

Editorials

Bradleya 25 and the Linnaean legacy

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Bradleya has reached a significant milestone with its 25th anniversary. In celebration the BCSS is offering you a bumper edition with some special features at no extra charge! We hope that you will enjoy reading a wider than usual range of contributions.

Bradleya, though, is not alone in being in celebratory mode since it is also the tercentenary of the birth of Carl Linnaeus (Figure 1), so here I offer you a perspective on the joint celebrations with a reflection on the Linnaean legacy as it impacts on the world of succulents in general and on the offerings in *Bradleya*. I begin, though, with a very brief sketch of Linnaeus's life and times.

Linnaeus was born on 23rd May 1707 in the province of Småland, Sweden. The surname, appropriately, came from a massive lime tree (the linden, in Swedish, lind) that stood on the family property and lind became lin, so his father's love of horticulture and botany was instilled in him from day one. Throughout his childhood Linnaeus showed a deep interest in natural history, apparently to the detriment of his other studies. However, after private tuition he was admitted to the University of Uppsala to study medicine (1728–31). During this time he stayed in the house of Olaf Rudbeck (later commemorated in the genus *Rudbeckia*, Asteraceae, formerly the Compositae) where he tutored Rudbeck's four youngest sons and had access to an excellent library. Here a classification of plants was started, based on the numbers of stamens and stigmas and so was born the Linnaean sexual system of plant classification (now long since defunct), published in a series of books notably *Genera plantarum* (1737) and *Classes plantarum* (1738). Hence by the age of only 24

the foundations of Linnaeus's later work had been firmly laid. Whilst in Uppsala, Linnaeus befriended a fellow student, Petrus Artedi (commemorated in the genus *Artedia*, Apiaceae, formerly the Umbelliferae). Together they studied the natural world and divided up the groups between them, with Artedi looking at the fishes, reptiles, amphibians and umbelliferous plants, whilst Linnaeus took the birds, insects and the rest of the plants. Tragically Artedi drowned on September 28th 1735 and the world lost a very promising zoologist. Linnaeus edited Artedi's work on fishes, published in 1738 as *Ichthyologia*. In the same year, *Hortus*



Figure 1. The Linnaean Society Tercentenary bust, courtesy of The Linnaean Society of London.

Cliffortianus was published, based on a study of the plants in the garden of George Clifford (commemorated in the genus *Cliffortia*, Rosaceae) at Hartekamp near Haarlem in Holland. This is one of the most important of Linnaeus's publications and by far the best illustrated, including as it does folio-sized plates by the famous botanical artist, Georg Ehret (commemorated in the genus *Ehretia*, Boraginaceae).

In September 1738, aged 31, Linnaeus set up in a medical practice as a physician in Stockholm. In the following year he was made a founder member of the Royal Swedish Academy of Sciences and on 26th June he married Sara Lisa.

His final move was back to Uppsala where, on 25th October 1741, he was inaugurated, aged only 34, into his professorship at the University of Uppsala, a post he retained until he retired with failing health in 1772. He died in Uppsala aged 70 on 10th January 1778

This brief history has so far said relatively little of the great man's achievements in the field of systematic botany. Looking back from present times, his magnum opus appeared as the first edition of *Species plantarum* (Linnaeus, 1753). The 1200 pages summarised the Linnaean view of the plant kingdom in a remarkably condensed but unified manner. It developed his concept of the binomial system for naming plants (the same for animals was published elsewhere) that is undoubtedly the most monumental concept devised by Linnaeus and is his most lasting legacy. Why was this seemingly simple concept so ground-breaking? Let us consider just one example. Prior to Linnaeus, a very familiar South African succulent was beautifully illustrated and described by Commelin (1703) as:

Aloe Africana humilis foliis ex albo viridi variegatis.

This polynomial is not only a "label" for the plant, but also provides a description, that translates as: "Low-growing African *Aloe* with variegated white and green leaves". Thanks to Linnaeus we no longer need to write such a lengthy polynomial on our plant labels because in 1753 this became known simply as *Aloe variegata* L. The "L." identifies Linnaeus as the publishing author of the name and his *Species plantarum* was chosen by the International Botanical Congress in 1906 as the starting point for modern botanical nomenclature: no plant name published before 1753 is considered valid unless Linnaeus adopted

it at this date or later.

