lensis C.C. Berg, was originally described from Grand Comore. Consequently, all the fig species known from the Comoros have now been recorded from Grand Comore.

The natural vegetation of Grand Comore consists of coastal and upland forest zones and a small area of heathland at the summit of Mt Karthala (Bijnens *et al.* 1987). In the lowlands, most of the original forest cover on the island has been converted to agriculture. The extent of native tree removal at lower altitudes is nonetheless variable, and *F. sycomorus* is not uncommon, either in remnant patches of disturbed forest or growing in pastures. The smaller strangler figs also persist at lower altitudes, if suitable host trees remain. At higher altitudes, forest cover is extensive on the active volcano Mt Karthala and there is a remnant Maoeni-Grill forest. *F. tiliifolia* and *F. antandronarum* subsp. *bernardii* were detected only in these areas.

ACKNOWLEDGEMENTS

The author would like to thank Vanessa Rashbrook for her assistance in the field, Marco Boni (South African Consul) for providing logistical assistance and Prof. C.C. Berg for identifying the plant material.

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MS. received: 1991-06-24.

FABACEAE

A NEW SPECIES OF *PRIESTLEYA* FROM THE SOUTHWESTERN CAPE

Priestleya boucheri *Oliver & Fellingham*, sp. nov., in genere singularis propter florescentias occultas foliis subinvolucratis, bracteas aurantiacas, flores grandes, calycem subinaequalem, vexillum elongatum reflexum.

TYPE.—Cape, 3418 (Simonstown): Grabouw area, Kogelberg Reserve, Five Beacon Ridge, summit of ridge, 1 160 m, 20 May 1989, *Boucher & Oliver 5531* (STE, holo.; BOL, K, MO, PRE, S, iso.).

A low compact woody single-stemmed shrub up to 500 mm tall. *Stem* and *branches* leafy only in the ultimate 80–100 mm, the younger long villous, the older glabrous with prominent leaf scars, distinctly 3-ridged below the leaf scars with the main ridge below the leaf scar and the two smaller lateral ridges below the stipules, the bark yellowish brown and corky. *Leaves* spirally arranged, imbricate, erect, incurved, subsessile, 26–50 × 12–17 mm, linear-elliptic to narrowly obovate, acute rarely subobtuse, green but slightly glaucous, the younger silky villous all over, noticeably shaggy-edged with the hairs all pointing to the apex and longer on the adaxial surface, soon becoming almost glabrous with some adpressed old dark-brown hairs, margins yellow, veins yellowish, mucro minute and reddish-brown, venation pinnate, stomata numerous and visible on both surfaces; stipules 2, minute, enlarging alongside the leaf scars.

Inflorescences 2-flowered fascicles on lateral absolute brachyblasts 1.0–1.5 mm long, mostly aggregated into 4- or 6-flowered synflorescences enclosed within the upper leaves at the ends of the main branches, flowers erect and arranged in a circle; pedicel 3 mm long, pubescent; bract 7.0–8.0 × 6.5 mm, very broadly ovate, shortly acuminate, at first creamy-green soon turning papery and yellow-brown, long ciliate, abaxially sparsely villous, adaxially villous, clasping the base of the calyx and the pedicel. *Calyx*: tube 7.5–10.0 × 5.0 mm, pale creamy-green, becoming papery and yellow-brown; lobes 5.0–5.5 mm long, the lowest subequal to or 0.5 mm longer than the others, the upper two lobes fused more than the others, free distally for 1 mm, darker in colour than the tube, villous, long ciliate. *Petals*: standard 25 × 6 mm, ovate-elliptic, reflexed over the fused calyx lobes in the mature flower, claw 4 × 2 mm with 2 basal lateral lobes 3 mm long, separated abaxially by 2 ridges and a median channel; alae 24 × 4 mm, oblong, falcate, obtuse, claw 3.5 mm long, lobe with an internal thickening in the upper part; keel 25.0 × 4.5 mm, navicular, acute, claw 2 mm long, lobes connate above for $^{2}/_{3}$ and below for $^{1}/_{2}$ their length. *Stamens* diadelphous, vexillary filament free, 26 mm long, the others connate for about 12 mm into a tube thickened at the base and with 2 knobs adjoining the free filament, the longest connate filament 28 mm and the shortest 21 mm long; anthers ± 1 mm long. *Ovary* ± 6 mm long, obliquely narrowly ovate, long, silky, villous, with forward pointing hairs; style 21 mm long, glabrous; *stigma* simple. *Fruit* 25 × 9 × 5 mm, including the remnant style base, 6-seeded, villous with appressed hairs pointing towards the apex, golden brown; seeds 4.5 × 2.0 mm, compressed, olive-brown with a white aril. Figure 7.

