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AUSTRALIA's WILDFLOWERS — Editor.

Perhaps we occasionally lose sight of what we are about. Is it the preservation of our unique flora? Is it the appreciation and understanding of it in its native habitat? Is it the introduction of our flora to horticulture and the development of good forms to grace our gardens and public places, to contribute to our culture and grace of living?

The purpose of this issue is to honour a fine Australian, George W. Althofer and his book "The Cradle Of Incense". Here is a man who has devoted his life to all these questions and his unique book records his feelings in print. See page 325 for further details of this book you must read.

How do we honour such men and women?

AN AUSTRALIAN FLORA MEDALLION

The Society has decided to award a medallion annually for work of special merit concerned directly with the Australian Flora. Over the years such an award will grow in stature as the names of noble people are added to the list of recipients. Further announcements are to follow.

Whom To Honour?

If we just confine our list to the living the number is staggering. I have just returned from a visit to Ken Stuckey of Furner, S.A. The work he is doing is monumental. It shows a lot of courage, foresight, and dedication to the flora. I started "Australian Plants" and have built it up over 20 years of hard work and some have suggested I could be a recipient. Not before such men as Ken Stuckey, George Althofer, Peter Althofer, Perc Parry, Lance Cockburn, Alick Dockrill, David Jones, Dave Gordon, George Brown, Jim Willis, Les Norton, Fred Lullfitz, George Lullfitz, Neville Marchant, Bill Cane, Alf Gray, Allan Gray, Leo Hodge, Noel Lothian, Ivan Holliday, Jim Webb, Byron Lamont, John Beard, Max Hewett, Alec Blombery, Pat Stanley, John Wrigley, Ernie Wittwer, Ralph Boddy, Rodger Elliott, Bill Molyneux, Henry Boyd, Ken Warnes, Leo Cady, Stephen Clemesha, Ken Newby, Harry Oakman, Lindsay Pryor, Cliff Debenham, David Hockings, Alex George, Bob Deane, Ross Garnett, Bill McCreadie. The work of these people make my efforts look puny.

But what of the ladies such as Olive Parry, Alison Ashby, Thistle Stead, Marion Blackwell, Gwen Oxnam, Judy Hamersley, June Salter, Winifred Curtis, Rica Erickson, Honor Venning, Nuri Mass, Betsy Jackes, Jean Galbraith, Ann Hamilton and Jenny Harmer to name just a few.

These are people who stand out above we triers, people that I have had the honour to work with over the twenty years. I have no doubt made a colossal blunder. I have stupidly left out some who at the moment have slipped my often poor memory. I have most certainly missed many whose work is unknown to me and to these I apologise. Thank God I shall not be involved in the choice of the Australian Flora Medallion winner.

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COVER PLATE: *Prostanthera teretifolia*

Photograph by P. Althofer.

A bushy shrub on granite outcrops from 1-2m. Leaves are greyish and crowded as shown, terete (i.e. cylindrical and tapering at the ends), to 1.5cm. long, sometimes with one or two lateral lobes. Flowers are violet to royal blue up to, but rarely, to the size shown.

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Prostanthera for Horticulture

by W. H. Payne

There are many things Australian of which we can be proud.

There is one group of Australian plants of which the world can be proud; that group of plants known botanically as the genus *Prostanthera*, and widely known in the horticultural trade as Australian Mint Bush.

Prostanthera have always been a special favourite of mine. They are easy to grow, so easy there is no reason why everyone who has space for one plant or even a large pot cannot grow at least one species. They are reliable, every spring being covered with flowers and rarely a sudden or unexplained death. In fact, in my garden, they are the indicator plants, a warning the garden is dry and needs watering. When my *Prostanthera incisa* begins to droop at the ends, water the whole garden and next morning it will be standing as proud and green as ever.

Prostanthera flower abundantly. Even during a bad season, they can be relied upon. When I first got the wildflower "bug" and planted as many different wildflowers as I could get, it was the *Prostanthera* that gave the best results quickest, no matter how foolish I was in my ignorance, as to the best place to plant various species of wildflower. There were many mistakes and failures with others but never with *Prostanthera*. It was not long before I came to regard them as easy; not a challenge; after all if you have ten different species, were not the flowers all similar, not large or spectacular?

Twenty years later, now that I enjoy my garden for the pleasure it can bring, for the floral splendour, the overall spectacle, a quite pleasant place, *Prostanthera* have a major role. I have learnt many things. A garden is not just a collection of a large number of different species. I am not knocking the collector's garden, botanical zoos as I have heard someone call them. I still like to collect as wide a range of plants as I can get. But! A garden needs a unifying feature, a backbone of species dotted through it to add continuity, a back drop of character; "we are at home in this garden and it is a good place to live, all your other odds and sods think yourself lucky you are here and grow your best".

Please pardon my lapses but I am a "plant talker". Plants are living things. I am not yet that far gone that I expect plants to understand me or that we will ever communicate intelligently, but I believe there is some contact, a feeling of mutual appreciation. I do not believe in green fingers but those who are good gardeners have a feeling for plants, a tenuous connection of mutual well being.

But! I am not a good gardener and yet my *Prostanthera* survive and do well. Having grown a little wiser (older anyway) I can see that there is quite a difference between the *Prostanthera* species. This is not just in colour. *Prostanthera linearis* that is so easy to grow being too vigorous and "floppy", is a good clear white. By cutting it back hard and tip pruning you can get a reasonable bush — and after all there is always a shady spot for a plant that refuses to die. There are forms of *Prostanthera rotundifolia* that are a good pink and superb flowerers. There are the red flowered species in the



Prostanthera rotundifolia* var. *rosea

Photography by Max Thiele

This is the rose coloured form of the spectacular *P. rotundifolia*. Available with mauve to lilac flowers as well, its capacity for mass flowering is well illustrated in the photograph. Would you like this shrub, to 1.5 metres, in your garden? The book "Cradle of Incense" is styled to provide enjoyable reading as well as information on how to grow these plants.



Prostanthera baxteri

Photography by P. Althofer

A striking silvery leaved shrub to 2m. the leaves being very narrow to terete as shown. The flowers are lavender and comparatively large. The erect and slender growth makes this an attractive shrub. From Western Australia this plant resembles *P. nivea* of the east and the colour of the flower as shown is the usual flower colour for *P. nivea*. An exceptional plant for the garden. In my article I have not mentioned the species in these colour plates, plants that appear to have the greatest horticultural potential of all. Grow some; Editor.



Prostanthera nivea* var. *induta

Photography by P. Althofer

While a form has pinkish flowers, this plant usually has flowers of a delicate lilac up to the size shown above. Not as hardy as other species, it is a magnificent shrub in the garden even when not in flower.

Prostanthera belong to the plant family Lamiaceae as described from page 299. One objective of the issue is to introduce the reader to all plant genera in the family, that occur in Australia. These genera are grouped in sub-families as illustrated on page 303 and here Fig. 7 illustrates the sub-family Prostantheiordeae. The characteristic floral envelope comprises five lobes (petals) two upper and three lower. As defined in the key to the genera in this group, *Prostanthera* have the three lower lobes joined at the base with the centre one being larger than the lobe on either side. There are four stamens. All of these characters are illustrated above.

Prostanthera aspalathoides, *P. microphylla* group that are beautiful little compact plants. It is this group that I have the most trouble with so beware, you can lose them very easily.

The greater number of *Prostanthera* are mauve flowered and years ago I thought, not a great deal different from one another. Now we appreciate one another I find there is quite a variation in the colour from lilac to a deep mauve or violet. The species are different in presentation. Early in spring, *Prostanthera discolor* shows first. The flowers show out so proudly on a sparse smallish shrub where the leaves are not dominant; a plant that quietly graces a garden when not in flower, not getting too big nor leafy. "You must be the best species," I think each year. Spurred on by this adulation, do plants really sense feelings and thoughts, the other species thrust out their flowers one by one until, the grand finale, *Prostanthera ovalifolia* really covers itself with splendour. So that is why I keep those large leafy bushes? There must be a background spot for more — out with the cutting powder.

Propagation — this may be the reason I have so many plants.

It is nice to grow some extra plants yourself. It is with *Prostanthera* that I had my first real success with propagation by cuttings. I did not realise then that any mug can grow them from cuttings. Prepare a clean pot, well crocked in the bottom, and filled with a coarse clean, well washed sand. I use a 10 cm terra-cotta pot. Cut off 15 cm of the growing ends of branches, pinch off the leaves from the lower half, shorten the cutting by cutting with a sharp blade just below a node, a part where you have pinched off the leaves or lower branchlets, dip it in a semi-hardwood cutting powder (I do not think this is really necessary for *Prostanthera*) and insert in a hole in the sand in the pot previously made by a small stick. A 10 cm pot will take up to 30 cuttings in this way. Do not put in less than 10. Now place this pot in a position that does not get wind. I put mine in an old washing tub out in the yard, and protect it from direct harsh sun. It depends where you live. The cuttings need to be kept warm for part of the day but generally moist and cool. In hot periods a cover over the tub will keep off all direct sunlight. Keep moist by watering every day. There are other ways as described in past issues, such as using plastic bags but special methods are not necessary. My first successes were on a wooden bench under a shady *Casuarina* open to the elements but with some wind protection.

Where to plant them? What soil do they prefer?

They have proved ideal in my situation where I have kept a light forest area of small trees. They do not mind shade and competition from the hungry roots of trees. In fact, for this situation, they are ideal. However they need pruning so as not to become leggy and the deeper the shade the less prolific the flowering.

The best plants are in a sunny spot where the leaves soak in the sun but where the roots are cool and sometimes moist. Good garden conditions are ideal for well-grown densely flowering plants. There are species for the hardiest conditions, apparently *P. sieberi* favouring the heavier soils. While many will survive extreme dry conditions, it seems none can take excessively wet conditions for long which seems to rule them out for areas that have extended rainy seasons.

I am no expert. The reason I braved my critics and wrote this article is to encourage beginners to grow these rewarding plants and especially to try their hand at propagation. Why not buy "The Cradle Of Incense" — The Genus *Prostanthera* by George Althofer and read what an expert has to say. You will be enthralled.

There is much to learn about these plants. Grow as many as you can get and swap with others. A study group is being formed and this group is ideal for beginners as well as experts. Exchange of plants and cuttings is so easy.

Grow *Prostanthera*, the Australian Mint Bush. ■

1971 came and after more plantings I again entered the garden competition. No mention, nothing! I pulled all my garden again to pieces. Dug out all my lawn and redesigned the whole area. I bought 20 tonnes of soil to put on top of my clay soil and some rocks. I laid the soil in the shape I wanted, then placed the rocks around it, no cement this time. Over about 60% of the area I put about 10 cm of mulch; I suppose we could call it a mulch, as it is the residue from sand washing at river sand quarries and it consisted of charcoal, washed into the river after bushfires, sticks, leaves, coarse sand, gravel, seed pods of various plants, etc.

Then I started planting all the pots of plants I had grown, bought or had been given to me over the last 12 months. This I carried out like a treasure hunt. I listed all the plants I had, searched previous "Australian Plant" journals, etc., to find out height, growth, habit, etc., then gave each listed plant a number. I then drew a design of my garden and by standing in the area I was able to locate on my map a number to represent each plant according to height, growth, etc. When planting time came my neighbours thought I was mad, standing in the garden with a large map, and placing all plants in position, according to positions indicated by the chart.

My hard work eventually paid off for in the 1973 Garden Competition I was placed 2nd and in 1974 and 1975 got first placing.

In the combination of the imported soil plus the river washings I had many plants come up on their own including 10 different species of *Acacia*; *A. longifolia*, *A. terminalis*, *A. linearis*, *A. parvippinnula*, *A. paradoxa*, *A. ulicifolia*, *A. elongata*, *A. elata*, *A. fimbriata*, *A. trinervata*. Of these I have only kept *A. terminalis*, *A. elongata* and *A. ulicifolia* and also planted *A. jibberdingensis*. Also there were *Kennedia rubicunda*, *Hardenbergia violacea*, *Ricnocarpus pinifolius*, *Cassia* sp., *Bossiaea scolopendria*, *Hovea linearis*, *Boronia polygalifolia*, *Melaleuca nodosa*, *Pimelea linifolia*, *Stypanandra glauca*, *Dianella caerulea*, *Hibbertia diffusa* and the (rock fern) *Cheilanthes tenuifolia* which has spread throughout the garden.

So much for nature. However I did plant some things myself like:—

GREVILLEAS: *Grevillea banksii*, *G. lavandulacea*, grey leaf, green leaf and desert forms, *G. juniperina* prostrate form, both red and yellow, *Grevillea* 'Dargan Hill', *Grevillea* 'Poorinda Firebird', *G. victoriae*, *G. tenuiloba*, *G. thelemanniana*, *G. rosmarinifolia*, *G. acanthifolia*, *G. baueri* (3 forms), *G. caleyi*, *G. asplenifolia*, *G. speciosa*, *G. sericea* (pink and white forms), *Grevillea* 'Canberra Gem', *Grevillea* 'Crosbie Morrison', *Grevillea* 'Robyn Gordon', *G. obtusifolia*. I have since acquired the following: *Grevillea* 'Pink Surprise', *Grevillea* 'Sandra Gordon', *Grevillea* 'Misty Pink', *Grevillea* 'Royal Mantle', *Grevillea* 'Coochin Hills', *Grevillea* 'Poorinda Queen', *G. triloba*, *G. rosmarinifolia*, plus several others. The best part is the seedlings that keep coming up in my garden, there are several forms of *G. sericea* in flower at present that are crosses of *Grevillea sericea*, white form and a deep pink form.

EUCALYPTUS were planted throughout the garden for shade and protection and include *Eucalyptus leucoxylon* var. *rosea* (Murray Bridge form), *E. pulverulenta* (powder gum), *E. nicholii*, *E. citriodora* and *E. ficifolia*.

Baeckea virgata, *B. astarteoides*.

Melaleuca fulgens, *M. steedmanii*, *M. armillaris*, *M. radula*, *M. thymifolia*, *M. decussata*, *M. nematophylla* all growing quite well.

Boronia megastigma (brown, 'Chandlers Red' and var. 'Lutea'), *B. polygalifolia* and *B. ledifolia*. However, I don't seem to be able to keep them going for more than a season or two.

Epacris pulchella, *E. longiflora*.

I have also *Pultenaea villosa*, *P. pedunculata*, *Bulbine bulbosa* and *Bulbine semibarbata*, these come up throughout the garden. There are several *Eremophila*, such as *E. maculata* red, mauve and yellow.

All this is only incidental as my real favourites are *Prostanthera* or Mint Bushes. They are planted throughout the garden. ■

PROSTANTHERA

SOME GEMS FOR THE GARDEN by LES TAYLOR

Everyone with a garden, native or otherwise, should have some *Prostanthera*, Australia's Mint Bush, growing as there would not be a garden situation that could not be further enhanced by the addition of these wonderful plants.

ROCKERIES

You have the choice of:—

Prostanthera aspalathoides, 0.5-1 m from NSW, VIC, SA, in light soil areas; likes dry areas in full sun. Flowers orange-red, with a yellow form.

Prostanthera hirtula, prostrate form from NSW VIC. Well shaded areas, flowers deep mauve.

Prostanthera sp aff *P. phyllicifolia*, to 1 m from Mt. Canobolas, NSW, flowers cream or white, with deep mauve throat.

