Studies in the genus Acacia (Mimosoideae)—9
Additional notes on the Series Pulchellae Benth.

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Abstract

Preparatory to a collaborative paper on *Acacia* Series *Pulchellae* Benth.*, some additions and corrections are made to my previous revision of the Series (Maslin, 1975). The following transfers and changes of status are proposed: *A. anarthros* Maslin (formerly *A. drewiana* subsp. *pungens* Maslin), *A. epacantha* (Maslin) Maslin (*A. lasiocarpa* var. *epacantha* Maslin), *A. fagonioides* Benth. (*A. pulchella* R. Br. var. *fagonioides* (Benth.) Macbride), *A. guinetii* Maslin (formerly *A. lasiocarpa* var. *villosa* (E. Pritzel) Maslin), *A. browniana* var. *glaucescens* Maslin (formerly a variant of *A. browniana* var. *endlicheri* (Meisn.) Maslin), *A. drummondii* subsp. *affinis* (Maslin) Maslin (*A. varia* var. *affinis* Maslin). *Acacia denudata* var. *spinosissima* Meisn. is transferred in synonymy from *A. pulchella* var. *glaberrima* Meisn. to *A. pulchella* R. Br. var. *pulchella*, while *A. pulchella* var. *grandis* (Henfr.) Chop. is added in synonymy under var. *glaberrima*. Opportunity is also taken to add or supplement legume and seed descriptions of 15 species and to choose a lectotype for *A. insolita* E. Pritzel.

Introduction

Since my revision of *Acacia* Series *Pulchellae* Benth. (Maslin, 1975) a number of name changes have become necessary. New data necessitating these alterations are derived from studies of seeds and seedlings by J. Vassal and of pollen morphology by Ph. Guinet (pers. comm.) and also from my own work on gross morphology. The new names given here are preparatory to a collaborative paper on the classification of the *Pulchellae**. At the same time, the opportunity is taken to provide new and supplementary descriptions of legumes and seeds for many of the included species.

The taxa are presented alphabetically by specific name. A list of the numbered specimens seen is given at the end of the paper.

Taxonomy

1. Acacia anarthros Maslin nom. et stat. nov., based on *Acacia drewiana* W. V. Fitzg. subsp. *pungens* Maslin.

Acacia drewiana W. V. Fitzg. subsp. *pungens* Maslin, Nuytsia 1(5): 475, Fig. 31 J–K, Map 5 (1975). Type: Boxvale, Miss *Julia Wells* s.n. (holo: MEL 49593).

Seed of *A. drewiana* subsp. *drewiana* (p. 357) provide data additional to the floral and vegetative features already noted (Maslin, l.c.) for the segregation of subsp. *pungens*. In my estimation the differences observed (see key below) justify specific rank for the latter. *Acacia anarthros* and *A. drewiana* share the unusual feature of decurrent leaf-axes, a character otherwise unknown in the *Pulchellae*. The new ephithet, *anarthros*, refers to this character.

A recent fruiting collection necessitates the following modifications to my previous description of this taxon: these modifications are based on *B. R. Maslin* 4347, 23 Nov. 1976, 21 km S of New Norcia towards Bindoon (PERTH).

Legumes to 60 mm long, 5–8 mm wide, obscurely reticulate. *Seeds* 3–4 mm long, 2·5–3 mm wide; *funicle* minute (less than 1 mm long), gradually expanded into a thickened yellowish *aril* which is folded near its middle and again close to the hilum.

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* Guinet, Ph., Vassal, J., Maslin, B. R., and Evans, C. S. "Acacia (Mimosoideae): Composition and affinities of the Series *Pulchellae* Benth" Paper presented at the Mimosoideae Group meeting, Kew, July 1978 and to be published shortly in Bot. J. Linn. Soc.

Key to decurrent-leaved taxa of Pulchellae:

1a. Pinnae consistently 1 pair; terminal seta pungent; stipules ± pungent; flowers less than 20 per head; apex of pinna rachis not laterally flattened; calyx ciliolate, without additional longer hairs; seeds longitudinal in legume, dull, minutely roughened, not mottled. (Wannamal–New Norcia area) .... **A. anarthros**

b. Pinnae more than 1 pair (a few unijugate leaves may occur among the multijugate ones); terminal seta often rigid but scarcely pungent; stipules not pungent, flowers more than 20 per head 2

2a. Apex of pinna rachis conspicuously laterally flattened; pinnules 4–6 mm long; calyx lobes ciliolate and with conspicuous, spreading hairs at their apices; seeds transverse to slightly oblique in legume, shiny, smooth, somewhat obscurely and irregularly mottled. (Near Armadale to Bindoon) .... **A. drewiana** subsp. **drewiana**

b. Apex of pinna rachis not conspicuously flattened; pinnules 2·5–4 mm long; calyx lobes ciliolate, without additional longer hairs; seeds unknown. (Wongan Hills; Kukerin to Lake King) .... **A. drewiana** subsp. **minor**

2. Acacia browniana H. Wendl.; Maslin (1975), Nuytsia 1(5): 425.

Further material of this species shows that the Mogumber-Bindoon form of var. *endlicheri* (Meisn.) Maslin represents a distinct variety described below as var. *glaucescens*, and also permits a description of the hitherto unknown fruits of var. *obscura* (DC.) Maslin. The species description should be amended as follows:

Pinnules 2–10 mm long, 1–4 mm wide. *Legumes* 10–45 mm long, 5–9 mm wide, glabrous or rarely sparsely pilose (var. *glaucescens*), rarely sparsely transversely reticulate. *Seeds* (not seen for var. *endlicheri*) 2·5–4 mm long; *areole* 1–2·7 mm long, 0·8–2 mm wide; *funicle* reflexed below and ± abruptly or gradually expanded into a thickened aril which is folded near the hilum.

The key to varieties previously given should be altered as follows (commencing at lead 4):

4a. Pinnules glaucescent and ± concolorous; dwarf shrub to 30 cm tall. (Mogumber to Bindoon) .... var. **glaucescens**

b. Pinnules dark green above, light green below; shrub normally 1–2 m tall. (Albany to Busselton) .... var. **browniana**

5a. Flowering peduncles normally very sparsely hairy at base; tall shrubs 1–2 m tall, subterranean runners absent; pinnules ciliolate, dark green above and light green below. (Karri or Karri-Jarrah forest from Nannup to near Northcliffe) var. **obscura**

b. Flowering peduncles glabrous; dwarf shrubs 0·3–0·5(0·6) m tall, spreading vegetatively by subterranean runners. (Jarrah forest) 6

6a. Pinnules glaucescent, ± concolorous, flat, normally glabrous, 6–10 x (2)3–4 mm; legumes 6–9 mm wide. (Mogumber to Bindoon) .... var. **glaucescens**

b. Pinnules dark green above and light green below, slightly to prominently recurved, normally ciliolate, (2)3–5(6) x 1–2(3) mm; legumes 4–6 mm wide. (Sporadic from Collie to Mount Barker) .... var. **endlicheri**

2a. var. **endlicheri** (Meisn.) Maslin, Nuytsia 1(5): 431 (1975).

