NEW SPECIES OF *THAMNEA* AND *BRUNIA* FROM WESTERN CAPE, SOUTH AFRICA

The Bruniaceae is one of the 33 'Cape floral clades' (Linder 2003) mainly distributed in the Western Cape, South Africa. Since the revision published by Pillans (1947), much work has been done to understand the intergeneric relationships and biology of the family (Claßen-Bockhoff, in press). Based on molecular and morphological data, a new classification has been proposed accepting six of the formerly 12 genera (Claßen-Bockhoff *et al.* in press). With the two newly described species in the present paper, there are currently 79 species in the family.

Thamnea matroosbergensis *A.V.Hall*, sp. nov.

Fruticulus humilis usque ad 0.3 m altus; foliis 0.8–1.0(–1.2) mm longis spiraliter insertis ellipticis sessilibus, pagina laterali paulo discoidea pagina abaxiali profunde carinata castanea. Inflorescentia flore solitario sessili ad apicem ramorum principalium vel in ramis lateralibus. Flores bracteis 6–10 usque ad 2 mm longis; sepalis liberis 1.7–2.1 mm longis; petalis ± 25 mm longis, albidis, limbis late obovatis obtusis patentibus; staminibus 1.5–2.1 mm longis, antheris 0.9 mm longis; nectario annulari viridi 0.1 mm alto; ovario uniloculari, placenta libera centrali, ovulis 4–8 pendulis; stylo superne contracto; fructu 1.8 mm longo, ellipsoideo, castaneo, tholo umbonato longo terminanti.

TYPE.—Western Cape, 3319 (Worcester): Worcester Dist.; SE slopes of Matroosberg, (–BC), 5000–6000' [1 520–1 830 m], 18 November 1962, *Esterhuysen 29877* (BOL, holo.). Figure 36.

Sprawling shrublets, up to 0.3 m high; no coppice shoots or lignotuber recorded; distal branching dense to diffuse, main lateral branches spreading rather widely from main axis, fairly evenly dispersed along it; leaves obscuring more densely branched stems; young stems ridged, glabrous, older stems almost smooth. *Leaves* spirally arranged, elliptic, 0.8–1.0(–1.2) mm long, sessile with attachment ± $^1/_3$ of leaf's area (Figure 37A), from side

FIGURE 36.—Holotype of *Thamnea matroosbergensis, Esterhuysen 29877* (BOL).

rather discoid with base curving abruptly into stem, abaxial surface strongly keeled (Figure 37B), flat or slightly channelled between keel and leaf margin, surfaces glossy brown, glabrous; margins hyaline; stipules absent; stomata on abaxial side only (Figure 37A, B). *Bud leaf colleter* incurved, broadly triangular-acute (Figure 37B), semiterete, 0.1 mm long, dark brown, lost from older leaves. *Inflorescence*: flowers solitary (Figure 38A), sessile at ends of main branches, some on 1–22 mm long side branches no different from leafy vegetative stems, terminal flower opening from before to later than those on side branches; old receptacles and bracts not persistent. *Involucral bracts* 6–10, up to 2 mm long, lower leaf-like but with a rapid transition distally to wider laminae, upper ovate, obtuse but with a dark apiculus, rather hard-textured, distally shortly ciliate. *Floral receptacle* ± 0.2 mm long, glabrous, finely ribbed, transition to calyx with a slight indentation (Figure 37C). *Sepals* free, lanceolate, 1.7–2.1 mm long, acute, imbricate, keeled, terminating in a hyaline to brown tip, distally ciliate. *Petals* ± 2.5 mm long, white, weakly clawed; limb broadly obovate obtuse, spreading; 2 narrow ridges along the prominent midrib near base of adaxial surface. *Stamens* 1.5–2.1 mm long; anthers 0.9 mm long (Figure 37C), distally lunate; pollen 3-colporate (Figure 37E). *Flower scent* not recorded. *Nectarostomata* present around upper edge of ovary (Figure 37D). *Ovary* $^{2}/_{3}$ inferior, 1-locular with free central axile placenta bearing 4–8 pendulous ovules at apex; style 0.6–0.9 times as long as sepals, tapering; stigma capitate (Figure 37C). *Fruit* ellipsoid, 1.8 mm long, distal end with short umbonate dome, red-brown, shallowly sulcate, glabrous; style-base persistent, broadly convex. *Flowering time*: November to April.

