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Critical Notes on the Compositae of Ceylon*

by

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(With six text figures)

The following points of interest have arisen in the course of working over the Compositae in preparation for the revision of Trimen's Handbook of the Flora of Ceylon. The nomenclatural changes given below and the new records are in addition to those already listed by Abeywickrama in the Check List of the Flowering Plants of Ceylon (in Ceylon Jour. Sci. 2 (2) ; 235-239, 1959). Some of the larger genera such as *Blumea*, *Anaphalis* and *Senecio* have been omitted from this paper and will become the basis for a separate study.

In the preparation of this paper, I must acknowledge with thanks the help I have received from two of my colleagues : Mr B. L. Burtt who has kindly read and criticised my work, and Miss R. M. Smith who has prepared the illustrations.

Unless otherwise stated, the specimens cited in this paper are all represented in the herbarium of the Royal Botanic Garden, Peradeniya (PDA).

Struchium sparganophorum (L.) O. Ktze. Rev. Gen. 366 (1891); Senaratna in Cey. Jour. Sci. 12 : 163 (1945).

This alien plant has previously been recorded from Matara, Kalutara, Colombo and Kegalla Districts. It has now been collected (*Grierson* 1136) in Puttalam District (between Madampe and Mahawewa) and is undoubtedly becoming more widespread.

Vernonia gardneri Thw. Enum. 161 (1860) excl. var β

The herbarium material of this species is obviously divisible into two taxa, which probably merit varietal status, as follows :

Leaves 8-15 cm long 2-4.5 cm broad, margins flat, coarsely and acutely dentate. Outer and intermediate phyllaries squarrose, tapering into long fine points ca 8 mm long ..... var *gardneri*

Leaves 5-8(-11) cm long 0.7-1.5 cm broad, margins revolute, finely serrate. Outer and intermediate phyllaries $\pm$ erect, tapering into fine points 3 mm long..... ..... var *brevior*

*Critical notes on Ceylon Plants. V.

var *gardneri*

Kandy District : "Peradeniya, Gardner ; Deltota, May 1857 ; Paragalla (?) 1853" *Thwaites CP.* 27 and 1745 (PDA, lectotype); Madugoda, *Alston* 1667 ; Nitre Cave Valley near Minipe, *Simpson* 9454.

var. *brevior* Grierson *var. nov.*

a varietate typica folia 5-8(-11) cm longa 0.7-1.5 cm lata, marginibus revolutis, tenuiter serratis. Phyllaria exteriora et intermedia plus minusve erecta, aciculis 3 mm longis terminatis recedit.

Kandy District : "Ambagamuwa and Adam's Peak, Gardner, 1857" *Thwaites CP.* 27 and 1745 (PDA-holotype). Nuwara Eliya District : Nuwara Eliya, Feb. 1857, *Thwaites CP.* 27.

Vernonia anceps C.B.Cl.

This species appears to hybridise with *V. wightiana* Arn. when their areas overlap e.g. on the margins of a stream on Adam's Peak, see my specimens, *Grierson* 1042. These show intermediacy in leaf and indumentum characters as well as in the form of the capitula. *V. wightiana* is itself a widespread and variable species ; *Gardner* 384 consists of series of specimens marked var. a, b, c, etc. These, however, seem to amount only to forms, but what does not appear to have been recorded is the occurrence of a dwarf semiprostrate form common on Horton Plains. The stems of these plants never attain a height of more than 30 cm (*Grierson* 1097).

Vernonia cinerea (L.) Less.

This has long been recognised as a variable species (see Hook. f. Fl. Brit. Ind. 3: 234 and Koster in Blumea 1: 407, 1935). Having examined the herbarium material at Peradeniya and at Kew, I believe that the plants which Alston (Suppl. p. 159) regarded as *V. albicans* DC. are only variants of *V. cinerea.*

Vernonia lankana Grierson *nom. nov.*

syn. *V. scariosa* Arn. Pug. 28 (1836); Thw. Enum. 161; Hook f. Fl. Brit. Ind. 3: 326 ; Trim. Hdb. Fl. Cey. 3: 8-non Poir.(1808), nec Baker (1882). Type: Ceylon, Walker 297 (E-GL).
Decaneurum scariosum (Arn.) DC. Prodr. 7; 264 (1838).
Centratherum scariosum (Arn.) C.B.Cl. Comp, Ind. 4 (1876).
This species may be divided, as Trimen indicated, into two varieties as follows :—
Leaves up to 10(-12) cm long. Phyllaries oblong with terminal awns 0.7-1.5 mm long. Capitula 4-5 mm diam. .....var *lankana*
Leaves generally more than 12 cm long. Phyllaries ovate with terminal awns 3-4mm long. Capitula 7.5 mm diam.....var *crassa*

Vernonia lankana var. *crassa* (Thw.) Grierson *comb. nov.*

syn. *V. scariosa* var. *crassa* Thw. Enum. 161 (1860); Trim. Hdb. Fl. Cey. 3: 8.
Type: Below Horton Plains, Feb. 1857, *Thwaites* C.P. 2825.

In renaming this endemic species I have followed modern parlance in using the name Lanka, the new title for Ceylon.

Vernonia zeylanica (L.) Less.

There is a prostrate form of this species which occurs on sea shores, e.g. at Ruhuna National Park (*Grierson* 1145).

Vernonia arborea Ham.

Two varieties of this species occur in Ceylon which may be separated as follows :—

Leaves oblong-elliptic, suddenly acuminate, ± glabrous except on the veins on the lower surface ..... var *arborea*,
Leaves ovate-elliptic, gradually acuminate, densely and uniformly pubescent beneath ..... var *javanica*

var. *javanica* (Bl.) C.B.Cl. is more widespread and has been more often collected than var *arborea* which is only known from Kegalla District, Pitawela below Kitulgala (*Worthington* 2087 in Herb. Worthington, Kandy).

Vernonia pectiniformis DC. in Wight, Contrib. 6, 1834.

This species is based on material collected by Wight (W. 1379) at Dindigul in the southern part of Madras State. Two years after its publication, Arnott described in his Pugillus Plantarum Indiae Orientalis (p. 27), a specimen that Walker had collected in Ceylon as a nameless variety of this species. Again two years later, De Candolle having examined Walker's material, and recognised it as a species distinct from *V. pectiniformis*, published it as *V. puncticulata* (Prodr. 7; 264, 1838). Since that time Cleghorn in 1855 collected a *Vernonia* in the Nilgiri Hills in Western Madras State which was identified as *V. pectiniformis* by Gamble in 1910. This gathering, although similar to Wight's material in leaf character, has the broader more obtuse phyllaries of the Ceylonese plant. The points of difference between these three specimens are tabulated below.

Wight 1379 (E, K)	*Cleghorn* s.n. (E)	*Walker* 255 (E)
Leaves glabrous or sparsely pubescent beneath, glandular ; margins finely serrate, flat.	Leaves pubescent beneath, glandular; margins finely serrate, flat.	Leaves puberulous on the veins beneath, punctate; margins finely serrate inrolled.
Peduncles naked.	Peduncles bearing small bracts.	Peduncles bearing small bracts.
Capitula ca 17-flowered.	Capitula ca 20-flowered.	Capitula ca 12-flowered.
Involucre 8-9 mm long ca 4 mm diam., 6-7 seriate.	Involucre 8-9 mm long ca 5 mm diam., 7-8 seriate.	Involucre 6-7 mm long 4 mm diam., 5-6 seriate.

