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A revision of the genus Alectra Thunberg (Scrophulariaceae) in Madagascar, with a description of Pseudomelasma, gen. nov.

E. FISCHER

Summary: The pantropical genus *Alectra* Thunberg comprises about 30 species. A revision of the Malagasy taxa is provided, in which five species are recognized, four of which are described as new: *A. hildebrandtii*, *A. humbertii*, *A. ibityensis* and *A. fruticosa*. The endemic *Alectra pedicularioides* Baker is recognized as a new endemic genus, *Pseudomelasma*, which differs from *Alectra* by its long pedicel and its calyx which enlarges in fruit; from *Melasma* by its persistent corolla; and from both genera by its proliferating inflorescence and its seed shape. A key to the Malagasy species is provided along with descriptions, illustrations and distributional data.

Résumé : Le genre pantropical *Alectra* Thunberg comprend environ 30 espèces. Une révision des espèces malgaches est presentée dans laquelle 5 espèces sont acceptées, dont 4 sont décrites comme nouvelles : *A. hildebrandtii*, *A. humbertii*, *A. ibityensis* et *A. fruticosa*. L'espèce endémique *Alectra pedicularioides* Baker représente un genre nouveau, *Pseudomelasma*, qui se distingue d'*Alectra* par le pédicelle long et le calice accrescent sur le fruit. Il se distingue de *Melasma* par la corolle persistante et des deux genres par l'inflorescence prolifère et la forme des graines. Une clé pour les espèces malgaches ainsi que des descriptions, illustrations et des dates de distribution sont présentées.

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INTRODUCTION

The genus *Alectra* Thunberg comprises about 30 species and was originally based on a South African species, *A. capensis* Thunberg. BENTHAM (1846) was the first to circumscribe *Alectra* with its modern limits, uniting it with *Glossostylis* Chamisso & Schlechtendahl. He at the time distinguished 12 species, characterized by subsessile flowers, a nonaccrescent calyx and a recurved style and stigma. WETTSTEIN (1891) however united *Alectra* with the related genus *Melasma* Bergius, considering it to be a section of the latter. WETTSTEIN's taxonomic view was subsequently followed by ENGLER (1897) and HIERN (1904).

For the treatment of the Flora of Tropical Africa, HEMSLEY & SKAN (1906) reestablished BENTHAM's generic concept, separating *Melasma* and *Alectra*. This view was followed by ENGLER (1922), MELCHIOR (1941), TROUPIN (1949) and most modern authors.

While the generic delimitation of *Alectra* is now generally accepted, species delimitation is quite difficult and remains the subject of controversial discussions. The most polymorphic species, *Alectra sessiliflora*, was clarified by HEPPER (1960), who distinguished 3 varieties and placed into synonymy the names *Alectra indica* Benth., *A. melampyroides* Benth., *A. senegalensis* Benth., *A. communis* Benth. and *A. avensis* (Benth.) Merr. This broad specific concept is also adopted here.

Apart from the treatments of *Alectra* for the Flora of West Tropical Africa (HEPPER 1963), South West Africa (MERXMÜLLER & ROESSLER 1967) and the Flora Zambesiaca area (PHILCOX 1990), no recent work on the genus is available. The classical papers of MELCHIOR (1941) and TROUPIN (1949), although still useful, are now outdated. During the preparation of Scrophulariaceae for the "Flore de Madagascar et des Comores", *Alectra* proved to be one of the most difficult genera. Therefore a separate study was carried out, the results of which are presented in this paper.

MATERIAL AND METHODS

This study is based on material collected during two field-trips to Madagascar in 1991 and 1993 as well as herbarium material. The specimens collected in the field were either dried or fixed in FAA and deposited in BONN. The following herbaria have been consulted (abbreviations according to HOLMGREN et al. 1990): BM, BR, K, P, ST and UPS. All cited material has been seen unless otherwise indicated.

The seeds used for scanning electron microscope (SEM) study were fixed on aluminium stubs with Tempfix, coated with gold in a Sputter coater (Balzers Union SCD 040), and investigated using a Cambridge Stereoscan 200 scanning electron microscope.

HISTORICAL SURVEY

The first species recorded in Madagascar was *Alectra melampyroides* Benth. (BENTHAM 1846), today considered a synonym of *Alectra sessiliflora* (Vahl) Kuntze. The endemic *A. pedicularioides* Baker was described in 1882, which is recognized here as a new monotypic genus (see below). BONATI (1927) studied the Madagascan specimens collected by D'ALLEIZETTE, DECARY, HUMBERT, PERRIER DE LA BÂTHIE, WATERLOT and VIGUIER. He recorded *Alectra melampyroides*, *A. communis* and, erroneously, *A. senegalensis*, all now regarded as synonyms of *A. sessiliflora*. In the same paper, he mentioned two endemic species, *Alectra perrieri* and *A. rupestris*, both without descriptions and thus nomina nuda. The latter is identical to *A. sessiliflora*, but *A. perrieri* is in fact a good endemic species and has until now remained undescribed. BONATI obviously intended to revise the Madagascan material of *Alectra* (cf. PERRIER DE LA BÂTHIE 1931) and in the Herbarium of the Muséum national d'Histoire naturelle (P), 5 specimens were found, that had been annotated by him as new species and often accompanied by a sketch of the floral morphology. The material ascribed to a species, which has been called provisionally *Alectra hildebrandtii* is identical to BONATI's *A. perrieri*. The original specimen of *A. perrieri* (*Perrier de la Bâthie 12428*) at Paris, however, is in a very poor state, whereas *Hildebrandt 3871* is of much better quality, and is represented by duplicate sheets at BM and K. Thus the latter collection is chosen as the type of a new species, which is named *A. hildebrandtii*.

The remaining specimens had been called *Alectra madagascariensis*, *A. principis*, *A. ramosa* and *A. stricta*. BONATI's death, however, prevented their publication. Close investigation by the present author showed that all the specimens except that bearing the name *A. hildebrandtii* (see above) belong to *A. sessiliflora*.

Herbarium studies as well as field observation in Madagascar additionally has revealed 3 new species, which are described below.

GENERIC DELIMITATION OF ALECTRA, MELASMA AND PSEUDOMELASMA

The inflorescence of *Alectra* is a terminal frondate raceme with subsessile flowers (Fig. 1), the calyx does not enlarge in fruit, the corolla is persistent, the style is clavate above middle, is recurved and is thus horse-shoe-shaped, and the seeds are linear or clavate, slender and truncate.

Melasma also has terminal frondate racemes, flowers that are distinctly pedicellate, a calyx that is inflated in fruit, a not persistent corolla, a clavate style, that is however not recurved, and seeds that are similar to those of *Alectra*. The fact that the shoots of *Melasma* are always leafy and show a leafy hypotagma below the frondate or frondobracteate main inflorescence led TROUPIN (1949) to the assumption that members of the genus are not parasitic. More recent investigation (e.g. VISSER 1981), however, has shown clearly the hemiparasitism of this group.

The new genus *Pseudomelasma* has an inflorescence with short, very reduced internodes. The flowers appear before the leaves and the inflorescence resembles in some respects that of *Aeginetia*, producing long-pedicelled flowers which seem to arise from one small part of the stem. After anthesis, however, the inflorescence proliferates, producing a leafy stem with well developed internodes (Fig. 1). This behaviour can be compared to that of some European *Veronica* species (e.g. *Veronica filiformis* Sm.). In *Pseudomelasma*, the shoot dies off after the vegetative period, i.e. in dry season. The innovation is provided by a subterranean sympodial rhizome. Based on its growth form, *Pseudomelasma* can thus be regarded as a small suffrutex. As in *Melasma*, the calyx inflates in fruit, but the corolla is persistent. The style is clavate and not recurved, and the seeds are oblong to ovate (Fig. 2), differing in shape from those of *Alectra* and *Melasma*. These differences are regarded as sufficient to describe *Pseudomelasma* as a new genus endemic to Madagascar.

PHYTOGEOGRAPHY

Although the genus *Alectra* is in need of a general revision, however, some comments can nevertheless be made regarding its phytogeography. Of the 65 published names, only 25-30 species should probably be recognized.

Tropical West Africa has 6 species, 3 of them endemic (HEPPER 1963). In Central Africa (Zaïre, Rwanda, Burundi) 8 species do occur, but only one seems to be restricted to this area (FISCHER, in prep.). In North East Tropical Africa 5 widespread species are recorded, while Tropical East Africa has about 10 species, probably all represented in adjacent areas as well. Southern Africa is especially rich, and at least 11 species occur in the Flora Zambesiaca area,

