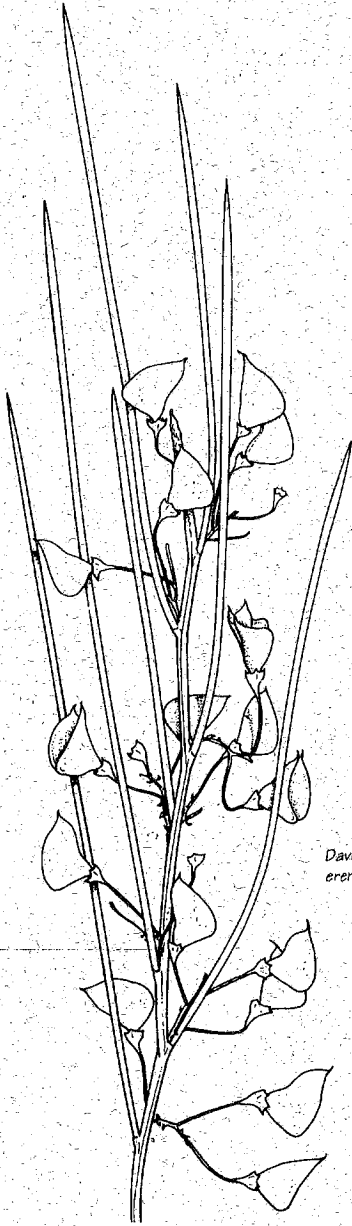


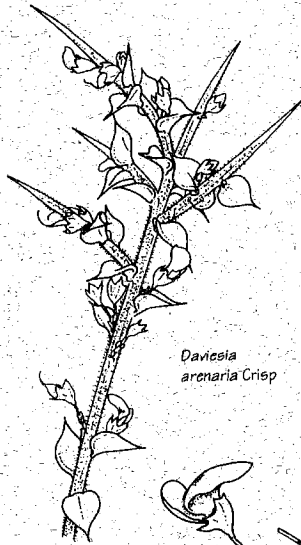


Australian Systematic Botany Society NEWSLETTER

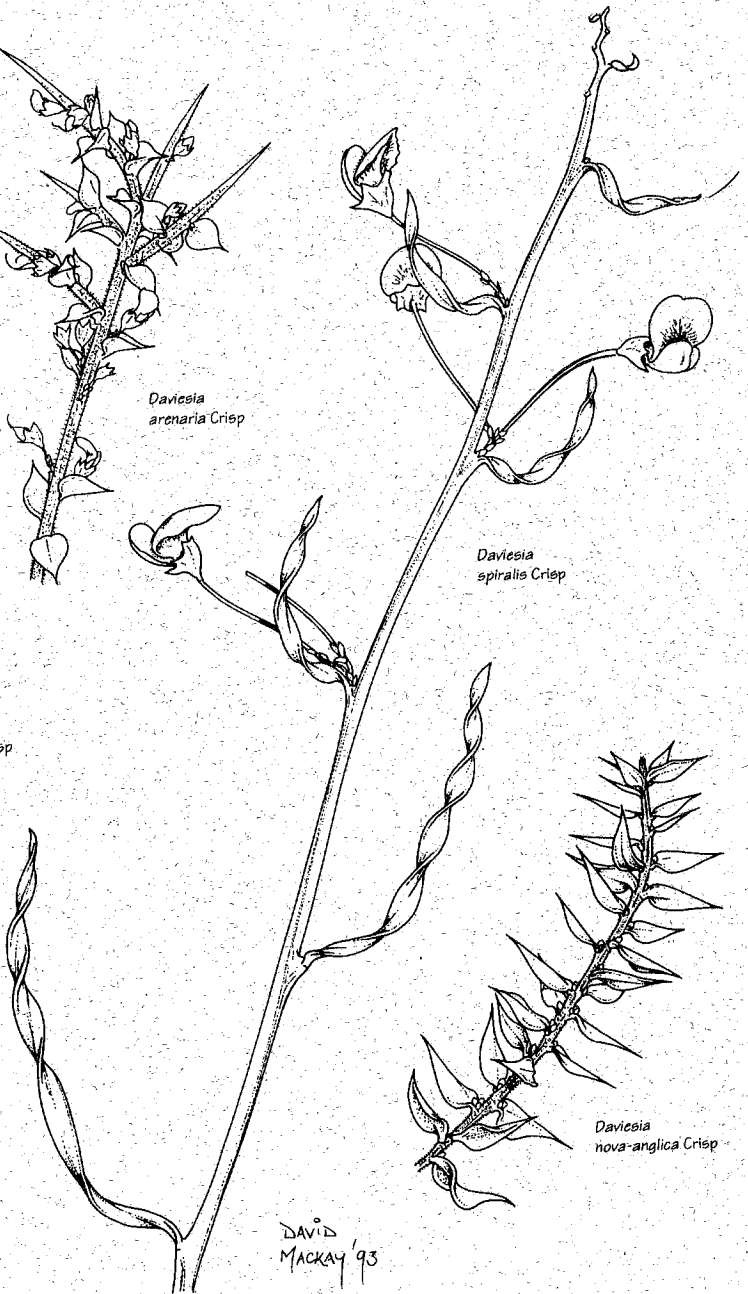
No. 83 JUNE 1995



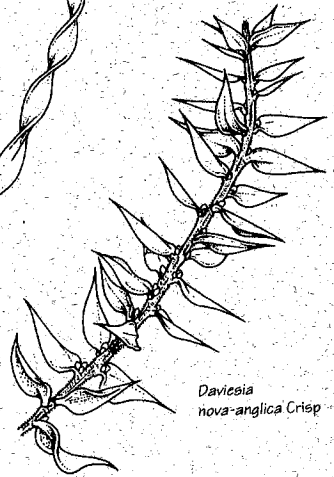
*Daviesia
eremaea* Crisp



*Daviesia
arenaria* Crisp



*Daviesia
spiralis* Crisp



*Daviesia
nova-anglica* Crisp

Price: \$5.00

Registered by Australia Post
Print Post Publication Number. PP 545545 - 0005
ISSN 1034-1218

DAVID
MACKAY '93

AUSTRALIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

Office Bearers

President

Dr. M.D. Crisp

Division of Botany and Zoology
Australian National University
CANBERRA ACT 0200
Tel. (06) 249 2882
Fax. (06) 249 5573
Email mike.crisp@anu.edu.au

Vice President

Dr. G.P. Guymer

Queensland Herbarium
Meiers Road
INDOOROOPILLY QLD 4068
Tel. (07) 877 9325
Fax. (07) 870 3276

Secretary

Dr. C. Puttock

Australian National Herbarium
GPO Box 1600
CANBERRA ACT 2601
Tel. (06) 246 5523
Fax. (06) 246 5249
Email chrisp@pican.pi.csiro.au

Treasurer

Dr. P.G. Wilson

National Herbarium of NSW
Mrs. Macquaries Road
SYDNEY NSW 2000
Tel. (02) 231 8158
Fax. (02) 251 7231
Email peterwi@rbgsyd.gov.au

Councillors

Dr. T. Entwisle

National Herbarium of Victoria
Birdwood Avenue
SOUTH YARRA VIC 3141
Tel. (03) 655 2313
Fax. (03) 655 2350
Email entwisle@botany.unimelb.edu.au

Mr. J. Clarkson

Queensland Herbarium
P.O. Box 1054
MAREEBA QLD 4880
Tel. (070) 92 1555
Fax. (070) 92 3593

Affiliated Society

Papua New Guinea Botanical Society

Australian Botanical Liaison Officer

Dr. B.J. Conn
Royal Botanic Gardens Kew
Richmond, Surrey. TW9 3AB.
ENGLAND
Tel. 44-81-940-1171
Fax. 44-81-332-5278
Email bc02kg@lion.rbgekew.org.uk

Public Officer and Membership Officer

Andrew Lyne
Australian National Herbarium
Centre for Plant Biodiversity Research CSIRO
GPO Box 1600, Canberra ACT 2601
Tel. (06) 246 5508
Fax. (06) 246 5249
Email al@anbg.gov.au

FROM THE PRESIDENT

ASBS ON THE INTERNET

In the next Newsletter, Jim Croft reports that he has posted a 'page' about ASBS on the World Wide Web. This will help advertise us to the rest of the world, perhaps recruit new members, and provide information to our members such as the constitution and Newsletter indexes. At present we do not plan to publish the Newsletter or our membership list this way.

The WWW is the 'information superhighway' that has been receiving so much hype in the media lately. Many but not all of you who have access to e-mail also have access to the WWW. You can use various programs to explore ('surf') the internet, such as Netscape and Mosaic. These are very pretty with fancy presentation and lots of graphics but not, as you may have been misled, quick. This because with all the publicity, the rate of usage is going up exponentially, and slowing the whole thing down.

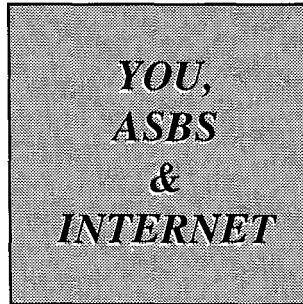
Nevertheless, there are some goldmines of information out there, and most organisations are now establishing their pages on the Web. One of the nice things about these pages are that they take the form of hypertext - words and phrases are highlighted so that you can open up new pages with more information on specific subjects. It is very easy and intuitive to use.

Jim is to be congratulated for constructing this page for us on the WWW. Moreover, he has agreed to provide an article in a future issue about resources for botanists and systematists on the WWW.