Acacia browniana var. *endlicheri*, amended to exclude the more northerly var. *glaucescens* (see below) requires a revised description:

Small, single- or multi-stemmed *shrub* 30–50(60) cm tall, suckering from subterranean runners; *branchlets* pilose to hispidulous (hairs patent), rarely glabrous. *Rachis* 3–5 mm long; distal pinna rachis 6–18 mm long; *pinnules* oblong or sometimes obovate, (2)3–7(9) pairs on distal pinnae, (2)3–5(6) mm long, 1–2(3) mm wide, slightly or sometimes prominently recurved along margins, discolorous (dark green above, light green below), ciliolate and sometimes also hairy on lamina, rarely glabrous, midrib slightly raised on lower pinnule surface. *Gland* situated on upper surface of rachis at base of (or 0·5–2 mm below) pinnae, lip yellow and prominent (obviously raised above

level of rachis), orifice distinct. *Peduncles* 8–15 mm long, glabrous. *Flower-heads* with 18–21 flowers. *Petals* not prominently inflexed at apex, rather obviously 1-nerved when dry; *flower buds* ± attenuated. *Legumes* to 22 mm long, 4–6 mm wide, glabrous. *Seeds* n.v.

Distribution: Sporadic from Collie to Mount Barker.

WESTERN AUSTRALIA: 13 mi (20·8 km) from Denmark on road to Mount Barker, 21 Oct. 1975, *J. S. Beard* 7767 (PERTH); About 19·2 km E of Collie towards Darkan, *B. R. Maslin* 4, 11 Apr. 1970, and 3202, 30 Dec. 1972 (PERTH); 23 km from Denmark towards Mount Barker, *B. R. Maslin* 2956, 21 Sept. 1972, and 3203, 30 Dec. 1972 (PERTH); In distr. Plantagenet, Dec. 1840, *L. Preiss* 888 (NY-syntype); Without locality, *Preiss* 905 (MEL, PERTH—lectotype); Upper Hay River, 1870, Mrs. *Mary Warburton* s.n. (MEL 49668 and 49729).

2b. var. **glaucescens** Maslin var. nov. (Figure 12 D in Maslin, 1975).

Acacia browniana H. Wendl. var. *endlicheri* (Meisn.) Maslin affinis, sed pinnulis 6–10 mm longis, (2)3–4 mm latis, planis, glaucescentibus, concoloribus, plerumque glabris; glandibus inconspicuis; leguminibus usque 45 mm longis, 6–9 mm latis, plerumque sparsim pilosis, differt.

Allied to *A. browniana* var. *endlicheri* but differing in the following ways: *pinnules* 6–10 mm long, (2)3–4 mm wide, flat, glaucescent, ± concolorous, normally glabrous; *glands* inconspicuous; *legumes* to 45 mm long, 6–9 mm wide, normally sparsely pilose.

Type: About 8 km due NE of Bindoon, Western Australia, 2 Aug. 1973, *B. R. Maslin* 3232. "Dwarf shrub to 30 cm tall; branchlets often entangled among associated low shrubs; pinnules glaucous, isochromous. Dark brown loam over gravel in Jarrah." (holo: PERTH; iso: PERTH).

Attractive, dwarf, multi-stemmed *shrub* to 30 cm tall, suckering from subterranean runners; *branches* light brown but grey at extreme base; *branchlets* pilose or antrorsely puberulous, sometimes glabrous. *Leaves* rather variable in size; *rachis* 3–6 mm long; distal pinna rachis 4–18(23) mm long; *pinnules* narrowly oblong or sometimes narrowly obovate to narrowly elliptic, frequently slightly oblique, 6–10 mm long, (2)3–4 mm wide, 2–6 pairs on distal pinnae, flat, ± concolorous, glaucescent, glabrous or rarely sparsely ciliolate, midrib obscure. *Gland* obscure, obliquely terminating rib on upper surface of rachis at base of pinnae, lip not prominent (not raised above level of rachis), orifice distinct. *Peduncles* 10–15(20) mm long at anthesis, to 30 mm long when in fruit, glabrous. *Flower-heads* with (13)15–17 flowers. *Petals* obviously 1-nerved when dry. *Legumes* to 45 mm long, 6–9 mm wide, sparsely pilose or sometimes glabrous, grey-brown, glaucescent, sparsely tranversely reticulate, abruptly contracted at apex into a short mucro. *Seeds* transverse in legume, obloid, 3·5–4 mm long, 2·5 mm wide, somewhat compressed, dark brown (chestnut brown just before maturity); *areole* 2·7 mm long, 0·8 mm wide; *funicle* reflexed below and gradually expanded into a dull yellowish aril which is folded near the hilum.

Distribution and habitat: South-west Western Australia: restricted to a small area near Mogumber and Bindoon (about 100 km north of Perth). Grows in laterite or in loam over laterite in Jarrah (*Eucalyptus marginata*) or Wandoo (*E. wandoo*) open-forest.

WESTERN AUSTRALIA: Mogumber, Aug. 1929, *W. E. Blackall* s.n. (PERTH); Near 61 mi peg, Great Northern Highway, 20 Aug. 1972, *B. R. Maslin* 2794 (AD, BRI, K, MEL, PERTH); Near 62 mi peg, Great Northern Highway, 20 Aug. 1972, *B. R. Maslin* 2797 (K, PERTH); About 8 km due NE of Bindoon, 23 Nov. 1976, *B. R. Maslin* 4346 (PERTH).

Flowering and fruiting period: Flowers in August; legumes with mature seeds have been collected in late November.

The dwarf, suckering habit previously led me to treat this taxon as a form of var. *endlicheri*, i.e. the Mogumber-Bindoon form. However, examination of more material indicates that varietal rank is more appropriate. The variety is distinguished from the rest of *A. browniana* by characters given in the key above.

The varietal epithet refers to the pinnules. Glaucescent foliage is otherwise unknown in *A. browniana*.

2c. var. **obscura** (DC.) Maslin, Nuytsia 1(5): 430 (1975).

