

Newsletter 63 June 2008

MR BRUCE GRAY'S AUSTRALIAN ORCHID FOUNDATION AWARD OF HONOUR

Leonard J Lawler

Readers of any one of the three Australian orchid publications – *The Orchadian*, the *Australian Orchid Review* and *Orchids Australia* – will have noted Dr. Bill Lavarack's article on Bruce Gray's orchid career written on the occasion of the presentation of the Australian Orchid Foundation's Award of Honour to Bruce.

While those who ask "who is Bruce Gray?" will find their answer in Bill's detailed account, there are some who may ask, "What is the Australian Orchid Foundation and what is its Award of Honour?" In an endeavour to satisfy these questions the following details from the Foundation are presented.

"Established in 1976, the Australian Orchid Foundation is a voluntary organisation whose members are dedicated to promote orchids in either a horticultural or scientific field. With a membership of around 100 orchid enthusiasts, the AOF is administered by a Board of Directors (six) who meet at least four times per year.

"The Foundation is an Approved Research Institute with a six member Research Committee, all specialists in Orchidaceae, who must be approved by the CSIRO. All applications for funding are reviewed by the Research Committee who make recommendations to the Directors.

"The Foundation is an Approved Charity and all donations to it are tax deductible.

"The aims of the Foundation are broad and may be summarised:-

- to preserve, protect, propagate, promote, nurture and cultivate all orchids, both species and hybrids.
- to establish, conduct, manage, support and finance research into orchids, their characteristics distribution, growth, preservation, propagation and cultivation.
- to educate the public generally, and especially young people, and encourage them in studies of the sciences relevant to orchids."

"The work of the Foundation is financed by donations from many sources, including members of the Foundation, other interested people, orchid societies, legacies and memorial donations. All donations are placed in the Australian Orchid Trust Fund and held in perpetuity. Only the interest generated from donations is used to fund projects. All donations of \$2 and over are fully tax deductible.

"The Australian Orchid Foundation invites applications for grants or support [see below] from any person or group who wish to undertake specialised work on any subject that relates to orchids, whether they are endemic or otherwise. The work must be performed in Australia and/or must relate to the orchids of Australasia."

"From the beginning, it was determined that this organisation would grow, functioning with a minimum of administrative costs. All those appointed to roles within the Foundation act in an honorary capacity. Membership, which is by invitation, is maintained at about 100 and, when a place becomes available, it is offered to a person who supports the Foundation and its objectives.

"The Directors meet regularly in Melbourne, assisted by several Associates. The Research Committee, whose members come from all around Australia, communicate electronically.

"The Foundation runs a seed bank and protocorm bank to promote and facilitate the propagation and conservation of orchid species. Seed and protocorms are available for a small charge. The seed bank is always in need of fresh, dry seed of any species.

"The Foundation sells an assortment of books on orchids, ranging from scientific publications to cultural handbooks, some of which may otherwise be difficult to obtain.

"The Foundation publishes the Australian Orchid Research series and has assisted in the publication of other books on orchids.

"The Foundation funds work related to orchids in Australia in areas such as horticulture, science and/or conservation. It especially encourages and supports the activities of young people in studying orchids.

"From time to time, the Foundation conducts workshops on orchid culture and supports conferences on orchids."

The AOF will support applications for projects and research grants for:

- Studies to research orchids in their habitat and management practices to protect those orchids and their habitats
- Studies of wild populations of orchids, their biology, distribution, conservation and taxonomy
- Cultivation and propagation of orchids
- Education of the public
- Education of young people in particular in the sciences relevant to orchids Publications.

Normally the AOF does fund Scholarships but not wages and salaries, course fees or overheads, but may consider those specific to a project. Work must be performed in Australia and/or must relate to orchids in Australasia.

"The Australian Orchid Foundation award of honour has been created to recognise achievement or contribution to the advancement of knowledge in the broad field that involves orchids in Australia. A Member of the Foundation may nominate a person, and this nomination must be supported by two other Members. Each nomination must be accompanied by a citation to support the application of outstanding service and/or achievement. Only under exceptional circumstances may a second Award be considered in the same year."