Prostanthera saxicola var *montana*, 0.3-0.6 m, from Blue Mountains, NSW, moist conditions, large flowers, lavender.



Prostanthera denticulata

Photography by C. J. Winn

More usually a small shrub to 1m there is a prostrate form that is ideal for a ground cover or cascading over rocks or garden edges. The leaves are usually a shiny green and the racemes of flowers are a pale lilac to violet but occasionally pink.

POTS OR WINDOW BOXES

Prostanthera walteri, low shrub to 1 m from NSW and VIC. in shady, moist areas; flowers greenish veined or streaked with violet.

Prostanthera cryptandroides from NSW on sandstone hills. A low divaricate shrub, flowers lilac to mauve.

Prostanthera phyllifolia, 0.5-1 m from QLD, NSW, VIC, in shady, moist areas, flowers pale mauve, violet or white.

Prostanthera violacea 1-1.5 m from NSW; small leaves, lavender — mauve flowers, sheltered areas.

Prostanthera incana 1 m from QLD, NSW; wrinkled leaves, lavender flowers, shaded areas.



Prostanthera scutellarioides

Photography by A. Burke

A beautiful little gem of a plant only 50 cm. high photographed as growing in Les Taylor's garden. It grows naturally near Les's home in Sydney. There is always room in a garden for such a little gem as this.

MEDIUM SHRUBS

Prostanthera incisa 1-2.5 m shrub from QLD, NSW, VIC; very pungent aroma, flowers pale mauve, semi-shade.

Prostanthera discolor to 2 m from NSW. One of my favourites, dry areas, flowers mauve to violet.

Prostanthera rotundifolia 2 m from QLD, NSW, VIC, TAS; sheltered conditions flowers from pink mauve to lilac.

Prostanthera rhombea 1-1.5 m from NSW, VIC; shelter and moisture, flowers mauve.

LARGE SHRUBS

Prostanthera nivea 3 m from QLD, NSW, VIC; hardy all areas, flowers white.

Prostanthera nivea var *induta* 3 m from NSW; very hardy, large flowers mauve.

Prostanthera prunelloides 3 m from NSW; dry areas, flowers white, pink very aromatic.

Prostanthera ovalifolia 2-4 m from NSW, QLD. One of the hardiest of all. Many forms are now available for all conditions; flowers mauve, pink, rose, almost white, violet and many other variations.

You can see that there are *prostanthera*'s for all aspects wheiher large or small areas are used.

I hope we can induce you all to grow these beautiful gems of the Australian flora. ■

Eastern Hemigenia

Notes by George and Peter Althofer

Hemigenia biddulpliana

This upright plant to one metre is confined to Queensland, mainly in central inland areas on sandstone outcrops. The attractive flowers are white to pale mauve, solitary or in pairs in the leaf axils and large for a *Hemigenia*, larger than the NSW species. The leaves have the margins slightly recurved, are lanceolate to narrow lanceolate and up to 5 cm long. It may be found on and around Mt. Playfair which is west of the Carnarvon Range, northern extension, south and north of that place and across the northern sandy areas to the ranges east of Portland. A very attractive plant.

Hemigenia clotteniana

This stiff, rigid upright shrub to one metre from Central Northern Queensland range country has flowers even larger than *H. biddulpliana* and are pale mauve to mauve. A third species is said to occur in Queensland and may well be the Labiate reported from Mt. Mulligan.

Hemigenia cuneifolia

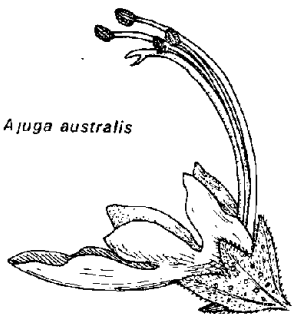
A rather large shrub of 1-2 metres, sometimes sprawling and dense growing it becomes massed with small violet flowers in season. Originally known only from the upper Georges River south of Sydney, it has since been reported from the Macleay River. This siting has not been confirmed and was probably *Westringia glabra* which, in its narrow leaved form has on a number of occasions been mistaken for this species. It was not until the late 1960's that I found this plant growing profusely over a small area about a kilometre from the Newell Highway on the Baradine Road, about 50 km from Coonabarabran. In 1974 I found the species growing with *Homoranthus darwinoides* on a road off Cox's Road, 20 km north of Dubbo. Here it grew in poor sandy country and the plants were not nearly so robust. *Hemigenia cuneifolia* has the leaves in whorls of three, oblong-cuneate, obtuse or mucronate acute, bright green on both sides, flat and rarely more than 1.3 cm long. The flowers are small, violet, solitary in the leaf axils, shortly pedicellate, with small acute bracts. The calyx is 1½ to 2 lines long, quite glabrous, striate, with teeth all equal, acute and shorter than the tube.

The corolla is pubescent outside, not twice as long as the calyx, the upper lip broad erect concave and emarginate as in *H. purpurea*, the lower lip longer and spreading. The upper stamens are as in *H. purpurea* with the connective dilated and bearded at the lower end, the lower stamens with the connective short, the cell at the upper end ovate but perhaps not perfect, the lower end linear and glabrous. With the form found in Pilliga Forest, the branches are tenuous and interlaced, the whole plant having the habit of being sprawling.

Hemigenia purpurea

A slender, upright heath-like plant of the sandstone ridges of the Blue Mountains, it possibly extended across the whole of the sandstone area

Ajuga australis



AUSTRALIAN LAMIACEAE

by John Jessop
State Herbarium of South Australia

The family Lamiaceae is a rather large one, with nearly 200 genera and more than 3,000 species. The flowers are generally recognisable by the somewhat unusual arrangement of the petals (corolla) and, to the botanist, the arrangement of the reproductive parts of the flower. The colour photographs in this issue show the common characteristic of the corolla arrangement, known as two-lipped because the two upper lobes and three lower lobes are partly fused and so positioned that they resemble two lips. The difference between the two lips is especially evident in the illustrations of *Ajuga* on page 304 in which the pair of upper lobes is very small compared with the large three-lobed lower lip. A two-lipped corolla does also occur in other families, such as *Eremophila* (Myoporaceae) and *Goodenia* (Goodeniaceae).

Even without flowers or fruits members of this family are often rather easy to pick out because of the square stems and branches, bearing opposite or whorled leaves and by the oil-secreting glands; pick a leaf and bruise it between the fingers and you will usually be able to smell the characteristic Lamiaceae smell — the smell of mint, rosemary, thyme, etc.

It is the volatile oils that have bestowed the main economic value on the family, through herbs such as mint (*Mentha*), rosemary (*Rosmarinus*), lavender (*Lavendula*) and thyme (*Thymus*). Other genera have contributed important ornamentals, for example, *Salvia*, *Plectranthus*, *Coleus*, *Stachys* and *Monarda*, and many genera are well-established as weeds.

The name Labiati, referring to the two-lipped corolla, was proposed for this family in 1694 and, in the form Labiatae, has generally been accepted. However, because most families take their names from one of their genera plus -aceae, it has been agreed to allow the name Lamiaceae (from *Lamium*) as an alternative for those who prefer it.

It is very difficult to survey the Australian genera because so much work remains to be done on them. These notes on the Lamiaceae are presented as a very tentative guide to the native genera; naturalised species have not been taken into account.

The Lamiaceae can be divided in various ways according to the form of the lips of the corolla, the structure of the anthers or of the seeds, but botanists have tended to regard the ovary as affording the best starting point. Two fundamental ovary arrangements are often recognised — in which the four components are virtually free of one another (fig. 1), the style arises from their base and up to four distinct nutlets are matured; or in which the components are fused (fig. 5), the style arises from above the base of the ovary and the nutlets are joined. Sketches on page 303.

The first of these two groups contains the larger number of species in other parts of the world, but is relatively poorly represented in Australia. Of its six subfamilies only three include Australian natives — Scutellarioideae, Lamioideae and Ocimoideae. The second group consists of only two or three subfamilies, the Ajugoideae being represented by only two genera in Australia, the Rosmarinioidae, not always recognised and not represented by any native species, and the Prostantheroideae. Not only are the Prostantheroideae restricted to Australia and possibly Lord Howe Island, but this is also the only subfamily in which any genus is endemic to Australia.

SUBFAMILIES IN WHICH THE NUTLETS ARE SEPARATE

Subfamily Scutellarioideae

This is a small subfamily with only a single genus, *Scutellaria* (skull-caps), represented in Australia. Of its approximately 300 species only a couple are native to Australia. They can be distinguished from other Australian Lamiaceae by their having a hollow protuberance on the back of the upper lip of the calyx (fig. 2). *S. mollis* (N.S.W. and Vic.) differs from *S. humilis* (Qld. to Tas. and S.A.) in being glandular-hairy, with lanceolate leaves, while *S. humilis* is less hairy or even glabrous, not glandular, and with broader-ovate to orbicular leaves.



Scutellaria humilis

Photography by M. Fagg

Subfamily Lamioideae

***Mentha australis* (top right)**

Members of this subfamily are given on page 302, one of which is the genus *Mentha*. The photograph does not show the ovary structure which is below the centre of the flower and concealed by the dense hairs in the "throat" of the flower. The flower on the left shows particularly well the upper 2-lobed lip although the three lower lobes are not grouped to form a distinct lip. The four stamens of the family show clearly and, in the flower furthest to the right the two-lobed style, indicating the originally two-part nature of the female structures.

Mentha is the best represented in Australia, but even so only about half a dozen species (*M. australis*, *diemenica*, *gracilis*, *grandiflora*, *laxiflora* and *saturejoides*) are native here with a further twenty or more in the old world. *Anisomeles* may have a few Australian native species, but it is possible that none of the other genera of this subfamily has more than one.

Subfamily Ocimoideae

The members of this subfamily are listed on page 302 and include the genus *Plectranthus*. All species in the genus are described from page 313.

Plectranthus parviflorus

(bottom left)

The sketch on page 323 illustrates the characters of this plant and the size of the leaves and flowers.

Plectranthus intraterraneus

(bottom right)

The sketch on page 321 illustrates the characters of this plant. *P. intraterraneus* resembles *P. parviflorus* in the teeth of the leaves and the general structure of the flower. However it has a more shrubby habit with many gland-tipped hairs on the stem, leaves and corolla as shown in the colour plate.



Mentha australis

All Photography by Alan H. Morrison



Plectranthus parviflorus



Plectranthus intraterraneus

Subfamily Lamioideae

The principal character of use in distinguishing this subfamily from the Ocimoideae is in the position of the stamens which lie horizontally or in the upper part of the flower (fig. 3), while in the Ocimoideae they project downwards (fig. 4).

The more than one hundred genera are predominantly old-world, but are also well represented in the Americas; Australia has only about seven.

Key to Lamioideae genera

1. Fertile stamens 4	2
1. Fertile stamens 2	6
2. Calyx strongly 2-lipped	<i>Prunella vulgaris</i>
2. Calyx 4-, or 8-10-toothed or slightly 2-lipped	3
3. Calyx 8-10-toothed	<i>Leucas flaccida</i>
3. Calyx 5-toothed	4
4. Anthers all 2-celled	<i>Mentha</i> spp.
4. Anthers all 1-celled or one pair 2-celled and one pair 1-celled	5
5. Anthers all 1-celled	<i>Pogonostemon stellatus</i>
5. Anthers both 1-celled and 2-celled in each flower	<i>Anisomeles malabarica</i>
6. Calyx strongly 2-lipped	<i>Salvia plebeia</i>
6. Calyx 5-toothed	<i>Lycopus australis</i>

Prunella vulgaris is a low-growing herb with its violet flowers, which are generally a little more than 1cm. long, in a dense terminal spike. It is widespread in temperate parts of the world.

Leucas flaccida is an annual herb which sometimes reaches a height in excess of 1 metre. Its flowers are white, borne in small clusters and about 1½cm. long. It also occurs in Indonesia and mainland Asia.

Mentha australis see page 301 for colour plate and other species.

Pogonostemon stellatus has also been known as *Dysophylla stellata* and *D. verticillata*. It is a more or less erect annual up to as much as 100cm. high and with terminal spikes of very small pinkish flowers. It also occurs through Indonesia to mainland Asia.

Anisomeles malabarica which has also been known as *A.* (or *Epimeredi*) *salviifolia*, is rather shrubby and generally about 1m. high. The flowers are about 1cm. long, lilac or pale blue and borne in a number of clusters towards the ends of the branches. It also occurs in Indonesia and mainland Asia.

Salvia plebeia is an erect herb around ½m. high. The flowers are bluish or purplish, only about 3mm. long and arranged in racemes. It is yet another of the species which extends in distribution through Indonesia to mainland Asia.

Lycopus australis is an erect perennial of about 1m. height. The flowers are white and arranged in small clusters among the leaves.

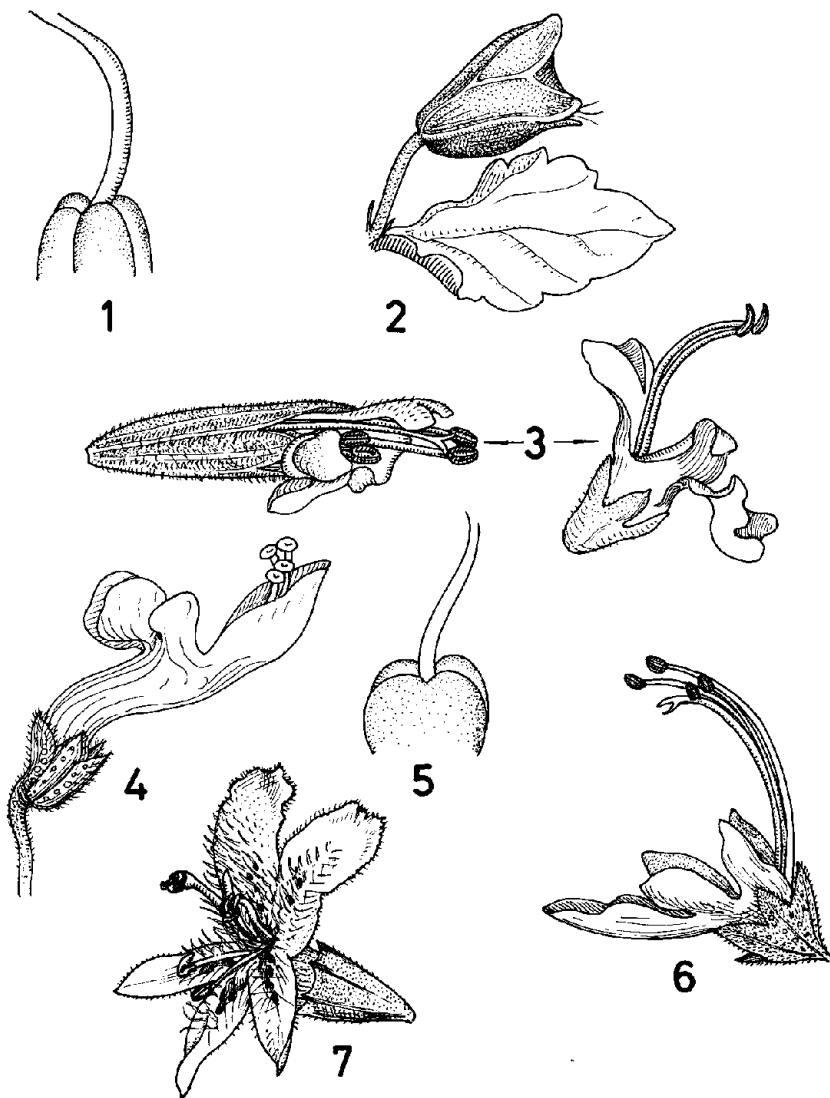
Subfamily Ocimoideae

This subfamily probably contains no more than about 30 genera, of which five occur in Australia. *Plectranthus*, with fifteen Australian species (*P. alloplectus*, *P. amicorum*, *P. apreptus*, *P. argentatus*, *P. congestus*, *P. diversus*, *P. foetidus*, *P. gratus*, *P. graveolens*, *P. intraterraneus*, *P. mirus*, *P. parviflorus*, *P. spectabilis* and *P. suaveolens*), is by far the best represented here, being particularly rich in species in Queensland. *Ocimum* and *Basilicum* each have at least two species described from Australia but only one species is usually recognised in these genera or in any of the remaining genera of this Ocimoideae.

