Four new species of Erica (Ericaceae) from Western Cape, South Africa

E.G.H. OLIVER* and I.M. OLIVER*

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ABSTRACT

Four new species of *Erica* L. from the mountains of Western Cape are described: *E.* **richardii** E.G.H.Oliv., rare and localized on quartzite cliffs in the foothills of the Great Swartberg north of Klaarstroom, *E.* **anemodes** E.G.H.Oliv., and *E.* **viminalis** E.G.H.Oliv., both restricted to the Hex River and adjacent mountains, and *E.* **limnophila** E.G.H.Oliv., rare around high altitude marshes in the Wemmershoek and Dutoitskloof Mountains.

1. Erica richardii E.G.H.Oliv., sp. nov., E. flocciflorae Benth. et E. saxigenae Dulfer affinis propter formam seminum sed a prima floribus albis corolla puberula, habitu tenello non crasso lignoso et a secunda floribus albis corolla minore et habitu tenello non crasso lignoso differt. Figura 1.

TYPE.—Western Cape, 3322 (Oudtshoorn): Klaarstroom area, Witberg southeast of Farm Droëkloof, northern slopes near summit, 1 140 m, (–BC), 12 July 2000, *Oliver 11529* (NBG, holo.; BM, K, MO, NY, PRE, S).

Shrubs varying from very small, $\pm 10 \times 50$ mm and prostrate, to erect and divaricate, up to 250×300 mm, woody, single-stemmed reseeder. Branches: few to many main branches (10-)20-30(-60) mm long terminating in a florescence, no secondary branches, with ± 3 new branches formed each year just below each florescence, all covered with dense short retrorse white hairs. Leaves 3-nate, erect, imbricate, linear, $3.5(-4.8) \times 0.8$ mm, adaxially slightly rounded, abaxially rounded, both sides with very short scattered hairs becoming glabrous, margins subacute with non-sticky glands in young stages, apex acute sometimes reddish, sulcus narrow open at base; petiole ± 0.6 mm long, glabrous, ciliate. Inflorescence: flowers 3-nate in 1 whorl at apex of main branches; pedicel \pm 7 mm long, red, covered with dense short white hairs, these somewhat clustered together in stellate-like groups with few, nonsticky, very short-stalked glands; bract partially recaulescent $\frac{1}{3}-\frac{1}{2}$ way up pedicel, oblong to oblance late, $\pm 2.4 \times$ 0.8 mm, covered with short scattered hairs and few, short, non-sticky glands on margins, creamish white with reddish apex, sulcus narrow $\pm \frac{1}{2}$ as long as bract; bracteoles 2, placed a short distance above bract, otherwise like bract. Calyx 4-partite; lobes not laterally imbricate, elliptic to obovate, $\pm 2.5 \times 1.5$ mm long, flattened base, white to creamish, with semitransparent margins, with stouter cream-coloured, sometimes reddish, sulcate upper portion, sparsely and shortly hairy, margins minutely serrated with occasional short, non-sticky, gland-tipped hairs, sulcus narrow $\pm \frac{1}{3}$ length of sepal. Corolla 4-lobed, globose urceolate, $\pm 4.5 \times 3.8$ mm, covered with very short hairs, white; lobes $\pm 1 \times 1$ mm, rounded entire. *Stamens* 8, free,

included; filaments oblong broad, $\pm 2.0 \times 0.3$ mm, with distinct apical S-bend, glabrous, white; anthers bipartite, basally attached, lanceolate in adaxial view, appendiculate; thecae erect, $\pm 1.1 \times 0.6$ mm and ovate in side view, with long pale red hairs between thecae otherwise glabrous, red-brown with darker apex, appendages obovate, $\pm 0.4 \times 0.2$ mm, pink-white, edged with long white hairs; pollen as tetrads. Ovary 4-locular, globose, \pm 1.8 \times 2.0 mm, slightly tapered at apex, glabrous, green, soon turning purplish with well-developed dark red nectaries around base; ovules \pm 20 per locule, spreading laterally from centrally placed placenta; style ± 2 mm long, manifest, becoming exserted in fruiting stage, green with purple apex, glabrous; stigma truncate. Fruit a dehiscent loculicidal capsule, $\pm 3.5 \times 3.5$ mm, very hard and woody; valves splitting halfway open but suberect and spreading very little, septa mainly on the valves very thin and papery portion on columella. Seeds asymmetrically angularobovoid with folds and ridges, $\pm 0.9 \times 0.6$ mm, yellow occasionally tinged red, testa thickened, deeply reticulate, cells 50–75 \times 40–60 μ m, anticlinal walls straight abaxially, undulate adaxially, inner periclinal walls with numerous small pits. Figure 1.