Diagnostic features: *Thamnea matroosbergensis* is similar to *T. thesioides* Dummer and *T. uniflora* (L.) Sol. ex Brongn., both belonging to different subclades within the genus (Quint & Claßen-Bockhoff 2006). It differs from *T. thesioides* in having a longer style (1.3–1.6 mm long vs 0.7 mm long in *T. thesioides*); stamens almost as long as the sepals; a style of almost double the length (1.3–1.6 mm vs 0.7 mm in *T. thesioides*) and a convex dome at the fruit apex. It differs from *T. uniflora* in having longer sepals (1.7–2.1 mm vs 1.2–1.4 mm in *T. uniflora*); a semi-inferior instead of an inferior ovary and in lacking a hairy fruit with a nectary rim on its top. The material is clearly distinct enough to warrant recognition at species level, although the extremely small size of the main organs will require careful analysis for identification. It is remarkably constant in the three collections from the site except that one shoot is taller and more diffuse, but in other respects they are identical.

Distribution and ecology: *Thamnea matroosbergensis* has seldom been collected and is known from a single area, the steep, rocky southeast-facing slopes of the Matroosberg in the Hex River Mountains, from 1 500 to 1 800 m (Figure 39). This site lies 35 km east from the locality of *T. thesioides* in the Ceres area, but is at a rather higher altitude.

Additional material examined

WESTERN CAPE.—3319 (Worcester): Matroosberg, amongst boulders, S side of 'Coat of Arms' Rock, ± 6000' [1 830 m], 19-01-1959, *Esterhuysen 28150* (BOL); ibid., rocks on SE slope, 5000–6000' [1 520–1 830 m], 7-04-1959, *Esterhuysen 27710* (BOL).

Brunia compacta *A.V.Hall*, sp. nov.

Frutex patens usque ad ± 0.5 m altus basiramifer, ramificatio distali densa; foliis 2.7–3.2 mm longis, usque ad 4.8 mm longis in sirculis rapide crescentibus, lanceolatis acutis, sessilibus, abrupte ex caulibus crescentibus; abaxialiter villosis minus adaxialiter. Inflorescentia floribus in capitulis densis terminalibus, 3–4 mm latis, racemosis; axe principali per anthesin non crescendi, axibus ulterioribus novis sympodialibus. Flores bractea 0.6–0.8 mm longa, arcte appressa, ovata, dense villosa; bracteolis dense villosis; receptaculis florum 0.6–0.8 mm longis; sepalis ± 1.1 mm longis, anguste deltoideis acuminatis, abaxialiter villosis, dense ciliatis; corolla alba, petalis liberis 0.6–1.2 mm longis, ellipticis, abaxialiter villosis; staminibus ± 0.8 mm longis, distaliter incurvatis; ovario semi-infero, ± 0.7 mm longo, biloculari, utroque loculo ovulo unico pendulo; nectario absenti; stylis duobus 0.9–1.3 mm longis, leviter connatis, distaliter recurvatis.

TYPE.—Western Cape, 3219 (Clanwilliam): Ceres Dist., Gideon's Kop, S Cederberg, Sandfontein area, (–CB), 4500–5000' [1 370–1 520 m], 25 Oct. 1966, *Esterhuysen 31628* (BOL, holo.). Figure 40.