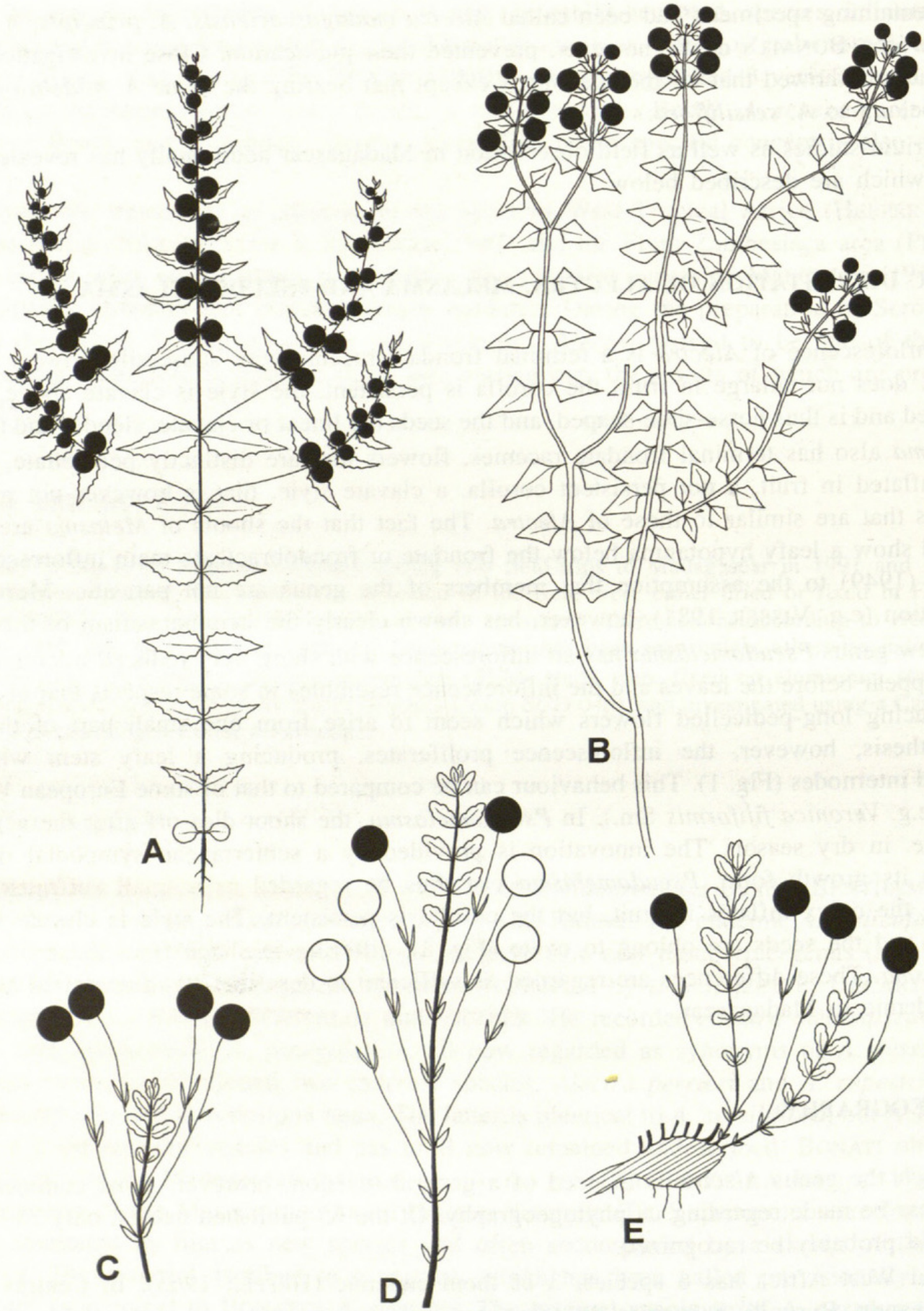

Fig. 1.—Inflorescence diagrams of **Alectra** and **Pseudomelasma**: **A, A. sessiliflora; B, A. fruticosa; C-E, P. pedicularioides.**

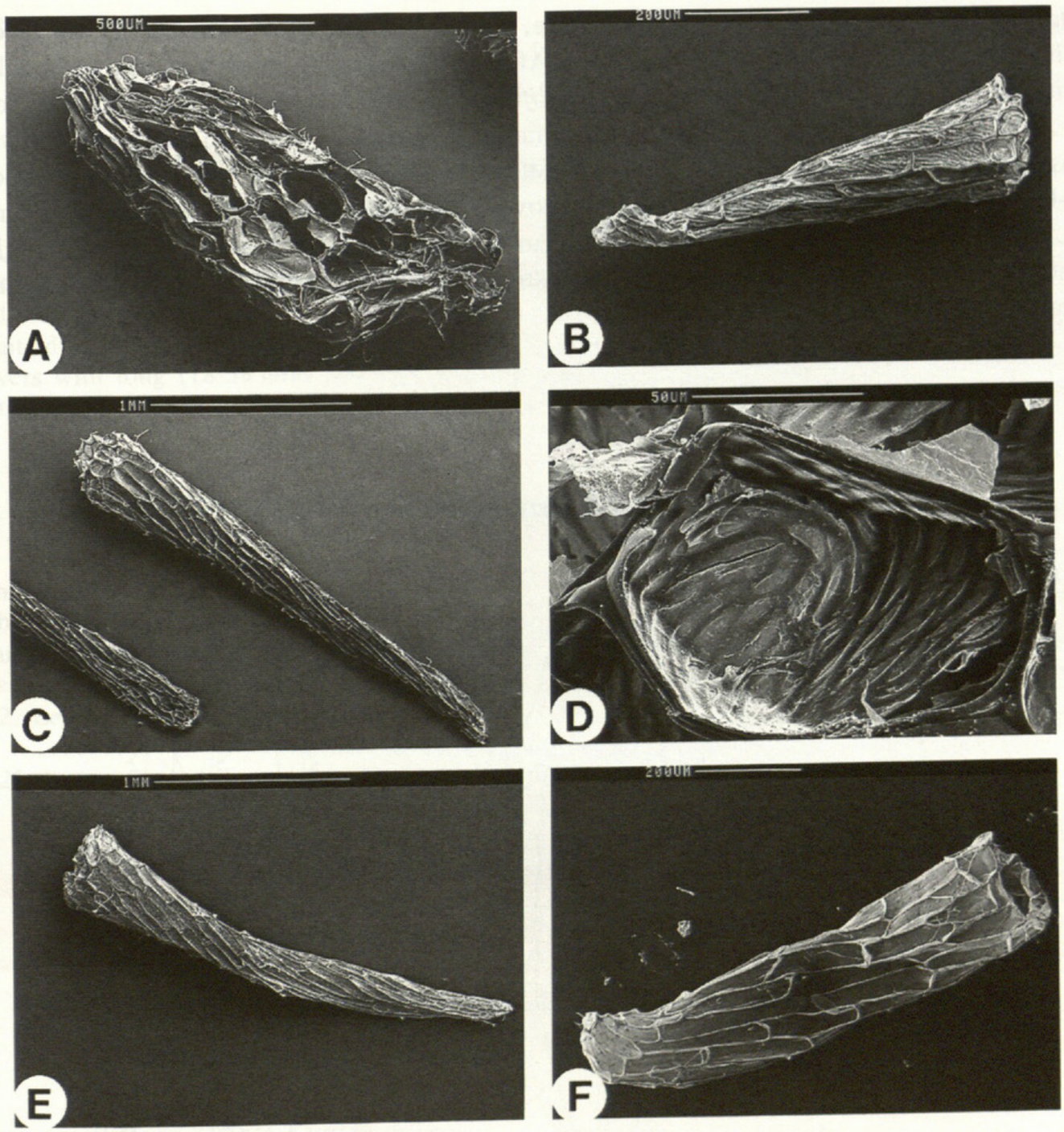

Fig. 2.—Seeds of **Pseudomelasma** and **Alectra**: **A, P. pedicularioides**; **B, A. humbertii**; **C-E, A. fruticosa**; **F, A. sessiliflora.** A from *Humbert 3644*, B from *Viguier & Humbert 1705*; C-E from *Humbert 22667*; F from *Fischer 410.*

where 3 species are endemic (PHILCOX 1990). Of these 3 species, 2 are restricted to northern Zambia (PHILCOX 1987). Namibia and South Africa possess about 12 species of which 8 are probably endemic.

In Madagascar 5 species occur, 4 of which are true endemics. Interestingly, the only fruticose species of *Alectra* has evolved here.

Outside Africa, one widespread species, *A. sessiliflora*, also occurs in South East Asia. In South America, 2-3 species are recorded.

Judging from this picture, which, of course, is not yet complete, the center of taxonomic diversity for *Alectra* appears to be Southern Africa. Madagascar, however, shows much more diversity in growth forms. Except for *A. sessiliflora*, all species seem to be restricted to small areas. *Alectra fruticosa* is ± restricted to the Marojejy massif in northern Madagascar, which is famous for its high degree of endemism (HUMBERT 1955) and only one locality is known in South-East Madagascar. *Alectra ibityensis* is known from the quartzitic Ibity and Itremo massifs, and *A. hildebrandtii* and *A. humbertii* both occur within a small range in the central highlands. The monotypic *Pseudomelasma* seems to be restricted to the granitic Ankaratra and Andringitra mountains.

