

ERICACEAE

TWO NEW SPECIES OF *ERICA* FROM WESTERN CAPE, SOUTH AFRICA

***Erica orthiocola* E.G.H.Oliv., sp. nov.** (§*Melastemon*), inflorescentibus floribus duobus in ramulis brevissimis et in synflorescentibus densis aggregatis, corolla breviter infundibuliformi, sepalis pedicello base adnatis, antheris muticis projectione apicale, foliis ciliatis pilis brevibus validis plumosis distinguitur.

TYPE.—Western Cape, 3419 (Caledon): Rivier-sonderend Mtns, Pilaarkop, ridge WNW of peak, 1 540 m, (–BB), 26-02-1999, E.G.H. & I.M. Oliver 11230 (NBG, holo.; K, NY, PRE).

Compact rounded woody shrub ± 300 –(400) \times 300 mm, single-stemmed reseeded. *Branches*: numerous main and secondary with continuous apical growth; internodes short, less than leaf length, no infrafoliar ridges, puberulous with simple spreading to reflexed white hairs. *Leaves* 3-nate, erect to spreading, imbricate, $\pm 5.5 \times 1.5$ mm, oblong-elliptic, adaxially flattened, abaxially rounded, hard and stiff, glabrous, margins with short stubby plumose hairs, apex shortly cuspidate, sulcus narrow and closed at base; petiole 1 mm long, appressed, adaxially glabrous, abaxially puberulous. *Inflorescence*: flowers 2(1) terminal on highly reduced lateral branchlets, appearing axillary on main branches, these branchlets with only 2 bract-like prophylls; pedicel 6 mm long, with very short dense substellate hairs, white to pinkish; bract about $\frac{1}{5}$ up pedicel, 1.5×0.5 mm, oblong, very slightly apiculate, white-pink, semitransparent, glabrous, sparsely ciliate, sulcus very small to absent; bracteoles 2, $\frac{2}{3}$ up pedicel, otherwise like bract. *Calyx* 4-lobed, 2.5×2.0 mm, appressed to corolla; lobes slightly fused at base and to apex of pedicel, ovate, apiculate, the outer two slightly overlapping inner two, stout and hard, scarious with semitransparent marginal zone, pink and green, glabrous, margins with short stout plumose hairs and finer simple hairs, sulcus narrow, $\pm \frac{1}{3}$ length of lobe. *Corolla* 4-lobed, 4×3.5 mm, shortly and broadly funnel-shaped, pink turning brownish, glabrous; lobes erect, 1.5 – 2.0×1.5 mm, ovate, subacute, keeled with a dark longitudinal stripe, margins occasionally toothed to slightly erose. *Stamens* 8, free, manifest; filaments 2×0.4 mm, linear-oblong, slightly narrowed at base, straight, glabrous, whitish; anthers dorsifixed near base, bilobed, V-shaped, muticous; thecae 1.5×0.5 mm, oblong with narrowed slightly elongated tip, papillate, medium brown; pore relatively large, $\frac{2}{3}$ length of theca; pollen in tetrads. *Ovary* 4-locular, $\pm 1 \times 1$ mm, broadly ellipsoid to obovoid, slightly emarginate, glabrous, dull pink, with no basal nectaries; ovules 6–10 per locule pendulous from placenta in upper $\frac{2}{3}$; style far exerted, 6 mm long, filiform, glabrous, white to reddish at apex; stigma small narrowly cyathiform, red. *Fruit* a dehiscent capsule, 2×2 mm, valves splitting for $\frac{2}{3}$ their length to angle of 30° , apices not incurved, septa equal on valves and columella. *Seeds* 0.7×0.5 mm, ellipsoid, yellow to dark brown, testa reticulate, with thick radial cell walls, internally slightly wavy, externally \pm straight. Figure 8.

This new species is characterised by the 2-flowered inflorescence borne on very short lateral branchlets

arranged in a rather dense synflorescence near the ends of the branches, the shortly funnel-shaped corolla, sepals fused to the upper end of the pedicel which is covered with short substellate hairs, and the muticous anthers with an apical projection. The leaves are stiff and hard and edged with short stout plumose hairs.