AUSTRALIAN SCIENCE COMMUNICATORS

This Newsletter contains a letter from the President of the new society of 'Australian Science Communicators'. Their aim is to help present Australian science to the wider public by putting scientists in touch with journalists and the media. They are actively soliciting contact with our members and are offering to help us in various ways. In particular, they are offering to attend our annual symposia and set up sessions for the media and public. In fact, some of our symposium organisers have done this sort of thing in the past, but this has been ad hoc, depending on the initiative of the organiser. I think the possibilities they offer us for doing this on a regular and organised basis are excellent, and

we should encourage them, and Council will follow this up. Note also that they encourage our local members to make contact with their local ASC representative.



INSTITUTE OF BIOLOGY

In recent Newsletter issues there has been some commentary (by David Greenwood and Bob Hill) about my proposal for an umbrella organisation to organise joint meetings of ASBS and related societies. Bob seemed a little nervous that this might impinge on the independence of societies with different aims and only partly overlapping memberships, such as PPAA and ASBS. This is exactly what I want to avoid. I envisage a loose federation of societies whose sole purpose is to facilitate meetings once a year, and not to impinge in any other way on the contributing societies.

Bob also suggested that the existing Australian Institute of Biology might already serve the function I have in mind. I have spoken to representatives of AIB, but they do not currently organise meetings of the kind I have in mind. However, it seems that they are looking for a broader role and may be interested in coordinating something like this. I shall look further into this possibility and report back to you.

FASTS

The Treasurer of FASTS has written to me (see a copy in this Newsletter) suggesting that they have improved their act, and are hoping that we will be persuaded to rejoin (see also Newsletter 80: 1; 81: 12). I have not yet heard from the new executive director, but I certainly intend to try to get him along to address our AGM here in Canberra at the end of September.

WOODCHIPPING

I am sorry to say that I have received no reply, not even an acknowledgement, to my letter, either from the Prime Minister or from the minister for the Environment. This does little to convince me that this government is sensitive or responsive on matters to do with the environment, or that they are interested in listening to professional organisations such as ourselves. Perhaps this is why we need organisations like FASTS...

CLADISTICS WORKSHOP

Within the next 2 weeks, a circular will be going out to all applicants for the workshop to be held in Canberra at the end of September. We have a quota of 40 places and currently these are full up, but nobody who has applied already will miss out.

ARTICLES

ANGIOSPERM FAMILY IDENTIFICATION AND THE FLORA OF AUSTRALIA, A COMMENT.

Terry Macfarlane, Nicholas Lander &
Alex Chapman
Western Australian Herbarium, Perth

*There is a tide in the affairs of men,
Which, taken at the flood, leads on to
fortune;
Omitted, all the voyage of their life
is bound in shallows and in miseries.
On such a full sea are we now afloat;
And we must take the current when it serves
Or lose our ventures.*

Shakespeare, Julius Caesar

Recently an important taxonomic publishing event took place in the form of "*The Families of Flowering Plants, Interactive Identification and Information Retrieval*" (Watson & Dallwitz 1994), comprising a CD-ROM containing data, programs, and an explanatory and tutelary booklet, anticipated by Watson & Dallwitz (1991). While we consider this work to be very important and useful, not everyone will appreciate it fully on a first meeting. It is our belief that the value and quality of a thing (or idea) is not always self evident and their acceptance is not inevitable. Often, true appreciation comes with time, but sometimes the thing vanishes in the meantime through lack of publicity or an excess of the wrong kind. Informed commentary may help, so we would like to offer some here.

The main importance of the *Families of Flowering Plants* database lies in its world-wide

coverage of families, in the quantity of comparative data it contains, in the excellence of the accompanying computer program INTKEY for providing access to the data, and in the novel form of its publication. There are other notable features: some of the data are original; the character list is sophisticated to a degree not fully appreciable at first acquaintance; it is extensively illustrated with screen displayable drawings (from acknowledged published sources); and the families are narrowly drawn, with many segregates separately described, so that the data can optionally be viewed broadly or narrowly. It does not present a new classification. So far, few references to the work have appeared in the literature, although a similar work dealing with the genera of grasses, published in hard copy as well as in electronic form (Watson & Dallwitz 1992) is now being cited with a similar frequency to a slightly earlier conventionally printed work (Clayton & Renvoize 1986).

A number of particularly favourable reviews of the *Families of Flowering Plants* have appeared, e.g. Hansen (1994) and Ingrouille (1994), who likened its significance to that of Linnaeus' *Genera Plantarum*. It has not been widely reviewed in this country, despite the fact that both database and program are products of Australia. And yet this type of technology is something we do well in Australia: another recent computer-based work deals with the species of Australian rainforest trees (Hyland & Whiffin 1993). The latter, like an earlier computer identification system for Angiosperm families (MEKA/ANGIOFAM of Duncan & Meacham 1986), is more specifically for identification than for both information retrieval and identification, with certain consequences for data generality.

HOW DO SYSTEMS SUCH AS THE FAMILIES OF FLOWERING PLANTS COMPUTER PACKAGE FIT INTO EXISTING TAXONOMIC PRACTICE AND INFORMATION ARRANGEMENTS?

Scientific disciplines and establishments are well used to adjusting to technological advances,

as indeed people of all levels of technical competence have learned to use microwave ovens and video recorders in their homes. Other types of computer applications are widely used in systematic botany: specimen databases, word processors, library catalogue systems, abstracting services, tools for cladistic and phenetic analyses. The descriptive aspect has perhaps lagged behind, and a number of reasons could be adduced to explain this, although this is not the place to detail them. For those using descriptive databases, the technology is well and truly here, for example in the form of the DELTA language and associated programs developed in Australia's own CSIRO, which we think is by far the best combination available. The programming of further improvements to the system is continuing, with new features being added from time to time. And a growing number of scientists, here and overseas, are recognizing the advantages of the multiple forms of output possible through the use of the DELTA language. Examples include text production for books and papers, such as the treatments of grasses (Watson & Dallwitz 1992,), sedges (Bruhl et al. 1992, Bruhl 1995), *Cucumis* (Kirkbride 1993) and Aquifoliaceae (Loizeau 1994), which variously also include keys, classificatory and/or cladistic analyses, accompanying INTKEY databases which may also be maintained on the Internet (Watson & Dallwitz 1992 onwards, Watson & Dallwitz 1994 onwards), and more recently a World Wide Web version, consisting of full descriptions in hypertext and illustrations, for the *Families of Flowering Plants* (Watson & Dallwitz 1995 onwards).

Several environments could be envisaged where the *Families of Flowering Plants* package might be employed. An individual copy on a desktop computer equipped with a CD-ROM player is the most straight-forward implementation, and even a CD-ROM player is not necessary if one is willing to forgo the pictures. For an institution, the package could be installed on one selected machine which users share, although a network licence might be more useful because then users could access it from their work

place, perhaps near the microscope. The images could then be loaded on the network server machine's CD-ROM drive (perhaps a juke box type of player) or the hard-disk. A herbarium's public access collection is another, particularly appropriate location, and this will doubtless happen as the database coverage of the flora reaches a critical mass and an informed user community develops. University teaching labs could make especially good use of this package, and indeed there are some universities in Australia, as well as many overseas, where it is in use.

The variety of uses to which a good database such as the *Families of Flowering Plants* package can be put is large indeed (Watson & Dallwitz 1991; Gibbs Russell et al. 1990). However, because some aspects may be little-known, and there are certainly misconceptions that INTKEY databases provide no more than an interactive key, a brief discussion is given here. The most important point to make is that, as stated in the title, it offers both interactive identificatory and information retrieval capabilities by means of a clever facility almost unique to INTKEY, namely the ability to vary the meaning of what is meant by a match between query data and taxon data. The broadest setting, *Match = overlap, unknowns and inapplicables*, is used for identification and means that in a query on a particular character state, any taxa exhibiting that state (whatever other states of the same character they also possess) will be retrieved, as will any taxa for which the character has not been scored (i.e. it is unknown), and also those where it is inapplicable (a safeguard against certain rare situations). A consequence of matching unknowns is that the set of matching taxa will often be larger than it would be without that setting, and also larger than it would be if all the taxa were fully scored. Thus the performance of INTKEY sometimes appears less than optimally efficient, whereas it really reflects a cost of the flexibility of choosing one's own path through an identification, and for not falsely rejecting the correct taxon because it was hitherto unknown for some features. These are useful features of

the program, not grounds for criticism. And the program allows the user to discover which of the categories, scored, unknown or inapplicable, any taxon belongs to for a given character, through the use of the commands *Describe*, *Differences* and *Similarities*. Any of the three *Match* settings *overlap*, *exact* and *subset*, used alone, permit in their own ways the retrieval of the actual recorded data.

Other features of the package include the ability of INTKEY to provide diagnoses for taxa in various contexts, and to produce descriptions of chosen taxa, in terms of selected characters. Here it is of interest to mention that apart from the coded characters, i.e. the multistate and numeric characters, the data contain various free-text characters which may be output in descriptions or queried on words or strings. INTKEY does not itself currently cater for the comments which DELTA allows in order to expand on or illuminate the strict coding form of the data in terms of a necessarily standardised character list. To make these comments available, the package includes a number of description files containing the full taxon descriptions in formatted text. They would fill a voluminous book, but they are included in the package. To read them it is usually necessary to leave INTKEY, but with the Windows version it is only a matter of swapping out temporarily to a file viewer.

BUT HOW GOOD IS THE *FAMILIES OF FLOWERING PLANTS* DATA?