Species plantarum catalogues around 7,700 species of plant (*Systema naturae* 10th edition, 1758 does the same for 4,400 species of animals), and hence this is the foundation for the naming of all plants.

Let us now take a look at how Linnaeus dealt with succulents in 1753 and consider how our present view of our beloved plants compares with his founding concepts. Table 1 lists the Linnaean genera that included, either wholly or in part, succulents. For a modern survey of succulent biodiversity I have used a combination of *The Illustrated Handbook of Succulent Plants (IHOSP, 2001–2003)* and *The new Cactus Lexicon (NCL, 2006)*. Additional data sources have been used for two rarely cultivated genera: *Salicornia* (Chenopodiaceae) and *Zygophyllum* (Zygophyllaceae).

An initial summary of the data in Table 1 is that, in the 254 years following the landmark publication of *Species plantarum*, there has been a vast increase in the number of succulents discovered and described. Linnaeus's 172 species in 29 genera have expanded to around 6,900 species in 311 genera – approximately a 10-fold increase in the number of genera and a 40-fold increase in the number of accepted species. Total increase in numbers is actually even greater than this, when the full coverage in *IHOSP* is taken into account. The reason for this is that Table 1 only considers genera or groups of genera familiar to Linnaeus. Whole groups such as the North American Crassulaceae were totally unknown to him and hence have not been included in Table 1. This expansion in succulent biodiversity is especially evident in the stapeliads (Apocynaceae), mesembs (Aizoaceae) and cacti (Cactaceae). There has been a remarkable parallel in the inflation of generic numbers for the cacti and mesembs: the former have mushroomed from the single, now defunct genus *Cactus* L. into a whole family of 124 genera in *NCL*, whilst the single genus *Mesembryanthemum* L. (the longest Linnaean generic name, incidentally) has increased to 123 genera in *IHOSP*.

Linnaean generic names have stood the test of time well with only 5 from the 29 being no longer in use. In addition to *Cactus* already mentioned, *Cacalia* and *Telephium* have also fallen by the wayside for technical reasons. *Tillaea* might yet be resurrected, since the specialised, greatly reduced, semi-aquatic plants appear,

from a preliminary DNA study (Ham, 1995), to be deeply divergent from *Crassula* and hence are likely to warrant separate generic status (not accepted as such in *IHOSP*). Similarly, *Polianthes* has only recently been relegated to synonymy under *Agave*. Linnaean generic concepts that have remained more or less intact, despite great expansion in their species content, include *Ceropegia*, *Crassula*, *Euphorbia*, *Jatropha*, *Sedum*, *Yucca* and *Zygophyllum*.

Those of us who have been heavily involved in *Bradleya* during any of its 25 years believe wholeheartedly that we have not only maintained but have expanded on Linnaean methods and achievements. To mark this 25th edition of *Bradleya*, I am delighted that the three former editors, David Hunt, Nigel Taylor and Gordon Rowley, have acceded to my invitation to contribute to the celebrations by reflecting on various aspects, past and present, of this yearbook. David

Table 1. Numbers of species in Linnaeus (1753) compared with recent compilations (2001–2007). Generic order follows that of Linnaeus.