In the 32 years since the establishment of the Australian Orchid Foundation, 13 Awards of Honour have been conferred:

George Hermon Slade AM
 William 'Bill' Murdoch
 Gerald McCraith AM
 Alick W Dockrill 1990
 Kenneth A Macpherson 1992
 John Henry Wilkie 1995
 John H 'Jack' Warcup Ph D 1996

Walter Thomas Upton 1997
 Leonard J Lawler 1999
 David L Jones 2001
 Peter (Bill) S Lavarack 2003
 Ronald George Tunstall (posthumously) 2006
 Bruce Gray 2007

From Pauline: I quite often apologise for the fact that the major content of our Newsletter relates to orchids of Far North Queensland. After reading the above and seeing the names of the recipients of this prestigious award, I'll apologise no more. Six of these gentlemen, namely Alick Dockrill, Kenneth

Macpherson, Jack Wilkie, Len Lawler, Bill Lavarack and Bruce Gray are all Far North Queenslanders. This indicates what a rich orchid area this is and what a debt the orchid fraternity owes to these men who have spent the best part of their lives exploring the north finding and studying orchids for the pleasure of us all. Alick, Len, Bill and Bruce are still with us; they are all very approachable and generously give of their knowledge and encouragement. Thank you, gentlemen.

DOREEN FROM MALANDA WRITES:

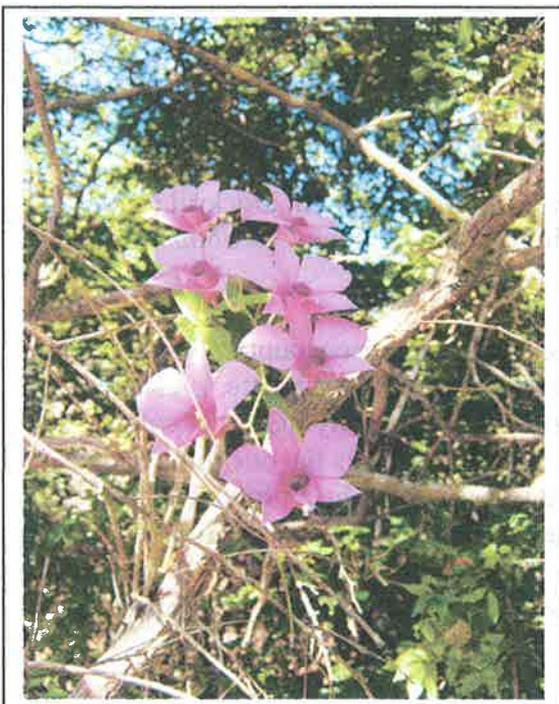
"I have had a feast of bloomin' orchids recently that is blooming literally, and also in the sense used by Peter Cundall (ABC Gardening) to be bloomin' frustrating.

"We had gone to the Herberton Range area on the Atherton Tableland to see ground orchids *Thelymitra pauciflora*, but for some puzzling reason the hundreds of buds there had not opened. Friends had seen them all opened in their glory on a similar day with some sun. One theory was, because of light rain the previous night, they were not fully dry. They were certainly very plentiful in the area – a sight to gladden the heart. Also plentiful were flowering greenhoods, *Pterostylis procera*, with the flowering stem emerging from the centre of a rosette of ground-hugging leaves. Further low searching saw the mosquito orchid, *Acianthus borealis*, and some scattered flowers. To see the white donkey orchid, *Diuris oporina* (syn *alba*) in flower was a bonus. *Dockrill* says this is the only species of *Diuris* that flowers in Autumn rather than Spring.