Recent gatherings now enable legumes and seeds to be described; this description is based on *B. C. Haberley* 448, 451 and 458, 7 Jan. 1977, 2·5 km W of Donnelly River bridge, between Manjimup and Nannup (PERTH).

Legumes to 30 mm long, 6–7 mm wide, very slightly undulate, dark brown, abruptly contracted at apex into an acute point. *Seeds* oblique in legume, 2·5–3·5 mm long, 1·5–2 mm wide, turgid, dark brown; *areole* 2–2·5 mm long, ca 1 mm wide.

3. Acacia drewiana W. V. Fitzg.; Maslin (1975), Nuytsia 1(5): 471.

Following the above exclusion of *A. drewiana* subsp. *pungens* Maslin as *A. anarthros* Maslin and also with the acquisition of fruits for the typical subspecies, my previous description of *A. drewiana* should be modified as follows:

Stipules scarious. *Terminal seta* often rigid but not sharply spinescent; pinnae (1)2–3(4) pairs; pinna rachis 3–8(10) mm long. *Gland*—delete reference to unijugate leaves. *Flowers* 22–35 per head. *Legumes* narrowly oblong, 30–40 mm long, 6–7 mm wide, flat or very slightly undulate, raised over seeds, puberulous to shortly pilose, greyish brown, basal stipe 3–5 mm long, abruptly narrowed at apex into a short apiculum 2 mm long; margins thickened, not contracted between seeds. *Seeds* transverse to slightly oblique in legume, ± obloid (shape somewhat irregular), 3–3·5 mm long, 2·2–2·8 mm wide, turgid (raised in centre but narrowed towards margins), dark greyish brown, somewhat obscurely and irregularly mottled, shiny, smooth; *pleurogram* open towards the hilum; *funicle* gradually expanded into a yellowish aril which is folded near its distal third and again close to the hilum.

The description of fruit is based on *B. R. Maslin* 4340, 23 Nov. 1976, 6 km N of Bullsbrook East on Great Northern Highway (PERTH).

4. Acacia drummondii Lindl.; Maslin (1975), Nuytsia 1(5): 464.

The inclusion of *A. varia* Maslin var. *affinis* Maslin within *A. drummondii* (see below) plus the acquisition of further fruiting material of subsp. *drummondii* and subsp. *candolleana* (Meisn.) Maslin necessitate some modifications to my previous description of the species:

Branches strigose, puberulous and/or pilose (hairs antrorse, retrorse or patent). Pinnules 2–4(5–6) pairs on distal pinnae, flat to recurved or sometimes (subsp. *affinis*) revolute, glabrous or sometimes (subsp. *affinis*) densely hairy. *Peduncles* strigose to puberulous or occasionally shortly pilose. *Bracteoles* 0·7–1 mm long. *Calyx* tube glabrous to puberulous. *Legumes* 15–40(50) mm long, 3–8 mm wide, light brown to dark brown or greyish brown, hairy (strigillose or puberulous) to glabrescent, slightly raised over seeds (umbo transverse to oblique), abruptly narrowed at apex into a short mucro. *Seeds* transverse to oblique in the legume, 2–3·5 mm long, 1·3–2 mm wide, slightly compressed, light brown to dark brown; *pleurogram* continuous or with a narrow opening towards the hilum, often bordered by a band of pale tissue; *areole* often darker brown than rest of seed; *funicle* reflexed below and gradually expanded into a straight, curved or once-folded aril.

The key to subspecies previously given should be modified commencing at lead 2b:

2b. Gland absent from rachis, present on petiole; hairs on peduncles (when present) normally retrorse (rarely patent in subsp. **affinis**) 3

3a. Pinnules flat, glabrous (rarely ciliolate), ± concolorous, nerveless or obscurely 1-nerved below, normally 3–6 x 1–2 mm. (Near New Norcia to Collie and Williams) subsp. **drummondii**

b. Pinnules recurved to revolute, sparsely to densely hairy (rarely glabrous), dark green above, subglaucous and ± obscurely 1-nerved below, normally 3–10 x 0·5–1·5 mm. (New Norcia to Muchea) .... subsp. **affinis**

Since my previous treatment of *A. drummondii* I have examined its types at both Cambridge (CGE) and Kew (K), and found that my former interpretation of these mixed gatherings was correct. The specimen at CGE from "West Australia" (with no other details) is labelled in Mueller's handwriting and is not a type.

4a. subsp. **drummondii**

Examination of recent fruiting specimens permits the following description to be made. This description is based on *B. R. Maslin* 4348, 23 Nov. 1976, about 17 km N of New Norcia towards Moora (PERTH) and *A. Selkirk* s.n., 6 Dec. 1976, Darling Range, ca 10 km due ENE of Mount Dale (PERTH).

Legumes 25–40 mm long, 4–8 mm wide, strigillose (hairs barely visible to unaided eye), light brown; margins yellow. *Seeds* transverse in the legume, 2–3·5 mm long, 1·3–2 mm wide; *areole* 1·5–2 mm long, 0·5 mm wide; *aril* slightly curved or occasionally once-folded, pale yellow.

4b. subsp. **affinis** (Maslin) Maslin comb. et stat. nov.—based on *A. varia* var. *affinis* Maslin.

Acacia varia var. *affinis* Maslin, Nuytsia 1(5): 461, Fig. 26, Map 9 (1975). *Type:* Near 39 mi peg, Great Northern Highway, Western Australia, 20 Aug. 1972, *B. R. Maslin* 2793 (holo: PERTH; iso: CANB, K).

Previously (Maslin, l.c.) I indicated that the position of this taxon within the *Pulchellae* was uncertain because its foliage suggested inclusion in *A. varia* but its inflorescences related it to *A. drummondii*. Recent pollen studies by Ph. Guinet (pers. comm.), showing that the central area of its central monad is divided into five parts, clearly relate the taxon to *A. drummondii*. In *A. varia* the central portion is undivided. In addition, Vassal (pers. comm.) has shown that in subsp. *affinis* the mean seed L/B is 1·7 thus rendering it closer to *A. drummondii* (L/B = 1·65–1·8) than to *A. varia* (L/B = 1·25–1·4).

Data from a recent collection permit supplementary notes on legumes and seeds to be provided; this description is based on *B. R. Maslin* 4341, 23 Nov. 1976, 7 km from Bullsbrook East towards Chittering (PERTH).

Legumes 25–35 mm long, 3·5 mm wide, ± sparsely puberulous, medium brown to greyish brown, umbo transverse. *Seeds* transverse in the legume, 2–2·5 mm long, ± 1·5 mm wide, light brown; *areole* dark brown; *aril* ± clavate, straight or slightly curved, very pale yellow.