Genus	Nos. of species: Linnaeus (1753)	Nos. of species: Modern (2000–2007)
<i>Salicornia</i>	4	4 (+ c. 6 other genera of Salicornieae) (USDA, 2007)
<i>Tillaea</i>	3	now in <i>Crassula</i> (Eggli, 2003)
<i>Plumeria</i>	3	7–45 (Eggli, 2002)
<i>Ceropegia</i>	2	160 (Albers & Meve, 2002)
<i>Stapelia</i>	2	394 in 27 genera (Albers & Meve, 2002)
<i>Trianthema</i>	1	28 (Hartmann, 2001b)
<i>Telephium</i>	1	<i>Hylotelephium</i> 27 (Eggli, 2003)
<i>Crassula</i>	10	195 (incl. <i>Tillaea</i>) (Eggli, 2003)
<i>Polianthes</i>	1	now in <i>Agave</i> (Eggli, 2001)
<i>Anthericum</i>	4	<i>Bulbine</i> 70 (Eggli, 2001)
<i>Yucca</i>	4	46 (Eggli, 2001)
<i>Aloe</i>	9	<i>Aloe</i> 445; <i>Astroloba</i> 6; <i>Gasteria</i> 17; <i>Haworthia</i> 63; <i>Sansevieria</i> 60 (Eggli, 2001)
<i>Agave</i>	4	<i>Agave</i> (incl. <i>Polianthes</i>) 221; <i>Furcraea</i> 20
<i>Haemanthus</i>	2*	3* (Eggli, 2001)
<i>Zygophyllum</i>	6	80–100 (Sheahan & Chase, 2000)
<i>Cotyledon</i>	6	<i>Cotyledon</i> 10; <i>Adromischus</i> 28; <i>Kalanchoe</i> 144; <i>Orostachys</i> 12; <i>Umbilicus</i> 14 (Eggli, 2003)
<i>Sedum</i>	15	<i>Sedum</i> 428; <i>Phedimus</i> 18 (Eggli, 2003)
<i>Portulaca</i>	4	<i>Portulaca</i> 106; <i>Anacampseros</i> 15 (Eggli, 2002)
<i>Euphorbia</i>	15*	<i>Euphorbia</i> 703*; <i>Pedilanthus</i> 16 (Eggli, 2002); <i>Sarcostemma</i> 15 (Albers & Meve, 2002)
<i>Sempervivum</i>	6	<i>Sempervivum</i> 63; <i>Aeonium</i> 36 (Eggli, 2003)
<i>Cactus</i>	22	1,438 in 124 genera (Hunt <i>et al.</i> , 2006)
<i>Tetragonia</i>	2	57 (Hartmann, 2001b)
<i>Mesembryanthemum</i>	35	1,575 in 123 genera (Hartmann 2001a & b)
<i>Aizoon</i>	3	13 (Hartmann, 2001a)
<i>Geranium</i>	7*	<i>Pelargonium</i> 135* (Eggli, 2002)
<i>Cacalia</i>	3	now in <i>Senecio</i> 78* (Eggli, 2002)
<i>Othonna</i>	2*	29* (Eggli, 2002)
<i>Jatropha</i>	2*	61* (Eggli, 2002)
<i>Rhodiola</i>	1	58 (Eggli, 2003)
Totals	172 spp. in 29 genera	6,898–6,956 spp. in 311 genera

* only succulent species included

relives the gestation and birth of *Bradleya*, emphasizing the desire of those involved in its creation in maintaining the scientific standards established by Linnaeus. Nigel considers the current standing and value of *Bradleya*, whilst Gordon surveys the contents of the 25 issues of this Yearbook, from which it should be evident that Linnaean traditions, although now with more elaborate methods, have been upheld. Without the foundations laid by Linnaeus 250 or so years ago, the 21st century succulent scene would most likely look rather different indeed.

Acknowledgements

The success of *Bradleya* owes a lot to many people over the years and I thank them all. We are especially grateful to the authors, artists, photographers and collaborators whose high quality work has produced the large number of papers of lasting scientific value over the 25 issues. Quality has also been assured by the assiduous work of a large band of usually anonymous referees, without whom the work of the editors would have been much more challenging. Their expertise has been essential in making *Bradleya* the outstanding success story that it so assuredly is. I am especially grateful to the three former editors, David Hunt, Nigel Taylor and Gordon Rowley, for their hard work over previous years, but also for accepting my offer to contribute guest editorials in this issue.

During my term in office, members of the BCSS Finance and General Purposes Committee have been unswerving in their support for *Bradleya*, but I thank them especially for providing additional financial support for this exceptionally large anniversary issue.

