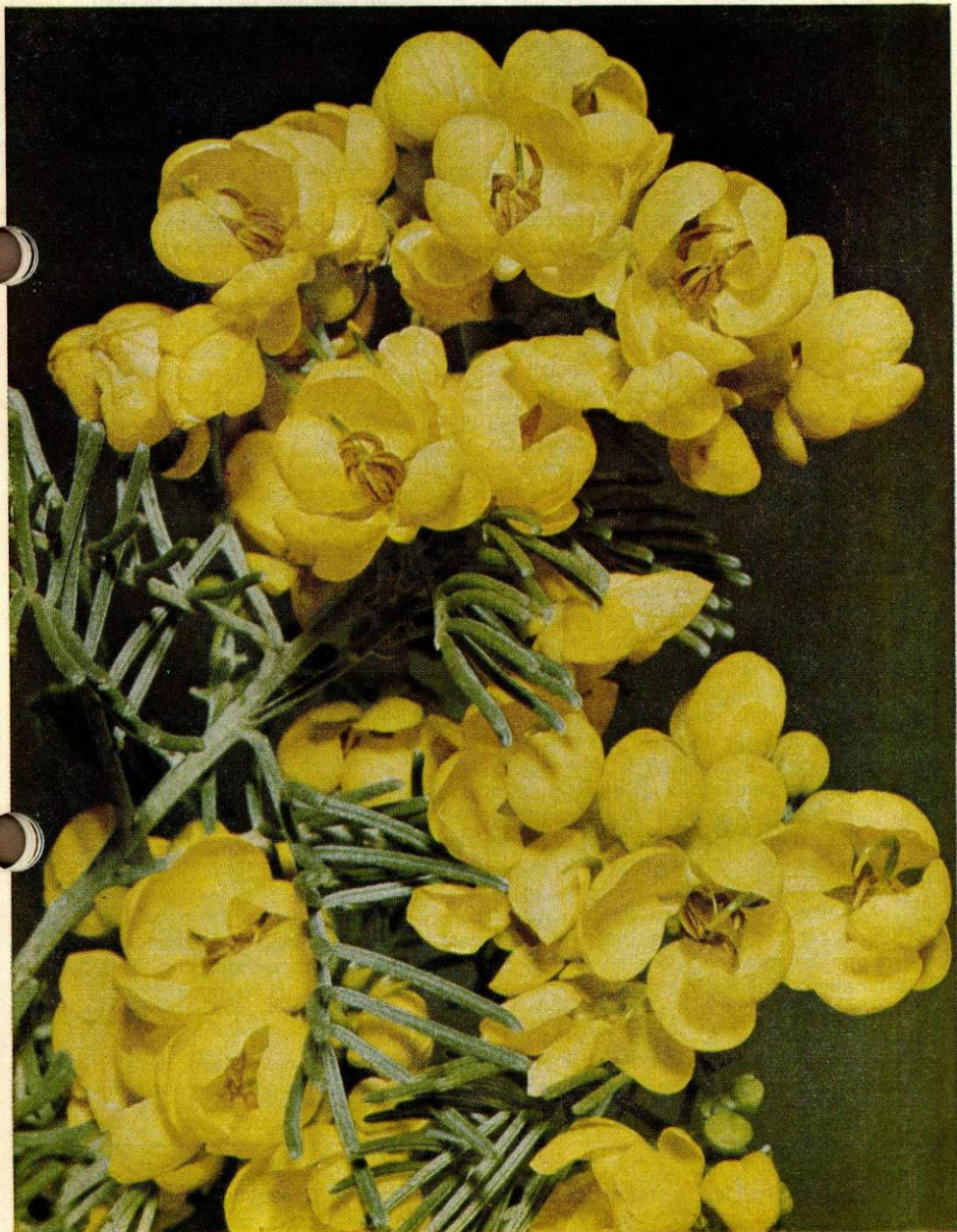


PUBLISHED BY THE SOCIETY FOR GROWING AUSTRALIAN PLANTS IN 15,500 COPIES

Australian Plants

Registered for posting as a periodical — September, 1976—Vol. 8, No. 68
Category B

Volume 8 will comprise Issues 61-68 **75c**



Photography by H. A. Morrison

CASSIA ARTEMISIOIDES — A hybrid form, see page 341

A WILDFLOWER GARDEN

A Garden in the Country by Jack Crowley, Echuca, Victoria

I have grown *Cassia* quite successfully in my garden together with many other wildflowers.

My soil is poor. It cracks badly in summer, showing that it is quite heavy. It is grey and shallow, not more than 8 cm deep. I do not build up garden beds for better drainage and depth of soil. Some sections of the garden are higher and better drained than others and I am growing the *Cassia* there.

When planting I dig a hole about 40 cm square to the depth of the container and fill with local soil improved by composting. I do not cultivate or fertilise. During summer I surround young plants with a mulch of dry grass or bark and wood chips.

I planted "Silver *Cassia*" (*Cassia artemisioides*) and "Desert *Cassia*" (*C. nemophila*, previously known as *C. eremophila*) in September 1963. I watered sparingly in the first summer but as they took the very wet winter of 1964 in their stride, they were watered more frequently the following summer, even weekly in the hottest times. I added a *Cassia sturtii* as I was so pleased with the show that they made.

These plants lived and flourished for 10 years. They were never pruned and I found that an occasional watering during summer was all they needed. "Silver *Cassia*" and "Desert *Cassia*" reached a height of 5 feet and *Cassia sturtii* of 4 feet, all well-shaped bushes.

Having only a small area and being more interested in larger shrubs and trees I did not replant but three *C. nemophila* and a *C. sturtii*, which regenerated in rather cramped conditions and partial shade, grew almost as well, surviving the abnormal rainfall of the last three years; 30 inches per year compared to the average of 17.

Other plants that I have found to be well suited to local conditions are: *Eucalyptus steedmanii*, *E. stoatei*, *E. viridis*, *E. spathulata* and *E. maculata*, all of which have been well described in previous issues of Australian Plants for those who want to know more about them. The "Coolgardie Gum", *E. torquata*, grew to 8 feet in three years but is a doubtful performer here. I think it would be better suited further inland.

Melaleuca armillaris, *M. elliptica*, *M. styphelioides*, *M. nesophila*, *M. decussata*, *M. pulchella* and *M. linariifolia*. *M. linariifolia* seems to need a low spot and to be well watered for the first summer. The soil and hot summers do not suit *M. incana*.

Grevillea rosmarinifolia, *Callistemon speciosus*, *C. phoeniceus*, *Kennedia nigricans*, *K. rubicunda*, "Sweet-Scented *Hakea*" (*H. suaveolens*) a first-class performer, and a wild hop *Dodonaea adenophora*. *Hakea suaveolens* has proved to be an excellent hedge that will stand any amount of pruning.

Nearby is a small natural stand of trees to 10 metres in height, hard and with rather rough brown bark, bluish-green leaves and long thin branches drooping almost to ground-level. The bigger trees are rather spreading. This is I believe *Acacia homalophylla* and I consider deserves to be much better known. They have a real atmosphere of the inland. They should be an ideal tree for park and roadside planting.

Due largely to an interest aroused by Australian Plants, I now have a really worthwhile garden. The nurserymen of this State have really got with it as native plants are now easy to obtain.

CONTENTS OF THIS ISSUE

This issue provides a reference to the plant family *Caesalpinaceae*, see pages 361, 365 and 374, and in particular the genus *Cassia* as indexed on page 346.

CASSIA

Reports by the Editor and Other Readers

Cassia are indeed beautiful hardy shrubs for the garden. There are species suitable for cultivation in gardens of all soil types and climatic conditions. They become attractive shrubs when not in flower and often flower well in winter before other wildflowers in your garden have reached their full majesty. Some species have proved very hardy under vigorous conditions.

Cassia may also be readily grown from seed. They have a hard seed coat similar to *Acacia* (wattles) and may be treated the same way—place seed in a cup, pour in boiling water, soak for five days, then plant in a clean coarse sand.

Why then were reports on cultivation of *Cassia* so difficult to obtain? I feel the reasons were (they are set out here as a guide to the problems you will meet in the cultivation of *Cassia*):—

- (a) Those who have grown *Cassia* successfully have done it so easily, without special attention, that they feel there is nothing to report.
- (b) *Cassia* are at their best up to 3-4 years old, when some tend to become sparse and straggly. A programme of replacement every four years has not been adhered to and these beautiful garden shrubs have been forgotten. You will see in a report later that pruning after flowering will keep the shrubs nicely shaped and healthy for 10 years, with some fertilizing.
- (c) The few species most readily available have been so successful, and are so showy, that other species have been neglected. There are many more worthy of a trial. The reverse to this has also caused a neglect of *Cassia* as follows:
- (d) There are *Cassia* to be found in most warm parts of Australia, but attempts to grow species not adapted to the local climate has often discouraged gardeners. It is unfortunate that the tendency by many growers to try to cultivate the "rare" species and neglect the proven floriferous shrubs has encouraged the incorrect statement, "wildflowers are difficult to grow in the garden". It does not matter where you live (excepting possibly in cold areas), there are many species of *Cassia* that will make ideal garden subjects.
- (e) Plants and seeds are difficult to obtain. Oh! How many nurserymen will despair of this statement about such plants as *Cassia*. Many *Cassia* plants have been thrown out because nobody has bought them. Your wildflower nurseryman always has a good stock of plants that will grow in your garden conditions. When you go seeking the more unusual species ask about his more reliable plants and pay heed to his advice. If he is not stocking *Cassia* it is because nobody wanted them. Why not? They grow readily, look good when not in flower and cover themselves in brilliant yellow to orange when in flower.

Let Us Study Them:

Nevertheless it is true that plants and seeds are hard to get, at least outside the major cities, and these plants are ideal for the country grower. There is a need for the proper recording of data on all of these lovely plants so that they may be more readily grown. There is also a need for the collection, storing and distribution of seed, especially as it may be grown so easily without special facilities. This is the function of a "study group for *Cassia*"—a number of readers from all parts of Australia who communicate by correspondence and exchange advice, seed and encouragement. No prior experience is needed, so why not join? Address your enquiries to the Editor.

Cassia Forms—Natural Hybrids, Crosses:

The first thing to make a study of *Cassia* difficult is the naming. More of this later. There has been a great deal of natural hybridization in the wild that has for years confused even the botanists. Take, for instance, what is broadly called "Sturts Cassia" below. In an attempt to define the plants for our convenience Barbara Randell, in an outstanding article from page 345, has given the following names:—



Photography by O. Hockings

CASSIA hybrid sturtii—"Sturts Cassia"

This name covers a wide range of morphological forms. The form above has been given the name shown—*Cassia* hybrid sturtii. The leaflets may be narrow to broadly elliptical as shown above, densely hairy and in 4-6 pairs on a leaf "stem". Other forms as described on page 357 are:—

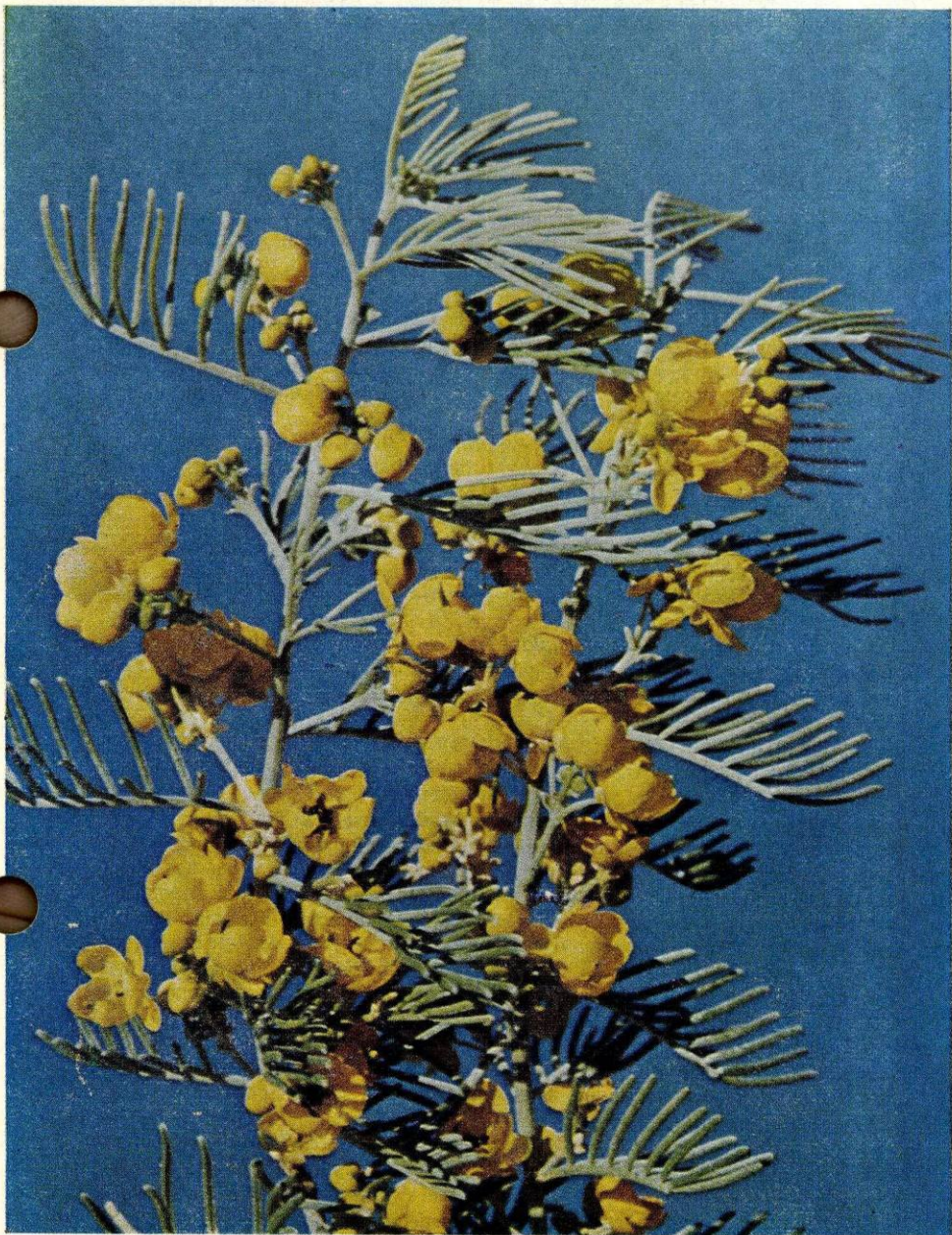
Glabrous (leaves without hairs) plants with leaflets in 1-2 pairs—*Cassia* hybrid zygophylla.

Glabrous or with leaflets slightly hairy and in 2-5 pairs—*Cassia* hybrid coriacea.

These three names cover most of the morphological forms resulting from hybridization of *Cassia* "nemophila" or *Cassia artemisioides* (narrow leaflets) and *Cassia oligophylla*, *C. helmsii* or *C. "coriacea"* (broad leaflets).

Cassia for the Garden:

Do not be confused by the large number of species. See reports on the next page of proven hardy species such as pictured here.



Photography by F. W. Humphreys

CASSIA ARTEMISIOIDES Gaudich. ex DC.

For a caption to above, and that on the front cover, see over page.

CASSIA FOR YOUR GARDEN

The following reports will indicate the plants already proven in cultivation as being reliable and rewarding. We are concerned that the provision of so much detail and the description of so many species such as in this issue may deter the beginner. Do not be put off by the use of the scientific botanical names either. A *Cassia* is a *Cassia*, even if the first part of the scientific name is *Cassia*. You can refer to them as "Sturts Cassia" (see page 340 for colour plate), "Silver Cassia", *Cassia artemisioides* (see page 341 and the cover for colour plates), or "Desert Cassia", *Cassia nemophila* (pictured in colour on page 289 of our No. 58 issue). You will eventually get to know them by their scientific names when they grace your garden with a blaze of colour. A scientific name that will save confusion would be *Cassia odorata*, previously known as *Cassia australis*.

The plants mentioned above are floriferous, reliable shrubs for your garden as confirmed by the following reports, but first let us consider more carefully the most magnificent of all.

CASSIA ARTEMISIOIDES—THE SILVER CASSIA

The colour plate on page 341 is a good example of the true species. The leaflets are many (about 6) pairs, grey and hairy, almost terete. Hybrids derived from this parent have fewer hairs and wider leaflets, though these may be inrolled.

Cassia hybrid *artemisioides*, as shown on the front cover, has leaflets that are linear but inrolled, with fewer hairs than the parental form. Often there are fewer pairs of leaflets. If there are only 1-2 pairs it becomes *Cassia* hybrid *nemophila*.

The flowers shown on the front cover have five equal petals, 10 equal stamens and a typical legume pod.

REPORTS ON CULTIVATION from Victoria

From Jack Crowley, Echuca, Victoria—

A report on *Cassia artemisioides*, *C. nemophila* (previously *C. eremophila*) and *C. sturtii*, all of which flourished over a 10-year period. See "A Wild Flower Garden," page No. 338.

From C. L. Wheeler—

"Wildflowers for Clay Areas," page 199, Vol. 5. The same plants are recommended for the heavy soil areas of Melbourne. We know they will also grow in light soils

Report from A.C.T.—Canberra Botanic Gardens:

Species successfully grown include *Cassia aciphylla* (five plants established although not without difficulty), *C. artemisioides* (two from seed from Broken Hill and six from seed from the Flinders Ranges, S.A.), *C. nemophila* var. *zygophylla* (a plant from Dubbo, N.S.W. was established after six attempts) and *C. odorata*. Frost is the main cause of death.

Not successful after plantings were *Cassia alata*, *C. bicapsularis*, *C. brewsteri*, *C. circinata*, *C. desolata*, *C. didymobotrya*, *C. nemophila*, *C. notabilis*, *C. oligophylla*, *C. pleurocarpa*, *C. sturtii* and *C. tomentella*.

For home garden situations in Canberra we recommend for trial *Cassia aciphylla*, *C. artemisioides*, *C. nemophila*, *C. nemophila* var. *zygophylla*, *C. sturtii* and, highly recommended as a ground cover, *Cassia odorata*.

Report from Queensland:

From Central Queensland—G. Foster—

This report, on page 114 of Issue 23, Vol. 3, will be of considerable interest to people living in the drier inland or wheat-belt areas. The species reported on are *Cassia artemisioides*, *C. costata*, *C. retusa*, *C. sturtii*, *C. brewsteri*, *C. laevigata* and *C. pleurocarpa*.

From North Queensland—Coastal Areas—

Page 132, Issue No. 63, reports on *C. artemisioides* and *C. sturtii* for Townsville.

This issue has a report of northern *Cassia* in "North Queensland *Caesalpinaceae*".

Reports on Cultivation from New South Wales:

From B. Whitehead, Forbes, N.S.W.—

Cassia artemisioides flowered in its first year and has improved each year in density of flowers. Flowering begins sparsely in winter and reaches its climax in early spring, when the shrub is a mass of bloom. A heavy crop of seed pods follows and during summer the plant does not flower again. The silvery foliage is reasonably attractive. Care must be taken to ensure that Crusader Bugs, which are fond of *Cassias*, do not destroy all new growth. These pests are at their worst about mid-summer. The plant is resistant to dryness and would be suitable for gardens in western areas of N.S.W.