Coverage of *Families of Flowering Plants* is world-wide. No particular classification is followed, but rather the place of each taxon in the main recent classifications is given. The number of characters (including pseudocharacters such as geographical distribution) is 541. Although this is a large number, it can sometimes still be difficult to distinguish a small residue of families. Partly this can reflect the real situation, especially with incomplete material, but it may also indicate a need for further characters to fine tune the differences between closely

related families. A view we have heard expressed is that this would necessitate scoring all the taxa for those characters, but this is not necessarily the case. It is possible to restrict the scoring to just the taxa where difficulties were experienced, and then such characters would be favoured by the *Best* command, which calculates the characters that best separate the remaining taxa, only in a useful situation. Or one could make use of the 'implicit' facility of DELTA, which permits one to optionally assume the presence of the common state except where the explicit state, usually an uncommon one, is scored. We have found outright errors to be few, and these the authors have proved more than willing to rectify when they are notified. It is not uncommon to observe a wider range of measurements, counts or variation than indicated by the data, but all taxonomists must be familiar with this situation. Again, the data are readily corrected. Of course in correcting the data, the published version becomes outdated, and owners of the package need to be aware that updates are available, from the Internet or the authors. Because current CDs cannot be updated without complete replacement, the solution is to set the program to read the new data files from the hard disk. The image files on the CD remain available. To sum up, we have had much success with the database, although we have not kept statistics nor made conscious comparisons with conventional printed keys to the flowering plant families.

We know of no well-designed direct comparisons between printed keys and computer identification systems which compare efficiency and accuracy. To yield useful information and avoid invalid methodology would require adherence to proper scientific experimental procedures. This would be all the more important if major decisions hinged on the outcome. Competent advice would be required at the design stage, especially with respect to the computer aspects, and due attention would need to be paid to having proper controls with meticulous record-keeping for both technologies, use of unlabelled plant specimens, adequate duplication, and careful briefing of participants.

The full facilities of the computer system would need to be available because the best systems can be used in a variety of ways and have a number of aids for the user. In the case of INTKEY, users need to make free but selective, rather than mechanical, use of the *Best* command. In addition the *Tolerance* facility, which provides for an identification to proceed beyond the point where no taxa remain by allowing retained taxa to differ from the specimen by a settable number of states, needs to be invoked to make best use of the program. This latter represents a major advantage of the INTKEY technology compared with printed keys, so it must be used. Other parts of the identification process with INTKEY include reviewing and changing the used characters as necessary, examining the outcome with commands such as *Differences* and *Describe*, and viewing illustrations. When it comes to comparing the data aspects of printed keys and computer databases, a program such as INTKEY offers additional facilities, beyond actual identification sessions, for data examination and checking. It will be apparent that significant resources would be needed for such an experiment, which might perhaps be better spent on botanical research. In our opinion, convinced as we are of the value of both traditional and new technologies, and knowing as we do that they are really complementary rather than competitive, it would not be a useful exercise.

HOW APPROPRIATE IS THE *FAMILIES OF FLOWERING PLANTS* PACKAGE TO THE AUSTRALIAN FLORA?

The database not only covers the families of the world, but the descriptions are intended to cover the world range of variation for each. The first adjustment an Australian user might make is to restrict the taxa under consideration to those known to occur in the country or in their state or region. Facilities to do this are available via taxon keywords which, for permanency, are placed in the INTKEY initialisation file. Cognisance needs to be taken of nomenclatural differences, particularly with respect to segregate families.

This does not affect the range of variation in the descriptions, which will still be at world level. Without changing the data, not much can be done about that, but occasionally it will be found that a segregate family already in the database represents the local range of variation of a broadly defined family, the remaining parts of which can be excluded. For instance, this is the case in Western Australia with respect to the diverse family Saxifragaceae, which is locally represented by the segregate Eremosynaceae. An additional consideration is whether the world level descriptions in fact adequately cover the variation encountered with Australian material. If not then the data should be amended.

Inevitably, some recasting of the data may be required for use with derivative Australian projects. For example, some special features of the Australian Solanaceae were originally not covered, but have been corrected in subsequent updates (readily available via Internet), whereas the Chenopodiaceae description reflects the current state of knowledge. Therefore, it appears that, whilst classical and recent standard international texts have been extensively used, recent Australian Floras and journal literature have so far been consulted only selectively. So perhaps the same spirit moved the authors as might have moved Linnaeus in his 1753 decision to publish now, even though he must surely have felt that Dampier had not comprehensively collected the plants of the new continent, and Bentham released his *Flora Australiensis* in seven instalments: it is better to release something for use now than to die before achieving perfection.

WHAT IS THE FUTURE FOR THE TECHNOLOGY AND DATA IN SYSTEMS SUCH AS THE *FAMILIES OF FLOWERING PLANTS* PACKAGE?

Even in the absence of direct tests, we think it is doubtful that the technology represented by INTKEY works less well than the traditional printed keys and other established processes. We have found that busy ecologists, who are

interested in efficiency when identifying plants, and younger people such as school and university students who have attended demonstrations of this and other databases take to computer identification systems readily, often gleefully, and we guess that this is because they are more computer literate and less influenced by established systems than many professional taxonomists. Also, the implications for changes in methodology may be smaller for the users than for the taxonomists, since using is easier than creating. However, two conclusions seem to follow. Firstly, widespread uptake of the newer technologies in descriptive facets of taxonomy may be effected through generational change instead of through change of habits. Secondly, if one were planning to market a computerised system, the major customer base may be outside the ranks of the professional taxonomists. As for INTKEY, one hears criticisms concerning missing features and shortcomings in the user interface, and we too have made criticisms. But if ever there was a responsive team of programmers, then Mike Dallwitz and colleagues are it. The program has now appeared in a Microsoft Windows version, after a period of testing and consultation of users, and it has a very professional interface which ought to be readily understandable by Windows users. In fact the technology is now ahead of the use currently made of it by even the best available datasets, including the *Families of Flowering Plants* package. In our view, INTKEY would make a very good platform on which to present marketable flora databases.

Interest in preparing such a database of flowering plant families for CD-ROM distribution with the *Flora of Australia*, using the *Families of Flowering Plants* package as a basis has been mooted (Hewson, cited by Chapman et al. 1994). What a superb advertisement for Australian technological expertise, scientific competence, and vision such a product would provide, not to mention making available to users a useful and efficient tool! It is a fair bet, too, that sales of the book would improve in consequence. Of various approaches that might

be taken to achieve it, modification of the existing *Families of Flowering Plants* package would probably be the most efficient and cost effective, in our considered opinion, having experience of such projects (e.g. Macfarlane 1995, Chapman and Gioia 1995). Alternatives such as the resource demanding writing of new software is a pitfall to be avoided, as is starting from scratch with an entirely new database. These could hardly be done in a reasonable time, and there are various factors which could lead to ultimate failure, at least of market acceptability even if database preparation could be carried through against the odds.

If there is serious interest in achieving a good product in a reasonable time, the following suggestions may be of value in indicating how it could best be done.

1. The DELTA language, associated CSIRO programs, and INTKEY are the appropriate technology.
2. For the data, a very substantial time lead could be gained by using the most recent dataset from the *Families of Flowering Plants* package (Watson & Dallwitz 1994 onwards) as a basis.
3. Modification to cover Australian requirements would involve comparisons of recent Australian publications with the database contents and making appropriate additions. In some cases new descriptions might be necessitated where the Australian representation of the family is small, but the extra-Australian variation is wide. Specialists may have a consultative role in this.
4. Specifically Australian illustrations, including colour photographs and drawings, could easily replace or augment the current ones.
5. The project could be staffed by experienced and competent DELTA users if they were available, but training could be carried out if suitable managers were on hand. Consideration should be given to contracting experienced managers of such projects from amongst the small pool of such people scattered around the country.

Where to from here? Ideally, public discussion in the pages of this Newsletter would be welcome, but high water may have receded by then, and an opportunity lost. We would be interested in any responses that our ideas and suggestions might evoke. However, the construction of an interactive key in the context of the *Flora of Australia* project is a task requiring wide consultation and national coordination, perhaps best achieved by a federal agency such as ABRS rather than a more focussed regional group like our own.

REFERENCES

- Bruhl, J.J., Watson, L. & Dallwitz, M.J. (1992). Genera of Cyperaceae: interactive identification and information retrieval. *Taxon* 41: 225-235.
- Bruhl, J.J. (1995). Sedge genera of the world: relationships and a new classification of the Cyperaceae. *Australian Systematic Botany* 8: 125-305. Sedge genera of the World dataset available at Internet URL <http://www.cis.csiro.au/cis/journals/asb/index.html> under accessory publications.
- Chapman, A.R. & Gioia, P. (1995). The Smart Collection. *Landscape* 10(4): 49-53. (WA Department of Conservation and Land Management.)
- Chapman, A.R., Lander, N.S. & Macfarlane, T.D. (1994). Workshop on Taxonomic Databases, Perth, October 1993. *Australian Systematic Botany Society Newsletter* 78: 14-16.

