



FIGURE 8.—*P. lucidus*, E. van Jaarsveld 3827, Port St Johns, Eastern Cape. Plant, $\times 0.6$; flowers and calyx, $\times 1.3$. Artist: Vicky Thomas.

trict, Breakfast Vlei, *Krook in Herb. Penther 1716* (W, holo.; PRE!).

Coleus pentheri Gürke in *Annalen des Naturhistorischen Museums in Wien* 20: 48 (1905).

Decumbent, succulent herb up to 100 mm tall; basal tuber 30×15 mm, white. *Stems* 4-angled, 2–4 mm in diameter, sparsely pilose, punctate, glands orange; internodes 3–6 mm long. *Leaves* conduplicate, succulent, firm, ovate to subrotund, $9\text{--}14 \times 9\text{--}14$ mm, entire to dentate-serrate in upper half, teeth shallow, in 4 or 5 pairs; sparsely pubescent, punctate, glands orange, base broadly cuneate, apex obtuse; petiole 2 mm long. *Raceme* 50–70 mm long, simple; cymes 3-flowered, 5–10 mm apart; bracts broadly ovate to subrotund, mucronate, 4×4 mm, initially imbricate, caducous; pedicels 5 mm long. *Calyx* 3 mm long (enlarging to 5 mm), upper lip broadly ovate, 2.0×2.5 mm, lower lobes 4, linear, 2 mm long. *Corolla* 15 mm long, white; tube laterally compressed, slightly geniculate, 5.0×1.5 mm, expanding to 3 mm at throat, upper lip 3 mm long, 2-lobed, lateral lobes 2.5 mm long, lower lip



FIGURE 9.—*P. pentheri*, E. van Jaarsveld, Sardien & Peterson 13774, Kei River, Eastern Cape. Plant and rootstock, $\times 0.5$. Scale bar: 20 mm. Artist: Vicky Thomas.

boat-shaped, 9 mm long. *Nutlets* brown to black, ovoid, 1.5×1.0 mm. *Flowering time*: March to May. Figure 9.

Codd (1985) regarded *P. pentheri* (as *Coleus pentheri*) as a synonym of *P. neochilus*. The two entities, however, differ markedly. Both belong to subgenus *Calceolanthus* but *P. pentheri* is at once distinguished by its oblong tuberous roots and white flowers. It also lacks the strong aroma of the closely related *P. neochilus*, which is a widespread species with fibrous roots and mauve to purple flowers.

P. pentheri is known from a few gatherings. It grows with *Crassula ericoides* on lithosols of granite boulders in grassland.

ACKNOWLEDGEMENTS

Dr O. A. Leistner is thanked for preparing the Latin diagnoses and editing the text.

REFERENCES

- BENTHAM, G. 1848. Labiatae. In A.P. de Candolle, *Prodrum* 12: 55.
- CODD L.E., 1975. *Plectranthus* (Labiatae) and allied genera in southern Africa. *Bothalia* 11: 371–442.
- CODD, L.E., 1985. Lamiaceae. In O.A. Leistner, *Flora of southern Africa* 28,4: 137–172.
- GÜRKE, R.L.A.M. 1905. *Coleus pentheri*. *Annalen des Naturhistorischen Museums in Wien* 20: 48.
- HARVEY, W.H. 1895. *Thesaurus capensis* 1: 53, t. 83.

Five new species of *Lachenalia* (Hyacinthaceae) from arid areas of South Africa

G.D. DUNCAN*

Keywords: Hyacinthaceae, *Lachenalia*, new species, South Africa

ABSTRACT

Five new species of *Lachenalia* are described: *L. aurioliae* G.D.Duncan from the Little Karoo and Great Karoo, *L. obscura* Schltr. ex G.D.Duncan from Namaqualand, the Kamiesberg, the western Great Karoo and the Little Karoo, *L. inconspicua* G.D.Duncan from the Kamiesberg, western Bushmanland and southern Namaqualand, *L. marlothii* W.F.Barker ex G.D.Duncan from the Calvinia-Sutherland region of the western Great Karoo, and *L. xerophila* Schltr. ex G.D.Duncan from northwestern and central Namaqualand, and western Bushmanland.

INTRODUCTION

This is the second in a series of papers on new species of *Lachenalia*, and serves as a continuation of the recent work of W.F.Barker (Barker 1978, 1979, 1983a & b, 1984, 1987, 1989) and the current author (Duncan 1987, 1988a & b, 1989, 1992, 1993, 1994, 1996), towards a revision of the genus. Material of a number of unpublished *Lachenalia* species has languished in local and foreign herbaria for many years, and in some instances manuscript names accompany this material; the abovementioned papers serve as a means of validating these names, where it is considered expedient. Furthermore, new species are published which have come to light in recent years. In most instances, the new species are described from both dried and living material, the dried material extracted mainly from the extensive *Lachenalia* holdings at the Compton Herbarium at Kirstenbosch (NBG), and the living material both from the wild and the large collection maintained in the nursery at Kirstenbosch National Botanical Garden.

***Lachenalia aurioliae* G.D.Duncan, sp. nov.** *L. schelpae* W.F. Barker affinis ob flores similes subspicatos oblongo-urceolatos, stamina parum exserta foliaque lanceolata; sed segmentis interioribus perianthii multo longioribus, staminibus declinatis folioque conduplicato immaculato plerumque costa distincta differt.

TYPE.—Western Cape, 3222 (Beaufort West): hillside facing Hesperus Old Age Home, Beaufort West, (–BC), 26-6-1984, A. Batten 468 (NBG, holo.!: PRE).

Deciduous, winter-growing geophyte 45–120 mm high. *Bulb* subglobose, 20–25 mm in diam., surrounded by thin, pale to dark brown spongy outer tunics, produced into a short neck. *Leaves* 1 or 2, partially to fully conduplicate, lanceolate to ovate-lanceolate with a distinct midrib and faint depressed longitudinal veins on upper surface, yellowish green, plain or faintly spotted with dull

green or purple on upper surface, with darker green blotches and transverse bands on lower surface, merging into brownish magenta transverse bands on the loosely clasping leaf bases. *Inflorescence* subspicate, moderately dense, few to many-flowered, 35–90 mm long, with a short sterile tip; peduncle suberect to erect, fairly sturdy, 45–140 mm long, pale green with distinct, irregularly scattered brownish magenta blotches in lower half, and minute spots in upper half; rachis pale green in lower half, shading to pale greenish brown in upper half, mottled with tiny brownish magenta specks; pedicels absent or up to 1 mm long; bracts ovate to lanceolate, greenish white, with or without pale brownish magenta tips, 1–4 × 1–3 mm. *Flowers* patent to cernuous, oblong-urceolate, pale bluish white to yellowish white, fading to dull reddish brown; outer perianth segments swollen at base, oblong, 6–7 × 4–5 mm, minutely spotted with dark blue on keel and near apex, pale bluish white to yellowish white with distinct dull reddish brown to purplish brown gibbosities; inner perianth segments obovate, 9–10 × 5 mm, translucent white with a dark blue or brownish blue keel, with or without a dull reddish purple zone near apex. *Stamens* very slightly exserted, declinate; filaments white, 8–9 mm long. *Ovary* ovoid, pale green, 3 × 2 mm; style white, 7–8 mm long, protruding beyond stamens as ovary enlarges. *Capsule* ovoid, membranous, 6–8 × 5 mm. *Seed* ovoid, shiny black, 2 mm long, with a ridged terminal arillode 1 mm long. Figures 1A; 2 & 3.