4c. subsp. **candolleana** (Meisn.) Maslin, Nuytsia 1(5): 467 (1975).

Access to additional fruiting material permits a revised legume and seed description. This description is based on *B. R. Maslin* 4370, 13 Dec. 1976, Mount Cooke, 45 km SE of Armadale on Albany Highway (PERTH), and *A. Selkirk* s.n., 6 Dec. 1976, Darling Range, ca 10 km due ENE of Mount Dale (PERTH).

Legumes erect when young but frequently spreading or pendulous when mature, 20–40(50) mm long, 4–6 mm wide, glabrescent to moderately puberulous,

light brown to dark brown, umbo oblique. *Seeds* transverse to oblique in legume, basically obloid to slightly ellipsoid but shape sometimes irregular, 2·5–3 mm long, 1·5–2 mm wide, medium brown to dark brown; *areole* darker brown than rest of seed; *aril* straight to slightly curved or sometimes once-folded near its middle, pale yellow.

5. Acacia epacantha (Maslin) Maslin stat. nov.—based on *A. lasiocarpa* var. *epacantha* Maslin.

Acacia lasiocarpa Benth. var. *epacantha* Maslin, Nuytsia 1(5): 416, Fig. 6 I–J, Map 4 (1975)' *Type:* 15 km S of Badgingarra towards Dandaragan, Western Australia, 3 Aug. 1973 *B. R. Maslin* 3247 (holo: PERTH; iso: CANB, K, MEL, NSW, NY, PERTH).

Recent pollen studies by Ph. Guinet (pers. comm.) reveal significant differences from *A. lasiocarpa* Benth., which when combined with gross morphological features, seem to justify specific rank for this taxon. The pollen of *A. epacantha* is distinctive in that the central area of its central monad is divided into four parts whereas in *A. lasiocarpa* it is undivided. Other features distinguishing *A. epacantha* from *A. lasiocarpa* are its simple (not reduced racemose) inflorescences which are borne on the solitary axillary spines (not at their bases) and its slightly broader, curved to circinnate legumes (flat or undulate in *A. lasiocarpa*). In foliage characters *A. epacantha* is separated from *A. lasiocarpa* (excluding var. *bracteolata* Maslin) by a combination of the following attributes: pinnules consistently 2 pairs and normally 6–10 mm long, pinna rachis 1–2 mm long with an acute, normally dark brown apex which is 0·5–1·5 mm long. As noted previously (Maslin, l.c.) *A. epacantha* is related to *A. lasiocarpa* var. *bracteolata* by its foliage (a relationship supported by pollen morphology—Ph. Guinet, pers. comm.) but is distinguished, in addition to the characters noted above, by its branch indumentum, its longer, strigose peduncles, its non-mottled seeds and its hairy legumes.

Access to mature fruiting material permits the following seed description to replace the one I gave previously. This revised description is based on *B. R. Maslin* 4355, 24 Nov. 1976, 15 km S of Badgingarra towards Dandaragan (PERTH).

Seeds longitudinal in the legume, obloid to orbicular, somewhat compressed, 3–3·5 mm long, ca 2 mm wide, light brown to dark brown, glossy; *pleurogram* continuous or open towards the hilum, black; *areole* ca 2 mm long and 1 mm wide; *funicle* minute (ca 0·3 mm long) and filiform, reflexed below a clavate or sometimes once-folded, thickened, pale yellow aril.

Acacia epacantha, together with *A. megacephala* and three other species discussed below viz. *A. fagonioides*, *A. lasiocarpa* and *A. pulchella*, are the only members of the *Pulchellae* possessing axillary spines. As the present paper deals with major taxonomic changes involving most of these taxa, a key to them is provided.

Key to species of *Pulchellae* with axillary spines (N.B. spineless individuals occur in both *A. lasiocarpa* and *A. pulchella*—see key given in Maslin (1975) for these variants).

1a. Inflorescences borne *on* the solitary axillary spines 2
b. Inflorescences arising from branch at base of the axillary spines; spines 1–2 per node 3

2a. Pinnules flat, glaucescent, 2–4 pairs, less than 6 mm long. (Toodyay and Eneabba districts) .... **A. fagonioides**
b. Pinnules revolute, dark green, 2 pairs, normally 6–10 mm long. (Dandaragan to Badgingarra) .... **A. epacantha**

3a. Pinnules prominently recurved to revolute; branchlets and peduncles hairy; spines 1 per node. (Widespread in S.W. Western Australia; a variable species) **A. lasiocarpa**
b. Pinnules flat; branchlets and peduncles sometimes glabrous; spines 1–2 per node 4

4a. Flowers 80–90 per head; peduncles 15–25 mm long; pinnules 3–6 x 1·5–3 mm; branchlets densely shortly pilose. (Geraldton district) .... **A. megacephala**

b. Flowers 10–40(50) per head; peduncles normally not exceeding 10 mm long 5

5a. Hairs on branchlets and peduncles retrorse; peduncles ca 10 mm long; spines 1 per node; pinnules normally slightly recurved, 3–4 pairs, discolorous, ± prominently 1-nerved below. (Geraldton to Murchison River) **A. lasiocarpa** var. **lasiocarpa**—variant

b. Characters not combined as above. (Widespread in S.W. Western Australia; a variable species) .... **A. pulchella**

6. **Acacia fagonioides** Benth.

Acacia pulchella R. Br. var. *fagonioides* (Benth.) Macbride; Maslin (1975), Nuytsia 1(5): 405·

In the light of other rank changes given in the present paper and having now seen mature fruits of *A. fagonioides* I consider it best to treat this taxon as a distinct species rather than as a variety of *A. pulchella* as I had previously done. Access to mature fruiting material permits the following description to replace the one given previously; this description is based on *C. Chapman* s.n., Nov. 1976, Eneabba district (PERTH).

Legumes narrowly oblong, 30–80 mm long, 7–12 mm wide (size very variable), hard and brittle to ± firmly chartaceous, flat, raised over seeds, dark brown, slightly pruinose, glabrous, sparsely reticulate, abruptly contracted at both ends; *margins* thickened, yellowish to light brown, not (or rarely) prominently contracted between seeds. *Seeds* variably placed in legume (longitudinal to oblique or sometimes transverse), ellipsoid to spheroid, turgid, 3–4 mm long, 3–3·5 mm wide, dark brown, shiny; *pleurogram* open towards the hilum; *areole* ca 2 mm long and 1 mm wide; *funicle* expanded into a clavate or once-folded aril.

