

more along the coast from Swakopmund, and up to about 75 km inland. Type locality near Khan Copper Mine, NE of Swakopmund.

DESCRIPTION: Although it varies considerably in size and in the presence or absence of facial markings, this variety has a characteristic combination of colour and shape. **Profile** cordate, usually very distinctly convex; fissure deep, 10-15 mm, lobes conjunct but sometimes slightly divergent at the top. **Face** elevated; elliptic to slightly reniform; lobes usually \pm unequal; opaque; smooth to slightly rugose. **Margins, windows, channels, islands,** absent; instead, a broken network of slightly impressed furrows. **Markings** often completely absent, otherwise a number of short lines, dashes or dots set in the furrows, the dots pitted; occasionally the lines may be sufficiently long and numerous to constitute a coarse broken network.

Colours: Face opaque, mostly greyish white or cream, sometimes yellowish or pinkish white. Markings dull red, red-brown or blood-red. Shoulders as for the face, or very slightly lighter.

Size: Small to large, up to 38 x 27 mm, mostly about 25 x 20 mm. Number of heads up to 30 or more, mostly 2-5.

FLOWERS yellow, small to medium, up to 30 mm \varnothing , mostly 20-25 mm \varnothing , often with long pedicels. **Seed capsules** usually 5-merous (81%), otherwise mostly 6-merous (15%), the remaining few (4%) 4- or 7-merous. Profile boat-shaped, top \pm flat, occasionally slightly peaked; face broadly elliptic, up to 9,0 x 7,0 mm, mostly about 6,5 x 5,0 mm.

GENERAL NOTE: The form published as *Lithops nelii* Schwant. (Plate 12/5) is generally smaller, more uniformly grey-white in colour, and mostly unmarked, but it cannot be consistently distinguished from the type. When well watered it grows to the same size as the type.

16.2 *Lithops ruschiorum* var. *lineata* (Nel) Cole (1946) (Y). Plate 12/6.

COLLECTED by J.C.M. Els, Town Clerk of the Municipality of Strand, C.P., in 1945 or earlier. Latin *lineata* "having (fine) lines".

DISTRIBUTION: SWA/Namibia, extending north-westwards for 120 km or more along the coast from Rocky Point (19° S latitude), and up to about 60 km inland. It is possible that this variety extends to the Angolan border and even further north. Its southern limit and boundary with var. *ruschiorum* is not known with any certainty. The type locality indicated by Nel, "40 miles north of Walfisch Bay", is obviously incorrect.

DESCRIPTION: Differs from the type variety in colour and in form of markings, and also has significantly smaller flowers and seed capsules, but in all other morphological respects essentially the same. **Profile** cordate, fissure 8-12 mm, lobes conjunct.

Markings usually a coarse network of very fine lines and dots, very slightly impressed, often with a distinct line along the inner margin; this network is occasionally reduced to a number of broken lines, dashes and dots.

Colours: Face and sides opaque pale orangey, pinkish, yellowish or greenish grey. Markings very fine orange, orange-brown or reddish lines and dots. Shoulders as for the face or slightly lighter.

Size: As for the type, or a little smaller at maximum.

FLOWERS yellow, small, up to 25 mm \varnothing , mostly 16-20 mm \varnothing . **Seed capsules** usually 5-merous (88%), otherwise (12%) 4-, 6- or 7-merous. Profile boat-shaped, top flat to slightly peaked; face elliptic, up to 6,0 x 4,0 mm, mostly about 5,0 x 4,0 mm.

17. *Lithops schwantesii* Dint. (1928) (Y).

We recognize five varieties within this rather variable and widely distributed species, namely var. *schwantesii*, var. *gebseri* De Boer, var. *marthae* (Loesch. & Tisch.) Cole, var. *rugosa* (Dint.) De Boer & Boom and var. *urikosensis* (Dint.) De Boer & Boom.

17.1 *Lithops schwantesii* Dint. var. *schwantesii* (Y). Plate 13/1-4.