Etymology: named after Mrs Auriol Batten, whose collection forms the type material of this species, in recognition of her contribution to the knowledge of South Africa's flora through her superb watercolour paintings which have illustrated several books authored or co-authored by her.

Diagnostic characters

L. aurioliae is characterised by a subspicate inflorescence of cernuous or patent, oblong-urceolate flowers with the translucent white inner perianth segments distinctly longer than the outer ones. The declinate stamens are very slightly exserted beyond the tip of the perianth and the plant usually has two lanceolate or ovate-lanceolate leaves which are partially to fully conduplicate, usually with a distinct midrib.

*National Botanical Institute, Kirstenbosch, Private Bag X7, Claremont 7735, Cape Town.
MS. received: 1996-11-08.

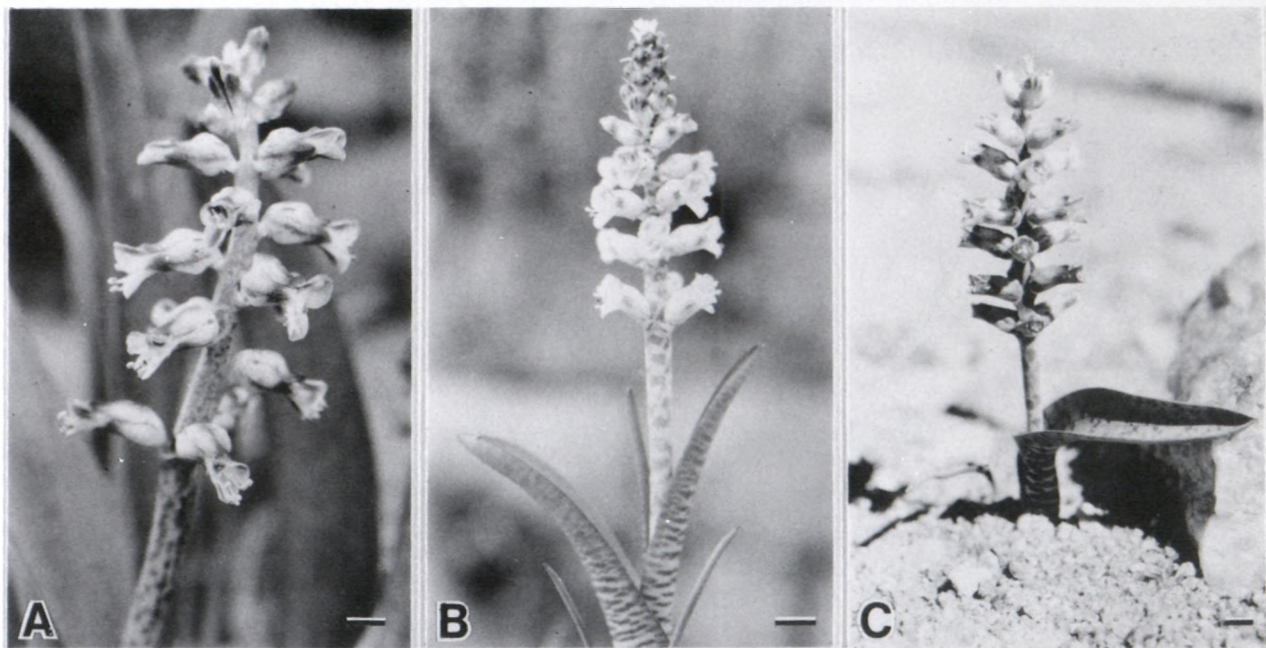


FIGURE 1.—A, *Lachenalia aurioliae*, Batten 468; B, *L. obscura*, Duncan 108; C, *L. inconspicua*, Duncan 259. Scale bars: 10 mm.

The upper leaf surface may be plain or spotted with dull green or purple, and the lower surface with or without darker green blotches and transverse bands.

L. aurioliae is related to *L. schelpei* W.F.Barker, (at present known only from the Hantam Mountains at Calvinia in the Northern Cape), in that both species have patent or cernuous oblong-urceolate flowers borne on very short pedicels, with very slightly exserted stamens and similar lanceolate leaves. In *L. schelpei*, the flowers are subtended by conspicuous, long, narrowly lanceolate bracts, and the inner perianth segments are only slightly longer than the outer segments, as compared to the very short, ovate to lanceolate bracts and distinctly longer inner perianth segments of *L. aurioliae*. Furthermore, the stamens of *L. schelpei* are arranged symmetrically around the rim of the mouth of the perianth, whereas in *L. aurioliae* the stamens are distinctly declinate. The flower colour of *L. aurioliae* varies from pale bluish white to yellowish white whereas *L. schelpei* has greenish white flowers. The two species are geographically clearly separated. *Flowering time*: June to August.

Distribution and habitat

Material of *L. aurioliae* was collected for the first time by C. Thorne in October 1935 at Leeuwkloof in the Nuweveld Mountains north of Beaufort West. It is a variable, early flowering species with a fairly wide distribution in the southern Great Karoo and the Little Karoo, where it is found in a variety of arid habitats ranging from sandy river courses in full sun to south-facing hill slopes in heavy soil. At a locality near Whitehill Station in the Little Karoo it grows together with the very distinctive *L. whitehillensis* W.F.Barker, another Karoo endemic species which flowers much later in the year.

Material examined

NORTHERN CAPE.—3221 (Merweville): between Boschluiskloof and Prince Albert, (–AB), July 1954, *Stokoe s.n.* (SAM); west of Steenbokkraal, (–BA), June 1986, *Bayer 5189* (NBG).

WESTERN CAPE.—3222 (Beaufort West): Leeuwkloof, Nieuweveld, (–BA), Oct. 1935, *Thorne s.n.* (SAM); 16 km S of Beaufort West, (–BC), July 1986, *Van Zijl s.n.* (NBG); hillside facing Hesperus Old Age Home, Beaufort West, (–BC), June 1984, *Batten 468* (NBG). 3320 (Montagu): in river course at Whitehill Station, (–BA), Aug. 1986, *Duncan 243* (NBG); Ratelfontein, between Montagu and Kareevlakte, (–CB), July

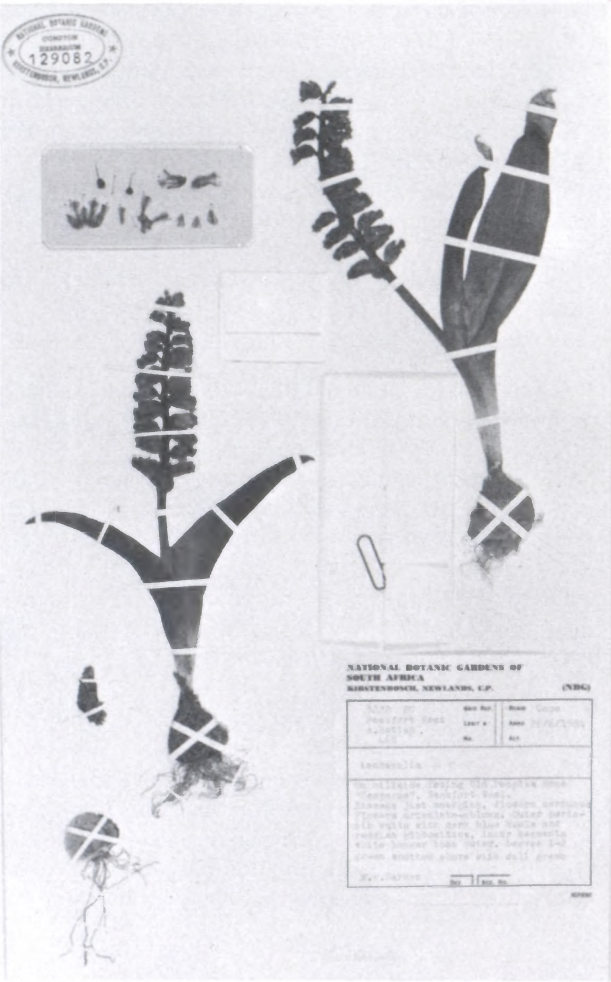


FIGURE 2.—Holotype of *Lachenalia aurioliae*, Batten 468.