There are several species similar to *E. orthiocola* based on the pedicel being longer than the corolla, the corolla shape, and anther type with extended portion above the pore, but it differs in a number of respects, the main one being the short stout plumose hairs on the margins of the leaf. *E. pillarkopensis*, which is sympatric with *E. orthiocola*, is a large woody shrub to small tree, with the flowers numerous, bright pink and arranged all over the branches, the leaves and sepals hairy with simple short hairs, and the calyx differently shaped and not fused. *E. seriphifolia* and *E. cubica* both have a simple many-flowered inflorescence on the ends of the main branches, the bract axial, long scattered distinctly plumose hairs on the pedicel, the stem with distinct infrafoliar ridges and the leaf margins with a few short simple hairs. They also have a similar fusion of the sepals with the upper portion of the pedicel. *E. obconica* is similar in the mucronate leaf and obconic stigma, but the bract and bracteoles are in a higher position on the pedicel and the inflorescence is simple and terminal on the main branches. *E. roseoloba* has the similar fusion of sepals but differs by the included style and simple hairs on the pedicel.

The flowers of *E. orthiocola* lack nectaries around the base of the ovary and have a slightly expanded stigma. This would indicate that the pollination is probably effected by wind. This could not be confirmed in the field due to the slightly late stage of flowering we encountered when collecting the type material.

The new species is very localised on a single slope in the Rivier-sonderend Mountains just west of Pilaarkop (Figure 9) where it grows on very steep south-facing rock ledges or small outcrops just below the summit ridge, hence the name *orthiocola* (*orthios* = high, lofty; *colus* = inhabiting). Several visits to the area provided only a few scattered small groups of plants, the largest with about five plants, which had escaped the major fire seven years ago. The plants appear to be very slow-growing since no young plants were observed. *Flowering time*: February and March.

This locality is peculiar in having several species of plants confined to the upper south slopes of the ridge. There are several undescribed *Erica* species including the following one, and the unusual and very rare *Lonchostoma esterhuyseniae* Strid (Bruniaceae). This is probably in part due to the habitat conditions which are cool and moist, with an accumulation of cloudy mist from the southeast winds caused by the leeward position of the ridge in relation to the peak of Pilaarkop.