- Clayton, W.D. & Renvoize, S. (1986). *Genera Graminum, Grasses of the World*. (H.M. Stationary Office: London.)
- Duncan, T. & Meacham, C.A. (1986). Multiple entry keys for the identification of Angiosperm families using a microcomputer. *Taxon* 35: 492-494.
- Gibbs Russell, G.E., Watson, L., Koekemoer, M., Smook, L., Barker, N.P., Anderson, H.P. & Dallwitz, M.J. (1990). *Grasses of Southern Africa. An Identification Manual with Keys, Descriptions, Classification and Automated Identification and Information Retrieval from Computerized Data. Memoirs of the Botanical Survey of South Africa No. 51.* (Botanical Research Institute: Pretoria.)
- Hansen, B. (1994). [Review of Watson & Dallwitz (1994)]. *Nordic Journal of Botany* 14: 486.
- Hyland, B.P.M. & Whiffin, T. (1993). *Australian Rain Forest Trees*. 3 volumes and computer disks. (CSIRO Publications: East Melbourne.)
- Ingrouille, M. (1994). Steps up the botanical staircase [book reviews]. *Nature* 369: 718.
- Kirkbride, J.H. (1993). *Biosystematic monograph of the genus Cucumis* (Cucurbitaceae). 159 pp. + diskette. (Parkway Publishers: Boone, North Carolina.)
- Loizeau, P.A. (1994). Les Aquifoliaceae peruviennes. (Elements pour une revision des Aquifoliaceae neotropicales). *Boissiera* 48. 306pp.
- Macfarlane, T.D. (1995). A DELTA database project for the plant genera of Western Australia. *Australian Systematic Botany Society Newsletter* 83.
- Watson, L. & Dallwitz, M.J. (1991). The Families of Angiosperms, Automated Descriptions, with Interactive Identification and Information Retrieval. *Australian Systematic Botany* 4: 681-695.
- Watson, L. & Dallwitz, M.J. (1992). *The Grass Genera of the World*. (CAB International: Wallingford.) (Revised edition 1994.)
- Watson, L. & Dallwitz, M.J. (1992 onwards). *The Grass Genera of the World*. INTKEY package. Internet URL <ftp://muse.bio.cornell.edu/pub/delta/>
- Watson, L. & Dallwitz, M.J. (1994). *The Families of Flowering Plants, Interactive Identification and Information Retrieval*. CD-ROM and booklet. (CSIRO Publications: East Melbourne.)
- Watson, L. & Dallwitz, M.J. (1994 onwards). *The Families of Flowering Plants, Interactive Identification and Information Retrieval*. INTKEY package. Internet URL <ftp://muse.bio.cornell.edu/pub/delta/>
- Watson, L. & Dallwitz, M.J. (1995 onwards). *The Families of Flowering Plants: Descriptions and Illustrations*. Internet (World Wide Web) URL <http://muse.bio.cornell.edu/delta/>
-

A DELTA DATABASE PROJECT FOR THE PLANT GENERA OF WESTERN AUSTRALIA

T.D. Macfarlane

Western Australian Herbarium, c/o Manjimup
Research Centre, Dept. of Conservation
and Land Management, Brian Street,
Manjimup W.A. 6258

A DELTA database project for the Angiosperm genera of Western Australia is in progress for the Department of Conservation and Land Management (CALM), centred at the Western Australian Herbarium, Perth. This is a brief note to announce the existence of this project, which is managed by T. D. Macfarlane, N.G. Marchant and L. Watson. Some other people who have worked on aspects of the project include H.R. White, T.R. Lally, J. Gathe and J.R. Wheeler.

The Western Australian flora is very diverse, having about 12,000 species with a high level of endemism at the species and genera levels. The complement of ca 1300 genera, including naturalised plants, represents both tropical and temperate floras, and is a little more than half of the total number of genera in Australia as a whole. Western Australia is not fully covered by modern Floras, a situation which will not be remedied for many years. Even those now available are subject to obsolescence, are difficult to revise, and expensive to publish. Yet there is high demand for current, authoritative information from government agencies concerned with land management, biological conservation and environmental protection, and from other sections of society. A database providing floristic information and a means of identification can provide a practical solution to the problem of information currency. And there will be improved resource efficiency over the long term by the use of a multiple-use data format, DELTA, through overcoming repetitious data gathering and entry.

With Angiosperm families catered for by the Watson & Dallwitz (1991, 1994) database, the logical next step is to cover the genera, for which a Flora was in any case a long-standing plan. Eventually it is planned to produce a database covering the whole flora to species level, but this will be a different and hopefully more widely based cooperative venture. Meanwhile various databased are under way at the species level as parts of the other projects

Our character list is largely taken from the angiosperm Families database of Watson & Dallwitz because it was of appropriate scope and quality. Because we wanted to record maximum useful data and provide the ability to identify specimens to genus, we have extended the standard character list with such further characters as are needed in particular families in order to differentiate the genera. These additional characters are incorporated into a logical position in the character list soon after they are added, but they are recorded only for those genera for which they are relevant. We have incorporated data for families into the database, so that there is data present at family level even where the genera of a given family have not yet been recorded. Our database provides some reciprocal input to Watson's Families of Flowering plants database in the form of character refinements and data modifications and corrections.

To date we have entered data for over 25% of the genera which we plan to record. We are excluding families for which published DELTA databases of genera already exist, e.g. Poaceae, although users of identifications systems will be referred to, and will be able to readily access, the separate databases. It is planned to complete initial data entry in 1997.

As a consequence of using the DELTA data format, the output from the database can take a variety of forms. We plan to provide INTKEY databases for information retrieval and identification, printed descriptions tailored to the

required detail and scope, and hypertext descriptions made available on our internal network, and ultimately, on World Wide Web. Images are to be included, and some are already in.

Watson, L. & Dallwitz, M.J. (1991). The families of Angiosperms: automated descriptions, with interactive identification

and information retrieval. *Australian Systematic Botany* 4: 681-685.

Watson, L. & Dallwitz, M.J. (1994). *The Families of Flowering Plants*. Interactive Identification and Information Retrieval. Booklet and CD-ROM for MS-DOS. (CSIRO Publications: East Melbourne.)

COMMENTARY

ABOUT AUSTRALIAN SCIENCE COMMUNICATORS

Julian Cribb
President, ASC

The Australian Science Communicators (ASC) is a recently formed national organisation for people who wish to encourage and improve the communication of science in this country.

Our membership of about 500 includes professional science communicators, journalists, scientists, teachers, museum staff and others having an interest in this field. We have established branches in most states and territories, as well as a national office in Canberra.

There has long been concern that science awareness and understanding in Australia is not what it might be, especially given our technology-dependence as a society. ASC is here to do what it can to remedy that — by bringing science to the public and media so that its significance is more readily appreciated. Eventually, we hope this will lead to a broader political and public awareness of the role and contribution of science to our society, its progress and prosperity. That in turn should help for a greater national investment in science.

I am writing not only to make your association aware of our existence, but to invite you to consider whether there is any way in which ASC

can be of assistance in the publicising or communication of science in your field.

For example, most learned societies hold an annual conference or congress at which many interesting advances and results are reported. However, these are often delivered in terminology which the public and media find hard to follow. One way ASC can assist is by staging a forum, a media conference or public seminar at which the most outstanding advances reported to your conference can be explained in terms the public and media can readily understand.

ASC is also willing, should you see the need, to provide practical or policy advice with regard to science communication or to put you in contact with people who can provide training in such areas of communication as media skills for scientists.

In addition we will ourselves hold many conferences, seminars, workshops and public forums in which your members are most welcome to participate.

For your information, I enclose a copy of the aims and objectives, as well as names and contact numbers for our organisers at national, state or territory level. Should you wish to contact them directly, please do so.

On behalf of the Australian Science Communicators, we would greatly appreciate any publicity you can give to our aims and existence

among your association's own members, and advise them that they are most welcome to join ASC or take part in its activities if they wish.

Enclosure 1. The aims of the Australian Science Communicators are:

- (a) To foster professional communication of science and technology, especially through high standards in the crafts of journalism and other forms of communication;
- (b) To promote national awareness and understanding of science and technology;
- (c) To provide opportunities for meetings between science and technology communication professionals.

Enclosure 2. Contact points for regional groups

These people are the contact points for the regional groups of the Australian Science Communicators. Contact them to see how the groups can help arrange media coverage of your Conference.

	Phone	Fax	Email
Townsville David Lloyd	(077) 818 883	(077) 726 093	d.lloyd@gbmpa.gov.au
Brisbane Jenni Metcalf	(07) 377 0361	(07) 377 0400	Jenni.Metcalf@cnets.tcp.csiro.au
Sydney Susannah Elliott Alison Leigh	(02) 330 2581 (02) 950 4344	(02) 330 2583 (02) 950 4387	S.Elliott@uts.edu.au sharonh@ozemail.com.au
Canberra Richard Eckersley	(06) 276 6529	(06) 276 6466	richard.eckersley@csd.csiro.au
Melbourne Ian Anderson	(03) 245 7517	(03) 245 7518	nsa001@dcda7.das.net
Adelaide Deane Hutton	(08) 260 8139	(08) 260 8139	
Perth Peter Dingle	(09) 360 2569	(09) 310 4997	dingle@essun1.murdoch.edu.au
Hobart Jess Dietzel	(002) 311 713	(002) 347 327	

**FEDERATION OF AUSTRALIAN
SCIENTIFIC AND TECHNOLOGICAL
SOCIETIES**

GPO Box 2181
Canberra ACT 2601
31 March 1995

Dear Dr. Crisp,

I am responding to your letter of 8 March which included a copy of your letter of 11 Nov 1994 to Graham Johnston regarding withdrawal of the ASBS from FASTS. You have highlighted the four main aspects of concern to the ASBS and we are grateful to have that feedback.