Phyllaries glabrous, coloured only at the apices (?), inner ones lanceolate, ± acute, 1.5-2 mm broad.	Phyllaries glabrous, coloured only at the apices (?), inner ones ovate-oblong, acute or subacute, 2-2.5 mm broad.	Phyllaries pubescent, purplish brown, inner ones oblong, obtuse or subacute, 2.5 mm broad.

From this table Cleghorn's specimens appear to represent a taxon almost as distinct from *V. pectiniformis* as the latter is from De Candolle's *V. puncticulata*. All three are obviously closely related and the differences between them do not merit specific recognition. On the other hand, to submerge the Ceylon plant completely under *V. pectiniformis* as most authors since Thwaites' time have done also seems to be incorrect. Accordingly, they appear to represent three subspecies of the one taxon and the following combination is therefore necessary.

Vernonia pectiniformis DC. subsp. *puncticulata* (DC.) Grierson *comb. et stat. nov.*
Syn. *Vernonia puncticulata* DC. Prodr. 7; 264 (1838); C.B.Cl. Comp. Ind. 15 (1876)
Type: Ceylon ad alt. 6000 ft. *Walker* 255 (E-GL).
Vernonia pectiniformis DC. var. Arn. Pug. 27 (1836).
Vernonia pectiniformis DC. quoad syn. *V. puncticulata:* Thw. Enum. 161 (1860); Hook.f. Fl. Brit. Ind. 3: 239 (1881); Trim. Hdb. Fl. Cey. 3; 10 (1895).

Adenostemma

Four species have been collected in Ceylon and may be separated as follows :

1. Leaves elliptic-lanceolate 1-1.5 cm broad, gradually attenuate at the base. Capitula ca. 3 mm diam. Corollas 3.5 mm long, glandular near the base, finely pubescent above. Achenes 3.25 mm long, sparsely verrucose.....*A. angustifolium*

1. Leaves ovate, obviously petiolate at the base, generally more than 1.5 cm broad.....2

2. Capitula ca 3 mm diam. Corollas 1-1.5 mm long, 3-4 lobed, densely tomentose in the upper part. Style branches scarcely exserted.....*A. parviflorum*

2. Capitula ca 5 mm diam. Corollas 3-4 mm long 4-5 lobed, glandular and pubescent but not densely so. Style branches strongly exserted.....3

3. Style branches exserted ca 2.5 mm beyond corolla mouth. Achenes distinctly verrucose. Leaves ±glabrous not prominently veined beneath.....*A. lavenia*

3. Style branches exserted 3-4 mm beyond corolla mouth. Achenes smooth or glandular at first. Leaves scabrous on the upper surface, pubescent on the prominent veins beneath.....*A. macrophyllum*

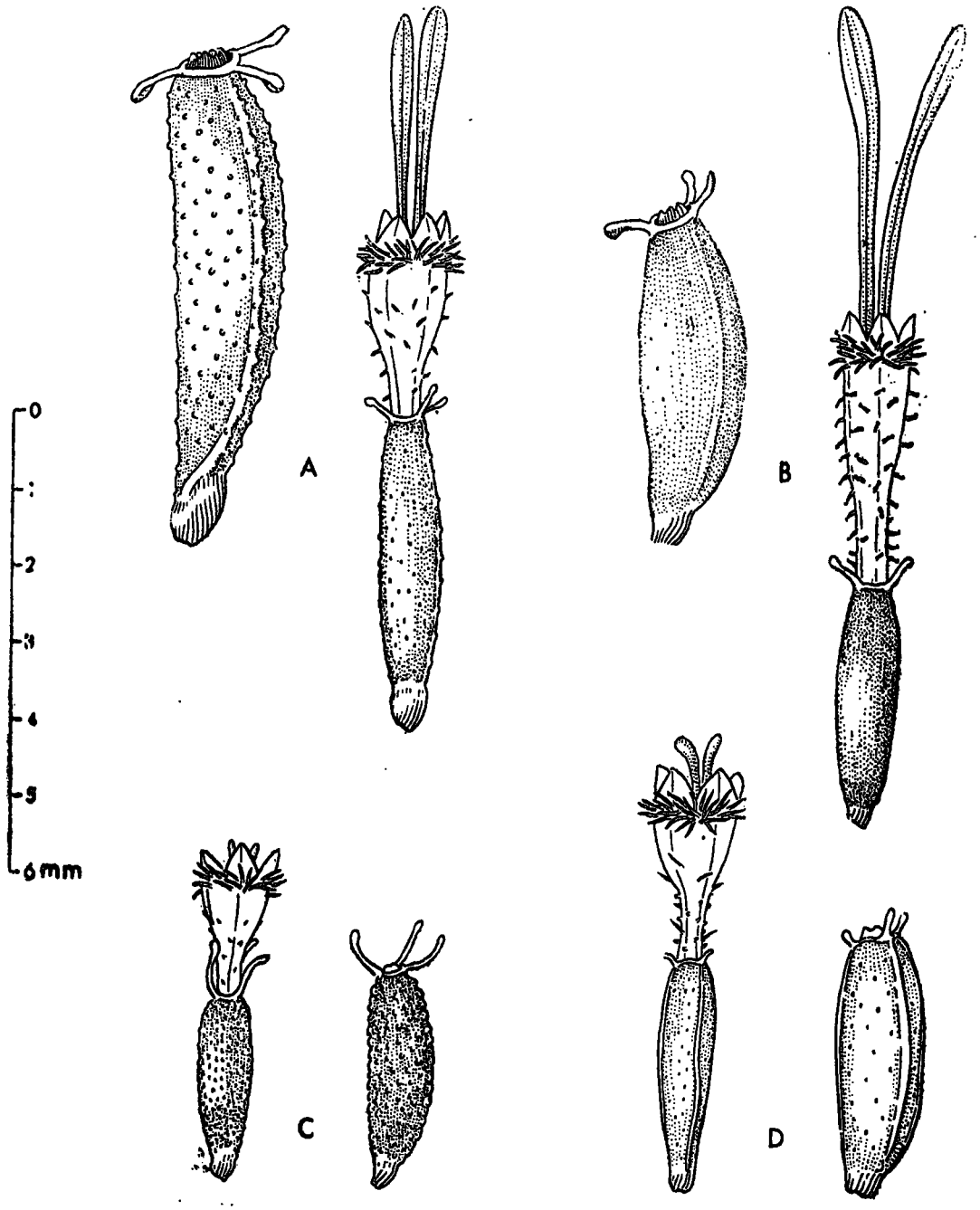

Fig. 1

Flowers and achenes of *Adenostemma* species. A – *A. lavenia*. B – *A. macrophyllum*. C – *A. parviflorum* D – *A. angustifolium*.

Adenostemma angustifolium Arn. Pug. 29 (1836). See Fig. 1, D.
syn. *A. viscosum* Forst. var. *typica* Hook. f. Fl. Brit. Ind. 3: 242 (1881) quoad syn.
A. viscosum Forst. Trim. Hdb. Fl. Cey. 3: 13 (1895).
A. viscosum var. *angustifolium* Edgw. ex C.B.Cl. Comp. Ind. 29 (1876)?

Although this has been reduced to synonymy under *A. lavenia* it is nevertheless a very distinct looking plant and one which (because of the smaller differently shaped corollas with distinct zones of glands and hairs and because of the shorter less tuberculate achenes) possibly does merit specific status. There are three collections of this species, none of which is represented at Peradeniya: *Moon* 542 (BM), *Walker* 303 (K) *s.n.* (E-GL). Possibly it is a rare species because Trimen noted (p. 13) that he had "never seen Arnott's *A. angustifolium*" and it is therefore unfortunate that none of the above specimens is localised. It may well be that this taxon is no longer represented on the island.