Cassia sturtii. This very dense upright shrub bears a heavy crop of deep golden yellow flowers in spring. Flowering is so impressive and extensive that the foliage is rendered insignificant at flowering time. Flowers on specimens here were maintained without diminution for a period of about three weeks, making the shrub well worthwhile. In the conditions under which the shrubs are growing, growth is slow in comparison to other natives with which it is associated. See colour plate on page 340.

Cassia nemophila. Along roadsides here, and on undisturbed hillsides, this shrub may be found growing naturally. Flowers are borne along the branches in spring in delicate clusters. The shrub in flower has a more delicate appearance than those mentioned previously and the green foliage is more obvious. Plants have been seen growing to a height of 5-6 ft, still attractive in appearance and showing none of the heavily wooded branches which can occur on some neglected specimens of native plants.

All specimens mentioned receive accidental watering during summer with watering of the lawn, but periods of extreme heat and dryness appear to have little effect. The plants are quite unaffected by frosts in winter, which rarely go below 26°F. Little care is required, the only attention given being the removal of the previously mentioned Crusader Bugs and an occasional trimming or pruning of untidy growth which may occur.

From the Editor, Picnic Point, N.S.W.—

Plants of *Cassia artemisioides*, *C. nemophila* and *C. sturtii* have also been successful in many gardens in Sydney. I have found a low-growing form of *Cassia aciphylla* a most attractive ground cover spreading to 1 m diameter but keeping low on the ground. *Cassia artemisioides* has been used to advantage in landscaping, its silvery leaves always looking attractive and good flowering is assured. It can withstand very rigorous dry situations and the neglect that is a feature of much commercial landscaping.

From G. Sinclair, Deniliquin, N.S.W.—

I have grown *Cassia artemisioides*, *G. nemophila* and *C. australis*. My ground is heavy clay here on the river, as it was when I lived on the land. They flower beautifully. The ground under my plants becomes thick with seed pods. In warm weather I flood around the plants and in no time seedlings appear. I plant them into pots for friends or put them in another part of the garden where they grow well. Under each little plant I always put a teaspoon of superphosphate and a little bone meal.

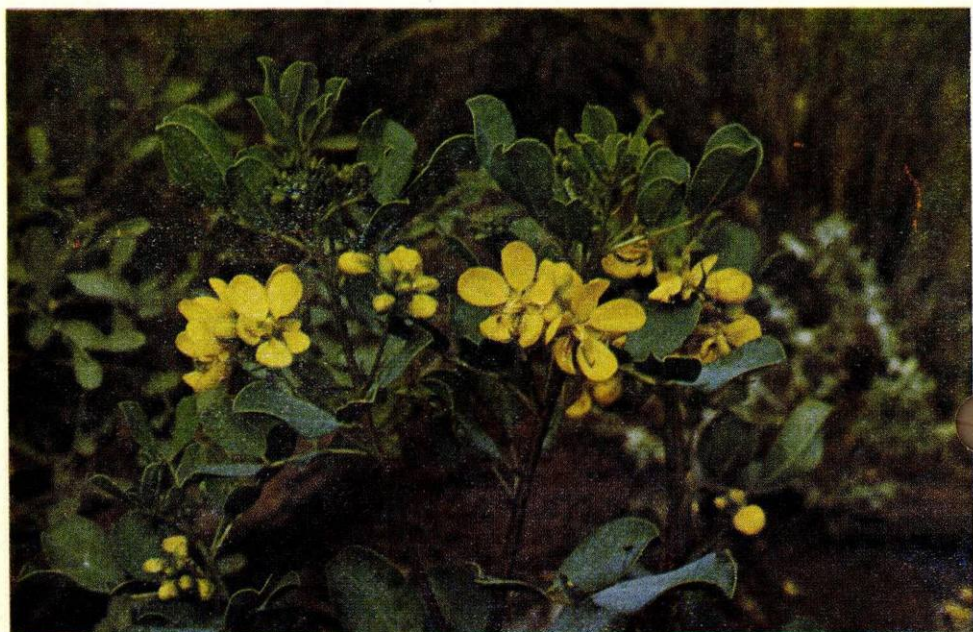
They are so bright in winter. I do not dig around the plants, but put sand and sometimes a little blood and bone and leaf mould under them. It is a good idea to trim the plants all over when the flowers fade—it keeps a good shape.

Report from Northern Territory:

See the report in this issue and our book "North Australian Plants".

Report from South Australia:

See the report in this issue on page 378.



Photography by O. Hockings

Cassia oligophylla*—Section *Psilorhegma

A species with few pairs of glabrous leaflets. The plants shown are typical, with 2-3 pairs of leaflets widest at the top, and often notched. Plants may be green, or grey without hairs. Hybrids with *C. helmsii* or *C. artemisioides* may be hairy. This is one of 11 species recommended for gardens in W.A. In "Plants for Gardens in Warmer Districts", page 115, Vol. 3. *Cassia leptoclada*, though similar, has narrower leaflets, fewer flowers, a more slender habit and is often purplish in colour.

THE SPECIES OF *CASSIA* IN AUSTRALIA

by Dr. B. R. Randell and Mr. D. E. Symon

The species of *Cassia* known to occur in Australia were completely revised by D. E. Symon in 1966. This is the revision which has been followed in the major part of this paper. More recent work (Randell 1970) on one Section—*Psilorhagma*—showed that the taxonomic treatment of this group is in need of further revision. However, this has not yet been done. The names at present given to species in this group are therefore not in their final form. However, we have endeavoured to put forward names which will be useful, until the final names are produced. The authors would like to ask for the indulgence of professional taxonomists for this popular treatment. We are well aware of the nomenclatural and biological problems in this genus.



Photography by F. W. Humphreys

CASSIA HELMSII Symon

The leaflets are obovate, often with recurved edges as shown above, are very hairy, grey in colour and in 3 to 5 pairs on a "stalk". Hybrids from this parent often have elliptic and narrower leaflets with fewer hairs and the plants appear greener in colour.

Hybridization:

The factor causing most taxonomic confusion must be the frequency of interspecific hybridization within the subgenus *Psilorhagma*. This has led to the proliferation of morphological forms, some of which have been given specific rank. In the opinion of the present authors, these do not warrant specific recognition, but should be grouped into loose hybrid aggregates. The index lists all valid botanical names and indicates those which we believe to be of hybrid origin. Consequently these taxa will not be defined in this article. Plants previously assigned to them will be treated by referring them to one of the hybrid standards.

To illustrate the complexity of the problem of correctly identifying plants that tend to hybridize take the possibilities with one cross, e.g. *Cassia* "*nemophila*" x *C. helmsii*. This can produce plants with:—

1. Narrow glabrous leaflets—*Cassia* hybrid *nemophila*.
2. Narrow hairy leaflets—*Cassia* hybrid *artemisioides*.
3. Intermediate glabrous leaflets—*Cassia* hybrid *zygophylla*.
4. Intermediate hairy leaflets—*Cassia* hybrid *sturtii*.
5. Intermediate intermediate leaflets—*Cassia* hybrid *coriacea*.
6. Wide glabrous leaflets—*Cassia* *oligophylla*?
7. Wide hairy leaflets—*Cassia* *helmsii*?

Further intergrading between these is also possible. These are not species; they are just convenient labels we give to certain plants so that other people will have some idea what we are talking about.

INDEX TO CASSIA SPECIES

To simplify reference an index follows of all species in this article (first column of page references) and of references in this issue by other authors (last column included by the editor with the understanding permission of the authors). It also contains several widely used synonyms. The hybrid forms and possible new combinations are also listed and identified as follows:—

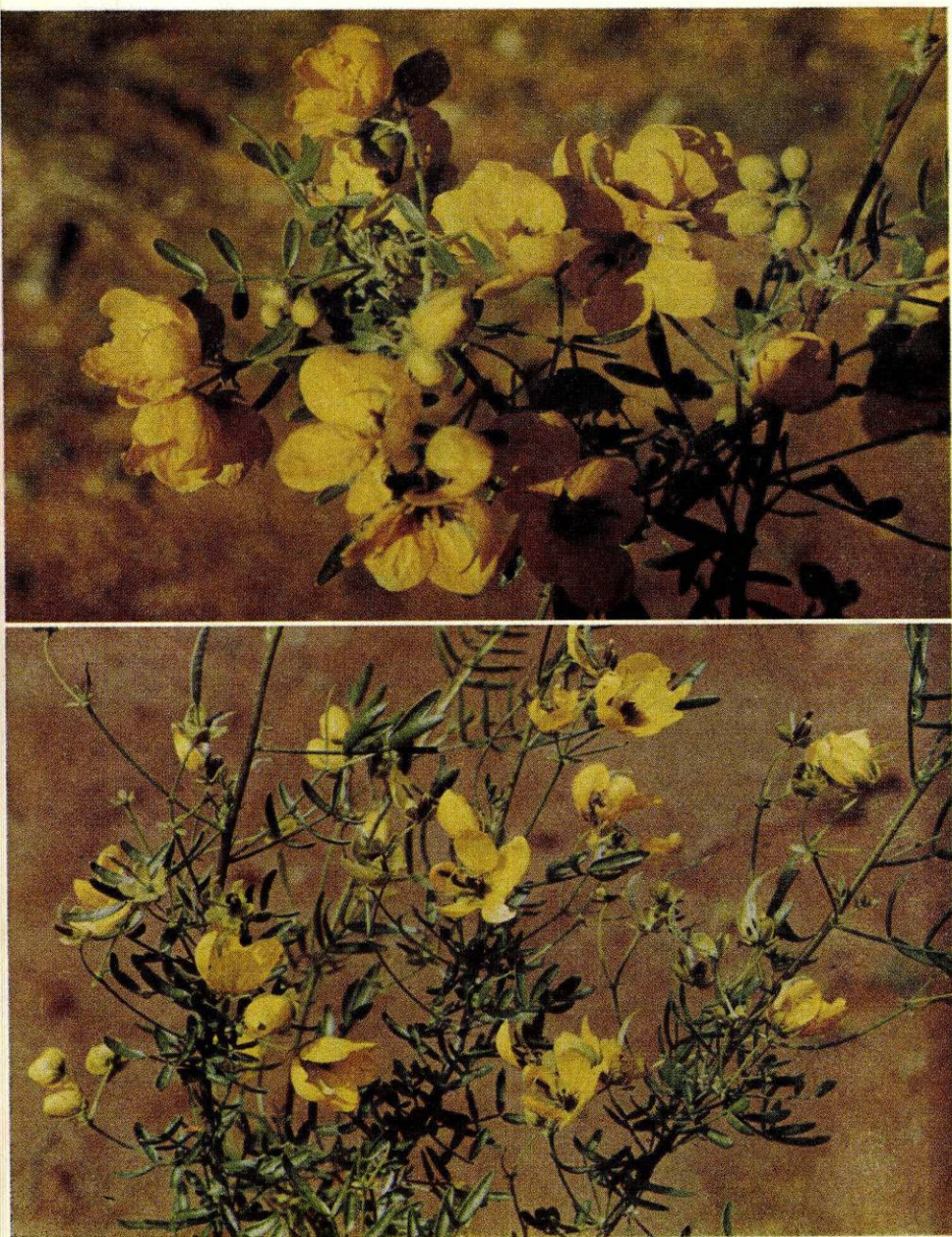
‡ Species name not mentioned in this article.

ø Hybrid standards.

" " New combinations.

	Page	Page
<i>Cassia absus</i> L.	353	366, 374
<i>C. aciphylla</i> Benth.	356	342
<i>C. alata</i> L.	358	366
<i>C. artemisioides</i> Gaudich. ex DC.	355	342
ø <i>C. C. hybrid artemisioides</i>	357	378
‡ <i>C. australis</i> Sims syn. <i>C. odorata</i>		342
<i>C. barclayana</i> Sweet	357	
‡ <i>C. bicapsularis</i> L. syn. <i>C. colutioides</i>		342
<i>C. brewsteri</i> F. Muell.	353	342, 374
‡ <i>C. cardiosperma</i> F. Muell. (hybrid see <i>C. hybrid coriacea</i>)		
‡ <i>C. charlesiana</i> Symon (hybrid see <i>C. hybrid nemophila</i>)		
<i>C. chatelainiana</i> Gaudich.	356	343
<i>C. circinnata</i> Benth.	355	342
<i>C. colutioides</i> Colla.	358	
<i>C. "coriacea" (C. nemophila var. coriacea)</i>	355	
ø <i>C. C. hybrid coriacea</i>	357	
<i>C. coronilloides</i> Benth.	356	
<i>C. costata</i> J. F. Bailey & C. T. White	356	366, 343
‡ <i>C. cuthbertsonii</i> F. Muell. (hybrid see <i>C. helmsii</i>)		
‡ <i>C. desolata</i> F. Muell. (hybrid see <i>C. hybrid sturtii</i>)		342, 378
<i>C. didymobotrya</i> Fres.	358	342
‡ <i>C. eremophila</i> Benth. syn. <i>C. nemophila</i>		
<i>C. ferraria</i> Symon	356	
<i>C. fistula</i> L.	353	

		Page	Page
C.	<i>floribunda</i> Cav.	358	342
†C.	<i>glauca</i> Lam. syn. <i>C. surattensis</i>		
C.	<i>glutinosa</i> DC.	355	377
C.	<i>hammersleyensis</i> Symon	356	
C.	<i>harneyi</i> R. L. Specht	353	366
C.	<i>helmsii</i> Symon	356	378
C.	<i>hirsuta</i> L.	357	
†C.	<i>involucrata</i>		
†C.	<i>laevigata</i> Willd. syn. <i>C. floribunda</i>		343
†C.	<i>laxiflora</i> Benth. syn. <i>C. timoriensis</i>		
C.	<i>leptoclada</i> Benth.	355	366
†C.	<i>luerssenii</i> Domin (hybrid see <i>C. pruinosa</i> & <i>C. glutinosa</i>)		343
C.	<i>magnifolia</i> F. Muell.	358	367, 374
C.	<i>manicula</i> Symon	355	
C.	<i>marksiana</i> (F. M. Bailey) Domin	353	
C.	<i>mimosioides</i> L.	353	367, 374
†C.	<i>nemophila</i> var. <i>nemophila</i> Cunn. ex Vogel see <i>C. "nemophila"</i>		378
†C.	<i>nemophila</i> var. <i>platypoda</i> (R. Br.) Benth. see <i>C. "platypoda"</i>		378
†C.	<i>nemophila</i> var. <i>coriacea</i> (Benth.) Symon see <i>C. "coriacea"</i>		379
†C.	<i>nemophila</i> var. <i>zygophylla</i> (Benth.) Benth. see <i>C. "zygophylla"</i>		343, 378
C.	<i>"nemophila"</i> (<i>C. nemophila</i> var. <i>nemophila</i>)	355	342
oC.	<i>C. hybrid nemophila</i>	357	
†C.	<i>neurophylla</i> W. V. Fitz. syn. <i>C. oligolada</i>		
C.	<i>notabilis</i> F. Muell.	358	367
C.	<i>obtusifolia</i> L.	358	367
C.	<i>occidentalis</i> L.	357	367
C.	<i>odorata</i> Morris	356	
C.	<i>oligoclada</i> F. Muell.	356	367
C.	<i>oligophylla</i> F. Muell.	355	343, 378
C.	<i>phyllodinea</i> R. Br.	355	377
C.	<i>pilocarina</i> Symon	356	
C.	<i>planitiicola</i> Domin	357	368, 374
C.	<i>"platypoda"</i> (<i>C. nemophila</i> var. <i>platypoda</i>)	355	
oC.	hybrid <i>platypoda</i>	357	
C.	<i>pleurocarpa</i> F. Muell.	358	343
C.	<i>pruinosa</i> F. Muell.	355	368
C.	<i>pumila</i> Lam.	353	368, 374
C.	<i>queenslandica</i> C. T. White	353	374
C.	<i>retusa</i> Vogel	356	374, 343
†C.	<i>revoluta</i> F. Muell. syn. <i>C. aciphylla</i>		
†C.	<i>sophora</i> L. syn. <i>C. barclayana</i>		
†C.	<i>sturtii</i> R. Br. (hybrid see <i>C. hybrid sturtii</i>)		342, 377
oC.	<i>C. hybrid sturtii</i>	357	343
C.	<i>surattensis</i> Burm. f.	356	368
C.	<i>timoriensis</i> DC.	358	368, 374
C.	<i>tomentella</i> (Benth.) Domin	351	
C.	<i>tomentosa</i> L. f.	358	
C.	<i>tora</i> L.	358	368
C.	<i>venusta</i> F. Muell.	358	368, 374
C.	<i>"zygophylla A"</i> (<i>C. nemophila</i> var. <i>zygophylla</i>)	355	
C.	<i>"zygophylla B"</i> (<i>C. nemophila</i> var. <i>zygophylla</i>)	355	
oC.	<i>C. hybrid zygophylla</i>	357	



Photography by J. Glass

Cassia chatelainiana*—Section *Psilorhegma

One of a group of glabrous species having many (4-10) pairs of leaflets. The stalked leaf glands do not appear on this photograph (see Fig. 2 on page 351) but are the most easily recognised character. Species with similar leaves are *C. costata* which, however, has distinctive curved orange pods containing shiny black seeds; and *C. glutinosa*, shown in colour on page 377, which has sticky leaves.



Photography by O. Hockings

Cassia pilocarina*—Section *Psilorhegma

A typical example of the species. Shrubs are low and twiggy, and flowers are often less numerous than shown. *C. pilocarina* has the smallest leaflets among the hairy species of the *Psilorhegmae*, though among the glabrous species *C. "coriacea"* has rather similar leaf structure. However, *C. "coriacea"* is a small tree.

Cultivation of *Cassias*

Plants are usually grown from seed, which is often long-lived. Seeds 80 years old have been germinated. Seeds may be "hard" and require scarification to assist water absorption. All species prefer warm to tropical conditions and grow best in well-drained situations. None tolerate cold, wet, soggy soils, though species from the inland will stand frosts. Species native to the southern temperate Australia are tolerant of alkaline soils (the *nemophila* group in the broad sense). Most species prefer open sunny sites and become leggy and drawn under shade. Many species are sweetly scented.

Multiple Seedlings:

In the subgenus *Psilorhegma*, many species are known to produce more than one seedling from many of their seeds. Most of these seedlings are produced asexually and are thus identical with the plant carrying the seedpod. Occasionally, however, a seedling can be produced after sexual reproduction and thus hybridization is possible.

Although seven or even eight embryos have been found in the developing seed, rarely more than two actually germinate. Only the strongest will survive without special attention. As most seedlings are asexual, the progeny of one seed is usually identical. A non-identical pair of seedlings (one asexual, one sexual hybrid) has been reported once.

Morphology of the Genus *Cassia*

Figure 1 — Floral Morphology and Fruit Morphology

The flowers are yellow or orange, with five equal separate petals. There are 10 stamens, sometimes all functional, but often with three, four or five sterile and much smaller. Sometimes 2 or 3 basal anthers are on elongated stalks (a and b). Flowers occur in racemes of 2-3 to 50-60 flowers.

Cassia fruits are pods of three basic types—

1. Cylindrical, indehiscent (d). The seeds are not shed until the fruit rots.
2. Flattened, elastically dehiscent. Pods open violently and fling seeds out.
3. Flattened, dehiscent but not elastically (e). These pods open gradually and the seeds can be seen hanging inside.

Figure 2 — Leaf Morphology.

The leaves are pinnately divided, without a terminal leaflet. The number of leaflets varies between 1 and 80 pairs. Stipules are present but usually fall early (a). Leaflets in several species are deciduous, leaving a functional phyllode (c, d). In two species this has been vertically flattened (b, d).