FASTS have been going through extensive restructuring and our prospects as a once more influential lobbying body supported by firm policies are now very good. There are two new members on the executive and the new executive director, Toss Gasgoine, has recently commenced. A Newsletter will soon be available which summarises the recent actions and includes information on the launch of the FASTS policy document.

You have indicated that there may be benefit from a presentation to the Council of ASBS by a representative of FASTS. This is the type of task that the new executive director will be undertaking. I am sure that Toss will be contacting you soon to discuss the most convenient means for arranging such a presentation.

FASTS needs the involvement of as many science and technology organisations as possible to ensure that the pertinent issues are considered. It is also important that FASTS can state that it is representing the bulk of those in the science and technology area in Australia when dealing with politicians.

I hope that FASTS can show that the points your society has been concerned about have been overcome and that your society will not only rejoin FASTS but become a more important

player in the science and technology debate in Australia.

Yours Sincerely,

Marion Burgess
Hon Treasurer

**MORE ABOUT UNIVERSITY OF THE
THIRD AGE (U3A)**

George Chippendale
4 Raoul Place
Lyons, ACT 2606

Following my mention of the U3A in ASBS Newsletter 73:3 (1992), I would like to further bring this organisation to the attention of retiring botanists. I know the majority of us **never** retire... we just don't get a salary... but in the 6 years I have been associated with U3A, running a general course in botany, I have found great satisfaction, and made many friends, because there is so much more time for social interaction.

Recently, 26-28 April 1995, the U3A held an Australasian Conference at the ANU, and this was certainly one of the most stimulating conferences I have ever attended. One of the speakers was Dr. Jack McDonnell AM, formerly Director of the Centre for Continuing Education at Monash University, now the Hon. Secretary, U3A Network-Victoria Inc. Dr. McDonnell mentioned some information from a paper he recently gave to the National Conference of the Aust. Assoc. Adult & Community Education. He said that "There is little doubt that the U3A movement has been, during the last decade — and still is, the fastest-growing education enterprise in Australia." He also said that there are about 25,000 members of about 100 U3A's throughout Australia.

I attended one session on networking of science subjects at our recent conference, and it is quite clear that all U3A's need more people to

contribute to this field. In particular, my course on botany appears to be the only one at present operative. So, if any retired botanists are looking for a happy and fulfilling retirement, get into U3A, design your own course, and I am sure you will enjoy being involved.

ICECREAM IN THE RAIN FOREST

Dr. Joseph E. Laferriere
Biosphere 2
P.O. Box 689
Oracle AZ 85623 USA
520-896-6487
joseph@bio2.com

Is the term "ice cream" one word or two? The answer to that question is: yes. It is traditionally written as if it were two words, but from a strictly grammatical point of view it is essentially one word spelled with a space in the middle of it. It has a separate meaning not entirely implied by the definitions of the component elements. Also, "ice" is a noun, not an adjective. If one were to say "icy cream" or "iced cream," then one would be using it as an adjective plus a noun, i.e. essentially two separate words. It is treated grammatically as a single word in two ways. First, one cannot break up the pair and retain the meaning. One can say "chocolate ice cream" but not "ice chocolate cream." It can be used in compounds as a single word.

For example, in the phrase "the frozen yogurt-ice cream freezer," it seems illogical to consider "frozen" as one word, "yogurt-ice" as a second word, and "cream" as a third. "Frozen yogurt" and "ice cream" are the two elements hyphenated into a compound term. "Frozen" is of course an adjective, but "ice" is not. English has many other such terms as this, e.g. "New York," "Vice President," "roller derby," or "Queen of England" (as in "the Queen of England's son Charles").

The jury is still out on whether the term "rainforest" should be written with a space in the middle of it or not. The popular press and technical writings are inconsistent in this regard.

The word matches the "ice cream" analogy very well. The term "rain forest" has a definition not entirely obvious from the definitions of the two component words. "Rain" is a noun, not an adjective. One cannot say "rain tropical forest." One can, however, make a compound such as "the rain forest-savannah boundary." Hence, the term is grammatically a single unit whether it is spelled with a space in it or not. This is not true of other similar terms like "dry forest" or "temperate forest" because in each case there is an adjective preceding the noun, not another noun.

The question "which is correct" is a moot point. Either way would be consistent with the English language. Terms like "ice cream" are common enough to provide a sufficient precedent for spelling this word as "rain forest." My personal preference is to write a single word as a single word. The time to make the decision is now, before the "rain forest" spelling becomes too firmly entrenched in the language. I would recommend adoption of "rainforest" as the proper spelling by all editors henceforth.

Thank you very much for your kind attention. I hope I have stimulated a bit of debate.

PS:

The Council of Biology Editors Style Manual gives an excellent discussion of when two terms should be joined as a single word, hyphenated, or separated by a space. While they do not discuss "rainforest" directly, this term falls very clearly into the pattern for which they recommend should be written as a single word unless a firmly established custom is already widely accepted dictating that it must be written separately. They give several fine examples illustrating the ambiguities which can arise if such terms are separated in complex sentences. If a two-part term is used as an adjective, as in "rain forest ecology," this can lead to all sorts of confusion. I recommend their argument as one which strongly supports my preference for joining the two terms into one.

REPORTS



**Australian
Botanical
Liaison
Officer**

NEW APPOINTMENTS AT KEW

Dr Simon Owens has been appointed as the new Keeper of the Herbarium and Nigel Taylor as the new Curator of the Living Collections Department.

DOWN-UNDER AT THE CHELSEA FLOWER SHOW (22-26 MAY 1995)

It hardly needs saying that the Royal Horticultural Society's Chelsea Flower Show is one of the great flower shows of the world. For those who come to Chelsea, they will find inspiration for their own gardens.

The show brings together the best garden designers who blend horticultural excellence with artistic skills that create dazzling displays of colour, scent and form. Although it is most unfair to single out any of the displays for special mention, two from the southern hemisphere were particularly outstanding.

The City of Melbourne (Victoria) exhibit displayed a wide selection of plants from the many diverse habitats of Australia; incorporating a white sandy beach with the red sands of arid Australia. The exhibit relied heavily on

species from Western Australia, with an overall proteaceous and myrtaceous theme. The main species included examples from the following genera: *Banksia*, *Hakea* and *Isopogon* (Proteaceae); *Eucalyptus*, *Melaleuca* and *Agonis* (Myrtaceae); a few species of *Acacia* (Mimosaceae) and with a scattering of Asteraceae, Restionaceae and ferns. The only questionable inclusions in the display were a *Correa* hybrid and a *Grevillea* hybrid. This excellent display was sponsored by the City of Melbourne - Parks and Gardens; Victoria's International Garden Fair; and Associated Flowers International. All who took part in the presentation of this display should be congratulated.

Adjacent to the Melbourne display was an equally spectacular exhibit by the Kirshtenbosch Botanic Gardens of South Africa. Although possibly including far too many Proteas, at least for my liking, this display provided a strong contrast between the southern hemisphere floras and the majority of the other exhibits which displayed northern hemisphere species and cultivars.

But the jewel in this display was what some botanists consider to be the world's rarest plant - a cycad, *Encephalartos woodii*. What was particularly interesting, especially to the media (e.g. 'New Scientist' No. 1979) was that a microchip had been inserted into the plant as an antitheft device. This species was last collected a century ago from a lone male plant. No other specimens, male or female, have been seen since.

One other Australian exhibit was provided by Kings Park Botanic Gardens (Western Australia). This was a small poster display on the ethnobotanical importance of *Eremophila* (Myoporaceae).

SOUTH AFRICAN BOTANICAL LIAISON OFFICER POSITION

Marinda Koekemoer returned to Pretoria on the 26th April 1995, after completing her year as the South African Botanical Liaison Officer. Unfortunately, Marinda will not be replaced due to financial constraints within South Africa. It is hoped that the position will soon be re-activated.

MALAYSIAN BOTANICAL LIAISON OFFICER POSITION

Professor Ruth Kiew, from Universiti Pertanian Malaysia, acted as the Malaysian Botanical Liaison Officer for the 'Tree Flora of Sabah and Sarawak' project for the period of 24 April until 27 May 1995. She is currently at Leiden for one month before returning to Malaysia.

THE 'BENCHMARK BIBLIOGRAPHY' PROJECT

The 'Benchmark Bibliography' project was launched in mid 1993 to document as far as possible the key literature on the families and genera of the world's vascular flora. It forms part of Kew's contribution to the IOPI Checklist Project as well as the Species Plantarum undertaking. It also represents an element in the move towards world scale floristic studies provided for in the current Corporate Plan of the Royal Botanic Gardens, Kew. The bibliography is selective and concisely annotated and so differs from Kew Record; it is also, though not comprehensively, retrospective. A number of families and larger groups have been completed (including all the Gymnosperms), with the current focus being on those of particular interest to the Herbarium staff.

Publication and dissemination are planned, but in what form (or forms) is yet fully to be determined. It is likely, however, that in the near

future the parts pertaining to given families will be incorporated into species checklists of these families now completed or under compilation. These include, among others, Euphorbiaceae and Rubiaceae.

The project was originally developed by David R. Hunt while he was Chairman of the IOPI Checklist Committee. The project is currently under the direction of David G. Frodin, who is being assisted, with respect to the family checklist compilation, by Rafakl Govaerts. Overall supervision of the project is the responsibility of Dick Brummitt.