Diagnostic characters: *P. boucheri* is very distinct in the genus on account of the hidden inflorescences, the large flowers, the longer lower calyx lobe, the calyx being yellow-brown at maturity and the large but narrow standard which is reflexed over the calyx at maturity.

Discussion: this species was brought to our attention by C. Boucher who has made a special study of the

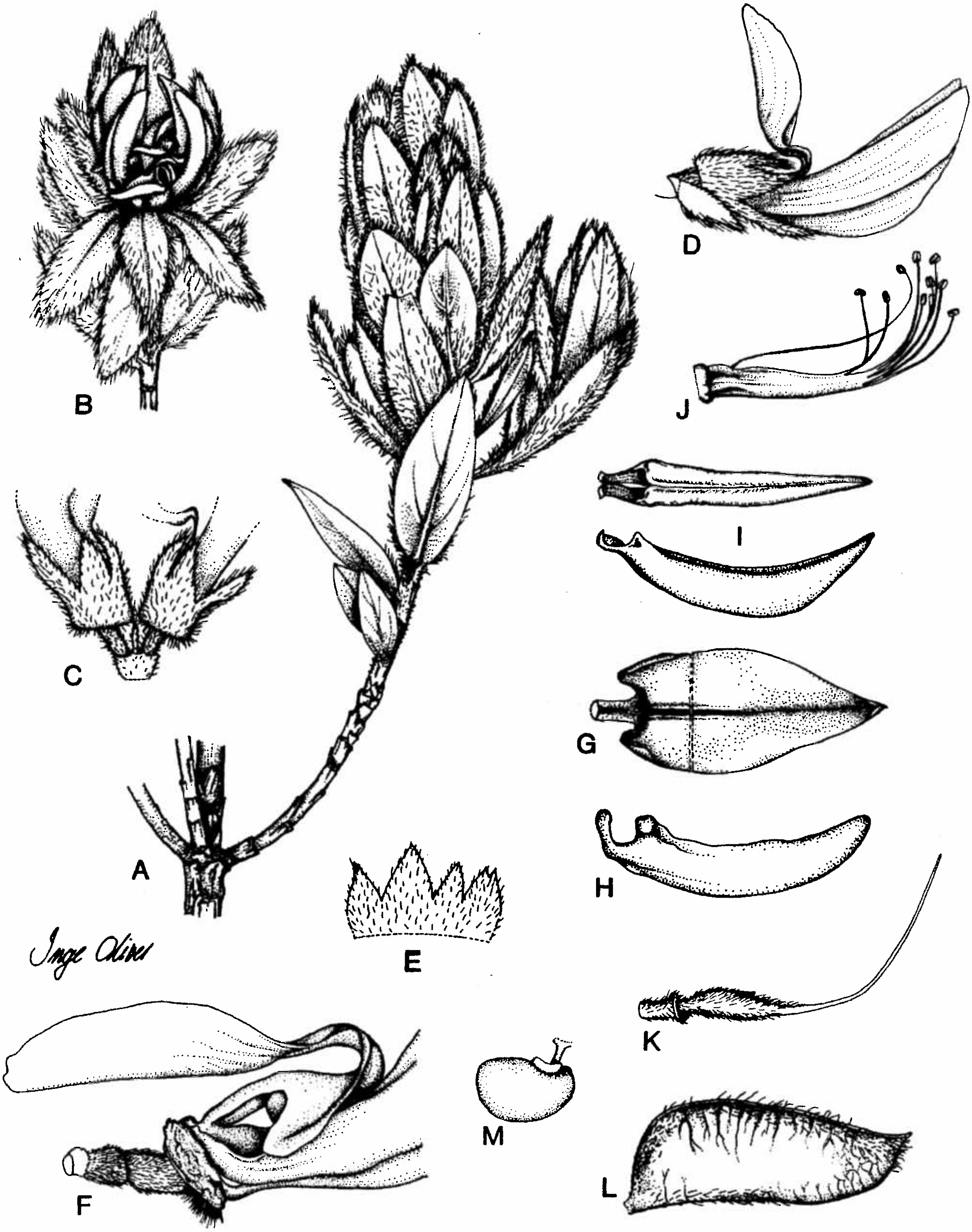

FIGURE 7.—*Priestleya boucheri*. A, flowering branch; B, terminal portion of A with the upper leaves opened outwards to reveal the synflorescence; C, single florescence, with the bracts removed, on an absolute brachyblast; D, flower; E, calyx laid out (upper lobes to the right); F, base of flower with the calyx removed; G, standard laid out flat with the break indicating the reflexion zone; H, wing, lateral outside view; I, keel, adaxial & lateral views; J, androecium; K, gynoecium; L, fruit; M, seed, × 6. All drawn from the type, *Boucher & Oliver 5531*. A, B, × 1; C–E, × 3; F, × 6: G–L, × 3; M, × 6.