COLLECTED by Ernst J. Rusch in August 1926, and named for Professor M.H. Gustav Schwantes who contributed so much to the study of *Lithops* and other Mesembryanthemaceae.

DISTRIBUTION: SWA/Namibia, in a large north-south strip about 80 km wide, north of 27° S latitude and west of 17° E longitude, tapering off northwards to a point about 100 km W of Maltahöhe, and with a major concentration to the SW, W and NNW of Helmeringhausen. Type locality Barbi, W of Helmeringhausen.

DESCRIPTION: Very variable. **Profile** truncate, flat to slightly convex; fissure 4-8 mm deep, lobes conjunct. **Face** flush; mostly \pm reniform; lobes \pm unequal; opaque to translucent; smooth to rugose. **Margins** usually rather irregular with indentations and peninsular projections into the window area; sometimes obscure, but often prominently banded. **Windows** occasionally absent, when the face is almost entirely opaque; sometimes completely open, but usually occluded by a number of indistinct islands and peninsular projections, thus reduced to irregular **channels**, usually fairly broad, occasionally very narrow and little more than slightly impressed furrows accommodating the markings. **Islands** few to many, usually indistinct and not well defined. **Markings** rarely absent, usually manifest as a number of dots, hooks and branched lines which may be linked into a coarse network, sometimes very bold and prominent. **Pellucid dots** rarely absent; usually subcutaneous, few to many, scattered irregularly over the whole face, opaque and

translucent areas alike, sometimes quite obvious but often very indistinct and not visible without a lens.

Colours: Margins usually banded in one or other shade of opaque yellowish, pinkish, orangey, brownish or reddish grey. Windows/channels obscurely to pellucidly translucent grey-green, often with red, orange-brown, purple-brown, greyish purple, greyed brown, blue or yellowish tints. Islands usually as for margins, sometimes a little paler. Markings dull to bright blood-red or purplish red. Pellucid dots dark dull grey-green. Shoulders opaque milky bluish grey, sometimes yellowish or reddish grey.

Size: Small to large, up to 40 x 30 mm, mostly about 25 x 20 mm. Number of heads up to 15 or more, mostly 1-3.

FLOWERS yellow, often with longish pedicels; medium, up to 35 mm \varnothing , mostly 25-30 mm \varnothing . **Seed capsules** usually 5-merous (94%), otherwise (6%) 6- and 4-merous. Profile boat-shaped, top \pm flat; face elliptic to broadly elliptic, up to 10,0 x 8,5 mm, mostly about 8,0 x 7,0 mm.

17.2 *Lithops schwantesii* var. *gebseri* De Boer (1964) (Y). Plate 14/1-2.

COLLECTED by Walter Gebser of Maltahöhe in January 1960, and named for him.

DISTRIBUTION: SWA/Namibia, in a small area to the N and NE of Helmeringhausen. Type locality Estorffdank.

DESCRIPTION: A distinctive variety which differs significantly from the type, and is somewhat reminiscent in some respects of *L. fulviceps* (N.E. Br.) N.E. Br. and of the distant *L. turbiniiformis* (Haw.) N.E. Br. **Profile** truncate, flat to slightly convex; fissure shallow, 5-10 mm deep, lobes conjunct. **Face** flush; elliptic to slightly reniform; lobes \pm unequal; opaque to obscurely translucent; slightly rugose. **Margins** rather indistinct with numerous small indentations. **Windows** absent, the face usually completely opaque, but occasionally very obscurely translucent. **Channels** absent; instead a fine network of inter-connected shallow valleys or furrows which accommodate the markings. **Islands** manifest as small opaque areas, mostly rather irregular in shape, surrounded by valleys and furrows. **Markings** in the valleys and furrows, occasionally absent or indistinct, mostly a broken network of branched lines, dashes, hooks and/or dots. **Pellucid dots** subcutaneous, usually numerous, scattered irregularly over the whole face.

Colours: Face, margins, islands, various shades of opaque to very obscurely translucent purplish brown, grey brown, reddish grey or yellowish grey, the margins sometimes obscurely banded in a slightly deeper hue. Markings blood-red, purplish red, orange-brown, greenish brown. Pellucid dots dull greenish grey. Shoulders various shades of dark bluish grey.