NEW ABLO E-MAIL ADDRESS AT KEW

The new email address for the ABLO position has been changed to:

ablo@rbgkew.org.uk

This change has been made to simplify procedures for future ABLO's, users and for the computing staff here at the Royal Botanic Gardens, Kew. Please note: email messages using the old email addresses will continue to be forwarded to me (namely, 'B.Conn@rbgkew.org.uk' or 'bc02kg@rbgkew.org.uk').

SECOND FIELD TRIP TO IRIAN JAYA BY STAFF OF THE ROYAL BOTANIC GARDENS, KEW

The second John D. & Catherine C. MacArthur Foundation funded expedition to Irian Jaya by staff from the Royal Botanic Gardens, Kew (March-May 1995) continued the collaborative project with Indonesian botanists on the flora and vegetation of NE Kepala Burung (Vogelkop). The Royal Botanic Gardens, Kew, was represented by Martin Sands, Aaron Davis and Sarah Thomas. Approximately 850 collections (with an

average of five duplicates) were gathered during this expedition which had two major collecting trips, one to the Mupi Valley (Arfak Mountains) and the other to Gunong Nettoti (Kebbar Valley). This was the first time that the Mupi Valley had been visited botanically and, in fact, the first occasion on which anyone, other than hill tribes people themselves, had stayed there and explored the valley system. The party established a base camp after a two day march into the Arfak Mountains. They maintained this camp for one week, collecting from river level (c. 500 m altitude) to over 1000 m altitude in Montane forests.

The topography was extremely steep with unstable slopes and, together with the deep white-water rivers, the area proved to be extremely difficult to traverse. There was considerable evidence that the Indigenous New Guineans actually used the plants of the forest extensively. For example, they regarded *Begonias* as important in the treatment of stomach complaints and headaches, recognising two types of *Begonias* in the Valley, based solely on flower colour. However, Martin Sands recognised five species and one new species of *Symbegonia*.

Unfortunately, Martin and Sarah had to be repatriated to England because of ill-health after six weeks, but Aaron, together with Uway Mahyar (BO) and Rudy Maturbones (MAN) flew to the Kebbar Valley. After a three day walk, they reached the summit of Gunong Nettoti (over 2000 m altitude), setting up their base camp on route, at 1000 m altitude. For five days, they collected from these upper montane and ridge-top forests, which included *Nothofagus* and *Lithocarpus*. A considerable number of orchid collections were gathered at these higher altitudes by Uway Mahyar.

HANDBOOKS OF THE FLORA OF PAPUA NEW GUINEA, VOLUME 3

Over the last few years, the preparation of the third volume of the 'Handbooks of the Flora of

Papua New Guinea' has been delayed on many occasions. Finally, it is with great pleasure and considerable relief that I can announce that the volume will soon be published by Melbourne University Press. The first page-proofs have been edited and the second page-proofs are expected in June 1995, with publication later in the year. Accounts of the following plant families are included in the volume: Araliaceae (excluding *Schefflera*) (by W.R. Philipson; with *Osmoxylon* for the Solomon Islands by B.J. Conn & D.G. Frodin), Buddlejaceae (B.J. Conn), Droseraceae (B.J. Conn), Erythroxylaceae (B.J. Conn & K. Kerenga), Guttiferae (P.F. Stevens), Loganiaceae (B.J. Conn), Nelumbonaceae (B.J. Conn), Nymphaeaceae (B.J. Conn), Onagraceae (K. Kerenga), Portulacaceae (O. Gideon) and Proteaceae (D.B. Foreman).

The challenge for the botanical community, both within and outside New Guinea, is to maintain the momentum achieved by the re-activation of this project.

VISITORS TO KEW

15 May 1995 Miss Helen Aston (MEL) managed to spend a day in the herbarium during a private visit to the United Kingdom. It was a wonderful opportunity to meet her herbarium friends and to see all the changes since her time as the Australian Botanical Liaison Officer in 1973-74. Was it that long ago?

16 May 1995 Ms Helen Hadobas (CANB) and family visited the herbarium. She used this opportunity to compare the specimen loan and exchange procedures used by the General Service Unit (GSU) of the herbarium with that used at CANB.

19, 22 & 23 May 1995 Dr Neville Marchant (PERTH) made brief visits to discuss various issues with staff and visiting researchers.

May-June 1995 Mrs Gillian Perry (ex PERTH) visited the herbarium and library as part of her



**Australian
Biological
Resources
Study**

The last three months have been unremarkable on the surface at ABRS, but behind the scenes frantic activity on editing of the next four Flora volumes, the first Fungi volume and another Supplementary Series volume have resulted in substantial progress. Authors involved in these books have been thoroughly harassed, but their cooperation has ensured that in most cases we are well on schedule towards publication.

FLORA OF AUSTRALIA VOL. 16, PROTEALES 1.

This volume is rapidly approaching completion and should be with the printer by late June, with publication expected by August-September. The volume will include Elaeagnaceae and the first part of Proteaceae. The second half of Proteaceae (the tribes Grevilleae and Banksieae containing *Grevillea*, *Hakea*, *Musgravea*, *Austromuelleria*, *Banksia* and *Dryandra*) will comprise volume 17, and will be published in mid-1996.

FLORA OF AUSTRALIA SUPPLEMENTARY SERIES NO. 4

We are pleased to announce that another volume in the Supplementary Series has been completed, and should be available by the time this newsletter appears. The book, by Sandra Day, Rosemary Wickham, Tim Entwisle and Peter Tyler, is entitled Bibliographic Checklist of Non-Marine Algae in Australia, and runs to 260

A4 pages. It lists all names used for non-marine algae in the Australian literature, with cross references to those works in which they have appeared. Wherever possible synonyms are indicated as such and cross referenced to currently accepted names. The book will be invaluable to those working in the field of freshwater phycology in Australia, as it provides the first complete conspectus of taxa so far recognised in the country, as well as a comprehensive bibliography. In particular it will be a basic resource for those contributing to the new series *Algae of Australia*. The book will be available by mail order from ABRS, but unfortunately at the time of writing a price was not available. An order form will be enclosed in the next newsletter, but in the meantime those urgently requiring a copy should contact me for price and ordering details.

BUDGETS AND GRANTS

The 1995/96 Federal Budget has now been announced and its implications for ABRS have been absorbed. The good news is that the Grants Program will now continue for the foreseeable future at about its present level (the boost that we received as a result of the 1992 Prime Minister's Statement was due to expire at the end of the next year). With rising costs, including salaries and satutory on-costs, the average size of grants has been increasing over the last few years, and this trend is likely to continue. The nett result will therefore be a slow decline in the numbers of grants each year, unless one of two things happens: either grantees will need to reduce the level of support that they are requesting, or the size of the cake will need to become bigger. Both are really beyond the control of ABRS. The increase in altruism must come from the botanical community, as must any lobbying effort to persuade government of the urgent need for greater support for taxonomic research.

Above, I mentioned good news. There is a corresponding bit of bad news.

As a result of general belt tightening flowing from Budget decisions, ABRs' program funds (the money used to fund the working of ABRs staff and our publications program) have been cut in the coming year. The result of this will be sharply reduced funding for small contracts let directly by ABRs Flora, outside the Grants program. These small contracts have in the past paid for preparation of artwork, supplementary support for focussed fieldwork, emergency assistance with completion of research projects, and a host of similar things. While small contracts will not disappear entirely, they will be less freely available, and even more tightly focussed on immediate needs.

ALGAE OF AUSTRALIA

In April ABRs Flora advertised to fill a new position of Scientific Editor, with special reference to the new series *Algae of Australia*. Interviewing of applicants is now taking place. It is intended that the new appointee will be heavily involved in planning of the series, including the content and structure of individual volumes, establishing priorities for research, and in initial recruitment of potential authors. Input from the botanical community will be sought throughout this process.

Tony Orchard
Executive Editor, Flora of Australia

REVIEWS

FLORA OF AUSTRALIA

Volume 55
Lichens - Lecanorales 2,
Parmeliaceae

The production of the second volume in the lichen series of the Flora of Australia is an important event for Lichenology not only in Australia, but globally, as the volume represents the most complete study of the the family Parmeliaceae this century. The family (with the exception of *Usnea*) is treated in detail for the continent, the vast bulk of the work coming from the laboratory of Jack Elix. The volume must be considered Jack Elix's masterpiece, a testimony to the excellence of his research and his dedication to lichenology.

Thirty years ago the lichenological world was digesting the work of Hale and Kurokawa which provided a new insight into the

complexity of the lichens then classified in the genus *Parmelia*. Although present in Europe and in temperate North America, the genus was predominantly tropical and subtropical: the new ideas were, therefore, treated with considerable suspicion by those who knew nothing of those parts of the world. When new genera started to be segregated from within *Parmelia* opposition grew.

While controversy raged around the Hale and Kurokawa concepts a small group of lichenologists met around a table in Melbourne Herbarium - I think about six of us, representing all of the lichen workers in Australia, and we dreamed of a lichen flora for the continent. We set in place a number of mechanisms designed to help towards that aim, but, in retrospect, I don't think that those mechanisms achieved anything. The important achievement was the development of the confidence and camaraderie necessary for the task. Jack Elix, a lecturer in chemistry at Australian National University, was one of the

group. Since that time Jack has become one of the worlds outstanding lichen taxonomists and a distinguished chemist. Together with the late Mason Hale, Jack has put his stamp on the classification of that heterogenous group of lichens once treated as *Parmelia*, but now dispersed through 20 genera!

The quality of the information concerning taxa in volume 55 of the Flora of Australia is outstanding. The species concept is, however, one which I find rather narrow - but since we know so little of the genetics of lichens, species concepts are necessarily artificial. It is arguable that the approach of documenting variation with many species names as has been done in this work is the right approach under these circumstances. Certainly the consistency, quality and clarity of the work ensures that any future revision which results from new understandings of lichen biology will be greatly facilitated.