Castle Colour have provided good preparation and printing services and have generously supported us financially for the special silver cover. I must single out Wilf Thompson for his incredibly efficient and effective pagination of most of the issues since I became editor with No. 19. He has turned my often rather rough lay-out ideas into something that always looks good on the page.

Suzanne Mace provided the initial inspiration for the guest editorials from former editors. Thanks also go to Heidi Hartmann for her comments on an earlier draft of my editorial. Tina Wardhaugh has provided technical assistance with scanning and photoshop work for various pieces of artwork.

Finally I thank my family, especially my long-suffering wife Marjorie, for support during the long hours of *Bradleya* editing when I probably should have been doing family things instead! Lastly, my daughter Amy deserves a particular mention for her design input into the special cover for this issue.

References

- ALBERS, F. & MEVE, U. (Eds.) (2002). *Illustrated Handbook of Succulent Plants: Asclepiadaceae*. Springer, Berlin.
- COMMELIN, C. (1703). *Praeludia botanica*. F. Haringh, Leiden.
- EGGLI, U. (Ed.) (2001). *Illustrated Handbook of Succulent Plants: Monocotyledons*. Springer, Berlin.
- EGGLI, U. (Ed.) (2002). *Illustrated Handbook of Succulent Plants: Dicotyledons*. Springer, Berlin.
- EGGLI, U. (Ed.) (2003). *Illustrated Handbook of Succulent Plants: Crassulaceae*. Springer, Berlin.
- HAM, R.C.H.J. VAN (1995). Phylogenetic relationships in the Crassulaceae inferred from chloroplast DNA variation. In Hart, H. t' & Egli, U. (Eds.) *Evolution and Systematics of the Crassulaceae*. Backhuys Publishers, Leiden, pp. 16–29.
- HARTMANN, H.E.K. (Ed.) (2001a). *Illustrated Handbook of Succulent Plants: Aizoaceae A-E*. Springer, Berlin.
- HARTMANN, H.E.K. (Ed.) (2001b). *Illustrated Handbook of Succulent Plants: Aizoaceae F-Z*. Springer, Berlin.
- HUNT, D., TAYLOR, N. & CHARLES, G. (Eds.) (2006) *The new Cactus Lexicon. Descriptions & illustrations of the cactus family compiled and edited by members of the International Cactaceae Systematics Group*. 2 vols. dh books, Milborne Port, England.
- LINNAEUS, C. (1753) *Species plantarum*. 2 vols. 1957–1959 facsimile ed., Ray Society, London.
- SHEAHAN, M.C. & CHASE, M.W. (2000) Phylogenetic relationships within Zygophyllaceae based on DNA sequences of three plastid regions, with special emphasis on Zygophylloideae. *Syst. Bot.* **25**: 371–384.
- USDA (2007) GRIN (Germplasm Resources Information Network) species records of *Salicornia*. (<http://www.ars-grin.gov/cgi-bin/npgs/html/splist.pl?10656>. Accessed 15.3.2007).

Bradleya and a society wedding

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In a word, Congratulations, to *Bradleya* on its 25th issue, and to BCSS and Colin Walker for ensuring and enhancing its reputation as the leading peer-reviewed journal (or annual) devoted to succulent plants.

Though the eventual marriage of the National and 'GB' Cactus & Succulent Societies might have been predicted, the idea of a Yearbook to replace one of the Journals was perhaps the crucial one in achieving it, in 1982, after previous failures due to opposition from some members of both Societies. If this seems too bold a claim, then it may be worthwhile recounting how the merger, and the Yearbook, came about.

Discussions on the future of British journals on succulents began in 1977 at meetings of the IOS British Section. I had assumed the editorship of *The Cactus & Succulent Journal of Great Britain* the previous year and Bill Keen that of *The National Cactus & Succulent Journal*. Following the death of its founder/editor Cyril Parr in July 1977, *The Journal of the African Succulent Plant Society* had ceased publication and John Donald reported that *Ashingtonia*, of which he was editor, was also in difficulties following the liquidation of the publishers (it lived on in a cheaper format till 1979). The possibility was suggested that various societies or groups might pool resources to produce one high quality journal. And, following lengthy discussion, Gordon Rowley was asked, as an 'unbiased party', to convene a meeting of those with editorial responsibilities to discuss the matter further.