Key to Ocimoideae genera

1. Corolla lower lip flat or nearly so	2
1. Corolla lower lip concave or boat-shaped	4
2. Style shortly 2-lobed; corolla-tube shorter than or scarcely exceeding the calyx	3
2. Style not branched, swollen at the apex; corolla-tube usually well exserted from the calyx	<i>Orthosiphon aristatus</i>
3. Filaments exserted; inflorescence symmetrical	<i>Ocimum tenuiflorum</i>
3. Filaments included; inflorescence 1-sided	<i>Basilicum polystachyon</i>
4. Corolla with a long spur at the base	<i>Ceratanthus longicornis</i>
4. Corolla with a short spur or none	<i>Plectranthus</i> spp.

For a short description of species in this subfamily, see page 307.



Sub-families with a deeply lobed ovary as in Fig. 1 are:

Fig. 2 — The sub-family Scutellarioides, represented in Australia by only *Scutellaria humilis*, has a characteristic calyx as described on page 300.

Fig. 3 — The sub-family Lamioideae, as described opposite, have their stamens in the upper part of the flower or more or less horizontal as compared with;

Fig. 4 — The sub-family Ocimoideae have their stamens distinctly in the lower part of the flower. Compare the photograph of *Mentha* with *Plectranthus* on page 301.

Sub-families with less distinct or no lobes to the ovary as in Fig. 5;

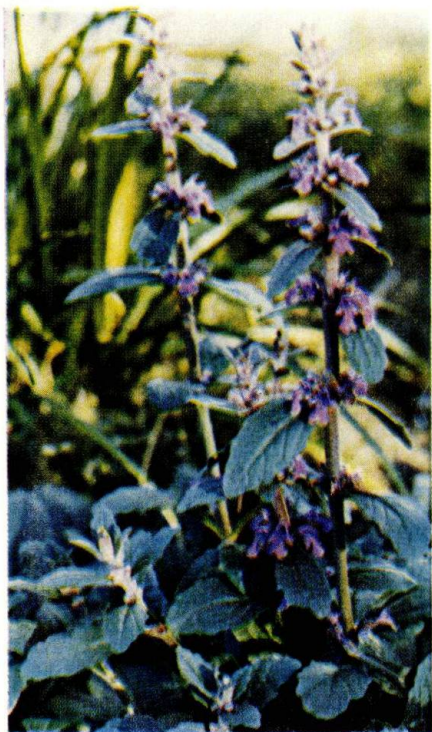
Fig. 6 — The sub-family Ajugoideae comprising, in Australia, *Ajuga* and *Teucrium* as illustrated in colour on pages 304 and 305, are easily distinguishable by the prominence of the lower lip and reduction or disappearance of the upper lip.

Fig. 7 — The sub-family Prostantheroideae comprises the genera listed on page 306. All five lobes are prominent to varying degrees as defined in the key on page 306. Another distinguishing feature is the presence of two stamens for *Wrixonia*, *Microcorgs* and *Westringia* and four for the other genera in the group.

SUBFAMILIES IN WHICH THE NUTLETS ARE JOINED

Subfamily Ajugoideae

The two Australian genera (*Ajuga* and *Teucrium*) are readily distinguishable from the Prostantheroideae in having a large lower lip to the corolla but no upper lip (fig. 6); the Prostantheroideae have two well-developed lips (fig. 7). *Teucrium* is the better represented of these two genera in Australia with at least nine or ten species (*T. argutum*, *corymbosum*, *eremaeum*, *fililobum*, *grandiusculum*, *integrifolium*, *myriocladum*, *racemosum* and *sessiliflorum*). *Ajuga* may consist of a single variable species, *A. australis*, but many authors consider that several species require recognition, for example *A. grandiflora*. *Ajuga* can usually be recognised by the blue or purple corolla, while *Teucrium* has a white corolla.



Ajuga australis

The photograph above shows the characters that distinguish this genus from other genera in the family, a large three lobed lower lip to the flower, the upper two lobed lip being quite small in comparison. An easily grown plant as described on page 312.

***Teucrium corymbosum* (top left)**

Photography by P. Althofer

***Teucrium racemosum* (top right)**

Photography by Murray Fagg

Photography by O. Hockings

The arrangement of the flower shown in the sketch on page 303 is well illustrated in the colour photographs of these species.

Subfamily Prostantheroideae

Microcorys exserta

Photography by B. Ballingall

A beautiful plant from a genus of which little is known. There are 15 species in South-western Australia and strangely, one species in Queensland. The flower is similar to many *Prostanthera* differing from them and the other genera in the subfamily as shown in the sketch on page 306.



Teucrium corymbosum



Teucrium racemosum

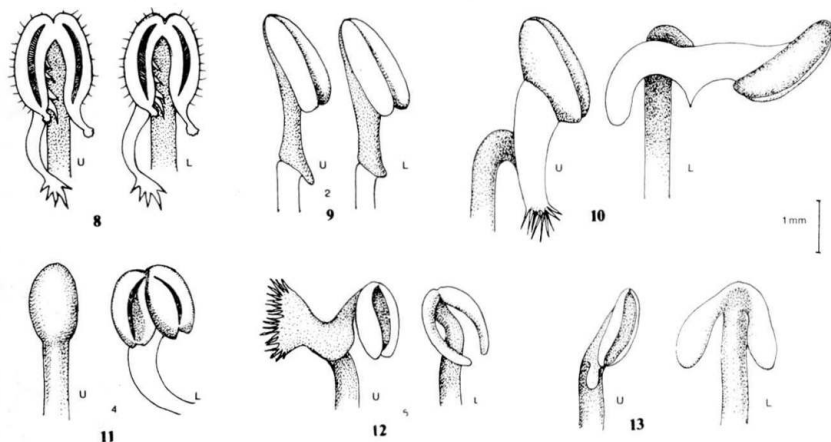


Microcorys exserta



Subfamily Prostantheroideae

The Prostantheroideae are confined to Australia and possibly Lord Howe Island, with seven genera currently recognised and probably over 150 species. The key presented here is almost as published by J. Carrick (*J. Adelaide Bot. Gard.* 1(1976)28), but has been slightly emended to include *Eichlerago* which Carrick published in the following year (*J. Adelaide Bot. Gard.* 1(1977) 115). It is tragic that these two are the only publications resulting from several years of study of *Prostanthera* and its close allies and cut short by his sudden death in January, 1978.



Figs. 8-13. — Anthers of the genera of Prostantheroideae: U = Upper, L = Lower. 8. — *Prostanthera* and *Eichlerago*; 9. — *Hemandra*; 10 — *Hemigenia*; 11. — *Wrixonia*; 12. — *Microcorys*; 13. — *Westringia*. (Figs 8 to 13 are reproduced, with permission, from the *Journal of the Adelaide Botanic Gardens*, vol. 1 (1976) fig. 1. Illustrations all by Mr. L. Dutkiewicz.)

Key to Prostantheroideae genera

- | | |
|--|---------------------|
| 1. Four stamens fertile | 2 |
| 1. Two stamens fertile | 5 |
| 2. Anthers 2-celled; connective prominent at back, usually cristate and produced into 1 or 2 linear appendages (fig. 8) | 3 |
| 2. Anthers 1-celled; connective elongated and produced beyond its insertion on the filaments | 4 |
| 3. Lower corolla lip with three equal lobes; fruit not separating into nutlets; style terminal | <i>Eichlerago</i> |
| 3. Lower corolla lip with the middle lobe larger than the laterals; fruit separating into nutlets; style attached near the base of the ovary components | <i>Prostanthera</i> |
| 4. Connective produced into a small tooth-like or shortly linear appendage (fig. 9) | <i>Hemandra</i> |
| 4. Connective produced into a sterile branch which in the upper pair is usually short and dilated, and crested or bearded at the end, in the lower pair (rarely in both pairs) is glabrous and attenuate or bearing an imperfect cell at the end (fig. 10) | <i>Hemigenia</i> |
| 5. Lower stamens fertile, anthers 2-celled, without appendages; upper stamens sterile, bearing very small club-shaped heads (fig. 11) | <i>Wrixonia</i> |
| 5. Upper stamens fertile, anthers 1-celled; lower stamens sterile, anthers reduced to a small connective with 2 linear or linear-clavate branches | 6 |
| 6. Connective of the fertile stamens elongated, produced below the insertion on the filaments into a short lower branch usually dilated and bearded at the end (fig. 12) | <i>Microcorys</i> |
| 6. Connective of the fertile stamens not, or very shortly, produced below the insertion of the filament (fig. 13) | <i>Westringia</i> |

Eichlerago

This genus was described by Carrick in his 1977 paper for a single species, known only from collections made by Isaac Tyson near the Murchison River, Western Australia, in the 1890s. Carrick expressed some doubts even as to the family to which to refer this genus because of the spherical entire fruit. However, overlooking this peculiarity, it shows several close similarities to other members of the Prostantheroideae and particularly the anthers are indistinguishable from those of *Prostanthera* itself.

See page 311 for a full description and line sketch.

Wrixonia

There are two species, *W. prostantheroides* from the Eremaean Province of Western Australia, and a second, *W. schultzei*, recently described (Carrick, 1976) from Mount Sonder in the Northern Territory. *W. schultzei* differs in having smaller sessile flowers, whereas *W. prostantheroides* flowers are larger and pedicellate. There are also differences in the leaves, the former having flat leaves, the latter undulate. See page 309 for description, line drawings and colour photograph.

Westringia

The genus has more than twenty species in all States but absent from the Northern Territory. It also includes the only species of the family reported to occur outside Australia, namely *W. fruticosa* which was thought, probably erroneously, to occur on Lord Howe Island. *W. fruticosa* (coastal rosemary) is quite commonly grown as an ornamental. This important genus, horticulturally, is the subject of the next issue, well illustrated in colour.

Microcorys

It is one of those curious oddities of distribution that, while there are at least fifteen species of *Microcorys* in southern Western Australia, there is also a single species in Queensland but none, so far as is known, in between. These plants have not attracted much attention as ornamentals. See the colour photograph on page 305.

Hemigenia

After *Prostanthera* this is the largest genus of the Prostantheroideae with about forty species concentrated in south-western Western Australia. A few occur in Queensland and New South Wales, including the violet-flowered *H. purpurea*. See the photograph on page 328.

Hemiandra

All seven species described in *Hemiandra* occur in south-western Western Australia. *H. pungens* (snake bush), a spreading shrub, is grown as a garden plant. See colour plates on pages 329 and 340.

Prostanthera

This genus of plants, all ideal for horticultural applications is so well described by George Althofer that you must obtain a copy of his book "The Cradle of Incense" the Genus *Prostanthera*.

Australian Species in the Subfamily Ocimoideae—See page 302

Orthosiphon aristatus is a herb which can occasionally reach as much as 2 m. in height. The petals are white to lilac but are only about half as long as the very conspicuous stamens and style, which may be 4cm. or more long. It also reaches Asia. For a good colour photograph refer to our Horticultural Guide series (see page 339).

Ocimum tenuiflorum which has been known as *O. sanctum*, is an erect herb around ½ m. high. The flowers are lavender-coloured or white and less than ½ cm. long. Widespread through the tropics of the world.

Basilicum polystachyon

Is an erect herb which may reach 1 m. It produces dense spikes of small pinkish flowers and occurs in Africa and Asia as well as Australia.

Ceratanthus longicornis is a perennial herb less than ½ m. high. The bluish or purplish flowers are borne in slender racemes. It also occurs in New Guinea.

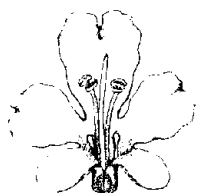
Plectranthus a genus of 15 species are all described from page 313. This includes the plant formerly known as *Coleus scutellarioides* or as *Solenostemon scutellarioides*. ■



Wrixonia schultzii

Photography by H. A. Morrison

In 1886, from the summit of Mount Sonder, Northern Territory, Rev. W. F. Schwartz of the Hermannsburg Lutheran Mission collected vegetative specimens of a plant which Mueller annotated *Prostanthera schultzii*, presumably in honour of Pastor Louis Schultz, also of Hermannsburg. Mueller recorded it in his Census supplement 4 in 1889, as *P. schultzii*, and again in his Second Census in 1889, but with a change in spelling, as *P. schultzii*.



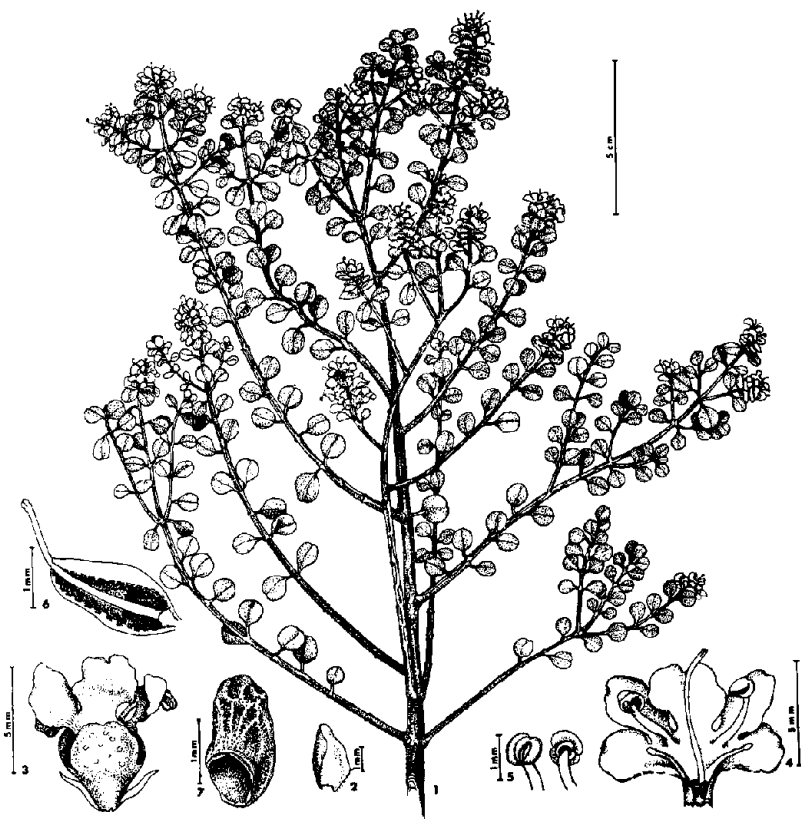
The Genus WRIXONIA

by J. Carrick,
Botanic Gardens,
Adelaide, South Australia

Article is based on a paper by the author (since deceased), as published in the Journal of the Adelaide Botanic Gardens, Vol. 1, Part 1, 27-34.