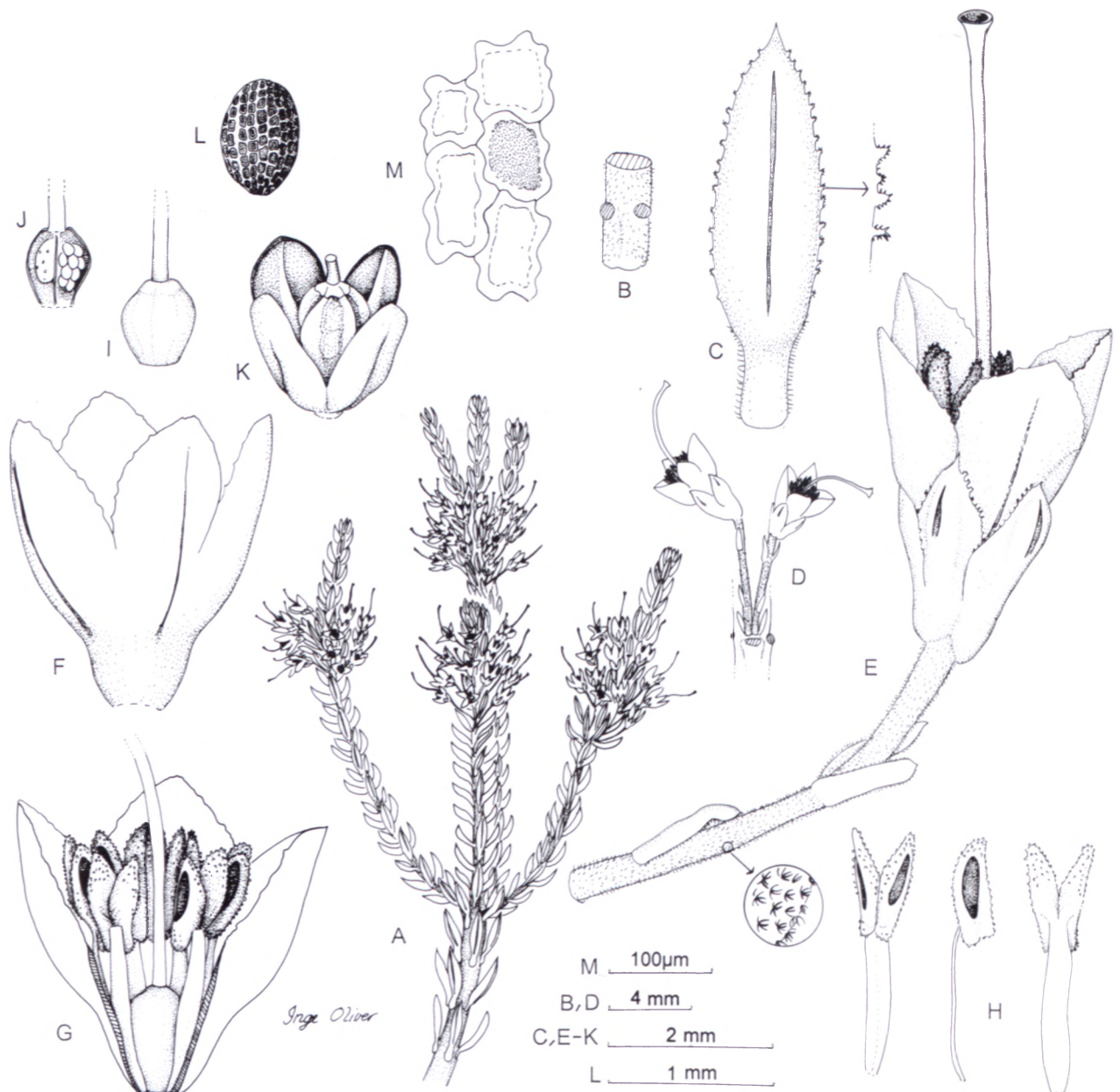


FIGURE 8.—*Erica orthiocola*. A, flowering branch; B, branch; C, leaf; D, inflorescence on very short lateral branchlet with subtending leaf removed; E, flower; F, corolla; G, corolla opened to show androecium; H, stamen, front, side and back views; I, ovary; J, ovary opened laterally; K, capsule; L, seed; M, testa cells. All drawn from the type, *Oliver & Oliver 11230*. A, $\times 1$; B, D, 4 mm; C, E–K, 2 mm; L, 1 mm; M, 100 μm . Artist: Inge Oliver.

E. pillarkopensis appears to have been very abundant on the southern slopes of the ridges just west and east of Pilaarkop as evidenced by the numerous silvery grey skeletons remaining after the extensive fire in 1994. This is particularly so in the upper portion of the main kloof of Olifantsbosch. At present there are very few old plants of the species remaining and these are only in rocky areas where they escaped the fire. Some are in the region of 3 m high with a trunk of 200 mm diam. Surprisingly there are very few young plants visible on any of the slopes.

E. seriphifolia, *E. cubica* and *E. obconica* all occur on the Langeberg range with *E. cubica* extending as far away as the South Coast of KwaZulu-Natal. *E. roseoloba* is restricted to a single peak in the Klein Swartberg near Seweweekspoort and was only recently described (Oliver & Oliver 1996).

Paratype material

WESTERN CAPE.—3419 (Caledon); Rivier-sonderend Mtns, Pilaarkop, 5400 ft, (–BB), 8-03-1970, *Esterhuysen 32416* (BOL); *ibid.*, 4500–4800 ft, 7-03-1971, *Esterhuysen 32579* (BOL, K); *ibid.*, 9-04-1971, *Esterhuysen BOL55092* (BOL); *ibid.*, 1 520m, 9-10-1998, *Oliver 11177* (NBG); *ibid.*, 04-1940, *Stokoe 7877* (BOL); *ibid.*, 06-1949, *Stokoe SAM62327* (BOL, SAM).

***Erica columnaris* E.G.H.Oliv., sp. nov.** (§*Hermes/Chlorocodon*), synflorescentibus densis columnaribus, foliis floribus superantibus, bracteolis plerumque plene recaulescentibus, calcaribus antherarum brevis ex parte decurrentibus, nectariis nullis distinguitur.

