the Botanic Garden and Museum, Berlin-Dahlem] had agreed in 1988 to accept an invitation from the then Sherardian Professor, Bob Whatley, to produce an academic monograph on the collections. Professor Leaver congratulated Walter Lack and his joint author David Mabberley [formerly of Wadham College Oxford and the Department of Plant Sciences] on their comprehensive work *The Flora Graeca Story: Sibthorp, Bauer and Hawkins in the Levant* - a fascinating and meticulously compiled definitive account of their expeditions, including the resulting collections, their illustration and eventual publication. Ironically, the new work had proved in relative terms almost as expensive to produce as its subject, and priced at £250 was likely to be beyond the reach of many potential buyers. It was especially gratifying, therefore, that the Hellenic Foundation, together with the Hulme University Fund and the South East Museum Service had generously subsidised the production of the handsome exhibition catalogue, also by Walter Lack, which was

consequently available at the more affordable price of £4.95. The exhibition and catalogue formed part of Oxford University Herbaria's outreach programme to increase public awareness of the collections, a new responsibility undertaken by the Department following the granting of museum status to the Herbaria in 1995 by the Museums and Galleries Commission.

Professor Lack then related the moving and very human *Story* behind the making of the *Flora Graeca.* He gave a wonderful account of the travels of the 3 heroes – John Sibthorp (Sherardian Professor of Botany at Oxford), Ferdinand Bauer (a brilliant natural history illustrator) and the geological scholar John Hawkins as they made a "Grand Tour" of the Ottoman Empire. Their goal was to search for the medicinal plants described by Dioscorides and illustrated in the *Codex Vindobonensis*, the 6th century manuscript of his herbal, kept then as now in Vienna. In their journeys to the Levant between 1784-95 they encountered many perils – pirates, an earthquake, and malaria, not to mention bedbugs; and they discovered lilac and horse-chestnut in the wild for the first time. Although Sibthorp died in 1796, his bequest to the University of Oxford provided funds for the subsequent publication of the *Flora Graeca* – "the most splendid Flora of the world". His colleagues Bauer and Hawkins lived to see many other achievements but for Sibthorp the project was his life's work; truly, he 'died for Greek flowers'. Professor Lack held the audience captive with his tales from the travels as it was clear that this was for him too, truly "a labour of love" (to paraphrase one of the many superb reviews the book has received).

In the exhibition room 76 items were displayed including diaries and herbarium specimens, presenting the story chronologically and including in pride of place a selection of the glorious flower illustrations, both the drawings and their printed versions, from the *Flora Graeca*. At the end of the exhibition a computer display showed some preliminary results of the proposed *Flora Graeca 2000* project, using digitisation techniques to produce electronic copies. If funding can be secured, it is hoped to digitise all the drawings and printed plates, to meet future demands both for academic study and from those who appreciate their wonderful artistry, and would like to see the entire work – which can never of course be presented in a single exhibition.

The exhibition was the result of collaboration between four organisations: the Berlin Botanic Garden, the Bodleian Library, Oxford University Press and the Department of Plant Sciences, Oxford. Co-ordinating their activities presented a number of unique challenges but the outcome was well worth the effort and demonstrated how much can be achieved by pooling resources. For those who saw the exhibition or have read the book, Greek travels will now always conjure up memories of Sibthorp and his companions and their epic journeys to discover Greek plants. And for those who missed it or would like a reminder of the displays, it is planned to present a 'potted version' showing photographs from the exhibition on the Department of Plant Sciences web site early in 2000 (see http://www.plants.ox.ac.uk/library for details). A mailing list has been set up for the *Flora Graeca 2000* digitisation project which is open to anyone interested, whether from botanical, horticultural, historical, artistic, technical or fund-raising viewpoints. To join, send your name and address, with telephone, fax or e-mail details if applicable, to:

Flora Graeca Digitisation Project
Plant Sciences Library
University of Oxford
South Parks Road
OXFORD OX1 3RB UK
Tel. 01865 275082; fax 01865-275074; e-mail library@plants.ox.ac.uk

Copies of the catalogue (£4.95) and other materials produced for the exhibition: poster (£3.00), notelets (£3.99) and 2000 calendar (£6.95) are also available (postage and packing extra) from the above address.