The genus *Wrixonia*, established by F. Mueller in 1876, was so called in honour of Henry John Wrixon, for many years Minister of Justice in Victoria, and scholarly patron of the Arts and Sciences.

The material was collected by Jess Young in 1875, during the Giles Expedition, in the vicinity of Mount Churchman, Western Australia, and Mueller named the plant *W. prostantheroides* because of its resemblance to the genus *Prostanthera* Labill. in having entire calyx lips and a similar odour. The two upper stamens, however, are sterile, which distinguishes *Wrixonia* from *Prostanthera* in which all four stamens are fertile, and from *Microcorys* and *Westringia* in which the two lower stamens are sterile.



Wrixonia schultzei (F. Muell. ex Tate) Carrick. 1, habit; 2, bract; 3, flower at anthesis; 4, corolla opened to reveal stamens; 5, front and back views of anther; 6, longitudinal section of fruit; 7, nutlet.

Reproduced with permission from the Journal of the Adelaide Botanic Gardens — Illustration by L. Dutkiewicz.

Cuttings sent to the Royal Botanic Gardens, Melbourne, in 1967, flowered in 1968. Because of the sterile upper stamens, Willis (loc. cit.) suggested that it belonged to the genus *Wrixonia*. The excellent flowering and fruiting material collected from Mount Sonder in 1972 (J. R. Maconochie 1653), because of its completeness, has been of particular value, and forms the basis of the present description.



Wrixonia prostantheroides F. Muell. 1, habit; 2, bract; 3, calyx after flowering; 4, corolla opened to reveal stamens; 5, front and back view of anther; 6, longitudinal section of fruit to show closed calyx; 7, nutlet.

Reproduced with permission from the Journal of the Adelaide Botanic Gardens — Illustration by L. Dutkiewicz.

Wrixonia

Intricately branched woody shrubs, up to 2 m high, leaves less than 1 cm long. *Inflorescence* racemose or spicate, more or less compact, terminal on short branchlets. *Bracts* broad, membranous. *Bracteoles* narrow-linear to narrow-lanceolate, well-developed or obsolescent, caducous. *Calyx* 2-lipped, 10-nerved, lips entire or somewhat sinuate, almost equal or the upper broader, closed in fruit. *Corolla* white, tube cylindric, expanded at the throat, upper lip deeply 2-lobed, lower lip deeply 3-lobed, the lobes broad, rounded and more or less emarginate. *Stamens* more or less exserted, lower pair fertile, 2-celled, upper pair sterile, with small, more or less club-shaped heads. *Ovary* glabrous, deeply 4-cleft, style slender, gynobasic, shortly bifid. *Nutlets* reticulate, attachment obliquely basal.

Leaves deflexed, with undulate margins; inflorescence a raceme, more or less condensed

..... *Wrixonia prostantheroides*

Leaves spreading, more or less flat, margin thickened; inflorescence a very condensed spike *Wrixonia schultzei*

EICHLERAGO

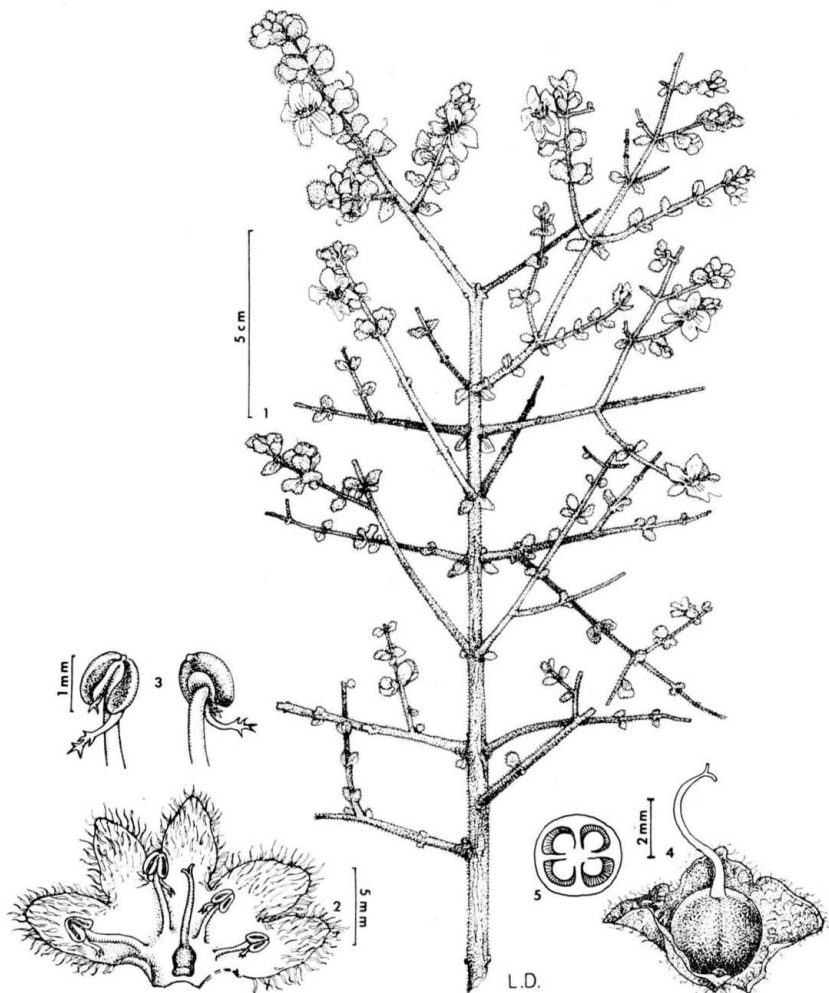
A New Genus Allied
to *Prostanthera*

by J. Carrick, Botanic Gardens, Adelaide, South Australia, 5000

Based on a paper by the author (since deceased), as published in the Journal of the Adelaide Botanic Gardens, 1(2): 115-122 (1977).

Eichlerago Carrick

Calyx two-lipped, the lower lip folding upwards and enclosing the fruit; corolla two-lipped, the upper lip two-lobed, the lobes equal, the lower lip three-lobed, the lobes equal; stamens four, didynamous, fertile, anthers bilobed.



1. *Eichlerago tysoniana* Carrick. Based on the Isaac Tyson 25 collection from Mt. Narryer, Murchison River, Western Australia, in 1898.

1, habit; 2, corolla opened out to reveal stamens and ovary; 3, front and back view of anther; 4, calyx upper lip with mature fruit (lower lip removed); 5, diagrammatic transverse section of fruit near base.

Reproduced with permission from the Journal of the Adelaide Botanic Gardens — Illustration by L. Dutkiewicz.

cular, connective appendaged; nectariferous disc present; ovary four-locular, one axile ovule attached towards the base of each loculus, style terminal; fruit dry, apparently indehiscent, seeds albuminous.

Eichlerago tysoniana

Divaricately branched shrub to about 1 m high, the branchlets densely clothed with pale brown matted hairs. Leaves decussate, shortly petiolate, elliptic to circular 2-4 mm long and broad. Flowers solitary in the leaf axils, the calyx tube c. 3 mm long, ribbed, sparsely villous. Corolla about 11 mm long, colour not known, tube c. 5 mm, long glabrous, upper and lower lip villous on both surfaces, c. 6 mm long. Stamens with strap-shaped filaments attached near the base of the tube, anthers about 1 mm long, appendaged. Style terminal, *not gynobasic*. Fruit spherical, 3 mm diam., style persistent.

Eichlerago was named in honour of Dr. HJ. Eichler now Curator of Herbarium Australiense, C.S.I.R.O., Canberra.

There are two collections for this plant recorded, both of which were made by Isaac Tyson. The first, MEL 41916, is annotated in Mueller's hand: "Prostanthera Tysoni F.v.M. Upper Murchison R. 1892. Isaac Tyson" and, on a separate label: "No. 4." The PERTH portion of the second collection is annotated in an unknown hand: "Prostanthera Tysoni Mt. Narryer, Murchison River. Isaac Tyson 25 (1898)". The name was never legitimised but was mentioned by Gardner (1931), Blackall and Grieve (1965) and Beard (1970).

Attempts to obtain specimens from the Mt. Narryer area of Western Australia have so far failed. Who will find this lost species? ■

Ajuga australis

Rosemary McLaren, Barmedman, N.S.W.

These lovely plants grow naturally in this area growing in clumps under *Eucalyptus* trees. Not many are left because of sheep grazing. I moved four plants into my garden to observe conditions needed for cultivation and can now report as follows:

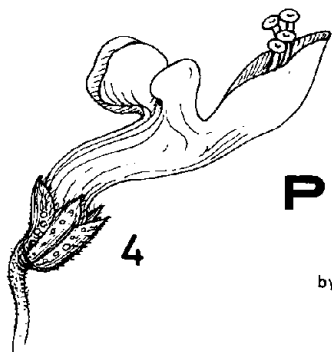
Plant 1: The position of this plant was on the western side of the house protected on the southern side by a wooden fence. It was a fairly damp position and not quite as well drained as the other 3 plants. By Spring the plant seemed to have gone but in about November it reappeared and is still alive. It is still a single plant but has not flowered.

Plant 2: Planted on the eastern side in a very well drained position, this plant flowered from September through to February. It is now a cluster of plants nearly a metre wide.

Plant 3: In a similar position to 2, this plant is still flowering and is now a cluster of plants nearly a metre wide. I have tried to count the number of plants but as they are matted, it is difficult to see where one starts and the other ends. Some are a little further away and appear to have come from seed rather than suckering.

Plant 4: In a similar position this plant did well to begin with but has been swamped by a *Grevillea dryophylla* and has not regenerated nearly as well as plants 2 and 3.

My soil is a thick layer of decomposed granite over a loamy soil, and is well drained. The plants responded well to watering in summer. Last week I saw some growing wild which were flowering after the autumn rain. Some appeared to have died back over summer, but are coming again. ■



PLECTRANTHUS

Notes based on a revision of the genus in Australia
by S. T. Blake, the Queensland Herbarium, Brisbane, as
published in the *Contributions from the Queensland
Herbarium* No. 9, 1971.

Plectranthus is represented by many species in Africa and a few in Asia. Fifteen species are found in Australia, chiefly in Queensland.

Some species have a wide distribution but there is a cluster of local endemics in northern Queensland and another in the extreme south-east part of Queensland and neighbouring part of New South Wales. There may be another local endemic in central Queensland. Most species are usually found on rock ledges or in crevices often on steep slopes or cliff sides.

Two or three species frequently grow in close proximity in nature and flower at the same time, so there seems ample opportunity for crossing to occur, but only five examples of hybridism in nature have been recognised: *P. argentatus* $\times$ *P. parviflorus*; *P. argentatus* $\times$ *P. spectabilis*; *P. gratus* $\times$ *P. spectabilis*; *P. parviflorus* $\times$ *P. spectabilis*; *P. graveolens* $\times$ *P. parviflorus*.

Flowers open at night and after remaining open for some days the corolla falls during the afternoon before it withers, carrying the style with it. Most if not all species have long flowering periods, lasting for several months. At least some plants are self-fertile to judge from self-sown seedlings in the garden. Small cleistogamous flowers have been seen on *P. parviflorus*.

In *habit*, most species are definitely shrubby with the stems living for several years at least, but *P. parviflorus* is as a rule definitely herbaceous with its stems dying down each year almost or quite to a tuberous base. *P. apreptus*, *P. congestus*, *P. suaveolens* and perhaps *P. forsteri** are somewhat woody near the base which is not tuberous or irregularly so in *P. suaveolens* and a greater part of the lower part of the plant perenniates than in *P. parviflorus* but none of the stems appears to perenniate for more than 2-3 years; new stems arise from the lowermost nodes and from the "crown" of the plant. Tuberous roots have been observed on plants of *P. congestus*, but it is not known if this is a constant character; such roots have not been seen in other species though they are known to occur in a few African and Indian species. In most species the pairs of leaves are fairly equally distributed and the inflorescence arises abruptly from the topmost pair.

Odours are characteristic of some species. Plants of *P. diversus*, *P. intraterraneus*, *P. mirus* and *P. suaveolens* emit a strong sweetish odour when handled and those of *P. graveolens* and the inflorescences of *P. parviflorus* a heavy somewhat foetid odour.

Horticulture

Plectranthus parviflorus was cultivated in Europe in 1805 if not before and in England in 1824. But this is possibly the least attractive of Australian species. *P. spectabilis* was raised at the Edinburgh Botanic Garden, whence specimens were sent to Kew in 1883 and described by J. D. Hooker and figured in Bot. Mag. t. 6792 under the name of *P. foetidus*; Hooker wrote enthusiastically of this "very striking, well worthy of cultivation". A form of *P. forsteri* with leaves edged with cream or yellow has been cultivated for its foliage at least in Australia and the United States under the name of *P. coleoides* (a name rightfully belonging to a very different Indian species).

P. argentatus has been cultivated around Brisbane to some extent during recent years chiefly because of the silvery young foliage. The intensely blue flowers of most species, the somewhat colourful foliage of some, their hardiness, and ease of propagation from cuttings should lead to a wider use as the species become better known, but the roots are subject to invasion by nematodes. The author, S. T. Blake, grew all the Australian species.

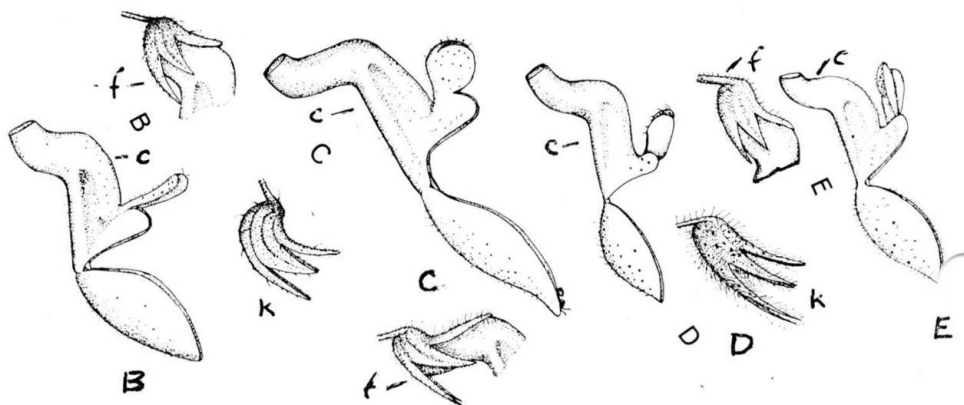


FIGURE 1—Floral characters of *Plectranthus* species corolla (as at c), flowering calyx (f), fruiting calyx (k) all $\times 4$. The direction of the upper lip of the corolla and fruiting calyx changes with age and no diagnostic importance should be placed on it. A. *Plectranthus graveolens* (see page 316); B. *P. diversus*; C. *P. mirus*; D. *P. foetidus*; E. *P. amicorum*.

KEY TO AUSTRALASIAN SPECIES

Stamens united at the base

17 *P. scutellarioides*.

Stamens free throughout their entire length

See Note Below.