Adenostemma parviflorum (Bl.) DC. Prodr. 5; 111 (1836); Koster in Blumea 1: 476 (1935). See Fig. 1, C.

syn. *Lavenia parviflora* Blume, Bijdr. 906 (1826).
Adenostemma viscosum Forst. var. *parviflora* (Bl.) Hook. f. Fl. Brit. Ind. 3: 242 (1881).

This species is likewise known only from an unlocalised collection (*Harvey s.n.*) which is also not represented at Peradeniya. Because of its small size and floral details it is a distinctive plant and one which careful searching of possible localities, i.e. moist marshy areas, should disclose if it is still represented in the flora.

Adenostemma macrophyllum (Bl.) DC. Prodr. 5: 113 (1836); Koster in Blumea 1: 480 (1935). See Fig. 1, B.

syn. *Lavenia macrophylla* Blume, Bijdr. 905 (1826).
Adenostemma viscosum Forst. var. *reticulatum* (DC.) C.B.Cl. Comp. Ind. 30 (1876); Trim. Hdb. Fl. Cey. 3: 13 (1895).

This species is closely similar to *A. lavenia* (L.) O. Ktze. (See Alston in Trim. Hdb. Fl. Cey. Suppl. 6: 160, 1931) but is distinguished by its prominently veined leaves, glandular pubescent phyllaries and smooth non-tuberculate achenes.

Ageratum houstonianum Mill. Dict. Ed 8, n.2 (1768); Robinson in Proc. Amer. Acad. 49: 459 (1913) et Contrib. Gray Herb. 42: 459 (1913).

This Mexican species has been recorded from several palaeotropical localities but not hitherto from Ceylon. It is represented by three collections: Nuwara Eliya, 1934 (?), *W. K. Harris s.n.* (E); Hakgala, *Simpson* 8647 and near Maskeliya, *Grierson* 1057. In general facies the species is similar to the more common *A. conyzoides* Linn. although the capitula are smaller and occur in less dense clusters in the latter. They may be separated as follows:

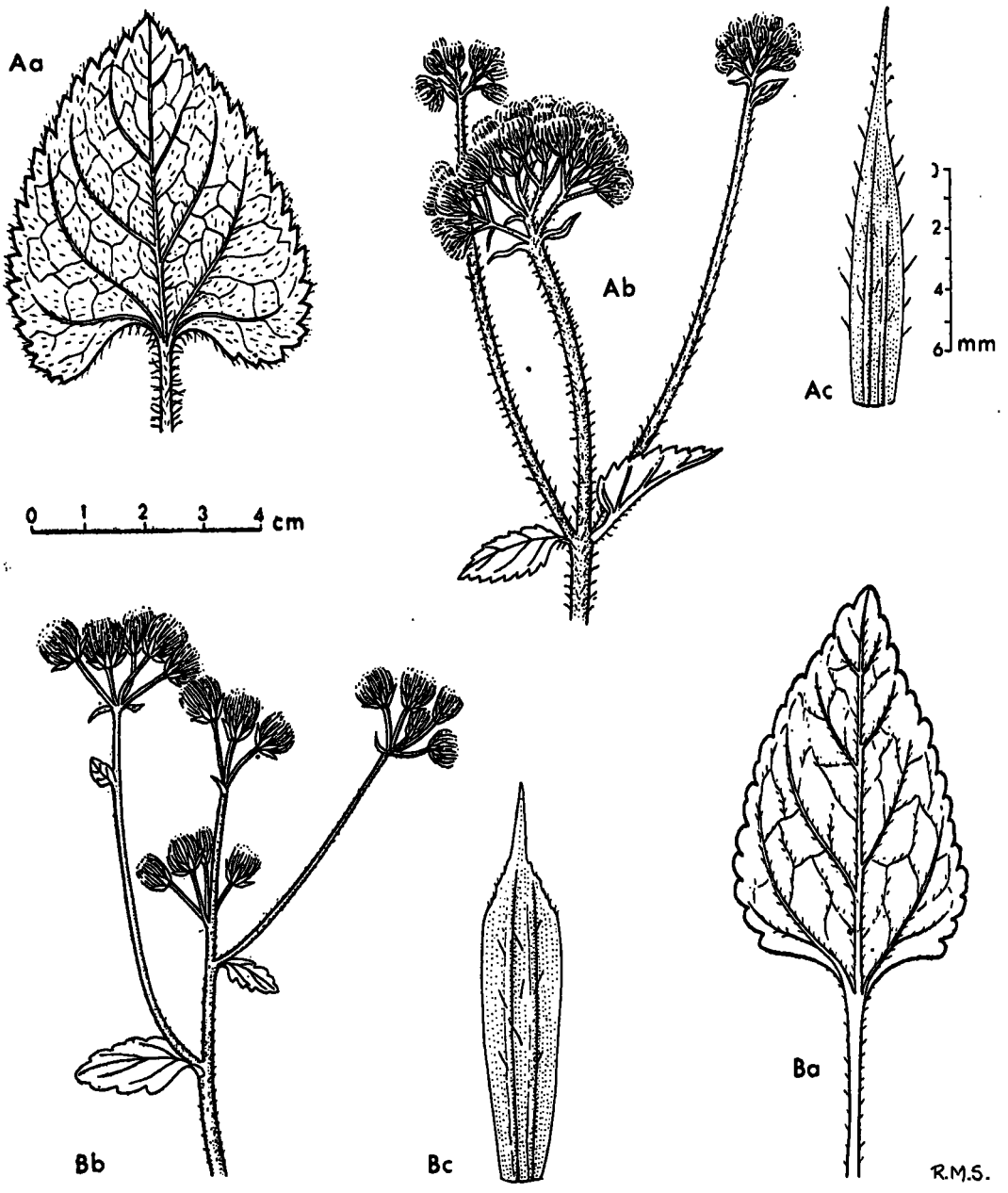

Fig. 2

Leaves (a), inflorescence(b) and phyllaries (c) of *Ageratum* species. A - *A. houstonianum*. B - *A. conyzoides*.

Involucral bracts linear-lanceolate, gradually acuminate, glandular ; margins entire (See Fig. 2, A) ..... *A. houstonianum*
Involucral bracts oblong±abruptly acuminate, pubescent or almost glabrous, eglandular; margins often dentate or erose. (See Fig. 2, B)..... *A. conyzoides*

Eupatorium inulifolium H. B. K. Nov. Gen. Sp. 4: 109 (1820). See Fig. 3.

Previously unrecorded from Ceylon, this species is only known from a roadside locality between Pussellawa and Ramboda at milestone 25, (*Mueller-Dombois* 67082406). Like *E. riparium* it is white flowered but can assume the proportions of a small tree up to 5 metres tall and may be recognised by its ovate leaves which are abruptly narrowed at the base into a cuneate petiole. In view of the rapid spread of both *E. odoratum* and *E. riparium* the progress of this species should be noted, lest it too becomes a menace in Ceylon.

Eupatorium riparium Regel in Gartenflora 15: 324, t. 525 (1866); Standley in Contrib. U. S Nat. Herb. 23: 1464 (1926)

Syn. *Ageratina riparia* (Regel) King & Robinson in Phytologia 19 (4): 216 (1970)

This species was recorded by Bond (Wild Fls. Ceyl. Hills 98 fig. 49: 1953) and has become a troublesome weed especially around upland tea estates. Its date of introduction into Ceylon is not recorded but the earliest herbarium collection at Peradeniya is dated 1926.