The work is superbly illustrated with coloured and black-and-white photographs. The keys are clear, and are backed up with additional aids to identification and keys to complex groups. Every species has a distribution map.

The volume is of enormous value for the professional scientist and the enthusiastic amateur, for it deals with the single most conspicuous group of lichens in Australia. With two volumes of the lichen series in the Flora of Australia now available it does not require expert knowledge to work on Australian lichens.

Rod Rogers
Botany Department
University of Queensland
St. Lucia, Qld. 4072

Email address: R.Rogers@botany.uq.oz.au

FLOWERS OF ANNONACEAE: MORPHOLOGY, CLASSIFICATION AND EVOLUTION

E. C. H. van Heusden
Blumea Supplement 7
Rijksherbarium / Hortus Botanicus
Leiden University, (1992)

This review of the flowers of Annonaceae was produced as a result of work carried out at the Institute of Systematic Botany at Utrecht as part of a multidisciplinary study of various aspects of the family.

In the author's words the aims of the study were:

1. to present a survey of the flower morphology of the Annonaceae and the distribution of floral character states over the family;
2. to examine generic delimitations and to indicate affinities between genera;
3. to indicate the importance and the limitations of the flower morphology in generic and supra-generic classification of the Annonaceae;
4. to indicate some morphological trends within the flowers of Annonaceae.

The author did this by studying some specimens of a representative number of species of most genera, including where possible the type of the genus in conjunction with a review and synthesis of the literature.

Floral morphology has formed the basis of the majority of the classifications of the genera of Annonaceae since the middle of last century. Early on in the work under a subheading called "Circumscription of Taxa" the author states that with certain exceptions the generic classification of Fries (1959) is followed. Fortunately the author makes some major departures from Fries' classification because the inadequacies of his

classification as it applies to the Asian-Pacific region have been well known for some time.

In the third chapter titled "Morphology of the Flowers", the author discusses the characteristics of the various parts of the annonaceous flower. Here the intention was to give a broad overview of the range of morphological features to be found in the family and while it might give some indication of the distribution of features amongst the genera the reader should refer to the description of each genus for details. In this chapter also are provided line drawings of selected species illustrating the diversity of petal shape and size, torus shape, stamen types and the range of shapes, placentation types and carpel shapes.

In the next chapter the author presents an informal classification of the genera into 19 groups plus a collection of 13 genera that she states cannot be accommodated in one of the foregoing 19 groups. This arrangement of the genera into groups forms the basis of the rest of the publication. The distributions of some "important" character states amongst the groups and the misfit genera and their geographic distribution are then summarized by the author as two tables. A synoptical key to the author's groups completes the preliminary sections to the chapter on the distribution of floral features in the family. A synoptical key to the genera would have been a far more informative way of presenting a summary of the distribution of character states. The floral features of each group and each of the genera (arranged in their informal groups) are described and one or a few example specimens are cited under the names of representative species. These descriptions of each group and each genus as well as short notes on some species make up the greater part of the review (146 of the 218 pages).

Chapter 5 "Discussion of classification on the basis of floral features" follows the descriptions. Van Heusden begins this by discussing the distribution of character states within the more variable genera after first noting that most

genera are quite uniform in their flower morphology. She also provides a list of distinctive or peculiar character states found in a number of genera, then discusses the longitudinal sections of the flowers of various genera noting the similarities and differences observed between related and unrelated genera. The author returns us then to the floral characters discussing their value for the purposes of classification of the informal groups of genera proposed in chapter 4.

Generic delimitation in Annonaceae in the Neotropics appears to be less problematical than it is in Africa and Asia and it is clear also that the 36-year old classification of Fries works much better in the Neotropics than it does elsewhere. Under the heading "Comparison with non-floral features" the author claims there is little or no agreement between floral morphology and leaf venation patterns and seed anatomy but generally good agreement with current knowledge on fruit morphology, pollen morphology and chromosome numbers.

On the balance of the evidence available the author seems to favour the view that $2n = 18$ is the most likely basal chromosome number for the Annonaceae, and if this is accepted a number of conclusions regarding character state polarity can be drawn. She lists eleven of these as well as providing some examples of parallel evolution and reversals.

In her conclusions van Heusden offers the view that at least some petal characters have been given undue weight in the past; that chromosome number is an important attribute in revealing broad relationships and that "the delimitation of most genera is disputable and needs further study", an assertion that I expect will leave many readers wondering about the robustness of any classifications of the genera of Annonaceae either formal or informal.

Laurie Jessup
Queensland Herbarium, Brisbane.

CONFERENCE CHANGE OF DATE

ROYAL BOTANIC GARDENS, MELBOURNE
1996 COMMEMORATIVE CONFERENCE
30 SEPTEMBER TO 5 OCTOBER

Due to circumstances beyond our control (in particular, a late change in the timing of the 1996 mid-2nd-semester break) we have had to move the 1996 Commemorative Conference from 22-28 September to the week following.

I apologise for any inconvenience this causes. The next circular will be sent in November.

Tim Entwisle
Convenor, 1996 Commemorative Conference

New Phone and Fax number for MEL

From 31 July all Royal Botanic Gardens, Melbourne numbers will commence with 9252 followed by the existing extension number.

The switchboard will be (03) 9252 2300; the Fax (03) 9252 2350.

Chris Puttock (secretary, A.S.B.S.) has documentation for the Australian Academy of Science exchange, fellowships and award programs with France, UK, Korea, Taiwan, China and Japan. Alternatively information is available from the Academy of Science.

Please note that the Canberra Chapter has a new convener, Lindy Cayzer. She can be contacted at the Australian National Herbarium Centre for Plant Biodiversity Research on (06) 246 5499 Fax. (06) 249 5573 or 246 5249

and

Andrew Lyne is now fully in charge of ASBS membership. His contact information is on the inside front cover of the Newsletter.

CANBERRA CHAPTER MEETINGS

- 18th July, 1995** Jim Croft - "Global information for botanists on the Internet".
- 15th August, 1995** Judy West - "Travels and travails in Indonesia".
- 19th September, 1995** Mike McPhail - "Wollemi Pine pollen" - this is tentative and depends on his field work commitments.

PS. Upcoming attractions include Chris Puttock and Laurie Adams.
More later.

Andrew Lyne & Lindy Cayzer

TAXONOMIC DATABASE WORKING GROUP (TDWG)

Barry Conn

The Taxonomic Database Working Group begun in 1985 as an international working group to explore ideas on standardisation and collaboration between major plant taxonomic database projects. TDWG has since expanded its scope to include all taxonomic database projects from all biological disciplines. It is affiliated with the International Union of Biological Sciences (IUBS) as the Commission on Taxonomic Databases and members include institutions and individuals responsible for biological databases with taxonomic components. Membership in TDWG is open to institutions, projects and individuals interested in participating in TDWG activities.

The mission of TDWG is:

- 1) to provide an international forum for biological database projects;
- 2) to develop and promote the use of standards; and
- 3) to facilitate data exchange.

TDWG annual meetings and symposia provide a forum for discussing technical aspects of taxonomic databases, discussing the form and content of proposed standards, voting on the adoption of standards, and sharing information on current developments in taxonomic databases.

A two day meeting of the TDWG Executive was held at the Smithsonian Institution, Washington, USA (30 & 31 January 1995). Since TDWG has gone through a period of inactivity, the meeting discussed what would be required to make TDWG fully active so that it could once again establish its role within the biological community. Currently the Group is preparing for

their next meeting in Madrid (4-6 October 1995) at the Real Jardin Botanico CSIC, Madrid, Spain. For additional program information please contact either:

Francisco Pando, Vice Chairman
Real Jardin Botanico CSIC
Plaza de Murillo 2
Madrid, Spain E 28014
Email: pando@ma.rjb.csic.es
Fax: +34 1 420 0157

or

TDWG Secretariat
Smithsonian Institution
Department of Botany
NHB 166
Washington, DC 20560, USA
Email: mnhbo005@sivm.si.edu
Fax: +1 202 786 2563

Another standard on Plant Names in Taxonomic Databases [not exact title] will soon be published (expected in the next few months). This standard, which has been prepared by Frank Bisby, discusses the issues related to using plant names in databases. TDWG members will receive a copy, whereas non-members may contact the Hunt Institute for Botanical Documentation to obtain a copy of this Standard.

Current TDWG Executive:

Chairman:

Jim Croft

Vice Chairman:

Francisco Pando (pando@ma.rjb.csic.es)

Secretary:

Rusty Russell (mnhbo005@sivm.si.edu)

Treasurer:

Scott Peterson

Continental Secretaries:

Mike Lock, Francisco Pando, Patricia Davila,
Barry Conn

A.S.B.S. PUBLICATIONS

History of Systematic Botany in Australia

Edited by P.S. Short. A4, case bound, 326pp. A.S.B.S., 1990.

Members \$30; non-members \$50. Postage \$10.

For all those people interested in the 1988 A.S.B.S. symposium in Melbourne, here are the proceedings. It is a very nicely presented volume, containing 36 papers on: the botanical exploration of our region; the role of horticulturalists, collectors and artists in the early documentation of the flora; the renowned (Mueller, Cunningham), and those whose contribution is sometimes overlooked (Buchanan, Wilhelmi).