Indumentum on stem and axis (except sometimes at the nodes) and the lower surface of the leaves of divaricate to retrorse (2-18-celled) hairs, with or without short divaricate gland-tipped hairs; sometimes (on *P. diversus*) the direction uncertain or varying from retrorse to antrorse but then abundant gland-tipped hairs also present (some plants of No. 12, *P. forsteri* have all or some hairs retrorse but no gland-tipped hairs and leaves with 3-6 pairs of teeth):

Leaves with 9-34 pairs of teeth, sometimes 10-7 pairs on plants with close hoary indumentum on the stem or with abundant gland-tipped hairs:

Javanese plant $\pm$ woolly; leaves 1.5-2.5 times as long as wide with petioles one-eighth to one-third as long as blade; glands and gland-tipped hairs absent on stem; minute gland-tipped hairs on leaves; racemes many, $\pm$ paniculate, verticillasters contiguous upwards; corolla-tube in profile much widened upwards with its lower surface arcuate.

18. *P. petraeus**

Non-Javanese plants with other combinations of characters; most leaves 1-1.5 times as long as wide except in *P. alloplectus* which has a short appressed whitish or silvery indumentum, petioles one-tenth to one-fifth as long as blades and (as in some others) conspicuous glands on stem; corolla twice bent and $\pm$ sigmoid, weakly so in a few species or in one species nearly straight (bends indistinct) and not much widened upwards:

Gland-tipped hairs usually abundant on stem, lower surface of leaf and sometimes on the axis, sometimes hidden or partly replaced by an abundance of long many-celled acute hairs; coloured sessile glands sparse to absent on stem and upper side of leaf:

Fruiting calyx divided to about the middle with the upper lobe ovate to very broadly ovate; lateral lobes 1.5-2 times as long as wide; lower lobes 2.5-4 times as long as wide:

Corolla in flower 1.6-2.3 mm long, directed horizontally and downwards in fruit, its upper lip as wide as or wider than long, $\pm$ obtuse, not longer than the lateral lobes; longer hairs on internodes and lower surface of leaf divaricate to retrorse.

1. *P. graveolens*

Corolla in flower 2.3-3.3 mm long, directed upwards in fruit, its upper lip from nearly as wide as to much narrower than long, $\pm$ acute, longer than the lateral lobes; some of the longer hairs on stem and lower surface of leaf $\pm$ antrorse; sessile glands sometimes rare.

2. *P. diversus*

Note: This key was first erected by Dr. S. T. Blake and included a total of 17 species, three (marked*) of which did not occur in Australia. A plant widely known as *Coleus scutellarioides* and referred to by Stan Blake as *Solenostemon scutellarioides*, has now been included in the genus *Plectranthus* by Keng.

Botanists have had considerable difficulty deciding where to place this species. Even at the species level some botanists split it up into numerous smaller species, but most regard it as a single large and variable species.

Fruiting calyx divided to the middle or beyond with the upper lobe narrowly ovate to ovate or $\pm$ triangular, acute; lateral lobes about 2.5-4 times as long as wide; lower lobes 4-5 times as long as wide;

Sessile glands absent at least from stem and leaves; surface of leaf easily visible between the hairs, teeth in 7-15 pairs; racemes lax-flowered.

Sessile glands present on stem and leaves $\pm$ hidden by long hairs; teeth in 12-34 pairs; racemes dense-flowered, at least upwards.

Gland-tipped hairs absent or few and minute, at least on stem and leaves; indumentum on stem $\pm$ dense, of short, closely appressed hairs silvery at least on the new shoots; coloured sessile glands $\pm$ abundant and usually easily seen on stem, both sides of leaf and axis:

Leaf-blades 1-1.5 times as long as wide, or up to twice as long on dried specimens; petioles about one-fifth to half as long as the blade; stamens scarcely if at all exceeding the tip of the lower lip of the corolla; pedicels 2-4 mm long:

Leaves with 7-13 pairs of teeth, densely and shortly villous beneath; corolla ciliolate on all lobes, the tube sharply bent at an angle of 90° - 120° ; glands 8-celled.

Leaves with 11-23 pairs of teeth, pubescent beneath, chiefly on the veins; corolla with at least the lateral lobes and lower lip glabrous at least at and near the margin, the tube gently curved rather than bent, at an angle of about 160° ; glands 4-celled.

Leaf-blades about 2-2.5 times as long as wide; petioles mostly less than one-third (one-tenth to one-fifth) as long as the blade; stamens and style exceeding the lower lip of the corolla by 1.5-4.5 mm; pedicels 1-3 mm long.

Leaves with 4-10 pairs of teeth (some of these sometimes with secondary teeth); axis of inflorescence with many gland-tipped hairs (*P. parviflorus* very rarely has up to 12 pairs of teeth but it has at most only few and minute gland-tipped hairs on the stem; see also No. 12, *P. forsteri*, some plants of which have retrorse hairs):

Axis of inflorescence with very few or no sessile globose $\pm$ coloured glands:

Stems densely shortly appressedly white pubescent; leaves without or with very few glands; corolla-tube prominently bent at an angle of 120° - 130° .

Stems hirsute; leaves with many glands at least on lower surface; corolla-tube slightly and gently curved at an angle of 120° - 160° . (Not Australian).

Axis of inflorescence with many coloured sessile globose glands:

Stems and leaves with many gland-tipped hairs; shrub without a tuberous base; lateral lobes of fruiting calyx about 1.5 times as long as wide.

Stems and leaves with at most a few minute gland-tipped hairs; perennial herb or subshrub with a tuberous base; lateral lobes of fruiting calyx at least 1.5 times as long as wide.

Indumentum of $\pm$ antrorse hairs throughout except on some plants of *P. forsteri*; gland-tipped hairs on stems, leaves and axis few and minute to absent; sessile glands absent or nearly absent from upper surface of leaf except in *P. forsteri*, usually also from axis and sometimes from stem; leaves on well grown plants usually with 7-18 pairs of teeth (fewer on *P. forsteri* and stunted plants of other species):

Calyx 1.8-3.3 mm long in flower, 3.5-5 mm long in fruit, with the upper lip as broad as or somewhat broader than long; verticillasters 8-15 mm apart with conspicuous hirtellous pedicels 2.5-7.5 mm long; stem with uppermost leaves not very different in size, length of petiole and disposition from those lower down; racemes 1-3, rarely 5:

Subshrubs, sparsely and shortly pubescent with hairs $\pm$ 0.5 mm long; petioles commonly one-third to two-third as long as the blades; verticillasters 6-10-flowered with broadly ovate to narrowly ovate bracts:

Leaves with 3-6 pairs of teeth with fairly numerous glands on the upper surface and densely glandular beneath; glands also on stem; corolla usually 3-6 mm long with straight or constricted tube. Not confirmed as Australian.

Leaves with 7-18 pairs of teeth without glands above and sparsely glandular beneath; no glands on stem; corolla 7-12 mm long with sharply and extensively bent tube (90° - 120°).

Shrub, densely pubescent with hairs up to 1 mm long; petioles commonly less than one-third as long as blade; verticillasters 10-14-flowered with ovate to very broadly ovate bracts.

Calyx either shorter than above or with the upper lip half to two-third as wide as long; verticillasters $\pm$ closely approximated except at the base of the raceme, commonly with short to very short pedicels (rarely up to 4 mm or more); uppermost 2-3 pairs of leaves more distant, much smaller with short to very short petioles; racemes often many:

Shrub; calyx 1.8-2.7 mm long in flower, 3.5-4.5 mm in fruit, the upper lip narrowly subtriangular-ovate, acute; verticillasters up to 18-flowered.

Perennial herb; calyx 1-1.6 mm long in flower, up to 3.2 mm in fruit with sub-circular upper lip; verticillasters commonly 20-50-flowered except on stunted plants.

SHORTENED NOTES ON SPECIES

1. *Plectranthus graveolens* R. Br.

Loosely branched heavily scented shrub up to 1 m high; stems up to 12 mm thick in lower part; branches densely glandular-pubescent. Leaves green or dark green paler beneath; very broadly ovate or somewhat elliptic, acute to obtuse, with 10–19 pairs of teeth. Flower racemes 15–25 cm long; axis densely glandular-pubescent, 12–15-flowered, about 8–12 mm apart. Corolla 8–9 mm long, tube sharply deflexed at an angle of 90° – 130° .

Plectranthus graveolens is chiefly a plant of exposed rock ledges and crevices (Fig. 1). There is much variation in the abundance of long spreading hairs on the stem; some plants have very few such hairs. Leaves vary from cordate to cuneate on the same plant at different times, and cordate leaves may become cuneate on drying. Leaves with less than 11 teeth on each side are sometimes found.

Although treated as conspecific with *P. parviflorus* by Bentham in Fl. Aust. 5: 78 and most later writers or as a variety of this species by others, it is well distinguished by the more shrubby habit, absence of a tuberous base, greater number of leaf-teeth, abundance of gland-tipped hairs on stem and leaves, relatively shorter calyx, and the corolla-tube $\pm$ sharply bent often almost at a right angle. The whole plant is somewhat clammy to the touch and emits a heavy odour when bruised.

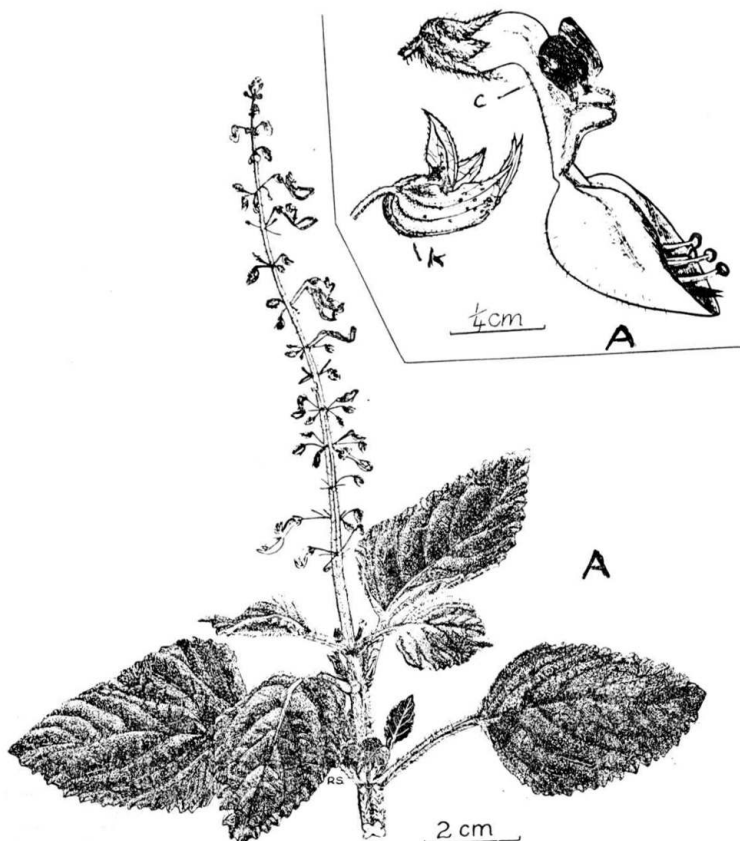


Figure 1. A — *Plectranthus graveolens*.

2. *Plectranthus diversus* S. T. Blake.

Shrub with a powerful sweetish scent, up to 1.2 m high; stems stout, $\pm$ erect, up to 15 mm thick, many-noded with short internodes, densely glandular-pubescent. Leaves sometimes shortly petiolate, dull green or light green, paler beneath, the veins much impressed above and prominent beneath; blade ovate to very broadly ovate and then sometimes $\pm$ triangular, with 7–16 pairs of short teeth.

Racemes of flowers, 4–30 cm long. Flowers violet, the lower lip distinctly paler. Corolla 9–15 mm long, the tube being bent a little below the middle at an angle of mostly 90° – 120° , the part above the bend sometimes broader, with upper lobes about 2.5 mm diam. Fig. 1 shows some flower detail.

P. diversus has been collected from granite, basalt, limestone and other rocks. It is closely similar to *P. graveolens* R. Br. and like this species it is very densely glandular-hairy, emits a strong though much sweeter odour when handled and the branches of the cymes of the verticillasters are often quite evidently distinct. The longer hairs are however partly antrorse or uncertain in direction. The calyx in flower is larger than is usual in *P. graveolens*, usually smaller in fruit so that the degree of enlargement is much less, and in this state the upper lobe is narrower.

The odour and general appearance are much like those of *P. mirus* S. T. Blake but the latter is almost or quite devoid of sessile glands and the declinate fruiting calyx is larger with much narrower lobes, especially the lateral and lower ones.

3. *Plectranthus mirus* S. T. Blake.

Green, strongly somewhat sweetly scented, semi-succulent shrub up to 1.5 m high with ascending or spreading stems at length woody below and there up to 10 mm thick, abundant gland-tipped hairs almost throughout, but no sessile glands. Stems densely to sparsely pubescent. Leaves green, paler beneath; blades ovate to very broadly ovate, acute, crenate-serrate nearly to the base with 10–15 pairs of broad somewhat triangular to $\pm$ rounded teeth. Racemes 1–3, about 10–20 cm long; axis pubescent and glandular-pubescent like the stem and without sessile glands; 10–20-flowered, 8–20 mm apart; bracts broadly triangular-ovate 3.5–4.5 mm long and 2.5–3.2 mm wide. Flowers rich violet. Calyx 2.5–4.0 mm long, corolla 8–13.5 mm long; tube sharply bent about the middle at an angle of about 80° – 110° . Figure 1 shows some flower detail.

Very distinct because of the almost complete absence of sessile glands, the many-flowered racemes with frequently distinct development of the cyme, often long pedicel, sharply and extensively bent corolla, deep lobing of the fruiting calyx with rather narrowly ovate upper lip and unusually narrow lateral lobes. It is the only Australian species consistently without abundant sessile glands even in the inflorescence, the cymes are less reduced than usual in *Plectranthus*, and the calyx is more deeply cleft with narrower lateral lobes than in other Australian species. All collections are from granite outcrops, being from an unusually white granite cliff running down to the sea.

4. *Plectranthus foetidus* Benth.

Shrub 40–150 cm high with a pronounced foetid odour, the leaves and younger branches thick and fleshy. Stems up to nearly 2 m long, up to 25 mm thick at base, densely retrorsely white hirsute with hairs up to 2.3 mm long. Leaves with petioles to one-tenth to two-third as long as the blades, the uppermost 3–4 pairs becoming more remote, blades broadly ovate or slightly wider than long, acute, with 12–30 pairs of short teeth becoming very small towards the base, commonly edged or tipped with purple, lower surface densely white villous with divaricate hairs sometimes concealing the many to few gland-tipped hairs except on the face of the larger veins and the many

orange or yellowish sessile glands, mostly 2–10 cm long and 1.5–9.5 cm wide, the veins and principal reticulations conspicuous because of the differential distribution of the indumentum. Racemes 1–3 or more, shortly pedunculate, 3–16 cm long, densely flowered, densely villous; bracts closely imbricate, very broadly ovate, racemes 6–11-flowered, about 5–10 mm apart, many of them contiguous. Flowers intensely blue to violet. Calyx 2.5–4.5 mm long, densely villous. Corolla 7–11 mm long; tube glabrous on lower surface, bent near the middle at an angle of 105°–140°. Fig. 1

A robust, densely hairy, thick-leaved shrub found on the sides of cliffs or on steep rock slopes with intensely violet to blue corollas that make a strong contrast with the dense white (sometimes purple) hairs of axis, bracts and calyxes. The leaves are commonly edged with purple on the teeth. The uppermost 3–4 pairs of leaves become more distant, markedly smaller with short to very short petioles, and are often asymmetric; they pass gradually into the bracts. As the flowering season advances short raceme-bearing branches with 1–2 pairs of small leaves grow out from the axils of the upper leaves; later these leaves fall and the greater part of each stem at length may resemble a large panicle of racemes.