Shrubs spreading, up to 0.5 m high, branched at base. *Lignotubers* unknown but can produce fast-growing cop-

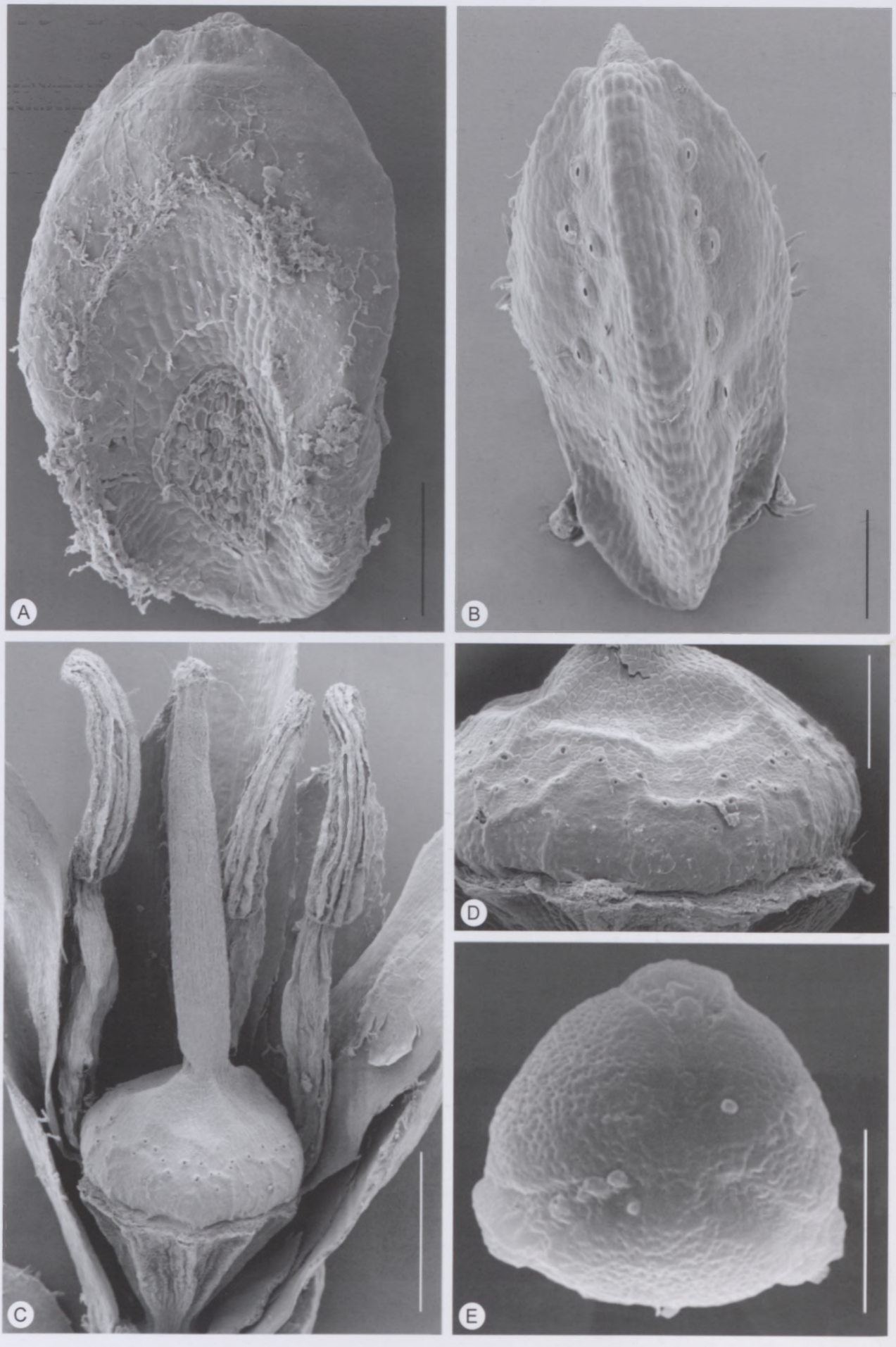

FIGURE 37.—*Thamnea matroosbergensis*. A, B, leaf: A, adaxial side; B, abaxial side. C, side-view into an artificially opened flower; D, nectarostomata at upper flanks of ovary; E, 3-colporate pollen grain. Scale bars: A, B, D, 200 µm; C, 500 µm; E, 10 µm.