"I had not seen *Dendrobium johannis* from Cape York Peninsula in flower before, so was delighted to find a lovely flowering plant displayed at the Atherton Tableland Orchid Society's show in early May. The intriguing, twisted tepals were a chocolate brown highlighted by yellow on the labellum. And what a sight to behold; at the same orchid show, amongst spectacular exotic flowering plants, hundreds of pink/mauve Cooktown orchid flowers delighted the eye. Home growers in most areas of North Queensland and on the Atherton Tableland flower these *Dendrobiums* very successfully, but my cooler climate in Malanda is not to their liking and I do not get flowers. A hint from experienced grower Bruce Gray from Atherton is to withhold watering from about February till the onset of the next wet season, which is what happens in the natural environment. So much colour to bring pleasure, and right on our doorstep!" (and all this was before her next adventure!)

COOKIES IN THE WILD

Don Lawie



We've written about the Queensland floral emblem, *Dendrobium bigibbum*, the Cooktown Orchid, several times in previous newsletters and I felt that it should be left alone since there is no shortage of other wonderful orchids in Australia about which to write. Besides, the common wisdom is that "they have all been poached from their wild habitats and there are only cultivated specimens available".

BUT, early this year we heard a that a population growing strongly on Cape York Peninsula had been found by an old fisherman who traversed the Peninsula frequently. The thing was to get him to reveal his secret, and this was accomplished by our dear friend and his, the above named Doreen. Nobody could refuse Doreen anything. After she told him she was getting on a bit and could die happy if only she could see such a phenomenon as he described, Ron organised the trip. Doreen let a few other friends in on the deal, and we all met at Musgrave Roadhouse on the Cape York road in mid-May. Ron had done his preliminary recce and had alerted us when the orchids were coming into full flower. (Photo: Don Lawie)

He led us by devious ways into the heart of the wild country of the Peninsula, passing giant magnetic termite mounds, stands of Ironbark and Cooktown Ironwood trees, occasional waterlily filled lagoons, kangaroos and wallabies, then made an abrupt turn off the track and got us all to park in a hidden little dell. Here the vegetation had changed; instead of the undulating grass and woodlands we found ourselves on a slightly elevated sand ridge with a dry rainforest/vine forest with a closed canopy. It was a bright sunny day and filtered sunlight reached right down to the sandy forest floor. As our eyes grew accustomed to the change from the outside glare we became aware that we were in Fairyland. We saw Cooktown orchids in flower, some plants with just a few flowers, some with two or three sprays of up to ten flowers on each, plants growing high in the trees, or clinging to vines or fragile twigs, or fallen to the ground but still in flower. Hundreds and hundreds of flowering Cooktown Orchids, with colours ranging from the basic deep mauve to a paler pink colour. Ron said that he had seen white ones and bicolour ones, but there were none to see today. The orchids grew at every level, some still in bud, some had been pollinated and were setting fruit.

We found the biggest scrub turkey mound that I have ever seen, and the diligent turkeys had scratched up fallen orchids and incorporated them into the mound. We wandered around the Fairyland, barely able to express our utter delight in such a sight. Doreen announced that she could die happily now, and I think that the rest of us had something of the same sort of feeling. We set our chairs in a circle under the flowering plants, enjoyed our smoko, and I think that Ron enjoyed his revelation almost as much as we did. We felt truly privileged that he had trusted us.

Apparently these hidden colonies of orchids are not all that uncommon on Cape York Peninsula. Not only of Cooktown Orchids, but of other rare species. They are known to "The Rons" who keep an eye on them in their travels, and it would be a foolish person who allowed himself to be caught by a Ron in pillaging these jewels of Wild Australia. It would be foolish anyway, since Cooktown Orchids can be purchased freely and cheaply at nurseries, along with expert growing advice.

INSIDE-OUT ORCHID LEAVES

Mary Gandini BSc Dip Research Methods

Do you know that the leaves of your thick, fleshy, terete and semi-terete orchids are inside-out? Anatomical studies of the leaves show this to be the case. I have gleaned this information from a 1994 paper I found in a journal. The science was done in America but the subjects were the following Australian Orchids.

D. cucumerinum
D. lichenastrum
D. linguiforme

D. pugioniforme
D. rigidum
D. schoeninum

D. teretifolium
D. toressae
D. wassellii

The investigators (Stern, et al. 1994) placed them all in section *Rhizobium* but Dockrill (1992), placed the last two in section *Lichenastrum*. These sections are both in the subgenus *Xerobium* of the genus *Dendrobium*.