TYPE.—Western Cape, 3419 (Caledon): Rivier-sonderend Mtns, Pilaarkop, moist southern slopes below ridge WNW of peak, 1 500 m, (–BB), October 1998,

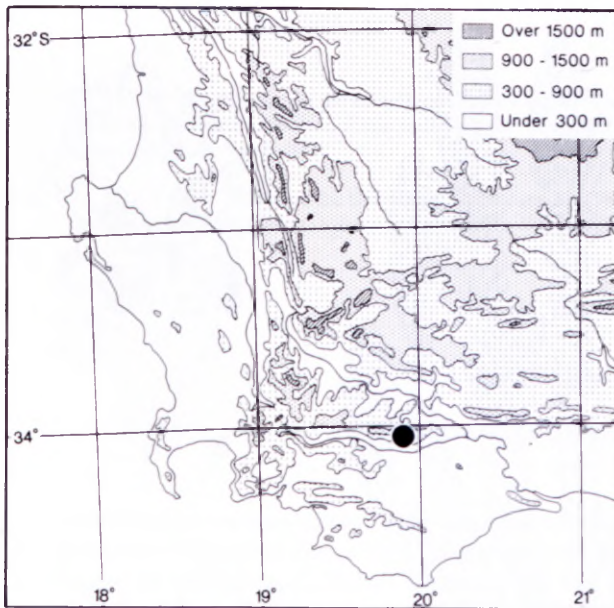


FIGURE 9.—Known distribution of both *Erica columnaris* and *E. orthiocola*.

E.G.H. & I.M. Oliver 11177 (NBG, holo.; BM, BOL, E, K, MO, NY, P, PRE, S, W).

Stoutish, erect, virgate shrub 0.5(–1) m high, single-stemmed reseeder. *Branches*: main branches of previous season often devoid of leaves and terminating in a compact innovation zone of 7–15 fastigate leafy secondary branches, these terminating in synflorescences 15–40 mm long, branches glabrous with infrafoliar ridges, tertiary branchlets very reduced, 0.5 mm long terminating in a florescence. *Leaves* 4–6-nate, subspreading-incurved, imbricate, 7–8 × 1 mm, lanceolate, flat adaxially and slightly rounded abaxially, glabrous, ciliolate, sulcus narrow and closed at base; those on tertiary reduced branchlets in 2 or 3 whorls, very small, bract-like and whitish; petiole 0.8 mm long, appressed, glabrous, ciliolate. *Inflorescence*: 1(2) flowers subterminally on very reduced lateral branchlets appearing axillary to the longer leaves on secondary branches, these arranged in column-like synflorescences 15–40 mm long at ends of secondary branches; pedicel 2 mm long, glabrous; bract partially recaulescent $\frac{1}{3}$ up the pedicel, 1 × 0.7 mm, ovate, acute, esulcate, glabrous, ciliolate, light green; bracteoles 2, fully recaulescent as lateral lobes of calyx, occasionally 2 partially recaulescent and appressed to calyx, rarely in middle position, when partially recaulescent then like the bract in shape. *Calyx* 4-partite; lobes appressed to corolla, occasionally lateral two imbricating at base, 1.5 × 1 mm, ovate-lanceolate, glabrous, ciliolate, green often tinged red, sulcus narrow, $\frac{1}{3}$ length of sepal. *Corolla* 4-lobed, 2.5 × 2.5–3.0 mm, urceolate, glabrous, wine-red with whitish base; lobes recurved, 0.8 × 1 mm, broadly triangular, margins entire. *Stamens* 8, free, included; filaments 1 mm long, broadly oblong, flat, straight in upper half, glabrous, white; anthers bilobed, ovate in front view, awned; thecae erect, appressed, glabrous, dark brown; awns decurrent on filament, \pm 0.1 mm long, linear, simple, pendulous, white; pore $\frac{1}{2}$ length of theca; pollen in tetrads. *Ovary* 4-locular, 8-lobed, 0.5 × 0.8 mm, oblate obovoid, emarginate, glabrous, reddish green, nectaries absent;

ovules 4 per locule, spreading from placenta in central position on columella; style exerted, 2.5 mm long, narrowly cylindrical, sometimes slightly curved apically, glabrous, greenish white base and dark red apex; stigma peltate-capitate, sometimes reflexed, dark red. *Fruit* a dehiscent capsule, 1.2 × 2 mm, valves splitting to \pm 45° and nearly to the base, septa \pm 30% and very thin on columella and 70% on valve, placenta very convoluted, columella easily shed from capsule. *Seeds* 0.5 × 0.4 mm, ellipsoid, circular in cross section, yellow brown, testa reticulate, cells 60 × 90 μ m, radial walls narrowly wavy. Figure 10.