This new species is related to E. flocciflora and E. saxigena, and to a lesser extent E. affinis Benth., mainly because of the very similar seeds, which are unusual in the genus with their asymmetrical shape covered with irregular ridges and folds. The capsules are also similar in being very woody and not opening very much. Other shared characters are the long hairy pedicels with coloured bract and bracteoles, the glabrous, globose ovary with a short style and truncate stigma, and the anthers with broad appendages and filaments. It seems to be closest to E. flocciflora and E. saxigena because all three possess hairy corollas and sepals, and have similar leaves. E. flocciflora differs in having the hairs noticeably long and woolly on the pedicel, bract, bracteoles and sepals, the flower colour being greenish yellow, the appendages broader and serrate (not ciliate) and in the shrubs being extremely woody and erect up to 1 m tall. E. saxigena differs in having no hairs on the anthers, erose appendages, a velvety, hairy, much larger crimson corolla and a stout woody growth.

Erica affinis can be distinguished by the glabrous bright pink corolla and sepals, the latter being broad and

^{*} Compton Herbarium, National Botanical Institute, Private Bag X7, 7735 Claremont, Cape Town.

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FIGURE 1.—Erica richardii. A, flowering branch, × 1; B, flowering branchlet; C, stem with leaves removed; D, leaf; E, flower; F, flower, cut open laterally to show position of internal organs; G, bract; H, bracteole; I, sepal; J, stamen, front, side and back views; K, gynoecium, cut longitudinally; L, capsule, with one valve removed; M, seed; N, testa cells (outer portion of anticlinal walls ± straight, inner portion jig-sawed). All drawn from type, Oliver 11529. Scale bars: B, 4 mm; C–G, K, L, 2 mm; M, 1 mm; N, 50 µm.

petaloid and as long as the corolla, and by the broader bract and bracteoles which are adpressed to the calyx. It also produces much larger shrubs up to 1.5, rarely 2 m tall.

Superficially the new species looks like the smallflowered forms of *E. spectabilis* Klotzsch ex Benth., *E. eustacei* L.Bolus, *E. tragulifera* Salisb. and *E. formosa* Thunb. in the shape and colour of the flower, the broad filaments, hairs on the anthers, and the long hairy pedicel with similar bract and bracteoles. The seeds of these species, however, are quite different from those of *E.* *richardii*, being rounded and symmetrically shaped and simply reticulate. All four of these species occur in the mountains in and around the Little Karoo to the south and west of Klaarstroom.

Erica richardii has only recently been discovered in a habitat that is most unlikely for Ericaceae. It grows only on the north side of cliffs, boulders and rocky outcrops of quartzites of the Witteberg Series on the boundary of the dry arid Great Karoo (Figure 2). This habitat occurs in the low mountain ridges north of the Great Swartberg



FIGURE 2.—Known distribution of Erica richardii, ■; and E. anemodes. ●.

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Range at Klaarstroom where only a few remnants of fynbos vegetation manage to survive, namely one small patch of a species of Restionaceae and also some plants of *Erica discolor*, *Phylica axillaris* var. *microphyllum* (Rhamnaceae) and *Agathosma ovalifolia* (Rutaceae) on the moister, cooler, south-facing side of the summit ridge, but with no species of Proteaceae present. *E. flocciflora* also grows in arid habitats, but in the dry southern foothills of the Kouga Mountains and *E. saxigena* in dry rocky habitats on Anthoniesberg and the far eastern Swartberg, whilst *E. affinis* grows at high altitudes in moister mountain fynbos along the Kouga and Baviaanskloof Mountains to the Groot Winterhoek area.

This species was sent to us in May 2000 by Richard Taylor of the Technicon at Saasveld, George, a keen climber and supporter of the Protea Atlas Project, who was trying to locate the most northern outliers of Proteaceae in the low foothills north of the Great Swartberg Range. He led us to the locality where we managed to locate 25 plants spread for some 4 km along the north-facing cliffs and upper part of the summit ridge. The plants were still in flower in early July with older fruiting flowers and some buds also present on some plants.