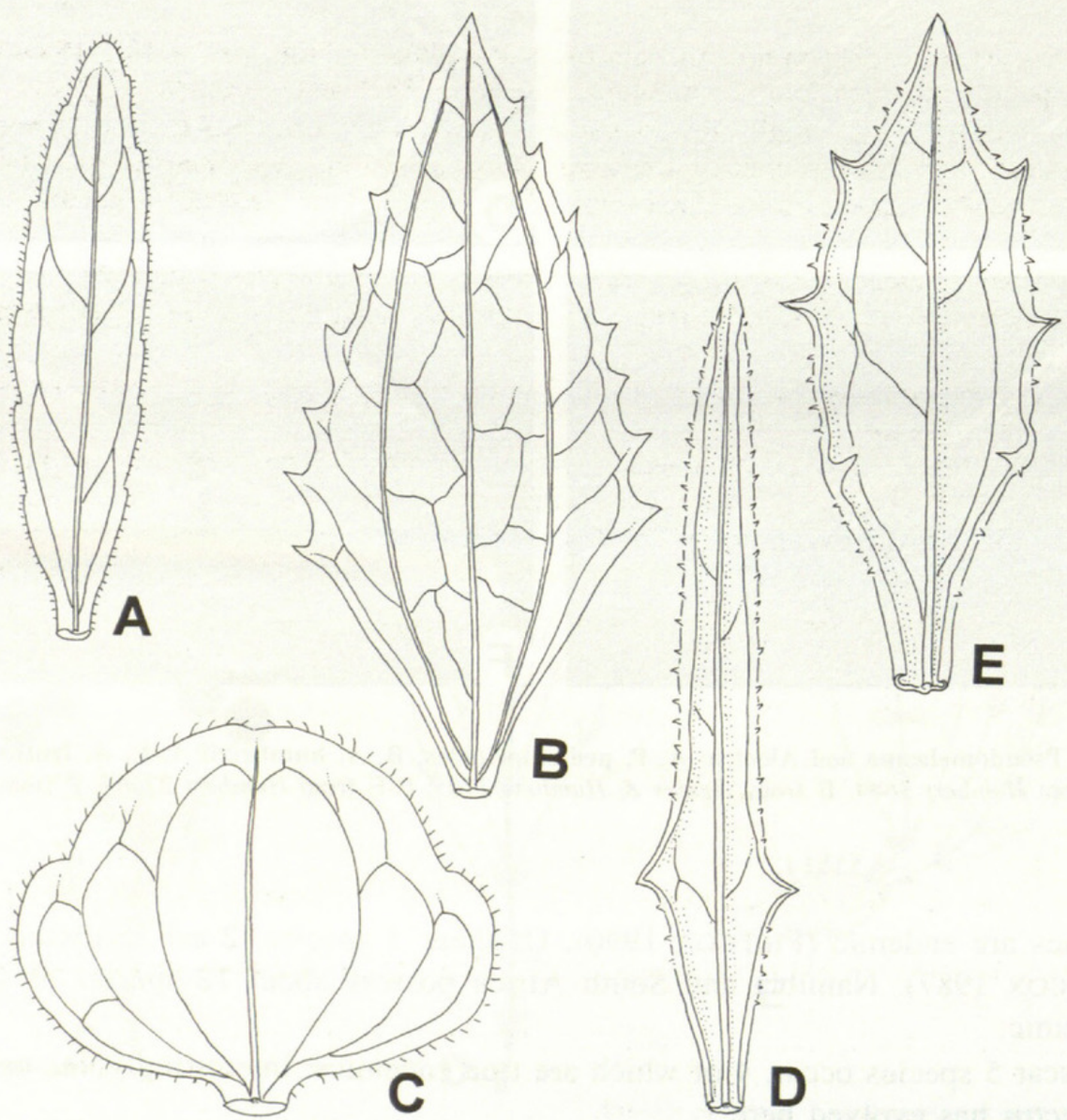

Fig. 3.—Leaves of **Alectra**: **A, A. hildebrandtii**; **B, A. sessiliflora**; **C, A. ibityensis**; **D, A. humbertii**; **E, A. fruticosa.** A from *Hildebrandt 3871*; B from *Fischer 410*; C from *Fischer 54*; D from *Viguier & Humbert 1705*; E from *Humbert 22667*.

SYSTEMATIC TREATMENT

Generic key

1. Plants ± large, up to 60(150) cm tall, annual or suffruticose, inflorescence not proliferating, with a leafy hypotagma, flowers with short (1-12 mm) pedicels, calyx not enlarging in fruit, style and stigma recurved, seeds narrowly lanceolate ..... **Alectra**

1'. Plants dwarf (5-9 cm tall), suffruticose, the inflorescence proliferating after anthesis with leafy shoots, flowers with long (18-38 mm) pedicels, calyx enlarging in fruit, style and stigma not recurved, seeds ovate ..... **Pseudomelasma pedicularioides**

Key to the Malagasy species of Alectra

1. Plants suffruticose, up to 150 cm tall, flowers red with yellow mouth, corolla 18.5-19 mm long, leaves with distinct petiole, 4-5 mm long, in montane forests of NE Madagascar (Marojejy) .. **A. fruticosa**

1'. Plants herbaceous, up to 60 cm tall, flowers yellow with darker veins, corolla up to 14 mm long, leaves sessile to subsessile, petiole 2-3 mm at maximum, in grassland and grassy areas within forests.

2. Leaves orbicular, obtuse, only slightly longer than wide, Ibity and Itremo mountains ..... **A. ibityensis**

2'. Leaves linear, linear-lanceolate to ovate, at least 2-3 times longer than wide.

3. Leaves linear, 25-42 × 2-4 mm, about 10 times longer than wide, calyx glabrous ..... **A. humbertii**

3'. Leaves lanceolate to ovate, about 3-5 times longer than wide, calyx pilose at least on sepal margin.

4. Leaves lanceolate, obtuse, 16-23 × 4-5 mm, inflorescence lax, anthers with obtuse thecae ..... **A. hildebrandtii**

4'. Leaves ovate, acute, 25-40 × 8-17 mm, inflorescence dense, anthers with apiculate thecae ..... **A. sessiliflora**

Alectra sessiliflora (Vahl) Kuntze

Rev. Gen. Pl. 2: 458 (1891).

Gerardia sessiliflora Vahl, Symb. Bot. 3: 79 (1794).

Alectra melampyroides Benth. in DC., Prodromus 10: 339 (1846).—Type: *Drège s.n.*, South Africa, Natal (holo-, K).

Alectra communis Hemsley, Flora Tropical Africa 4, 2: 372 (1906).—Type: *Buchanan 520*, Malawi, s.loc., 1891 (lecto-, K; isolecto-, BM).

Alectra rupestris Bonati, Bull. Soc. Bot. France 74: 96 (1927), nom. nud.

Alectra senegalensis var. *pallescens* Bonati, Bull. Soc. Bot. France 74: 96 (1927), nom. nud.

Alectra madagascariensis Bonati, nom. in sched.

Alectra principis Bonati, nom. in sched.

Alectra ramosa Bonati, nom. in sched.

Alectra stricta Bonati, nom. in sched.

TYPE.—From South Africa (not seen).

Erect annual herb, 15-40(60) cm tall, stems simple or branched with 2-3 pairs of paracladia, hispid with retrorse hairs. Leaves sessile, subsessile to shortly petiolate, opposite, alternate within inflorescence, linear-ovate to broadly or narrowly lanceolate, 14-30(55) × 8-18(28) mm, subentire or crenate to coarsely toothed, acute, cuneate, rounded to cordate at base, appressed to subappressed to spreading, hispid to subglabrous, petiole 2-3 mm long.

Inflorescence a dense raceme, bracts leaf-like (frondate to frondobracteate), the lower pair 17-19 × 7-12 mm. Pedicels 0.5-1.5 mm long. Bracteoles linear, equalling or slightly shorter than calyx, hairy ciliate to glabrous. Calyx (6)8.5 mm long, glabrous to ciliate on nerves and margins of lobes, calyx tube 4-5 mm long, free sepal lobes 3.5-4.5 mm long, subequal, triangular, acute. Corolla yellow to dark orange, with reddish-purple venation, 13-14 mm long, corolla tube 9.5 mm long, free petals 4 mm long. Stamens unequal, longer abaxial filaments bearded, 6.5 mm long, anthers with 1.6 mm long thecae, adaxial filaments 4 mm long, with 1.4 mm long thecae, anther thecae apiculate. Ovary 2.5-2.8 mm long, style and stigma clavate, horseshoe-like recurved, 8-8.5 mm long, included in the corolla.

Capsule spherical, 5.5 × 5.5 mm long.

Marshes, swamps and wet grassland. A widespread species known from West and Central Africa, Sudan, Ethiopia, East Africa, South East Africa, South Africa, Madagascar and Mauritius to India, Burma, Thailand, the Philipines, Taiwan and China. HEPPER (1960) distinguished 3 varieties which, however, all display intergradations, and are therefore not recognized in this revision. For Madagascar, material is known that would correspond to *A. sessiliflora* var. *monticola* (Engler) Melchior and var. *sessiliflora*.—Fig. 2, 3, 4, 10.

MATERIAL STUDIED.—*Académie Malgache s.n.*, W et NW, X.1904 (P); *Baron 1570*, Central Madagascar (K); *2255*, ibid. (P); *5250*, ibid. (P); *5555*, NW Madagascar (K); *5665*, NW Madagascar (K); *6506*, N Madagascar (K); *Beaujard 199*, Fort-Carnot, région Tanala, 1986 (P); *Benoist s.n.*, Manjakatompo, 18.XII.1950 (P); *905*, Tsimbazaza, 7.V.1951 (P); *Bernier 199*, Ste Marie, 1834 (P); *Boivin s.n.*, Ste Marie, 1850 (P); *s.n.*, ibid., 1854 (BM); *81*, Grande Comore, 1850 (P); *Bosser 18769*, col des Tapias, 45 km d'Ambositra, XII.1963 (P); *Bowles 46*, s.loc., s.d. (K); *Catat 429*, Ankisatra, V.1889 (P); *Cours 1038*, Sasamanga, Onibe, XI.1938 (P); *3609*, Ambodihasina, 14.XII.1950 (P); *5206*, Antamboara, distr. Midongy du sud, massif de l'Ivakoany, montagne Analanavelo, s.d. (P); *Cowan s.n.*, Ankafana, 1880 (BM); *d'Alleizette 184m*, Namisana, VII.1905 (P); *Decary 3886*, Vanganidrano, 12.VI.1925 (P); *3933*, Fenoarivo, 30.IV.1926 (P); *4608*, Befotaka, piste de Farafangana, 9.VIII.1926 (P); *7546*, vallée de l'Ikopa, au NW d'Ankazobe, 15.III.1930 (P); *7604*, Tampoketsa, au NE de Fenoarivo, 16.III.1930 (P); *7613*, Fenoarivo, 17.III.1930 (P); *7717*, Ambohimalaza, près Ankazobe, 29.III.1930 (P); *8206*, Bekodoka, 17.IX.1930 (P); *14343*, Tampoketsa, Ankazobe, 29.IV.1943 (P); *16770*, Zahamana, 23.III.1941 (P); *17600*, Antsahapandrano, Ankaratra, 9.IV.1942 (P); *17918*, environs de Moramanga, 8.VII.1942 (P); *18358*, Lakato, distr. de Moramanga, 5.IX.1942 (P); *Fischer 34*, inselberg Lohavohitra near Andranovelona, 26.III.1993 (BONN); *202*, Ambalamanaka, S of Ambositra, secondary grassland within mountain rain forest, 29.III.1993 (BONN); *410*, Ranomafana National Park, 18.III.1991 (BONN); *487*, lac Mantasoa ca. 3-4 km S Ambatolaona, lake shore, 17.IV.1993 (BONN); *492*, rock plateau W Sambaina, ca. 33 km E of Antananarivo, 17.IV.1993 (BONN); *Forsyth Major 361*, Ambohimitombo forest, 21.I.1895 (BM); *Humbert 12712*, vallée moyenne du Mandrare, près Andabolava, Mt Vohitrotsy, XII.1933 (P); *Humbert & Capuron 24978*, montagnes au N de Mangindrano (Haute Maevarano) jusqu'aux sommets d'Ambohimirahanvavy, 19.I-12.II.1951 (P); *Jard. Bot. Tananarive 19-2*, Tsimbazaza, 10.V.1935 (P); *Lantz s.n.*, Ampasenambe, VI.1881 (P); *Peltier 16*, lac