Small black glands occur at the base of the petiole (g), or along the midrib. They are usually sessile (b, d) or rarely stalked (f).

THE GENUS *CASSIA* AND ITS SUBGENERA

The genus *Cassia* in Australia is divided into 3 subgenera.

Subgenus *Absus*

- | | |
|--------------------------------|------------------------|
| A. Section <i>Absus</i> | 1 species in Australia |
| B. Section <i>Apoucouita</i> | None in Australia |
| C. Section <i>Chamaecrista</i> | 3 species in Australia |

Subgenus *Cassia*

5 species, 1 introduced to Australia

Subgenus *Senna*

- | | |
|---------------------------------|---------------------------------------|
| A. Section <i>Senna</i> | 7 species, 2 introduced |
| B. Section <i>Chamaefistula</i> | 3 species, all introduced |
| C. Section <i>Oncolobium</i> | 4 species, 2 introduced |
| D. Section <i>Prososperma</i> | 2 species, both introduced |
| E. Section <i>Psilorhegma</i> | About 30 species, 1 outside Australia |

Simplified key to the Subgenera

- | | | |
|---|----|------------------------|
| 1. Foliar glands present along leaf midrib | 3. | |
| 1. Foliar glands absent along leaf midrib | 2. | |
| 2. Pod indehiscent, 20-60 cms long | | Subgenus <i>Cassia</i> |
| 2. Pod dehiscent, to 15 cms long | | Subgenus <i>Senna</i> |
| 3. Pod dehiscent, to 15 cms long | | Subgenus <i>Senna</i> |
| 3. Pod elastically dehiscent, to 4 cms long | | Subgenus <i>Absus</i> |

CHARACTERISTICS OF FLOWERS, PODS AND LEAVES

These characteristics are used to identify plants in the general text and in the key to the species on page 359.

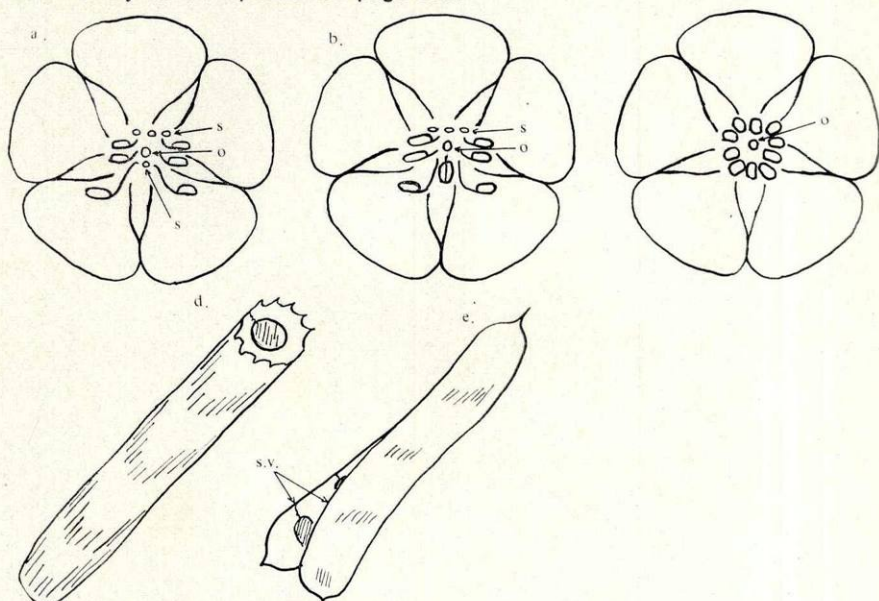


FIGURE 1.—FLORAL MORPHOLOGY

a. 6 fertile stamens, e.g. *C. barclayana*; b. 7 fertile stamens, e.g. *C. notabilis*; c. 10 fertile stamens, e.g. *C. artemisioides*; d. Cylindrical pod, e.g. *C. fistula*; e. Flat pod, e.g. *C. artemisioides*.

s—sterile anther; o—ovary; s.v.—separating valves.

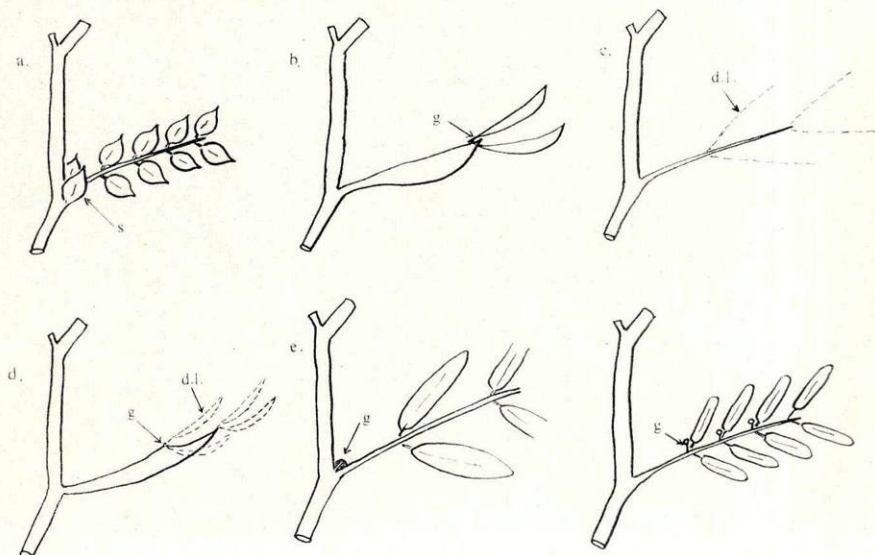


FIGURE 2.—LEAF MORPHOLOGY

a. *C. pruinosa*, persistent stipules; b. *C. "platypoda"*, vertical phyllode, apical gland; c. *C. circinnata*, terete phyllode, deciduous leaflets; d. *C. phyllodinea*, vertical phyllode, lateral gland; e. *C. planiticola*, large gland at the base of petiole; f. *C. costata*, stalked glands between leaflets. g—gland; s—stipule; d.l.—deciduous leaflet.

THE GENUS CASSIA AND ITS SPECIES

The species of *Cassia* are now briefly described in groups.



Photography by O. Hockings

Cassia pleurocarpa*—Subgenus *Senna

Identification of varieties is difficult from the photographs but probably the upper is *C. pleurocarpa* var. *angustifolia*. The lower is *C. pleurocarpa* var. *pleurocarpa* var. *angustifolia* and has more leaflets than the type variety, and is restricted to Western Australia. The third variety, *C. pleurocarpa* var. *longifolia*, is restricted to Queensland and has more leaflets than the other varieties, falling between them in leaflet width. The photographs do not show fertile anthers (7) or the longitudinal stripe along each pod.

(a) Subgenus *Absus*

A group of small shrubs with small pods from tropical Northern Territory, tropical Queensland, and on coastal areas as far south as Sydney.

This group of species is essentially tropical. Few if any are in cultivation. They are not particularly showy and none is especially recommended.

Notes to the Species in the Subgenus *Absus*

C. absus. Shrub to 50 cms, viscid; leaflets 2 pairs, 1-2.5 x 0.8-1.5 cms. Fertile stamens 5.

Northern W.A., N.T., Qld.

C. harneyi. Perennial herb to 1 m. Leaves 5-9 cms; leaflets 5-15 pairs, 1.6-2.4 x 0.4-0.5 cms. Fertile stamens 8-10.

Bickerton Is., Gulf of Carpentaria.

C. pumila. Shrub to 40cms. Leaves 0.8-1 cms; leaflets 10-15 pairs, 0.4-0.7 x 0.1 cms. Fertile stamens 5.

North W.A., N.T., Qld.

C. mimosioides. Shrub to 1 m. Leaves 3-8 cms; leaflets 20-80 pairs, 0.3-0.5 x 0.05-0.1 cms. Fertile stamens 10 or fewer.

North W.A., N.T., Qld. and south coastal Qld., northern N.S.W.

(b) Subgenus *Cassia*

A group of trees having large indehiscent pods, from coastal areas of Qld. and northern N.S.W.

This group of species is well worth growing and should be more extensively tried in gardens. *C. brewsteri* will grow as far south as Adelaide. Seeds are long lasting and locating supplies of the lesser-known and rarer species like *C. queenslandica* would be worthwhile. The long racemes of flowers may be yellow or yellow with reddish markings and may be orchid-like in appearance.

Notes to the Species in the Subgenus *Cassia*

C. fistula. Deciduous tree 3-10 m. Leaflets 3-8 pairs, 5-15 x 3.5-8 cms. Inflorescence 20-40 cms long, bearing 30-50 flowers. Pods 30-60 x 2-2.5 cms, cylindrical.

Native to Asia, established in north Qld. Widely grown as an ornamental in tropical Australia.

C. queenslandica. Tall shrub or tree, hairy, somewhat ribbed. Leaves to 18 cms; leaflets 6-8 pairs, 4-7 x 2-2.5 cms. Inflorescence 25-35 cms long bearing 50-60 flowers. Pod to 35 x 1-1.5 cms, somewhat flattened and ribbed.

A tall tree from the rainforest near Cairns, Qld.

C. brewsteri. Shrub or tree 2-12 m, sparsely hairy but becoming glabrous with age. Leaflets 2-4(6) pairs, to 4.5 x 1.5 cms. Inflorescence 7-20 cms long, bearing 6-12 flowers. Pod 20-45 x 1-2.5 cms, somewhat compressed, transverse ribs between seeds more or less distinct.

Central coastal Qld., Cairns to Maryborough.

Grown as an ornamental.

C. marksiana. Erect tree to 20m, glabrous. Leaves 20-23 cms; leaflets 7-8 pairs, 2.5-8.5 cms long. Inflorescence 7-8 cms long. Pod 30 x 1-1.5 cms, nearly cylindrical, transverse ribs not distinct.

Coastal Qld./N.S.W. border areas.

C. tomentella. Shrub or tree to 10 m, young parts densely hairy with pale curved hairs. Leaves to 10 cms; leaflets 4-5 pairs, 1-6 x 1-2 cms. Inflorescence 7-18 cms long. Pod 15-30 x 1-1.5 cms, cylindrical, transverse ribs not prominent.

Subtropical southeast Qld.

(c) (1) Subgenus *Senna*

Section *Psilorhegma*. A group of about 30 species mostly from inland areas of Australia, though some occur on the central coast of N.S.W. They have large, flattish dehiscent pods, and 10 fertile stamens.

Taxonomically, the Section *Psilorhagma* is very difficult. The species are fairly easy to recognise in a key, but in the field it becomes obvious that boundaries between many of the species are obscured by numerous and frequent hybrids, with (asexually) fertile seeds (see Randell 1970). Not only do these hybrids intergrade between the parental species, they are so frequent and variable that, although it is necessary to give them some type of names for practical use, we have not yet been able to devise a system which adequately covers the situation. The problems are these:

- (1) The parental species were recognised from chromosome counts. Hybrids show almost continuous morphological variation between these parental forms.
- (2) Hybrids between species A and B may mimic species C, e.g., hybrids between *C. helmsii* and *C. "nemophila"* . . . (*C.* hybrid *zygophylla*) . . . are sometimes impossible to distinguish from *C. "zygophylla A"*.
- (3) Hybrids between several different parental crosses are morphologically almost indistinguishable, e.g., *C.* hybrid *sturtii* . . . can be derived from
 - C. helmsii* x *C. "nemophila"*
 - C. helmsii* x *C. artemisioides*
 - C. oligophylla* x *C. "nemophila"*
 - C. oligophylla* x *C. artemisioides*.
- (4) Previous workers have described and named forms which are now shown to be of hybrid origin. Then if taxonomic rules are followed, new descriptions and names are needed for many species, although currently accepted descriptions often coincide fairly closely with the parental species.

In this treatment, the names applied by Symon (1966) are used for the parental species recognised by Randell (1970), though in some cases new combinations are obviously necessary, and are indicated by quotation marks.

The majority of the species and forms in this Section occur in the dryer regions of Australia but do extend from NE Victoria to the Gulf of Carpentaria and from Sydney to Broome. Amongst them are many fine garden plants especially for inland areas. Many species have not been grown in gardens and there is wide scope for selection of cultivars in the bewildering array of variation available. All have yellow flowers. Some features of the group include:

glaucous white leaflets	<i>C. pruinosa</i>
silvery hoary leaflets	<i>C. helmsii</i> , <i>C.</i> hybrid <i>sturtii</i> , <i>C. phyllodinea</i>
sticky glutinous tips	<i>C. glutinosa</i>
curved orange pods	<i>C. costata</i>
low spreading habit	<i>C. pilocarina</i> , <i>C. hammersleyensis</i> , <i>C. aciphylla</i>
tolerant of winter rainfall	<i>C. "nemophila"</i> , <i>C. "coriacea"</i> , <i>C. "platypoda"</i>
small trees	<i>C. retusa</i> , <i>C. surattensis</i> , <i>C. chatelainiana</i> .

Notes to the Species in the Subgenus *Senna*

(a) Leaves almost completely reduced to phyllodes. Leaflets fall early.

- C. phyllodinea*. Shrub 0.2-2.2 m, grey and hoary. Leaves almost completely reduced to vertically flattened phyllodes, 1.5-5 cms x 0.5 cms, often falcate. Leaflets when present 1-2 pairs, also phyllodinaceous, gland between lowest pair of leaflets (1/4 to 3/4 along upper edge of phyllode). Pod 3-8 x 1.5 cms, coiled to a semi-circle.

North-western plains of N.S.W. and Lake Eyre Basin.

- C. "platypoda"* (*C. nemophila* var. *platypoda* pp. of D. E. Symon). Shrub 1-3 m, green and glabrous. Petioles phyllodinaceous, vertically flattened, 2-5 x 0.4-0.6 cms. Leaflets 1-2 pairs, vertically flattened, sometimes falling early, 1-2 x 0.2 cms. Gland terminal. Pod straight.

Gawler Ranges, S.A., McDonnell Ranges, N.T.

- C. circinnata*. Shrub 1-2 m. Leaves completely reduced to phyllodes, almost terete, 1.5-5 x 0.1 cms. Leaflets when present 1-3 pairs, terete, 0.6 x 0.1 cms, falling early. Pod 1 cms broad, spiral, forming 1-2 coils.
North-western plains of N.S.W.

(b) Leaves almost completely terete.

- C. "nemophila"* (*C. nemophila* var. *nemophila* pp. of D. E. Symon). Shrub 1-3 m. Leaves 4-8 cms; leaflets 1-2 pairs, terete, 4-6 cms long, glabrous, usually green sometimes grey. Pod flat and straight, 2-8 x 0.7-0.9 cms.
Flinders Ranges, S.A.; McDonnell Ranges, N.T.
- C. artemisioides*. Shrub 1-2 m. Leaves 3-6 cms; slightly or densely hairy, grey. Leaflets 4-8 pairs, 1-4 cms, terete. Pod flat and straight, 4-8 x 0.6-1 cms.
Flinders Ranges, S.A.; McDonnell Ranges, N.T. Colour, page 341.
- C. manicula*. Shrub 0.5-1 m, with short dense foliage, densely hairy, grey. Leaves about 1 cm, leaflets 3-4 pairs, 5-10 x 0.5-0.75 mm, channelled above.
Rare, near Leonora, W.A.

(c) Leaves with specialised indumentum.

- C. glutinosa*. Shrub 1-3 m. Young stems, petioles, peduncles, and pods very viscid or sticky. Leaves 2-5 cms; leaflets 3-4(6) pairs, 1.2-3 x 0.3-0.5 cms, viscid on the edges. Pods flat shining, viscid, 4-6 x 0.8-1 cms.
Central N.T.; Hamersley region, W.A. Colour plate on page 377.
- C. pruinosa*. Shrub 1.5-2 m. Young stems, petioles, and peduncles pruinose (with a white powdery covering), older parts grey. Leaves 5-10 cms; leaflets 3-7 pairs, 1-2 cms x 3-6 mm. Stipules 3-9 x 1-5 mm, falcate, persistent. Pod flat 3-6 x 1 cms.
Central N.T.; Western Qld.; Hamersley region, W.A.

(d) Leaflets glabrous, green or glaucous. Leaflets 1-3 pairs.

- C. "zygophylla A"* (*C. nemophila* var. *zygophylla* pp. of D. E. Symon). Small shrub 1.5 m, green and glabrous. Leaves 4-6 cms; leaflets 2-3 pairs, 3-4 x 0.3-0.5 cms, linear elliptic. Pod straight.
Flinders Ranges, S.A.; McDonnell Ranges, N.T.; north-west of W.A.
- C. "zygophylla B"* (*C. nemophila* var. *zygophylla* pp. of D. E. Symon). Small shrub 1.5 m, glabrous and glaucous, rusty red. Leaves 4-6 cms; leaflets 2-3 pairs, 3-4 x 0.5-0.8 cms.
Rare, near Alice Springs, N.T.
- C. oligophylla*. Shrub 1-2 m, glabrous, usually green, rarely grey and glaucous. Leaflets 1-2 pairs, 1-3 x 1-2 cms. Inflorescence 6-20 flowers.
Western Qld.; N.T.; north-east and Pilbara of W.A. Colour, page 344.
- C. leptoclada*. Shrub 1.5 m, glabrous and very glaucous, purplish. Leaflets 2 pairs, 1.3-3 x 0.7-1.5 cms. Inflorescence 2-3 flowers.
Rare, Gulf of Carpentaria Region, N.T.

(e) Leaflets glabrous, green or glaucous. Leaflets 4-10 pairs.

- C. "coriacea"* (*C. nemophila* var. *coriacea* pp. of D. E. Symon). Shrub or small tree 1.5-2 m, glabrous, glaucous and grey. Leaves 0.5-1.2 cms; leaflets 7-10 pairs, 3-5 mm x 1-2 mm. Leaf midrib recurved.
Rare, Gawler Ranges and Flinders Ranges, S.A.
- C. ferraria*. Shrub. Leaves 6-8 cms; leaflets 4 pairs, 3-4 x 1-1.5 cms elliptic. Gland not stalked. Pod not seen.
Rare, in Hamersley Ranges, W.A.
- C. chatelainiana*. Shrub 1-4 m, slightly hairy, becoming glabrous. Leaves 4-6 cms; leaflets 3-4 pairs, 1.5-4 x 0.1-0.25 cms. Glands several on prominent stalks 1-4 mm. Pod flat and straight. See page 348 for colour plate.
Pilbara Region, W.A.
- C. costata*. Shrub 1-2 m. Leaves 4-6 cms, glabrous and green; leaflets 4-6 pairs, 2-4 x 0.4-0.6 cms. Pod 7-8 x 0.7-0.9 cms, flat, curved to $\frac{1}{2}$ or $\frac{3}{4}$ circle, orange-yellow, seeds shiny black.
Central Qld.; Northern N.T. and W.A.

(f) Leaflets hairy, 1-4 pairs.

- C. hamersleyensis*. Small shrub, pilose with pale erect hairs. Leaves 2-3 cms; leaflets 2-3 pairs, 5-12 x 4-9 mm. Inflorescence 4-6 flowers.

Hamersley Ranges, W.A.

- C. helmsii*. Shrub 1-2 m, with dense, short, woolly hairs. Leaves 2.5-5 cms; leaflets 3-4 pairs, 1-2.5 x 0.5-1.2 cms, obtuse, edges often recurved. Glands sessile. Inflorescence 4-10 flowers. Colour plate on page 345.