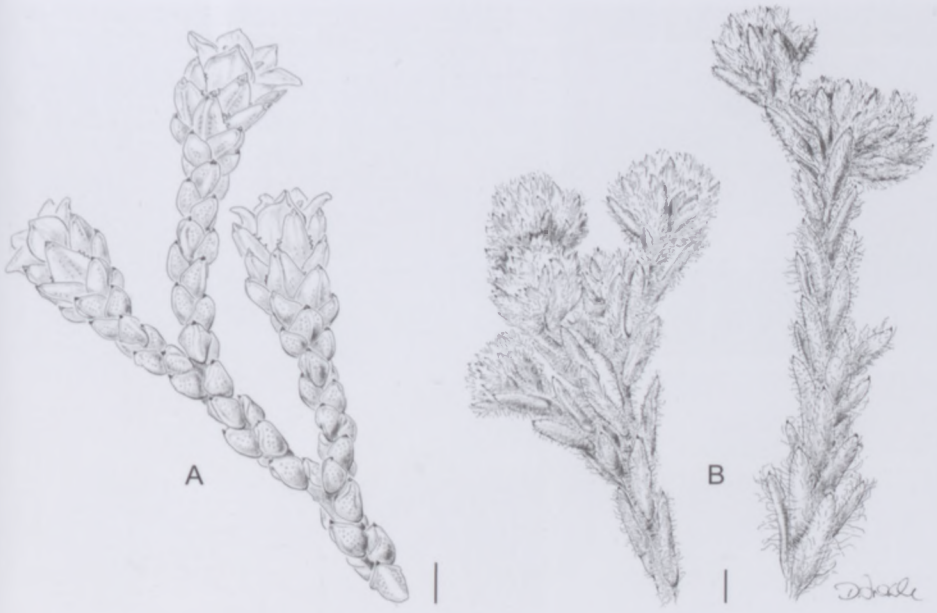

FIGURE 38.—Flowering branchlets. A, *Thamnea matroosbergensis*; B, *Brunia compacta*. Scale bars: 1 mm. Artist: D. Franke, Mainz).

pice shoots. *Distal branching* dense, lateral branches close to main axis, somewhat clustered at nodal zones with fewer branches in between. *Young stems* usually hidden by leaves, lacking decurrent ridges, tomentose distally, with older shoots pale brown when dried; old leafless stems dark grey-brown, smooth, with scattered leaf scars; stipules absent. *Leaves* lanceolate (Figure 41A, B), 2.7–3.2 mm long, up to 4.8 mm in fast-growing coppice shoots, acute, sessile, appearing abruptly from stem, lamina from side basally appressed to stem then gradually curving slightly away, increasingly so throughout its length; adaxial surface slightly concave and basally keeled, abaxial surface smoothly rounded, abaxially villous (Figure 41B), adaxially less so (Figure 41A), older leaves glabrescent, in coppice shoots more densely villous; stomata only on adaxial surface (Figure 41C). *Bud leaf colleter* as a brown, erect papilla 0.2 mm long, soon broadening slightly and darkening to form a black deltoid apiculus shrinking to a minute patch in older leaves. *Inflorescence* with 6–10 flowers in terminal, dense clusters (Figure 38B), 3–4 mm wide, main axis not continuing growth during anthesis,