Systematic Status of Large Flowering Plant Genera

A.S.B.S. Newsletter Number 53, edited by Helen Hewson. 1987. \$5 + \$1.10 postage.

This Newsletter issue includes the reports from the February 1986 Boden Conference on the "Systematic Status of Large Flowering Plant Genera". The reports cover: the genus concept; the role of cladistics in generic delimitation; geographic range and the genus concepts; the value of chemical characters, pollination syndromes, and breeding systems as generic determinants; and generic concepts in the Asteraceae, Chenopodiaceae, Epacridaceae, *Cassia*, *Acacia*, and *Eucalyptus*.

Evolution of the Flora and Fauna of Arid Australia

Edited by W.R. Barker & P.J.M. Greenslade. A.S.B.S. & A.N.Z.A.A.S., 1982. \$20 + \$5 postage.

This collection of more than 40 papers will interest all people concerned with Australia's dry inland, or the evolutionary history of its flora and fauna. It is of value to those studying both arid lands and evolution in general. Six sections cover: ecological and historical background; ecological and reproductive adaptations in plants; vertebrate animals; invertebrate animals; individual plant groups; and concluding remarks.

Australian Systematic Botany Society Newsletter

Back issues of the *Newsletter* are available from Number 27 (May 1981) onwards, excluding Numbers 29 and 31. Here is the chance to complete your set. Cover prices are \$3.50 (Numbers 27-59, excluding Number 53) and \$5.00 (Number 53, and 60 onwards). Postage \$1.10 per issue.

Also available are sweaters (\$25), t-shirts (\$15), mugs (\$8 each, or \$42 for a six-pack), and scarfs (\$20).

Send orders and remittances (payable to "A.S.B.S. Inc.") to:

Katy Mallett
A.S.B.S. Sales
Flora section, A.B.R.S.
G.P.O. Box 636
CANBERRA. A.C.T. 2601.
AUSTRALIA

A.S.B.S. INC. MEMBERSHIP APPLICATION

AUSTRALIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

(incorporated under the Associations Incorporation Act 1991)

APPLICATION FOR MEMBERSHIP

I,

of

.....
(address)

.....
(occupation)

hereby apply to become a member of the abovenamed incorporated association. in the event of my admission as a member, I agree to be bound by the rules of the Society for the time being in force.

.....
(signature of applicant)

..... / /
(date)

I,

(full name)

a member of the Society, nominate the applicant for membership of the Society.

.....
(signature of proposer)

..... / /
(date)

I,

(full name)

a member of the Society, second the nomination of the applicant for membership of the Society.

.....
(signature of seconder)

..... / /
(date)

Return this form, with the appropriate subscription, to the honorary treasurer:-

Dr P.G. Wilson

National Herbarium of New South Wales

Mrs Macquaries Road

SYDNEY, NSW, 2000

A.S.B.S. INC. MEMBERSHIP RENEWAL

AUSTRALIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED
(incorporated under the Associations Incorporation Act 1991)



SUBSCRIPTION FORM

Subscriptions for A.S.B.S. membership for 1995 are due on 1 January, 1995. If you have already paid your subscriptions for 1995, please ignore this *pro forma* notice. The *Australian Systematic Botany Newsletter* will not be sent to unfinancial members. Correspondence concerning membership and subscriptions should be sent to the Treasurer at the address below.

Subscriptions for 1995, including the *A.S.B.S. Newsletter*, are:

Ordinary/Institutional \$35.00
Full-time Student \$15.00

In addition, your contribution to the H.J. Eichler Research Fund would be most welcome. Please return the form below with your 1995 subscription, plus any arrears, voluntary contributions to the Research Fund or payment for CSIRO journal subscriptions, with any address corrections, to the Treasurer at the address shown below. Your cheque should be made payable in Australian dollars to: Australian Systematic Botany Society Inc.

Name:

Address:

.....
.....
.....

1995 subscription

Arrears (for years)

Voluntary donation to research fund

Subscription to CSIRO journals

Total (cheque enclosed for this amount)

Return to: Dr P. Wilson
Honorary Treasurer, A.S.B.S. Inc.
National Herbarium of NSW
Royal Botanic Gardens
Sydney NSW 2000 Australia.

A.S.B.S. CHAPTER CONVENERS

Adelaide

Molly Whalen
School of Biological Sciences
Flinders University of South Australia
BEDFORD PARK. S.A. 5042.
Tel: (08) 201-2723

Armidale

Jeremy Bruhl
Department of Botany
University of New England
ARMIDALE. N.S.W. 2351.
Tel: (067) 732-2429

Brisbane

Laurie Jessup
Queensland Herbarium
Meiers Road
INDOOROPILLY. Q.L.D. 4068.
Tel: (07) 371-3511

Canberra

Lindy Cayzer
Research School of Biological Sciences
Australian National University
CANBERRA. A.C.T. 0200.
Tel: (06) 246-5499

Darwin

Clyde Dunlop
Darwin Herbarium
Conservation Commission of the N.T.
P.O. Box 496
PALMERSTON. N.T. 0831.
Tel: (089) 99-4512

Melbourne

Tim Entwisle
National Herbarium of Victoria
Birdwood Avenue
SOUTH YARRA. VIC. 3141.
Tel: (03) 655-2313 [(03) 9252 2300 - July '95]

Perth

Jenny Chappill
Department of Botany
University of Western Australia
NEDLANDS. W.A. 6009.
Tel: (09) 380-2212

Sydney

Barry Conn
National Herbarium of New South Wales
Mrs. Macquaries Road
SYDNEY. N.S.W. 2000.
Tel: (02) 231-8131

Telephone and Fax Numbers for Major Australian Herbaria

International dialing sequence from outside Australia:-
add the Australian country code 61 and omit the leading zero of the area code.

AD Ph: (08) 228 2311 Fax: (08) 223 1809	BRI Ph: (07) 877 9325 Fax: (07) 371 6655	HO Ph: (002) 202 635 Fax: (002) 207 865	MBA Ph: (070) 921 555 Fax: (070) 923 593
CANB Ph: (06) 246 5113 Fax: (06) 246 5249	CBG Ph: (06) 250 9450 Fax: (06) 250 9599	MEL (after July '95) Ph: (03) 9252 2300 Fax: (03) 9252 2350	NSW Ph: (02) 231 8111 Fax: (02) 251 7231
DNA Ph: (089) 994 516 Fax: (089) 994 793	ERI Ph: (06) 281 8211 Fax: (06) 281 8312	PERTH Ph: (09) 334 0500 Fax: (09) 334 0515	QRS Ph: (070) 911 755 Fax: (070) 913 245

This list will be kept up to date, and will be published in each issue.
Please inform us of any changes or additions.

The Society

The Australian Systematic Botany Society is an incorporated association of over 300 people with professional or amateur interest in botany. The aim of the Society is to promote the study of plant systematics.

Membership

Membership is open to all those interested in plant systematics. Membership entitles the member to attend general meetings and chapter meetings, and to receive the *Newsletter*. Any person may apply for membership by filling in an "Membership Application" form and forwarding it, with the appropriate subscription, to the treasurer. Subscriptions become due on January 1 each year.

The Newsletter

The *Newsletter* appears quarterly, keeps members informed of Society events and news, and provides a vehicle for debate and discussion. In addition, original articles, notes and letters (not exceeding ten published pages in length) will be considered.

Contributions should be sent to one of the editors at the address given below. They should preferably be submitted as:- an unformatted word-processor or ASCII file on an MS-DOS or Macintosh diskette, accompanied by a printed copy; as an unformatted word-processor or ASCII email file, accompanied by a fax message reporting the sending of the file; or as two typed copies with double-spacing if less than one page.

The deadline for contributions is the last day of February, May, August, and November.

All items incorporated in the *Newsletter* will be duly acknowledged. Authors alone are responsible for the views expressed, and statements made by the authors do not necessarily represent the views of the Australian Systematic Botany Society Inc. *Newsletter* items should not be reproduced without the permission of the author of the material.

Notes

A.S.B.S. annual membership is \$35 (Aust); full-time students \$15. Please make cheques out to A.S.B.S. Inc., and remit to the treasurer. All changes of address should be sent directly to the treasurer, as well.

Advertising space is available for products or services of interest to A.S.B.S. members. Current rate is \$100 per full page, \$50 per half-page or less. Contact one of the *Newsletter* editors for further information.

Editors

Greg Leach	(089) 815 826
Email	leach.greg@ccpl01.a1.nt.gov.au
Ian Cowie	(089) 994 511
Email	cowie.ian@ccpl01.a1.nt.gov.au
Clyde Dunlop	(089) 994 512
Email	dunlop.clyde@ccpl01.a1.nt.gov.au

Postal Address

N.T. Herbarium
Conservation Commission of the N.T.
P.O. Box 496
PALMERSTON NT 0831

Cover

David Mackay

CONTENTS

From the President	1
Articles	
Angiosperm family identification	2
A Delta database project for the plant genera of WA	9
Commentary	
Australian Science Communicators	10
Reports	
Australian Botanical Liaison Officer	14
Australian Biological Resources Study	18
Reviews	
Flora of Australia Volume 55	19
Flowers of Annonaceae	20
Notices	
Queensland Herbarium Seminar Program	22
Canberra Chapter Meetings	23
Taxonomic Database Working Group (TDWG)	24
A.S.B.S. Publications	
Available publications from the A.S.B.S.	25
A.S.B.S. Membership forms	
Membership Application form	26
Membership Renewal form	27
A.S.B.S. Chapter Conveners and Herbaria Phone Numbers	
.....	28