At this meeting, which duly went ahead at 'Cactusville' on 5 November 1977, the only fireworks were outside, and a proposal basically suggesting a merger of the GB and National journals as *The British Cactus & Succulent Journal*, under the management of a joint Committee and with the smaller specialist societies being offered the option of participating, received cautious support. At that stage there was no talk of amalgamating the societies, but Bill Keen and I agreed to collaborate and after further meetings and a joint meeting in 1979 of representatives of the Council of the GB Society and the NCSS Finance & General Purposes Committee, agreement in principle was reached to unite the journals under the proposed title for an experimental period. The experiment was initially scheduled to start with the first issue of 1981, but

both societies decided to ballot their members, and the journal merger was postponed.

Up to that point the proposal, on the face of it, had been simply to merge the journals and issue the NCSS Newsletter to its members only. But by then, with Nigel Taylor assisting me with the GB journal, the possibility of producing a Yearbook incorporating the more 'technical' material, latterly to be found mainly in the GB journal, had been mooted. NCSS Chairman Keith Mortimer, who was already in favour of merging the societies, gave his full support to the Yearbook idea, seeing it very much as a 'carrot' to persuade potential 'NO' voters. With the prospect of a modest financial windfall and influx of members, his treasurer, Kathleen Batch and her husband, Gerald Stonley, whom I visited wearing my combined hats as GB editor/treasurer, were also kindly disposed to the idea and even John Mullard, the formidable NCSS Secretary, seemed in favour. So the initial ballot on the journal merger (see *Cact. Succ. J. Gr. Brit.* 43: 2, 1981) also asked members to approve continuing discussions for a full merger of the societies – on the understanding that there would then be a quarterly journal *and* a Yearbook.

With a resounding mandate from the members (*l.c.* 29), serious work on the Yearbook began. Remembering Gordon Rowley's essays on Richard Bradley, it occurred to me that Bradley, author of the pioneer *History of Succulent Plants*, well-deserved to have the yearbook's dedication – especially as his surname begins Br (for British!). This agreed, I enlisted the help of James Hill, a typographical designer and lecturer at Middlesex Polytechnic, to come up with a house style for both journal and yearbook. Jim had been introduced to me by Christabel King, a botanist and former student of his, who came to Kew in the mid-1970s to draw for *Curtis's Botanical Magazine*. With his encouragement, several of Jim's current students had then contributed cover designs for the GB journal in 1977–79. Jim's own cover design for *Bradleya* (using a reproduction of a Bradley drawing supplied by Gordon Rowley) and typographical layout for the text were adopted and strictly adhered to for the first nine issues. (Bill Keen adopted Jim's design for the new Journal title, but largely retained the style of the 'National' for the text.)

Had the GB society not survived, would or could the 'National' have produced a yearbook? Perhaps, perhaps not. For a few years, the German society produced a *Jahrbuch (Cactaceae, 1937–1943/44)* and in post-war times the Swiss society published *Sukkulentenkunde*, but only 7 issues (1947–63). In 1994 the German society published the first issue of *Schumannia* (a 'Sonderheft', not a *Jahrbuch*), but to date only three more. The American society produced a

Yearbook in 1975, but no more until *Haseltonia*, in 1993, now well-established.

And the future? I remember someone telling me thirty years ago that all journals would soon only be available on microfilm. Now I'm told they'll soon only be available on 'the net'. The signs are certainly there, but would you prefer to read *Bradleya* on your computer, or just to download articles that particularly interest you?

Vivat Bradleya!