Mikania cordata (Burm.f.) Robinson in Contrib. Gray Herb. 104: 65 (1934)
syn. *Eupatorium cordatum* Burm. f. Fl. Ind. 176 t, 58 fig. 2 (1768).
Mikania scandens auct. non Linn.; Alston in Trim. Hdb. Fl. Cey. Suppl. 6: 160

Dichrocephala integrifolia (Linn. f.) O. Ktze. simple leaved variety. See Fig. 4.

As in the case of *Adenostemma angustifolia* this variety may no longer be represented in Ceylon for it has not been recollected since Thwaites' time. It is known from two collections: without locality, *Moon* 383 (BM) and Kotmale *Thwaites C.P.* 1766 (PDA, K, BM). Trimen gave it only passing mention as "an erect unbranched form with undivided leaves and small, more numerous, heads". Apart from the habit, the leaves are the most distinctive feature of this variety for they are simple, ovate-lanceolate and have acute apices. From the floral details there can be no doubt that it must be included within the concept of the above species which is vegetatively a very variable one in which several varieties have been described. Kuntze (Rev. Gen. 1: 333) listed var. *normalis* Miq. which he described as having undivided leaves but Miquel himself (Fl. Ind. Batav. 2: 37) cited Wight's Icones 3: t1096 which shows lyrate leaves, obovate in outline, obtuse at the apex and generally having one pair of lateral segments. The Ceylon plant, if still extant, may represent an undescribed variety.

Lagenophora gracilis Steetz in Lehmann, Pl. Preiss. 1: 431 (1845); Cabrera in Blumea 14: 300 (1966).
syn. *L. harveyi* Thw. Enum. 162 (1860)
L. billardieri auct. non Cass.: Trim. Hdb. Fl. Ceyl. 3: 16 (1895)
L. stipitata auct. non (Labill.) Druce: Alston in Trim. Hdb. Fl. Cey. Suppl. 6: 160 (1931).

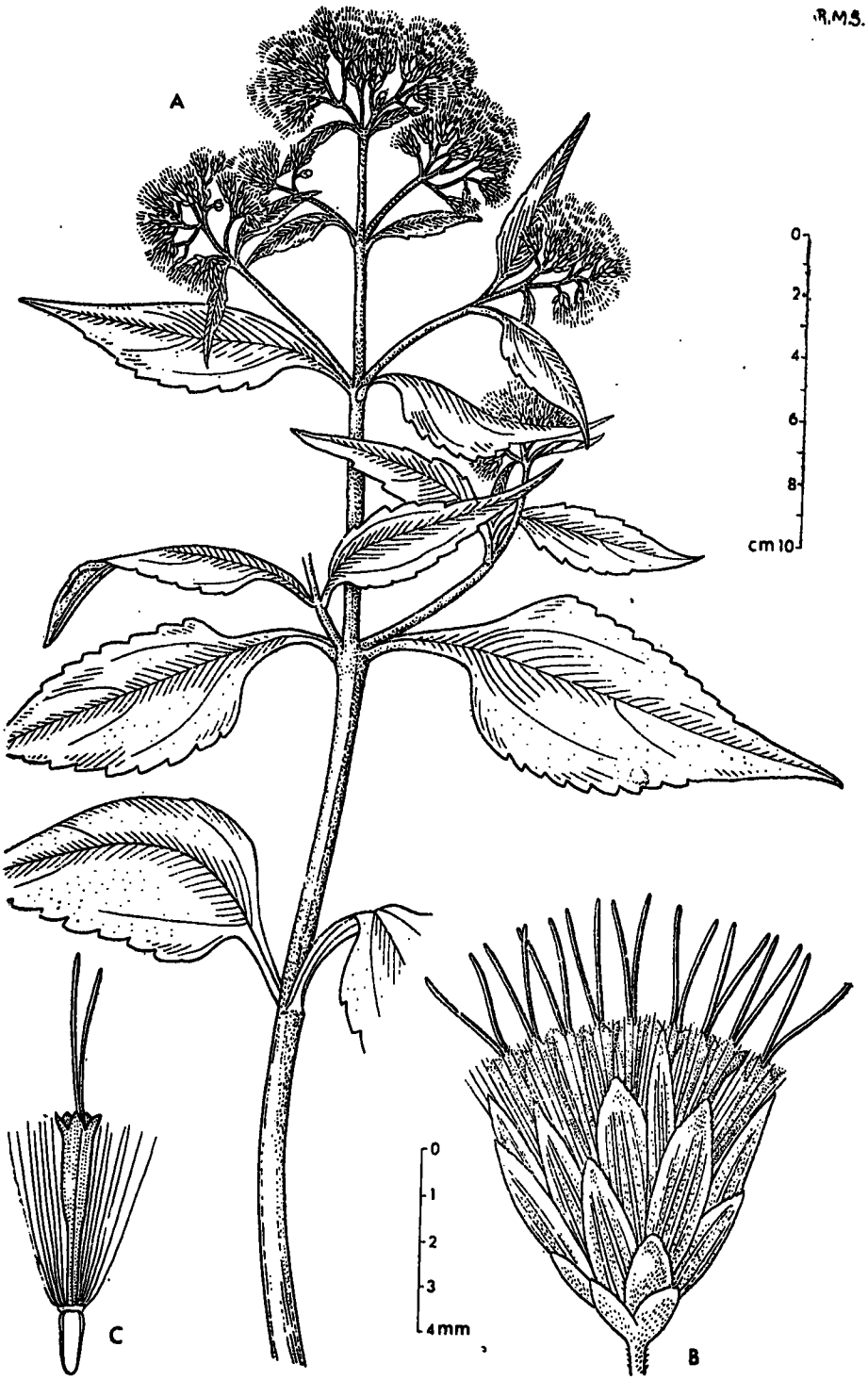

Fig. 3

Eupatorium inulifolium A - flowering shoot. B - capitulum. C - individual flower.