Anne Marie Townsend
Special Collections Librarian/Archivist

Herbaria

Visitors

We were pleased to welcome 186 people to the herbaria during the academic year from 1 October 1998 to the end of September 1999. Besides visits by individuals, a number of group visits were made. 50 members of the Oxfordshire branch of the Oxford Society made an evening visit to see some of the historical collections in OXF. 11 students attending the Kew International Diploma course in Herbarium Techniques made an external visit to OXF and FHO during their course. Another group visit was made by the Curator of the Herbarium from the Royal Horticultural Society's Garden, Wisley accompanied by seven volunteers and botanists.

In addition the British branch of the International Woodcollectors Society visited the Oxford Forestry Institute, herbaria and wood collection on 23 October 1999.

Fielding-Druce (OXF)

The historic herbaria of OXF

A wide audience was able to view a number of specimens from the historic collections during 1999 as 3 special loans consisting of a total of 28 sheets were made for display in exhibitions. These included 2 specimens from the Morisonian Herbarium which were loaned to The Colonial Williamsburg Foundation, U.S.A.. The two specimens comprised an orchid, *Cypripedium calceolus* var. *pubescens* and a fern, *Camptosorus rhizophyllus* collected by John Banister in Virginia in about 1680 which were included in an exhibition celebrating the tercentenary of the founding of the town of Williamsburg, Virginia.

Another special loan consisting of 21 specimens (mounted on 19 sheets) of plants collected by William Dampier in 1699 from Australia were taken to the Western Australian Museum in Perth for a special exhibition entitled "Voyage of Discovery. William Dampier Tricentennial Exhibition." (see article on pages 5-8). These specimens form part of the Sherardian Herbarium.

Another 7 specimens collected in Greece and the Aegean by the Oxford botanist and naturalist John Sibthorp were loaned to the Bodleian Library for an exhibition entitled 'The Flora Graeca Story'. Oxford's finest botanical treasure". John Sibthorp was a former Sherardian Professor of Botany at Oxford and bequeathed his herbarium and library to the University. (See article on pages 11-12).

The Druce Herbarium

During the summer 936 British specimens were accessed and incorporated to the Druce Herbarium. This comprised material collected by H.J.M. Bowen from various vice-counties in the British Isles during the 1950's and 1960's. The accession included 350 specimens collected in Berkshire and many of these records had been cited in H.J.M. Bowen's *Flora of Berkshire* (1968) which succeeded G.C. Druce's *Flora of Berkshire* (1897).

The Druce Herbarium contains substantial holdings of the genus *Taraxacum* and this was the focus for a visit in early May by Dr. John Richards, from the University of

Newcastle upon Tyne, together with 16 students during a *Taraxacum* workshop organized by the Ashmolean Natural History Society of Oxfordshire.

The Lichen Herbaria

Professor Mark Seaward from Bradford University spent two weeks, one in February and one in May, researching the lichen collections, making a detailed appraisal of the contents, of both the general and historical collections. This work was supported by a grant from the Royal Society.

Loans

Material sent out on loan from the Fielding and Druce collections included specimens from the following genera and families: *Bocagea*, *Unonopsis*, Annonaceae; *Coriandrum*, Apiaceae; *Carex*, Cyperaceae; *Pultenaea*, Fabaceae; *Schultesia*, Gentianaceae; *Bromus*, *Orthoclada*, *Uniola*, Gramineae; *Hippocratia*, Hippocrateaceae; *Acridocarpus*, Malphigiaceae; *Eugenia*, *Eugeniopsis*, *Gomidesia*, *Myrica*, *Psidium*, Mytaceae; *Mirabilis* and *Oxybaphus*, Nyctaginaceae; plus a number of miscellaneous lichens, the bryophyte *Tortula* and the hepatic *Fossombronia*. The above loans were borrowed by the following institutions: BHCB, CANB, GH, HUJ, ISC, K, LANC, MUB, RAMM, RB, SIU and U. 27% of the specimens returned to OXF from loan during the same period, ie. OXF material, were types.