This new species is distinguished by the dense compound synflorescence, the leaves of which are longer than the lateral flowers, the bracteoles often fully recaulescent as the lateral segments of the calyx, the short anther spurs which are partially decurrent along the apex of the filament, and the absence of nectaries. The pseudospicate, columnar synflorescences give the species its name, *columnaris* = pillar- or column-like.

Several species show alliances with *E. columnaris* based on the long erect tightly packed synflorescences with small corolline flowers and stems with infrafoliar ridges. *E. regerminans* with a very similar habit and method of branching, differs in its slightly larger, more conspicuous dark pink flowers that are longer than the leaves, its corolla being ellipsoid with a longer pedicel and in the long anther spurs which are not decurrent. *E. dodii* differs in having a soft delicate growth form, corolla more open cyathiform to campanulate, anthers small and delicate with spurs much longer but slightly decurrent, style included, flowers pink not dark purplish pink and larger and more visible. *E. coarctata* Wendl. differs in the flowers being slightly smaller and more cyathiform and greenish cream-coloured sometimes tinged pink, the anthers lacking spurs, the stigma peltate-cyathiform and far exerted, and the ovary not emarginate.

E. columnaris exhibits clearly the transition from partially to fully recaulescent bracteoles in the Ericaceae which condition was noted in the problems with the delimitation of the genera *Philippia* Klotzsch (Oliver 1988) and *Ericinella* Klotzsch (Oliver 1994). In \pm 70% of the flowers, it would appear that the bracteoles have been lost, whereas they have recaulesced fully with the pedicel and become incorporated in the calyx as the apparent lateral sepals. This will be addressed in a forthcoming publication dealing with the relationship of the rest of the minor genera of the Ericaceae to *Erica*.

The lack of nectaries and the expanded stigma complex would indicate that the pollination syndrome for the species is anemophily. On walking through a large dense population, occasional puffs of pollen were noted coming from disturbed plants. However, there were numbers of small beetles visiting the inflorescences of some plants. This could suggest a case of evolutionary change from entomophily to anemophily taking place in a species. We postulate that this is the situation in a number of other species of *Erica*. The occurrence of fully recaulescent bract and bracteoles is always accompanied by loss of nectaries, expansion of the stigma and anemophily in the Ericaceae.