Firstly, let's look at the anatomy of a flat leaf that is the general form we encounter. This leaf has two faces (surfaces) and is called bifacial. A difference in colour, lustre, texture, hairs etc. is usually easily discernable between the two surfaces. The under surface (abaxial) is usually lighter in colour. The face that can be folded up against the stem is the upper or adaxial surface. This is the one that receives the most light and exposure to the environment. The exterior of a leaf is coated by a protective layer of wax, called the cuticle, that has no cellular structure and coats the epidermis. The microscopic cells inside each surface differ in structure and arrangement so that by examining a cross section of the leaf under the microscope, one can tell which surface is "up". A cross section is a very thin slice cut from the leaf at right angles to the mid vein (Figure 1).

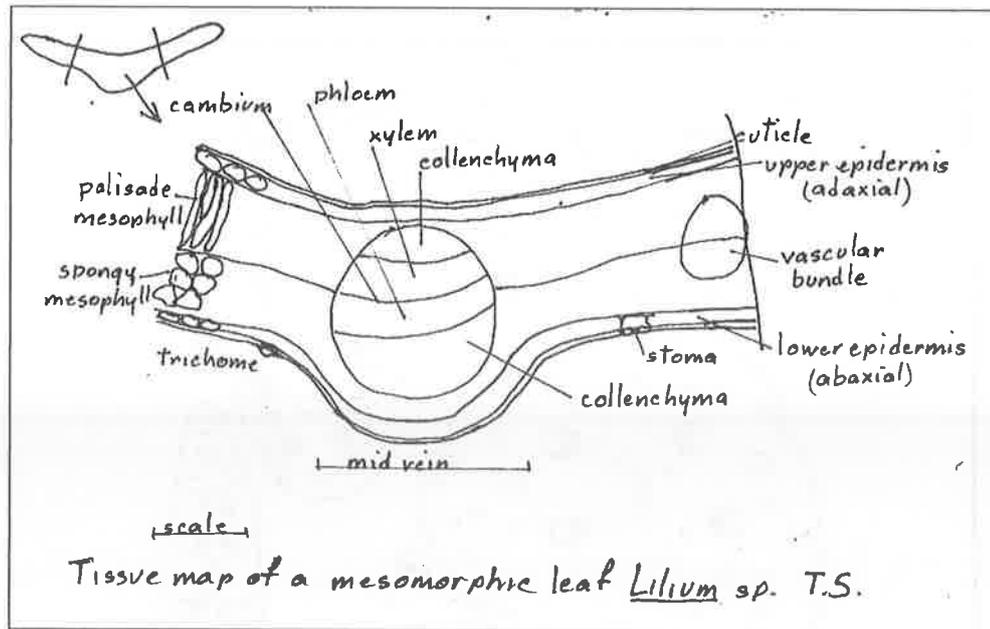


Figure 1. Diagram of a leaf cross section showing a mid vein

Remember that a leaf also has veins and in a monocotyledon these are usually parallel to the mid vein. In the cross section these show as a single row of circular structures. They are part of the vascular system that runs throughout the entire plant taking water and food to every cell just as your blood vessels do in you. Two main cell types are present in the veins - xylem and phloem. Xylem transports water while phloem transports foods. In a leaf the xylem is always situated towards the adaxial surface, i.e. "up" and phloem is towards the abaxial lower surface.

Without going into too much technical detail, these are the results obtained from highly magnified thin sections of the specimens. Except for *D rigidum* and *D toressae*, each species had a canal (lacuna) running the length of the leaf (Figs 2 & 3). Unfortunately there is no diagram of *D lichenastrum* so we have to take their word for it. Each lacuna was elliptical and central except in *D linguiforme*, where it was excentric (to one side). In the flattened, ovate leaves of *D linguiforme*, *D lichenastrum* and *D pugioniforme*, the long axis of the lacuna was concentric with the oval outline of the leaf. Each lacuna was lined with an epidermis complete with a cuticle. *D rigidum* and *D toressae* did not have lacunae. Each had a small area of adaxial surface exposed. On *D rigidum* this was a small hollow area near the attachment of the petiole (stalk) on one flattened side. (Look for yourself with a magnifying glass.) *D toressae* has a deep v-shaped channel on the upper surface but most of the exposed leaf surface is abaxial.