The plants of *E. richardii* grow only in crevices in the rocks and vary considerably in size. The younger plants and those in very small rock crevices on vertical faces are small and prostrate, whereas the older ones that have

managed to grow in larger rock crevices or on more horizontal rock faces, are divaricate—the largest one 300 mm tall. Most seem to have a very woody basal stem, which would indicate that they are all of considerable age. However, the branches are surprisingly rather thin and delicate with leaves confined to the upper parts, which is in stark contrast to the extremely woody, stoutly branched and leafy shrubs of *E. flocciflora* and *E. saxigena*.

Paratype material

WESTERN CAPE.—3322 (Oudtshoorn): Klaarstroom area, Witberg southeast of Farm Droëkloof, summit ridge, (-BC), 1 150 m, 12-07-2000, frt, *Oliver 11535* (NBG, PRE); ibid., 1 040 m, 30-04-2000, *Taylor in NBG169521* (NBG).

2. Erica anemodes *E.G.H.Oliv.*, sp. nov., *E. calycinae* L. (formae Cedromontanae) similissima sed habitu parvo compacto, calcaribus antherarum angustioribus, pilis plumosis paucioribus in ramulis pedicellisque, stigmate capitato-peltato differt. Figura 3.

TYPE.—Western Cape, 3319 (Worcester): Ceres Dist., Waaihoek Peak, west slopes at summit, 1 920 m, (-AD), 12 October 1985, *Oliver 8793* (NBG, holo.; K, NY, PRE).

Compact erect shrublets, 200–500 mm tall, singlestemmed reseeder. *Branches*: densely and frequently branching with many main branches \pm 20–30 mm long ending in an inflorescence, occasional secondary branch-



FIGURE 3.—Erica anemodes. A, flowering[®]branch, × 1; B, stem with leaves removed; C, leaf; D, flower; E, bract; F, bracteole; G, sepal, abaxial view (left) and adaxial view (right); H, corolla; I, stamen, back, side and front views; J, gynoecium; K, ovary, with one side removed; L, fruit; M, capsule, with one valve removed; N, seed; O, testa cells. All drawn from type, *Oliver 8793*. Scale bars: B–N, 1 mm; O, 100 µm.



FIGURE 4.—Erica viminalis. A, flowering branch, × 1; B, stem with leaves removed; C, leaf; D, flower; E, bract; F, bracteole; G, sepal; H, stamen, back, front and side views; I, gynoecium; J, ovary, with one side removed; K, capsule; L, seed; M, testa cells. All drawn from type, Esterhuysen 28100. Scale bars: B–G, 2 mm; H–L, 1 mm; M, 100 µm.

es 2-10 mm long ending in an inflorescence; stems covered with dense short retrorse simple hairs, no infrafoliar ridges. Leaves 3-nate, slightly imbricate, erect to subspreading, elliptic-oblong, $\pm 4.2 \times 1.0$ mm, adaxially flattened, abaxially rounded margins subacute, glabrous, minutely ciliate, when young with few, small, non-sticky glands on margins, narrowly sulcate, sulcus open at base; petiole ± 0.7 mm long, adpressed, adaxially puberulous, minutely ciliate. Inflorescence: 3 flowers in 1(2) whorls at ends of main and secondary branches; pedicel 3 mm long, curved, with dense, short, retrorse, simple hairs, occasionally a few plumose hairs intermixed; bract partially recaulescent in middle of pedicel, ovate to elliptic, $\pm 2 \times 1$ mm, acute, glabrous, margins with small nonsticky glands and basally short hairs, white, sulcus narrow in upper 1/4; bracteoles 2, just above bract, elliptic to obovate, $\pm 1.5 \times 0.9$ mm, obtuse to subacute, otherwise like bract. Calyx 4-partite; lobes ovate to elliptic, $\pm 2.0 \times$ 1.3 mm, laterally imbricate, adpressed to corolla, apex subacute and cucullate, white, glabrous, margins with small, sessile, non-sticky glands and basally few short hairs, sulcus $\frac{1}{4}-\frac{1}{3}$ length of sepal. Corolla 4-lobed, broadly campanulate, 2.5×2.5 mm, glabrous, white; lobes erect to spreading, $\pm 1/_2$ length of corolla, $\pm 1.3 \times$ 1.3 mm, triangular subacute, entire. Stamens 8, free, included to manifest; filaments ± 2 mm long. linearoblong, with strong apical S-bend, glabrous, white; anthers dorsifixed near base, bilobed, quadrate in adaxial view, appendiculate; thecae erect, adpressed, $\pm 1.1 \times$ 0.6 mm, ellipsoid in lateral view, dark brown, aculeate on