Acacia fagonioides occurs in a small group of species distinguished from the other members of the *Pulchellae* by their axillary spines and stipitate glands. A key to the recognition of these species is given above. Within this group, *A. fagonioides* is most closely related to *A. pulchella* from which it differs in inflorescence arrangement, strigose branchlets (glabrous or with patent hairs in *A. pulchella* except sometimes in var. *subsessilis*) and wider legumes and seeds.

An interesting example of parallel evolution exists between *A. fagonioides* and *A. epacantha* (see above). These species are closely related to *A. pulchella* and *A. lasiocarpa* respectively from which they differ (among other characters) in the same important feature viz. their inflorescences are simple (not racemose) and are borne on the axillary spines instead of at their bases. Both species have restricted ranges in the northern sandheaths while *A. pulchella* and *A. lasiocarpa* are both widespread throughout the southwest of Western Australia. Interestingly Ph. Guinet reports (pers. comm.) that the pollen of *A. epacantha* is very different from that of *A. lasiocarpa* (see p. 362) but that of *A. fagonioides* is essentially the same as that of *A. pulchella*.

7. **A. grisea** S. Moore; Maslin (1975), Nuytsia 1(5): 432.

Seeds of this species have not been described and the following account is therefore presented; this description is based on *B. R. Maslin* 4383, 14 Dec. 1976, about 13 km due SE of Broomehill, on Pallinup Road (PERTH).

Seeds transverse to slightly oblique in legume, obloid to ellipsoid, 2·5–3 mm long, 2 mm wide, dark brown, shiny; *funicle* gradually expanded into and reflexed below a thickened pale yellow *aril* which is folded near its attachment to the seed.

Since my previous treatment of *A. grisea* I have inspected the holotype, *F. Stoward* 166 (BM) and found it to accord well with my circumscription of the species.

8. Acacia guinetii Maslin sp. nov.

Acacia pulchella R. Br. var. *villosa* E. Pritzel, *synon. nov.*, Bot. Jb. 35: 310 (1904). Syntypes: Diels 2066 and 3211 (n.v.).

Acacia lasiocarpa Benth var. *villosa* (E. Pritzel) Maslin, Nuytsia 1(5): 414, Figs. 6 G—H Map 3 (1975).

Acacia lasiocarpa Benth *affinis*, sed habitu fruticoso aperto et exili 1·2–2 (2·5) m alto; spinis axillaribus nullis; stipulis 2–3·5 mm longis; rhachide pinnarum infra pinnulas infimas saepe glandulifera; pinnulis quam in *A. lasiocarpa* plerumque majoribus (3–7 (8–10) x 1–1·5 (2) mm) et magis pilosis; glandulis apice manifeste dilatatis; pedunculis 10–20 mm longis; floribus 65–75 pro capitulo; leguminibus nunquam pilosis; seminibus in legumine semper longitudinaliter dispositis, nunquam marmoratis, differt.

Type: Moresby Range, Western Australia, 30 August 1972, *A. M. Ashby* 4586 (holo: PERTH; iso: CANB, PERTH).

Shrub 1·2–2(2·5) m tall, somewhat spindly and straggly, normally single-stemmed, foliage crowded on branchlets which tend to arch downwards; new shoots light green; bark grey, smooth but finely fissured towards base of main stem; branches terete, very obscurely nerved, densely villous-pilose (hairs sparser with age, sometimes tubercle-based), brownish grey. Axillary spines absent. *Stipules* very narrowly triangular, 2–3·5 mm long, 0·2–0·3 mm wide, scarious, ciliolate, dark brown, 1-nerved. *Leaves* bipinnate; petiole 1–1·5 mm long; terminal seta linear to very narrowly triangular, 1·5–3 mm long, otherwise as for stipules; pinnae 1 pair; pinna rachis (2·5)4–10 mm long, often gland-bearing below the lowermost pair of pinnules, indumentum as on branches, broadly ribbed above, apex acute and rather flattened and sometimes dark brown; *pinnules* 2–4(5) pairs, normally narrowly oblong, 3–7 (8–10) mm long, 1–1·5(2) mm wide, slightly curved upwards, somewhat thickened, often very finely wrinkled when dry, prominently recurved to revolute, dark green and nerveless above, lighter green and 1-nerved below, moderately to densely puberulous (hairs patent to slightly antrorse). *Gland* arising at junction of pinnae, stipe so reduced (ca 0·1 mm long) that gland appears sessile, apex dilated (ca 0·4 mm diam.) with a yellow rim and a shallow, brown central orifice; an additional smaller gland (otherwise of the same morphology) often occurs on the pinna rachis below the lowermost pair of pinnules. *Inflorescence* a very reduced raceme with a single peduncle arising from axil of uppermost bract on the very short raceme axis (ca 1 mm long), 1–2 per node; *peduncles* 10–20 mm long (normally greatly exceeding the leaves), patent or ascending, moderately to densely puberulous; *flower-head* globular, light yellow to deep yellow, 7–9 mm diam. at anthesis (when dry), with 65–75 densely packed flowers. *Bracteoles* 2–2·5 mm long, not prominent in mature bud; claws linear; laminae narrowly ovate, sparsely to moderately puberulous, yellow to brown, ± nerveless. *Flowers* 5-merous; calyx $\frac{3}{4}$–$\frac{4}{5}$ length of corolla, divided for $\frac{1}{4}$–$\frac{1}{3}$ its length into ± oblong, sparsely hairy lobes; calyx tube narrowly turbinate, obscurely 5-nerved, glabrous or glabrescent; petals 2–2·5 mm long, 1-nerved, sparsely puberulous. *Legumes* narrowly oblong, 20–40 mm long, 3–3·5 mm wide, slightly undulate, moderately raised over seeds (umbo longitudinal), glabrous, very dark brown, apex acute; margins prominently thickened, not contracted between seeds, yellow. *Seeds* longitudinal in legume, obloid, 2·5–2·7 mm long, 1·5–1·9 mm wide, overall somewhat compressed but slightly raised in the centre and narrowed towards the margins, greyish brown, shiny; *pleurogram* continuous or with a narrow opening towards the hilum; *areole* oblong, 1·3–1·5 mm long, 0·6–0·7 mm wide; *funicle* filiform, ca 0·5 mm long, normally reflexed below and ± gradually expanded into a gently curved, clavate aril which is slightly shiny and dull yellow (except at hilum where it is brownish).