In the leaves of all species there were two rows of veins evenly arranged around the lacuna or groove with the xylem oriented towards the lacuna and the phloem to the exterior (Figs. 2&3), just as if each leaf had been folded in half with the under surface to the outside and the upper surface in the middle of the fold. "Inside-out".

Try cutting across a leaf of *D teretifolium* and letting it dry for a while. The concentric vascular bundles stand out.

Pauline: I could not get the next two diagrams clear. Here is the writing as well as I can make it out:

Figure 2 "Figs. 23-27 Diagrams illustrating bilaterally symmetrical distribution of vascular bundles and position of the lacunae in transverse sections of *Dendrobium* section *Rhizobium*. Hatched areas represent xylem. Fig 23, *D cucumerinum* ? lacuna. Fig 24, *D schoeninum*. Fig 25, *D teretifolium*. Fig 26, *D linguiforme*. Fig 27, *D pugioniforme*"

Figure 3 "Figs 28-30 Diagrams illustrating bilaterally symmetrical distribution of vascular bundles and position of lacuna in transverse sections of leaves of *Dendrobium* section *Rhizobium*. Hatched areas represent xylem. Fig 28, *D rigidum*, no lacuna ? adaxial groove. Fig 29, *D toressae*, no lacuna. Fig 30, *D wassellii* ? lacuna"