Widespread through arid Australia — W.A., N.T., N.S.W., S.A.

- C. oligoclada*. Shrub 20-60 cms, with dense, straight hairs. Leaves 1-5 cms variable. Leaflets 1-3 pairs, 0.5-3 x 0.15-1 cms. Glands on stalks 1-2 mm. Inflorescence of 2-5 flowers.

From Kimberley region, W.A., to Arnhem Land.

(g) Leaflets hairy, 4-9 pairs.

- C. surattensis*. Shrub several metres, glabrous or slight hairy. Leaves to 15 cms. Leaflets to 7 pairs, 2-5 x 1-2 cms. Glands between 2 or 3 pairs of leaflets, on stalks 3 mm. Pod flat and straight.

Native to Asia. Introduced to Arnhem Land, N.T.

- C. retusa*. Shrub or small tree, hairy with golden or pale hairs. Leaves 5-10 cms; leaflets 4-6 pairs, 1-3 x 0.7-1.5 cms. Glands 1-3 on stalks 2-4 mm.

Coastal tropical and subtropical Qld.

- C. pilocarina*. Shrub 30-50 cms, hairy when young, glabrous with age. Leaves 1-2 cms; leaflets 5-9 pairs, 5-12 x 2-3 mm. Colour plate on page 349.

Hamersley Range, W.A.

(h) Leaves almost linear, coastal N.S.W.

- C. odorata*. Shrub 1-2 m. Leaves 5-11 cms; leaflets 8-11 pairs, 1-2.5 x 0.2-0.6 cms. Glands 2-3, prominent. Pod flat straight.

Coastal N.S.W.

- C. aciphylla*. Shrub to 1.5 m but often trailing, hairy with pale or yellowish hairs. Leaves 2-10 cms; leaflets 8-12 pairs, 1.5-3 cms, linear, channelled above. Pod flat, often slightly curved.

Coastal N.S.W.; Southern Qld.; Northern Vic.

- C. coronillioides*. Shrub 1-2 m, sparsely hairy. Leaves 3-6 cms; leaflets 7-17 pairs, 8-18 x 2-5 mm. Gland 1 slender. Stipule 2-3 mm, sub-persistent. Pod straight or slightly curved.

Coastal subtropical Qld.; north N.S.W.

(i) Hybrids

Hybrids in this section are extremely frequent, and any plant not easily fitted into one of the above species is probably a hybrid. They present an almost complete range of morphological forms, and it is easiest to name them by referring each plant to the nearest species, or to one of a number of arbitrary standards. Obviously, each of these "standards" has no clearly defined limits, and some plants could be referred to more than one of them. Further, some of these "standards" have been given specific rank by various workers, but this cannot be maintained.

The "standards" suggested by B. Randell are:

- C. hybrid artemisioides*.

Shrub very variable, sparsely to densely hairy. Leaflets deeply channelled, or linear and inrolled, in 3-6 pairs. Colour plate on page 337.

Widespread through arid Australia.

- C. hybrid nemophila*.

Shrub very variable, glabrous or sparsely hairy, often glaucous. Leaflets deeply channelled, or linear and inrolled, in 1-2 pairs.

Widespread through arid Australia.

- C. hybrid platypoda*.

Shrub. Leaf petioles vertically flattened, 0.5-2 cms broad. Leaflets elliptic or sometimes vertically flattened, to 0.5 cms wide. Glabrous and glaucous, or sparsely hairy.

Widespread through arid Australia.

C. hybrid coriacea.

Shrub or small tree, usually glabrous, sometimes glaucous, rarely hairy. Leaflets 2-5 pairs, usually elliptic, very variable, 5-15 x 3-8 mm. Widespread throughout arid Australia.

C. hybrid zygothylla.

Shrub, leaves usually glabrous, sometimes glaucous, rarely sparsely hairy. Leaflets narrow elliptic, 1-2 pairs, 1.5-3 cms x 3-8 mm. Widespread through arid eastern Australia.

C. hybrid sturtii.

Shrub, densely woolly hairy, grey. Leaflets 4-6 pairs, elliptic, 1-2 cms x 3-8 mm. See colour plate on page 340. Widespread through arid Australia.

(c) (2) Subgenus *Senna*—other sections

Pods long and dehiscent, fertile stamens 6 or 7. A group of 16 species. 9 of which have been introduced to Australia.

Several of the introduced species are well known in gardens, such as *C. alata*, *C. didymobotrya*, *C. colutioides*, *C. tomentosa*. The native species *C. notabilis* has attractive foliage and pods, *C. venusta* is a showy erect shrub, *C. magnifolia* has fine leaves and showy flowers. The last three are all worth trying.

Notes to Species of Subgenus *Senna*—Other Sections.

(a) Fertile stamens 6, gland at base of petiole.

- C. hirsuta*. Shrub hairy on all parts. Leaves 10-15 cms; leaflets 4-6 pairs variable in size and shape, 1-7 x 0.5-3 cms. Fertile stamens 6, the lowest pair on long curved filaments. Pod 10 x 0.6 cms, slightly curved, slightly flattened.

Native to tropical America. Collected in south-west Qld. in 1959.

- C. occidentalis*. Annual or short-lived shrub, 1-2 m, very sparsely hairy, becoming glabrous at maturity. Leaflets 3-5 pairs, 3-7 x 2-3 cms. Flower stalk rarely greater than 0.5 cms. Fertile stamens 6, lowest pair on longer filaments. Pods somewhat flattened.

Native to Jamaica, first recorded in Qld. in 1888. Now established in tropical and subtropical W.A.; N.T.; Qld.

- C. planitiicola*. Shrub 0.1-2 m, herbaceous or short-lived. Leaves 5-15 cms; leaflets 4-6(7) pairs, 1.5-6 x 0.8-2 cms. Flower stalk 1-5 cms. Fertile stamens 6, lowest pair on long curved filaments. Pod 6-8 x 1 cms, cylindrical.

Native, widely distributed in central Australia.

- C. barclayana*. Herbaceous or perennial shrub 0.5-1 m. Leaves 10 cms, glabrous (hairy in var. *pubescens*). Leaflets 3-6(7) pairs, 2-4.5 x 0.6-1.3 cms. Fertile stamens 6, the lowest pair on long curved filaments. The basal sterile stamen also on a longer filament. Pod 4-7 x 0.7 cms, cylindrical.

Found in Central Western wheat districts of Qld. and N.S.W. It is weedy on pasture and cereal lands.

(b) Fertile stamens 7. Leaflets 2-3 pairs, stipules persistent.

- C. tora*. Shrub or subshrub 0.5-1 m. Leaflets 2-3 pairs, largest 2-4 x 1-2 cms. Pod pedicel less than 1.5 cms. Pod 10-15 x 0.4-0.6 cms, terete with prominent lateral ridges.

Native to Asia, introduced to Darwin before 1888.

- C. obtusifolia*. Herb or small shrub about 1m. Leaves 5-10 cms; leaflets 3 pairs, 1-6 x 0.5-3 cms. Pod pedicel 1.5-4 cms. Pod about 15 x 0.5 cms, subtetragonous.

Native to tropical America. Pantropic weed, but only in the N.T. of Australia.

(c) Fertile stamens 7. Leaflets 4-20 pairs, stipules persistent.

- C. alata*. Erect shrub or small tree, densely minutely hairy. Leaves to 60 cms; leaflets 10-20 pairs, 6-12 x 4-6 cms. Pod stiff and straight with a prominent wing 5 mm high along each valve.

Native to tropical America, now a pantropic weed. Tropical Qld. and N.T.

- C. didymobotrya*. Large shrub 2-3 m. Leaves 10-30 cms; leaflets 6-15 pairs, 2.5-6 x 1-2.3 cms. Flowers in erect spike-like racemes, sepals dark brown.

Native to tropical Africa, widely grown ornamental in Australia. Locally established in Qld. and N.S.W.

- C. venusta*. Shrub 1-2 m. Leaves large 10-25 cms, hairy. Leaflets 6-15 pairs, 2.5-4 x 1.3-1.9 cms. Fertile stamens 7, 2 of basal 3 larger.

Inland tropical and subtropical W.A., N.T., Qld. Colour, page 384.

(d) Fertile stamens 7, plant hairy, leaflets 5-20 pairs, stipules falling.

- C. tomentosa*. Shrub 2-3 m. Leaves 5-10 cms; leaflets 5-8 pairs, 2-3 x 0.6-1 cms. Pod 8-14 x 1 cms, somewhat compressed.

Native to tropical America. Garden shrub, naturalised in parts of Qld. and N.S.W.

- C. timoriensis*. Erect or straggly shrub, hairy with golden hairs. Leaves 4-10 cms; leaflets 13-19 pairs, 1.9-3.3 x 0.5-1.2 cms. Pod 7.5-9 x 0.9-1.2 cms, flat and straight.

Common in SE Asia, rare in northern W.A., N.T., Qld.

- C. notabilis*. Small shrub or short-lived perennial, all parts hairy. Leaves 10-15 cms; leaflets 6-13 pairs, 2.5 x 1 cms. Pod flat 2.5-3.5 x 1.3 cms.

Widespread in subtropical W.A., N.T. and far west Qld.

(e) Fertile stamens 7, plant glabrous, leaflets 3-12 pairs, stipules falling.

- C. floribunda*. Shrub or small tree 1-3 m. Leaves 10-15 cms; leaflets 3-5 pairs, 3-7 x 2-3 cms. Glands on midrib, several. Pod 5-8 x 1 cms, terete.

Native to tropical America, weedy in Africa and Asia. Occasionally cultivated in Australia, in coastal areas of Qld. and N.S.W.

- C. colutioides*. Large sprawling shrub to several metres. Leaves 5-8 cms; leaflets 4-5 pairs, 1-5 x 0.5-2 cms. 1 gland on midrib. Pod 10 x 0.6 cms, terete, sutures prominent.

Native to tropical South America, naturalised in Qld. and N.S.W. A garden shrub in Australia, sometimes appearing in nursery lists as *C. candolleana* or *C. corymbosa*.

- C. magnifolia*. Erect straggly shrub, 1-4 m. Leaves large 10-30 cms; leaflets 3-8 pairs, 3-8.5 x 2.0-5.5 cms.

W.A./N.T. border and Cairns hinterland Qld.

- C. pleurocarpa*. Shrub 1-3 m. Pod with longitudinal ridges. Leaves 7-15 cms, without glands. Leaflets variable in the varieties. Colour, page 352.

- var. *pleurocarpa*. Leaflets 5-9 pairs; 2-5 x 0.6-1.2 cms. Widespread.

- var. *angustifolia*. Leaflets 8-9 pairs; 5-7 x 0.3-0.4 cms. Restricted in W.A.

- var. *longifolia*. Leaflets 11-12 pairs; 2.5-4 x 0.4-0.6 cms. Restricted in Qld.

KEY TO THE SPECIES OF CASSIA IN AUSTRALIA**KEY TO THE SUBGENERA**

1. Foliar glands present along leaf midrib
1. Foliar glands absent along leaf midrib

3.
2.

2. Pod indehiscent, 20-60 cms long
2. Pod dehiscent, to 15 cms long

- Subgenus *Cassia*
Subgenus *Senna*

3. Pod dehiscent, to 15 cms long
3. Pod elastically dehiscent, to 4 cms long

- Subgenus *Senna*
Subgenus *Absus*

KEY TO THE SPECIES OF SUBGENUS *ABSUS*

- | | |
|--|----------------------|
| 1. Leaflets usually in 2 pairs, plant viscid or sticky | <i>C. absus</i> |
| 1. Leaflets more numerous | 2. |
| 2. Leaflets 20-80 pairs | <i>C. mimosoides</i> |
| 2. Leaflets 3-20 pairs | 3. |
| 3. Leaflets 10-15 pairs, fertile stamens 5 | <i>C. pumila</i> |
| 3. Leaflets 5-14 pairs, fertile stamens 10 | <i>C. harneyi</i> |

KEY TO THE SPECIES OF SUBGENUS *CASSIA*

- | | |
|---|-------------------------|
| 1. Inflorescence of many flowers (30-60) | 2. |
| 1. Inflorescence of fewer flowers (to 20) | 3. |
| 2. Flowers 30-50, pod cylindrical | <i>C. fistula</i> |
| 2. Flowers 50-60, pod flattened and ribbed | <i>C. queenslandica</i> |
| 3. Plant with young parts densely hairy | <i>C. tomentella</i> |
| 3. Plant sparsely hairy, or becoming glabrous | 4. |
| 4. Leaflets 2-4 pairs, inflorescence 7-20 cms long, pod compressed | <i>C. brewsteri</i> |
| 4. Leaflets 7-8 pairs, inflorescence 7-8 cms long, pod nearly cylindrical | <i>C. marksiana</i> |

KEY TO THE SPECIES OF SUBGENUS *SENNA*

- | | |
|--|-----------------------------------|
| 1. Fertile stamens 6 or 7 | 2. |
| 1. Fertile stamens 10 | Section <i>Psilorhagma</i> (q.v.) |
| 2. Fertile stamens 6, gland at base of petiole | 3. |
| 2. Fertile stamens 7, glands on midrib | 6. |
| 3. Pod cylindrical | 4. |
| 3. Pod flattened | 5. |
| 4. Basal sterile stamen on short filament | <i>C. planitica</i> |
| 4. Basal sterile stamen on long filament | <i>C. barclayana</i> |
| 5. Shrub hairy on all parts | <i>C. hirsuta</i> |
| 5. Plant sparsely hairy, becoming glabrous with age | <i>C. occidentalis</i> |
| 6. Leaves with persistent stipules | 7. |
| 6. Leaves with stipules falling early | 11. |
| 7. Leaflets 2-3 pairs | 8. |
| 7. Leaflets 4-20 pairs | 9. |
| 8. Pod with prominent lateral ridges, pod pedicel less than 1.5 cms long | <i>C. tora</i> |
| 8. Pod with four angles, pedicel 1.5-4 cms | <i>C. obtusifolia</i> |
| 9. Leaflets 10-20 pairs, 6-12 x 4-6 cms, hairy | <i>C. alata</i> |
| 9. Leaflets 6-15 pairs, much smaller | 10. |
| 10. Flowers in spike-like racemes, sepals dark brown | <i>C. didymobotrya</i> |
| 10. Flowers in erect racemes, sepals not brown | <i>C. venusta</i> |
| 11. Plant hairy, leaflets 5-20 pairs | 12. |
| 11. Plant glabrous, leaflets 3-12 pairs | 14. |
| 12. Leaflets 5-8 pairs. Pod 8-14 cms long | <i>C. tomentosa</i> |
| 12. Leaflets 6-19 pairs. Pod to 9 cms long | 13. |
| 13. Leaflets 13-19 pairs, pod 7-9 cms long | <i>C. timoriensis</i> |
| 13. Leaflets 6-13 pairs, pod 2-4 cms long | <i>C. notabilis</i> |
| 14. Leaves 10-30 cms long, leaflets 3-8 pairs | <i>C. magnifolia</i> |
| 14. Leaves 5-15 cms long | 15. |
| 15. Leaf midrib without glands | <i>C. pleurocarpa</i> |
| 15. Leaf midrib bearing glands | 16. |
| 16. Leaflets 3-7 cms long, glands several | <i>C. floribunda</i> |
| 16. Leaflets 1-5 cms long, one gland | <i>C. coluteoides</i> |

KEY TO THE SPECIES OF SECTION *PSILORHEGMA*

- | | |
|---|----------------------------|
| 1. Species from semi-arid central plains of Australia | 2. |
| 1. Species from coastal N.S.W. | 23. |
| 2. Leaves almost completely reduced to phyllodes, leaflets fall early | 3. |
| 2. Leaflets persistent | 5. |
| 3. Phyllodes terete; pod spiral, of 1-2 coils | <i>C. circinnata</i> |
| 3. Phyllodes vertically flattened | 4. |
| 4. Leaflets 1 pair, gland terminal | <i>C. "platypoda"</i> |
| 4. Leaflets 2 pairs, gland not terminal | <i>C. phyllodinea</i> |
| (Leaflets 1-2 pairs, broad persistent) | <i>C. hybrid platypoda</i> |
| 5. Leaves with specialised surface covering | 6. |
| 5. Leaves without specialised covering | 7. |
| 6. Young parts very viscid or sticky | <i>C. glutinosa</i> |
| 6. Young parts pruinose (with a white powdery covering) | <i>C. pruinosa</i> |

- | | |
|--|--------------------------|
| 7. Leaflets almost completely terete | 8. |
| 7. Leaflets flattened | 10. |
| 8. Leaflets 3-8 pairs, more or less hairy | 9. |
| 8. Leaflets 1-2 pairs, glabrous | C. "nemophila" |
| (Leaflets 1-2 pairs, linear and inrolled) | C. hybrid nemophila) |
| 9. Leaflets 3-4 pairs, short, densely packed, densely hairy | C. mancula |
| 9. Leaflets 4-8 pairs, long, sparsely to densely hairy | C. artemisioides |
| (Leaflets 3-8 pairs, linear and inrolled) | C. hybrid artemisioides) |
| 10. Plant glabrous, leaflets 1-10 pairs | 11. |
| 10. Plant hairy, leaflets 1-9 pairs | 18. |
| 11. Leaflets 1-3 pairs | 12. |
| 11. Leaflets 4-10 pairs | 15. |
| 12. Leaves elliptic, pointed | 13. |
| 12. Leaves broad, with rounded apex | 14. |
| 13. Shrub green and glabrous, leaflets to 5 mm broad | C. "zygophylla A" |
| 13. Shrub glaucous, rusty red, leaflets to 8 mm broad | C. "zygophylla B" |
| (Leaflets 1-2 pairs, glabrous, elliptic, 1.5-3 cms long) | C. hybrid zygophylla) |
| 14. Shrub glabrous and green, inflorescence 6-20 flowers | C. oligophylla |
| 14. Shrub glaucous and purplish, inflorescence 2-3 flowers | C. leptoclada |
| 15. Glands on leaf midrib on stalks 1-4 mm long | C. chatelainiana |
| 15. Glands on midrib sessile | 16. |
| 16. Leaflets 7-10 pairs, 3-5 mm long | C. "coriacea" |
| 16. Leaflets 4-6 pairs, 2-4 cms long | 17. |
| 17. Leaflets 4 pairs, 1-1.5 cms broad | C. ferraria |
| 17. Leaflets 4-6 pairs, 0.4-0.6 cms broad | C. costata |
| 18. Leaflets 1-4 pairs | 19. |
| 18. Leaflets 4-9 pairs | 21. |
| 19. Leaflets 3-4 pairs with dense woolly hairs, edges often recurved | C. helmsii |
| 19. Leaflets 1-3 pairs, with straight hairs | 20. |
| 20. Leaflets 2-3 pairs, to 1.2 cms long | C. hamersleyensis |
| 20. Leaflets 1-3 pairs, to 3 cms long, glands on midrib stalked | C. oligoclada |
| 21. Small shrub to 0.5 m, leaves 1-2 cms long | C. pilocarina |
| 21. Shrub or tree, leaves 5-15 cms long | 22. |
| 22. Glands stalked, hairs golden or pale, leaves 5-10 cms long | C. retusa |
| 22. Glands stalked, hairs few or absent, leaves to 15 cms long | C. surattensis |
| (Gland sessile, plant with dense woolly hairs) | C. hybrid sturtii) |
| (Glands sessile, hairs few or absent) | C. hybrid coriacea) |
| 23. Shrub linear but often trailing, glands not prominent, leaflets linear | C. aciphylla |
| 23. Erect shrub, glands prominent, leaflets to 6 mm broad | 24. |
| 24. Gland 1 slender, stipule sometimes persistent | C. coronilloides |
| 24. Glands 2-3, prominent | C. odorata |

REFERENCES

- Symon, D. E. (1966). A Revision of the genus *Cassia* L. Caesalpiniaceae in Australia. *Trans. Roy. Soc. S. Aust. Vol. 90*, pp. 73-146.
- Randell, B. R. (1970). Adaptations in the Genetic System of Australian Arid Zone *Cassia* species. *Aust. Jour. Bot. Vol. 18*, pp. 77-97.

