## TWO NEW SPECIES OF ERICOIDEAE

Erica insignis E. G. H. Oliver, sp. nov. in genere singularis et facile recognita combination trium characterum: corolla redactissima aspectu aliquot coronae parvae circum ovarium, segmentis calycis maximis et staminibus bene exsertis 6–8plo corolla longioribus; ab *Erica nabea* Guthrie & Bol., specie altera generis exhibente corollam redactam, staminibus bene exsertis, floribus multo majoribus et habitu statim dignoscenda.

Fruticulus ad 400 mm altus, caudice lignoso. Rami erecti pubescentes. Folia 3nata erecta imbricata parum falcata, 8–12 mm longa, linearia ad angustissime ovata, acuta ad obtusa, parum alata ad basim, sulcata carinataque, statu iuvenili omnino puberula, et ciliata glandulis minutissimus subsessilibus, minus pubescentia vetustate; petiolo 1,5-2 mm longo, pubescente glandulo-ciliatoque. Flores 2-3nati ad extrema ramorum et/vel 1-3nati ad extrema ramulorum lateralium; pedicellis 1,3-3 mm longis, dense pubescentibus; bracteolis 3 approximatis subaequalibus aut aequalibus,  $8,5-9\times3-4$  mm, duabus lateralibus asymmetricis, omnibus ovatoattenuatis acutis, sulcatis carinatisque in parte  $\frac{2}{3}$ superiore, sparse et minutissime puberulis, densiore puberulis ad basim, sparse ciliatis glandulis minutis subsessilibus. Calyx 4partitus bicyclicus, segmentis exterioribus ab- et adaxialibus,  $18-24 \times 6-7$  mm, segmentis interioribus lateralibus  $16-20 \times 5$  mm, omnibus anguste ovato-acutis, carinatis sulcatisque in parte 1/4 superiore, naviculatis, sparse et minutissime puberulis utringue, sparse ciliatis glandulis minutis subsessilibus. Corolla 4lobata 4–5plo calyce breviora  $4.5 \times 4.5$  mm oblato-urceolata, 4saccata et profunde canaliculata sub interstitiis, glabra; lobis filamenta amplectentibus, emarginatis, breviter ciliatis. Stamina 8 libera exserta; filamentis elongatolinearibus,  $25-32 \times 0.5$  mm, glabris; antheris 2,7-3mm longis, oblongis obtusis, parum prognathis rotundisque vel parum bilobatis ad basim, muticis glabris; poro 1,8 mm longo; polline in tetradis. Ovarium 4loculare, ovulis multis, breviter cylindraceum,  $2,5-3 \times 2-2,5$  mm, manifestum ad interstitia corollae, 8sulcatum glabrum, crista conspicua similis coronae apice immerso; stylo 30-37 mm longo tereti, longe exserto glabro; stigmate capitellato. Fructus ad 5 mm longus, capsula loculicidalis, valvis quattuor cucullatis.

TYPE.—Cape, Prince Albert District, northern slopes of Kangoberg in the Great Swartberg Range, 1 400 m, December 1979, *Oliver* 7469 (STE, holo.; K; NBG; PRE).

Dwarf woody shrub up to 40 cm often small and bonsai-like with a woody rootstock. Branches erect, pubescent with spreading white hairs. Leaves 3-nate. erect imbricate slightly falcate 8-12 mm long, linear to very narrowly ovate, with acute to obtuse red apex and slight wings towards the base, sulcate and carinate, puberulous all over when young and ciliate with minute subsessile glands becoming less so with age: petiole 1,5-2 mm long, pubescent and gland-ciliate. *Flowers* 2-3-nate at the ends of branches and/or 1-3-nate at the ends of short lateral branchlets sometimes becoming crowded towards the ends of branches; pedicels 1,3-3 mm long, densely pubescent; bracteoles 3 approximate, subequal to equal  $8,5-9 \times 3-4$  mm with the two laterals asymmetrical, all ovate-attenuate to broadly ovate and more markedly attenuate, acute, sulcate and carinate in the upper  $\frac{2}{3}$ , sparsely and very minutely puberulous, denser towards the base, sparsely edged with minute subsessile glands, pale green turning bright red. Calyx 4-partite, 2-ranked the outer two ad- and abaxial,  $18-24 \times 6-7$  mm, the inner two lateral  $16-20 \times 5$ mm, all narrowly ovate-acute, carinate and sulcate in the upper 1/4, boat-shaped, sparsely and very minutely puberulous on both surfaces, sparsely edged with minute subsessile glands, pale green turning bright red. Corolla 4-lobed  $4-5\times$  shorter than the calyx and only just exceeding the ovary,  $4.5 \times 4.5$  mm broadly oblate urceolate, 4-pouched and deeply channelled below the interstices, glabrous, pale green; lobes clasping the relatively large filaments. emarginate, shortly ciliate-edged. Stamens 8, free, exserted; filaments elongate linear  $25-32 \times 0.5$  mm. glabrous, pale green; anthers 2,7-3,0 mm long, oblong obtuse, slightly prognathous and rounded or slightly bilobed at the base, muticous, glabrous, pale brown; pore 1,8 mm; pollen in tetrads. Ovary 4-celled with numerous ovules,  $2,5-3 \times 2-2,5$  mm shortly cylindric just visible above the corolla interstices, 8-grooved, with conspicuous corona-like ridge with 8 bumps, apex and stigma attachment sunken, glabrous, pale green; style 30–37 mm terete, far exserted, glabrous, pale green; stigma capitellate,