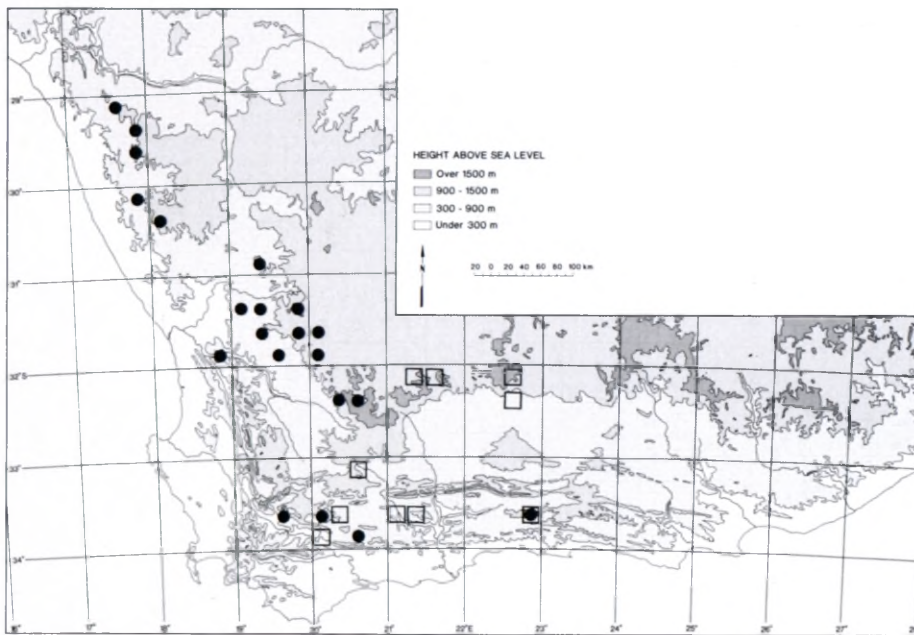


FIGURE 3.—Distribution of *Lachenalia auriolae*, □; *L. obscura*, ●

1954, *Lewis* 4397 (SAM); Wildehondekloof Pass, 36 km E of Montagu, (–CC), Aug. 1974, *Nordenstam & Lundgren* 1191 (NBG). 3321 (Ladismith): Mannshoop Farm, 0.8 km from homestead, (–CA), July 1982, *Laidler* 186 (NBG); N of Rooiberg, Ladismith, (–CB), Aug. 1954, *Wurts* 1227 (NBG). 3322 (Oudtshoorn): hills near Kammanassie, (–DB), July 1954, *Lewis* 4396 (SAM).

***Lachenalia obscura* Schltr. ex G.D.Duncan, sp. nov.** *L. maximiliani* Schltr. ex W.F. Barker affinis ob segmentos interiores perianthii similes ad apicem magenteos, folium lanceolatum, bulbum globosum squamis exterioribus duris brunneis circumcinctum, seminaque globosa; sed planta omnino grandiora floribus oblongo-campanulatis pallide flavo-virentibus ad brunneolocaeruleis vel cremeis, staminibus parum exsertis foliisque plerumque pagina inferiora fasciis distinctis viridibus, brunneolo-purpureis et magenteis differt.

TYPE.—Northern Cape, 3119 (Calvinia): Vogelstruis Vlakte, Calvinia Division, (–DC), 26-7-1941, *R.H. Compton* 11174 (NBG, holo.!).

Deciduous, winter-growing geophyte 55–380 mm high. *Bulb* globose, 10–25 mm in diam., white, surrounded by hard, cartilaginous pale to dark brown outer scales, produced into a short, strawlike neck. *Leaves* usually 2, erect to suberect, yellowish green to dark green, often conduplicate, 25–280 × 5–45 mm, upper leaf surface with faint, depressed longitudinal veins, usually unmarked, lower leaf surface usually heavily banded with bright green merging into dull brownish purple and magenta on clasping leaf base. *Inflorescence* spicate to subspicate, 15–220 mm long, few to many-flowered, with a short sterile tip; flowers often arranged in distinct whorls of three at base of inflorescence, becoming less distinctly whorled towards top of inflorescence; peduncle erect to suberect, slender or sturdy, 25–100 mm long, pale to dark green with pale to dark purplish blotches; rachis mottled with very pale bluish purple; pedicels white, often absent in lower half of inflorescence, but up to 2 mm long in upper part; bracts ovate to lanceolate, greenish white, 2–4 × 1–3 mm. *Flowers* patent to slightly cernuous, oblong-campanulate, pale yellowish green to brownish blue

or cream, with or without distinct magenta tips, fading to dull purple; outer perianth segments oblong, 6–9 × 4 mm, pale yellowish green to brownish blue or cream with pale blue speckles or solid blue at base, with dull brown, brownish purple or green gibbositities and slightly recurved tips; inner perianth segments protruding well beyond outer segments, obovate, translucent white with distinct bright

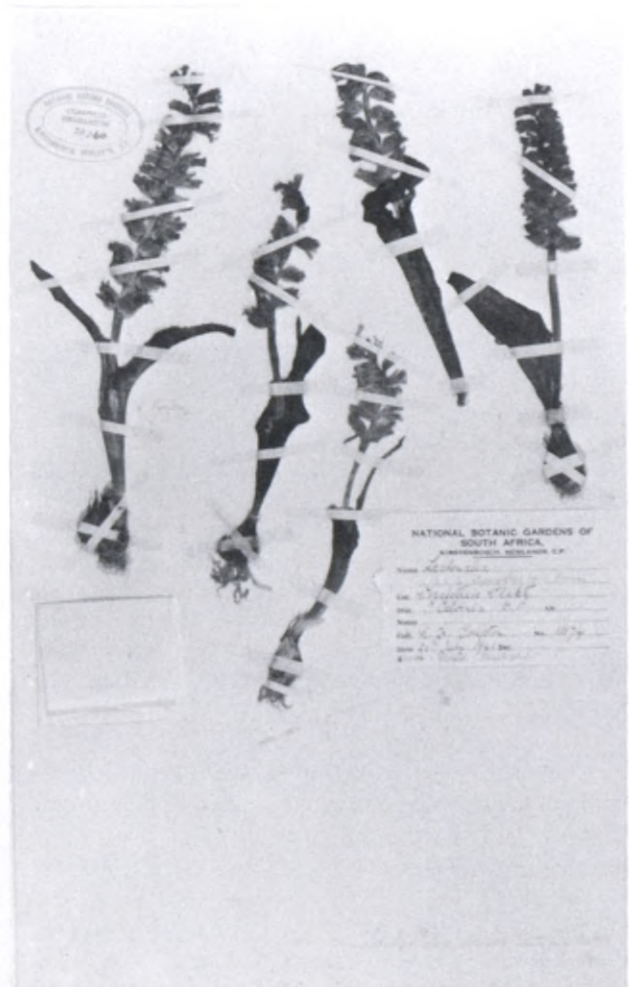


FIGURE 4.—Holotype of *Lachenalia obscura*, *Compton* 11174.