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inner and adaxial margins, appendages pendulous, lanceolate, $\pm 0.5 \times 0.2$ mm, irregularly servate and with few hairs, brown; pore $\pm \frac{1}{2}$ length of theca; pollen in tetrads. Ovary 4-locular, broadly ovoid to ellipsoid, 1.0×1.5 mm, obtuse, glabrous, with reduced nectaries around base; ovules \pm 12 per locule, subpendulous from large placenta in upper half; style exserted, ± 2.3 mm long; stigma capitate-peltate, ± 0.7 mm across. Fruit a dehiscent capsule, broadly ovoid, $\pm 1.1 \times 1.8$ mm, valves splitting almost to the base but only slightly spreading, septum \pm 90% on the woody columella and 10% on valve. Seeds ovoid-ellipsoid, $\pm 0.7 \times 0.5$ mm, occasionally semi-angular, very shallowly reticulate, shiny, brown; testa not very hard, $70-100 \times 50-70 \mu m$, anticlinal walls straight to mostly slightly undulate, inner periclinal wall with numerous small pits. Figure 3.

This new species is characterized by its compact, dense habit, glabrous leaves, white flowers with erect to spreading lobes, pedicel mainly with simple hairs and very few plumose hairs admixed and a capitate-peltate stigma. It is a high altitude species. It is most similar to the widespread and common *E. calycina*, especially the Cederberg form, which differs in having larger appendages on the anthers (about twice the size), many more plumose hairs on the stem and pedicel, a hairy ovary with truncate stigma, finely hairy leaves, and in growth is woody and erect up to 1 m tall. Several of the collections of the new species were originally identified as being *E. calycina*.

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It is also similar to *E. laxa* [= *E. lucida* var. *laxa*] which differs in having dense plumose hairs on the stem, leaves and pedicel and pink flowers. It is a coastal endemic on recent sands of the west coast, north of Cape Town. The typical *E. lucida* is widespread along the mountains of the western region from Cape Town to the Kamiesberg in Namaqualand, and forms sparsely branched, fastigiate shrubs, up to 1.5 m tall.

Erica anemodes is confined to slopes near the summits of the highest peaks in the Hex River Mountain complex and adjoining Keeromsberg between Ceres and Worcester, mostly in the range of 1 500-1 900 m in altitude (Figure 2). Stokoe's collection from 1 200 m is the lowest recorded. The type collection was made near the summit of Waaihoek (= windy corner), hence the epithet (Greek, anemodes = windy). This latter locality was on a rather dry, stony, west-facing slope as opposed to the records of Esterhuysen and McDonald from southern slopes, either rocky and/or peaty or cliffs. Only three of the collections recorded the habit of the species-low compact shrublets with McDonald noting that the species was locally common. The type collection came from a population which contained numerous small shrublets just in that area, and was made on an excursion with Ms Esterhuysen.

A comment given by Esterhuysen on her collection from the Keeromsberg is significant—'growing with *E. calycina*' which would indicate that she noted the distinctness of this new species in the wild.

It would appear that the species is tending towards wind pollination since the nectaries are very reduced and almost non-existent and the stigma is expanded. Unfortunately the recording of pollen discharge was not noted when *Oliver 8793* was collected.

Paratype material

WESTERN CAPE.—3319 (Worcester): Milner Ridge Peak, cliffs S side, 5000–6000 ft [1 520–1 830 m], (-AD), 11-11-1943, Esterhuysen 9383 (BOL); ibid., S slopes, 5000 ft [1 520 m], 11-11-1943, Esterhuysen 9381 (BOL); Michell's Peak, 4000 ft [1 220 m], (-AD), 12-1920, Stokoe 65 (BOL); Brandwacht Peak, 6000 ft [1 830 m], (-CB), 26-11-1944, Esterhuysen 11024 (BOL); Horseshoe Ridge Peak, rocky S slopes, 5500 ft [1 680 m], (-CB), 1-11-1953, Esterhuysen 22214 (BOL); Fonteintjiesberg, steep SE slopes, 5000–6000 ft [1 520–1 830 m], (-CB), 20-10-1963, Esterhuysen 30427 (BOL); Keeromsberg, cliffs, S side, 5000–6000 ft [1 520–1 830 m], (-DA), 8-11-1943, Esterhuysen 9291 (BOL); ibid., SE slopes overlooking Patryskloof, 1 400 m, 30-10-1988, McDonald 1713 (NBG).