FIG. 18.—Erica insignis. 1, flower, abaxial view; 2, flower, lat. view; both × 3; 3, medium bracteole, outer and side views; 4, lateral bracteole; 5, abaxial sepal; 6, corolla; 7, anther, rear, front and side views; 8, ovary; all × 6; 9, young fruit in longitudinal section; 10, mature fruit seen from above; 11, base of leaf, × 12. All drawn from the holotype, Oliver 7469 (STE).

black. *Fruit* up to 5 mm long, loculicidal capsule with 4 hooded valves. Fig. 18.

CAPE.—3321 (Ladismith): Swartberg, upper north slopes of Kangoberg (-BD), *Taylor 1102* (BOL); Oliver 7469 (K; NBG; PRE; STE), 3322 (Oudtshoorn); Swartberg Pass, lower northern slopes (-AC), *Bond 1676* (PRE): *Oliver 7463* (NBG; STE); Swartberg Pass Mountains, upper north slopes without precise locality, *Stokoe 6408* (BM; BOL).

This remarkable species is very distinct in the genus for its very reduced corolla which appears almost like a corona around the ovary, its extremely large calyx segments and for its far exserted stamens four to five times the length of the corolla.

The extremely reduced corolla is not unique in the genus, as it is shared with only one other species, *Erica nabea* Guth. & Bol., which is a species of uncertain position in the Ericoideae. It was originally placed in a monotypic genus as *Macnabia montana* by Lehman on account of the floral arrangement, but was included under *Erica* by Guthrie and Bolus (1905) in Flora Capensis. Their view may have to be reversed when my investigations of the generic delimitation within the Ericoideae, at present in progress, are finally completed. For the time being, it is best to accept that *Erica nabea* belongs to the genus

*Erica* in the section *Adelopetalum* and therefore the new species, *Erica insignis*, as well.

E. insignis, although possessing a basic floral pattern like E. nabea, can easily be separated from it. E. nabea occurs on the moist coastal flats and southern slopes of the George-Knysna-Uitenhage Districts and is an erect single stemmed shrub up to 1,5 m high with virgate branches. It has smaller whitish green flowers (sepals 14-16 mm long), which are usually arranged in dense pseudoracemes. The stamens are included, the corolla is subovoid, the ovary oblong obtuse and the seeds are flat and broadly winged. E. insignis on the other hand occurs in very dry rocky habitats on the northern slopes of the Great Swartberg and is often a gnarled bonsai-like shrublet up to 0,4 m high. It has larger bright red flowers (sepals 18-24 mm long), which are aggregated towards the ends of branches, but never in dense long pseudoracemes. The stamens in *E. insignis* are well exserted, the corolla is broadly oblate-urceolate and 4-channelled, the ovary is shortly cylindrical with a sunken apex and the seeds are not winged.

Despite the above clear differences between the two species there is an overall similarity, which would

suggest some closer relationship somewhere during their evolution. But their widely separated distribution ranges and habitat preferences will remain difficult to explain.

*E. insignis* has for many years remained an elusive subject for me. It was discovered as early as 1935 by that veteran mountaineer and collector, T. P. Stokoe. A postcard written by him to N. S. Pillans and attached to his collection in the Bolus Herbarium is worth quoting 'My Swartberg trip produced nothing exciting, a few phylica and Erica of the 7 weeks Poort Mountain Type. I found an Erica, Petiveri like in Type but I do not think it is *it. Rock Erica*, faces the blazing north sun pale greeny yellow when young but vivid scarlet as it reaches fruiting stage alt. 5 000 ft. flowers are not pendent but at right angles to stem'. Little did he realize what problems this species would create. Then in 1954 H. C. Taylor recollected the species at 5 000 ft on a high altitude traverse of a number of peaks.

Since the early 1960s, I have visited the Great Swartberg in the vicinity of the pass about ten times, twice with Taylor, and have covered most of the northern slopes on high altitude traverses from Gamkaskloof in the west to Tierberg in the east without finding the species.