Distribution and habitat: South-west Western Australia: restricted to the Nanson-Howatharra region (about 30 km north of Geraldton) where it grows in either rocky loam or lateritic gravel.

WESTERN AUSTRALIA: Hills 10 mi (16 km) S of Northampton, 19 July 1971, *K. M. Allan* 659 (PERTH); Howatharra, 13 July 1967, *A. M. Ashby* 2148 (PERTH); Moresby Range, *A. M. Ashby* 4587, 30 Aug. 1972, and 4614 (both at PERTH); Moresby Range, *A. C. Burns* 5, 19 Sept. 1965 (K, PERTH) and 8, 19 June 1966 (PERTH); About 8·1 km W of Nanson, 27 Aug. 1970, *R. Coveny* 3062 (CANB, K, MEL, NSW, NY, PERTH); 8 km W of Nanson, *B. R. Maslin* 3164, 8 Oct. 1972 (PERTH) and 3349, 22 Aug. 1973 (MEL, PERTH); 28 km from Geraldton towards Northampton, 20 Aug. 1973, *B. R. Maslin* 3321 (PERTH); Howatharra Hill Reserve, Moresby Range, *D.* and *N. McFarland* 1005, 20 July 1974 and 14 Oct. 1974 (both at PERTH); Moresby Range, Howatharra-Nanson road, Jan. 1974, *G. Phillips* 55 (NT, PERTH); Howatharra Range, 7·5 km N of Nanson, 22 Aug. 1973, *M. D. Tindale* 2752 (PERTH) and 2753 (K, PERTH).

Flowering and fruiting period: Flowers from June to August (September); legumes with mature seeds have been collected in mid-October.

Recent pollen studies by Ph. Guinet (pers. comm.) suggest a change in rank for the taxon I previously described as *A. lasiocarpa* var. *villosa* (Maslin, 1975). Its pollen differs significantly from *A. lasiocarpa* (with var. *epacantha* excluded—see *A. epacantha* above) in that all the monads of the same polyad are faintly striate (near the pseudo-furrows on the central monads and on the polar areas on the peripheral monads) and the pseudo-furrows on the peripheral monads are interrupted. In *A. lasiocarpa* the peripheral monads are not striate on their polar areas, and in addition, their pseudo-furrows are interrupted. When these differences are combined with the gross morphological features noted in the diagnosis above it seems to justify specific rank for this taxon.

The species is named in honour of Philippe Guinet for his numerous contributions to the study of *Acacia* pollen. I am particularly indebted to Guinet for giving me access to much of his unpublished data concerning the Australian species.

9. Acacia insolita E. Pritzel, Bot. Jb. 35: 310, Fig. 36 (1904); Maslin (1975), Nuytsia 1(5): 478. *Lectotype:* In silvis subumbrosis montium Darling Range, Aug. 1901, *E. Pritzel* 1013 (K–central specimen on sheet; iso: AD, E, G–DC, K, NSW, PR, US, W), *lecto. nov.* Syntype: *Diels* 3835 (n.v.).

Because I had not examined all syntypes previously a lectotype was not selected for *A. insolita*. Having now searched in many herbaria (including Berlin) I can find no trace of the syntype, *Diels* 3835. Because *Pritzel* 1013 is well distributed and accords well with the protologue, this collection is selected as the type. The lectotype sheet at Kew is annotated by Pritzel thus: "Acacia insolita Pritzel nov. spec. Engl. Jahrb. 1905".

According to Vassal (pers. comm.) the seed and seedling characters of *A. insolita* clearly relate it to the other members of the *Pulchellae*, even though its upper leaves are reduced to phyllodes. The species none the less does possess some seed/seedling features which set it slightly apart: the cotyledons persist a little longer than normal (i.e. until the first two leaves have completely opened) and its seeds are relatively large (this species, together with *A. gilbertii*, *A. megacephala* and *A. fagonioides*, has the longest seeds in the *Pulchellae*).

10. Acacia lasiocarpa Benth.; Maslin (1975), Nuytsia 1(5): 409.

The exclusion of both var. *epacantha* Maslin and var. *villosa* (E. Pritzel) Maslin as separate species (*A. epacantha* (Maslin) Maslin and *A. guinetii* Maslin respectively—see above) and the acquisition of more fruits of var. *sedifolia* (Meisn.) Maslin necessitate a revised description for *A. lasiocarpa:*

Shrub 0·2–1·5 m tall, often dense and compact; *branchlets* often spinescent, sometimes flexuose, obscurely nerved to nerveless, indumentum various. *Spines* axillary, 1 per node, sometimes absent in var. *lasiocarpa* and var. *sedifolia*, 3–12 mm long, spreading, normally sparsely hairy towards base, brown. *Stipules* triangular to very narrowly triangular, 0·5–2 mm long, scarious but sometimes thickened towards the base, brown. *Leaves* bipinnate; petiole $\leq$ 0·5 mm long; terminal seta triangular to narrowly triangular, 0·5–2·5 mm long, scarious but often slightly thickened towards the base, often dark brown and conspicuous; pinnae 1 pair; pinna rachis 1–10(20) mm long, apex green or dark brown, sometimes prominent; *pinnules* 2–6 pairs (rarely to 12 pairs in var. *lasiocarpa*), narrowly oblong, 1–4(5) mm long, 0·5–1 mm wide, prominently recurved to revolute (rarely flat in var. *lasiocarpa*), green or occasionally glaucescent, glabrous to hairy, nerveless above, 1-nerved below; *gland* arising at junction of pinnae, stipitate but stipe often extremely reduced ($\leq$ 0·5(1) mm long), apex not dilated except often in var. *lasiocarpa*, pinna rachis eglandulose. *Inflorescence* a very reduced raceme, peduncle arising from axil of uppermost bract on the very short raceme axis, a new shoot or sometimes a second peduncle arising from axil of lowermost bract; peduncles 2–13 mm long, indumentum various; *flower-heads* globular, 4–7 mm diam. at anthesis when dry, with (13)16–50 flowers. *Bracteoles* 1–2·5(3·5) mm long; laminae green to dark brown, sometimes conspicuous in bud. *Flowers* 5-merous; calyx $(\frac{1}{2})\frac{2}{3}$–$\frac{3}{4}$ length of corolla, divided for $\frac{1}{4}$–$\frac{1}{2}$ its length into $\pm$ oblong sparsely ciliolate lobes which are slightly thickened and inflexed at their apices, tube glabrous to glabrescent and obscurely to prominently 5-nerved; petals 1·5–2·5 mm long, glabrous to glabrescent, nerveless to prominently 1-nerved. *Legumes* narrowly oblong, normally 10–40 mm long, 3–5 mm wide, flat or undulate, raised over seeds, glabrous or hairy, light brown to greyish brown or black, sometimes with a glaucescent bloom, abruptly narrowed at apex into a short acute point; margins thickened, not (or rarely slightly) contracted between seeds, yellow to brown. *Seeds* often variably placed in legume, often proximal and distal seeds longitudinal and the middle ones transverse, shape sometimes variable on the same plant, normally obloid to ellipsoid or orbicular, 1·5–2·5 mm long, 1·5–2 mm wide, distinctly turgid or somewhat compressed, pearly white, grey-brown or light brown to dark brown, frequently mottled; *pleurogram* open towards the hilum, often bordered by a narrow band of dark tissue; *funicle* $\pm$ filiform and ca 0·5 mm long, normally reflexed below and gradually or $\pm$ abruptly expanded into a fleshy, straight or slightly curved, yellowish aril.