vegetation and flora of the Kogelberg Reserve (Boucher 1977) and is currently involved with sensitive conservation matters in the area. His collection, made late in the year, was in fruit and remained unidentifiable, but tentatively placed near the genus *Liparia*. Subsequently further material, which was in a young flowering stage, was collected by D. le Maître in April during a survey of rare species in the Kogelberg area for the Department of Forestry. This enabled us to ascertain that the collections represented a remarkable new species quite unlike either of the two species of *Liparia* (Bos 1967). Material with fully open flowers was then obtained in late May to analyse in detail.

Knowing that the material was collected in the Kogelberg area, which had been visited many times by that veteran plant collector Thomas Stokoe during the period 1920 to 1955, a search was made for a collection of his in BOL and NBG including SAM. Two fruiting twigs came to light under the incertae of *Priestleya* in SAM, one collected in 1944 from just 'Kogelberg', the other in 1953 recorded from Five Beacon Ridge. While reading through the letters of Stokoe to the late W. & M. Cloete of Kleinmond [in the possession of EGHO], a reference was found, dated 1953, to an unknown *Priestleya* which he had not been able to collect in flower despite several attempts to do so. He mentioned it as growing on the crest of the Five Beacon Ridge near Kogelberg and a sketch of the locality was given. From this sketch it is clear that our type collection and Stokoe's note refer exactly to the same population.

Two distinct populations of this species are known to exist at present (Figure 8), separated by only 0.5 km. The type population on Five Beacon Ridge contained eight plants, two of which were seedlings. The population on the ridge towards Kogelberg (*Le Maître 401; Oliver 9139*) contained 10 plants, two of which were seedlings. In a detailed note accompanying his collection, Le Maître notes that the fire history showed that the area had been burnt in March 1976 and therefore the plants were probably 13 years old in 1989. He further records that R.A. Haynes and F.J. Kruger, also of the Department of Forestry, found another population of 10 plants to the southwest in 1981, but that only one dead plant could be located in 1986 due to a fire a few years earlier. All the populations were destroyed in a lightning-induced fire in February 1990 and will therefore have to regenerate from seed.

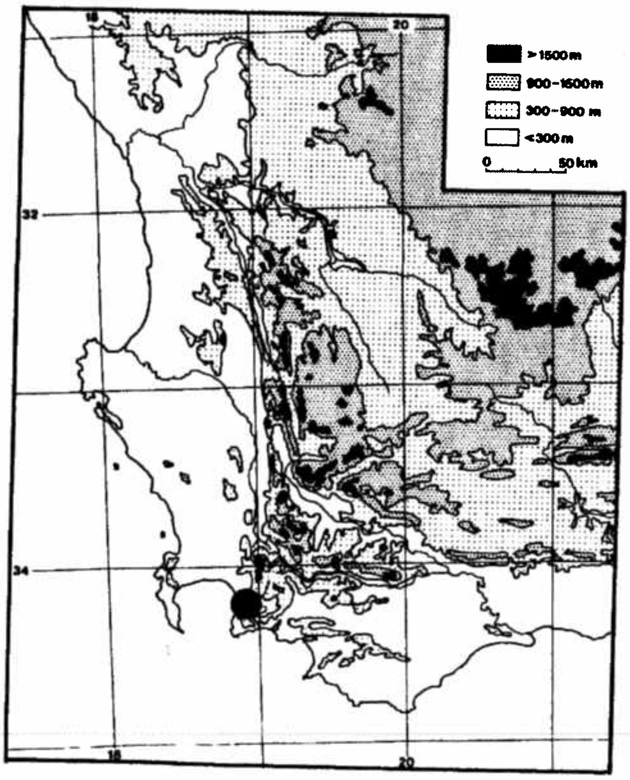

FIGURE 8.—Known distribution of *Priestleya boucheri*.