3. Erica viminalis E.G.H.Oliv., sp. nov., bene distincta propter habitum elatum 3 ad 5 pedum viminalem, folia quadrinata, flores glabros albos ad roseos calcaribus antherarum longis tenuibus, et ovulis \pm 30 in quoque loculo. Figura 4.

TYPE—Western Cape, 3319 (Worcester): Worcester Dist., Hex River Mountains, Milner Peak, on wet shaded cliffs at base of amphitheatre, E side, 5000 ft [1 520 m], (-AD), 4 January 1959, *Esterhuysen 28100* (BOL, holo.; BM, E, G, K, L, MO, NBG, NY, P, PRE, S, W).

Erect, robust, willowy shrub, up to 1.5 m tall, singlestemmed reseeder. *Branches*: main branches fast-grow-



FIGURE 5.—Known distribution of Erica viminalis, ■; and E. limnophila, ●.

ing with continuous apical growth, secondary branches occasional to numerous but not at every node, 10-50 mm long, mostly terminating in an inflorescence, occasionally with continuous apical growth, tertiary branchlets occasional, internodes short, 1-2 mm long, sparsely puberulous with simple spreading hairs. Leaves 4-nate, subspreading, linear-oblong, $3.0-5.0 \times 0.4$ mm, rounded in t/s, subobtuse, a few short hairs adaxially, sparsely and shortly ciliate, narrowly sulcate, open at base; petiole ± 0.8 mm long, glabrous, adpressed. Inflorescence: 4 flowers in 1 whorl terminal on secondary, rarely tertiary branchlets, erect; pedicel ± 3.5 mm long, upper half glabrous, lower half with few, short, spreading hairs; bract partially recaulescent $\pm 1/4$ way up pedicel, lanceolate, $\pm 1.3 \times 0.3$ mm, glabrous, ciliate, sulcus small, narrow at apex; bracteoles 2, ± half way up pedicel, narrowly lanceolate, $\pm 0.8 \times 0.2$ mm, esulcate, glabrous, ciliate. Calyx 4-partite; lobes lanceolate-ovate, $\pm 1.5 \times 0.8$ mm, adpressed to corolla, not laterally imbricate, glabrous, ciliate, sulcus in upper 1/3 narrow, pinkish white. Corolla 4-lobed, ovoid, $\pm 3.5 \times 2.0$ mm, white to pinkish, glabrous; lobes rounded, $\pm 0.7 \times 0.7$ mm, entire, erect to subspreading. Stamens 8, included, free; filaments linear, ± 1.6 mm long, with apical S-bend, thin and delicate, glabrous, white; anthers bilobed, lanceolate in adaxial view, dorsifixed near base, appendiculate; thecae erect, adpressed, $\pm 0.5 \times 0.3$ mm, broadly ovate in lateral, view, ± smooth, light brown; appendages pendulous, narrowly oblong, \pm 0.4 mm long, pilose with spreading hairs; pore $\pm 1/_3$ of theca; pollen in tetrads. Ovary 4-locular, broadly ellipsoid to obovoid, $\pm 1.2 \times 1.0$ mm, emarginate, glabrous, nectaries around base; ovules ± 30 per locule, spreading from centrally placed placenta; style ± 1.5 mm long, included; stigma capitate. Fruit a thinwalled dehiscent capsule, broadly obovoid, $\pm 1.4 \times 1.6$ mm, valves splitting $\pm \frac{2}{3}$ their length, and to $\pm 30^{\circ}$, septa on valves only. Seeds ellipsoid, $\pm 0.6 \times 0.4$ mm, slightly reticulate, pale yellow-brown, testa thin with elongate

cells \pm 100 \times 50 μ m, anticlinal walls finely undulate, inner periclinal walls densely and finely pitted. Figure 4.

Erica viminalis is characterized by its tall growth (3 to 5 ft according to Esterhuysen) with fast-growing willowy branches, (hence the epithet, *viminalis* = bearing long flexible shoots/branches or willowy), 4-nate leaves with 0–2 sclereids around the midvein, the numerous (\pm 30) ovules per locule (a large number for a small-flowered species) and the long thin anther appendages.