FLOWERS IN STAINED GLASS WINDOWS

by E. M. McCulloch, 6 Bullen Ave., Mitcham, Vic. 3132

I am very interested in tracing the use of Australian animals (including birds) and flowers in stained glass windows. Would any of your members be able to tell me of any samples known to them? Those I have found so far have been either in churches, or homes from about 1920. Before that, what I have found has been of European origin, mainly painted scenes, some of them pleasantly done but far from Australian in design.

I am convinced that somewhere or other there will be a church window featuring St. Francis of Assisi surrounded by Australian animals. There is a famous window of this at Selborne, in England, and also one in South Africa. So far the only one I have seen here is at Kew in Victoria, and has stylised general birds, animals and flowers of no particular species that I can see.

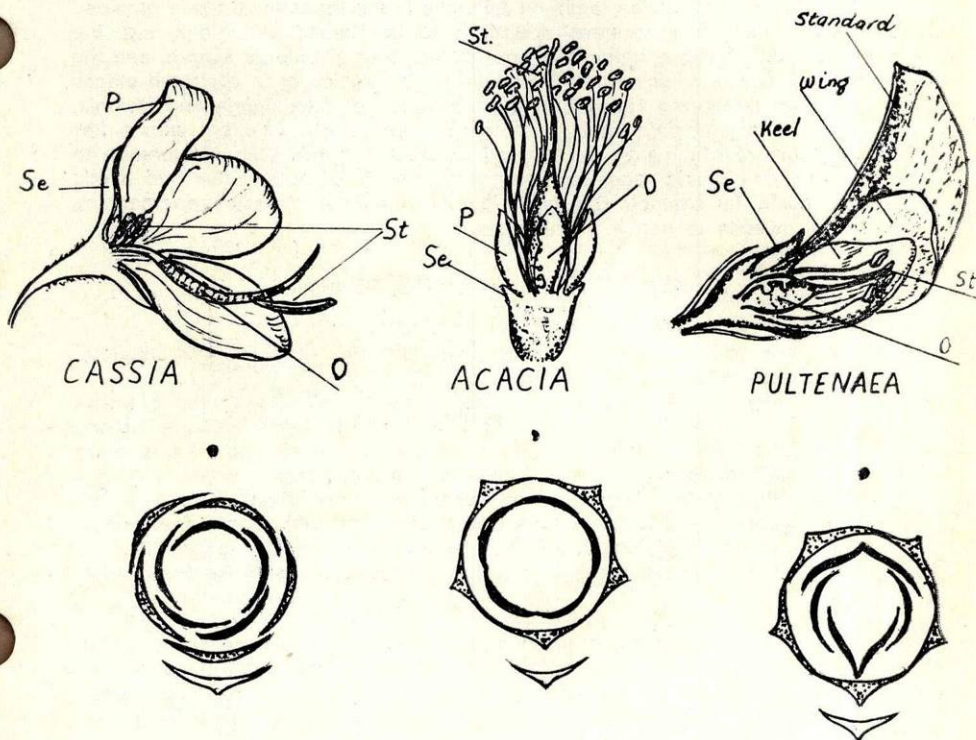
If anyone has any information I would be most interested to hear from them. It is fascinating, if somewhat frustrating, trying to sort out when the changeover from nightingales to kookaburras and waratahs took place in this medium. If those interested could supply photographs, sketches, tracings or detailed descriptions it would be doubly valuable. All letters will be gratefully acknowledged.

THE FAMILY CAESALPINIACEAE

by C. N. Debenham

Cassia, *Acacia* and *Pultenaea* are genera well known to the Australian scene and serve to give perspective to our title. While the examples may show more conspicuous differences as, for example, the inflorescences, the number of stamens (numerous in *Acacia*, 10 usually in *Cassia*, constantly in *Pultenaea*), other features of the flower must be considered for comparisons at the family level.

In each, the flower is bisexual and complete. The ovary, produced to a simple style and stigma, is superior, monocarpellate, and becomes, on maturation, a pod. The pod may be indehiscent in some *Cassia* and *Acacia* but more generally it is dehiscent by two valves and then a legume.



Examine the corollas of each and significant differences emerge. Least significant in size is that of *Acacia*, the five (or four) petals are arranged regularly edge to edge without modification. The sepals are united, edge to edge (valvate), to form a five- (or four-) lobed or toothed tube. In *Cassia*, the petals overlap by their margins (are imbricate), the uppermost petal innermost, the basal petal outer and slightly larger. Sepals of *Cassia* are free almost to the base and also are imbricate. In *Pultenaea*, modification is greatest. The corolla here is the papilionaceous (butterfly-like) type composed of *standard* formed by the uppermost petal which usually is the largest two lateral *wings*, and a lowermost pair, the *keel*, formed by partial union of margins and enclosing reproductive parts. While the petals are imbricate, the sepals form a five-lobed tube.

Cassia, *Acacia* and *Pultenaea* represent a very large group of legume bearers traditionally known as *Leguminosae*. The floral differences are regarded by many to be constant and significant enough to separate the group (as an order, *Leguminales*) to families. The three genera are assigned, then, respectively to *Caesalpinaceae* (from the pantropic *Caesalpinia*, named after the Italian systematist, *Mimosaceae* (from the American *Mimosa*) and *Fabaceae* (from the old Linnean name for *Vicia* and retained for broad bean, *Vicia faba*). *Papilionaceae* is an alternative to *Fabaceae*.

Besides *Cassia*, only 12 of the approximately 150 genera of *Caesalpinaceae* are native to Australia. Most members are woody but have pinnate or bipinnate leaves. Some *Cassia* are herbaceous or have leaves reduced to phyllodes: simple, digitate or unifoliate leaves occur in *Labichea*. Stipules when present are small or minute and deciduous, with some exceptions in *Cassia*. Flowers may be solitary along the branches or occur in simple or paniculate racemes; their pollination is by insects.

A major interest of the family in Australia is the ornamental value provided by exotic small to large trees adaptable to dry inland conditions, e.g. the Honey Locust *Gleditsia triacanthos*, the Carob Bean *Ceratonia siliqua*, and the Judas Tree *Cercis siliquastrum*. Cultivated in the tropics or in sheltered places of the warm temperate zones are the poincianas of *Caesalpinia* and *Delonix*, also species of *Bauhinia* again from tropical Africa and Asia but with a few native (some of which may be referred to other genera). With a tolerance to a much wider climatic range are the many species of both native and exotic cassias, some, for example *Cassia floribunda* from South America, encroaching as serious weeds to native forest areas.

KEY TO THE AUSTRALIAN GENERA

A. Leaves pinnate, digitate, unifoliate, or simple.

1. Leaves with a terminal leaflet (imparipinnate) or (*Labichea*) digitate, unifoliate, or simple.

Petals and sepals 5 or 4, the sepals free almost to the base. Stamens 2 or 3, the filaments very short. Pod 2-valved, flat, oblique, oblong lanceolate or linear, the funicle of the seed expanded to a globular fleshy appendage. Shrubs, tropical and temperate.

Flowers few in short axillary racemes, yellow. Ovary 2- or 3-ovuled, tapered into a short style with a small terminal stigma. Stamens 2; anthers opening in terminal pores. Colour plates, page 372.

A pantropical genus with about 9 species, a few in temperate W.A.

1. *Labichea*

Flowers solitary on axillary peduncles, yellow. Ovary many-ovuled, the style large and petaloid, forming a pouch above the ovary, 3-lobed with the middle lobe much longer and terminated by a small stigma. Stamens 3, the anthers opening in longitudinal slits; staminodes 2. Colour plate, page 376.

Three pantropical species.

2. *Petalostylis*

2. Leaves without a terminal leaflet, in a few *Cassia* reduced to phyllodes.
 - a. Anthers opening in longitudinal slits.

Leaflet-pairs 1 or few. Petals 5. Sepals 4 with 1 broader than the other 3, free almost to the base. Stamens 10 or more, the filaments filiform. Pod 2-valved, turgid, thick and fleshy, ovoid or semiorbicular, usually with 1 seed.

Flowers in axillary or lateral clusters or short racemes, small, red. Ovary 2-ovuled.

A single species of trees, *C. iripa*, confined to NE Q.

3. *Cynometra*

Leaflet-pairs single in Australian species, the leaflets with 5 or more digitate veins. Petals 5; sepals 5, valvate, united in a short or long tube. Stamens 10 or some reduced to staminodes. Pod 2-valved, flat, linear or oblong, several-seeded.

Flowers in short terminal racemes, white or red. Ovary several ovuled. Tropical trees or woody climbers.

Current research has shown that 2 distinct genera are concerned here. They are *Lysiphyllum* and *Piliostigma*.

4. *Bauhinia*

Leaflet-pairs 2 or more. Sepals 4, imbricate, united in a tube, long in *Intsia*, otherwise very short. Petals 1, the others minute or none. Stamens 8, some reduced to staminodes. Pod 2-valved, compressed, coriaceous, oblong, transversely septate between the seeds; seeds transverse, thick, arillate.

Flowers in terminal panicle racemes. Ovary many-ovuled.

A single species of tree, NE Q., *I. bijuga*.

5. *Intsia* (formerly *Azelia*)

Petals 5, narrowly linear. Stamens 15 to 10. Pod turgid, thick, ovoid, pitted; seeds 2, transverse.

Flowers in racemes from leafless branches. Ovary 2-ovuled. Leaflets glaucous on the undersurface, when young enclosed by long cartilaginous scales coarsely serrate at the apex.

A single species of tree, NE Q., *Maniltoa schefferi*.

6. *Maniltoa*

Leaflet-pairs 10-20. Petals 3, the upper 1 innermost, narrower, the lower 2 minute or scale-like. Stamens 3, united in a sheath to about the middle, with a few minute staminodes at the top of the sheath. Pod indehiscent, somewhat compressed, thick, incurved, linear or oblong, septate between the seeds.

Flowers in short loose racemes at the ends of the shoots, yellowish. Ovary several-ovuled. Tropical trees.

A single species, *T. indious*, extending from north ?? to N.T.

7. *Tamarindus*

b. Anthers opening in terminal pores or short lateral slits.

Leaflet-pairs from several to 2 or 1, sometimes replaced by phyllodes. Petals 5. Sepals 5, imbricate, united in a very short tube. Stamens usually 10, free, either all equal and perfect or some reduced to staminodes. Pod indehiscent or 2-valved, cylindrical to flat; seeds transverse.

Flowers in axillary or terminal racemes, or axillary and solitary, usually yellow. Ovary many-ovuled. Trees, shrubs or herbs.

8. *Cassia*

B. Leaves bipinnate. Stamens 10, all perfect. Sepals 5, shortly united, imbricate except in *Erythrophleum*. Petals 5, imbricate. Flowers in racemes either simple or paniculate, usually yellow. Trees, shrubs, or woody climbers, tropical.

Style with a broad peltate stigma. Prickles absent.

Ovary sessile, with 2 or more ovules. Pod indehiscent, thin or flat, not distinctly winged, oblong or lanceolate. Large trees.

One species, *P. pterocarpum*, N.T. to NE Q. Colour plate, page 369.

9. *Peltophorum*

Style with a small or truncate stigma. Branchlets often prickly.

Fruit samaroid, indehiscent, the seed-bearing part obliquely ovate or elliptic, the upper part produced as an obliquely oblong or falcate wing, 1-seeded, red.

One species, NE Q., *P. nitens*.

10. *Pterolobium*

Fruit indehiscent or finally opening in 2 valves, the upper suture bordered by a wing, flat, few or 1-seeded. Usually tall climbing shrubs. One species, NE Q., *M. brachycarpum*.

11. *Mezoneuron*

Fruit 2-valved, not winged, flat, obliquely ovate or oblong or broadly linear and falcate, sometimes with prickles, 1 or few-seeded. About 4 pantropical species.

12. *Caesalpinia*

Fruit 2-valved, not winged, flat, oblong, usually several-seeded. Sepals valvate. Petals only slightly imbricate. Flowers small, almost sessile in long cylindrical spikes forming a terminal panicle. Trees.

13. *Erythrophloeum*

The one species, *E. chlorostachyum*, is the "Black Bean" of the Kimberleys, so called because of its almost black, close-grained and extremely hard timber. Known as Ironwood.

Acknowledgement: I am grateful to the helpful comments by Mr L. Pedley recorded below clarifying a number of nomenclatural points, especially the position of *Bauhinia*—error remaining, of course, is my own.

NOTES ON CAESALPINIACEAE IN QUEENSLAND

by L. Pedley, Supervising Botanist of the Queensland Herbarium

A review of the tribe Bauhineae (H. C. D. de Wit—Reinwardti, vol. 3, pp. 388-539) recognised 7 genera, most of which had been regarded as sections or subgenera of *Bauhinia*. Of these *Piliostigma* and *Lysiphyllum* are the only ones to occur in Australia. Publication of a paper shortly will clarify the nomenclature and allow *Lysiphyllum* to be used for all five native species. One species is undescribed and two, *Bauhinia carronii* and *B. hookeri*, are to be transferred to *Lysiphyllum*.

There is only one native species of *Piliostigma*, *P. malabathricum*.

Diagnostic characters of the genera are:—

Bauhinia. Leaves bilobed. Sepals linear, the majority coherent laterally (calyx spathaceous). Stamens 1-10. Ovary long-stiped, slender, with a slender style. Stigma small.

Lysiphyllum. Leaves consisting of two free leaflets. Sepals free. Perfect stamens 10. Ovarial stipe connate with the wall of the receptacle. Style well developed. Stigma large, peltate.

Piliostigma. Leaves bilobed. Sepals free or coherent in two lobes in their upper half, all coherent in the lower half. Flowers dioecious; male flowers with 10 stamens; female flowers with ovary on a free stipe, style more or less absent, stigma large peltate.

Other northern genera in the family *Caesalpinaceae* where some confusion has occurred over nomenclature are:—

Cynometra: The Australian species is *C. iripa*, not as is often stated *C. ramiflora*, which occurs in New Guinea and the East Indies.

Mesoneuron: In a revision of Malesian *Caesalpineae* Hattink (Reinwardti vol. 9, pp. 1-69, 1974) united *Mesoneuron* with *Caesalpineae*. He transferred two Australian species, *Mesoneuron brachycarpum* and *M. schortechinii* to *Caesalpinia* but overlooked *Mesoneuron robustum* which occurs on the Atherton Tableland. The formal transfer of *Mesoneuron robustum* to *Caesalpinia* will be made in a forthcoming paper.

Tamarindus indicus is from cultivated trees and is an introduced plant.

Pterolobium does not occur in Australia. Benthham described *P. nitens* from Queensland, but evidently it is not a species of *Pterolobium*. This matter is yet to be resolved.

Intsia bijuga is the correct name of the species described by F. M. Bailey as *Atzelia australis*.

NORTHERN CAESALPINIACEAE

The Cassia Family in the Northern Territory—by Jenny Harmer

A large family confined mainly to tropical and sub-tropical areas of the world; there are 152 genera and about 2,800 species. Most species are trees or shrubs, a few are herbs.

LEAVES: Usually alternate, pinnate or bipinnate, leaflets one to many pairs; leaves rarely simple or one-foliate; stipules present or absent.

FLOWERS: Inflorescence racemose or paniculate, axillary, terminal or rarely leaf-opposed; flowers usually zygomorphic, mostly bisexual, some large and showy, others very small. Sepals 5, or 4 by the union of 2, free or partly united, imbricate or rarely valvate, often much reduced when the bracteoles are large and calyx-like. Petals 5 or fewer, rarely absent, variously imbricate. Stamens 10 or fewer, free to variously connate; anthers various; extra staminal disc sometimes present. Ovary free or sometimes the stipe fused to the calyx tube; style single, undivided; ovules one to many.

FRUIT: A legume, or indehiscent pod, often winged; seeds with copious, thin or no endosperm and large embryo.

NATIVE OR INTRODUCED

There are a number of plants in this family that have been introduced in recent times by various means, and hence are not regarded as native to Australia. To resolve confusion and assist in identification of plants in the territory brief mention of them has been made in the following notes.

BAUHINIA

A genus of trees, shrubs and vines with showy flowers and occurring in the tropical regions of the world.

LEAVES: Broad, entire or two-lobed, sometimes the leaflets being entirely free; the leaf-stalk prolonged into a short but characteristic awn between the leaflets.

FLOWERS: In simple or paniced terminal or axillary racemes. Petals 5, somewhat unequal, usually clawed. Stamens 10, but sometimes reduced even to 3 and perhaps bearing sterile filaments. Ovary stalked, stigma in some species peltate and in others oblique.

FRUIT: A long flat pod, dehiscent or indehiscent. Only one of the 300 species occurs in the Northern Territory:—

B. hookeri

A spreading shrub or tree growing at the landward edge of tidal swamps or on stabilised coastal sand above the high tide level. The paired leaflets are quite separate, broadly ovate or obovate, 2.5-5 cm long and with 5-7 fine veins. The flowers are borne in short terminal racemes; the petals, 3.5 cm long, are white; the 10 red stamens are slightly longer than the petals. The pods are flat, 12-16 cm long and 2.5-3.5 cm broad.

CAESALPINIA

About 100 species of tropical and subtropical trees and shrubs, often with showy flowers.

LEAVES: Bipinnate.

FLOWERS: In racemes, either single in the upper axils or forming terminal panicles. Calyx with short tube and 5 imbricated lobes, the lowest one concave and larger. Petals 5, clawed, usually orbicular or obovate and nearly equal. Stamens 10, curved. Ovary sessile with 2 or more ovules and a slender elongated style.

FRUIT: An ovate to lanceolate pod, usually flattened, often indehiscent.

One species occurs in the Northern Territory:

Caesalpinia bonduc

A shrub with loose spreading or climbing branches growing in coastal monsoon forests. The branches and leaves are armed with numerous hooked

prickles. The leaflets are oblong, 2-4 cm long. The flowering spikes, 10-15 cm long, are produced in the upper leaf axils and are sometimes branched; the individual yellow flowers are about 1 cm long. The pods, 5-8 cm long and about 4 cm wide, are covered with thick, stiff prickles. The large seeds are a grey-blue colour and are very hard. The species is pantropic.

CASSIA

500-600 species of trees, shrubs or herbs occurring in tropical and warm temperate regions of the world.

LEAVES: Paripinnate with one to many pairs of leaflets or sometimes reduced to phyllodes; petiolar glands often present; stipules present.

FLOWERS: In axillary or terminal racemes, terminal panicles or axillary and sub-solitary. Sepals 5, unequal, imbricate. Petals 5, spreading, nearly equal or the lower outer one larger. Stamens usually 10, rarely 5 but much modified, and 10, 7 or 6 may be fertile with the upper 3 and the lowest one reduced to staminodes; filaments rarely all equal; fertile anthers opening by pores or slits. Ovary usually curved and with few to many ovules; the stigma obliquely terminal, small.