A grandstand view: 1983 to 2007

Gordon D. Rowley

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The quarter century traversed by *Bradleya (B)* has seen advances on many fronts in the botanical world. It is rewarding to scan the past issues and trace these developments. Subjectwise taxonomy is, perhaps inevitably, to the fore. We have a whole series of revisions of genera large and small, in whole or in part: *Anacampseros (B12)*, *Brachystelma (B14)*, *Caralluma (B8, 11)*, *Cheiridopsis (B11)*, *Echidnopsis (B6)*, *Echinocereus (B6, 7)*, *Ferocactus (B1, 2, 5)*, *Frailea (B24)*, *Glottiphyllum (B11)*, *Haageocereus (B25)*, *Lomatophyllum (B16)*, *Melocactus (B9, 23)*, *Monanthes (B10)*, *Neolloydia (B4)*, *Odontophorus (B11)*, *Piранthus (B12)*, *Pseudolithos (B8)*, *Quaqua (B1)*, the Rhipsalideae (*B13*), *Ruschia (B20)*, *Thelocactus (B5, 18)* and *Vanheerdea (B10)*, plus a monograph of *Rosularia* by Urs Eggli published as a separate volume supplementary to *B6*.

There has been a sprinkling of new genera: *Avonia (B12)*, *Lodia (B18)*, *Phiambolia (B21)*, *Rimacactus (B19)* and *Ruschiella (B23)*. They have fared differently in the battle to survive. Many of the taxonomic papers have been necessary preliminaries for a major work, a monograph or flora: P. V. Bruyns's stapeliads, for example, and Heidi Hartmann's Aizoaceae for *The Illustrated Handbook of Succulent Plants*. Three major check-lists of names have been serialised, for *Mammillaria (B1–5)*, *Opuntia (B13–23)* and *Conophytum (B6–9)*.

"Taxonomy by Consensus" was the initiative of David Hunt, Nigel Taylor and a group of IOS members charged with revising Cactaceae. Its emergence can be traced through preparatory schemes in *B4, 5, 8, 9 & 10* especially, although the outcome as seen in *The new Cactus Lexicon* inevitably reflects one person's overall private opinion when drawing all the threads together. Taxonomy by consensus remains an interesting pipe-dream: one

wonders if it will start a cult?

Taxonomy in the twentieth century advanced – or at least progressed – in a series of leaps rather than a smooth flow. New techniques were each hailed as the salvation of problems of defining species and tracing the course of evolution. Cytology was one such: "Count the chromosomes and unravel the secrets of life!" By the time that *Bradleya* was founded the scanning electron microscope (SEM) had revealed a whole new world of three-dimensional features in pollen and seeds, which in turn posed new problems to describe and classify. Seed surveys of *Echinopsis* and *Ferocactus (B1)* and *Parodia (Notocactus) (B4)* are examples covered, and cactus pollen is mapped and classified in *B15*.

Computers were coming into their own as a means of handling banks of data too large for manual processing, and numerical taxonomy was born. New terminology came in here, too: phenetics, for the study of overall similarities, and phylogenetics for the representation of evolutionary lines. Cladistics was born; the old-fashioned "rootless trees" were felled to be replaced by phenograms and cladograms. Nigel Taylor and Daniela Zappi admirably introduced the new thinking into their exposition of Tribe Cereeae of Cactaceae in *B7*.

From chromosomes to genes, and genes to component deoxyribonucleic acid (DNA): the quest for the origin of life had its great breakthrough in 1953 with the revelation of the structure and replication of DNA. Genome analysis was born, and its practical application to classifying succulents revealed to the public in 1995 in the classic and influential paper by Rob Wallace in *B13*. He also lectured to the IOS Working Party with memorable acclaim, and went on to direct an ongoing series of research projects bearing on some of the most controversial and neglected genera of succulents. Long-favoured

systems of classification were challenged and some overthrown; hasty reshuffles were made and labels rewritten. In a timely reminder that caution was needed before jumping to conclusions, Root Gorelick (in *B20* and *21*) cited the example of *Blossfeldia*, smallest of all cacti but, because of extreme reduction and specialisation, still one of the most perplexing to classify (*B22*, *24*). A parallel could be drawn with the case of Lemnaceae (the minute duckweeds) among the remaining angiosperms. Improvements in the laboratory techniques of DNA analysis were put forward in *B21*.