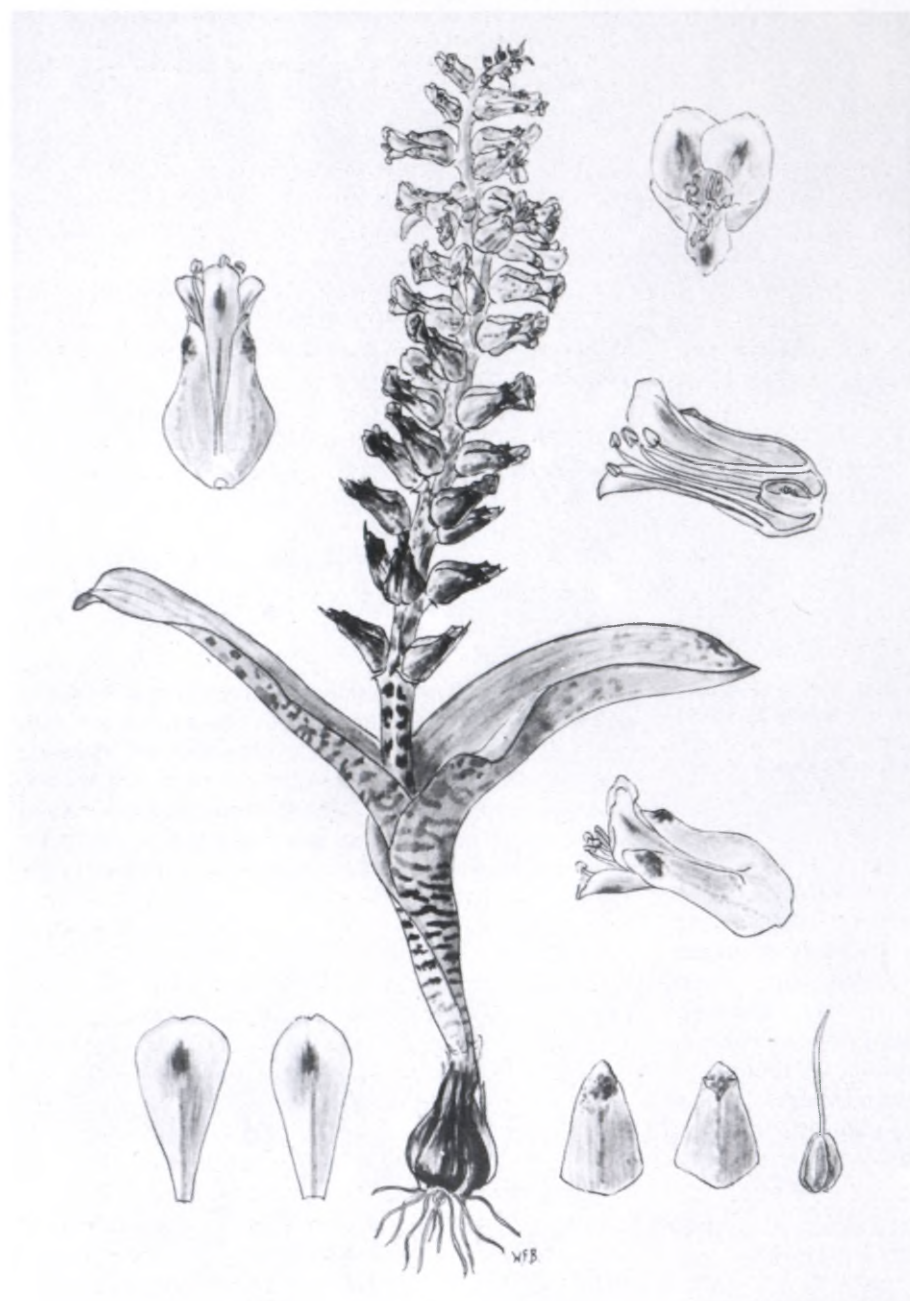


FIGURE 5.—Painting of *Lachenalia obscura*, drawn from Compton 11174, reproduced from the original watercolour by Miss W.F. Barker. Plant, $\times 0.7$.

green keels, recurved, with or without pale to dark magenta tips, $8-10 \times 5-7$ mm. *Stamens* declinate, as long as or shortly exserted up to 2 mm beyond inner perianth segments; filaments white, 8–11 mm long. *Ovary* ovoid, pale green, $3-4 \times 2$ mm; style white, 8 mm long, protruding beyond stamens as ovary enlarges. *Capsule* ovoid, $7-8 \times 4-6$ mm. *Seed* globose, 1 mm long, shiny black, with a short, ridged terminal arillode 0.3 mm long. Figures 1B; 3–5.

Etymology: named *obscura* by Schlechter to convey the obscure and very variable appearance of this species.

Diagnostic characters

L. obscura is characterized by a spicate or subspicate inflorescence of patent to slightly cernuous, oblong-campanulate, pale yellowish green to brownish blue or cream flowers, with or without distinct magenta tips. The translucent white, inner perianth segments are distinctly longer

than the outer segments and have slightly recurved tips. The flowers are usually arranged in distinct, three-flowered whorls in the lower part of the inflorescence, becoming less distinctly whorled towards the top. The declinate stamens are included within, or very slightly exserted beyond the perianth. The one or two erect to suberect, lanceolate leaves usually have distinct green to brownish purple and magenta bands on the lower surface, and the globose bulb is surrounded by hard, dark brown, cartilaginous outer scales.

L. obscura appears to be most closely related to *L. maximiliani* Schltr. ex W.F.Barker, a dwarf species occurring in large colonies and restricted to the Wuppertal-Cederberg area of the Western Cape. Both species have spicate or subspicate inflorescences with magenta-tipped inner perianth segments and a globose bulb surrounded by hard, dark brown outer scales and similar globose seeds with a terminal, ridged arillode. *L. maximiliani* differs from *L. obscura* mainly in having narrow-urceolate, very pale blue-

ish grey flowers and a single unbanded, canaliculate leaf. *Flowering time*: June to October.

Distribution and habitat

Rudolf Schlechter collected this species for the first time at Papkuilsfontein, southeast of Vanrhynsdorp, in August 1897. He distributed material to nine local and foreign herbaria under his manuscript name *L. obscura*, where it has remained unpublished for one hundred years. *L. obscura* is a widely distributed and very variable species; it is currently recorded from Steinkopf at the northernmost end of its range, southwards throughout Namaqualand to the Kamiesberg and Knersvlakte, eastwards to the Nieuwoudtville-Calvinia area where it is common, and further south to Sutherland, and south and southeastwards to the Montagu and Oudtshoorn areas.

Due to its wide distribution, *L. obscura* is encountered in a wide variety of habitats, but is usually found on karoid flats in dry stony clay soil, and less frequently in sandy soil on moist lower mountain slopes. Plants usually grow singly or in small clumps in full sun among low-growing bushes. The typical forms of this species, such as those occurring in the Nieuwoudtville-Calvinia area, have pale yellowish green, oblong-campanulate flowers with distinct magenta tips and leaves with bright green to brownish purple and magenta bands on the lower leaf surface, whereas certain forms found further north in Namaqualand have longer, less campanulate flowers which are pale blue, with or without very pale magenta tips, and leaves without distinct bands on the lower surface.