FRUIT: Pod variable, cylindrical woody and indehiscent, or cylindrical or flattened and two-valved, or flattened and elastically dehiscent. Seeds usually obovate, sometimes oblong, albuminous.

Cassia absus

A viscid herb or subshrub found in gravelly soils. Leaflets in 2 pairs 1-2.5 cm by 0.8-1.5 cm, thin, obovate, unequal sided. Inflorescence a raceme 2-8 cm long, solitary axillary flowers also occurring; sepals oblong obovate, blunt, bristly; petals yellow with red base, 5-7 mm long, glabrous; stamens 5, all fertile; ovules 6-8. Pod 2-4 cm long, 0.5-0.6 cm wide, flat, viscid-hispid, elastically dehiscent; seeds shining black, flattish.

Cassia alata

An erect shrub or small tree growing at the edges of rainforests or other damp situations. The leaves, to 60 cm long, consist of 10-20 pairs of leaflets which are 6-12 cm long by 4-6 cm wide, oblong, oblong-obovate unequal sided, bright green above paler below. Inflorescence an erect, axillary raceme 30-60 cm long; sepals unequal, oblong-oval; petals 1.5-2 cm long, obovate-oval, golden yellow; stamens 10, very unequal, the uppermost 3 greatly reduced and infertile; ovules 60-70. Pod minutely pubescent or glabrous, 15 cm long, stiff, straight with prominent wings. A native to tropical South America this species has become naturalised in the Northern Territory and Queensland.

Cassia costata

A shrub 1-2 m high or rarely a small tree. Leaves 4-6 cm long, glaucous, with 4-6 pairs of leaflets which are 2-4 cm long, 0.4-0.6 cm wide, oblong-elliptic. Inflorescence a condensed, subumbellate, axillary raceme of 2-6 flowers; sepals 4-5 mm, unequal, broadly ovate; petals 7-10 mm long, yellow; 10 fertile stamens. Pod 7-8 cm long by 0.7-0.9 cm wide, curved to nearly half a circle, the margin broadly crenate, a bright golden yellow, it dries to a rich brown; up to 20 plump, shiny black seeds.

Cassia harneyi

An annual or perennial herb growing in sandy soils or amongst sandstone rocks. The leaves, 5-9 cm long, have 5-14 pairs of leaflets which are 1.6-2.4 cm long and 0.4-0.5 cm wide, oblanceolate mucronate, slightly hairy. Flowers axillary, solitary or 2 or 3 together; sepals obtuse, 3 mm long; petals yellow, 4 mm long; stamens 8-10, anthers all perfect. Pod 2.5-3.5 cm long by 0.4-0.5 cm wide, oblong, finely hairy and containing 5-9 oblong seeds.

Cassia leptoclada

A slender, glabrous and very glaucous shrub growing in sandy soils. Two pairs of leaflets, the upper pair 1.3-3 cm long by 0.7-1.5 cm wide, the lower pair smaller or absent. Flowers produced in the upper axils, 2 or 3 together; sepals obtuse, unequal 4-5 mm long; petals 8-10 mm long, obovate-

oval, deep yellow; stamens 10, all fertile, more or less equal. Pod flat, glabrous, either 1-seeded and nearly orbicular 1 cm diameter, or 2-seeded and 1.5 cm by 1 cm.

Cassia magnifolia

An erect, straggly shrub 1-4 m high with thick spreading stems. Leaves 10-30 cm long with 3-8 pairs of leaflets which are ovate or orbicular-ovate, 3-8.5 cm long, 2-5.5 cm wide, glabrous with prominent veins. Flowers numerous in erect axillary racemes 35-40 cm long, sepals obovate, 1 cm long; petals obovate 0.8-1 cm long, yellow; stamens 10, 3 of which are sterile; ovules 7-15. Pod flat, dark when mature, 8-9 cm long, 1.5-2 cm wide with 10-12 oblong obovate, rough, dull black seeds.

Cassia mimosoides

A slender herb or short-lived shrub often growing in bare areas. Leaves 3-8 cm long with 30-80 pairs of leaflets which are almost rhombic, 3-5 mm long and 0.5-1 mm wide. Inflorescence a single flowered raceme, solitary or in group of 2-3 in the leaf axils; sepals lanceolate, 5-8 mm long; petals obovate, yellow 6-10 mm long; stamens 10 or fewer; ovules 15-30. Pod 3-4 cm long and 0.4 cm wide, thin, flat, elastically dehiscent with 10-14 smooth, flat, brown seeds.

Cassia notabilis

A small shrub or short-lived perennial, the leaves and stems covered with soft hairs. Leaves 10-15 cm long with 6-13 pairs of sessile, ovate-lanceolate leaflets, 2.5 cm long by 1 cm wide. Flowers in erect terminal and axillary racemes; sepals oblong, 5-6 mm; petals obovate, yellow, 6 mm long; stamens 10, 3 sterile; ovules about 7. Pod flat 2.5-3.5 cm long and 1.3 cm wide, blackish-brown with paler edges and raised ridges over the seeds.

Cassia obtusifolia

A herb or small shrub growing as a weed in open or disturbed areas. Leaves 5-10 cm long with 3 pairs of obovate, obtuse leaflets; the lower leaflets 1-3 cm by 0.5-2 cm and the upper ones 3-6 cm by 1.5-3 cm, dull and pubescent below, glabrous and greener above with paler, hairy margins. The inflorescences are few flowered and arise from the upper leaf axils; sepals unequal, oval to narrow ovate, 3-7 mm long, petals unequal, yellow, 7-10 mm long; stamens unequal, 7 fertile, the upper 3 reduced to staminodes. Pod 15 cm long, 0.5 cm wide, subtetragonous, curved, dehiscent with at least 30 rhomboidal, glossy, dark olive-green seeds. This species, probably a native of tropical America, has become a pantropic weed.

Cassia occidentalis

An annual or short-lived shrub growing as a weed in open or disturbed areas. 3-5 pairs of leaflets 3-7 cm long and 2-3 cm wide, ovate-elliptic, acuminate. Inflorescence a short raceme of 2-4 flowers in a terminal panicle or in the upper leaf axils; sepals unequal 5-10 mm long, obovate; petals 10-15 mm long, yellow, obovate; stamens 10, 6 fertile, the upper 3 very reduced. Pod 10-12.5 cm long, 0.8-1 cm wide, somewhat flattened, straight or slightly curved, the margins pale; 40-55 obovate, dull grey-brown seeds. This species has spread as a pantropic weed but is believed to have come from tropical America.

Cassia oligoclada

A small, densely pubescent subshrub with erect, angular branches growing in sandy soils. Leaves 1-5 cm long with 1 (rarely) to 3 pairs of oblong-ob lanceolate or oblong-elliptic leaflets, 0.5-2 cm long and 0.15-1 cm wide. Inflorescence an umbel of 2-5 flowers in the upper axils; sepals unequal, obovate, 2-3 mm long; petals unequal, obovate or almost circular, yellow, 5-8 mm long; stamens 10, 8 or 7, all fertile. Pod 2-4 cm long and 0.7-1 cm wide, oblong, flat, slightly curved and containing 4-7 obcordate, almost black seeds.

Cassia planitiicola

A herb or short-lived shrub. Leaves 5-15 cm long with 4-6 pairs ovate leaflets, 1.5-6 cm long by 0.8-2 cm wide, green above paler below. Inflorescence an axillary or terminal, corymbose raceme with 2-4 flowers; sepals unequal, 4-8 mm, rounded; petals unequal, obovate-oval, yellow to pale yellow, 8-10 mm long; stamens 10, the upper 3 and usually the lowest one sterile. Pod 6-8 cm long by 1 cm wide, almost cylindrical, straight or curved; seeds flattish, dull olive-brown.

Cassia pruinosa

A straggly shrub, young parts often whitish, growing on rocky outcrops and slopes. Leaves 5-10 cm long with 3-7 pairs of oblong-elliptic, pruinose leaflets 10-15 mm long, 3-6 mm wide. Inflorescence subracemose or umbellate, axillary with 4-6 showy flowers; sepals oval, unequal, 3-5 mm long; petals yellow, oval 12 by 8 mm; 10 fertile stamens; ovules 15-18. Pod flat, 3-6 cm long, 1 cm wide; seeds thick, flattish, dark greenish-brown.

Cassia pumila

A subshrub with a woody base growing on a variety of soils. Leaves 0.8-1 cm long with 10-15 closely arranged, linear oblong pairs of leaflets, 4-7 by 1 mm. Inflorescence a single flowered raceme in the upper axils; sepals linear lanceolate 5-6 mm long; petals ovate-orbicular, 8-9 mm long, yellow; stamens 5, nearly equal; about 8 ovules. Pod flat, elastically dehiscent, 2-2.5 cm long, 0.4 cm wide and containing 8-10 smooth, dark rhomboid seeds.

Cassia surattensis

Shrub or small tree. Leaves 15 cm long with up to 7 pairs ovate to ovate-oblong leaflets, green and glabrous above, glaucous and sparsely pubescent below, 2-5 cm long, 1-2 cm wide. Inflorescence a condensed raceme arising from the upper leaf axils; sepals ovate-orbicular, 5-8 mm long; petals obovate, yellow, 10-15 mm long; 10 fertile stamens; ovules about 25. Pod flat, nearly straight, 10 cm long, 1 cm wide; seeds glossy black.

Cassia timoriensis

An erect or straggly shrub. Leaves 4-10 cm long with 13-19 pairs narrow oblong leaflets pubescent with golden hairs, 1.9-3.3 cm long, 0.5-1.2 mm wide. Inflorescence in racemes in the upper axils and loose terminal panicles; sepals oval, unequal, 6-7 mm long; petals obovate 7-10 mm long; stamens 10, the lower 7 fertile. Pod flat, straight, shiny rich dark brown, 7.5-9 cm long, 0.9-1.2 cm wide and containing 10-20 obovate, flattish seeds.

Cassia tora

A shrub or subshrub with light coloured stems. Leaflets in 2-3 pairs, obovate, obtuse 2-4 cm long, 1-2 cm wide, finely pubescent or becoming glabrous. Inflorescence a short raceme of 1-2 flowers from the upper leaf axils; sepals narrowly ovate, 5 mm long; petals unequal, narrowly ovate, yellow, 5-8 mm long; 7 fertile stamens, the other 3 reduced or absent. Pod 10-15 cm long, 0.4-0.6 cm wide, somewhat tetragonous with prominent sutural ridges and 20-30 rhomboidal glossy seeds. Introduced from Asia

Cassia venusta

A shrub with ribbed, softly pubescent stems. Leaves 10-25 cm long with 6-15 pairs oblong leaflets, 2.5-4 cm long, 1.3-1.9 cm wide. Flowers numerous on long terminal and axillary racemes; sepals boat-shaped, 10 mm long; petals obovate, yellow, 10 mm long; stamens 10, 7 fertile; ovules about 9. Pod flat, light brown, 4-5 cm long, 1-1.4 cm wide with transverse ridges above the seeds and a longitudinal ridge between the transverse ridges; seeds obcordate, thick, dark, dull. Colour plate on page 384.

PARKINSONIA—Introduced Species from America and Africa*Parkinsonia aculeata*

Small tree 3-4 m high growing along creekbanks, around dams and along roadsides. Introduced to northern Australia, it has become naturalized and has since been declared a noxious weed.

PELTOPHORUM

Twelve species of tall, hard-wooded tropical trees, one of which occurs in north Australia.



Photography by Jenny Harmer

A young tree of *Peltophorum pterocarpum* flowering profusely in a Darwin street. The bipinnate leaves and bright yellow flowers are shown in inserts.

LEAVES: Bipinnate; leaflets small and numerous, opposite.

FLOWERS: In terminal panicles of racemes. Sepals 5, united in a cup at the base, imbricate, nearly equal. Petals 5, orbicular, spreading, slightly unequal. Stamens 10, free; anthers uniform, oblong-linear. Ovary sessile with 2 or more ovules; style filiform with a broad peltate stigma.

FRUIT: Pod oblong-lanceolate, thin and flat, indehiscent, tapering at the base, with a thin vein along the margins; seeds flat.

Peltophorum pterocarpum

A large deciduous tree which occurs on the coastal plains in clay soils, sometimes around lagoons and swamps or along rivers, and also on coastal sand dunes in rainforests. The young branches and inflorescences are covered in soft rust-coloured hairs; the bark is light grey. The leaflets, 1-2 cm long, are dark green and shiny above, and paler with rusty hairs below. The brilliant yellow flowers, about 4 cm across, are produced in terminal panicles 30-45 cm long. The pods are 8-10 cm long and 2.5 cm broad and contain 1-5 flat, yellowish, hard seeds. In Asia, the trees are sometimes grown for shade in coffee plantations and the bark yields a yellow-brown dye which is used in the batik industry.

PILIOSTIGMA

Three species of trees or shrubs, one species occurring in the Northern Territory.

LEAVES: Bilobed.

FLOWERS: In racemes, separate male and female flowers. Calyx lobed or dentate in the upper half. Petals 5. Male flowers with 10 perfect stamens; filaments free; anthers broad. Female flower ovary on a free stipe; style thick, not well-developed; stigma large, peltate; staminodes 10, minute.

FRUIT: Pod large, strap-shaped, indehiscent. Seeds embedded in pulp.

Piliostigma malabathricum

Small tree growing on rocky slopes. Leaves wider than long, 3.5-12 cm by 5-16 cm, bilobed to a quarter of their length; glabrous above, hairy and dull glaucous beneath. Flowers pale yellow, racemes 2-5 cm long; calyx 15-18 mm long, densely hairy; petals 12-20 mm long, dorsally hairy. Male flowers with 10 stamens and a linear rudimentary pistil. Female flowers with 10 minute staminodes; ovary borne on a free stalk, densely hairy; stigma broad, lobed. Pod linear, often curved, rather thick, 17.5-35 cm long, 2-2.5 cm wide; 10-30 albuminous seeds.

LYSIPHYLLUM

Seven species of small trees, shrubs and climbers with one species occurring in the Northern Territory.

LEAVES: Two free leaflets.

FLOWERS: In corymbose racemes. Receptacle narrow, tubular. Calyx lobed from the receptacle; sepals coherent in lobes. Fertile stamens 10; anthers elliptic. Ovary stipe connate with wall of receptacle; style slender; stigma peltate.

FRUIT: Indehiscent pod.

Lysiphyllum cunninghamii

A tree to about 7m high, growing in clayey soil on open plains or sandy soil near rocky slopes. The leaflets are 2-4 cm long and more than half as broad, with 5-7 fine veins. Flowers red, velvety; petals 5, somewhat unequal, about 1.5 cm long. Stamens 10, longer than the petals. Ovary with 8-10 ovules; stigma large. Pod very flat and thin, about 15 cm long and 5 cm broad or shorter, according to the number of seeds ripened.

TAMARINDUS A single tropical species, *T. indicus*

A native of Africa and Asia, it is an historically recent introduction to the north Australian coast (probably by the Macassans), where it has become established but not widespread. A large, hard-wooded tree with a spreading crown.

ERYTHROPHLEUM

17 species of trees occurring in the tropical parts of Africa and Asia with a single species in Australia.

LEAVES: Bipinnate.

FLOWERS: Small, almost sessile in long cylindrical spikes forming a terminal panicle. Calyx 5-lobed. Petals 5, small, very slightly imbricate. Stamens 10, longer than the petals. Ovary stipitate, with several ovules.

FRUIT: An oblong pod, flat, coriaceous and 2-valved. Seeds ovate, compressed.

Erythrophleum chlorostachys

A tree sometimes growing to 12 m high but usually smaller, it is found in open eucalypt forests, woodlands and monsoon forests. The bark is dark grey to almost black and rough; the wood is very hard, hence the common name, Ironwood Tree. The broad leaflets are arranged alternately and are 2.5-5 cm long. The cream flowers are produced densely in spikes 2.5-8 cm long. The flat pods are 10-15 cm long and 2.5-4 cm broad. All parts of this tree are poisonous and many stock fatalities have occurred after animals have eaten as little as 50 g of the plant.

LABICHEA

Eight species of shrubs and subshrubs confined to the Australian continent with one species in the Northern Territory.

LEAVES: Unequally pinnate; or digitate with 3 or 5 leaflets; or reduced to a single terminal leaflet.

FLOWERS: Few together in short loose axillary racemes. Sepals 4 or 5, much imbricated, somewhat unequal. Petals spreading, as many as the sepals, nearly equal. Stamens 2, filaments very short, anthers oblong-linear. Ovary sessile or shortly stipitate, with 2 or rarely 3 ovules.

FRUIT: Oblong or lanceolate, flat pod. Seeds obovate or oblong with a hard, shining coat.

Labichea nitida

A rigid shrub with divaricate, slightly pubescent branches growing in rocky situations. Leaflets, usually 5, pungent pointed, the central one 1.5-3 cm long, the lateral ones smaller. The yellow flowers have 5 sepals and 5 petals; the ovary has 3 ovules.

THE GENUS LABICHEA

These shrubs are particularly easy to grow. Will readers provide details of the following shrubs? Characteristics of the genus are given in the key to the whole family on page 362.

Labichea cassioides. Shrub to ½ metre, with hairy spines on stems and on leaflets of compound leaves.

Labichea eremaea. Low, rigid shrub—colour plate on page 372.

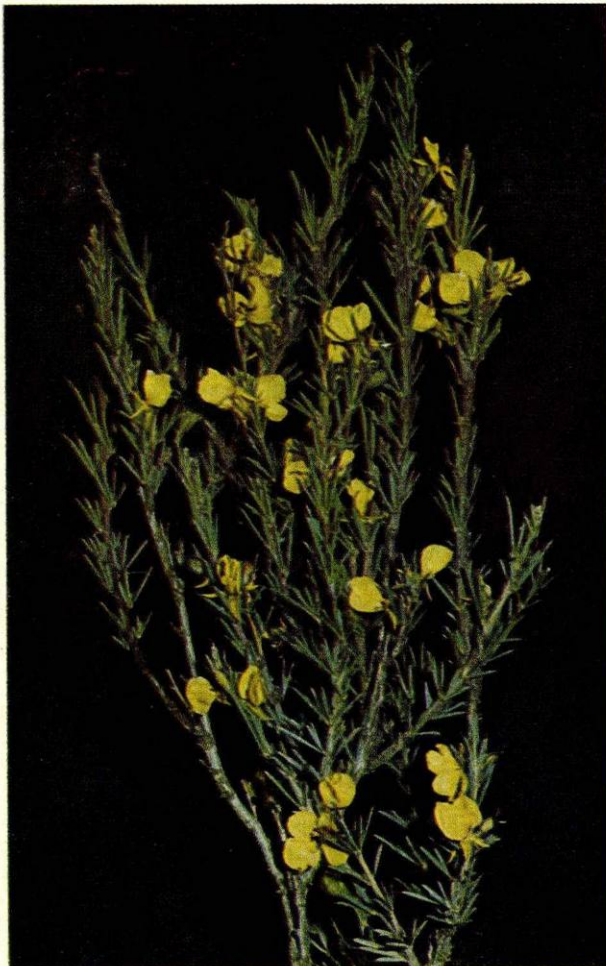
Labichea lanceolata. A shrub to 1½ metres—colour plate on page 372.

Labichea punctata. A beautiful shrub shown in colour on page 373.