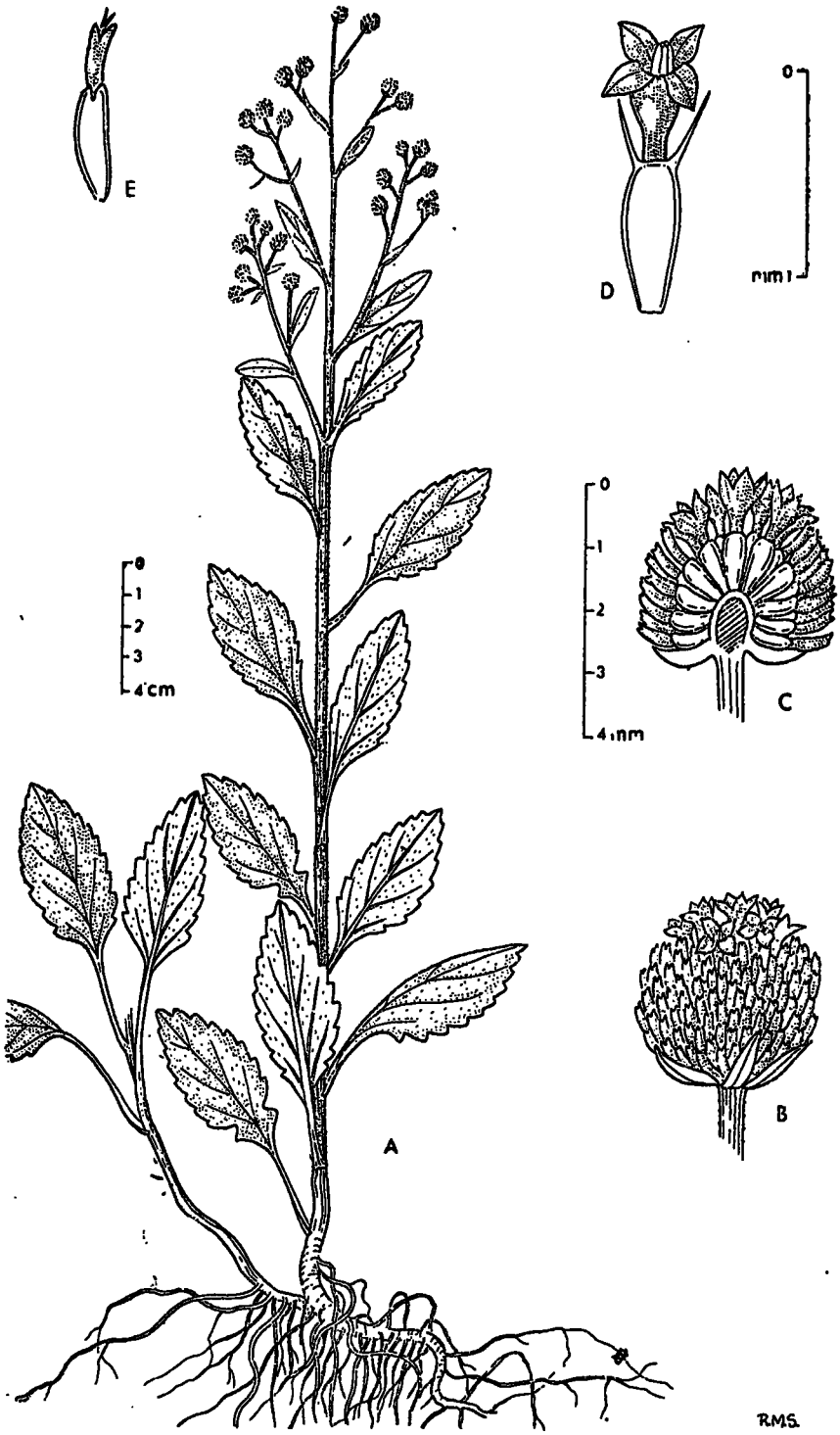

Fig. 4

Erect growing simple-leaved variant of *Dichrocephala integrifolia*. A - complete plant. B - whole capitulum. C - bisected capitulum. D - hermaphrodite flower. E - female flower.

Erigeron karwinskianus DC. Prodr. 5: 285 (1836)
syn. *E. mucronatus* DC. Prodr. 5: 285 (1836); Bond, Wild Fl. Cey. Hills 100 (1953).

The earliest specimens at Peradeniya, both of them from botanic gardens, are dated 1926 but this species probably did not become widespread for several years afterwards as Alston did not include it in his Supplement to Trimen's Handbook (1931). Its eventual spread was probably to some extent deliberate because Bond (l.c.) records that it was planted on tea estates " for the protection of drain sides and steep banks".

Both the names that De Candolle gave to this species have been widely used but *E. mucronatus* appears first to have been treated as a variety of *E. karwinskianus* by Hieronymus (in Bot. Jahr. 28: 585, 1901). It was later made completely synonymous with the latter by Standley (in Contrib. U.S. Nat. Herb. 23: 1499, 1926) and this practice has been followed by Solbrig in his paper on the South American species of *Erigeron* (in Contrib. Gray Herb. 91: 44, 1962).

Psiadia ceylanica (Arn.) Grierson *comb. nov.*
syn. *Solidago ceylanica* Arn. Pug. 29 (1836).
Amphirhapis zeylanica (Arn.) DC. Prodr. 7: 279 (1838); Thw. Enum. 162 (1860).
Microglossa zeylanica (Arn.) C.B.Cl. Comp. Ind. 58 (1876); Hook. f. Fl. Brit. Ind. 3: 257 (1881); Trim. Hdb. Fl. Cey. 3: 17 (1895).

De Candolle in his original description of *Microglossa* (Prodr. 5: 320, 1836) set out no valid points of distinction between it and *Psiadia* (described by Jacquin in 1797) an account of which he gave on a previous page (Prodr. 5: 318). Both genera are claimed to have disciform, yellowish or whitish-flowered capitula with several series of shortly liguled, fertile, female flowers and few, functionally male, disc flowers with sterile achenes. The involucres of both are imbricate and composed of several series of phyllaries ; achenes are more or less compressed and bear uniseriate pappusses of simple hairs. Additionally, *P. ceylanica* is similar to *P. glutinosa* Jacq., the type species of the genus, in habit, stature, leaf type and arrangement, size and disposition of the corymbs of capitula.

It is questionable whether any grounds exist for maintaining *Microglossa* as a separate genus. Indeed, the five species originally listed under it by De Candolle have all been transferred to *Psiadia* by various workers and these reductions have been upheld by Humbert whose Flora de Madagascar (189(1), 1960) probably contains the most extensive account of the genus at the present time.

Conyza leucantha (D. Don) Ludlow & Raven in Kew Bull. 17 : 71 (1963).
syn. *Erigeron leucanthum* D. Don, Prodr. Fl. Nepal. 171 (1825).
Conyza viscidula DC. Prodr. 5: 383 (1836); Thw. Enum. 163; Trim. Hdb. Fl. Cey. 3: 18 (1895).

Conyza floribunda H.B.K. Nov. Gen. Sp. 4: 73 (1820)

syn. *Erigeron floribundus* (H.B.K.) Sch. Bip. in Bull. Soc. Bot. Fr. 12: 81 (1965) et Linnaea 34: 534; B. L. Burtt in Kew Bull. pp. 369-372 (1948).
Erigeron sumatrensis Retz. sec. Ridley in Journ. Roy. As. Soc. Straits Br. 79: 90 (1918) et Fl. Malay Penins. 2: 196 (1923); Alston in Trim. Hdb. Fl. Ceyl. Suppl. 6: 161—dubie Retz. Obs. Bot. 5: 28 (1789).

Conyza bonariensis (L.) Cronq. in Bull. Torrey Cl. 70: 632 (1943)

syn. *Erigeron bonariensis* Linn. Sp. Pl. 863 (1753); B. L. Burtt in Kew Bull. p. 371 (1948).
Erigeron crispus Pourr. in Mem. Acad. Toul. 3: 318 (1788); Alston in Trim. Hdb. Fl. Cey. Suppl. 6: 161 (1931).
Erigeron linifolius Willd. Sp. Pl. 2: 1955 (1803); Trim. Hdb. Fl. Cey. 3: 17 (1895).

Conyza bonariensis is not " an exceedingly abundant weed " in Ceylon as Trimen described it. A few specimens have been collected from the Nuwara Eliya neighbourhood and it is obviously not common. It is similar to and confusable with *Conyza floribunda* which is a widespread weed. Curiously, there are no herbarium specimens of this latter species earlier than 1919—is it possible that it has ousted the previously abundant *C. bonariensis* from its territory? There is no previous record of the two species being in active competition.

In habit *C. bonariensis* is a much branched annual in which the lateral shoots regularly overtop the main axis after the latter has flowered. *C. floribunda*, on the other hand, is an erect plant often attaining 2 metres with few branches and more or less pyramidal in outline. The species are further distinguished by the less strongly pubescent phyllaries and paler coloured pappus of *C. floribunda*. In both these species the corollas of the marginal female flowers are as long as the involucre. In the third species, *C. leucantha*, the corollas of the female flowers are minute.