5. *Plectranthus amicornum* S. T. Blake.

Sweetly scented shrub to about 1.5 m. Stems up to 10 mm thick at base, hoary when young then purplish and later pale brown, densely evenly shortly appressedly pubescent hairs at first white finally ferruginous. Leaves evenly distributed, hoary to sage green above, whitish beneath; petioles one-fifth to two-fifth as long as the blade; blades broadly to narrowly ovate, acute to broadly rounded, evenly crenate with 7–13 pairs of usually short and broad teeth. Racemes solitary, pedunculate, 5–12 cm long; bracts broadly ovate, acute sometimes shortly clawed, pubescent and with glands, racemes mostly 10-flowered, 7–12 mm apart. Flowers blue with a paler tube. Calyx 2–3 mm long extending beyond the bend of the corolla-tube. Corolla 9–12 mm long; tube glabrous or with a very few tiny hairs on the lower side, sharply bent below the middle at an angle of 90°–120°. Fig. 1 shows some flower detail.

The dense, white, closely appressed hairs on the stem resemble those of *P. argentatus* and *P. alloplectus* from extreme southern Queensland and all three species have glands on both sides on the leaves; *P. amicornum* differs from the former in the fewer leaf-teeth, 8-celled glands and sharply bent corolla-tube and from the latter in the broader leaves, longer pedicels and petioles, shallower lower lip of the corolla and included stamens, and from both in its sweet smell, abundance of mostly minute gland-tipped hairs in the inflorescence, and somewhat narrower upper lip of the calyx. It resembles the northern *P. gratus* in many ways but differs by the unusually dense, short, appressed hairs on the stem. It differs from all species in having all corolla lobes ciliolate.

"The epithet *amicorum* ('of the friends') commemorates all those who have helped in this study, especially those who collected living material."

6. *Plectranthus argentatus* S. T. Blake.

Spreading, hoary shrub up to 1 m high, the branches ascending from stems up to 13 mm thick, appressedly pubescent with recurved silvery hairs. Leaves with a silvery sheen when young, dull light green, whitish beneath; petioles one-fifth to three-fifth as long as blade, 1.2–5 cm long; blades ovate to broadly ovate, acute, evenly crenate to near the base with 13–23 pairs of teeth; 5–11.5 cm long, 3–5.5 cm wide. Racemes 12–30 cm long; 9–11-flowered, 6–12 mm apart; bracts ovate, acute, 2–3 mm long. Flowers predominantly bluish white, paler coloured than usual. Calyx 1.6–2.5 mm long. Corolla 9–11 mm long; tube slightly decurved; uppermost lobes and lower lip about as long as the tube. Fig. 2 shows plant and flower.

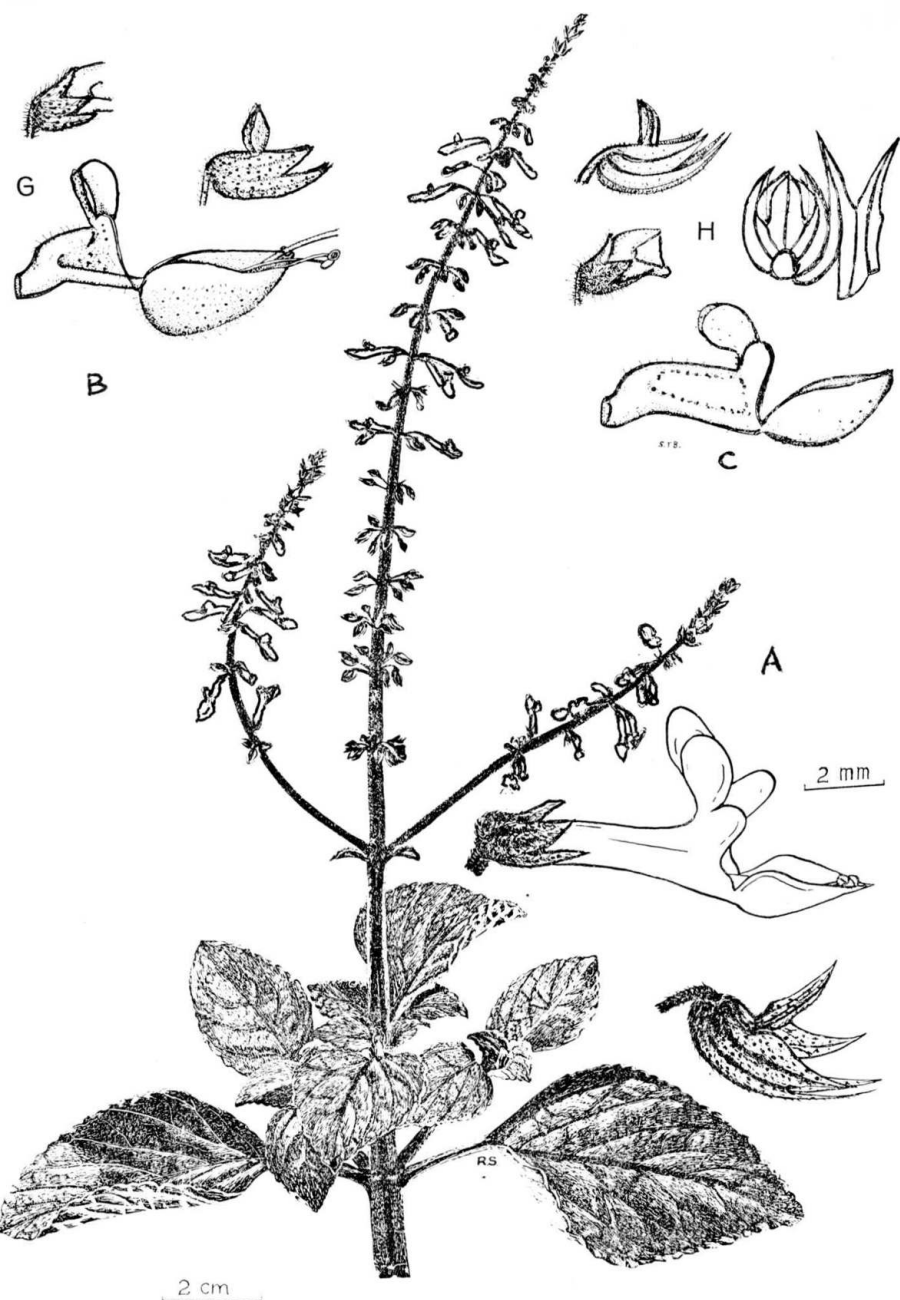


FIGURE 2—A. *Plectranthus argentatus*—plant, flower and fruit. B. *P. alloplectus*—calyx, fruiting calyx and flower. C. *P. suaveolens*—fruiting calyx and fruiting calyx split open and flattened out, calyx and flower.

P. argentatus is readily distinguished by its pale-coloured flowers with slender nearly straight corolla-tube and the silvery indumentum. It is the only Australian species with the sessile glands constantly 4-celled. The crushed

plant has very little odour. It grows in less rocky places than many other species and does very well in cultivation. It is achieving some popularity as a foliage plant under the name of "Green Silver".

Spontaneous garden hybrids with *P. parviflorus* and *P. spectabilis* are intermediate between the parents in habit. A wild hybrid with *P. graveolens* was found near its parents on Mt. Roberts in November, 1967 (Blake); another with *P. parviflorus* was collected on Tamborine Mtn. by Longman in 1917, and a plant resembling this hybrid was collected at Dorrigo, N.S.W.

7. *Plectranthus alloplectus* S. T. Blake.

Hoary scentless shrub with few erect to spreading or ascending, sparsely branched stems up to 70 cm long, up to 7 mm thick towards the base; stems and branches pubescent with reflexed, white hairs 0.05–0.35 mm with abundant orange 8-celled sessile glands. Leaves shortly petiolate, when living sage green above withering yellowish, hoary beneath, with veins much impressed above and much raised beneath, petioles one-tenth to one-fifth as long as the blade; blade narrowly ovate, obtuse or acuminate with the terminal tooth obtuse, crenulate above the lower one-sixth with 9–17 pairs of short and broad, divaricate to slightly ascending teeth. Racemes 1–3, pedunculate, mostly 6–25 cm long; axis densely pubescent and with abundant sessile glands but with no or very few and minute gland-tipped hairs; bracts more persistent than in most other species, ovate and acute racemes 6–13-flowered, mostly 10–20 mm apart. Flowers predominantly violet blue. Calyx 1.7–2.3 mm long, pubescent and abundantly glandular. Corolla 8–12 mm long, pubescent above the base; tube broadened upwards towards the slightly oblique mouth, bent at an angle of about 120°–140° shortly below the middle, the lowest segment slightly swollen on the lower surface; uppermost lobes subcircular; lateral lobes rounded; lower lip unusually large, distinctly longer than the tube by up to 1.4 mm. Fig. 2 shows some flower detail.

The close white indumentum, narrow shortly petiolate leaves, unusually persistent bracts, short pedicels, larger lower lip of the corolla and well exerted stamens and/or style set this species apart from the other species. The indumentum and to some extent the general appearance of the plant resemble that of *P. argentatus*, but the unusually shortly petiolate leaves are narrower than those of any other species, the lower lip of the corolla is the largest and deepest of any of the Australian species and it alone has such prominently exerted genitalia. It is known only from the few neighbouring localities on cliffs and steep ledges of trachyte, in the Cunningham Gap, Mt. Edwards, Mt. Grevillea area.

8. *Plectranthus suaveolens* S. T. Blake.

Loosely branched, sweet-smelling undershrub with decumbent to sub-erect stems up to 80 cm long and 9 mm thick near the base, often rooting at the lower nodes. Branches densely pubescent with short white hairs up to 0.5 mm long. Leaves hoary, paler beneath; petioles one-fifth to half as long as the blades; blades ovate crenate with 5–10 teeth on each side, mostly 3–7.5 cm long, 2–6 cm wide, the veins deeply impressed above and strongly raised beneath. Racemes 5.5–35 cm long; axis pubescent with recurved hairs. Racemes 10–12 flowered, 10–15 mm apart; bracts early deciduous, circular-ovate, 1.5–2.7 mm long. Flowers 9–12 mm long, predominantly blue to violet; calyx 2–2.7 mm long, the lower lobes extending to or beyond the bend in the corolla-tube; corolla 9–12 mm long; tube bent at an angle of 120°–130°, slightly broadened upwards, nearly straight at the mouth, sparsely pubescent. Fig. 2 shows some flower detail.

Distinct from all other species except *P. mirus* by reason of the fewness or absence of sessile glands and the fact that when present they are often colourless. Except for the presence of glandular hairs the indumentum resembles that of *P. argentatus*, the toothing of the leaves is more like that of *P. parviflorus*, and the deeply impressed veins like *P. graveolens*, but the sweetish smell, large corollas with gland-tipped hairs, and the form of the corolla-tube are different from any.

9. *Plectranthus klossii* S. Moore — Not confirmed as Australian.

10. *Plectranthus intraterraneus* S. T. Blake.

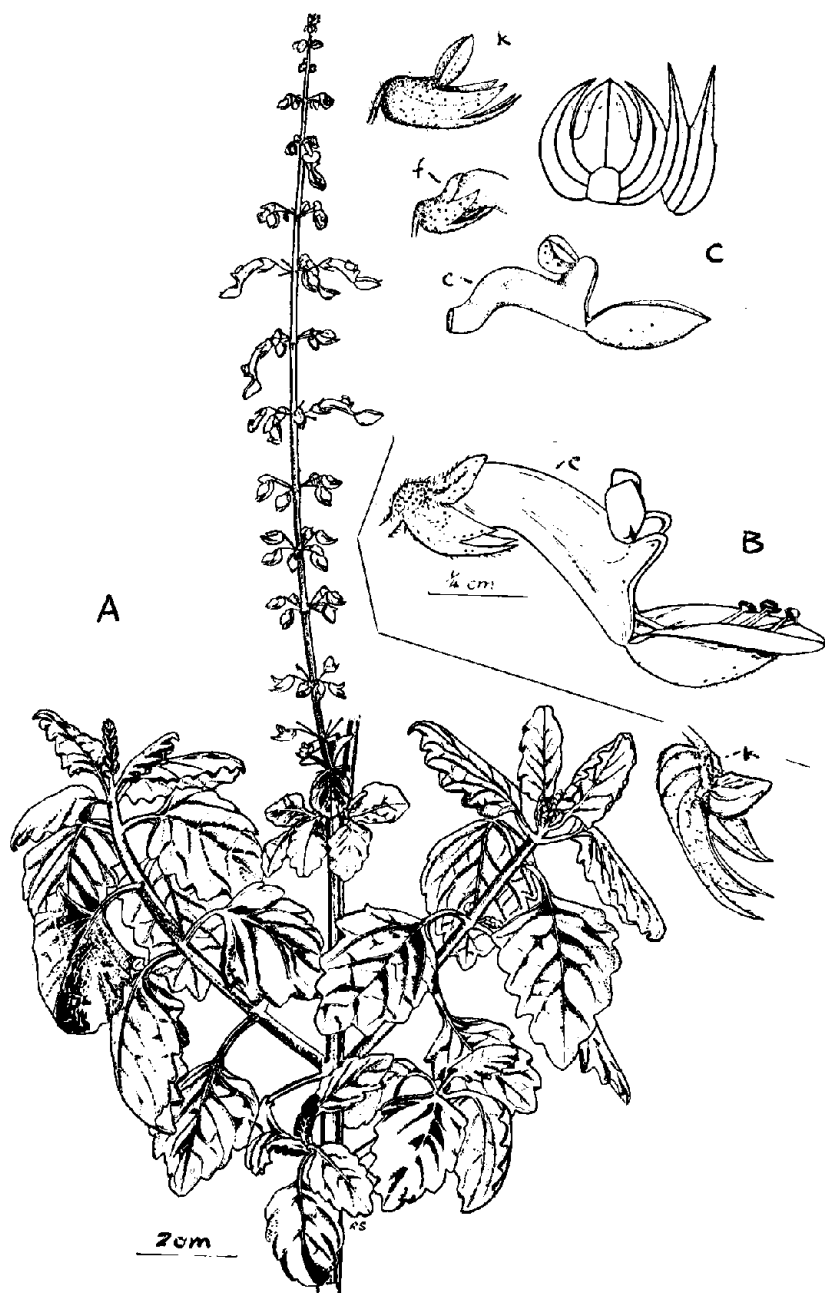


FIGURE 3—*Plectranthus intraterraneus*. A. plant, B. flower and fruiting calyx, *Plectranthus apreptus*—C. flower (c), flowering calyx (f), fruiting calyx (k), and fruiting calyx split open and flattened out.