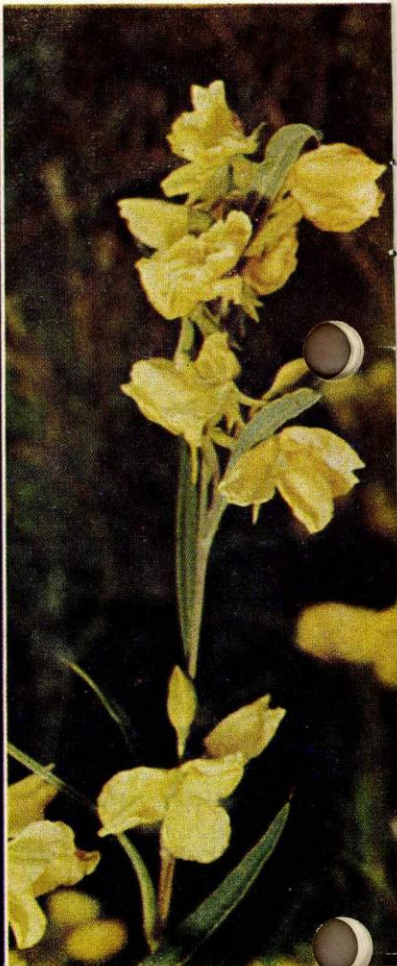
Labichea teretifolia. A densely branched shrub to one metre.

Labichea ?...?...? We are missing names and details of two species.

EDITOR'S NOTE: I hope the author and readers will excuse me for including the above genera out of alphabetical sequence. One reason is to get the description of *Peltophorum* to coincide with a colour page position. Another is to draw attention to *Erythrophleum* and a request for someone to obtain colour slides of this tree and a flower close-up. I hope competent photographers will assist with slides of northern and rainforest flora. I was able to obtain slides of three western species of *Labichea* as shown over the page.



Photography by F. W. Humphreys



Caption by Magda Wittwer

LEFT: *Labichea lanceolata* grows in the Darling Ranges, in the Irwin and Avon Districts and over to Ravensthorpe and to Mt. Rugged. To about 1.20 m high, the shrub has pungent pointed fresh green leaves. The yellow flowers are marked with a broad burgundy red spot at the throat. It grows well in the Kings Park sands.

RIGHT: *Labichea eremaea*. A beautiful shrub when in flower. The leaves are needle-like and very sharp. The shrub, to 80 cm, is much branched and dense. It occurs N.E. of Geraldton in the Yuna Reserve on sandy loams and is also found further east. It does not do well in Perth in cultivation.



Photography by E. Crane

LABICHEA PUNCTATA

A compact undershrub, to 45 cm, it grows on the Darling Range in gravelly soils in the Irwin District and further south. The five-petaled flowers are a pure yellow. The leaves are simple without prominent points. It grows well in Kings Park but is more successful in heavier soils.

NORTH QUEENSLAND CAESALPINIACEAE

C.S.I.R.O., Division of Forest Research, Atherton, Qld

These notes are based on a limited collection of specimens held in the herbarium of the Queensland Regional Station of the Division of Forest Research.

Some *Caesalpinieae* that occur in North Queensland. These plants are more adequately described by other authors in this issue and the reference to these will be brief.

CASSIA—Northern Species:

Cassia absus L. Herb 40 cms high collected in Irvinebank, Mt Molloy and Hodgkinson River areas.

Cassia brewsteri F. Muell. Recorded from open forest as a small tree to 8 m high near Sarina-Marlborough road and to the west of Townsville.

Cassia magnifolia F. Muell. Collections from Georgetown, Mungana and Chillagoe areas. Shrub up to 5 ft high with heads of bright yellow flowers each about 3 cms across.

Cassia mimosoides L. Collections from Cairns, Atherton Tablelands and adjacent areas. Generally an erect herb to 1 m high with bright yellow flowers.

Cassia planiticola Domin. Shrub 2 m high in savanna along Gilbert River near Georgetown.

Cassia pumila Lam. Small herb to 30 cms high with yellow flowers found near Mt Garnet and on the Lappa Range.

Cassia queenslandica C. T. White. Medium sized tree usually found on rainforest margins between Cairns and Cooktown.

Cassia retusa Vogel. Collected in shrubland situations from near Mackay, Charters Towers and Mt Garnet. Generally 2 to 3 m high with yellow flowers.

Cassia timorensis DC. Small tree to 3 m with pale to golden yellow flowers. Collected near the southern shore of the Gulf of Carpentaria.

Cassia venusta F. Muell. Shrub to 2 m high collected near the southern shores of the Gulf of Carpentaria. Colour plate on page 384.

All these *Cassia* species are native, at least in the sense that they were growing in Australia at the time Europeans first arrived.

CYNOMETRA IRIPA Kostel:

A small tree or scrambler from the upper mangrove edge. Specimen from the Cairns, Mossman and Weipa areas. There is quite a good description in Australian Plants, Issue No. 49, page 227, dealing with plants of the mangroves, where it is incorrectly called *C. ramiflora*.

CAESALPINIA:

Caesalpinia bonduc (L.) Roxb. Heavily armed scrambling shrub generally near beaches from Cape Hillsborough across the north of Australia and extending into S.E. Asia.

Caesalpinia brachycarpum (Benth.) Rattink (see Rattink in Reinwardtia 9:53). One record of this prickly scrambler from near Mossman.

Caesalpinia scortechinii (F. Muell.) Hatlink. A prickly canopy level vine in rainforest at Iron Range. Yellow flowers.

Caesalpinia cristal. A small tree or scrambler in the Cairns-North Johnstone area. Stem and petioles armed. Yellow flowers.

MEZONEVRON:

Mezoneuron robustum C. T. White. Prickly vine in rainforest near Malanda. Its red seeds were used by aborigines for beads.

INTSIA BIJUGA (Colebr.) O.K.:

Formerly known as *Azelia australis* Benth. Often a large tree near the sea. Collected near Mossman, Gove and on the Torres Strait Islands. Extending into S.E. Asia.

MANILTOA SCHEFFERI K. Sch.:

A medium sized tree in rainforest at Iron Range. Also known from New Guinea, the Solomons and some of the Indonesian Islands. Flowers white to 2 cms across. Leaves in the pendulous new growth flush light pink to cream. A very attractive species.

PHOTOGRAPHERS

If you are a competent photographer then please make a special effort for me (Editor) this season. If you will write to me first, enclosing samples of your work, I will pay in advance for your film. We desperately need colour slides of the following:—

Prostanthera—Mint bushes. We are finalising a book on these lovely plants by George Althofer. We desperately need good colour slides or prints of all species. I am hoping the respect for this very fine gentleman will stir some of you on to extra special efforts this season to photograph every species you can find.

Grevillea—We need good slides of all species, especially the Poorinda and Clearview hybrids.

Everlastings—*Helipterum* and *Helichrysum*. We are finalising a book on these fascinating plants. Please help with slides.

Rain Forest Flora—With your help we are hoping for a colour study of these interesting plants. There must be many Queensland readers who can help.

Malvaceae—Hibiscus-like flowers. Help us prepare a beautiful issue on these by taking photographs for us.

Rutaceae—especially *Eriostemon* and *Phebalium*. There must be many competent photographers who can help!

THE GENUS PETALOSTYLIS

by Fred Lullfitz

These plants like an open sunny position. In spite of their heavy seeding habits they will never be a problem. They have hard seeds which need soaking to germinate. Warm water overnight will set them off and the time to plant is spring.

There are only two species recorded for this genus.

Petalostylis millefolium is a semi-prostrate shrub with finer foliage than the plant shown in colour on the next page, as indicated by the name. It carries many flowers over a long period and is well worth a trial in your garden. It is found naturally on the red sands of the desert and semi-desert areas of Comet Vale. It does not perform well on the Perth sands but grows well on the heavier soils of the Darling Ranges. However, it does not live long, probably because of the higher rainfall.

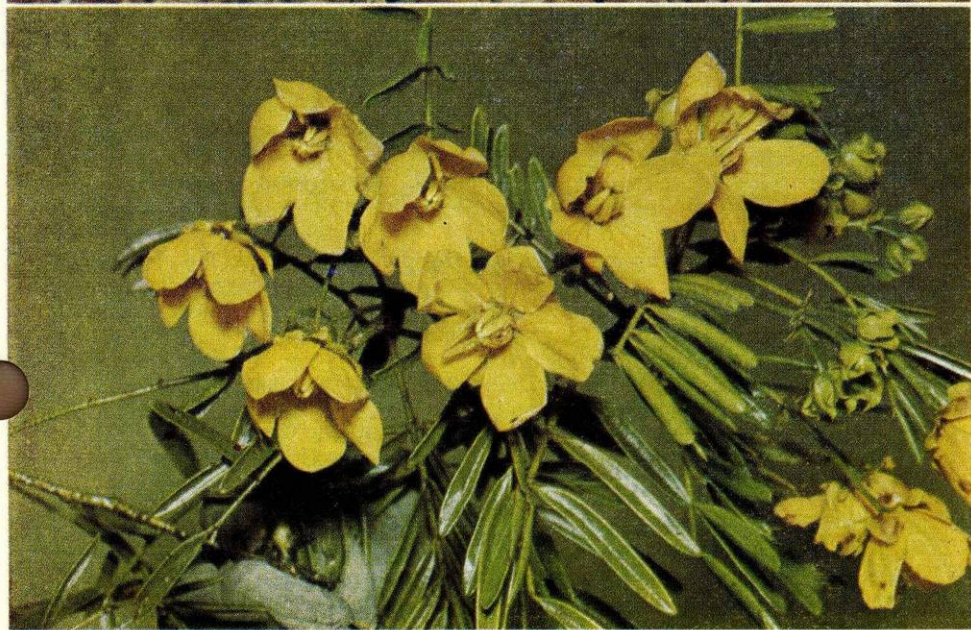
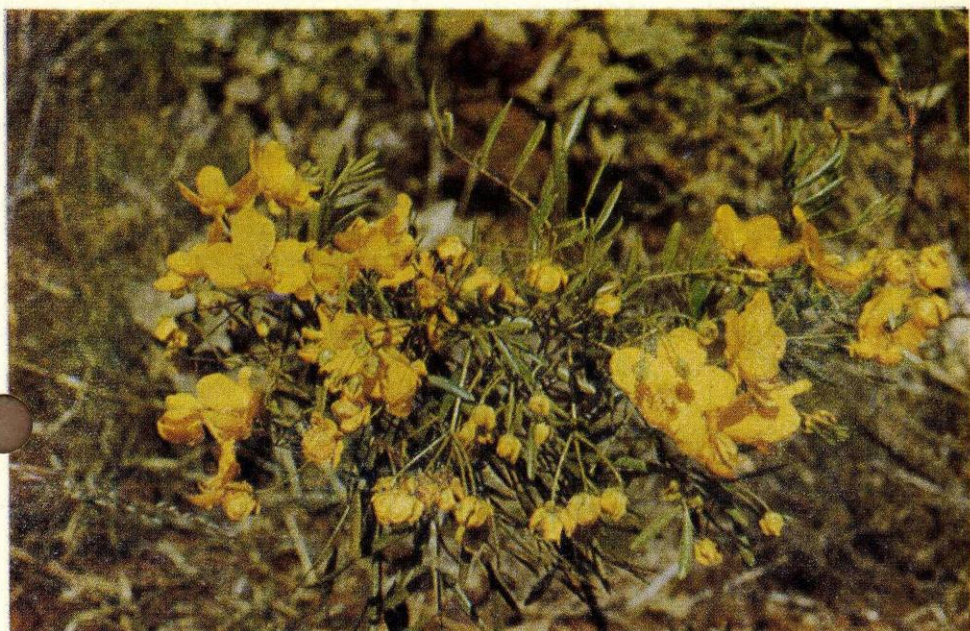
Petalostylis labicheoides, as the name implies, has flowers like the *Labichea*. They are Cassia-like, usually with a pink throat, and have a long flowering season. The leaves are a fresh green, pinnate and attractive when not in flower. It is a shrub to 1½ metres high and 2 metres diameter. It does well in the yellow sand of metropolitan Perth.



Photography by H. A. Morrison

PETALOSTYLIS LABICHEOIDES

Petalostylis have five petals, of which not all are equal. The leaves have a terminal leaflet. The distinctive feature of these plants is the flattened stigma of the flower.



Photography by O. Hockings (top) and H. A. Morrison (bottom)

Cassia glutinosa*—Section *Psilorhegma

The only Australian species of *Cassia* with sticky leaves; this is usually enough to identify it. The leaves are shiny and green, while those of *Cassia pruinosa*, a very similar plant, have white and powdery surfaces. Hybrids are known between these two species.

Leaflet shape in *C. glutinosa* resembles that of *C. chatelainiana* shown in colour on page 343, but there are no stalked glands.

CASSIA IN SOUTH AUSTRALIA

Notes on distribution and cultivation in South Australia

by T. R. N. Lothian, Director, Botanic Garden, Adelaide, South Australia

Species found in South Australia:

- C. artemisioides* ("Silver" or "Dense Cassia" and "Puntee"). Principally in the northern and western sections of the State — Tarcoola, Nullarbor, Mt. Parry, west of Leigh Creek, and the Birksgate Range in the far north.
- C. desolata* v. *planipes*. In the north-eastern section of the State, particularly from Cordillo Downs and Inamincka.
- C. glutinosa*. This is limited to the far north-west of the State at Mt. Davies in the Tomkinson Range. See colour plate on page 377.
- C. helmsii*. Found principally in the northern arid regions around Lake Eyre, in the Everard Ranges and Mount Lyndhurst. Colour plate, page 345.
- C. nemophila*. This is extremely wide-spread and Symon in his treatment of genus in the Transactions of the Royal Society of South Australia (1966) lists four varieties as follows:
 - v. *nemophila*: Blinman, Ooldea Siding, Gawler and Winulta.
 - v. *platypoda*: Ooldea, Emu Field and between Lakes Everard and Gairdner.
 - v. *zygophylla*: Cordillo Downs, Pedirka (north-east of Lake Eyre) and the Frome.
 - v. *coriacea*: Enfield, which is a suburb to the north of Adelaide, Kimba, Koonamore and Mt. Lyndhurst.
- C. oligophylla*. Principally through the north-east of the State (Lake Eyre, Mt. Lyndhurst), but also to the west on Emu Field 300 miles north-west of Woomera. See colour plate, page 344.
- Cassia planiticola* ("Yellow Pea" and "Arsenic Bush"). This is recorded from the arid regions of the State and collections have been made in the Everard Ranges (north-west), Wantapilla Swamp, Pernalty Station near Port Augusta, and west of Lake Eyre.
- C. phyllodinea* ("Silver Cassia"). Comparatively wide-spread from the head of Spencers Gulf through Mt. Lyndhurst to Cordillo Downs, also Evelyn Downs Station.
- C. pleurocarpa* v. *pleurocarpa*. This is wide-spread throughout the northern and western areas of South Australia with specimens being recorded from Coopers Creek, Cordillo Downs, south-east of Kingoonya (between Lake Everard and Lake Gairdner), and SW of Musgrave Ranges. Plate, page 352.
- C. pruinosa*. Mt. Lyndhurst, Mt. Distance, Pedirka.
- C. sturtii*. Wide-spread through many regions and specimens have been recorded from Chambers Gorge, Mt. Lyndhurst, the Flinders Ranges and Arkaringa. See colour plate and comments on page 340.

CULTURAL REQUIREMENTS

Because most of the species come from arid regions, although they will tolerate some frost, providing the soil and conditions generally are dry, they normally require an extremely warm well-drained position. Of the species listed, *C. nemophila* and its varieties will tolerate winter rainfall. The others, however, will last for a few years under winter rainfall regime but ultimately collapse.

Also, little watering is required in the summer months and this is usually more lethal to the abovementioned species than winter rainfall. This group of *Cassias* must therefore be separated from any collection of Australian plants unless the whole group is treated as arid area plants, i.e. give a little water at very infrequent intervals.

SPRING-TO-AUTUMN GOLD

A Series for the Young In Spirit by NURI MASS

When Cassias first appeared on earth they lived only in the hot, moist tropics. But plants don't usually "stay put" any more than humans do. In their quiet, gradual way they venture out in this and that direction, exploring, getting the feel of different environments—and often liking these strange new places so much that they become permanent settlers there, as though they had never lived anywhere else.

So perhaps it isn't as odd as it might seem that Cassias can now be found growing happily not only in the tropics but also in dry, almost desert-like parts, and even in cooler ones, although as yet they haven't ventured as far south as Tasmania. Perhaps they need another few centuries for that.

And of course, as they've moved around from moist to dry and from hot to cool places, they have had to change themselves in several important ways, otherwise they'd never have been able to survive. Indeed, this is always the way with plants—so different from humans, who can live quite comfortably in a cold country today and in a hot one tomorrow merely by changing their clothes.

Way up in tropical Queensland there are luxurious, tall-tree Cassias, often with hanging clusters of golden or reddish—and sometimes beautifully fragrant blooms. In cooler, or in drier places, one would never see such a thing—rather, Cassias in all shapes and sizes of shrubs: upright, straggly, sprawling, thin, flat-topped, rounded, sometimes really large, and other times so small as to look more like herbs.

Again, several of the Cassias that moved into arid country found that they could live there only by dispensing with their leaves and growing false ones (or phyllodes) instead. This is because plants normally lose a great deal of moisture out into the atmosphere through tiny pores on the undersides of their leaves. So, in hot dry places by cutting down on their leaves and flattening out some of their stems to look like leaves instead, they cleverly save themselves from dying of thirst.

Many other Australian plants do this same thing, including some of our Wattles. And Wattles happen to be extremely close relatives of Cassias—just as all the Pea-plants are.

At first glance, and looking only at their flowers, you might never guess that these three large groups of plants were related at all. But then you notice that all of them have pods or legumes for seed-boxes. Also, they can all produce special little nodules on their roots, which greatly enrich the soil by adding nitrogen to it. And their flower parts tend to come to fives and tens. And so on. Yet, on the other hand, nobody could ever mistake a Cassia flower for that of a Wattle or a Pea-plant, for its five roundish petals are always arranged in a sort of goblet shape, giving it quite a "blossomy" look—except for the fact that we usually think of blossoms as white or pink, whilst Cassias are always a lovely shade of yellow, bright and sunshiny.

Then, if you look more closely at a Cassia flower, you notice something rather odd about its stamens. There are ten of these, but they come in different lengths—and a few of them, for some strange reason, don't produce pollen. So, since pollen is the main reason for a stamen's existence, these ones without pollen are known as make-believe stamens (or staminodes).

But, apart from its beautiful golden-yellow colour, perhaps the most noticeable thing about a typical Cassia flower is the large green hook curving out from its centre. This, of course, is its pistil and seed-bearer, which will

soon be growing much larger into a long brown pod, as the seeds inside it ripen.

Altogether, then, there could be no mistaking a *Cassia* plant when it is out in flower. But what about in winter-time, when it isn't? Could we always recognise it by its leaves? That might be a bit harder, for the leaves of *Cassias* differ very much indeed from species to species. They can be large and flat, or divided into leaflets. They are sometimes smooth and other times slightly hairy or actually woolly. And, of course, there are those cases where they aren't leaves at all, but phyllodes.

Cassias, by reason of their beauty alone, are real treasures on the face of our earth. But as well as being lovely to look at, numbers of them also have medicinal value, mainly in their pods or leaves. *Senna*, for instance, comes from the leaves of a species native to South Africa (*C. lanceolata*).