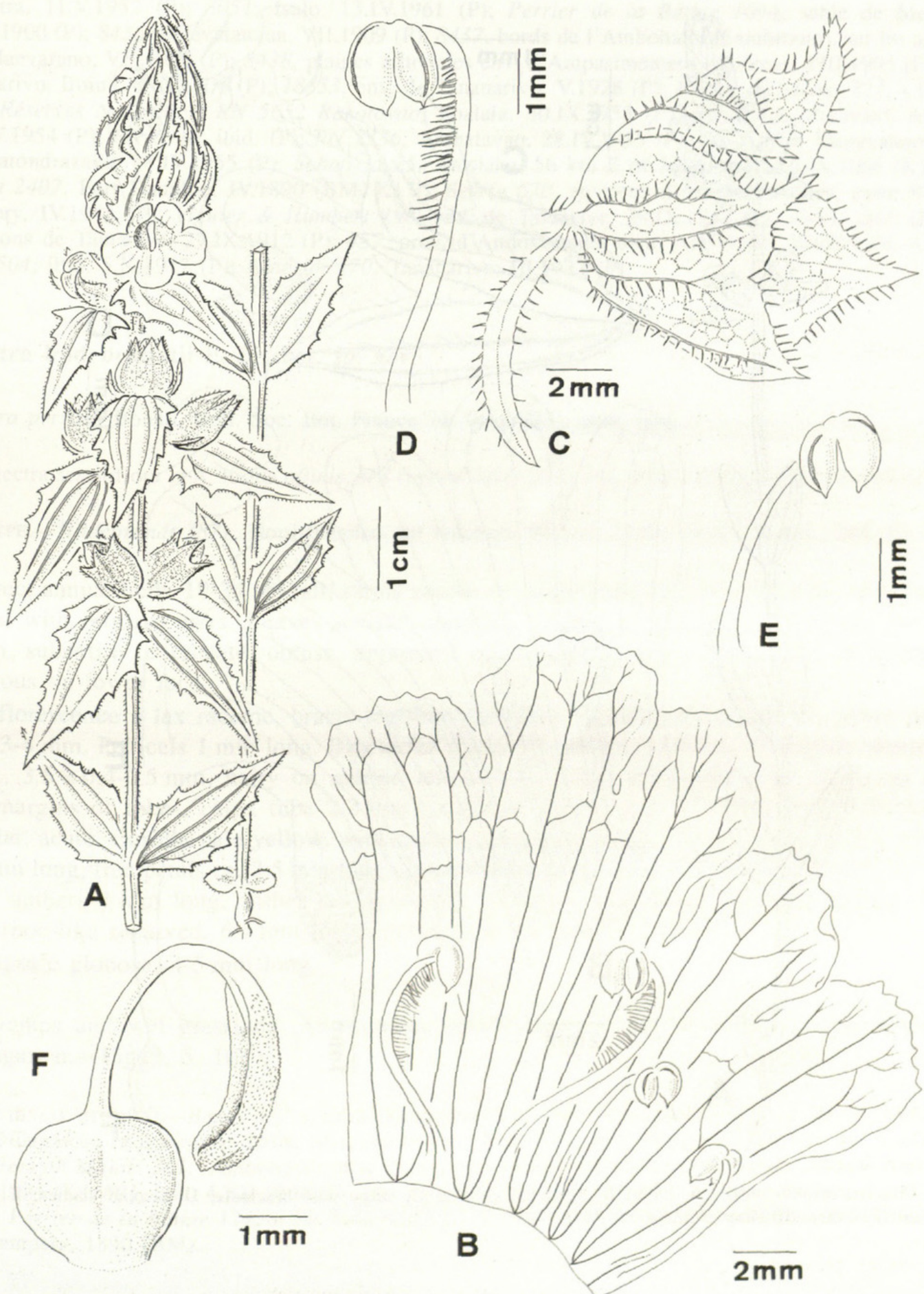

Fig. 4.—**Alectra sessiliflora**: **A**, habit; **B**, dissected corolla; **C**, calyx with bracteole; **D**, abaxial stamen; **E**, adaxial stamen; **F**, ovary. All from *Fischer 410*.

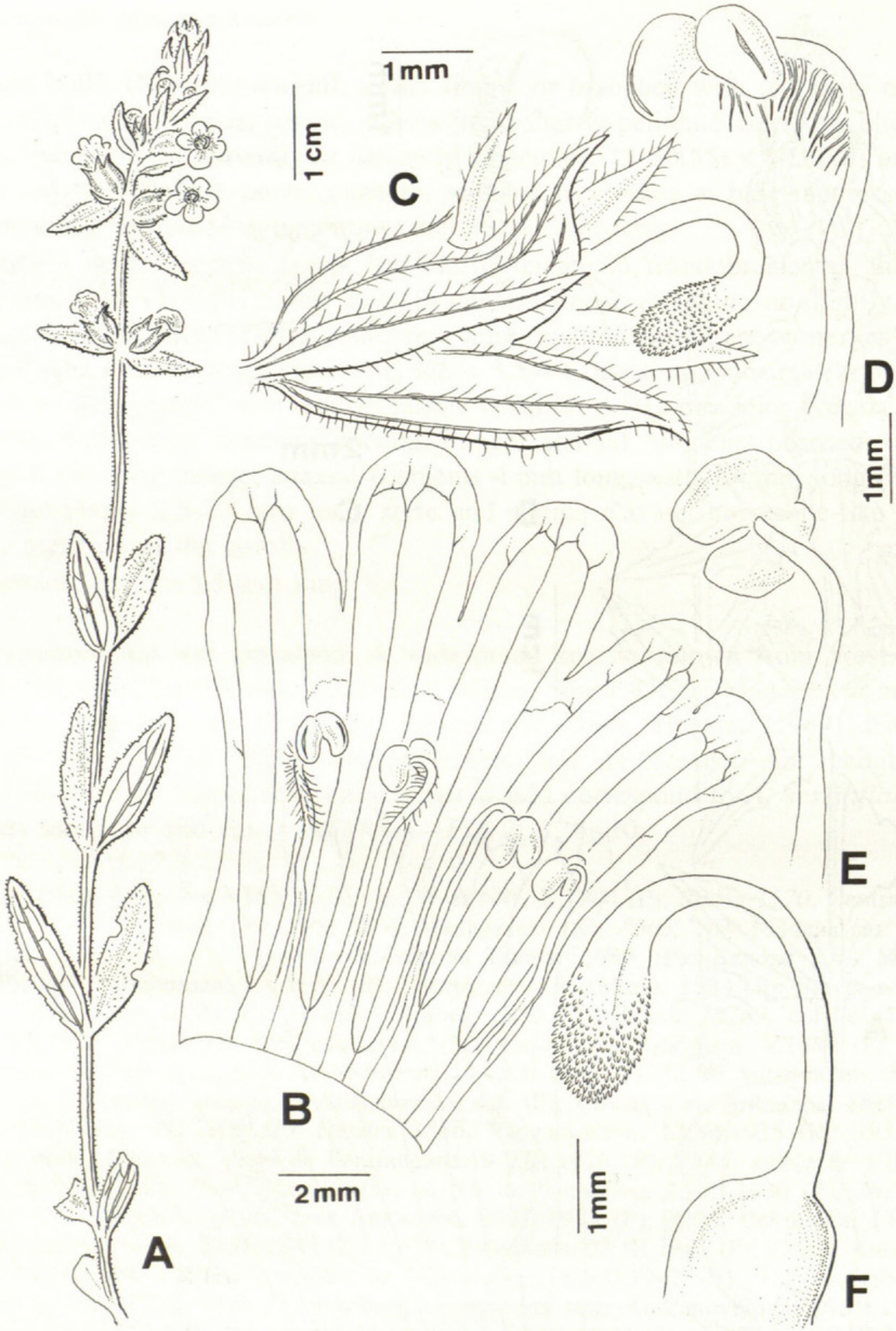

Fig. 5.—**Alectra hildebrandtii**: **A**, habit; **B**, dissected corolla; **C**, calyx with bracteole; **D**, abaxial stamen; **E**, adaxial stamen; **F**, ovary. All from *Hildebrandt 3871*.