A key to the recognition of *Pulchellae* species (including *A. lasiocarpa*) with axillary spines is given in p. 359.

10a. var. **sedifolia** (Meisn.) Maslin, Nuytsia 1(5): 411 (1975).

Examination of recent fruiting collections necessitates the following changes to my previous description of this taxon. These modifications are based on the following collections: *B. R. Maslin* 4344, 23 Nov. 1976, about 5 km due NE of Bindoon on Stephens Rd. (PERTH); *B. R. Maslin* 4351, 24 Nov. 1976, 6·5 km W of Moora towards Dandaragan (PERTH); *B. R. Maslin* 4382, 14 Dec. 1976, about 13 km due SE of Broomehill, on Pallinup Road (PERTH); *A. Selkirk* s.n., 6 Dec. 1976, east of Mundaring on Manna Flats Road, 6·5 km E of West Talbot Road (PERTH).

Legumes to 30(35) mm long, brown to greyish brown or black. *Seeds* variably placed in legume, normally proximal and distal seeds longitudinal and middle ones transverse, 1·5–2·5 mm long, light brown to dark brown, frequently mottled.

11. Acacia lateriticola Maslin, Nuytsia 1(5): 433 (1975).

A recent fruiting collection necessitates the following modifications to my previous description of this taxon; these modifications are based on *B. R. Maslin* 4366, 7 Dec. 1976, south of Serpentine, about 1 km east of South West Highway on Scriviner Road (PERTH).

Seeds shiny; funicle description should read—minute (0·2 mm long), expanded into a normally twice-folded pale yellow aril (one fold near the distal third and the other close to the hilum).

12. Acacia luteola Maslin, Nuytsia 1(5): 453 (1975).

A recent fruiting collection necessitates the following changes to my previous description of this taxon; these modifications are based on *B. R. Maslin* 4395, 15 Dec. 1976, 23 km from Denmark towards Mount Barker (PERTH).

Seeds dark brown to black; *funicle* filiform, reflexed below and gradually expanded into a curved or once-folded (near its middle) aril.

13. Acacia moirii E. Pritzel; Maslin (1975), Nuytsia 1(5): 417.

Because seeds are now described for subsp. *recurvistipula* Maslin (see below) some modifications to my previous description of *A. moirii* are necessary:

Seeds transverse to oblique in legume, obloid to ellipsoid or spheroid, 2–3 mm long, 2–2·3 mm wide, sometimes obscurely mottled (subsp. *recurvistipula*).

13a. subsp. **recurvistipula** Maslin; Maslin (1975), Nuytsia 1(5): 420.

Examination of a recent gathering enables seeds to be described. This description is based on *B. R. Maslin* 4375, 14 Dec. 1976, 7 km S of Kulin towards Kukerin (PERTH).

Seeds oblique in legume, obloid to spheroid, 2–2·5 mm long, 2–2·3 mm wide, raised in centre but narrowed towards margins; *pleurogram* often bordered by a band of yellowish tissue; *areole* 0·7 mm long, 0·7 mm wide; *funicle* very short (0·5 mm long), rather abruptly expanded into a short (0·7 mm long), pale yellow aril.

14. Acacia pentadenia Lindl.; Maslin (1975), Nuytsia 1(5): 444.

Examination of a recent collection indicates that my previous funicle description should be altered to read: *funicle* filiform or flattened, very short (ca 0·3 mm long) and abruptly expanded into a clavate or once-folded, thickened, pale yellow aril. The additional information is derived from *B. R. Maslin* 4392, 15 Dec. 1976, near Hay River, Albany–Denmark road (PERTH).

Since my previous account of the species I have examined the type sheet at Cambridge (CGE). My former interpretation of the specimens contained thereon is correct except that the right hand one is not the stunted form of *A. pentadenia* as previously thought. Instead it is a shoot apex of normal *A. pentadenia* with non-inflexed pinnules. It is therefore quite possible that all the specimens on this sheet are from the same gathering.

15. Acacia plicata Maslin, Nuytsia 1(5): 451 (1975).

Add the following data to my previous seed description of this species: *Seeds* rather compressed, broadly ellipsoid to spheroid. These additions are based on *B. R. Maslin* 4358, 24 Nov. 1976, about 20 km due E of Jurien Bay (PERTH).

16. Acacia pulchella R. Br.; Maslin (1975), Nuytsia 1(5): 397.

The exclusion of var. *fagonioides* (Benth.) MacBride as *A. fagonioides* Benth. (see above) and the acquisition of fruits for var. *reflexa* Maslin and var. *subsessilis* Maslin necessitate some changes to my previous description of *A. pulchella:*

Terminal seta 1–4 mm long. *Pinnules* 0·5–2 mm wide. *Inflorescences*—delete reference to var. *fagonioides*. *Legumes* ca 15–50 mm long, 3–5 mm wide, flat to undulate, occasionally curved; margins not constricted between seeds. *Seeds* normally longitudinal in legume (transverse to oblique in var. *subsessilis*), normally obloid to ellipsoid (rarely ± spheroid in var. *glaberrima*), 2–4·5 mm long, 1·5–3 mm wide, turgid, dark greyish to brown, mottled black in var. *subsessilis* otherwise colour uniform; *pleurogram* open towards the hilum (rarely continuous).

A key to the recognition of *Pulchellae* species (including *A. pulchella*) with axillary spines is given in p. 359.