Just before leaving in 1979 on another attempt to find it, I received a recent collection of Ericaceae from W. Bond of Saasveld and among them was the species collected not at 5 000 ft, but at 3 000 ft at the base of the Swartberg. En route to the upper slopes of the Kangoberg, I recollected the species at Bond's locality at the foot of the pass. This immediately gave the clue as to its habitat preferences — bare open rocks facing north to west at the extreme lower limit of the fynbos and Table Mountain Sandstone (TMS). Here, it was growing with such unlikely species as *Portulacaria afra, Cotyledon orbiculata* and *Passerina* sp.

The visit to Kangoberg revealed a similar situation. The species was found not at high altitude but on the steep very rocky lower slopes at the lowest limit of the fynbos and TMS formation just above the renosterveld and uppermost karroid elements on the shales. Again it was growing in rock cervices with very little or apparently no soil facing north to west and associated with dry elements of fynbos vegetation. The species was definitely not a member of the high montane fynbos vegetation.

The shrublets were very much 'bonsaied' with the rather few branches arising from a gnarled woody rootstock which was pressed into the rock cervices or spread over the rock surface. Occasionally plants grew on flat rock surfaces where soil could accumulate and were more robust and floriferous. It is remarkable that the plants were able to survive in this environment facing the blazing hot sun for much of the day. The flowers when young are pale green, but soon turn bright red when fully exposed to the sun therefore adding to the striking appearance of the plants.

There appears to be little variation of significance in the material available. The hairiness is extremely fine and sometimes sparse and may easily be overlooked. The fruit, like all ericoid fruits, is loculicidal. It exhibits xerochastic movements connected with seed dispersal. The hooded valves open in a dry atmosphere and close on being moistened and therefore the seeds will only be released in dry sunny weather when they can easily be dispersed by the wind. Scyphogyne calcicola E. G. H. Oliver, sp. nov. in genere distincta et sejuncta propter locum et ecologiam sed quasi accedens S. divaricatam Benth., speciem montium Caledonensium et Worcesterensium a qua absentia glandularum, floribus terminaliter aggregatis subglabris et ovario glabro differt.

Fruticulus compactus erectus ad 300 mm altus valide lignosus. Rami fastigiati virgati foliis solum versus apices instructi, minute pubescentes, trigoni, vetiores notabile articulati. Folia 3nata erecta incurva subimbricata, 1,4–2 mm longa, elliptica ad ovata, acuta ad subacuminata, complanata pubescentia ad basim adaxialem, convexa sulcata glabraque in facie abaxiali, marginibus minute serratis hyalinis. Flores (3) 6 (8) nati congesti versus apices ramorum vel 2–3nati in ramulis brevibus lateralibus inferioribus, apparente sessiles. Calyx 4lobatus inaequalis, interstitia corollae contingens; lobis latissime ovatis obtusis, omnibus subcucullatis in parte superiore, glabris, infra ciliatis supra denticulatis. Corolla 410bata, 1,5–1,7 mm longa obconica ad cyathiformis glabra; lobis latissimis 0,5 mm longis protuberantibus inter lobos calycis, inaequaliter crenatis. Stamina 4, connata usque ad medias antheras; tubo filamentorum  $\pm$  0,4 mm longo glabro; antheris 1 mm longis ellipticis obtusis glabris muticis inclusis aut manifestis; poro fere usque ad mediam thecam; polline in tetradis. Ovarium 1-loculare, 1-ovulatum, glabrum 0,5 mm longum ellipsoideum; stylo 0,9 mm longo glabro, 4porcato; stigmate 1,3 mm lato, late infundibuliformi, exserto, relative giganteo et conspicuissimo glabro rubro. Fructus incognitus.

TYPE.—Cape, Bredasdorp District, limestone hills near Heidehof (Awila) just north of Pearly Beach, Feb. 1980. *Oliver* 7604 (STE, holo.; BM; BOL; K; MO; NBG; PRE; S).