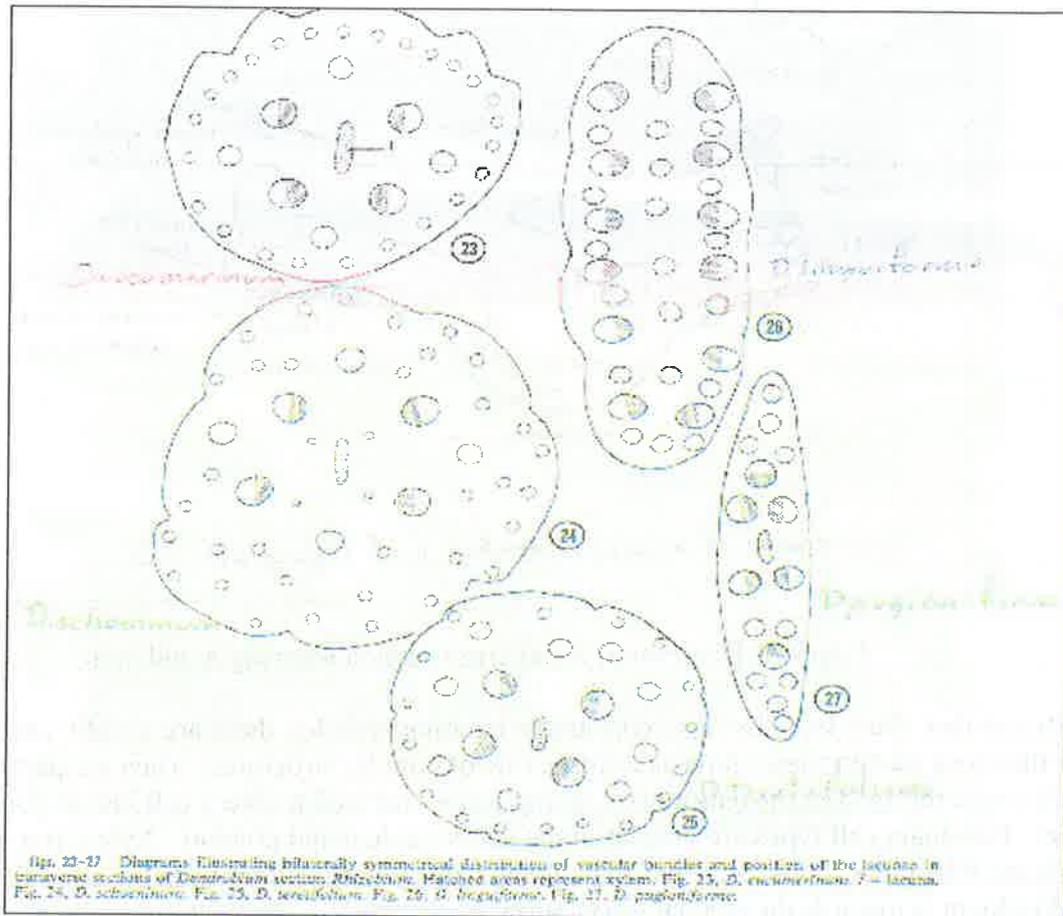


Figure 2. Leaves with lacunae. (Diagram from Stern et al. 1994)

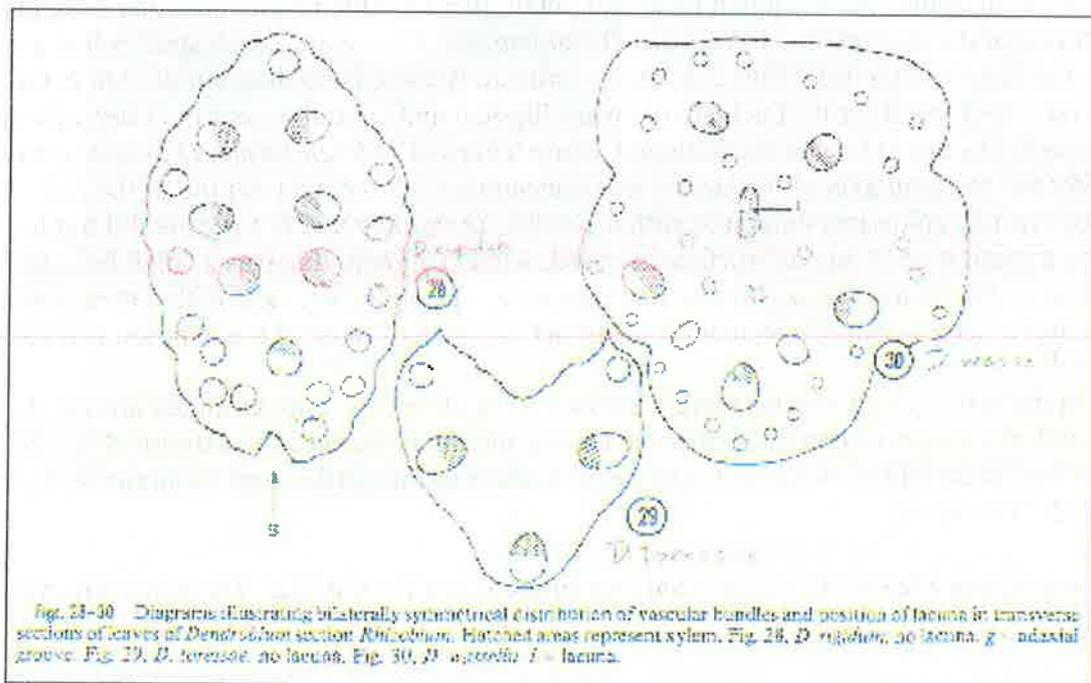


Figure 3. *D. wassellii* lacuna present. *D. rigidum* and *D. toressae* lacunae absent. (Diagram from Stern et al. 1994).

References:

Dockrill, A.W. (1992), *Australian Indigenous Orchids*, Volumes 1 & 2. Surrey Beatty & Sons Pty Limited in association with SGAP NSW.
 Stern, William, L., Morris, M.W., and Judd, W.S. (1994). Anatomy of the thick leaves in *Dendrobium* section *Rhizobium* (Orchidaceae) in *International Journal of Plant Science*, 155(6): 716-729.