Serena Marner

Daubeny (FHO)

Accessions

New accessions were fewer in number this year and were mainly specimens sent for identification such as *Aglaia* (Meliaceae) for Dr. Caroline Pannell from Irian Jaya and Sumatra (Indonesia) and Thailand; *Malus* (Rosaceae) collected in Uzbekistan by Dr. Barry Juniper and Yunnan, China by Dr. David Chamberlain (E) for Dr. Juniper's ongoing research into the origin of apples, Vietnamese Gymnosperms and *Uncinia* (Cyperaceae) from Mexico.

Loans

The successful completion of a doctoral thesis by Augustine Chikuni allowed the return of *Brachystegia* (Leguminosae: Caesaplinioideae) to begin. Incoming loan material was received for the ongoing D. Phil. studies by Jonathan Bennett (*Strobilanthes*, Acanthaceae), Elizabeth Moylan (*Hemigraphis*, Acanthaceae) and Julian Starr (*Uncinia* and related genera, Cyperaceae). Loans were also received for Alison Strugnell from E, BM and MO to aid identifications and as records for the Mt. Mulanje check list and others for Rosemary Wise for illustration purposes.

Further substantial loans of Neotropical Ebenaceae were sent to Dr. Bruno Wallnöfer (W) for his monographic studies and Ms. Cynthia Sothers (K) for her study of the Brazilian Ebenaceae, as well as Zambian *Indigofera* (Leguminosae: Papilionoideae) and Neotropical Meliaceae to K, *Acridocarpus* (Malphigiaceae) to A and Annonaceae to U.

Curation

Several different sections of the herbarium were curated as specimens were incorporated, returned from loan or to take account of the publication of new names. The reordering of the large FHO *Brachystegia* holdings has almost been completed following determination of the specimens. After their return from loan, the African Loranthaceae, African *Carissa* (Apocynaceae) and African *Ozoroa* (including *Heeria*) Anacardiaceae were refoldered. During this process, several type specimens of *Caesalpinia* (Leguminosae: Caesalpinioideae) from Central America were placed in type folders.

The overhaul of the spirit and carpological collections was completed (with the exception of the *Brachystegia* carps.) and all are now on a database. The spirit collection is ready to be moved out of the herbarium into its new quarters. Apart from a few very large carps. and the Central American *Pinus* cones, the carpological collection now fits into the existing cupboards which will be retained when the herbarium is refurbished.

Alison Strugnell

Contents of the Oxford Forestry Institute Xylarium

The Oxford Forestry Institute Xylarium (FHOw) was established in 1924, with the foundation of the Imperial Forestry Institute, by C. C. Forsaith. Following the return of Forsaith to the USA, Dr. L. Chalk assumed responsibility for the collection and remained in charge of the xylarium until 1963, when Mr. J. H. Hughes took over. In 1976 responsibility for the collection was assumed by Prof. J. Burley and in 1999 by Dr S. Harris.

FHOw contains a mixture of scientifically important and historically interesting materials. For example, scientifically important collections include those of Vigne (Ghana), Anderson (Sarawak), Breteler (Cameroon, Venezuela), Brown (Borneo), Cooper (Liberia), Cooper & Slater (Panama), Cuatrecasas (Columbia) and Krukoff (Brazil, Sumatra). Historically interesting collections include those made by Gamble (India) and Molfino (Argentina, a collection presented to FHOw in 1935 by HRH the Prince of Wales, later Edward VIII, and individual items collected by Erasmus Darwin (FHOw 12208, *Prunus dulcis* (Mill.) D. Webb) and Richard Spruce (FHOw 3339, *Mimusops* sp.).