Material examined

NORTHERN CAPE.—2917 (Springbok): Steinkopf Reserve, (–BA), Aug. 1980, *Van Berkel 164* (NBG); Farm Ratelpoort, (–BD), Aug. 1971, *Hall 4087* (NBG); Farm Eksteenfontein, (–DB), Aug. 1986, *Duncan 252* (NBG). 3017 (Hondeklipbaai): Kamieskroon, (–BB), Aug. 1980, *Van Berkel 166* (NBG). 3018 (Kamiesberg): Kamiesberg, (–AC), Aug. 1984, *Van Zijl s.n.*, (NBG); Studer's Pass, E of Garies, (–AC), June 1970, *Stayner s.n.* (NBG). 3019 (Loeriesfontein): N of Loeriesfontein, (–CD), July 1972, *Hiemstra s.n. sub NBG 97199* (NBG). 3118 (Vanrhynsdorp): Farm Papkuilsfontein, 41 km SE of Vanrhynsdorp, (–DD), Aug. 1897, *Schlechter 10907* (B, BM, G, GRA, K, L, PRE, S, Z). 3119 (Calvinia): Grasberg, N of Nieuwoudtville, (–AC), Aug. 1961, *Barker 9351* (NBG); between Grasberg & Nieuwoudtville, (–AC), Aug. 1961, *Barker 9362* (NBG); Klippoppies, Nieuwoudtville, (–AC), Aug. 1961, *Barker 9379* (NBG); Sept. 1971, *Hardich s.n.* (NBG); Nieuwoudtville Reserve, (–AC), July 1983, *Perry & Snijman 2173* (NBG); E of Nieuwoudtville, (–AC), July 1970, *Nordenstam 770* (NBG); Farm Uitkomst, NW of Nieuwoudtville, (–AC), Sept. 1970, *Barker 10750* (NBG); Farm Soetwater, between Nieuwoudtville & Calvinia, (–AD), Aug. 1974, *Botha s.n.* (NBG); Akkerendam Nature Reserve, Calvinia, (–BD), July 1961, *Barker 9321* (NBG); Calvinia commonage, (–BD), Aug. 1968, *Stayner s.n. sub NBG 93582* (NBG); 30 km before Calvinia, on road from Karooport, (–BD), Sept. 1983, *Duncan 108* (NBG); E of Calvinia, on road to Williston, (–BD), July 1973, *Thomas s.n. sub NBG 98484* (NBG); Farm Vanrhynshoek, Calvinia, (–BD), *Thompson 2366* (NBG); Lokenburg, (–CB), Aug. 1959, *Acococks 20602* (NBG); W of Tafelberg, SE of Calvinia, (–DB), May 1975, *Thompson 2445* (NBG); Vogelstruis Vlake, (–DC), July 1941, *Compton 11174* (NBG). 3120 (Williston): 34 km on road from Middelpoos to Calvinia, (–CA), Oct. 1974, *Thomas s.n. sub NBG 105715* (NBG); Farm Blomfontein, E of Middelpoos, (–CC), Aug. 1972, *Barker 10784* (NBG). 3220 (Sutherland): Farm Voëlfontein, Sutherland, (–AD), Sept. 1968, *Hall 3252* (NBG); S of Sutherland, (–BC), Oct. 1968, *Hall 3287* (NBG); near Sutherland, (–BC), Sept. 1969, *Stayner s.n. sub NBG 93909* (NBG).

WESTERN CAPE.—3319 (Worcester): E of Worcester on Robertson road, (–DA), July 1954, *Barker 8255* (NBG). 3320 (Montagu): Farm

Mooi-Erfenis, NW of Montagu, (–CA), Oct. 1979, *Kriel s.n. sub NBG 120475* (NBG); Flats E of Warmwaterberg, (–DC), Aug. 1971, *Boucher 1576* (NBG). 3322 (Oudtshoorn): S slopes of Mannetjiesberg, (–DB), Oct. 1971, *Oliver 3605* (NBG).

***Lachenalia inconspicua* G.D.Duncan, sp. nov.** *L. concordianae* Schltr. ex W.F. Barker affinis ob habitum nanum similem, inflorescentiam spicatum floribus plerumque verticillis 3-floris, foliumque singularem lanceolatum pagina inferiora fasciis brunneo-viridibus; sed floribus oblongo-campanulatis, lacteis vel viridi-albis, folioque coriaceo late patenti pagina superiora maculis purpureo-brunneis differt.

TYPE.—Northern Cape, 2918 (Gamoep): 500 m beyond Gamoep, on road Springbok to Gamoep, in deep red gravelly sand at side of road, (–CD), 19-8-1986, *G.D. Duncan 259* (NBG, holo.).

Deciduous, winter-growing geophyte 120–160 mm high. *Bulb* globose, 15–20 mm in diam., white with thick, spongy, dark brown outer tunics produced into a short neck. *Leaf* usually solitary, lanceolate or occasionally ovate, widely spreading, deeply channelled, leathery, 85–150 × 15–20 mm, glaucous with depressed longitudinal veins and irregularly scattered purplish brown spots on upper surface, and broad, brownish green bands on lower surface, shading to narrower brownish magenta bands on clasping leaf base. *Inflorescence* spicate or subspicate, fairly dense, few to many-flowered, 45–80 mm long, with a very short sterile tip, flowers usually arranged in distinct three-flowered verticils; peduncle erect, sturdy, pale green with large purplish brown blotches, 55–80 mm long; pedicels absent, bracts very much reduced, ovate, 1 mm long. *Flowers* erecto-patent, oblong-campanulate, pale bluish or greenish white, fading to dull brownish purple; outer perianth segments oblong, slightly recurved, pale greenish blue with darker blue markings at base, and dull purplish brown or brownish green gibbosities, 7–8 × 4–5 mm; inner perianth segments obovate, translucent white, with brownish green keels, protruding well beyond outer segments, slightly recurved, upper two segments overlapping, lower segment slightly longer, 8–11 × 4–5 mm. *Stamens* declinate; filaments white, 7–9 mm long, included within, or slightly exerted up to 1 mm beyond perianth. *Ovary* ovoid, pale green, 3 mm long; style white, 8–9 mm long. *Capsule* ovoid, membranous, 9–10 × 5 mm. *Seed* globose, 1 mm long, dull black, with a ridged terminal arillode 1 mm long. Figures 1C; 6 & 7.

Etymology: named for the inconspicuous, well-camouflaged flowers.

Diagnostic characters

L. inconspicua is a dwarf species characterized by a spicate or subspicate inflorescence of pale bluish white or greenish white oblong-campanulate flowers with purplish brown or brownish green gibbosities, usually arranged in distinct three-flowered verticils, and a usually solitary, lanceolate, widely spreading, deeply channelled leaf with conspicuous transverse bands on the tightly clasping leaf base. It is related to *L. concordiana* Schltr. ex W.F. Barker, another dwarf species with greenish cream flowers also arranged in three-flowered verticils; but the latter differs