Also relevant to taxonomy are papers on the measurement of overall genome size (*B20*, *21*), and the use of flat-bed scanning as a quick and easy way of recording images of fresh material (*B23*). And for those craving a down-to-earth practical application of such a wealth of technology, there are classic models of good key-making for identifying *Lithops* (*B14*) and *Conophytum* (*B25*).

Just as no taxonomic revision is considered complete today without its cladograms based on DNA sequencing, so ecological surveys are expected to end up with recommendations on conservation. Funding from the BCSS is behind some of these field surveys that involve an increasing number of trained workers native to the area. This has ensured a constant supply of articles for *CactusWorld* and *Bradleya*, and filled many gaps in our knowledge of variation in the wild and how best to analyse it into species, subspecies, ecotypes or cultivars. Conservation in cultivation has also received support from articles dealing with tissue culture from Kew (*B1*, *10*, *13*, *25*), employed for rare and difficult taxa such as *Ariocarpus* (*B10*, *24*) and *Adenia* (*B24*).

Anthecology, the study of plants and their pollinators, is at last receiving more attention in the field, bringing the pages of *Bradleya* some of its most revealing and colourful photographs. *Cereus* (*B17*), *Conophytum* (*B9*), *Gymnocalycium* (*B13*), *Micranthocereus* (*B24*), *Parodia* (*B13*) and *Pilosocereus* (*B25*) are among the genera studied.

Wild hybrids, intra- and inter-generic, have been reported and in some cases named (*B12*, *19*), and a full name list was provided for *XGasteraloe* (*B16*).

In plant anatomy the field is headed by Jim Mauseth who, amongst other works, compared the anatomy of cacti with that of other stem succulents and brought to light striking differences – another case of different evolutionary pathways towards achieving the same goal of life in adverse climates. Further revelations on morphological and anatomical features included *Melocactus* (*B7*), *Sedum*

(*B12*), the flowers and fruits of *Drosanthemum* (*B18*, *20*) and the diadems of *Trichodiadema* (*B15*).

Turning from plants to the people who have studied them, we find biographical entries on at least 14 of them: John Blackburne, Emilio Chiovenda, Thomas Coulter, James Donn, C.A. Ehrenberg, Pehr Forsskål, Thomas Hanbury, John Hill, N.J. Jacquin, James Justice, Hugh Morgan, R.L. Praeger, William Roscoe and John Shepherd. Three celebrated artists and their work are also featured: Elise Bodley (*B15*), Mary Page (*B19*) and J.E. Ward-Hilhorst (*B13*). A treasure-house of fine paintings of cacti from the early nineteenth century by Prince Salm-Dyck was opened up and made public in *B17*, and those of Sessé and Mociño in *B12–13*. A sampling of the Badminton Florilegium and its association with the Duchess of Beaufort graced the pages of *B5*, and we have had two selections of Plumier's drawings (*B2*, *20*) – all of great historical and archival interest. *Bradleya* hosted the initial listing of succulent plant periodicals by Egli, Newton and others in *B3*, *5*, *7*, *11*, leading up to Urs Egli's bibliography of over 960 titles in 1994 (*Friciana* *60*). Finally one further innovation: *B23* included the first book reviews.

The above sampling does not exhaust the coverage, and I apologise to authors of some shorter papers omitted as belonging to the byways of ethnobotany, history, cytology and so on.

Because it is linked to a horticultural society and journal, and to a restricted choice of plants, subject matter coverage is not even or all-inclusive. For instance, only briefly touched upon is biochemistry, where the sole link to succulents is a mention that the extracts analysed came from a kalanchoe or an opuntia. The gap between what is suitable for *CactusWorld* and what for *Bradleya* is narrow, and sometimes swayed by the amounts of material that the two editors have on hand. This is not a bad thing: an occasional touch of "hard science" in *CactusWorld* could lead keen succulentists to probe deeper and explore *Bradleya*, and an occasional lighter touch in the latter, such as the cultivation tips for *Chortolirion* (*B24*) and the use of *Euphorbia tirucalli* for planting on asbestos tips (*B11*) leavens the more solid diet of diadems and idioblasts, cladograms and autapomorphies.