The FHOw card index has now been input into a computer database comprising 29,953 entries. The database indicates that FHOw contains 24,343 wood blocks and 13,100 microscope slides. Of the wood blocks in the collection 7,673 (31.5%) have microscope slides associated with them. 1,635 (5.5%) accessions in the database are from gymnosperms, and the remainder from non-gymnosperms (including palms and tree ferns). 10,678 species, 2,719 genera and 241 families are represented in FHOw, although this does not take into account synonym and misidentification. The most frequent families in the collection are Leguminosae (3698 accessions), Dipterocarpaceae (3029 accessions) and Meliaceae (1346 accessions), the most frequent genera are *Shorea* (1491 accessions), *Dipterocarpus* (549 accessions) and *Diospyros* (446 accessions) and the most frequent species are *Shorea parvifolia* Dyer (72 accessions), *Khaya ivorensis* A. Chev. (68 accessions) and *Shorea bracteolata* Dyer (54 accessions). 51 accessions in the xylarium are identified as associated with type material. 44% of the accessions appear to have herbarium specimens associated with them.

Based on geographical regions, 22.1% of the collection is from Malaysia, 20.8% from tropical Africa and 11.9% from South America. 200 countries are represented in the entire database, with 47.3% of accessions coming from the 10 most well represented countries. 765 collectors have contributed to the xylarium. 25.5% of the accessions have no collector associated with them, whilst 348 (45.5%) collectors have contributed only one accession. The most prolific individual collectors are Krukoff (Brazil and Sumatra), Gamble (India), Vigne (Ghana), Breteler (Venezuela and

Cameroon), Molfino (Argentina), Cuatrecasas (Columbia), Cooper (Liberia), Stern & Brizicky (USA) and Anderson (Sarawak), whilst Forest Departments from former British Colonies contributed 7502 accessions (25.1%).

59.7% of accessions to the xylarium were made during the 1930s, 1940s and 1950s, with less than 11% of accessions made post-1963. The lack of interest in anatomically-based wood research over the past three decades is reflected by other large xylaria. However, the collection is important since material is available from many different parts of the world, which are now difficult regions in which to recollect. The xylarium contains species which are narrow endemics or are controlled through CITES regulations (e.g. *Swietenia mahogani* (L.) Jacq., *Dalbergia nigra* Allem.), thus recollection would be difficult. Furthermore, collecting restrictions are applied by many countries, such that destructive sampling of trees may no longer be possible.

Stephen Harris

The History of the Daubeny Herbarium (FHO): 75th Anniversary

The Imperial Forestry Institute was created in October 1924 under the Directorship of Professor Robert S. Troup. Dr. Joseph Burtt Davy, from Pretoria, South Africa, was appointed to organise systematic botany and build up a forest herbarium from scratch, so becoming the first Curator of The Forest Herbarium Oxford (FHO). He brought with him Mr. Percy Greenway as his assistant, a Kew-trained taxonomist with African experience, to develop the collections.

Systematic forest botany was originally concerned with the identification and naming of timber trees and teaching courses for forest officers, practical classes being held in the herbarium. At that time, many of the tropical trees were only known by loosely applied vernacular names and commercial names were equally unreliable. There was a great need for scientific names accompanied by accurate botanical descriptions. In its first year, the herbarium had very little material for use and relied heavily on the facilities at the Royal Botanic Garden, Kew and this state of affairs continued whilst FHO was in its embryonic stages. It grew rapidly with accessions running at 6000-8000 specimens per year, reaching a phenomenal 13,425 in 1929-30. The increase in material was mainly due to the efforts of forest officers who had attended courses at the Institute, presumably following the guidelines set out in a pamphlet written by Dr. Burtt Davy on the collection and preparation of specimens to ensure that collected material was of good scientific quality. The bulk of the material was African, but smaller amounts came from other countries under British jurisdiction such as Trinidad, Sri Lanka, Belize and Malaysia.