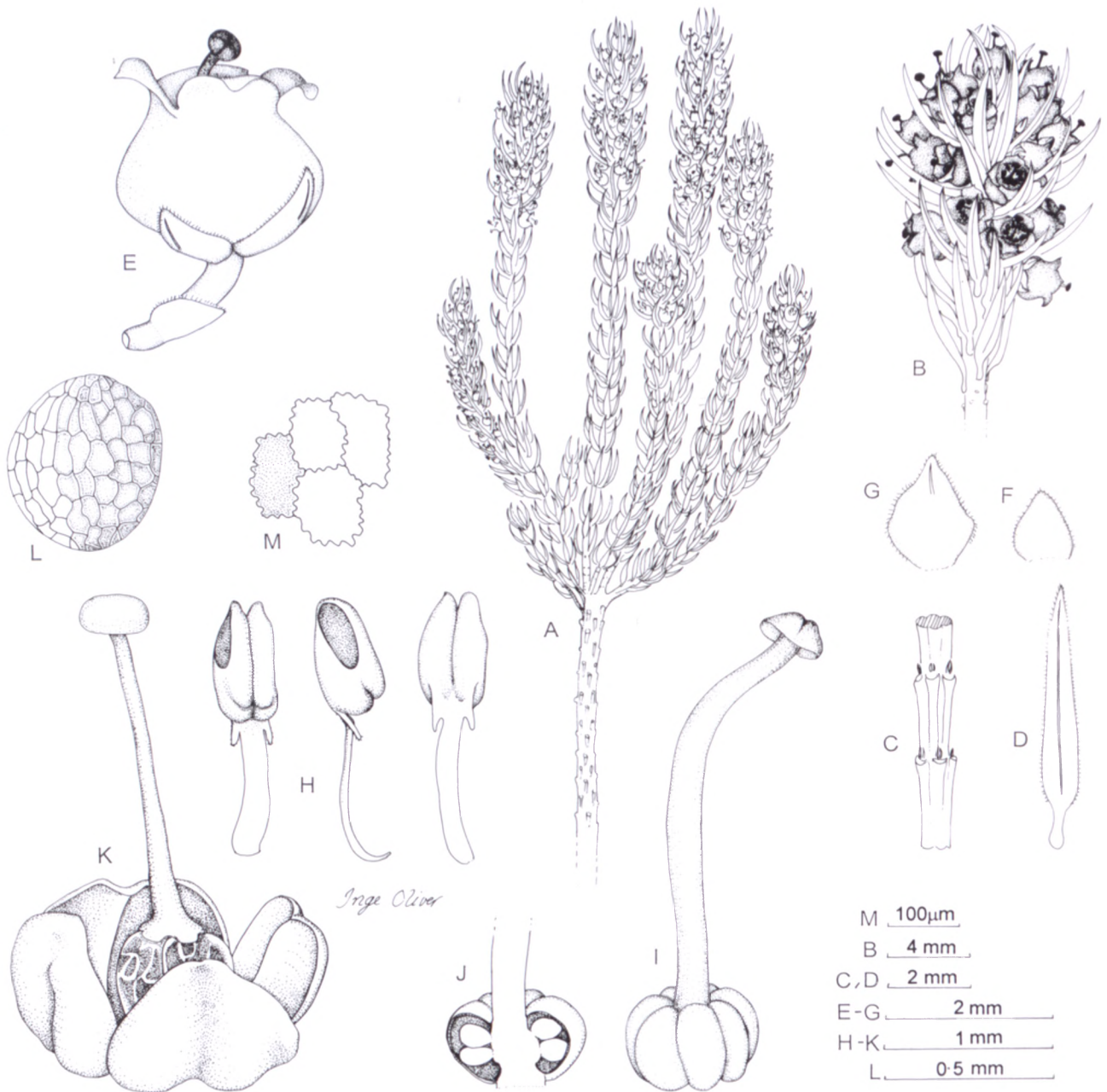


FIGURE 10.—*Erica columnaris*. A, flowering branch; B, flowering branch, close-up; C, stem with leaves removed; D, leaf; E, flower; F, bract; G, sepal; H, stamen, front, side and back views; I, gynoecium; J, ovary opened laterally; K, capsule; L, seed; M, testa cells. A–J, drawn from type, *Oliver & Oliver 11117*; K–M, drawn from *Oliver 10940*. A, $\times 1$; B, 4 mm; C, D, 2 mm; E–G, 2 mm; H–K, 1 mm; L, 0.5 mm. Artist: Inge Oliver.

The new species is confined to the steep southern slopes of the ridge, just west of the main peak of Pilaarkop in the Rivier-sonderend range (Figure 9), which is the only known locality. It forms dense stands of plants in some areas, mostly on the loamy open slopes away from the rocks inhabited by *E. orthiocola*. *Flowering time*: September and October.

E. regerminans is confined to moist south-facing slopes in the Langeberg range, whereas *E. coarctata* is widespread from the Cape Peninsula to the George area where it grows on dry lower slopes of sometimes coastal flats associated with calcareous deposits. The latter species has been noted by us to be a resprouter in several well-separated localities.

E. dodii occurs from the Cape Peninsula to the Rivier-sonderend Mountains where it grows sympatrically with *E. columnaris*, sometimes less than a metre apart, but then up against or under overhangs of large rocks and rock faces with a soft delicate habit no more than 200 mm high.

Paratype material

WESTERN CAPE.—3419 (Caledon): Rivier-sonderend Mtns near Lindeshof, Pilaarkop, 4000 ft. (–BB), 17-11-1965, fruiting, *Esterhuysen 31400* (BOL, K); *ibid.*, 4500 ft, 24-10-1971, *Esterhuysen 32718* (BOL, NBG, PRE); *ibid.*, 4750 ft, 28-10-1997, fruiting, *Oliver 10940* (K, NBG, NY, PRE).

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MS. received: 1999-05-17.