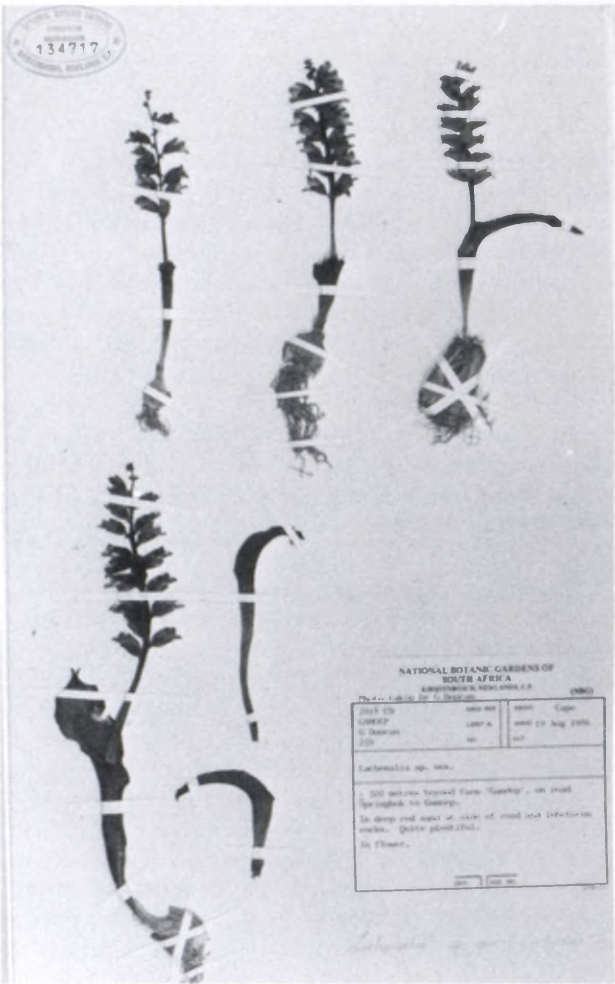


FIGURE 6.—Holotype of *Lachenalia inconspicua*, Duncan 259.

in having a linear-lanceolate leaf and widely campanulate flowers with dark green gibbosities and the tips of the inner and outer perianth segments all distinctly recurved. *Flowering time*: July to August.

Distribution and habitat

L. inconspicua is at present known only from a few collections made in the Kamiesberg, western Bushmanland and southern Namaqualand in the Northern Cape. According to current records, the first collection was made by F. Archer as recently as August 1982 NE of Gamoep, and it has since been found at several locations near Gamoep, and further south near Leliefontein, Kliprand and Bitterfontein. It is locally plentiful and occurs on open flats in deep red gravelly sand. An interesting growth feature of this species in cultivation is the manner in which healthy bulbs periodically remain completely dormant during the growing season, a characteristic shared by several *Lachenalia* species from the very arid parts of South Africa.

Material examined

NORTHERN CAPE.—2918 (Gamoep): 0.5 km beyond Gamoep, on road from Springbok to Gamoep, (–CD), Aug. 1986, *Duncan 259* (NBG); Kouberg, NE of Gamoep, (–CD), Aug. 1982, *Archer 192* (NBG); Vaalkoei Farm, SE of Gamoep, (–CD), Aug. 1996, *Duncan 381* (NBG). 3018 (Kamiesberg): 2 km S of Paulshoek village, (–AD), Sept. 1996, *Petersen*

41 (NBG); 5 km on R358 to Kliprand, (–CD), Aug. 1996, *Duncan 378* (NBG); 6 km SW of Kliprand, (–DA), Aug. 1995, *Symmonds 2* (NBG).

***Lachenalia marlothii* W.F.Barker ex G.D.Duncan**, sp. nov. *L. marginatae* W.F. Barker affinis ob folium singularem simularem ovatum ad ovato-lanceolatum, coriaceum, basi amplexantem fasciis distinctis purpureo-brunneis, flores urceolato-oblongos, segmentosque interiores perianthii longos protrudentes; sed folio sine margine distincto coriaceo, basi arcte circumcincto, segmentis perianthii distincte recurvatis floribusque valde odoratis differt.

TYPE.—Northern Cape, 3119 (Calvinia): between Vlakkraal and Kalkgat Suid, S of Calvinia, (–DC), 23-7-1961, *W.F.Barker 9330* (NBG, holo.!).

Deciduous, winter-growing geophyte 90–160 mm high. *Bulb* subglobose, 15–33 mm in diam., white with brown spongy outer tunics. *Leaf* solitary, 30–60 × 10–25 mm, suberect, ovate to ovate-lanceolate, with an undulate, sometimes crisped margin, blade very leathery, dark green and unmarked on upper surface, with dark purplish brown and green transverse bands on lower surface; tightly clasping leaf base 30–70 mm long, white with very conspicuous purplish brown bands in the upper half, shading to magenta in the lower half. *Inflorescence* spicate or subspicate, fairly dense, few- to many-flowered, 40–95 mm

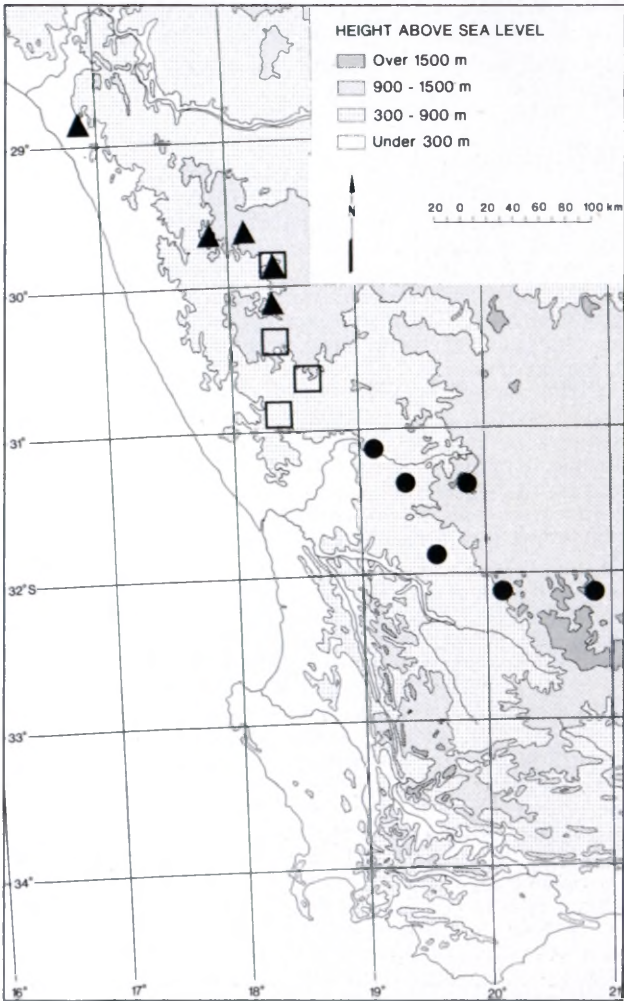


FIGURE 7.—Distribution of *Lachenalia inconspicua*, □; *L. marlothii*, ●; and *L. xerophila*, ▲.