It is most similar to several species in the section *Orophanes*. It shares with *E. gracilis* the 4-nate leaves, the similar corolla and sepal shape and size, and the glabrous ovary and leaves with few sclereids, but that species has much smaller leaves and darker pink flowers and forms a dense, small, delicately branched shrub. With *E. leucantha* it shares the white flowers, similar anther appendages, glabrous ovary, similar stigma type and 4-nate leaves having few sclereids, but it does not have the glabrous leaves and stems, and the narrow cyathiform corolla. It is also similar to *E. sitiens* in many of the above characters but that species has much larger flowers with a short pedicel and only 6 ovules per locule and forms smaller fastigiate shrublets up to 1 m tall.

The species is known only from the type collection made by Elsie Esterhuysen in 1959. Her locality is at the base of the 'amphitheatre' on the east side of Milner Peak in the Hex River Mountains (Figure 5). This is the side of the range that faces down into the Hex River Valley and is very dissected with a veritable amphitheatre of very large rocky cliffs and deep gullies. She notes that the plants grew on wet shaded cliffs and that they were conspicuous due to their size. Fortunately, some older flowers with sufficiently matured fruits were also present on the very floriferous branches, which she collected. Although we have not seen the species in the wild, the material reminds us of the rapid growth pattern and habit of two other species we have recently described, namely E. oakesiorum from the Riviersonderend Mountains and E. magnisylvae from near Gansbaai.

4. Erica limnophila *E.G.H.Oliv.*, sp. nov., bene distincta, habitu semiprostrato, foliis ternatis, corolla pilosa rosea, calcaribus antherarum longis tenuibus, sed praesertim inflorescentis crescentia apicali extensis, vena media foliorum, bractearum, bracteolarum, sepalo-rumque crassa sine callo apicali dignoscenda. Figura 6.

TYPE.—Western Cape, 3319 (Worcester): Paarl Div., Wemmershoek Peak, edge of swamp below summit on east side, 5800 ft [1 770 m], (–CC), 31 December 1944, *Esterhuysen 11239* (BOL, holo.; K, NBG, NY, PRE).

Sprawling, tangled shrublets, \pm 150 mm tall, 200–300 mm across, single-stemmed reseeder. *Branches*: thin delicate main branches (30–)50(–100) mm long with continuous apical vegetative growth; few secondary branches (10–)20(–30) mm long with continuous apical growth or subterminal inflorescence; with simple, short, spreading hairs and with or without short-stalked glands intermixed. *Leaves* 3-nate, often imbricate, subspreading to spreading, slightly recurved, elliptic-oblong, 2.5–3.4 ×

0.8-1.0 mm, adaxially flattened, abaxially rounded, subacute, margin subacute, pilose with few, longer, stouter, gland-tipped hairs on abaxial surface and margins, sulcus slightly open revealing thick prominent main vein, and open basally; petiole 1.0-1.5 mm long, adpressed, glabrous, ciliate with short simple hairs and few, longer, gland-tipped hairs. Inflorescence: 3 flowers in single whorl terminal or subterminal below vegetative growth on main and secondary branches, central axis continuing growth; pedicel 1.5–2.0 mm long, pilose; bract partially recaulescent in middle of pedicel, lanceolate, $\pm 2.8 \times 0.8$ mm, with foliaceous upper half, coloured pinkish below, sulcate $\pm \frac{1}{3}$ of its length with prominent midvein, indumentum as in leaf; bracteoles 2, approximate to calyx, lanceolate, $\pm 2.8 \times 0.6$ mm, otherwise like bract. Calyx 4partite; lobes not laterally imbricate, ovate-lanceolate, ± 3×1 mm, apex recurved, with green upper $^{2}/_{3}$, coloured below, sulcus $\pm \frac{1}{3}$ length of sepal with prominent vein thickened in upper 1/3 adaxially, pilose, ciliate with long, stouter, gland-tipped hairs intermixed. Corolla 4-lobed, urceolate, $5.0-5.5 \times 3.5-5.0$ mm, pilose, pale pink; lobes erect, rounded to subacute, $\pm 1.5 \times 1.2$ mm, entire to suberose. Stamens 8, free, included; filaments linearoblong, tapering towards apex, $\pm 3.0 \times 0.2$ mm, with apical S-bend, glabrous; anthers bilobed, subquadrate in adaxial view, dorsally attached near base, appendiculate; thecae erect, adpressed with diverging apices, $\pm 0.8 \times 0.3$ mm, lanceolate in lateral view, orange-brown, strigulose, appendages pendulous subspreading laterally $\pm 0.7 \times 0.1$ mm, minutely spiculate or with very short teeth; pore \pm ¹/₄ length of theca; pollen in tetrads. Ovary 4-locular, globose, $\pm 1 \times 1$ mm, emarginate, pilose, with large nectaries around base; ovules ± 15 per locule, spreading from placenta in upper half of locule; style \pm 2.5 mm long, straight, glabrous; stigma included, capitellate. Fruit a dehiscent capsule, septa only on valve. Seeds immature but testa cells $\pm 30 \times 50 \ \mu m$, anticlinal walls undulate and periclinal walls pitted. Figure 6.