One of the original aims of the Imperial Forestry Institute, and the systematic forest botany section in particular, was to produce descriptive catalogues of trees, shrubs and other plants of importance to forestry.
From the beginning, Dr. Burtt Davy was engaged on the preparation of several forest-tree lists and, by 1930, eighteen Colonial Forest Floras or annotated check lists were in preparation. Over the ensuing years this activity broadened into the production of Floras, monographs and other scientific publications. Most were still concerned with genera and species of forestry interest, although latterly that link has been weakened.

In 1929, Dr. Burtt Davy set off for a tour of South Africa and southern and eastern tropical Africa, establishing a trend of making field work an important part of systematics. During this tour he collected 2800 specimens for FHO as well as duplicates for some of his funding bodies. A considerable number of new species were found, ranges of species were extended and information regarding the specific differences and distribution of *Brachystegia* was collected. That year, Mr. A. C. Hoyle joined the staff of the Forest Herbarium as forest botanist to assist Dr. Burtt Davy in the teaching of systematics, identification of specimens and the writing of Floras and monographs. Early in the 1930s he began what turned out to be a life time's study of the genus *Brachystegia,* following on from Burtt Davy's earlier investigations and Mr. Paul Topham's revision of Malawian *Brachystegia.*

Not all the activity in FHO was geared up to tropical timbers. For example, 1929 saw the beginning of an investigation into the cricket-bat willow problem by the forest systematics group on behalf of the Forest Products Research Laboratory. Growers of bat willows had sustained heavy losses due to the rejection by buyers of many of the trees as unsuitable for making cricket bats. Dr. Burtt Davy traced the problem to the fact that there was more than one botanical variety being grown under the name of 'Cricket-bat Willow'. Investigations lasting a few years were carried out to correlate the wood properties and structure with botanical characters in order to determine which variety was best for the job. This enabled growers to plant useful trees. A similar investigation was started on cultivated poplars. Some were highly susceptible to 'poplar canker' whilst others were not. The systematics of the cultivated poplars was in such confusion that a study of the group needed to be made before the characters of the resistant species/varieties could be determined.

By the end of 1935 the herbarium collection had reached nearly 54,000 specimens. The number of species identifications was running at 1000-3000 per year and determination lists were continually being sent out. In 1939 the Forest Systematics group and the Herbarium were moved under the administration of the Botany Department, although the herbarium had to physically remain in the old forestry building due to lack of suitable facilities elsewhere. The advent of Professor T.G.B. Osborne, Professor of Botany, and no lover of taxonomy, almost sounded the death knell of the Forest Herbarium but it survived. On the retirement of Dr. Burtt Davy, Mr. Hoyle took over as Curator of FHO and Mr. Patrick Brenan was appointed as Forest Botanist in his place to produce an annotated Check List of Tanzania. Mr. Hoyle visited Sudan to make extensive collections for FHO and undertake research on the soil and vegetation.

During the years of the Second World War staff levels were severely reduced and there were virtually no accessions. Windows were blacked out and cat-walks constructed across the roof tops with sandbags and fire buckets strategically placed. The remaining staff, students and assistants of the Forestry Department were organised into shifts as night fire-watching crews. They each spent their shift time in various ways, Pat Brenan preferring to work steadily on throughout the night on his Check List. After the War, the Empire fell apart as countries gradually achieved their independence and the Imperial Forestry Institute changed its name to the Commonwealth Forestry Institute to reflect these changes. There were consequently fewer people employed as ex-patriot forestry officers, although courses for forest officers continued until 1969.

For the rest of the 1940s, work in the herbarium returned to normal with work continuing on identifications, Check Lists and Flora accounts. Mr. Pat Brenan visited Zambia, Tanzania (with P.J. Greenway) and Nigeria in 1948, collecting specimens and

information that might be useful for future forest Floras of these countries before leaving the Forest Herbarium at the end of that year to take up an appointment at Kew, eventually becoming its Director. He was replaced as Forest Botanist by Mr. Frank White. At the end of the decade, Mr. Hoyle visited Zambia and Tanzania to study *Brachystegia* and Uganda to continue soil/vegetation studies whilst Mr. White accompanied an Oxford University Expedition to Mount Kenya. A long over-due overhaul of the carpological collection took place with relabelling and poisoning.