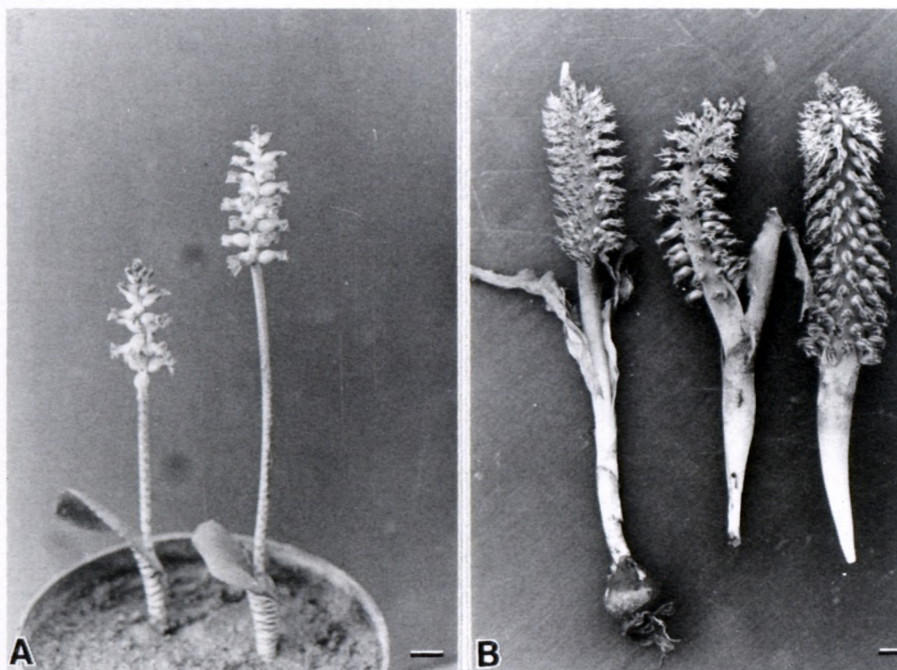


FIGURE 8.—A, *Lachenalia marlothii*, Botha s.n.; B, *L. xerophila*, Botha s.n. Scale bars: 10 mm.

long, with a very short sterile tip; peduncle slender, erect, 40–100 mm long, pale green with brownish purple blotches; pedicels absent or up to 2 mm long; bracts white, ovate, 1–2 mm long. *Flowers* strongly scented, patent or suberect, urceolate-oblong; outer perianth segments ovate, pale blue and green with darker blue bases, $8-9 \times 5$ mm, with greenish purple or purplish brown gibbosities and recurved tips; inner perianth segments obovate, $8-11 \times 3-6$ mm, white or brownish yellow with purplish green keels, protruding well beyond outer segments, recurved, upper two segments overlapping, lower segment longer and narrower. *Stamens* declinate; filaments white, 8–10 mm long, included within perianth. *Ovary* ovoid, pale green, $4-5 \times 3-4$ mm; style white, 6–7 mm long. *Capsule* ovoid, $5-6 \times 4$ mm. *Seed* ovoid, 1.5 mm long, shiny black with a ridged terminal arillode 0.5 mm long. Figures 7, 8A & 9.

Etymology: *L. marlothii* is named after the famous German chemist and botanist Rudolf Marloth, who made the first recorded collection of this species in October 1920.

Diagnostic characters

L. marlothii is characterized by a spicate or subspicate inflorescence of patent or suberect, pale blue and yellowish green urceolate-oblong flowers with recurved tips and included stamens, and a very distinctive, single, ovate to ovate-lanceolate, coriaceous, suberect leaf with a heavily banded, tightly clasping leaf base. The peduncle is heavily marked with brownish purple blotches and the flowers have a strong sweet scent.

L. marlothii appears to be most closely related to *L. marginata* W.F. Barker which also has an ovate or ovate-lanceolate, leathery leaf with distinct purplish brown bands on the clasping base, urceolate-oblong flowers with brownish gibbosities on the outer perianth segments and long protruding inner perianth segments. *L. marginata* differs in having a distinctly coriaceous leaf margin, the

clasping leaf base is not tight, the inner and outer perianth segments are not recurved, and the flowers are not heavily scented. *Flowering time*: July to September.



FIGURE 9.—Holotype of *Lachenalia marlothii*, Barker 9330.

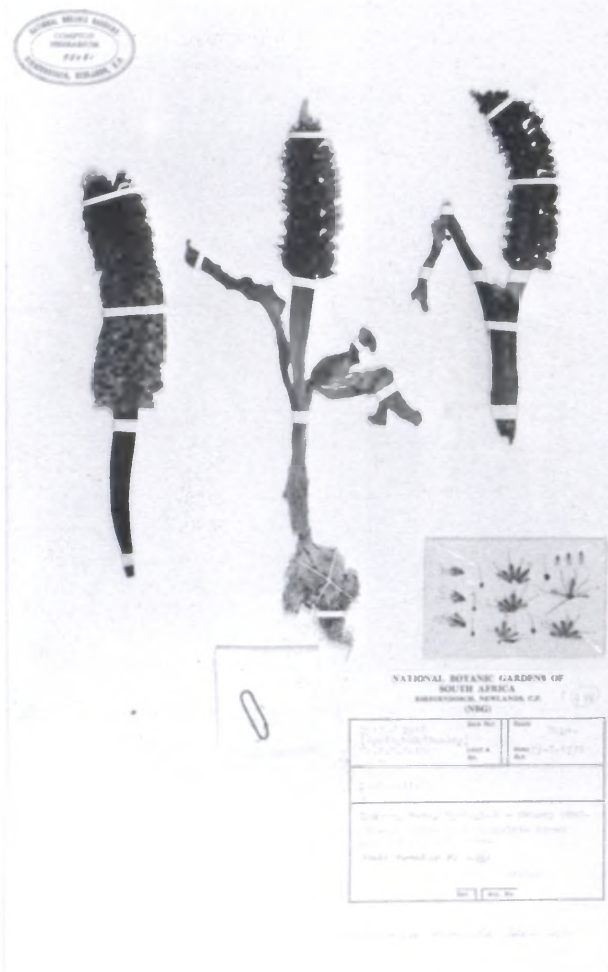


FIGURE 10.—Holotype of *Lachenalia xerophila*, Botha s.n.

Distribution and habitat

L. marlothii was collected for the first time by Rudolf Marloth in October 1920 at Waterkloof in the Sutherland Roggeveld, which forms the southern boundary of its distribution. It has since been collected mainly in the Calvinia District, and is currently known from as far north as Brandkop, north of Nieuwoudtville. Plants occur singly or in groups and are usually associated with south-facing hillslopes in clay soil.

Material examined

NORTHERN CAPE.—3119 (Calvinia): Brandkop, N of Nieuwoudtville, (–AA), Aug. 1950, *Barker 6486* (NBG); Calvinia road towards Soetwater turn-off, (–AD), July 1971, *Botha s.n.*, (NBG); Van Rhynshoek Farm, Calvinia, (–BD), Oct. 1986, *Thomas 275*, (NBG); between Vlakkraal and Kalkgat Suid, S of Calvinia, (–DC), July 1961, *Barker 9330* (NBG). 3220 (Sutherland): Gannaga Pass, SW of Middelpos on Calvinia-Ceres road, (–AA), Sept. 1971, *Hardich s.n. sub. NBG 93862* (NBG); Waterkloof, Sutherland Roggeveld, (–BB), Oct. 1920, *Marloth 9661* (PRE).

***Lachenalia xerophila* Schltr. ex G.D.Duncan, sp. nov.** *L. klinghardtianae* Dinter et *L. physocaulotis* W.F. Barker affinis ob stamina similes bene exserta declinata, pedunculum rachidemque conspicue tumidum, inflores-

centiamque subspicatum vel racemosam floribus oblongo-campanulatis; sed inflorescentia multo densiora floribus minoribus cernuis gibbis distinctissimis magnis brunneis, folioque lanceolato-acuto canaliculato differt.

TYPE.—Northern Cape, 2918 (Gamoep): Kouberg Farm, off R355 Springbok to Gamoep, western Bushmanland, (–CD), 29-8-1972, *M.C.Botha s.n. sub. NBG 95451* (NBG, holo.).

