

## **HAEMANTHUS GRANDIFOLIUS BALF.F.: AN ENIGMA RESOLVED**

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*Haemanthus grandifolius* Balf.f., a Socotran endemic, has been found flowering for the first time and is shown to be better placed in the genus *Ledebouria* (Hyacinthaceae); the new combination *Ledebouria grandifolia* (Balf.f.) A.G. Mill. & D. Alexander is made and an expanded description given.

*Keywords.* Amaryllidaceae, Hyacinthaceae, *Ledebouria*, *Scilla*, Socotra.

### INTRODUCTION

In 1880, Isaac Bayley Balfour undertook the first botanical exploration of the small island of Socotra in the Indian Ocean. In the course of just over six weeks he discovered over 200 species new to science. Amongst these was a non-flowering bulb which he described as *Haemanthus grandifolius* (Amaryllidaceae), with the following later proviso (Balfour, 1888: 288): 'our specimens of this species are confined to the leaves. We obtained bulbs but they have not grown in this country [i.e. UK]. The leaves are, however, so very distinct, being very much larger than any known species with short petioles, that on our scant material we have ventured the diagnoses [sic] of a new species'. In her revision of *Haemanthus*, Snijman excluded *H. grandifolius* from the genus, without indicating an improved taxonomy (Snijman, 1984: 124). Its affinities and correct generic position have thus remained a mystery for over one hundred years.

The large paired leaves of this enigmatic plant are a relatively common sight on the island, but the plant was not found in flower on any of the limited number of botanical expeditions to Socotra: *Forbes et al.* 1888–89; *Simony* 1899; *Lavranos* and *Radcliffe-Smith* 1967; *Miller et al.* 1989, 1990, 1992. All of these expeditions were timed to coincide with the optimum flowering of the island's flora between January and April, after the winter rains.

In 1993 an expedition from the Royal Botanic Garden Edinburgh was timed to coincide with the beginning of the winter rains, between October and November, in order to collect autumn-flowering species. In Shibiri di Momi, a rugged region of limestone pavement and rocky ridges in the NE of the island, bulbs of *H. grandifolius* were found in flower for the first time. The solitary racemes of small, pinkish-purple flowers, standing out clearly against the grey limestone, were a common sight in the area.

An examination of the flowers has shown the plant's true affinities to be with *Ledebouria* and *Scilla* in the family Hyacinthaceae. However, it is not immediately

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clear to which of the two genera it should be referred. The differences between *Ledebouria* and *Scilla* have been summarized by Jessop (1970) and Ingram (1971). *Ledebouria* is characterized by its distinctly stipitate, conical ovary with two basal ovules per locule and filaments which are free at the base; the leaves are typically, although not always, blotched. In *Scilla* the ovary is cylindrical, not stipitate, the several ovules per locule are axile, and the filaments are united towards the base; the leaves are unblotched. Jessop also noted that in *Scilla* the inflorescence is terminal whereas in *Ledebouria* it is axillary, and (on the basis of a small sample) that there appeared to be differences in leaf anatomy, with a palisade layer present in *Ledebouria* and absent in *Scilla*. The leaf anatomy and inflorescence position have not been studied in the Socotran plant.

The Socotran plant agrees with *Ledebouria* in its distinctly stipitate ovary with two basal ovules per locule and filaments that are free to the base; the ovary, however, is depressed ovoid rather than conical and the leaves are unblotched. On balance, and particularly because of the stipitate ovary and placentation, it seems that *H. grandifolius* is best placed in *Ledebouria*.

*Ledebouria* is a genus of some 30 species from tropical and southern Africa with one species, *L. hyacinthina* Roth, distributed from Sri Lanka (Ceylon) and India to NE Africa. There is a record of *L. hyacinthina* from Socotra in an unpublished checklist at the Royal Botanic Garden Edinburgh. Unfortunately the origin of this record cannot be traced and no specimens have been seen during recent intensive botanical activity on the island.