In 1950, Mr. Andrew Angus was appointed for a few years to assist Mr. White in the production of the forest Flora of Zambia while Mr. White also continued his studies into the genus *Diospyros* (Ebenaceae). In 1952 they both went to Zambia on field work collecting 3514 specimens for FHO, which added to previous collections made by W.D. Holmes. The herbarium was finally moved, in 1951, to new quarters in the newly-built Botany Department building. Perversely, the staff of the forest botany section were moved back under the jurisdiction of the Forestry Department three years later although the herbarium had to remain where it was, close to the Botany School Herbarium (OXF) and the Library. During this time FHO survived yet another threat from the Professor of Botany, now Professor Darlington, to have it ejected from the building. Now in a new, more spacious purpose-built room, the herbarium collection was more accessible, the carpological collection was transferred to new boxes and the spirit collection largely reorganised and relabelled. Much time was spent by Herbarium Assistants on preparing illustrations for the book to be entitled 'The Forest Flora of Northern Rhodesia'. Mr. White supervised the advanced study by Mr. J.D. Chapman, forest officer from Malawi, on 'The vegetation of Mt. Mulanje, Nyasaland with particular reference to *Widdringtonia whytei*, the Mlanje Cedar'.

1959-60 saw further changes in the Forest Herbarium. After spending nine months in South Africa and Zambia on field work, Mr. White took over as Curator of FHO from Mr. Hoyle who remained as Forest Botanist. Mr. G.T. Prance commenced work for a doctoral thesis on the Chrysobalanoideae under the supervision of Mr. White, before going on to The New York Botanical Garden to build a reputation as an eminent botanist, returning to Britain as Director of Kew. Dr. Brian Styles was appointed as a Senior Research Officer with the Overseas Development Agency (ODA) to assist Mr. White in the preparation of botanical monographs of important forest trees.

So began the long association of FHO with research into the Meliaceae. Brian Styles collected Meliaceae and other important tree species in Uganda in 1963. As well as continuing with an interest in the African Meliaceae he also worked on *Swietenia* and *Cedrela* for *Flora Neotropica*. Mr. T.D. Pennington joined the group in 1961, first as a doctoral student on a study of the generic limits of the Meliaceae then as a Research Officer funded by ODA studying several South American genera. They were joined much later by Dr. David Mabberley who was appointed firstly as the Druce Junior Research Fellow in 1973 on a monographic study of *Chisocheton*, then as Lecturer in Forest Ecology working on the Asiatic genera and in particular a monograph of *Dysoxylum*. Miss Caroline Pannell arrived as the Druce Scholar in 1978 working on a study of *Aglaia* followed by a period as Departmental Demonstrator when she developed the work into a monograph. She was particularly interested in the relationship between animals and the phenology of rain forest trees. Frank White and Brian Styles produced the account of the Meliaceae for the *Flora of East Tropical Africa* in 1990 as part of a series for different African countries and were working towards a monograph of the African Meliaceae when they both died prematurely. Thirty years research into this family has resulted in FHO accumulating a large, comprehensive collection of the Meliaceae as herbarium sheets, carpological and spirit collections from Africa, S.E. Asia, the Pacific, Central and South America.

The 1960s saw the pace of activity continuing with the ongoing studies into *Brachystegia* and Meliaceae. Dr. Exell, newly retired from the post of Deputy Keeper of Botany at the British Museum, used FHO as his base to continue editing *Flora Zambesiaca*. Herbarium support staff seemed to change at regular intervals but kept up the level of processing – mounting and poisoning specimens and incorporating them into the herbarium – as large consignments of material came in from Zambia, Malaysia and the Pacific and Uganda. 'The Forest Flora of Northern Rhodesia' was completed, whilst the 'Vegetation Map of Africa' and 'The Evergreen Forests of Malawi' were started. The Vegetation Map, which Frank White compiled and wrote on behalf of the AETFAT vegetation map committee, was eventually published in 1981 (the map) and 1983 (the accompanying descriptive Memoir) and the Malawi Forests book was completed at the end of the decade. With Mrs. Anita Caveney joining the herbarium to work with Mr. White on the African Ebenaceae and Mr. Francis Ng commencing a doctoral thesis on the Indo-Pacific Ebenaceae, the Ebenaceae was now becoming a substantial section in FHO.