16a. var. **pulchella**

Having examined the type of *A. denudata* var. *spinosissima* Meisn. at U.S. National Herbarium, Washington (US) in 1975, it is evident that this name should be transferred in synonymy from *A. pulchella* var. *glaberrima* to var. *pulchella*. The type sheet is labelled (probably in Meisner's hand): "Acacia denudata Lehm. γ. spinosissima Meisn. in Pl. Preiss. 1. p. 21. Cult. in Hort. Baumann, Bollwiller." The specimen is very spiny and has the minutely puberulous branchlets and peduncles of var. *pulchella* but its pinnules lack the thickened lateral veins frequently found in this taxon.

16b. var. **glaberrima** Meisn.; Maslin (1975), Nuytsia 1(5): 402.

Acacia pulchella R. Br. var. *grandis* (Henfr.) Chop., Ann. Amelior. Pl. 4: 17 (1951), *synon. nov.*

Examination of the type of *A. denudata* var. *gracilis* Meisn. (*Preiss* 904) at US confirms my previous inclusion of it as a synonym of var. *glaberrima*.

16c. var. **reflexa** Maslin, Nuytsia 1(5): 401 (1975).

Examination of a recent gathering of mature fruits now enables legumes and seeds to be properly described; this description is based on *B. R. Maslin* 4339, 23 Nov. 1976, 7 km N of Bullsbrook East on Great Northern Highway (PERTH).

Legumes to 40 mm long, 4 mm wide, puberulous, light brown; margins yellow. *Seeds* obloid, 3–4 mm long, 2 mm wide, dark brown; *pleurogram* continuous or with a very narrow opening towards the hilum; *areole* ca 2 mm long and 1 mm wide; *funicle* reflexed below a thickened yellowish aril which is normally once-folded near its middle.

16d. var. **subsessilis** Maslin, Nuytsia 1(5): 406 (1975).

Legume valves but no seeds were described previously (Maslin, 1975). A recent collection enables the following description to be presented; this description is based on *K. Newbey* 5031, 20 Dec. 1976, 5 km NW of Ongerup (PERTH).

Legumes to 15 mm long, 4 mm wide, undulate, prominently raised over seeds, glabrous, light brown, faintly pruinose. *Seeds* transverse to oblique in legume (otherwise longitudinal in *A. pulchella*), broadly ellipsoid, 2 mm long, 1.7 mm wide, 1·4 mm thick, dark brown with black mottlings; *areole* ca 1 mm long and 0·5 mm wide; *funicle* filiform, 0·4 mm long, abruptly expanded into a straight or curved (not folded) pale yellow aril.

17. Acacia varia Maslin, Nuytsia 1(5): 456 (1975)

Following the transference of var. *affinis* Maslin to *A. drummondii* (see above) and the acquisition of seed of var. *crassinervis* Maslin, the description of *A. varia* should be modified as follows:

Pinnules 2–6(7) mm long, 1–2·5 mm wide, thickened (except in var. *varia*), prominently 1-nerved below. *Peduncles* 7–15 mm long, densely hairy (rarely glabrous in var. *parviflora*); *flower-heads* 7–20 mm long and 4–7 mm wide at anthesis, with (20)25–55 flowers. *Calyx* and *corolla* sparsely to densely hairy, obscurely to prominently 5-nerved. *Legumes* moderately to densely hairy. *Seeds* obloid to ellipsoid or sometimes spheroid, dark brown to black.

17a. var. **crassinervis** Maslin, Nuytsia 1(5): 459 (1975).

Legumes and seeds of this variety have not been described and the following account is therefore presented; this description is based on *B. R. Maslin* 4381, 14 Dec. 1976, 4 km E of Katanning towards Nyabing (PERTH).

Legumes to 35 mm long, 4 mm wide, abruptly contracted at apex into a short mucro. *Seeds* variable in shape, obloid, ellipsoid, sometimes spheroid, 2–2·5 mm long, 1·7–2 mm wide, raised in centre and somewhat narrowed towards margins; *pleurogram* open towards the hilum, bordered by a band of yellow tissue; *funicle* and *aril* generally not remaining attached to dehisced seed, funicle filiform, ca 0·5 mm long, reflexed below an abruptly thickened ± straight pale yellow aril.

Acknowledgments

I wish to thank Dr. Ph. Guinet and Dr. J. Vassal for allowing me access to much of their unpublished data on pollen and seed/seedlings respectively. I am indebted to both Ms. B. S. Field and Dr. R. M. Polhill for helpful comments on the manuscript. The Australian Biological Resources Study Interim Council is acknowledged for funds provided enabling me to visit various European and American herbaria in 1975 where many types relevant to the present study were consulted.

Reference

MASLIN, B. R. (1975). Studies in the genus Acacia (Mimosaceae)–4. A revision of the Series *Pulchellae*. Nuytsia 1(5):388-494.

Index to numbered specimens

This index contains a reference to all numbered specimens seen for the present study. It is arranged aphabetically according to the name of the collector. Numbers in parentheses refer to the corresponding taxon in the text. All specimens are housed at the Western Australian Herbarium (PERTH) unless otherwise stated.

Allan, K. M. 659(8).

Ashby, A. M. 2148(8), 4586(8–Type: CANB, PERTH), 4587(8); 4614(8).

Beard, J. S. 7767(2a).

Burns, A. C. 5, 19 Sept. 1965 (8–K, PERTH), 8, 19 June 1966(8).

Coveny, R. 3062(8–CANB, K, MEL, NSW, NY, PERTH).

Haberley, B.C. 448(2c), 451(2c), 458(2c).

Maslin, B. R. 4(2a), 2793(4b–Type: CANB, K, PERTH), 2794(2b–AD, BRI, K, MEL, PERTH), 2797(2b–K, PERTH), 2956(2a), 3164(8), 3202(2a), 3203(2a), 3232(2b–Type), 3247(5–Type: CANB, K, MEL, NSW, NY, PERTH), 3321(8), 3349(8–MEL, PERTH), 4339(16c), 4340(3), 4341(4b), 4344(10a), 4346(2b), 4347(1), 4348(4a), 4351(10a), 4355(5), 4358(15), 4366(11), 4370(4c), 4375(13a), 4381(17a), 4382(10a), 4383(7), 4392(14), 4395(12).

McFarland, D. and N. 1005, 20 July 1974 and 14 Oct. 1974(8).

Newbey, K. 5031(16d).
Phillips, G. 55(8–NT, PERTH).
Preiss, L. 888(2a–Syntype: NY), 904(16b–Type: US), 905(2a–Lectotype: MEL, PERTH).
Pritzel, E. 1013(9–Lectotype: AD, E, G–DC, K, NSW, PR, US, W).
Stoward, F. 166(7–Holotype: BM).
Tindale, M. D. 2752(8), 2753(8–K, PERTH).

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