Blepharispermum petiolare DC. in Wight Contrib. 11 (1834). See Fig. 5.

The capitulum of this species has been incorrectly described and ambiguously illustrated. Each capitulum in the glomerule is laterally compressed and consists of six involucral bracts subtended by a short keeled bract. The two outer concave lateral phyllaries are shorter than the other phyllaries and each carries a female flower in its axil. The two inner phyllaries are folded and each encloses a single hermaphrodite flower the achene of which is sterile. At the centre there are two linear-spathulate involucral bracts which usually appear to be functionless. Abnormal capitula, however, may sometimes be encountered in which there is a fifth (hermaphrodite) flower borne centrally between the innermost pair of phyllaries.

Gnaphalium

There are three species in Ceylon which may be separated as follows :

1. Phyllaries greenish-yellow. Capitula in dense±flat-topped corymbs..... ..... *G. luteo-album* subsp. *affine*

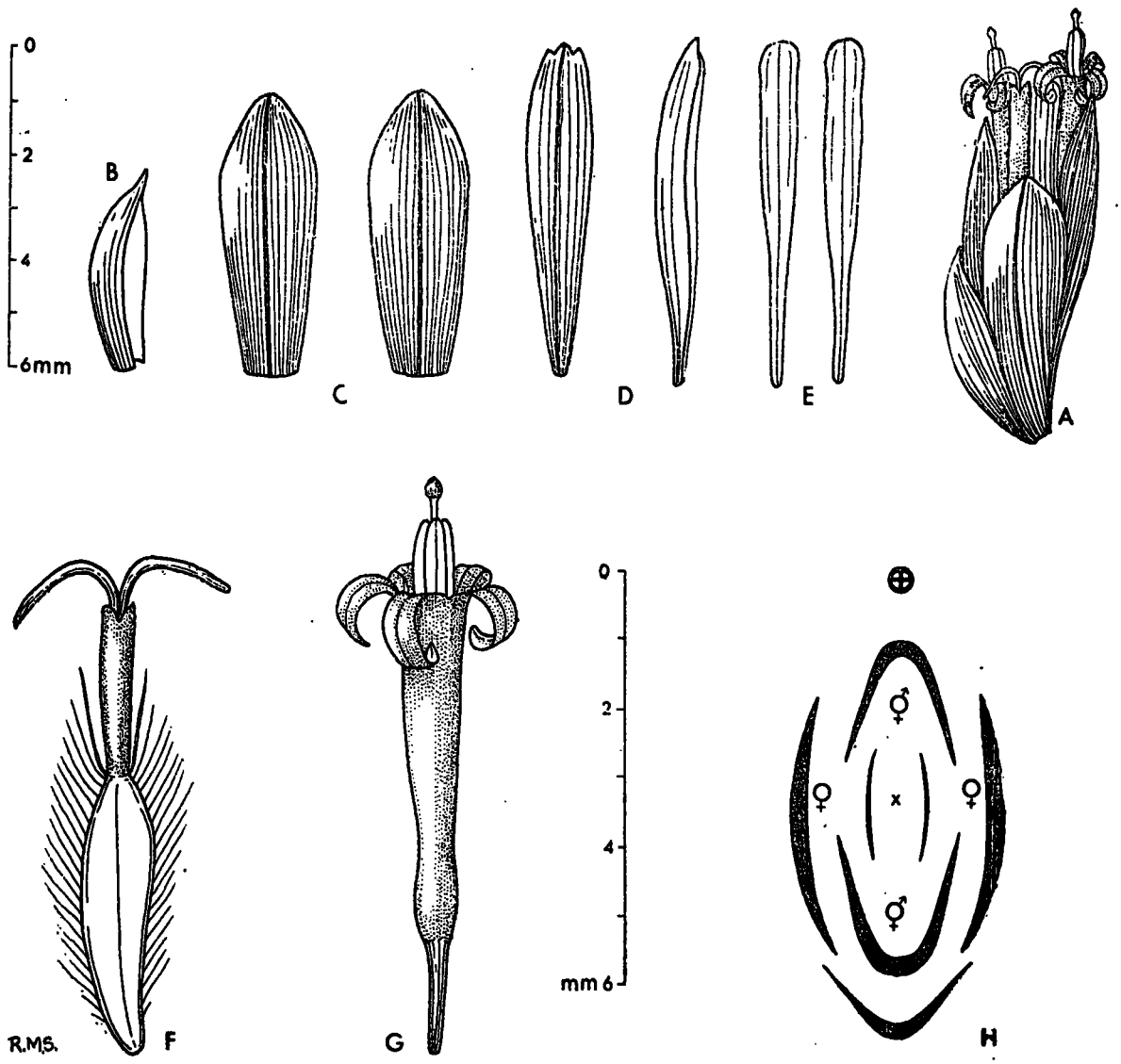

Fig. 5

Blepharispermum petiolare A - individual capitulum. B - subtending bract. C - outer phyllaries (enclosing female flowers) D - inner phyllaries (enclosing hermaphrodite flowers). E - functionless innermost phyllaries. F - female flower. G - hermaphrodite flower. H - diagram of capitulum.

1. Phyllaries stramineous, brownish or tinged purple.....2

2. Leaves noticeably discolorous, thinly pubescent or subglabrous above, densely white tomentose beneath, margins somewhat crisped. Capitula in dense ± unbranched terminal panicles, clusters of capitula subtended by short leaves. Phyllaries often purplish or brown, glabrous except at the base ..... *G. spicatum*

2. Leaves less obviously discolorous, pubescent on both surfaces but more densely so beneath, margins flat. Terminal panicles usually branched at least at the base, clusters of capitula subtended by longer leaves. Phyllaries stramineous, outer ones sparsely lanate ..... *G. pensylvanicum*

Gnaphalium luteo-album Linn. subsp. *affine* (Don) Koster in Blumea 4: 484 (1941)
syn. *Gnaphalium affine* Don, Prodr. Fl. Nepal. 173 (1825)
Anaphalis subdecurrens var. *lutea* Alston in Trim. Hdb. Fl. Cey. Suppl. 6: 164

Gnaphalium spicatum Lamk. Encycl. 2: 757 (1786)
syn. *Gamochaeta spicata* (Lam.) Cabrera in Bol. Soc. Argent. Bot. 9: 380 (1961);Fl. Prov. Buenos Aires 174 (1963).

Gnaphalium purpureum auct. non Linn.: Hook. f. Fl. Brit. Ind. 3: 289 (1887) *G. purpureum* and *G. spicatum* are closely allied annual species which are separated by the more obtuse phyllaries of the latter.

Gnaphalium pensylvanicum Willd. Enum. Hort. Berl. 867 (1809)
syn. Gamochaeta pensylvanica (Willd.) Cabrera in Bol. Soc. Argent. Bot. 9: 375 (1961); Fl. Prov. Buenos Aires 175 fig. 48 (1963).
Gnaphalium peregrinum Fern. in Rhodora 45: 479 t 795 (1943).
Gnaphalium polycaulon auct. non. Pers.; Alston in Trim. Hdb. Fl. Cey. Suppl. 6: 164 (1931).

Following my enquiry, there is no specimen of *G. pensylvanicum* in the Willdenow herbarium in Berlin. *G. polycaulon*, the name which Alston used, refers to an Indian species that does not occur in Ceylon.

Melampodium divaricatum (Rich. ex Pers.) DC. Prodr. 5: 520 (1836).
This species is widely planted as ornamental but sometimes escapes and grows in a wild condition.