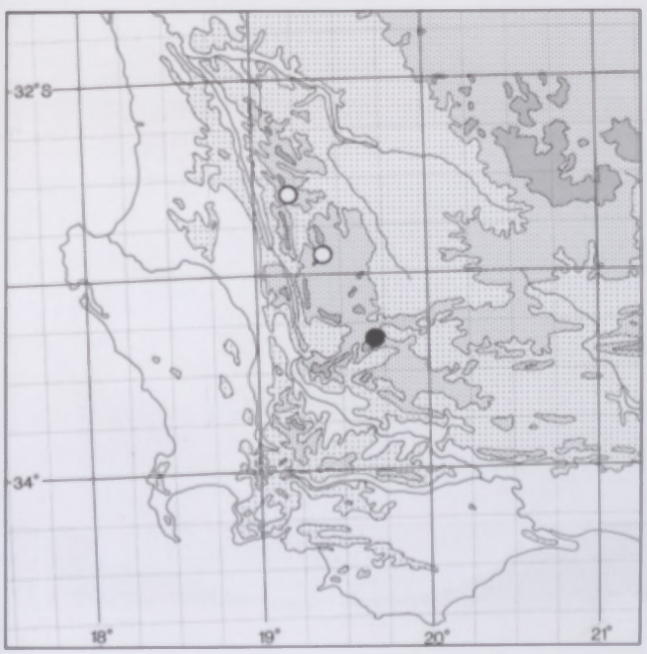

FIGURE 39.—Known distribution of *Thamnea matroosbergensis*, ●; and *Brunia compacta*, ○.

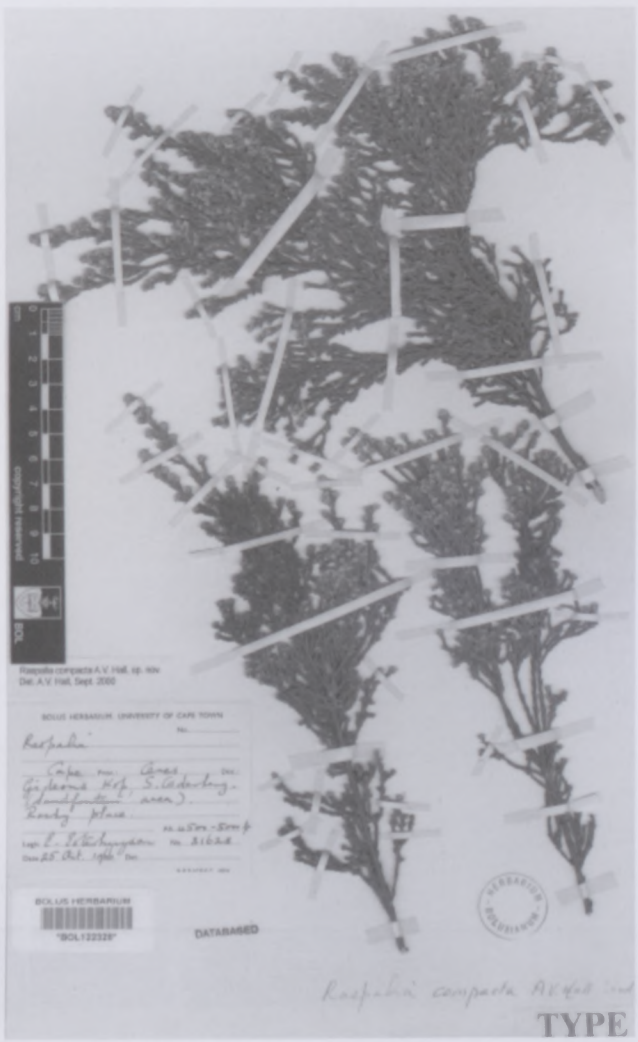

FIGURE 40.—Holotype of *Brunia compacta*, *Esterhuysen 31628* (BOL).