From spring to autumn, year by year,
There's magic to behold,
When *Cassias* decorate their plants
With clustered, flowering gold.

SOME W.A. CASSIA — by Fred Lullfitz

Cassia are beautiful shrubs, ideal for gardens in warmer climates.* The showy foliage will grace any garden when they are not in flower. In flower, the golden-yellow blooms, sometimes borne in terminal spikes and sometimes in clusters, often cover the bush.

Coming up from Perth to the north-west (I am living at Broome), the first notable *Cassia* is *C. pleurocarpa*. This is a dense, dark green-foliaged, large shrub to 3 metres high which, after a mediocre display of yellow flowers, carries a large crop of dark brown rattling pods for quite a while. This one is worthy of garden space for the foliage and for the pods.

In the Wittercom area, going towards Mt. Bruce, there is what appears to be a dwarf form of *C. pleurocarpa*, about ½ metre tall with nice yellow flowers and the same type of foliage. This is a good plant.

From Carnarvon, north almost to Port Hedland, is the round or hemispherical shrub known to me as *Cassia oligophylla* var. *oligophylla*. A very handsome, dense shrub. The flowers are not bad but the heavy crop of pods which it bears for some months, changing from green to yellow and then to light brown, puts it high on the list. *Cassia helmsii* is similar.

Then there are three species that confuse me. One I know as *Cassia laversenii*. As you will see on pages 347 and 377, this is possibly a hybrid including *C. pruinosa* and *C. glutinosa*, so now I see why I have been confused. Another is *C. pruinosa* with its distinct, almost white foliage.

Cassia artemesioides, with its very slender leaflets, is outstanding. It grows in the Pilbara.

Down in the Carnarvon inland is a *Cassia* I think is *C. nemophila*. A plant in cultivation in a house garden was about four years old and 3 metres tall. The householder asked my expert advice on when to prune it. I said about six weeks after flowering. Amid loud guffaws, he told me it had not stopped flowering for two years. He now has a hedge of it.

Cassia venusta is one of the nicest *Cassia* in the north-west. It grows almost always in the sandy river beds and makes an attractive shrub up to 1-3 metres. I have seen the candles or spikes of delicate lime-yellow buds persist up to ½ metre. One in cultivation on a rocky hillside is 3 metres tall.

At Telfer, a new mining town about 150 miles east of Port Hedland, in the so-called desert, is *Cassia oligophylla* with very polished foliage. In the wild it is straggly, but in cultivation is most attractive.

Cassia notabilis, of course — the cockroach bush — is most attractive when in pod. A low shrub ½ metre tall with a flat top, carries a heavy crop. A form here in Broome is coarser looking than the Pilbara form.

WE NEED YOUR HELP

We are trying to unravel and prepare for registration, the extensive range of "Poorinda" and "Clearview" cultivars. Grevillea cultivars in particular, though the others are needed also. While they are in flower, will growers and nurserymen send fresh flowering specimens they are growing to The Secretary, Australian Cultivar Registration Authority, Canberra Botanic Gardens.

Photographers — please get out those cameras this season and send slides or photographs to The Editor, Australian Plants.

ERICIFOLIA NATIVE PLANT NURSERY

5 Game Street, Blackburn, Vic. 3130
Telephone 878-3889
Open 9-5.30 Daily. Closed Wed. only.

NATIVE PLANT NURSERY

Extensive range of native plants, including many rare or difficult to obtain species. Native bird feeders available.
Mt. Martha Shopping Centre,
Mornington Peninsula, Victoria.
Phone Mt. Martha (STD 059) 74-1792
weekdays. (Open weekends only.)

**Austraflorea Nursery**

W. & J. MOLYNEUX NURSERIES
PTY. LTD.,
BELFAST ROAD, MONTROSE, VIC. 3765

The largest range in Australia from which to select. Mail orders within Australia and Overseas. Retail only

Open 9-5.30 Mon.-Sat.; 12-5.30 Sun.
during spring and autumn.

Agency in Canberra, A.C.T.

1975 catalogue — 60c at Nursery,
\$1.00 posted.

ALEXANDER PLANT FARM

(Doug Twatts, Prop.)

2 Winfred Street, ESSENDON, VIC. 3040

Phone: 379-5163

EVERYTHING FOR THE GARDEN

Specialising in Australian Native Plants

Nindethana Native Plant Seeds

By Packet, Ounce or Pound

Large selection. Send for free list.

NINDETHANA

Box 129, Wellington, N.S.W. 2820

BELBRA NURSERY

In the heart of the Gramplains

LARGE RANGE OF AUSTRALIAN
NATIVES

Closed Wednesday only

BOX 12, HALL'S GAP, VIC. 3381

WIRIMBIRRA

Hume Highway, between Tahmoor and
Bargo, N.S.W.

AUSTRALIAN PLANTS

Wide Range — Phone: Bargo 84-1112

OPEN SEVEN DAYS A WEEK

Greenbriar Drive-In Nursery

AUSTRALIAN NATIVE PLANTS

Large and Varied Selection

195-7 MOUNTAIN VIEW ROAD,

BRIAR HILL, VIC. 3088

Phone: 43-1468 — Open Weekends

MICHIE'S KENTLYN NATIVE PLANT NURSERY

Specialising in Australian Plants

Beth & Bob Michie invite you to call

96c George's River Road, Kentlyn, 2560

Phone: Campbelltown 25-1583

Closed Tuesday and Wednesday only

NAROOMA NATIVE NURSERY

(H. & N. RYAN, Proprietors)

15 TILBA STREET, NAROOMA, N.S.W.

2546 — Phone 132

Good variety of native plants

Catalogue available 10 cents

CHIVERS' NATIVE PLANT NURSERY

26 Cowper Road, Black Forest, S.A.

5035 — Phone: 93-7808

Open April-May

Catalogue available — Send 18c stamp

No Interstate Orders



COLLECTORS NURSERIES NATIVE PLANT SPECIALIST
KEVIN REED

Cnr BELLEVUE CRES and STAFFORD RD SEAFORD VIC. 3198

Huge selection from ground
cover to trees, rare and the
common, sizes large or small

Open Saturday and Sunday

(Closed Mon. and Tues.)

PRESERVATION BY CULTIVATION

Closed Tuesdays

FLOREALANDS

KARIONG, via GOSFORD, N.S.W. 2250 — Prop. Brian & Lyn Parry

A large variety of the most popular native plants at nursery

PHONE: Gosford 25-1142

Send self-addressed envelope for plant list

WHALAN'S NURSERIES

175 GRINSELL STREET, KOTARA, 2288.

Phone: Newcastle 57-1225

Situated right next to the famous Blackbutt Reserve in Newcastle

All types of native plants, advanced and small, including Crowea, Correa, Erlostemon, Boronia, Callistemon, Melaleucas, Dampieria, Hypocalyma, and numerous others.

Many new and exciting types

WHALAN'S NURSERIES — KOTARA

Lakkari Native Plant Nursery

Russell & Sharon Costlin

*Wide range of all common varieties,
many interesting and hard-to-get plants,
new introductions from North Queens-
land and other tropical areas.*477 REDLAND BAY ROAD,
CAPALBA, QLD. 4157 — 206-4119
(Closed Thursdays)**PARSONS NATIVE PLANT****NURSERY**Trees, Shrubs, Ground Cover, Climbers.
Specialising in GrevilleasOpen Thur., Fri., Sat., 9-5; Sun. 9-1
Warrandyte Road, Research, Vic. 3095**BUSHFLORA**

46 Swan Street, Eltham, Vic. 3095

Wide range of well-grown plants

INSPECTION INVITED

Hours: 9 a.m.-5 p.m., Thurs., Fri., Sat.
Sunday, 1-5 p.m.**AUSTRALIAN PLANTS CENTRE**

(John & Joan Barton)

Large variety of natives.

Specialising in rockery plants.

Retail only — No mail orders

Pine Ridge Rd., Coombabah, Qld. 4215.

Phone Gold Coast 37-1227

Closed Mondays (except Pub. Hols.)

DEANES ORCHID NURSERY*Specialising in Australian Native Orchids*

Please send for descriptive list. Plants sent anywhere.

Nursery open every weekend — Weekdays phone 86-3446

157 BEECROFT ROAD, BEECROFT, N.S.W. 2119

**FOREST
NATIVE
NURSERY**

(02) 450-1785

NO MAIL ORDERS

9 Namba Road, Duffy's Forest, N.S.W.
(beside Waratah Park, via Terrey Hills)

**MAGAZINES, BOOKS, BROCHURES, PRICE LISTS,
CATALOGUES, OFFICE STATIONERY, LETTERHEADS,
INVOICES, STATEMENTS, ENVELOPES, BUSINESS CARDS**

Consistent quality and unbeatable service together with reasonable
costs remove most of the problems confronting people purchasing
printing at . . .

SURREY BEATTY & SONS

43 RICKARD ROAD, CHIPPING NORTON, N.S.W. 2170

Telephone: (STD 02) 602-7404, 602-3126

PAST ISSUES OF "AUSTRALIAN PLANTS" AVAILABLE

Because of the vast wealth of our flora there is very little repetition.
VOLUME No. 1. Issues 1-12 — to be reprinted in 1978. Watch for announcements.
VOLUME No. 2. Issues 13-20, all available only fully bound at \$9.00 plus \$1.00 postage.
 Including "A Descriptive Catalogue of Western Australian Plants".
VOLUME No. 3. Issues 21-28, all available only fully bound at \$9.00 plus \$1.00 postage.
 Including also "Catalogue of Cultivated Australian Native Plants" valued at \$6.00.
VOLUME No. 4. Issues 29-36, all available only fully bound at \$9.00 plus \$1.00 postage.
 Including "Western Australian Plants for Horticulture—Part 1" valued at \$6.00.
VOLUME No. 5. Issues 37-44, all available only fully bound at \$9.00 plus \$1.00 postage.
 Including "The Language of Botany", a valuable reference to words and terms.
VOLUME No. 6. Issues 45-52, all available only fully bound at \$9.00 plus \$1.00 postage.
 Including "Western Australian Plants for Horticulture—Part II" valued at \$6.00.
VOLUME No. 7. Issues 53-60, all available only fully bound at \$9.00 plus \$1.00 postage.
 Including "North Australian Plants" valued at \$6.00.
 "Australian Plants" is produced as a continuing series, each issue adding to the information recorded over the past issues. The most valuable and complete reference.

OTHER BOOKS OF THE SOCIETY

West Australian Plants for Horticulture. Parts 1 & 2, each available at \$6.00 plus 80c postage from the Editor. On the right-hand pages of these books there is a full colour plate of a W.A. wildflower and on the page opposite is a description of this plant together with another plant or plants from the same genus. The descriptions are clear and in simple terms with a special section on propagation and horticulture treatment and potential. Part 2 most recently published carries 42 new colour plates.

WEST AUSTRALIAN PLANTS—A Descriptive Catalogue. Price \$6.00 plus 80c postage.

The only complete reference to the flora of Western Australia.

AUSTRALIAN INDIGENOUS ORCHIDS, by A. W. Dockrill. Price \$24.00 plus \$2.00 postage.

A magnificent large book. The only complete reference to all Australia's epiphytic orchids. Each plant is fully described botanically followed by a description for the layman and each has a large detailed line drawing.

BINDERS FOR ISSUES OF "AUSTRALIAN PLANTS". Price \$3.00 plus 60c postage.

Good quality D-ring binders with gold lettering on the spine. At the moment available only with Vol. 9 or without a number on the spine.

NORTH AUSTRALIAN PLANTS—1, by Jenny Harmer. Price \$6.00 plus 80c postage.

This is the first book giving a reasonable coverage to the flora in the North of Australia and will be an authoritative reference to it. There is a reference to 380 species. While this is a lot of flowering plants it is still a long way short of the Northern Australian flora. As such it is Part 1 of a series and describes those plants of horticultural interest that are to be found in the Darwin area and Arnhem Land, known locally as the "top-end" of the territory.

This book will be of interest to all. On each right-hand page is a large full colour plate of a wildflower usually showing the tree or shrub, and a detail of the flower. Opposite is a description of the genus together with all other species of the same genus occurring in the area followed by a clear description of the plant pictured, its distribution and economic value.

LANGUAGE OF BOTANY, by C. N. Debenham. Price \$3.90 plus 60c postage.

A complete reference to all botanical terms using Australian species as a reference. Clearly written for the layman, it has, however, become a recommended School, College and University reference.

THE SOCIETY FOR GROWING AUSTRALIAN PLANTS

"AUSTRALIAN PLANTS" IS AUSTRALIA'S NATIONAL PRESERVATION JOURNAL (A non-profit making venture, produced quarterly, dedicated to preservation by cultivation). This Journal is published by The Publishing Section on behalf of:

SOCIETY FOR GROWING AUSTRALIAN PLANTS—N.S.W. REGION:

President: Mr. W. H. Payne, 860 Henry Lawson Drive, Picnic Point, N.S.W. 2213.

Secretary: Mr. Ray Page, 21 Robb Street, Revesby, N.S.W. 2212.

SOCIETY FOR GROWING AUSTRALIAN PLANTS—QUEENSLAND REGION:

President: Mr. J. Smith, Roger Street, Birkdale, Qld. 4152.

Secretary: Mrs. D. Brown, 79 Birley Street, off Wickham Terrace, Brisbane, Qld. 4000.

SOCIETY FOR GROWING AUSTRALIAN PLANTS—SOUTH AUSTRALIAN REGION (Inc.):

President: Mr. J. Scarvells, 19 Wakelin Terrace, O'Sullivan Beach, S.A. 5166.

Secretary: A. Peart, Box 1592, G.P.O., Adelaide, S.A. 5001.

SOCIETY FOR GROWING AUSTRALIAN PLANTS—TASMANIAN REGION:

President: Mr. R. Wyatt, 7 Cedar Street, Lindisfarne, Tasmania 7015.

Secretary: Mrs. D. H. Gill, Box 1353P, G.P.O., Hobart, Tasmania 7001.

SOCIETY FOR GROWING AUSTRALIAN PLANTS—VICTORIAN REGION:

President: Mr. D. B. Fletcher, 247 Waverley Road, East Malvern, Victoria 3145.

Secretary: (Sister) E. R. Bowman, 4 Homebush Crescent, Hawthorn East, Victoria 3123.

Please do not phone or call at private home—enquiries by mail only.

SOCIETY FOR GROWING AUSTRALIAN PLANTS—CANBERRA REGION:

President: Mrs. Christine Tynan, 42 Bindaga Street, Aranda, A.C.T. 2614.

Secretary: Mrs. J. Benyon, P.O. Box 207, Civic Square, A.C.T. 2608.

WEST AUSTRALIAN WILDFLOWER SOC. (Inc.):

President: Mrs. M. Wittwer, P.O. Box 64, Nedlands, W.A. 6009.

Secretary: Mrs. K. Edmonds, P.O. Box 64, Nedlands, W.A. 6009.

Seed is in very short supply—try the commercial seedsmen, not W.A. Society.

Membership is open to any person who wishes to grow Australian native plants. Contact the Secretary of the Society for your State for information without obligation.

PUBLISHING SECTION FOR SOCIETIES—Produced as a non-profit venture.

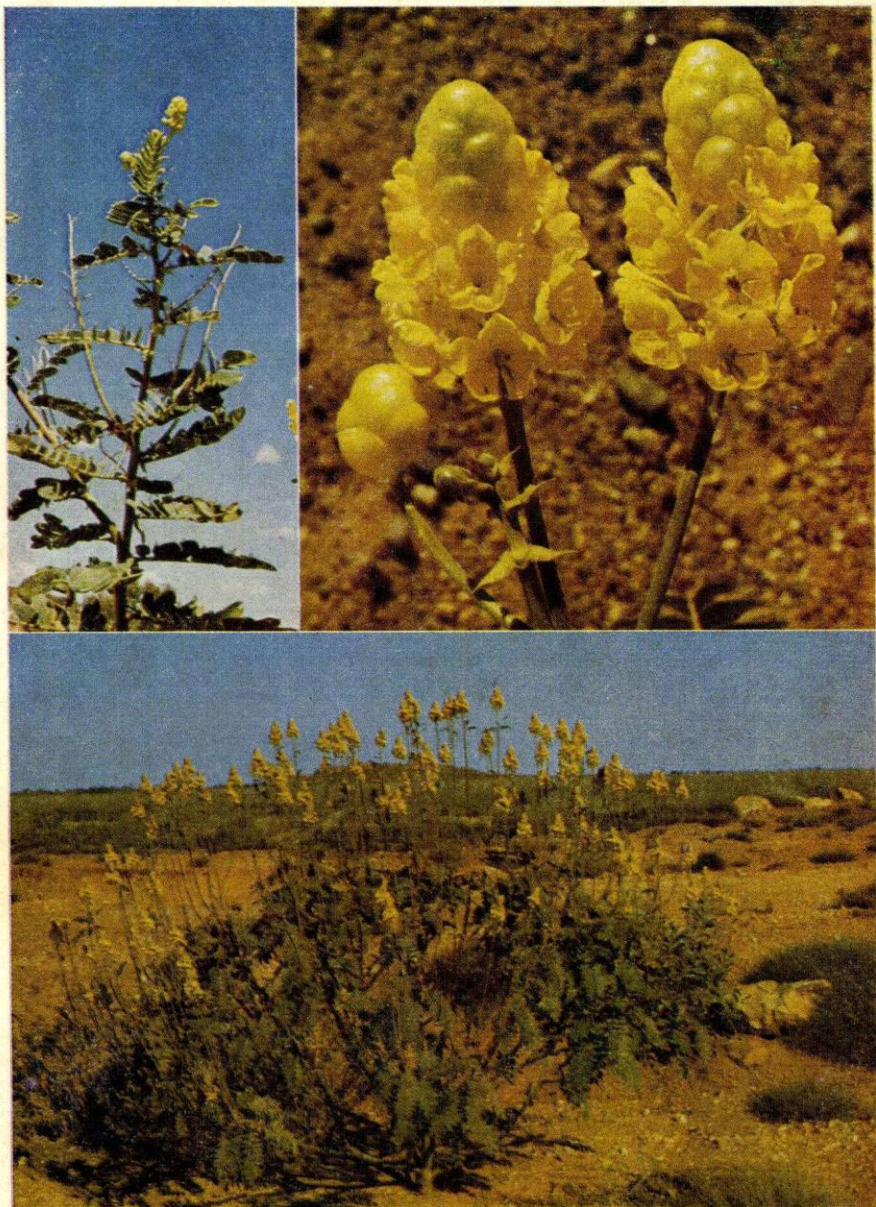
Managing Editor: W. H. Payne, assisted by P. D. Leak; Despatch by E. Hubner, H. Jones. MAIL—Address mail to the Editor, 860 Henry Lawson Drive, Picnic Point, N.S.W. 2213.

Please do not telephone or call at private home—enquiries by mail only.

SUBSCRIPTION—Members: Apply to State Secretary above.

NON-MEMBERS: You may receive the next 4 issues direct to your home by forwarding an annual subscription of \$3.00. Overseas subscription \$4.20 Aust., £2.80 in English currency or \$5.50 U.S.

A CASSIA OF THE TROPICAL INLAND NORTH



Photography: Flower, F. W. Humphreys; branch, G. Thorpe; bush, O. Hockings

CASSIA VENUSTA

Surrey Beatty & Sons, Printers