Spilanthes
There are three species in Ceylon which may be separated as follows :—
1. Achenes completely epappose and eciliate.....*S. calva*

1. Achenes with weak pappus bristles, ciliate on one or both margins.....2

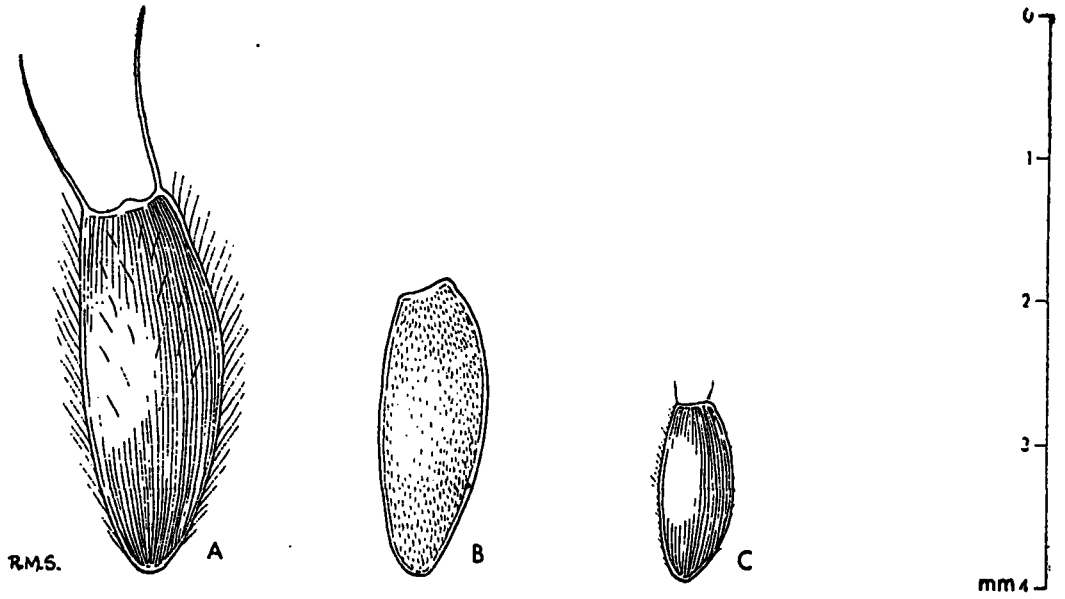

Fig. 6

Achenes of *Spilanthes* species. A - *S. paniculata*. B - *S. calva*. C - *S. iabadicensis*.

2. Capitula small 3-5 mm diameter. Achenes 1.25-1.5 mm long with very weak pappus bristles, ca 0.25 mm long.....*S. iabadicensis*

2. Capitula longer, 0.7-1 cm diameter. Achenes 2-2.5 mm long with stouter bristles, ca 1 mm long.....*S. paniculata*

Spilanthes calva DC. in Wight Contrib. 19 (1834); Koster & Philipson in Blumea 6; 354 (1950). See Fig. 6 B.

This species is known from Ramboda and Hantane *Thwaites C.P.* 684 p.p.; Rangalla, *Simpson* 8363 and from Hakgala Hill, *Grierson* 1061.

Spilanthes iabadicensis A. H. Moore in Proc. Amer. Acad. Arts & Sci. 42 : 542 (1907); Koster & Philipson, l.c. See Fig. 6 C.

Some specimens e.g. at the British Museum of *Thwaites C.P.* 684 (see above) belong to this species which has also been collected from Peradeniya and Katugastota, *Amaratunga* 763 and 985, Sigiriya, *Grierson* 1038 and from Ruwanwella (Ratnapura Dist.) *Amaratunga* 1091.

Spilanthes paniculata Wall. ex DC. Prodr. 5: 625 (1836); Koster & Philipson l.c. See Fig. 6 A.

This species is apparently less common than the other two and is known only from Colombo, *Trimen s.n.* and Peradeniya, *Amaratunga* 649.

Xanthium indicum König in Roxb. Fl. Ind. 3: 601 (1832); DC. in Wight Contrib. 17 (1834) et Prodr. 5: 523 (1836); Wight Ic. 8, t. 1104 (1846); Widder in Fedde Repert Beih. 20: 25 (1923).

syn. *Xanthium indicum* König in Roxb. Hort. Beng. 67 (1814) nom nud.
Xanthium strumarium Linn. Sp. Pl. 987 (1753) p.p. quoad syn. Fl. Zeyl. 564 ; Thw. Enum. 164 (1860) excl. syn. *X. inaequilaterum* DC.; Hook. f. Fl. Brit. Ind. 3: 303 (1881); Trim. Hdb. Fl. Cey. 3: 35 (1895) excl. syn.
X. orientale Linn.
Xanthium orientale auct. non Linn.: Moon, Cat. 63 (1824).

Cosmos caudatus H. B. K. Nov. Gen. Sp. 4: 188 (1820)
syn. *C. bipinnatus* auct. non. Cav.: Trim. Hdb. Fl. Cey. 3: 40 (1895) in nota.

Cosmos calvus (Sch. Bip. ex Miq.) Sherff in Pub. Field Mus. Nat. Hist. 8: 405 (1932)
syn. *Adenolepis calva* Miq. Fl. Ind. 2: 79 (1856).
Adenolepis calva Sch. Bip. in Flora 30: 375 (1847), nomen subnudum

Ratnapura Dist, railway embankment at Malawa between Kuruwita and Avissawella, *Grierson* 1024.

This species has not previously been recorded from Ceylon, though Trimen (l.c.) mentioned the occurrence of *C. sulphureus* Cav. possibly in error for this species. To support this belief it may be pointed out that *C. calvus* was once regarded as a variety of *C. sulphureus* by some authors.

Bidens

The two species present in Ceylon may be separated as follows :—

Leaves ternate, leaflets simple, serrate. Rays generally 5 (4-7).....*B. pilosa*

Leaves with 3-5 deeply dentate or pinnatifid leaflets. Rays generally 3.....*B. biternata*

Bidens pilosa L.

There are two varieties represented in Ceylon: the typical discoid var. *pilosa* and the short rayed, var. *minor* (Bl.) Sherff. (The Genus *Bidens*, Publ. Field Mus. 16: 412 and 421, 1937). The occurrence of the former was noted by Bond (Wild. Fls. Cey. Hills 108: 1953) but was not previously recorded. It appears to be localised in the Kandy-Peradeniya area. Var *minor* was referred to as *B. chinensis* Willd. by Alston (Suppl. p. 168).

Bidens biternata (Lour.) Merr. & Sherff in Sherff, Bot. Gaz. 88: 293 (1929) et Publ. Field Mus. 16: 388 (1937).

Sherff himself determined *Thwaites CP* 3583 at Kew as belonging to this species. Generally the leaves of *B. biternata* bear five leaflets the lower part of which are ternate, but the leaf characters used to separate this species in the key above appear in Sherff's monograph to be closely similar to those of *B. bipinnata.* He does not fully explain this but remarks (p. 403), apropos of Chinese material of *B. biternata* var *glabrata*, that there is a "gradation of the foliage toward the more membranous and more decompound type possessed by *B. bipinnata*".