The necessary new combination is made below and an expanded description is provided.

***Ledebouria grandifolia* (Balf.f.) A.G. Mill. & D. Alexander, comb. nov. Figs 1, 2.**

Basionym.: *Haemanthus grandifolius* Balf.f. in Proc. Roy. Soc. Edinburgh 12: 96 (1882). Lectotype (chosen here): Socotra, *Balfour, Cockburn & Scott* s.n. (E).

Bulbs broadly ovoid, c.5 × 4cm; outer scales membranous, pale brown, not marked. *Leaves* basal, always 2, appressed to ground, pale glossy-green, not blotched; lamina ovate to broadly ovate, 13–23 × 8–15cm, apex rounded, base rounded to cordate, glabrous. *Peduncle* solitary, 20–35cm, erect or ascending, dark green becoming pinkish purple towards tip, stiffish or somewhat flexuous, with c.30–100 flowers restricted to upper half. *Flowers* not congested, spreading, becoming reflexed after anthesis; pedicels ascending, 5–12mm, pinkish purple; bracts solitary, subulate, 0.4–1.2mm, not spurred. *Perianth* pinkish purple, slightly constricted above ovary, shallowly cup-shaped at base, the segments spreading at anthesis. *Tepals* 6, in 2 whorls, all more or less similar, narrowly oblong to narrowly obovate, 6.3–7.8 × 1.5–2.25mm; apex obtuse or subapiculate, slightly hooded, thickened, minutely papillose. *Stamens* 6; filaments pinkish purple, free to base, c.4.5–5mm long, shortly (c.1.5mm) united to base of tepals; anthers c.1–1.2 × 0.45mm. *Ovary* depressed ovoid, 6-lobed, 1.5–1.8mm long, 2–3mm in diameter, abruptly constricted at the base into a short (c.0.3mm)