Deciduous, winter-growing geophyte 100–250 mm high. *Bulb* usually deep-seated, globose, 15–25 mm in diam., white with membranous dark brown outer tunics. *Leaves* one or two, 25–180 × 10–20 mm, lanceolate, acute, canaliculate, glaucous, with an undulate and crisped margin, clasping leaf base white, up to 200 mm long. *Inflorescence* subspicate or racemose, dense, many-flowered, 55–130 mm long with a short sterile tip; peduncle erect to suberect, very sturdy, 30–110 mm long, conspicuously inflated below and at base of inflorescence, gradually becoming less inflated towards top of rachis, pale green; pedicels 2–5 mm long; bracts small and membranous, ovate, 1–2 mm long. *Flowers* cernuous to spreading, oblong-campanulate; outer perianth segments ovate-oblong, 6–7 × 3 mm, very pale blue at base, shading to white above, with very large dull red to dark brown gibbositities; inner perianth segments obovate, 8–9 × 3–4 mm, protruding beyond outer segments, white with a greenish brown marking at apex. *Stamens* well exserted, declinate; filaments white, up to 12 mm long. *Ovary* obovate, pale green, 3–4 × 2 mm; style white, up to 9 mm long, protruding beyond stamens as ovary enlarges. *Capsule* obovate, membranous, 8–9 × 5 mm. *Seed* oblong, 2–3 mm long, with a narrow decurrent, inflated terminal arillode 0.2 mm long. Figures 7, 8B & 10.

Etymology: named *L. xerophila* by Schlechter to describe the preference this species has for growing in dry places.

Diagnostic characters

L. xerophila is characterised by a dense subspicate or racemose inflorescence of small oblong-campanulate, white flowers with very large dull red to dark brown gibbositities, and well-exserted, declinate stamens. The sturdy peduncle and rachis are distinctly swollen, and the erect, lanceolate, acute, canaliculate leaf has a distinctly undulate, and sometimes crisped margin. The seed is unique within the genus in having a narrow decurrent, inflated terminal arillode.

L. xerophila is closely related to *L. klinghardtiana* Dinter and *L. physocaulos* W.F.Barker, which fall into the group of species having well exserted stamens and a conspicuously swollen peduncle and rachis. *L. klinghardtiana* also occurs in northwestern Namaqualand, as well as in the Richtersveld and the southwestern corner of Namibia, but differs in having larger oblong-campanulate flowers with much smaller greenish brown to reddish brown gibbositities, borne on a less dense, usually shorter inflorescence. Further, it differs in having a lanceolate-falcate leaf, the peduncle usually has greenish brown blotches or spots, and its seed has a different shape, being globose with an inflated terminal arillode. *L. physocaulos* differs from *L.*

xerophila in having a linear-conduplicate leaf which widens suddenly into a subterranean clasping base, its flowers are pale magenta and its very small seeds are globose with an inflated terminal arillode. The two species are well separated geographically, as *L. physocaulos* occurs only in the Robertson and Swellendam areas of the southern Western Cape. *Flowering time*: July to September.

Distribution and habitat

Material of this species was first collected by Rudolf Schlechter on 21st September, 1897 at Leeuwpoot just north of Concordia, in Namaqualand. He appended the manuscript name *xerophila* to this material, and distributed it to seven overseas and local herbaria (Barker 1983), where it has languished unpublished for one hundred years. *L. xerophila* is restricted to the dry northwestern and central parts of Namaqualand, and western Bushmanland, where it occurs singly or in colonies in deep red sand in full sun. The fleshy bulb is deep-seated in order to survive the harsh dry summer conditions, and may remain dormant during the winter growth period if rainfall is insufficient. In western Bushmanland, an area of predominantly summer rainfall, *L. xerophila* nevertheless follows the typical pattern of winter rainfall growth and summer dormancy characteristic of the vast majority of species belonging to this genus.

Material examined

NORTHERN CAPE.—2816 (Oranjemund): Holgat, Namaqualand, (–DD), Aug. 1952, *Hall* 558 (NBG). 2917 (Springbok): Leeuwpoot, 14 km N of Concordia, (–DB), Sept. 1897, *Schlechter* 11366 (BM, BOL, G, GRA, K, LD, Z). 2918 (Gamoep): Kennedy's Farm, 40 km E of Springbok, (–CA), Sept. 1967, *Eliovson* 13 (NBG); near Ratelkraal, Namaqualand, (–CA), Sept. 1950, *Barker* 6759 (NBG); Kouberg Farm, off R355 Springbok to Gamoep, Bushmanland, (–CD), Aug. 1972, *Botha* s.n. sub. *NBG* 95451 (NBG). 3018 (Kamiesberg): Vaalputs Farm, 7 km E of Stofkloof, (–AB), Sept. 1983, *Schelte* s.n. sub. *NBG* 127341 (NBG).

ACKNOWLEDGEMENTS

I thank the staff of the Compton Herbarium, Kirstenbosch, especially Dr D.A. Paterson-Jones, Dr J.C. Man-

ning, Mrs J. Beyers and Mrs S.E. Foster for their friendly assistance at various stages of this study. I am also very grateful to Dr O. A. Leistner for kindly preparing the Latin diagnoses, Mrs J. Loedolff for taking the black and white photographs of the herbarium sheets, and Prof. M.C. Botha and Mr R. Symmonds for assistance in the field.

REFERENCES

- BARKER, W.F. 1978. Ten new species of *Lachenalia* (Liliaceae). *Journal of South African Botany* 44: 391–418.
- BARKER, W.F. 1979. Ten more new species of *Lachenalia* (Liliaceae). *Journal of South African Botany* 45: 193–219.
- BARKER, W.F. 1983a. A list of the *Lachenalia* species included in Rudolf Schlechter's collections made on his collecting trips in southern Africa, with identifications added. *Journal of South African Botany* 49: 45–55.
- BARKER, W.F. 1983b. Six more new species of *Lachenalia* (Liliaceae). *Journal of South African Botany* 49: 423–444.
- BARKER, W.F. 1984. Three more new species of *Lachenalia* and one new variety of an early species (Liliaceae). *Journal of South African Botany* 50: 535–547.
- BARKER, W.F. 1987. Five more new species of *Lachenalia* (Liliaceae-Hyacinthoideae), four from the Cape Province and one from southern South West Africa/Namibia. *South African Journal of Botany* 53: 166–172.
- BARKER, W.F. 1989. New taxa and nomenclatural changes in *Lachenalia* (Liliaceae) from the Cape Province. *South African Journal of Botany* 55: 630–646.
- DUNCAN, G.D. 1987. *Lachenalia macgregoriae*. *The Flowering Plants of Africa* 49: t.1951.
- DUNCAN, G.D. 1988a. The *Lachenalia* handbook. *Annals of Kirstenbosch Botanic Gardens* 17. National Botanical Institute, Cape Town.
- DUNCAN, G.D. 1988b. *Lachenalia arbuthnotiae*. *The Flowering Plants of Africa* 50: t.1961.
- DUNCAN, G.D. 1989. *Lachenalia*. In B. Jeppe, *Spring and winter flowering bulbs of the Cape*. Oxford University Press, Cape Town.
- DUNCAN, G.D. 1992. *Lachenalia*: its distribution, conservation status and taxonomy. *Acta Horticulturae* 325: 843–845.
- DUNCAN, G.D. 1993. *Lachenalia thomasiae*. *The Flowering Plants of Africa* 52: t. 2061.
- DUNCAN, G.D. 1994. The genus *Lachenalia*, and the discovery of a beautiful new species from the Western Cape Province of South Africa. *Shin-Kaki* 163: 32–35.
- DUNCAN, G.D. 1996. Four new species and one new subspecies of *Lachenalia* (Hyacinthaceae) from arid areas of South Africa. *Bothalia* 26: 1–9.