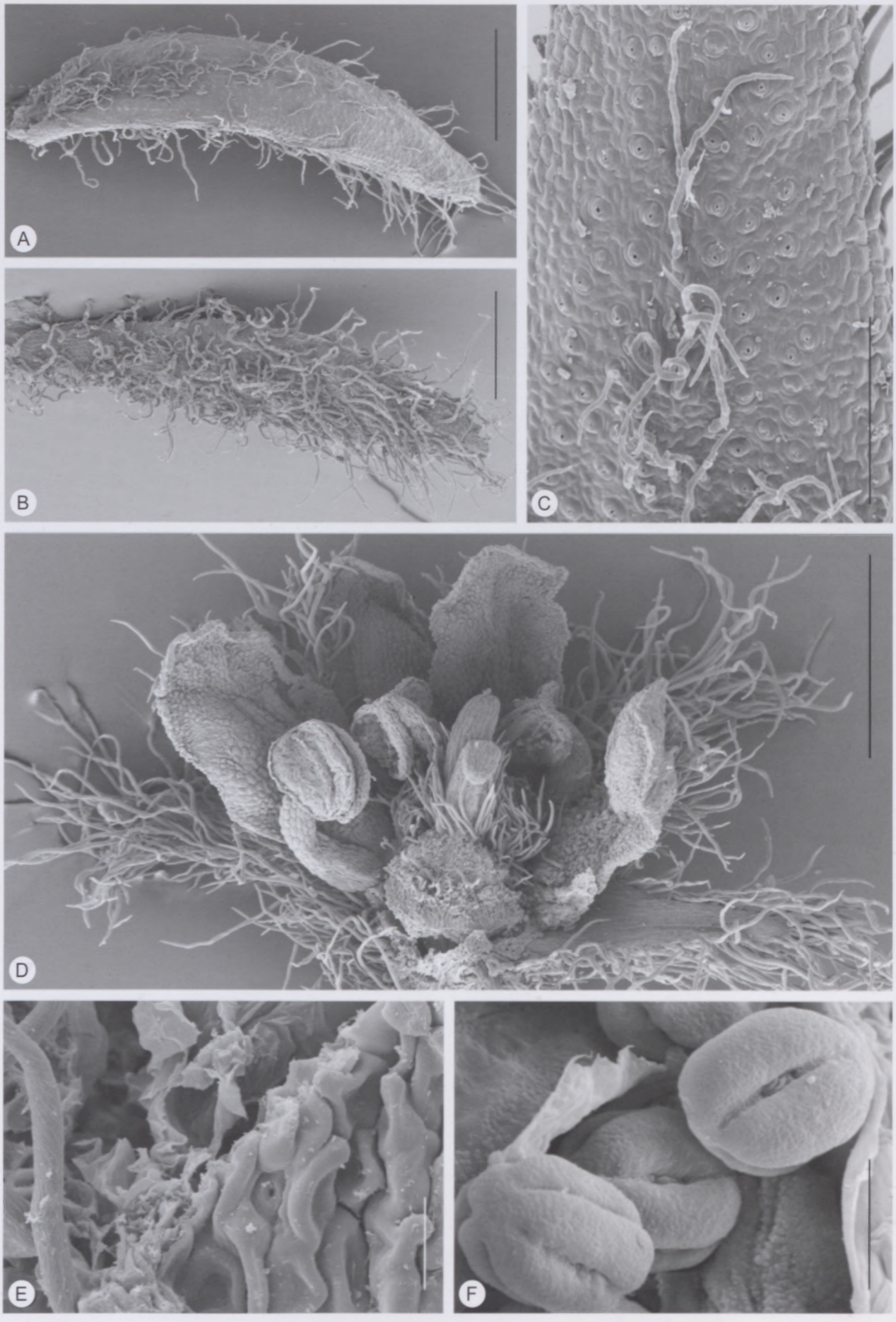

FIGURE 41.—*Brunia compacta*. A, B, leaf: A, adaxial side; B, abaxial side. C, stomata on adaxial leaf side; D, side-view into an artificially opened flower; E, single nectarostomata (centre) at upper edge of ovary seen in D (lower centre); F, (4)5-colporate pollen grains. Scale bars: A, B, D, 500 µm; C, 200 µm; E, 20 µm; F, 10 µm.