Tagetes

Alston included both *T. erecta* L. and *T. patula* L. in the supplement (p. 169). I have only observed the former species in Ceylon though the presence of the second species may not be excluded. The characters which Alston used to separate the species are misleading but the two are readily distinguished by Rydberg (N. Amer. Fl. 34(2) 148-159, 1915) as follows :—

Involucre ca 2 cm long; glands of the lower half in 3-4 series, linear-oblong..... ..... *T. erecta*

Involucre ca 1-1.2 cm long, glands of the lower half in two series, elongate, narrowly linear..... *T. patula*

Additionally, the glands on the leaflets are numerous and scattered in *T. patula* but they are generally fewer and located near the base of each tooth in *T. erecta. T. patula* according to Towner in Amer. Journ. Bot. 48 (9): 743-751 (1961) is a tetraploid (2n = 48) probably resulting from hybridisation between *T. erecta* and *T. tenuifolia.*

Tanacetum cinerariifolium (Trev.) Sch. Bip. Tanacet. 58 (1844)
syn. *Pyrethrum cinerariifolium* Trev. Ind. Sem. Hort. Vrat. Isl. App 2, 2. 1820.

A native of south and central Europe this species is cultivated in India for the production of Pyrethrum powder. In Ceylon it is also cultivated but not extensively and is sometimes encountered in a semi-wild condition. (Mahacudugala, *Holmes* 544-Herb. Forest. Dept. Colombo).

Cotula australis (Sieb. ex Spr.) Hook. f. Despite several attempts I could not find this species. It was last collected at Single Tree Hill, Nuwara Eliya in 1925 by Alston and previously on Abbotsford Estate, Dimbula by W. Nock in 1890.

Artemisia dubia Wall. ex Bess. in Nouv. Mem. Soc. Imp. Nat. Mosc. 3: 39 (1834); DC. Prodr. 6: 110; Pamp. in Nuov. Giorn. Bot. Ital. N.S. 33: 447 (1926).
syn. *A. dubia* Wall. Cat. 3307 (1828) nom. nud.
A. vulgaris auct. non Linn.: C.B.Cl. Comp. Ind. 161 (1876); Hook. f. Fl. Brit. Ind. 3: 325 (1881).

var. *grata* (Wall. ex DC.) Pamp. in Nuov. Giorn. Bot. Ital. N.S. 36: 437 (1929).

syn. *A. grata* Wall. Cat. 3294 (1828) nom nud; DC. Prodr. 6: 114 (1837).
A. vulgaris auct. non Linn.: Trim. Hdb. Fl. Cey. 3: 43 (1895).

Youngia fuscipappa Thw. Enum. 168 (1860); Babc. & Stebbins, The Genus Youngia 63 (1937).

syn. *Crepis fuscipappa* (Thw.) C.B.Cl. Comp. Ind. 254 (1876); Trim. Hdb. Fl. Cey. 3: 51 (1895).

Youngia japonica (L.) DC. Prodr. 7: 194 (1838)

syn. *Prenanthes japonica* L. Mant. 907 (1767)
Crepis japonica (L.) Benth. Fl. Hongk. 194 (1861); Trim. Hdb. Fl. Cey. 3: 51 (1895).
Youngia lyrata Poir. in Lamk. Encycl. Suppl. 2: 332 (1811); Thw. Enum. 168.

Taraxacum javanicum v. Soest in Wentia 10: 56 (1963)

syn. *T. officinale* auct. non Wigg: Trim. Hdb. Fl. Cey. 3: 51 (1895)
T. vulgare auct. non Shrank: Alston in Trim. Hdb. Fl. Cey. Suppl. 6: 173 (1931).

This species is a native of Java and India and contrary to previous beliefs, does not belong to the European groups of species.

I am indebted to Professor J. L. van Soest who kindly determined my material of this species (*Grierson* 1117).

Sonchus

The three species found in Ceylon may be separated as follows :—

1. Achenes strongly compressed and narrowly winged, 3-ribbed on each face, ±smooth; tube of corolla longer than ligule; leaf margins coarsely and subpungently toothed ..... *S. asper* (L.) Hill

1. Achenes weakly compressed, unwinged with a variable number of ribs on each face, surface rough or wrinkled; tube of corolla longer or shorter than ligule 2

2. Corolla tube and ligule ± equal in length; involucre glandular-setose or eglandular but otherwise glabrous; cauline leaves usually runcinate with well developed auricles. Annual plants..... *S. oleraceus* L.

2. Corolla tube almost twice as long as ligule; involucre glandular-setose and tometose; cauline leaves elliptic-lanceolate, entire or shallowly pinnatifid, auricles small. Perennial plants..... *S. wightianus* DC

Sonchus wightianus DC. Prodr. 7: 187 (1838)
syn. *S. arvensis* auct. non Linn.: Hook. f. Fl. Brit. Ind. 3: 414 (1881); Alston in Trim. Hdb. Fl. Cey. Suppl. 6: 174 (1931).

Often growing in the mortar of bridges, embankments, etc. in the lower montane zone. Badulla Dist., Bogawantalawa-Borolanda, 1400 m, *Comanor* 1087; Kandy Dist., Parragalla between Gampola and Dolosbage, 3000 ft., *Grierson* 1007.

Launaea

The two species in Ceylon may be separated as follows :—

Prostrate stoloniferous herbs..... *L. sarmentosa*

Erect non-stoloniferous herbs with well developed stems ca 1.5 cm tall..... *L. intybacea*

Launaea sarmentosa (Willd.) Sch. Bip. ex O. Ktze. Rev. Gen. 1: 350 (1891); Alston in Trim. Hdb. Fl. Cey. Suppl. 6: 173 (1931).

syn. *Prenanthes sarmentosa* Willd. Phytogr. 10 t.6 f. 2 (1794) et Sp. Pl. 3 : 1540 (1803).
Launaea pinnatifida Cass. in Dict. Sci. Nat. 23: 85 (1831); Trim. Hdb. Fl. Ceyl. 3: 52 (1895).

These are two variants of this seashore species around the coasts of Ceylon which are geographically distinct. On the West Coast, in the North near Jaffna and on the East Coast near Trincomalee the plants are small. Leaves measure up to 3 cm long 1.2 cm broad; involucres 3 mm diam. at base 9-10 mm long on peduncles not more than 1 cm long; achenes 3 mm long; pappus 6.5 long. The ligules when fully extended form a circle 1.75 cm diam. This is the widespread form of this species which is known also from India, Malaysia, E. Africa and Mauritius.

On the South Coast between Galle and Yala (eg. *Comanor* 346, *Grierson* 1143 and *Cooray* 69042204 R) and probably also from the southern part of the East Coast near Pottuvil (*Mueller-Dombois & Cooray* 67072601) larger plants have been recorded. Their leaves measure up to 9 cm long 1.5 broad; the involucre 5 mm diam. at the base 1.3-1.6 cm long on peduncles 1-3 cm long; achenes 6.25 mm long, pappus 10 mm long. The ligules when fully extended form a circle 2.5 cm diam. Such plants are not peculiar to Ceylon ; at Kew there are similar specimens from Madras Beach (*Bourne s.n.*) and from the Andaman Islands (*Rogers s.n.*).

No one appears to have investigated the interrelationship of these variants and one may only speculate that the larger plant may represent a polyploid race.

Launaea intybacea (Jacq.) Beauv. in Bull. Soc. Bot. Geneve Ser. 2, 2: 114 (1910); Jeffrey in Kew Bull. 18: 474 (1966).
syn. *Lactuca intybacea* Jacq. Ic. Pl. Rar. 1: 16, t. 12 (1784)
Lactuca runcinata DC. in Wight Contrib. 26 (1834); Alston in Trim. Hdb. Fl. Cey. 6: 173 (1931).
Lactuca heyneana DC. Prodr. 7: 140 (1838); Trim. Hdb. Fl. Cey. 3: 52 (1895).

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