Overall *Bradleya* remains unique. Whereas many academic periodicals levy a charge for printing and supplying reprints, and colour plates are beyond the pale, *Bradleya* offers all for free, and writers are not even obliged to be members of the BCSS. Small wonder that it continues to attract both top experts and promising newcomers, students seeking to make their name in a highly competitive world. Long may it continue!

***Bradleya* becomes an institution**

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David Hunt has given us an insight into how *Bradleya* began, while Gordon Rowley has reprised its substantial content over 25 years. Noting another, somewhat grander anniversary, its current editor, Colin Walker, has put the modern world of cacti and succulents into a Linnaean perspective, showing us how our world has changed. What does that leave for me to say? Well, 25 years is quite a long time and my thesis is that, like its first editorial base, *Bradleya* is now an institution. We should thus aspire to the next 25 years – after all Colin is still a young man and editing is a role where building on experience brings steadily more benefits! But what makes a scientific yearbook an institution?

The word ‘institution’ means different things to different people. To some it might imply ‘institutionalised’, but I don’t want to suggest that negative connotation. Rather, I think we should consider the positive things that make an institution worthy of the term. There are several important characteristics that could explain *Bradleya*’s success. First, it is a quality publication that a lot of effort goes into. By this I don’t just mean that it looks good, but more importantly it strives to publish work that reflects detailed studies by those who we believe know what they are talking about. This is to some degree ensured by the rigour of the referee process, whereby an author’s work is reviewed at the manuscript stage by one or more of his or her scientific peers. Hopefully, such review is done in a constructive manner, so the editor has a measure of the study’s value, accuracy, weaknesses and areas for improvement. The author in return usually gets the satisfaction that an acceptable standard has been reached and this may be important for his employer too, if writing is within the context of academic employment or formal higher education. Indeed, without this kind of rigour, the quality of material offered for publication may decrease because some authors are now obliged to publish in so-called ‘refereed’ journals. This process, then, depends on referees taking their unpaid professional responsibilities seriously and that’s when the editor himself needs to gain their respect and be seen to be part of the academic network (it helps, therefore, if the editor has an academic address or association). Even better, if the editor is in a position to influence others as to where their student’s studies might be published!

Secondly, the author’s choice of journal may be influenced by the audience they are writing for. There is, to my mind at least, little point in writing something that only a handful of people are ever going to find it necessary or interesting to read, so a bigger audience is a bonus. That means the publication needs to attract that audience and *Bradleya*, as David’s and Gordon’s comments indicate, has achieved this aim, in part by concentrating material of common specialist interest in one place. The size of that audience and also the unfailing support BCSS has given to the regular use of colour printing, has undoubtedly made a huge difference to the ability of the author to communicate what a plant or its habitat is like, not to mention the possibility for the reproduction of beautiful historic artworks that would otherwise remain inaccessible.

Thirdly, once the above criteria have been met it is a matter of building reputation and sustaining this over many years of publication, and especially within academic audiences overseas, where, of course, the majority of succulent plants are found. Word gets around, eventually, and when enough cactus and succulent specialists see that a journal has papers of substance from authors whom they might consider their peers, then more manuscripts are forthcoming. For me the greatest pleasure has been to observe the steady increase in contributions from research students in the countries of origin of these plants. In this regard one could analyse the variety of authors’ addresses over *Bradleya*’s 25 years. In the early volumes most authors were British or European, plus some North Americans and South Africans, but lately we have seen studies written by Argentineans, Brazilians, Chileans, Mexicans, Peruvians and others. This also bodes very well for the future of succulent plant study and ultimately for the conservation of these plants. After all, the greatest challenge to *Bradleya*’s next 25 years is the environmental crisis that we all face, which will ultimately determine the fate of the very plants that interest its readers. Let’s hope that the researches that appear in future volumes will continue to demonstrate the value and importance of these remarkable plants and give their authors the ability to influence those in whose remit their conservation lies.