further branching sympodial with one new dominant shoot, old inflorescence peduncles persistent as bracteate, villous structures among older branches. *Bract* subtending each flower closely appressed, ovate, 0.6–0.8 mm long, midrib not visible, densely villous, with a black apiculus; bracteoles 2, oblanceolate, navicular, black-tipped, densely villous. *Floral receptacle* 0.6–0.8 mm long, with transition to calyx lacking a constriction. *Calyx* tube vestigial, segments narrowly deltoid, ± 1.1 mm long, acuminate, separated by a broadly obtuse gap, abaxially villous, densely ciliate, lacking a midrib, hyaline with minute dark apiculus. *Corolla* white, petals free from stamens, elliptic, 0.6–1.2 mm long, erect to spreading, abaxially villous, adaxial surface with a thick cushion-like swelling lying against top of ovary. *Stamens* ± 0.8 mm long, distally incurved; anthers 0.2 mm long, lobes parted and slightly divergent below; pollen (4)5-colporate (Figure 41F). *Ovary* half-inferior, ± 0.7 mm long, top villous with single nectarostomata (Figure 41D, E); locules 2, wall between complete at anthesis, each bearing a pendulous ovule on one of two placentas in each loculus; styles 0.9–1.3 mm long, slightly adnate, distally curved to point terminal stigmas into a lateral position. *Fruit* with enlarged receptacle and shrivelled flower parts attached; seed ovoid, 1.3 × 0.8 mm, brown, transversely wrinkled, lacking an elaiosome. *Flowering time*: January, April, May, August and October.

Diagnostic features: *Brunia compacta* differs from *B. sacculata* (Kirchner ex Pillans) Class.-Bockh. & E.G.H. Oliv. in having hairs on the adaxial leaf side, from *B. microphylla* Thunb. in having larger leaves (2.4–2.8 mm instead of 1.2–2.4 mm in *B. microphylla*) and from *B. squalida* E.Mey. ex Sond. in having distally recurved instead of erect styles. With the second group it shares the very short petals (shorter than 1.5 mm) appearing in all species so far included in this group. Herein, *B. compacta* is very similar to *B. bullata* (Schltr.) Class.-Bockh. & E.G.H.Oliv. differing in having 6–10 instead of only 1(–3) flowers per inflorescence. Though the relationships are not clear, the species is preliminarily grouped under *Brunia* subgen. *Mniothamnea*.

The species varies within the collections in having fast-growing coppice shoots among the normal ones, as in *Esterhuysen 32160* (BOL). These have longer and more densely villous leaves, and less profuse branching.

Distribution and ecology: *Brunia compacta* has been collected in the southern Cedarberg and Cold Bokkeveld Mountains, north of Ceres, at altitudes from 1 200 to 1 500 m (Figure 39). At one of its localities it is recorded as not common but widespread in the area (Apollo Peak, southern Cedarberg: *Esterhuysen 32160*). The shrubs occur among rocks, large boulders and cliffs on upper slopes. After fires the species reproduces from seedlings.

Note: this new species was at first recorded as one belonging in the genus *Raspalia* Brongn., but according to the new classification of the family (Claßen-Bockhoff *et al.* in press), it must be placed in the genus *Brunia* Lam. under which *Raspalia* is being placed in synonymy based on molecular analyses (Quint & Claßen-Bockhoff 2006).

Additional material examined

WESTERN CAPE.—3219 (Clanwilliam): Clanwilliam, Apollo Peak, S Cederberg, on S side at base of massive rock or cliffs, 4000–5000' [1 520 m], (–CA), 17-05-1969, *Esterhuysen 32160* (BOL); Clanwilliam, Kaffirkop [Kafferskop], suurvlakte, S Cederberg, amongst boulders on upper slopes, (–CA), 17-04-1976, *Esterhuysen 34250* (BOL); Ceres, central peak of Schurweberg above 'Excelsior' N of Bokkeveld Tafelberg, amongst rocks on SW side of rocky summit, 4800' (?) [1 460 m], (–CD), 15-08-1971, *Esterhuysen 32619* (BOL); Ceres, Schurweberg Peak (between Bokkeveld Sneeuberg and Bokkeveld Tafelberg) amongst rocks, 4500' [1 370 m], (–CD), 1-01-1962, *Esterhuysen 29432* (BOL).

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MS. received: 2008-10-16.