Alaotra, 11.V.1952 (P); *3051*, Isalo, 13.IV.1961 (P); *Perrier de la Bâthie 1094*, sable de Menavava, VIII.1900 (P); *8436*, Maevatanana, VII.1909 (P); *8437*, bords de l'Ambohatra (Sambirano), sur les alluvions du Maevarano, VII.1909 (P); *8438*, plaines alluviales env. d'Ampasimentera (rizières), VIII.1905 (P); *8451*, Bemarivo, Boina, VIII.1906 (P); *18553*, env. de Tananarivo, V.1928 (P); *Prince d'Orléans 822*, s.loc., s.d. (P); *Réserves Naturelles: RN 5652 Rakotovao*, Soalala, 30.IX.1953 (P); *RN 6314*, Marovato, Ambanja, 12.IV.1954 (P); *RN 6316*, ibid. (P); *RN 7336*, Ambalavao, 28.IV.1955 (P); *RN 10510*, Menavahatra, distr. Ambatondrazaka, 28.IV.1955 (P); *Schofield 25*, Antsiaka, 56 km E of Mandritsara, 6.IX.1968 (K); *Scott-Elliot 2407*, Fort Dauphin, IV.1890 (BM, K, P); *Seyrig 670*, environs d'Ampandrandava, entre Bekily et Tsivory, IV.1943 (P); *Viguier & Humbert 198*, env. de Tamatave, 20.IX.1912 (P); *198A*, ibid. (P); *427*, environs de Tamatave, 27.IX.1912 (P); *457*, prov. d'Andovoranto, distr. Anivorano, Brickaville, 4.X.1912 (P); *504*, ibid. 5.X.1912 (P); *Waterlot 470*, Tananarive, III.1922 (P).

Alectra hildebrandtii E. Fischer, *sp. nov.*

Alectra perrieri Bonati, Bull. Soc. Bot. France 74: 96 (1927), nom. nud.

Alectra sessiliflora *et* A. lurida *affinis, sed racema laxa, foliis lanceolatis obtusis et thecis obtusis differt.*

TYPE.—*Hildebrandt 3871*, Nord-Betsileo auf feuchten Wiesen, I.1881 (holo-, P; iso-, BM, K).

Erect annual herb, 19-34 cm tall, stems simple or rarely branched with 1-2 pairs of paracladia, hispid with retrorse hairs. Leaves sessile, opposite, broadly to narrowly lanceolate, 16-23 × 4-5 mm, subentire or crenate, obtuse, appressed or subappressed to stem, hispid on upper face, glabrous on lower face.

Inflorescence a lax raceme, bracts leaf-like (frondate to frondobracteate), the lower pair 10-12 × 3-4 mm. Pedicels 1 mm long. Bracteoles linear lanceolate, equalling or slightly shorter than calyx, 3.5 × 0.4-0.5 mm, hairy on margin and nerves. Calyx 4.5-5 mm long, ciliate on nerves and margins of lobes, calyx tube 2-3 mm long, free sepal lobes 2.5-3 mm long, subequal, triangular, acute. Corolla pale yellow, with reddish-purple venation, 8-9 mm long, corolla tube 5.5-6.5 mm long, free petals ca. 2,5 mm long. Stamens subequal, abaxial filaments bearded, 3-3.5 mm long, anthers 1 mm long, anther not apiculate. Ovary 1.5 mm long, style and stigma clavate, horseshoe-like recurved, 6.5 mm long, included in the corolla.

Capsule globose, 4-5 mm long.

Swamps and wet grassland. An endemic species known only from the Central Plateau of Madagascar.—Fig. 3, 5, 10.

MATERIAL STUDIED.—*Baron 917*, Central Madagascar (K); *1895*, Central Madagascar (K, P); *6786*, Central Madagascar (K); *Benoist 1674*, Manjakatompo, 19.XII.1951 (P); *Bosser 18769*, col des Tapias, s.d. (P); *Forsyth-Major 361*, Ambohimitombo Forest, 25.I.1895 (K); *638*, Mt Antely above Ambositra, 1.XII.1894 (K); *691*, ibid. 4.XII.1894; *Hildebrandt 3871*, Nord-Betsileo auf feuchten Wiesen, I.1881 (BM, K, P); *Perrier de la Bâthie 12428*, Mt Vohitrakadaly, tourbières, II.1919 (P); *Scott-Elliot 2114*, forest near Angalampera, 1890 (BM).

Alectra ibityensis E. Fischer, *sp. nov.*

Haec species differt ab Alectra sessiliflora *foliis orbiculatis, floribus minoribus et staminibus valde inaequalibus staminibus adaxialibus distincte minoribus.*

TYPE.—*Fischer 54*, Ibity mountains ca. 20 km S of Antsirabe, on quarzit rocks, 27.III.1993 (holo-, P).

Erect annual (perennial?) herb, 4.5-15 cm tall, stems simple or rarely branched with 1 pair of paracladia, hispid with retrorse hairs. Leaves subsessile to shortly petiolate, opposite, alternate within inflorescence, orbicular, 9-18 × 9-18 mm, subentire or slightly crenate, obtuse, rounded to cordate at base, hispid on upper face to glabrous on lower face, petiole 1-2 mm long. Inflorescence a lax dense raceme, bracts leaf-like (frondate to frondobracteate), the lower pair 12 × 15 mm. Pedicels 1 mm long. Bracteoles linear-lanceolate, equalling or slightly shorter than calyx, 4-5 × 0.5 mm, ciliate. Calyx 5.5 mm long, ciliate on nerves and margins of lobes, calyx tube 3.5 mm long, free sepal lobes 2 mm long, subequal, triangular, acute. Corolla pale yellow, 9 mm long, corolla tube 5 mm long, free petals 2.5 (upper lip) to 4 mm (lower lip) long. Stamens unequal, longer abaxial filament bearded, 3 mm long, anthers with unequal thecae, the longer 1.2 mm and the shorter 1 mm long, filament of adaxial stamens 1.5-1.6 mm long, with 0.8 mm long thecae, anther thecae apiculate.

Ovary 1.7 mm long, style and stigma clavate, horseshoe-like recurved, 5.9-6 mm long, included in the corolla.

Capsule globose, 3-4 mm long.

On quarzite rocks with *Pachypodium brevicaule* Bak. and *Uapaca bojeri* Baill. An endemic species known only from Ibity and Itremo mountains.—Fig. 3, 6, 10.

MATERIAL STUDIED.—*Fischer 54*, Ibity mountains ca. 20 km S of Antsirabe, on quarzit rocks, 27.III.1993 (P); *Jard. Bot. Tananarive 4767*, Mt Tsitondroina, 15.IV.1941 (P); *Mabberley 759*, Fianarantsoa Prov., near Morondava-Ambatofinandrahana road, col d'Itremo, Itremo mountains, 23.III.1971 (K); *Peltier 2097*, massif de l'Ibity, 19.III.1960 (P).

Alectra humbertii E. Fischer, *sp. nov.*

Differt ab Alectra sessiliflora *foliis linealibus, indumento ex pilis multicellulatis, filamentis glabris et thecis obtusis. Ab* Alectra lineare *floribus minoribus et thecis obtusis valde differt. Ab* Alectra rigida *calyce glabro et thecis obtusis differt.*

TYPE.—*Viguier & Humbert 1705*, province du Vakinankaratra, district d'Ambatolampy, Mt Tsiafajovana, massif d'Ankaratra, 28.XI.1912 (holo-, P).

Erect annual herb, 21-46 cm tall, stems simple or rarely branched with 1 pair of paracladia, hispid with retrorse hairs. Leaves sessile, opposite, linear, 25-42 × 2-4 mm, subentire or with 2-3 coarse teeth, acute, hispid with pluricellular hairs on upper face to glabrous on lower face.