The relationships of this new species are rather vague with characters shared with several different groups of species. The nearest allies seem to be the E. leptoclada-E. flacca complex because of the similar prominent thickened midrib especially on the sepals-this vein enlarges considerably in the complex and forms a distinctive apical callosity which is missing in E. limnophi*la.* The hairiness with glands intermixed, the slightly widened filament and the low spreading habit, all agree with this complex, but the differences are the short pedicel, recaulescent bract and bracteoles approximate to the calyx. In the complex, the bract is characteristically nonrecaulescent (i.e. placed on the main branch) and leaflike and the two bracteoles are placed right at the base of a pedicel which is long, relative to the flower. They also have pollen in monads which is not shared by E. limnophila.

Another group to which the new species is similar is the *E. trichoclada–E. cederbergensis* group with their often sprawling habit, stalked glands on the leaves and stems, hairy corolla, ovary and appendages and the capitate to truncate stigma; even the transverse section of the leaves is similar with the very narrow epidermis and numerous sclereids surrounding the midvein—not a very common feature in the genus. The main difference of the



FIGURE 6.—*Erica limnophila*. A, flowering branch, × 1; B, flowering branchlet; C, stem with leaves removed; D, leaf; E, flower; F, bract; G, bracteole; H, sepal, side, abaxial and adaxial views; I, stamen, back, side and front views; J, gynoecium; K, ovary, with one side removed; L, capsule, with one valve removed; M, testa cells. All drawn from type, *Esterhuysen 11239*. Scale bars: B, 4 mm; C–H, J–L, 2 mm; I, 1 mm; M, 50 µm.

new species lies in the fine very short pubescence as opposed to the long villous pubescence in the group.

The glands and hairs on the leaves, corolla and ovary, similar stigma and anther appendages and the similar transverse section of the leaf is shared with the *E. pubescens–E. sphaeroidea* group but the species in this group form erect stout plants and grow in dry habitats and have multi-whorled inflorescences.

The features of *E. limnophila* are prostrate, spreading plants, 3-nate leaves, pilose corolla, long, thin anther appendages, short pubescence with long, stout, gland-tipped hairs intermixed, inflorescence continuing with vegetative growth often before the flowers have opened and the thickening of the midvein in the leaves, bracts, bracteoles and sepals, but with no apical callosity. The

thickening of the vein in the sepals and the singlewhorled inflorescence which continues vegetative growth, are features not seen in any other species of *Erica*.

Erica limnophila is another new high altitude species, but in this case, is confined to the Dutoitskloof/Wemmershoek Mountains (Figure 5). It has been recorded from only two localities about 8 km apart. In both localities its habitat has been recorded as being around the edge of a marsh/swamp/pan, hence the choice of epithet, *limn-* = pertaining to standing water, pools, lakes, *-philus* = loving. In this habitat, the species would undoubtedly be a single-stemmed reseder. Due to the extensive fires in this mountainous region during February/March 1999, fresh material and mature fruits could not be collected. This will have to wait for at least another five years.

Paratype material

WESTERN CAPE.—3319 (Worcester): Paarl Dist., Wemmershoek Peak, 5200–5500 ft [1 580–1 680 m], (-CC), 15-12-1968, Esterhuysen

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32095 (BOL, NBG); ibid., 5750 ft [1 750 m], 12-1944, *Lewis & Stokoe in SAM57785* (NBG, SAM); Worcester Dist., between Goudini Sneeukop and Deception Peak, 5000 ft [1 520 m], (-CC), 16-12-1973, *Esterhuysen 33446* (BOL, NBG).