Sweetly scented shrub up to 1 m high, stems and branches hard, 3.5–7 mm or more thick, densely pubescent with spreading glandular hairs with reddish glands, finally glabrous. Leaves light green, paler beneath; petioles about $\frac{1}{4}$ – $\frac{1}{2}$ as long as the blade; blades ovate, acute, crenate, sometimes deeply or coarsely so, with 4–6 pairs of teeth. 2–5 cm long and 1.2–5 cm wide. Racemes 10–20 cm long; axis with glands and glandular hairs; verticillasters 6-flowered, 10–15 mm apart; bracts ovate, pubescent and glandular, 1.2–1.6 mm long, 1–1.6 mm wide; pedicels 2.5–4.5 mm long. Flowers violet, chiefly the lighter tints. Calyx 2.4–2.7 mm long. Corolla 8.5–13 mm long; tube sharply bent below the middle at an angle of 110° – 130° , widened upwards and glabrous. Colour plate on page 301.

P. intraterraneus resembles *P. parviflorus* and *P. suaveolens* in the few teeth to the leaves and in the general structure of the flower. It differs from the former in the more shrubby habit, many gland-tipped hairs on the stems, leaves and corolla, glands on the stem, leaves about equally pubescent on both sides, less unequal pedicels, and sweeter odour of the plant; from the latter (which it resembles in odour) it differs in the more erect habit, looser indumentum, coloured sessile glands, and fewer leaf-teeth; and it differs from both in the much broader lateral lobes of the calyx, and the corolla-tube much more widened towards the mouth.

11. *Plectranthus parviflorus* Willd.

Perennial herb mostly 10–70 cm high, rarely attaining 1 m, with a fleshy tuberous base up to 3 cm diameter that shrinks very much on drying, dying away after flowering nearly or quite to the tuber; stems simple or more usually branching from the base upwards sometimes repeatedly so, the branches ascending, the stems or branches 6–8-noded beneath the inflorescence. Leaves dull green or purplish, paler beneath; petioles one-third to four-fifth as long as the blades; blades ovate, acute, crenate, sometimes coarsely so, with 4–8 or rarely up to 12 pairs of teeth, mostly 2–6.5 cm long and 2–4 cm wide, the veins not very conspicuous in the dry state. Racemes pedunculate, solitary or 2–5 with a common peduncle, mostly 3–15 cm long; axis pubescent; bracts broadly ovate, pubescent, 1.3–2.5 mm long, 0.9–2 mm wide; verticillasters 10-flowered, 5–15 mm apart. Flowers predominantly violet blue, sometimes very pale, variable in size, sometimes minute. Calyx 1.4–2.6 mm long, and pubescent. Corolla of chasmogamous flowers 6–11 mm long, tube decurved a little below the middle at an angle of 110° – 140° , dilated above the middle, lower lip about as long as the tube. Plant and flower details in Fig. 3. Illustrated in colour on page 301.

Widely spread in a variety of habitats from littoral forest to rainforest margins and exposed rock crevices to mountain tops at 1,200 m altitude as well as among rocks and under burnt logs in Eucalyptus forest and on sand. Some localities receive an annual rainfall in excess of 2,500 mm (100 in.) others as low as 600 mm (24 in.).

P. parviflorus is readily distinguished in the field by its tuberous base. The tuber formed at ground level is well developed in seedlings before the second pair of leaves is produced. After flowering the stems commonly die down almost to the tuber, new shoots arising from the lowermost part of existing stems and from the tuber. The leaves vary in shape, texture and density of indumentum more than in the other species, but much of the variation is certainly correlated with exposure and soil moisture; plants in damp and shady places tend to have thinner, less hairy, more deeply toothed leaves with longer petioles than those in dry sunny habitats.

12. *Plectranthus forsteri* Benth.

Subshrub or perennial herb with a sweetish odour; stems or branches erect or ascending with the lower part sometimes straggling, up to 1 m long.

A species native to New Hebrides, New Caledonia, Loyalty Is., Fiji and Samoa and confused with *P. parviflorus* in the past.

A form with the leaves variegated with yellow is in cultivation under the name of *P. coleoides* but at least in Brisbane it very rarely flowers. *P. coleoides* Benth. is a very different Indian species.

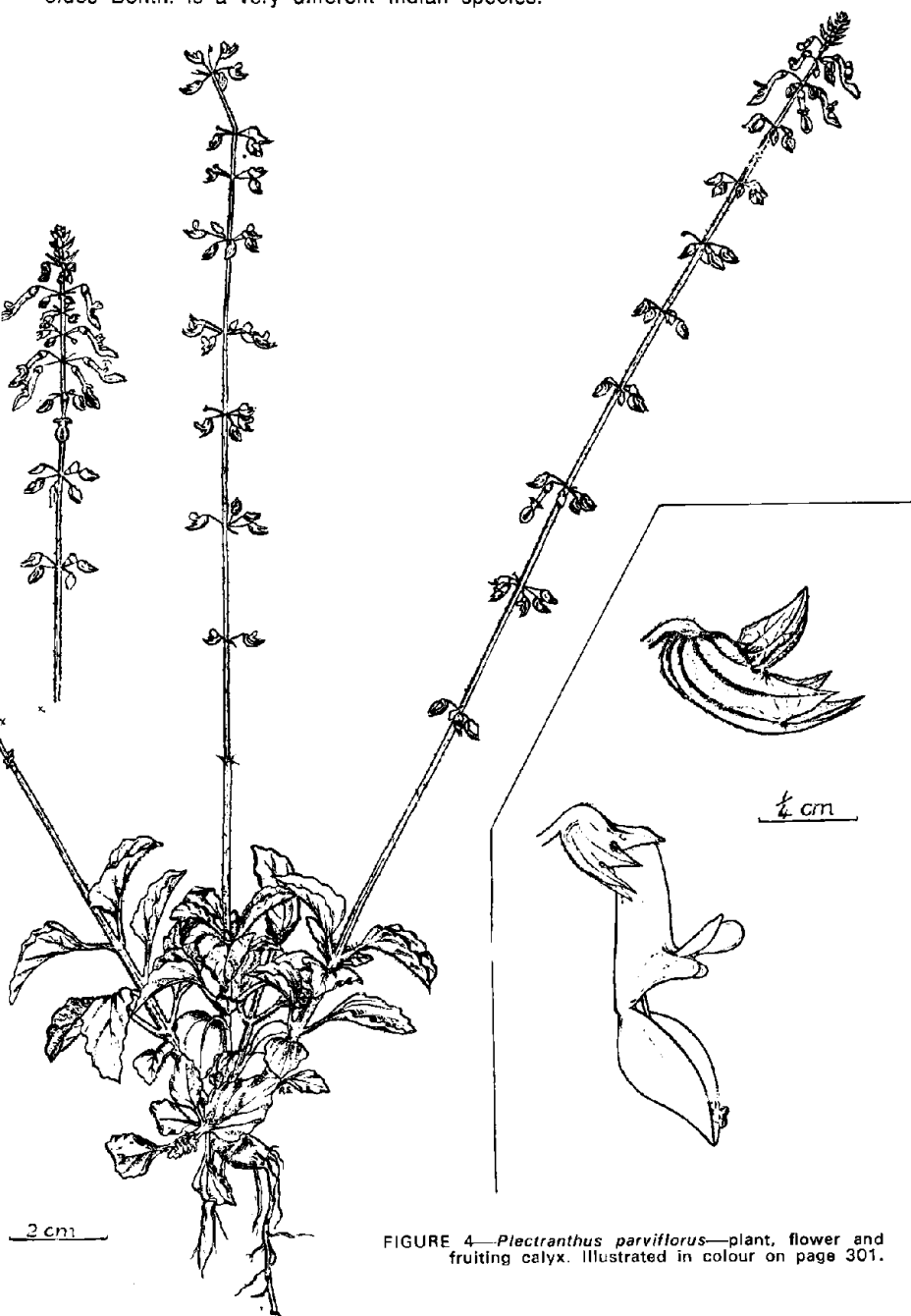


FIGURE 4—*Plectranthus parviflorus*—plant, flower and fruiting calyx. Illustrated in colour on page 301.

13. *Plectranthus apreptus* S. T. Blake.

Scentless subshrub 30–150 cm high; stems or branches erect or ascending, the lower woody part often straggling and up to 12 mm thick, the upper part sparsely pubescent. Leaves long-petiolate, dull green, paler beneath, thin, nearly flat when dry; petiole about one-fourth to two-third as long as the blade; blade circular-ovate, acute, crenate, serrate except near the base with 7–15 pairs of short broad teeth, mostly 2.5–8.5 cm long and 2–7 cm wide, as the veins impressed above, prominent beneath. Racemes usually 1–3, pedunculate, 6–25 cm long; axis sparsely pubescent; bracts circular-ovate, coarsely pubescent, about 1.2–1.8 mm long, early deciduous; verticillasters 6–10, 5–15 mm apart. Flowers predominantly blue. Calyx 1.7–2.6 mm long and pubescent. Corolla 7–13 mm long; tube abruptly curved just below the middle making an angle of 90°–120°, slightly inflated upwards and then constricted to the slightly oblique mouth, glabrous; upper lobes subcircular, lateral lobes obliquely ovate, glabrous, lower lip about as long as the tube.

P. apreptus resembles *P. forsteri* and *P. parviflorus* in the thin texture of the leaf, 6–10-flowered, well-spaced verticillasters with prominent pedicels and small bracts, and in the form of the fruiting calyx, while it also agrees with *P. forsteri* in habit and hairs on the leaf, stem, etc.; it differs from both in the more numerous leaf-teeth and the sharply and extensively bent corolla-tube and also from *P. forsteri* in the relatively shorter petiole, and the absence of glands on the branches, upper surface of the leaves and lateral lobes of the much larger corolla and their relative sparseness elsewhere; it further differs from *P. parviflorus* in being more woody below without a tuberous base. The flower is much like that of *P. gratus* but the calyx is smaller and glands are constantly absent from the lateral lobes of the corolla and it further differs in the less shrubby habit, longer petioles, thin texture of the leaves sparse indumentum of shorter hairs, the presence of many minute gland-tipped hairs on leaves and axis, generally fewer-flowered verticillasters, somewhat smaller calyx in flower and constant absence of glands from the lateral lobes of the corolla. This species has no single peculiar character, a feature that suggested the epithet (*apreptos*, undistinguished) but the sparse, short or very short indumentum of hairs and thin leaves with fairly numerous teeth are not shared by any other species.

14. *Plectranthus gratus* S. T. Blake.

Erect shrub to 80 cm high, the stems and branches hard, up to 7 mm thick, villous with glandular hairs. Leaves olive green above, purplish to hoary beneath in the fresh state, hoary on both sides when dry, intensely so beneath; petioles one-fifth to three-tenth as long as blade; blades broadly ovate, acute, crenate with 9–18 pairs of short ± rounded teeth, 2.5–5 cm long, 1.5–3.5 cm wide. Racemes solitary or few, 10–30 cm long; axis with a few minute glands and glandular hairs; verticillasters 10–20-flowered, 7–13 mm apart; bracts ovate, loosely pubescent and glandular, 1.5–2.7 mm long. Flowers blue. Calyx 2.3–3.3 mm. long. Corolla 7–11 mm. long, with glands on all lobes; tube deflexed at an angle of 100°–120°, nearly equally wide throughout, nearly straight at the mouth, glabrous; lower lip about as long as tube. Some flower detail in Fig. 5.

P. gratus is known from a single mountain side but the original collections, the plants grown from them, and some self-sown seedlings so well agree and differ so clearly from other species that they must be accepted as representing a distinct species. The flowers are very like those of *P. apreptus* but there are many more in each verticillaster, the habit is definitely shrubby with persistent stems and branches, the indumentum is much denser with longer hairs and the petioles are conspicuously shorter. It is an attractive plant, with a fairly compact habit, dense even indumentum and strongly purplish veins on the lower surface of the younger leaves.

Continued on page 326

THE CRADLE OF INCENSE

The Genus *Prostanthera*, by GEORGE W. ALTHOFER

This book is undoubtedly a major contribution to the Flora of Australia. Plants of the genus *Prostanthera*, known generally as the Australian Mint-bush, are grown world wide for their beautiful bushes, abundant flowering, and the mint smell of their crushed leaves.

This book has a magic that is missed by most books on wildflowers. Written by a leading authority on the Australian Flora and its cultivation, certainly the authority on *Prostanthera*, the clinical presentation of description of plants so necessary when there are so many species is tempered by the narrative of a bush wanderer and poet.

In fact the book is presented along two parallel themes. On each right page the author describes in narrative form, his exploration of the bush and the spectacle that holds him in wonder as he comes upon yet another species of free flowing mint-bush. On the left hand page opposite the native is a colour plate or sketch of the species "discovered" together with a simple but adequate description.

Many new species are described and illustrated in colour. The colour presentation is exceptional bearing in mind that the photography is by amateurs and often of very rare species not seen by many, even professional botanists, in the past.

As with our other publications, new recordings and information will be supplied in Australian Plants to up-date your book, but the wealth of information in the book is such that it can never be presented in our normal issues. You must get a copy of this valuable book, fully bound with a hard cover and colourful glossy dust jacket. We would have liked to sell it cheaper but even on a non-profit basis, the income is needed to produce more books of this outstanding quality.

Why "The Cradle of Incense" for the title? Why not read the book and find out. Available from the Editor for \$15.00 plus \$1.00 postage.



Prostanthera prunellioides

Photography by M. Baldwin

A shrub to 2m. with large flaccid leaves. The flowers are interterminal racemes often larger than shown above. This photograph shows the corolla or floral envelope from the side, showing how the tube formed by the three lobes (petals), the upper two being distinct from the lower three.

THE FLORA OF Mt ARTHUR RESERVE

C. W. Althofer and G. J. Harden — Available from Editor for \$4.00 plus \$1.00 postage. This 82-page book records and describes the whole of the flora on a recreation reserve three kilometres west of the town of Wellington, N.S.W. The presentation is ideal with a map of the area and a general introduction for the tourist, followed by a description of the plants in order of family on the right hand page throughout the book, opposite clear line sketches on the left hand page of species described opposite. Illustrations include 16 colour plates. The book is a credit to those concerned. There are many more beautiful scenic places that deserve such a record. It is possible that it only needs an approach to the printer of this book.

15. *Plectranthus spectabilis* S. T. Blake.

Shrub about 1-1.5 m high with hardly any scent. Stems up to 15 mm thick, densely pilose with weak long and short hairs. Leaves sage green above, paler or, especially when young, purple beneath, thick; petioles mostly one-sixth to two-fifth as long as the blade; blades subsircular to ovate, acute, crenate to somewhat serrate with about 7-12 pairs of short, broad, rounded to subtriangular teeth, 3.5-11 cm long, 3.2-7 cm wide, the uppermost 1-3 pairs more remote, smaller and sessile. Racemes up to 11, pedunculate, in pairs along a common pedunculate axis, the peduncles sometimes bearing two racemes, 4-18 cm long or more, about 8-10 mm thick excluding the corollas, covered when young by imbricate, purplish, broadly ovate, acute, densely hairy and glandular bracts 3-6 mm long and about 2-4.5 mm wide; verticillasters about 12-20-flowered, 2-10 mm apart and commonly contiguous. Flowers predominantly deep blue with a paler tube.

P. spectabilis resembles *P. foetidus* in its robust habit, dense indumentum of long white hairs, short petioles, distant, reduced upper leaves, relatively short but dense racemes with contiguous verticillasters of very shortly pedicellate flowers, with the intensely blue corolla-lobes protruding from the long white hairs of bract and calyx, and the narrow calyx-lobes, the upper narrowly ovate; it differs in having very few if any and then mostly minute gland-tipped hairs, all the longer hairs antrorse, fewer leaf-teeth, commonly more numerous racemes, calyx usually shorter in flower and in fruit with firmer shorter and relatively broader lateral and lower lobes, and a corolla with less sharply and, on the whole, less extensively bent tube.