The large, flat, hairy leaves give the plants a remarkably proteoid facies similar to *Protea stokoei, P. caespitosa* and *Leucadendron gandogeri* which all grow in the immediate vicinity. The flowers are hidden from view from a distance and are only seen when the shrub is viewed from above, very much like the condition occurring in many species of *Leucadendron*. This is due to the large subterminal leaves which curve over the synflorescences. The bud and fruit stages are completely hidden. In the bud stage the flowers are erect with the standard covering the alae and the keel. In the mature flower the position of the standard becomes horizontal, i.e. perpendicular to the rest of the flower. This position is reached after a 180° bend occurring closely over the fused calyx lobes followed by a second, distally from and close to the first but 90° in the opposite direction (Figure 1D). With the standards of all flowers in the synflorescence assuming this position, the 'involucral' leaves are pushed open to expose the flowers in a cuplike formation (Figure 1B). After pollination, the second bend in the standard is straightened again, allowing the standard to be totally reflexed over the calyx lobes (Figure 1F). The involucral leaves then close over the synflorescence and hide the developing fruits completely.

The pollinating agent was not noted during the visit to the flowering population. However, the large size and whole arrangement of the flowers noted above strongly suggests visitation by a large bee.

The floral characters place the species very close to *Liparia* and in particular to *L. parva*. That genus is characterized by large narrow flowers each in the axil of a large petaloid bract, with the calyx very unequal, the lowest lobe being subpetaloid and much longer than the others. In the new species the calyx lobe is subequal to 0.5 mm longer than the other lobes. In *L. splendens*, however, the keel petals are held together by a most remarkable interlocking 'catch' system of the alae. The flower colour and structure is very similar to the lemon-yellow-flowered *L. parva* which is endemic in the southern Cape Peninsula, whereas the more widespread *L. splendens* has bright orange to reddish orange flowers. In *Priestleya* and *Xiphotheca* the flowers are generally smaller and have a very broad rounded standard and usually equal calyx lobes.

In the plant architecture and structure of the inflorescence this species is quite unlike *Liparia* and is identical to the genus *Priestleya sens. str.* (= *Priestleya* section *Priestleya*). In *Liparia* the flowers are borne in the axils of leaf-like bracts at the ends of main or leafy lateral branches, forming a simple condensed racemose florescence. This florescence, which in most cases is fairly heavy due to the number of large flowers, hangs downwards in a nodding fashion. It is also non-innovating and so further growth of the axis has to be initiated from an axillary bud on the upper side of the curved branch just below the florescence.

In the new species the flowers are borne in pairs at the ends of lateral absolute brachyblasts, i.e. extremely shortened and leafless branchlets. These 2-flowered florescences are grouped mostly in pairs or threes at the ends of the main branches to form a synflorescence which is enclosed within the involucre-like upper leaves (Figure 9). The florescences are non-innovating, but this does not affect the growth pattern of the plant as growth continues from the apical bud of the main axis in the centre of the synflorescence. On old branches the remains of some brachyblasts lower down clearly indicate the position of the synflorescences of previous years.

A detailed study of inflorescences in *Priestleya* and related genera has shown that three basic types can be distinguished (Schutte & Van Wyk in prep.): 1, simple terminal or subterminal racemes with a rachis extension, i.e. a sterile apical portion. This type can be many-flowered (*Liparia*) or few-flowered (*Priestleya hirsuta* and related species); 2, axillary 2- or 4-flowered fascicles, also with a sterile apical portion. The flowers are arranged in opposite pairs (decussate). This inflorescence type occurs in *Priestleya calycina* and related species and also *P. boucheri* (see Figure 7C where the small terminal sterile part can be distinguished); 3, axillary 2-flowered fascicles without a sterile apical portion, i.e. a simple determinate reduced inflorescence. This type is superficially similar to the previous type, but can easily be distinguished by the absence of a terminal sterile part. Section *Anisothea* of *Priestleya* has this type of inflorescence and, together with the non-intrusive base of the calyx and characteristic combination of alkaloids, these provide convincing supportive evidence for excluding the section from *Priestleya*. This was done by Ecklon & Zeyher (1836) who proposed the new generic name *Xiphotheca*.

Several species of *Priestleya* occur in the area around Kogelberg Peak and they are very striking plants. The two tall, almost tree-like species, *P. calycina* and *P. tomentosa* (*X. villosa*) have silvery leaves and conspicuous heads of bright yellow flowers. An as-yet-undescribed species occurs on the southern slopes of Five Beacon Ridge in Spinnekopsneskloof and was also collected by Boucher (*Boucher 1812*).