Shrublet, compact erect up to 30 cm high, woody. Branches numerous fastigiate virgate with leaves only towards apices, minutely pubescent with spreading hairs, trigonous, the older noticeably jointed with conspicuous leaf scars and grey remnants of internodal ridges. Leaves 3-nate, erect incurved subimbricate 1,4-2 mm long elliptic to ovate to broadly so, acute or subacuminate, flat and pubescent at base adaxially convex, sulcate and glabrous abaxially, with minutely serrate hyaline margins; petiole 0,5-0,6 mm long, adpressed, shortly ciliate, puberulous adaxially, glabrous abaxially. Flowers (3) 6 (8)-nate crowded at ends of branchlets or lower down 2-3-nate on short lateral shoots, apparently sessile. Calyx 4-lobed to halfway, unequal, reaching to corolla interstices, the larger one 1,2-1,5 mm long broadly deltoid acute to subacuminate, the smaller ones 1-1,4 mm long very broadly ovate obtuse, all subcucullate in upper half, glabrous, ciliate towards the lower edges, denticulate in upper part, carinate above, green. Corolla 4-lobed, 1,5-1,7 mm long obconical to cyathiform, glabrous, green with lobes tinged red; lobes very broad 0,5 mm long, bulging out between calyx lobes, unevenly crenate. Stamens 4 connate to halfway up the anthers; filament tube  $\pm$ 0,4 mm long glabrous; anthers 1 mm long elliptic obtuse, glabrous, muticous, included to manifest; pore almost <sup>1</sup>/<sub>2</sub> length of cell. Ovary 1-celled with a single pendulous ovule, glabrous 0,5 mm long ellipsoid; style 0,9 mm long glabrous 4-ridged; stigma 1,3 mm wide broadly funnel-shaped, exserted, relatively very large and conspicuous, glabrous, red. Fruit not known. Figs 19 & 20.

CAPE.—3419 (Caledon): Spitzkop, hills near Heidehof (Awila) (-DA), May 1973, Oliver 4272 (STE); April 1975 Oliver 5818 (E;



FIG. 19.—Distribution of ● Erica insignis and of ▲ Scyphogyne calcicola.

NBG; PRE; STE; W; Z); Feb 1980, *Oliver 7604* (BM; BOL; K; MO; NBG; PRE; S; STE).

The genus *Scyphogyne* at present consists of 18 species which occur on the mountains mostly in the region from the Caledon District in the south to the Cedarberg in the north. Only the very common *S. muscosa* (Ait.) Druce is recorded in the Bredasdrop District from a few localities on the coastal hills where it is associated with fynbos vegetation on acid sandstone. Therefore the discovery of this new species growing on the limestone formations, is of particular interest and hence the specific epithet.

The species was discovered by accident while a survey was being made of the unique series of limestone hills between the Uilenkraal River mouth and Quoin Point. On two subsequent visits to the area to collect better material a thorough search revealed only the single population first discovered. The plants were growing on a fairly steep southfacing slope below small cliff faces. The soil was the



FIG. 20.—Scyphogyne calcicola. 1, flower; 2, corolla; 3, abaxial sepal; 4, lateral sepal; 5, gynoecium; 6, anther, front, side and back views; all × 25; 7, leaf, × 12,5. Drawn from the holotype, Oliver 7604 (STE).

typical light brown sandy soil associated with coastal limestone in the south-western Cape. The surrounding vegetation was very short restiads and equally sized Rutaceae and Fabaceae.

The calcified dunes of the coastal areas of the south-western and southern Cape have only in recent geological times become available for colonization by plants. Being poor in nutrients and well drained, their colonization has been by fynbos elements from the nearby sandstone hills. In many cases speciation has accompanied this colonization. There are some notable examples of this among the typical Cape families, Proteaceae, Restionaceae and Ericaceae. In the Ericaceae there are a number of endemic limestone species. This is particularly so in the genus Syndesmanthus which I regard as the most recently evolved genus in the tribe Ericeae. In the same range of hills there occur several distinct and endemic species of Erica – E. saxicola Guth. & Bol., E. gracilipes Guth. & Bol., E. calcareophila E. G. H. Oliver and the remarkable E. occulta E. G. H. Oliver which grows out of cracks in the limestone cliffs like a bonsai cypress. The problem of endemism on these limestone formations among typically acid sandstone loving genera is enigmatic. Very little research has been done on this intriguing problem and it is hoped that the recently established Fynbos Biome Project will tackle such problems.

On first examination the material did not appear to belong to the genus *Scyphogyne*, but dissection of numerous flowers in spirit of the more recent collection showed that the species bears all the characters characteristic of the genus namely no bracteoles, an unequal 4-lobed calyx, a 4-lobed corolla, 4 stamens and a 1-celled, 1-ovuled ovary. Only one flower was found to vary from this — it had an ovary with 2 cells and 1 ovule per cell which is characteristic of the genus *Salaxis*.

In the description it is stated that the flowers are 'apparently sessile'. This has been used because it is difficult to decide whether the large swollen region below the calyx is a swollen receptacle or a very short pedicel swollen and merged with the base of the calyx. This condition has been noticed in a number of ebracteate genera with unequal calyces.

The relationship of *S. calcicola* is difficult to determine. As already mentioned, *S. muscosa* is the only other species anywhere near to the limestone hills, but it is a completely different species with a different facies with its scattered almost hidden flowers and its free stamens. In the key *S. calcicola* runs down to a position near *S. divaricata* (Klotzsch) Benth., a species from the high mountains of the Caledon and Worcester Districts.

E. G. H. OLIVER