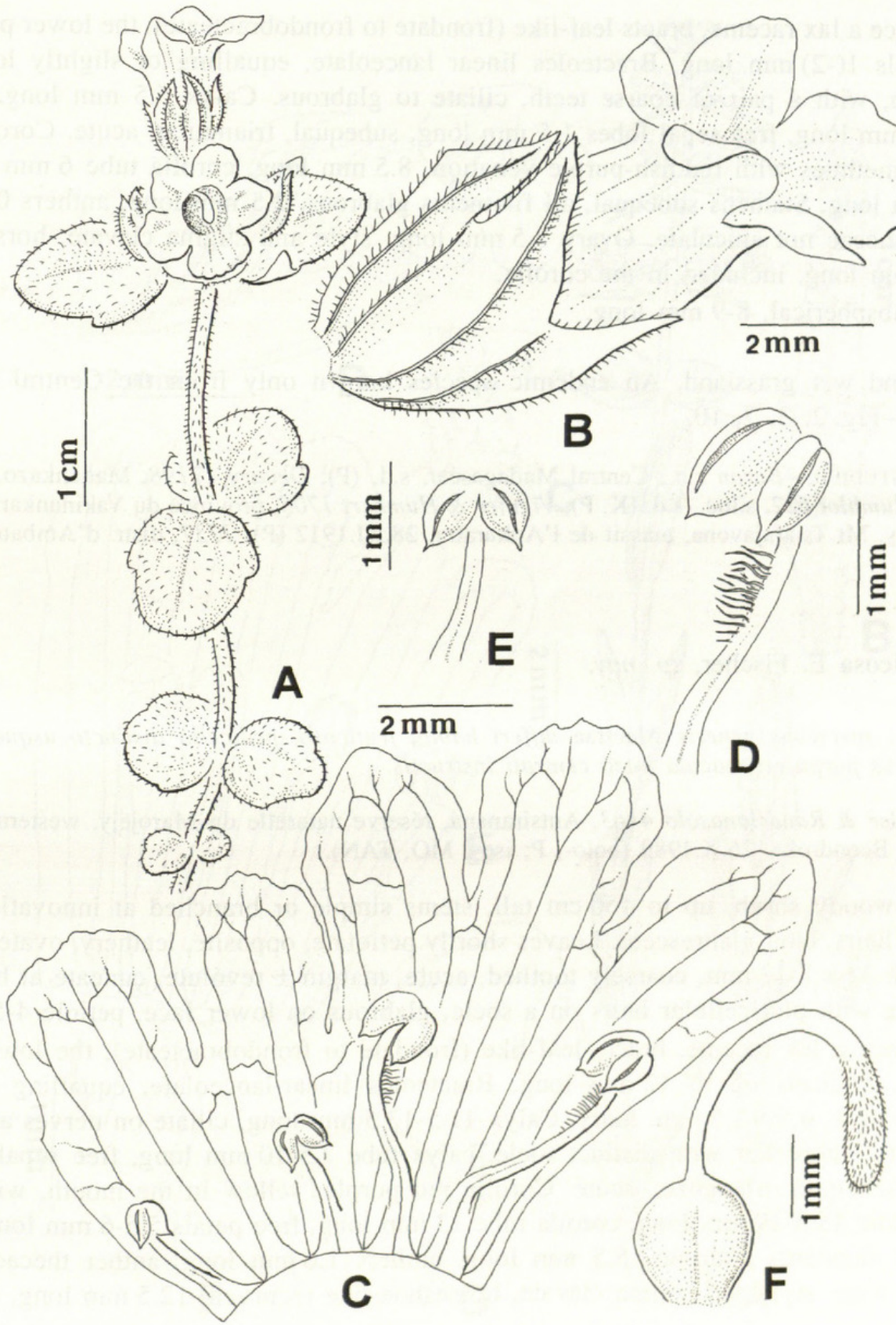

Fig. 6.—**Alectra ibityensis**: **A**, habit; **B**, flower; **C**, dissected corolla; **D**, abaxial stamen; **E**, adaxial stamen; **F**, ovary. All from *Fischer 54*.

Inflorescence a lax raceme, bracts leaf-like (frondate to frondobracteate), the lower pair 22 × 2-3 mm. Pedicels 1(-2) mm long. Bracteoles linear lanceolate, equalling or slightly longer than calyx, 61 mm, with a pair of coarse teeth, ciliate to glabrous. Calyx 5.5 mm long, glabrous, calyx tube 4 mm long, free sepal lobes 1.5 mm long, subequal, triangular, acute. Corolla yellow to orange, sometimes with reddish-purple venation, 8.5 mm long, corolla tube 6 mm long, free petals 2.5 mm long. Stamens subequal, all filaments glabrous, 2.5 mm long, anthers 0.8-0.9 mm long, anther thecae not apiculate. Ovary 2.5 mm long, style and stigma clavate, horseshoe-like recurved, 8 mm long, included in the corolla.

Capsule subspherical, 8-9 mm long.

Swamps and wet grassland. An endemic species known only from the Central Plateau of Madagascar.—Fig. 2, 3, 7, 10.

MATERIAL STUDIED.—*Baron s.n.*, Central Madagascar, s.d. (P); *Decary 17198*, Manankazo, Ankazobe, 3.I.1942 (P); *Humblot 622*, s.loc., s.d. (K, P); *Viguier & Humbert 1705*, province du Vakinankaratra, district d'Ambatolampy, Mt Tsiafajavona, massif de l'Ankaratra, 28.XI.1912 (P); *1737*, distr. d'Ambatolampy, s.d. (P).

Alectra fruticosa E. Fischer, *sp. nov.*

Ab omnibus speciebus generis Alectrae *differt habitu fruticoso, pedicello distincto usque ad 12 mm longo et floribus purpureis macula lutea centrali instructis.*

TYPE.—*Miller & Randrianasolo 4463*, Antsiranana, réserve naturelle du Marojejy, western slopes and summit of Mt Beondroka, 26.X.1989 (holo-, P; iso-, MO, TAN).

Perennial woody shrub, up to 150 cm tall, stems simple or branched at innovations, hispid with retrorse hairs, later glabrescent. Leaves shortly petiolate, opposite, leathery, ovate to broadly lanceolate, 18-32 × 7-12 mm, coarsely toothed, acute, margin ± revolute, cuneate at base, hispid on upper face with pluricellular hairs on a socle, glabrous on lower face, petiole 4-5 mm long.

Inflorescence a lax raceme, bracts leaf-like (frondate to frondobracteate), the lower pair 12-20 × 6-9 mm. Pedicels up to 12 mm long. Bracteoles linear-lanceolate, equalling or slightly shorter than calyx, 6.5 × 1.5 mm, hairy. Calyx 11.5-13.5 mm long, ciliate on nerves and margins of lobes, hairs multicellar with distinct socle, calyx tube 7.5-10 mm long, free sepal lobes 3.5-4 mm long, subequal, triangular, acute. Corolla red purple, yellow in the mouth, with reddish-purple venation, 18.5-19 mm long, corolla tube 13 mm long, free petals 5.5-6 mm long. Stamens subequal, all filaments glabrous, 5.5 mm long, anthers 1.6 mm long, anther thecae apiculate. Ovary 3 mm long, style and stigma clavate, horseshoe-like recurved, 12.5 mm long, included in the corolla.

Capsule globose, 11-12 mm long.

Lichen forest and open wind-swept ridges, heath vegetation near the summits and montane forest from 830-1850 m. An endemic species known from the Marojejy massif.—Fig. 2, 3, 8, 10.

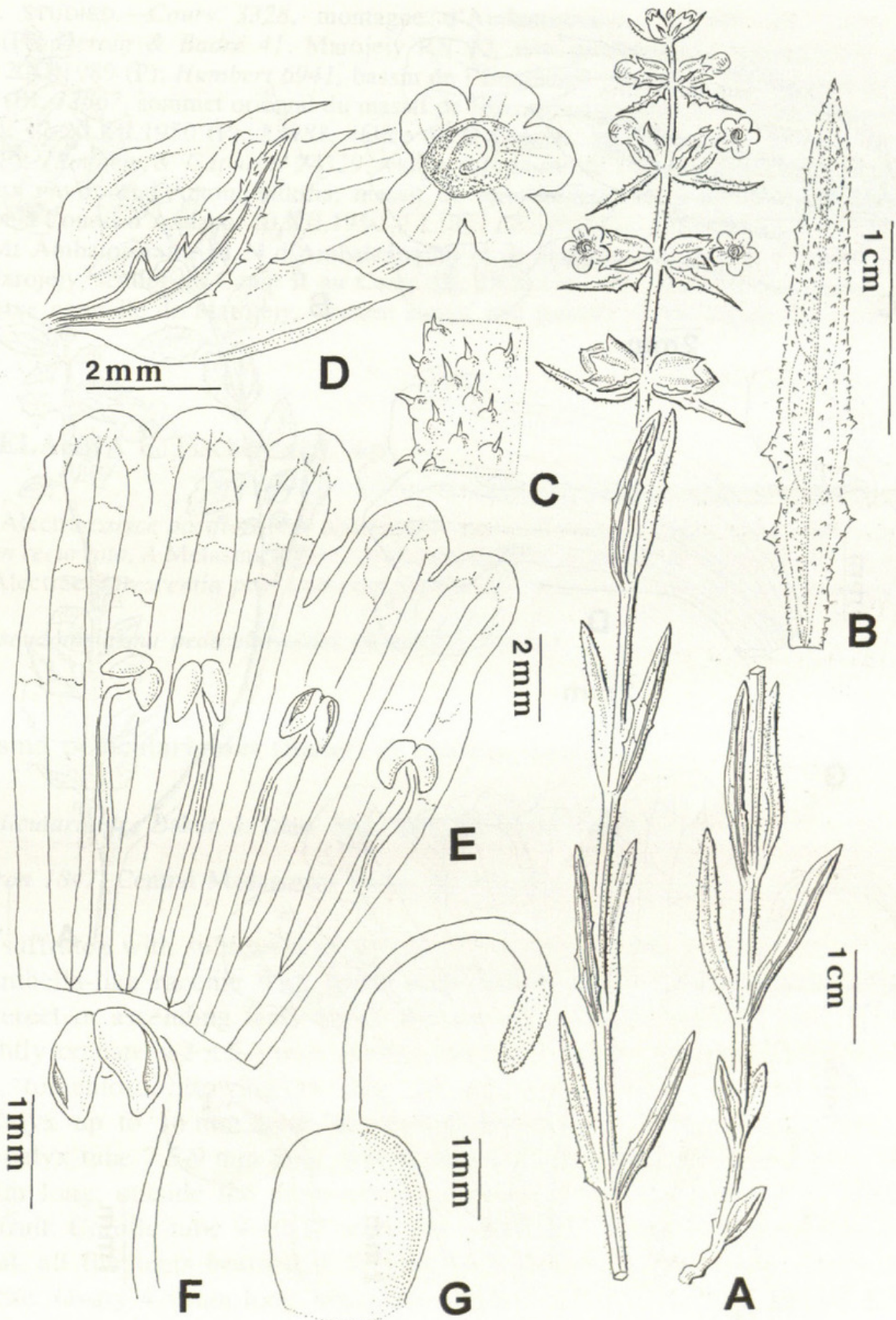

Fig. 7.—**Alectra humbertii**: **A**, habit; **B**, leaf; **C**, leaf margin with hairs; **D**, flower; **E**, dissected corolla; **F**, adaxial stamen; **G**, ovary. All from *Viguier & Humbert 1705*.