Chemical analyses of samples from both populations on the Kogelberg clearly indicate that this species contains alkaloids characteristic of *Priestleya sens. str.* and *Liparia parva* and none of the unique compounds found in *Xiphotheca* (Van Wyk *et al.* 1991). The new species has large amounts of quinolizidine alkaloids such as sparteine, 11,12-dehydrosparteine, lupanine, isolupanine and 13-hydroxylupanine. The relative quantities of these alkaloids are closely similar to the combinations found in other species of *Priestleya* (virtually identical to that found in *P. latifolia*, for example). *Liparia splendens* differs from *L. parva* in the much higher proportion of ammodendrine, but otherwise the alkaloids of *Liparia* are similar to those found in *Priestleya*. In contrast, *Priestleya* section *Anisothea* (= *Xiphotheca*) has a unique combination of alkaloids not found in *Priestleya sens. str.*, i.e. anabasine (a bipiperidyl alkaloid) and lupinine (a bicyclic quinolizidine).

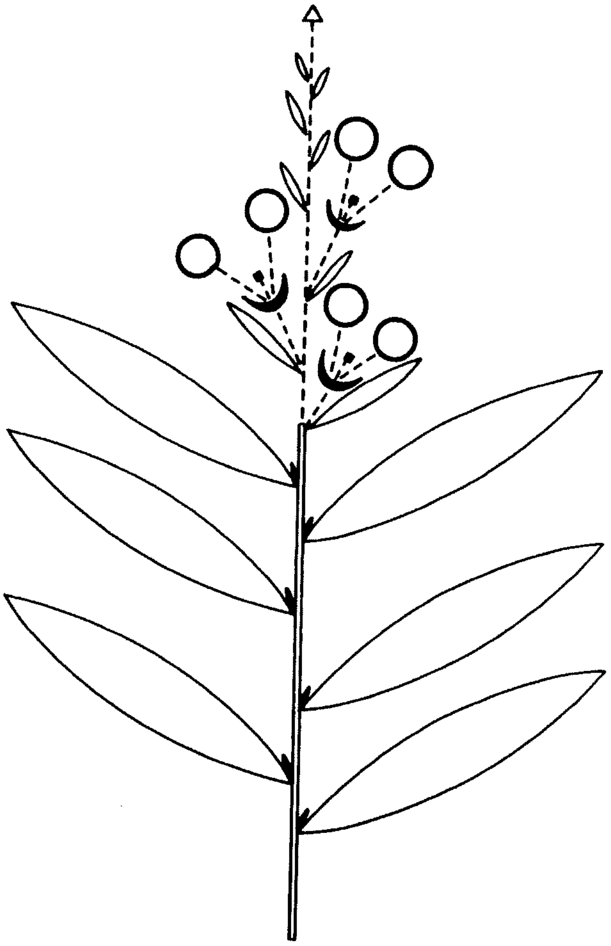

FIGURE 9.—Diagram of the structure of a synflorescence in *Priestleya boucheri* consisting of three two-flowered florescences on lateral, non-innovating brachyblasts—dotted lines represent extended axes.

The position of this new species is thus anomalous on account of its liparioid flowers and it shows the connection between the two genera. Indeed, the status of *Liparia* as a genus distinct from *Priestleya sens. str.* can be seriously questioned. Generic delimitation in the tribe Liparieae is currently under critical revision (Schutte & Van Wyk in prep.) because the present system does not reflect major discontinuities in intergeneric relationships.

Specimens examined

CAPE.—3418 (Simonstown): Kogelberg Reserve, Five Beacon Ridge, 1 160 m, 8-10-1980, mature fruiting, (–BB), *Boucher 4975* (STE); ibid., 20-5-1989, flowering, *Boucher & Oliver 5531* (BOL, K, MO, PRE, S, STE); ridge between Kogelberg and Five Beacon Ridge, 1 120 m, 22-4-1986, in bud, (–BB), *Le Maître 401* (PRE, STE); ibid., 1 130 m, 25-5-1989, flowering, *Oliver 9139* (PRE, STE): Kogelberg, 11-1944, mature fruiting, (–BB), *Stokoe in SAM 56330* (SAM); Five Beacon Ridge near Kogelberg, 9-1953, young fruit, (–BB), *Stokoe in SAM 65718* (SAM).

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MS. received: 1991-08-27.