Mr. Arthur Hoyle retired in 1971 with the unwieldy *Brachystegia* still unfinished as a monograph but he left accounts of the genus for several regional Floras and descriptions of new genera and species such as *Burttdavya* (Rubiaceae), commemorating the herbarium's founder, amongst many publications. He was a competent illustrator himself and many of his intricate illustrations of flower dissections are preserved on FHO specimens. He was particularly interested in precise botanical descriptions and was one of the first taxonomists to appreciate the value of full and detailed field notes on herbarium labels.

Mr. Frank White was also appointed as Curator of the Botany Herbarium (OXF) at that time so achieving some union between the two herbaria at last. Miss Helen Fortune started a doctoral study of *Parkia* (Leguminosae: Mimosoideae) under the supervision of Mr. White. There followed several changes in Herbarium Assistants over this and the next decade with a consequent decline in the amount of curation being done in FHO. In 1976, Miss Serena Marner was appointed to FHO, initially spending much time listing and identifying the large collections from the forests of Gongola State, Nigeria sent to FHO by Jim Chapman, but subsequently moved to OXF which she still manages. The arrival of Mr. Jameson H. Seyani from Chancellor College, Malawi in 1978 to commence a doctoral thesis on the genus *Dombeya* (Sterculiaceae) continued and consolidated the move after the war from the training of Colonial forestry officers to the training of biology graduates from both the U.K. and the Tropics in taxonomic studies. Mrs. Alison Strugnell was appointed as herbarium assistant to FHO in 1986 to work with Frank White on listing and identifying the large amount of material being sent to FHO by Jim Chapman from Malawi, mainly Mt. Mulanje, and to tackle the mounting curation problems in the herbarium. Throughout all these changes, the Curator was heavily involved in undergraduate teaching for the Botany Department in plant systematics and biogeography for which the herbarium was still used for some practical work until lack of space for people and specimens

necessitated moving the classes to the laboratories.

The 1960s saw the development of a Forest Genetics Group within OFI to carry out research into the evaluation, conservation and improved use of forest genetic resources. Initially this was centred on studies of tropical pines, but over the years attention was also paid to fast-growing hardwoods and in more recent years to multi-purpose Central American and African dry-zone genera such as *Leucaena, Gliricidia, Parkinsonia and Acacia.* All along it has had a close association with FHO because any collections made during these studies were deposited there and the forest systematic staff were often involved. Brian Styles, as Forest Botanist, was a member of this group firmly linking plant taxonomy with tropical forestry. He believed that sound taxonomy made a permanent contribution to the wise use and conservation of trees. Brian started working on the then little known pine flora of Central America in the 1970s, work which culminated in a monograph for *Flora Neotropica* completed by Aljos Farjon after Brian's untimely death in 1993. He always considered that field work was an important part of his work and his many collections, of the various groups he worked on, now reside in FHO. Three of the Group's projects in particular, on Mimosoid Legumes, have resulted in considerable collections of woody legumes being deposited in FHO: Colin Hughes' study into the systematics of *Leucaena,* Duncan MacQueen's study of *Calliandra calothyrsus* and related species and a series of investigations to test the genetic potential of some African *Acacia* species by Mr. Chris Fagg and Dr. Richard Barnes. In 1998 Chris and Richard began a new project in conjunction with botanical artist Rosemary Wise to publish the taxonomic, ecological and other information gained as a series of scientific publications, field guides and a conspectus of the African Acacias as a whole.