16. *Plectranthus congestus* R. Br.

Perennial herb or subshrub commonly 30-130 cm high or up to 350 cm; roots tuberous. Stems erect or ascending, sometimes shortly creeping at the base, simple or sparsely branched below the inflorescence, shortly pubescent. Leaves prominently petiolate below, the uppermost pairs much less so, more distant; petioles mostly one-fourth to two-third as long as the blade, the uppermost very short; blades broadly ovate to triangular-ovate, acute to crenate nearly to the base with 8-14 pairs of teeth, 2.5-8.5 cm long, 1.3-6 cm wide, nerves impressed above, but not strongly so, much raised beneath, upper surface lightly rugose, some of the reticulations conspicuous on both sides in the dry state. Racemes commonly several to many, paniculate, about 10-50 cm long, rarely few or solitary; bracts ovate, acute 1.2-2.5 mm long; verticillasters 4-12 mm apart with commonly 20-50 flowers; pedicels 1-5 mm long. Flowers predominantly blue or deep blue.

Plectranthus congestus is readily distinguished by the usually many- and dense-flowered verticillasters with mostly short pedicels and the small calyx (in flower or fruit) with the lower lobes almost as broad as the relatively broad lateral lobes. The corolla is hardly to be distinguished from that of *P. parviflorus* and the leaves are also much like those of this species except for the usually more numerous teeth. Well grown specimens are much taller than the plants of most other Australian species, the greater part of each stem being occupied by a large leafy panicle of racemes.

17. *Plectranthus scutellarioides* (L.) R. Br.

Branched scented herb up to 1.5 m high; stems and branches finely pubescent or glabrous. Leaves very variable in colour; generally ovate with a crenate, serrate or laciniate margin, usually 4-7 cm long. Inflorescence branched. Bracts ovate, 2-3 mm long. Corolla 8-13 mm long, boat-shaped, blue or violet with a whitish tube.

This species occurs quite widely in Asia, through Indonesia and Papua New Guinea and throughout northern Australia. It generally occurs in damp shady habitats. Botanists have had considerable difficulty deciding where to place this species and it may also be found in the literature in *Coleus* or *Solenostemon*. Even at the species level it has given trouble, with some botanists splitting it up into numerous smaller species while others combine them in a single large and variable species. ■

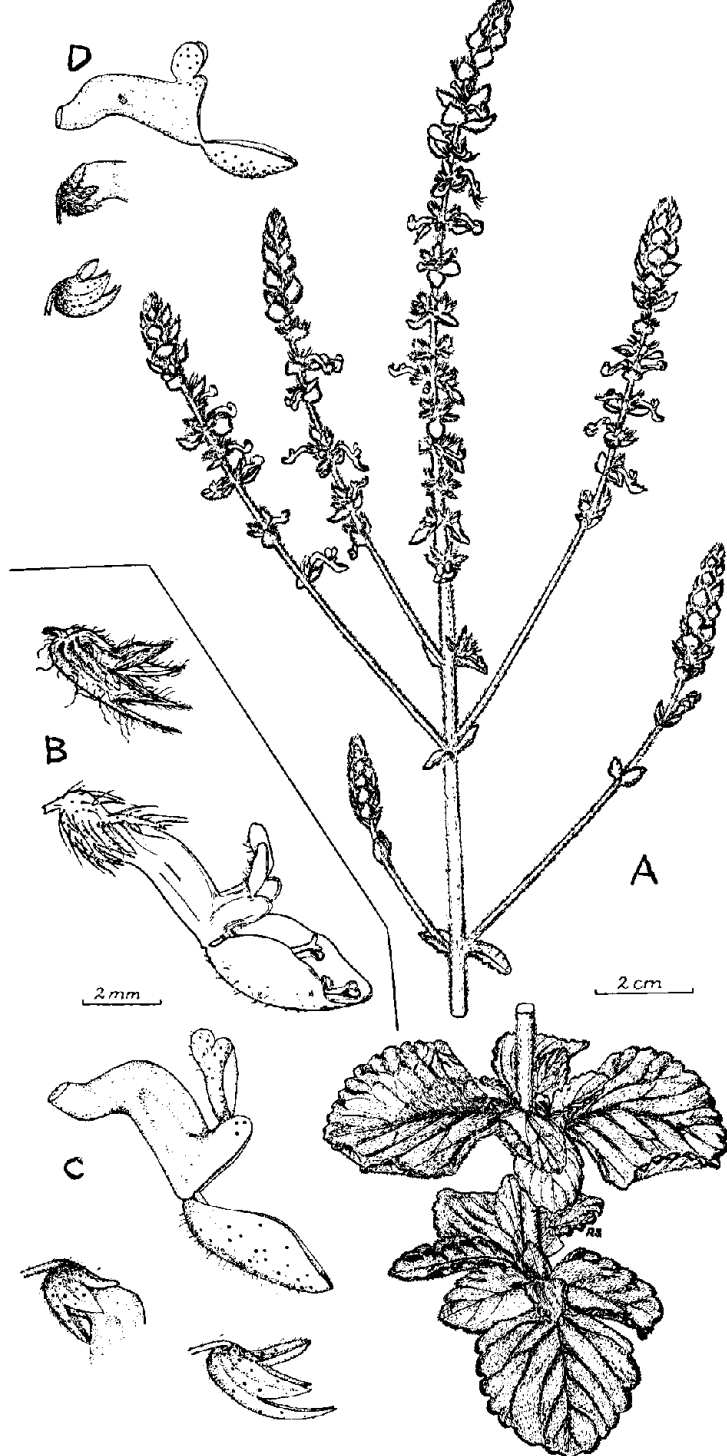


FIGURE 5—*Plectranthus spectabilis*—A. plant. B. flower and fruiting calyx. *P. gratus*—C. flower, flowering and fruiting calyx. *P. congestus*—D. flower, and flowering and fruiting calyx.

LAMIACEAE IN MY GARDEN

by Neil R. Marriott, Ararat, Victoria, 3377

Hemiandra

Hemiandra pungens — I have grown a number of forms of this beautiful ground-cover for many years:

1. The commonest form I feel is one of the least showy. It has small green spiny leaves and forms a dense mat up to one metre across with a scattering of pale mauve flowers throughout spring-summer.

2. Another form has larger more rigid leaves and spreads to become a sparse ground-cover but makes up with its very large showy pink flowers. This form is not generally as hardy as the first.

3. The best form, I believe, is extremely vigorous with beautiful reddish tints to the deep green foliage. Flowers are not as large as the pink form but are larger and of a deeper mauve than the first form.

4. Another form which is almost as good as the red-leaf form has the ability to withstand the effects of frosts — all the others succumb to severe frosts.

I have heard that there are many other forms in the West including upright bushes. However all our prostrate forms make excellent vegetative mulches in a rockery with good drainage and full to dappled sunlight. All strike quite easily from cuttings.



Hemigenia sericea

Photography by J. Glass

An erect shrub to one metre, being one of about forty species of this genus concentrated in south-western Australia. The eastern species are described on page 334. The above is the best photograph that could be obtained of any *Hemigenia* and indicates that those competent photographers should get busy. The purple strictions in the throat make it an attractive flower. *Hemigenia* are closely related to *Hemiandra* and it needs close examination of the appendages to the anthers as illustrated on page 306 to define the genus.



Hemiandra pungens.

The plant gracing a garden edge.

Photography by B. Ballingall

Mentha

Mentha diemenica is an excellent native mint for growing in a damp spot in the garden, by a pool or in a bog garden. It creeps along the ground, forming roots as it goes, while in spring it sends up stems and branches to 30 cm in height.

These are soon covered in masses of pale mauve flowers which continue into summer. During winter these branches die and need to be removed to keep the plant attractive; or they can be cut off while still alive and used as cutting material. The easier way to propagate however is simply to divide the clump or remove portions to other positions as required. I have even had them self sow from seed in several damp spots in the garden.

I have used this plant in cooking instead of the introduced mint.

Other species I have grown are *M. laxiflora* which is taller and has white flowers, and *M. australis* which is also taller but has mauve flowers like *M. diemenica*. See colour plate on page 301.

Both of these are similar to *M. diemenica* in their cultural requirements.

Plectranthus

Plectranthus parviflorus is an interesting low plant for the rockery. It has creeping stems which root at the nodes, greyish-green leaves and upright 30 cm long spikes of small mauve flowers during spring-summer.

It is extremely drought hardy but grows better in dappled sunlight with protection from frosts.

It soon spreads to form an attractive clump, and is readily divided to form new plants. Often seedlings also appear throughout the garden.

Westringia

Westringia fruticosa grows extremely rapidly in almost any position from shady to full sun, but likes good drainage for most rapid growth. Not a very showy plant with white flowers during winter-spring. However it makes up for this by its rapid growth and easily strikes from cuttings; even just pieces planted in the garden often strike.

Westringia glabra — is an attractive shrub to 1 metre high and wide with dark green leaves and showy masses of purple flowers in spring. It prefers a well drained sunny site, and like most *Westringia*, strikes readily from cuttings.

Westringia rigida — a small dense shrub from dry, often stony areas including the Mallee. It has very rigid stems and leaves, hence the specific name. In early spring to summer it is covered with small white flowers.

It strikes fairly easily from cuttings and makes a reasonable small shrub for a hot dry spot in the rockery.

Ajuga

Ajuga australis is a very attractive widespread and variable herb for the garden. The best form is from the Mallee where it forms clumps up to 30 cm high covered with masses of purple flowers during spring-summer. It likes a sunny, well drained site with adequate moisture. Under such conditions it will spread by suckers to form quite a large clump. It also readily self sows from seed when conditions are suitable. However it needs to be protected from slugs and snails who love it. See the colour plate on page 304. ■

A NATIVE GARDEN IN SYDNEY

by Les Taylor

I first started to grow natives in 1968 in an area about one metre wide around my lawn. Later this did not seem wide enough so I dug out some lawn and made wider gardens and in the 1970 Region Garden Competition I received a special mention from the judges. A comment was made that I had cemented the edging in around the area, too straight.

My garden is mainly in the front of the house facing north, with a street opposite, so I get sunshine from daylight till dark and it would be an open aspect.

around Port Jackson. It is still fairly common on sandstone areas around Glenbrook and as far as the Central Blue Mountains. I have never found it on the western fall however. It is usually less than one metre with leaves in whorls of three or four, linear-terete, mucronate-acute or obtuse, channeled above, contracted at the base and sometimes shortly petiolate, rarely above 1.3 cm long. The flowers are large, for so small a plant, violet or purple, pedicellate or almost sessile in the upper axils, solitary, bracts linear and shorter than the calyx which is larger than in *H. cuneifolia*, the tube turbinate, the teeth linear or linear lanceolate and longer than the tube. The corolla is not twice as long as the calyx, slightly pubescent outside with the lower lip twice as long as the upper. The connective of the upper anthers is broad and bearded at the lower end while that of the lower anthers is glabrous; the cell at the upper end apparently perfect as is usual in the genus. This plant makes a fine, small plant for gardens but make sure that the soil is light and lime free. It does not resent the addition of well-rotted eucalypt leaves or leaf mould. ■

AUSTRALIAN PLANTS INDEX—Vols.1-8

The Society has produced a number of very valuable books. In many ways this superb index prepared by members of our Canberra Region could be the most valuable. It is not just an index of plant species mentioned in our Volumes 1-8 inclusive but has separate indices for plant common names, authors, etc. As we have mentioned a large proportion of the Australian flowering flora, this index gives a valuable reference to the correct species names, one co-writer, Arthur Chapman being a specialist in this area. His efforts to clear up many incorrect names will be appreciated by us all.

NEW BOOK ON WILDFLOWERS

"**Acacias Of South Australia**" — By D. J. E. Whibley — Available from The Editor for \$0.00 plus 65c postage. Produced as a field and hence the 240 pages are about the same size as this journal. The presentation of this book is ideal. The front section divides the 97 species into groups in such a clear manner, illustrated by sketches, that it is easy to follow. This is followed by a key to the species. Then comes the best presentation ever. Every species has a page of clear description with a map showing where it is found. Opposite the description, is a photograph of a mature plant, usually in colour, showing its habit of growth. Below the half page photograph is a line sketch showing a flowering branch with inserts at a larger scale of leaf, seed and seed capsule. You must have a copy of this book.

We also have "Acacias Of N.S.W." available from The Editor at the same price. We hope to encourage competent people to do this for each of the other States.

BOOKS WE CAN RECOMMEND

The following books were reviewed previously but went out of stock. They are now available as follows:

"Flora Of The Sydney Region"	\$15.50 plus \$1.50 postage
"Flowers And Plants Of N.S.W. and Southern Qld."	\$19.95 plus \$1.55 postage
"Flowers And Plants Of Western Australia"	\$23.95 plus \$1.55 postage
"Australian Ferns And Fern Allies"	\$15.95 plus \$1.55 postage
"Australian Native Orchids In Colour"	\$6.95 plus \$0.65 postage
"Eucalypts" by Stan Kelly, Volume 1	
"Eucalypts" by Stan Kelly, Volume 2	
"Flowering Plants Of The World"	\$33.00 plus \$2.50 postage
"Handbook To Plants In Victoria" Vol. 1, Willis	\$18.80 plus \$1.20 postage
"Handbook To Plants In Victoria" Vol 2, Willis	\$30.00 plus \$1.50 postage
"Aquatic Plants Of Australia" — Astor	\$24.00 plus \$1.50 postage
"Lichens Of South Australia" — Filson, Rogers	\$10.50 plus \$1.50 postage
"Flora Of South Australia" — Part 1, Black	\$16.90 plus \$1.10 postage
"Flora Of South Australia" — Parts 2 and 3, Black	\$6.50 plus \$0.50 postage
"Flora Of South Australia" — Part 4, Black	\$3.00 plus \$0.50 postage
"Native Trees & Shrubs", Morcombe. Good colour plates	\$12.95 plus \$1.05 postage

All of the books are recommended.

A range of books on fauna that are available are:

"Butterflies Of South Australia" — Fisher	\$9.50 plus \$1.50 postage
"Crustaceans Of South Australia" — Hak	\$5.50 plus \$0.50 postage
"Fishes, Marine & Freshwater Of S.A." — Scott	\$9.20 plus \$1.40 postage
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Hemiandra gardneri

Photography by F. Humphreys

Like *Hemiandra pungens*, illustrated on page 329, this species is also mat forming and ideal for a ground cover, for rockery, or for cascading over garden edges. It is readily distinguished by its red flowers and incurved stamens.

Photographers !

Have you noticed an improvement in the colour printing of Australian Plants? This has been due mainly to the availability of better photographs, either slides or colour negatives. We need the support of good colour photographers throughout Australia. For those accepted as capable of producing the quality that is acceptable we will meet the expense of film and processing. Send me a sample of your work. Why not make a special effort over the season just starting, to take as many photographs of wildflowers that you can? It can be a fascinating interest.

We need photographs of most species but if you wish a guide on those most urgently needed they are *Calothamnus*, pea flowered plant, any in the *Boronia*, *Phebalium* family, etc. Please help.