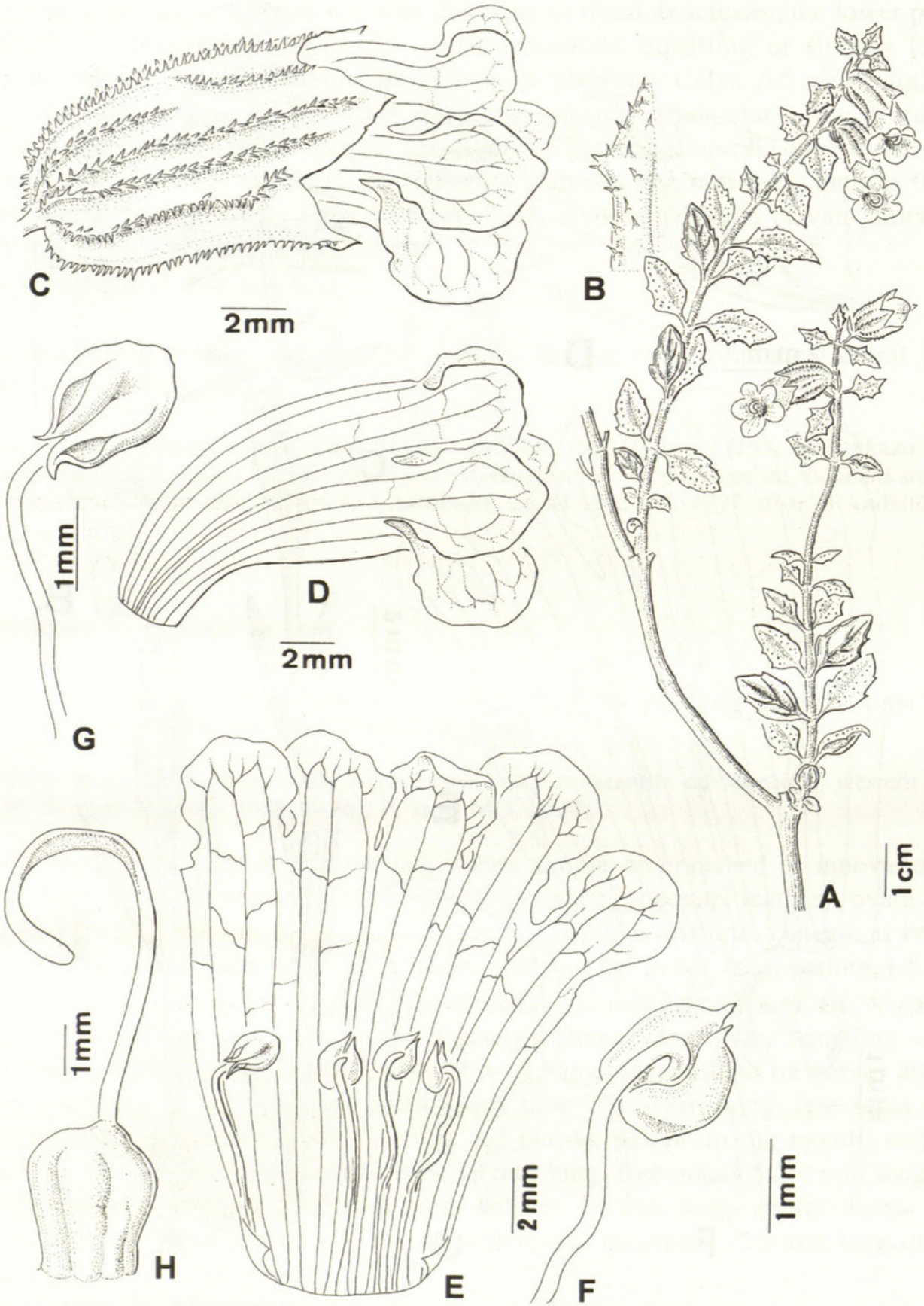

Fig. 8.—**Alectra fruticosa**: **A**, habit; **B**, leaf margin with hairs; **C**, flower; **D**, corolla; **E**, dissected corolla; **F**, abaxial stamen; **G**, adaxial stamen; **H**, ovary. A-B from *Miller & Randrianasolo 4463*, C-H from *Humbert 22667*.

MATERIAL STUDIED.—*Cours 3328*, montagne d'Ambatosoratra, 7.I.1949 (P); *3822*, Anjanaharibe, 23.XII.1950 (P); *Deroin & Badré 41*, Marojejy RN 12, rive gauche de la Manantenina, versant sud du Beondroka, 12.XI.1989 (P); *Humbert 6941*, bassin de l'Itomampy (Sud-Est), Mt Papanga près de Befotaka, 2-3.XII.1928 (P); *22667*, sommet oriental du massif de Marojejy, à l'ouest de la Haute Manantenina, affluent de la Lokoho, 17-20.XII.1950 (P); *23583*, vallée de la Lokolo, Mt Beondroka au N de Maroambihy, 17-22.III.1949 (P); *Humbert & Capuron 24329*, vallée inférieure de l'Androranga, affluent de la Bemarivo (Nord-Est) aux environs d'Antongondriha, massif de Betsomanga, 17-20.XI.1950 (P); *24669*, massif de l'Anjanaharibe à l'ouest d'Andapa, 10.XII.1950–3.I.1951 (P); *Humbert & Cours 22864*, vallée de la Lokoho (Nord-Est), Mt Ambatosoratra au N d'Ambalavoniho et de Belaoka, 4-8.I.1949 (P); *Jacquemin H 602 J*, réserve du Marojejy, sentier du Camp II au Camp III, 28.X.1967 (P); *Miller & Randrianasolo 4463*, Antsiranana, réserve naturelle de Marojejy, western slopes and summit of Mt Beondroka, 26.X.1989 (MO, P, TAN).

PSEUDOMELASMA E. Fischer, *gen. nov.*

Differt ab Alectra *calyce postfloraliter accrescenti, pedicellis longis, thecis lanceolatis acutisque et stylo et stigmate non recurvato. A* Melasma *differt corolla persistente et filamentis barbatis. Ab omnibus generibus ex affinitate* Alectrae *florescentia post anthesim proliferata et forma ovato-oblonga seminum valde differt.*

TYPUS.—*Pseudomelasma pedicularioides* (Baker) E. Fischer.

Pseudomelasma pedicularioides (Baker) E. Fischer, *comb. nov.*

Alectra pedicularioides Baker, J. Linn. Soc., Bot. 20: 214 (1884).

TYPE.—*Baron 1847*, Central Madagascar (holo-, K; iso-, P).

Perennial suffrutex with subterranean woody rhizome up to 5-6 cm in diameter. Inflorescence a reduced, umbella-like raceme with small scaly bracts, which after anthesis proliferates and produces an erect or ascending leafy shoot, 5-9 cm tall. Leaves opposite ovate-lanceolate, subentire to slightly crenate, 12 × 5-8 mm, obtuse. Stem and leaves densely tomentose. Pedicel 18-20 mm long, tomentose, growing in fruit up to 38 mm. Bracteoles lanceolate, 7 × 1 mm, tomentose. Calyx up to 14 mm long, accrescent in fruit to 17-18 mm, hairy only on the 10 main-nerves, calyx tube 7.5-9 mm long, free sepals 4-5.5 mm long, triangular acute. Corolla yellow, 20-21 mm long, outside the main nerves pilose and the free petals with glandular hairs, persistent in fruit. Corolla tube 9-10(12) mm, free petals 8.5-11 mm long, ± oblong, obtuse. Stamens subequal, all filaments bearded, 6.5-7 mm long, anthers 2.3 mm long, anther with narrow apiculate thecae. Ovary 4.5 mm long, style and stigma clavate, ± straight, pilose, 8-9 mm long.

Capsule spherical to globose, 16-17 mm long.

Grassland on rocky slopes. An endemic species known only from Ankaratra and Andringitra mountains.—Fig. 2, 9, 11.

MATERIAL STUDIED.—*Baron 1847*, Central Madagascar (K, P); *Decary 13839*, Vavavato (Betafo), 25.XI.1938 (P); *Humbert 3644*, massif d'Andringitra (Iratsy), vallées de la Riambava et de l'Antsifotra,