After an unsatisfactory research history of more than 60 years, new work to look at the taxonomic problems of *Brachystegia* (Leguminosae: Caesalpinioideae) began at last with the arrival in 1995 in FHO of Mr. Augustine Chikuni from the National Herbarium of Malawi. He began working for a doctoral thesis under the supervision of the present Curator of the Herbaria, Dr. Stephen Harris and Dr. Brian Schrire, Royal Botanic Garden, Kew. This has now been completed, laying firm foundations for future studies into this troublesome genus and allowing the large FHO holdings to be curated into a meaningful state. Publications are in the pipeline including the long-awaited account for *Flora Zambesiaca* and a field guide. Some new species described by Hoyle were recently published post-humously by Dr. R.K. Brummitt of Kew.

Alongside these and other research projects and for their use, a data management system (BRAHMS) has been developed by Mr. Denis Filer, concerned with the broad subject areas of forestry, biodiversity and herbarium management. It is currently being used in FHO by Alison Strugnell for loan management and for compiling a Check List of the Flora of Mt. Mulanje, Malawi – a project that has grown out of the original identification lists of Jim Chapman's collections. FHO has grown to approximately 400,000 specimens (plus associated carpological and spirit collections) and has outgrown the cupboard capacity of the herbarium of the 1950s. Databasing of all the FHO holdings is not possible but is being done for those groups that are subjects for research as part of the data management of these programmes. It is hoped that before too long this information will be readily available for reference from a point within the herbarium, including the databases for the recently overhauled carpological and spirit collections. This partial availability of the collections on a computerised system and the installation of compactor shelves to increase the storage capacity for herbarium sheets, when FHO is refurbished, will enhance the accessibility of the collection and suitable working space for staff, students and visitors.

In the academic year of 1985-86, the University merged the departments of Agricultural Science, Botany and Forestry into one Plant Sciences Department. The Commonwealth Forestry Institute was renamed again, this time as the Oxford Forestry Institute and operated from within the Plant Sciences Department. This finally put an end to the to-ing and fro-ing of the forest systematics section between the administration of Botany and Forestry but it caused FHO to become vulnerable again in the early 1990s as it was much in need of curation and a sense of direction in a changing systematic world. During a few transitional years which saw the retirement of Dr. Frank White from the Curator's position to concentrate on research, Dr. David Mabberley and Dr. Quentin Cronk as successive Acting Curators and much discussion on the role of the collections in the Plant Sciences Department, the Forest Herbarium (FHO) (by now renamed the Daubeny Herbarium) was officially merged with the Botany Department Herbarium (OXF) under the umbrella title of 'The Oxford University Herbaria' and as such became a registered museum collection. Although merged into one, the two acronyms (FHO and OXF) are still used for day-to-day transactions and this does occasionally cause some confusion. It reflects the fact that the two collections are still physically separated on different floors of the department and are still of interest to different groups of people although there is now much more overlap in activity than in earlier years.

Since the reorganisation, all new specimens, except for British material and lower plants, are now accessed to FHO only. FHO is no longer the repository solely for forest plants but now acts as the present day research collection and still maintains its original role as a teaching resource. The Forest Genetics group continues close links with Dr. Robert Scotland, University lecturer in Plant Systematics and Biodiversity, and Dr. Stephen Harris, Curator of the Herbaria and Head of the Molecular Systematics Laboratory. Current taxonomic research is largely focused on the Acanthaceae, the Asian genera *Strobilanthes* and *Hemigraphis* in particular, under Robert Scotland, the Cyperaceae and forest and arid-zone woody species of economic importance. The production of field guides by Drs. William Hawthorne, Colin Hughes and Richard Barnes in collaboration with Rosemary Wise also continues. Since the mid 1990s the herbarium has emerged in a much renewed and healthier state under the present Curator and helps maintain a taxonomic presence in a modern Plant Sciences department.

Acknowledgements

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Alison Strugnell
Manager of the Daubeny Herbarium (FHO)