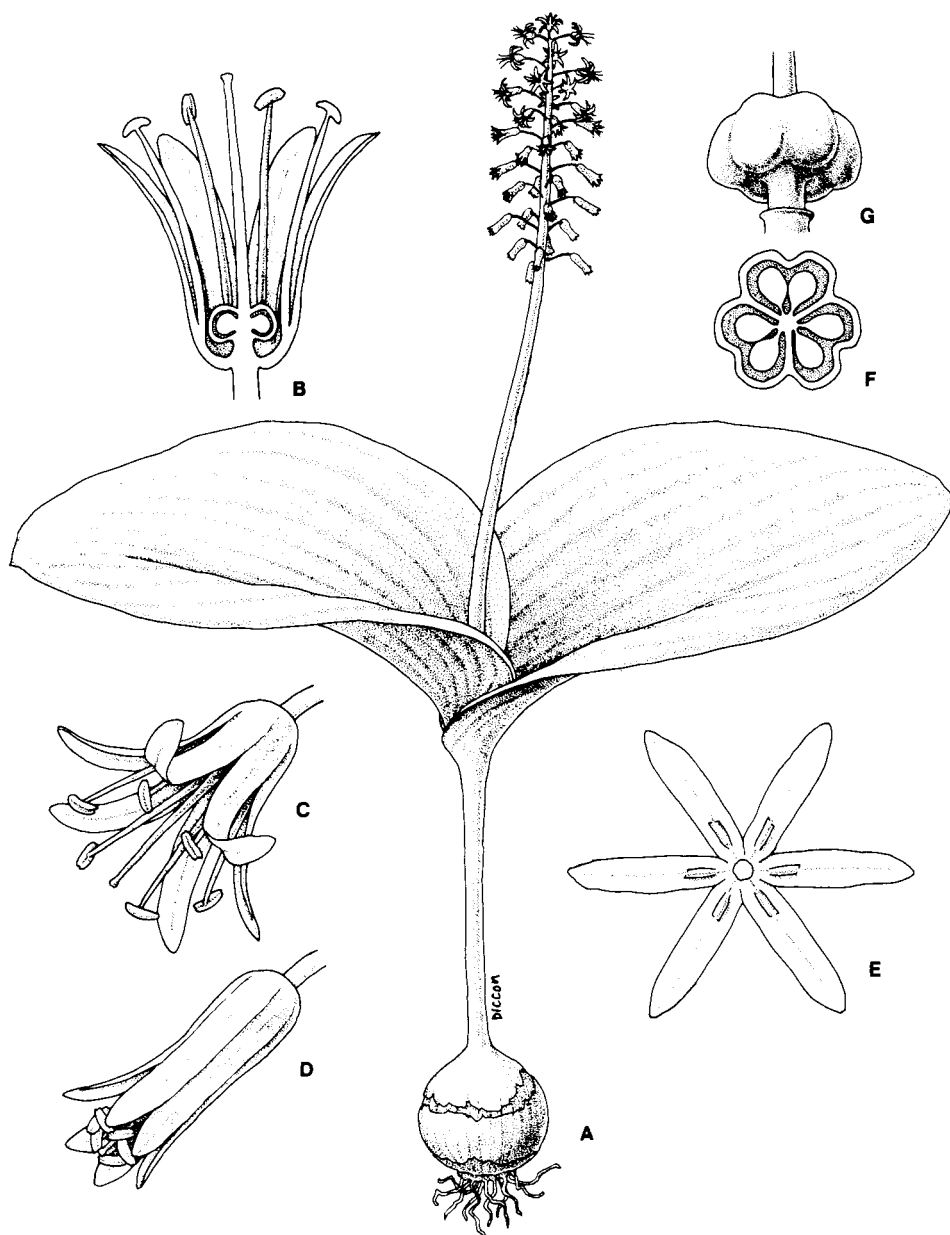


FIG. 1. *Ledebouria grandifolia* (Balf.f.) A.G. Mill. & D. Alexander. A, habit ( $\times \frac{1}{2}$ ); B, section through flower ( $\times 4$ ); C, flower ( $\times 5$ ); D, flower just opening ( $\times 5$ ); E, corolla opened showing attachment of stamens ( $\times 3$ ); F, section through ovary near base ( $\times 10$ ); G, ovary ( $\times 10$ ). Drawn by D. Alexander from *Miller* 12675.



FIG. 2. *Ledebouria grandifolia* (Balf.f.) A.G. Mill. & D. Alexander, growing in a pocket of soil in limestone pavement on Socotra. Photograph by A.G. Miller.

stalk, 3-loculed, with 2 basal ovules per locule, locules deeply 2-lobed; style linear, 7.5–9mm. *Fruit* not seen.

*Additional specimens examined.* SOCOTRA. Wadi Ayhaft, c.10km W of Hadiboh, deciduous shrubland, in shady places, common, 50m, 25 i 1990, *Miller, Bazara'a, Guarino & Kassim et al.* 10012 (E, K) [leaves only]; Hamaderoh, nr Firmig, 12°34'N 54°22'E, rocky limestone outcrop, 550m, 3 xi 1993, *Miller* 12675 (E) [in flower].

*Ledebouria grandifolia* is locally common on Socotra, growing in both limestone and granite areas in the centre and east of the island. It has not been recorded from the western limestone plateau or from any of the other islands in the archipelago. Typically, it is found growing in shady places under trees and on cliffs, at altitudes of 50–600m, in relatively high-rainfall areas (no rainfall figures are available for the island; however, the annual rainfall in these areas is likely to be in the region of 400mm). The bulbs are buried at least 10cm and often over 30cm beneath the soil surface. It is particularly common in the dense, drought-deciduous woodlands which blanket the valleys draining to the north and northwest of the Haggier Mountains and in the east of the island on the northern, seaward-facing cliffs and broken limestone ridges of the Hamaderoh plateau.

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