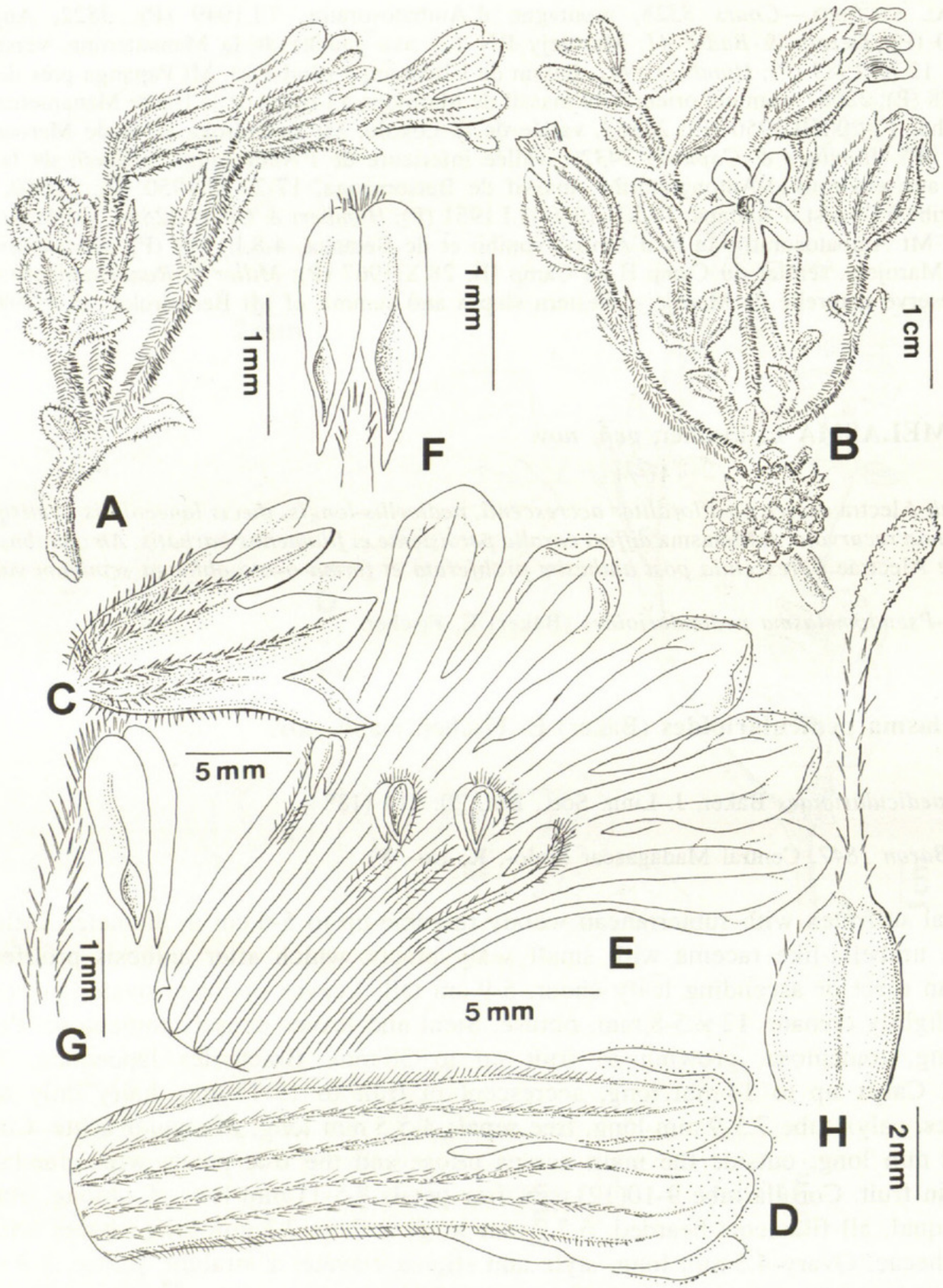

Fig. 9.—**Pseudomelasma pedicularioides**: **A-B**, habit; **C**, calyx; **D**, corolla; **E**, dissected corolla; **F**, abaxial stamen; **G**, adaxial stamen; **H**, ovary. A, C-H from *Decary 13839*; B from *Humbert 3644*.

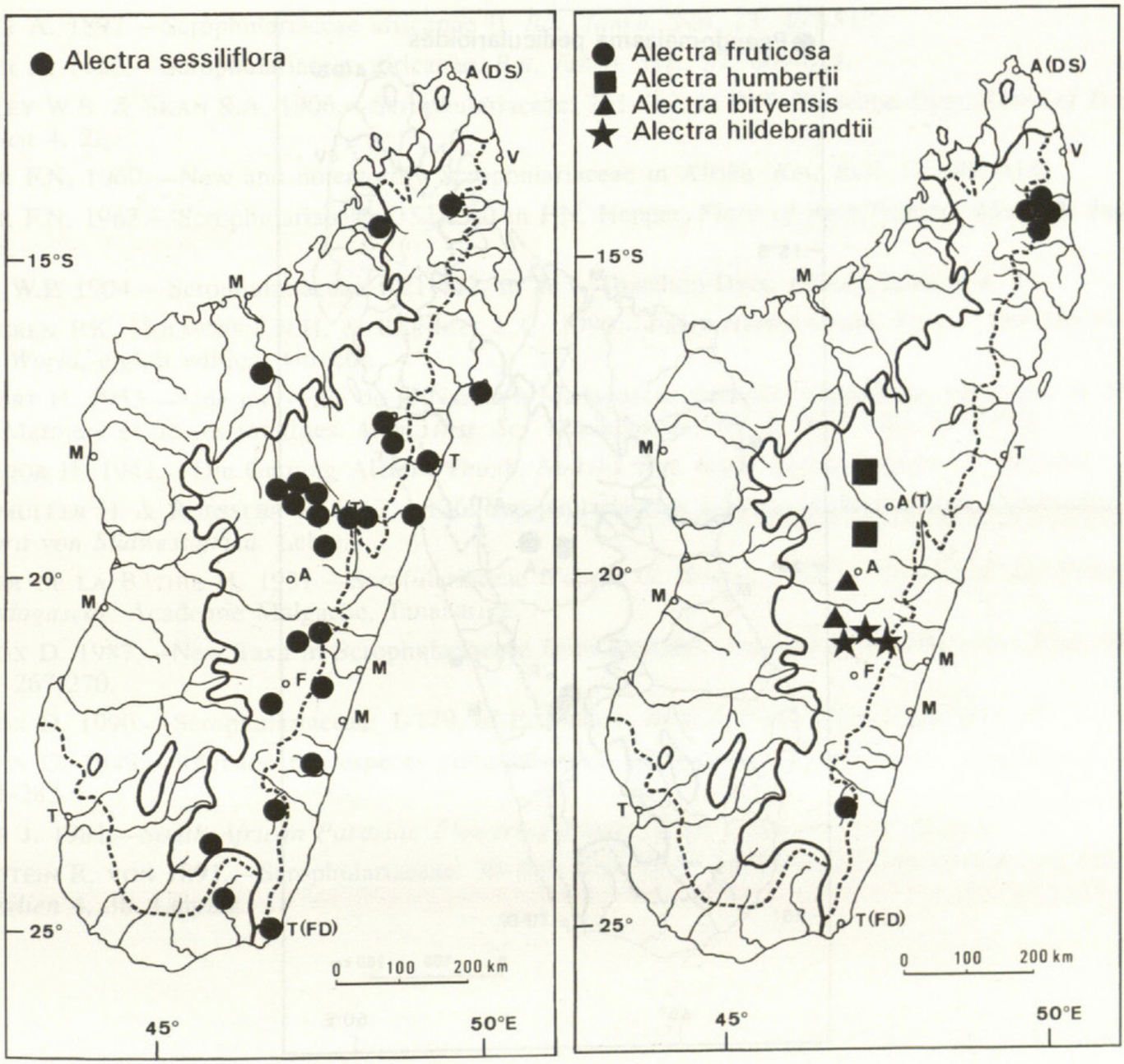

Fig. 10.—Geographic distribution of **Alectra** in Madagascar.

27.XI-8.XII.1924 (BM, K, P); *Réserves Naturelles: RN 9937 Rakotovao*, Sendrisoa, Ambalavao, 13.I.1958 (P); *Viguier & Humbert 1692*, Ambatolampy, pentes herbeuses sur le flanc est de l'Ankaratra en dessous de Tsiafajavona, 28.XI.1912 (P).

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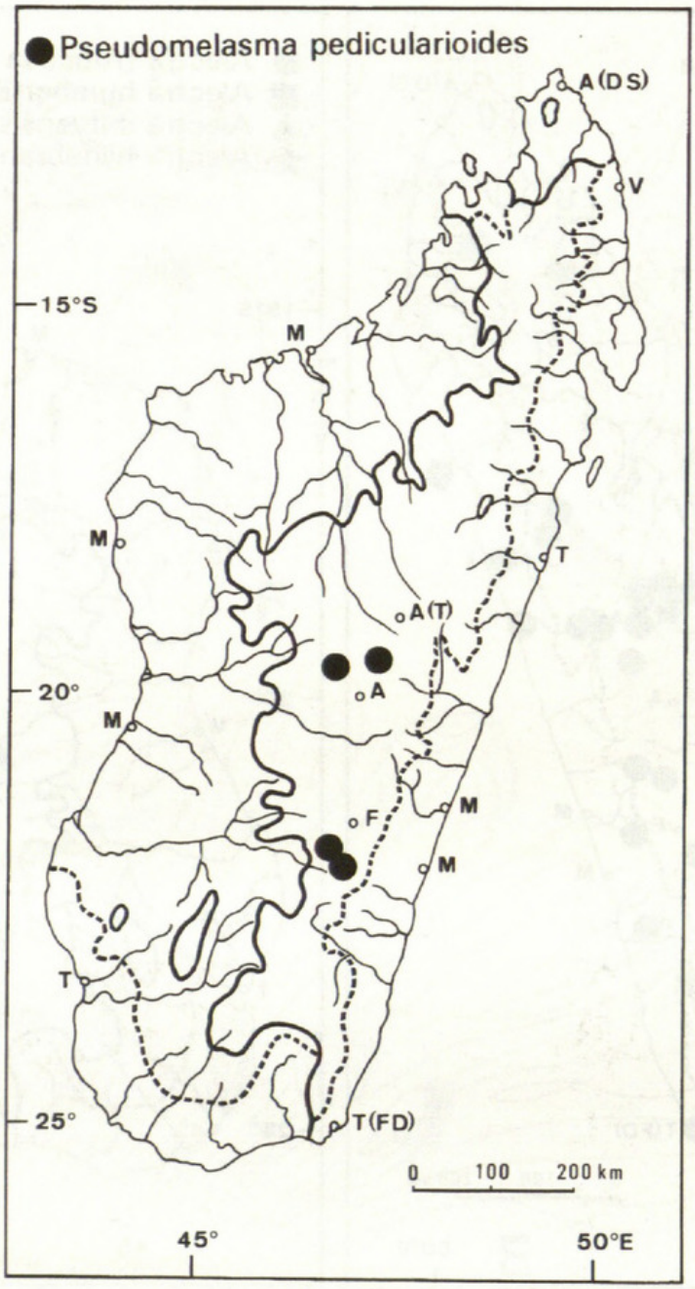

Fig. 11.—Geographic distribution of **Pseudomelasma** in Madagascar.

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