Size: Medium to large, up to 40 x 28 mm, mostly about 30 x 25 mm. Number of heads up to 6, mostly 2-3.

FLOWERS yellow, medium, up to 35 mm \varnothing , mostly 25-30 mm \varnothing . **Seed capsules** usually 5-merous (89%), otherwise (11%) mostly 6-merous. Profile boat-shaped, top flat to slightly convex; face broadly elliptic, up to 9,5 x 7,5 mm, mostly about 8,5 x 7,0 mm.

17.3 *Lithops schwantesii* var. *marthae* (Loesch. & Tisch.) Cole (1936) (Y). Plate 13/5-6.

COLLECTED by Franz S. Erni in 1931, and named for his wife, Martha.

DISTRIBUTION: SWA/Namibia, S and SE of Aus, in an area to the NW, N, NE and E of Witputs. Type locality Pockenbank.

DESCRIPTION: Rather distinctive and differing in a number of respects from the type variety. **Profile** truncate, flat to very slightly convex; fissure shallow, 4-8 mm deep, lobes conjunct. **Face** flush; slightly reniform; lobes \pm unequal; obscurely translucent; smooth. **Margins** rather indistinct, mostly regular, prominently banded. **Windows** mostly open. **Channels** absent, or very rarely evident as slightly more translucent edgings to the markings. **Islands** mostly absent, occasionally manifest as a few obscure opaque flecks in the windows. **Markings** usually a number of slender to bold branched lines, hooks and/or dots, sometimes sparse, occasionally linked into a broken network; sometimes absent, or so obscure as to be visible only with a lens. **Pellucid dots** usually absent, otherwise rather sparse, seldom visible without a lens.

Colours: Margins obscurely banded in various shades of opaque pale grey, beige or cream, or light grey tinted with pink, yellow-brown or green. Windows various shades of obscurely translucent dull greenish or bluish grey, occasionally with a slightly reddish tint. Markings dull blood-red to purplish red. Pellucid dots dull grey-green. Shoulders opaque pale grey, or grey tinted with blue, green or yellow.

Size: Small to medium, up to 26 x 18 mm, mostly about 20 x 15 mm. Number of heads up to 18 or more, mostly 2-6.

FLOWERS yellow, small to medium, up to 35 mm \varnothing , mostly 20-25 mm \varnothing . **Seed capsules** usually 5-merous (92%), the remainder (8%) mostly 6-merous. Profile boat-shaped, top flat to slightly convex; face elliptic to broadly elliptic, up to 8,0 x 6,5 mm, mostly about 7,0 x 6,0 mm.

17.4 *Lithops schwantesii* var. *rugosa* (Dint.) De Boer & Boom (1928) (Y). Plate 15/1.

COLLECTED by Ernst J. Rusch in August 1926. Latin *rugosa* "rugose, wrinkled".

DISTRIBUTION: SWA/Namibia, in a small area to the WNW of Helmeringhausen. Type locality Aubores.

DESCRIPTION: Differs mainly in colour from the type variety, occasional plants from colonies of which may not be clearly distinguishable. It is interesting to note that the colour of this variety has some similarity to that of *L. pseudotruncatella* var. *elisabethiae*, which bears a similarly very close relationship to its type variety. **Profile** truncate, flat to slightly convex; fissure 5-10 mm deep, lobes conjunct. **Face** flush, slightly reniform; lobes \pm unequal; mostly opaque; somewhat rugose. **Margins** indistinct, rather irregular. **Windows** absent, the face usually opaque, but occasionally barely discernible as very obscurely translucent. **Channels** mostly absent; instead, a system of interconnected **valleys**, narrow to broad, impressed and fairly regularly branched. **Islands** manifest as opaque areas surrounded by valleys. **Markings** set in the valleys, a number of branched lines, hooks, dashes and/or dots, sometimes forming an entire network, more often broken. **Pellucid dots** few to many, scattered irregularly over the whole face; sometimes fairly obvious, usually rather obscure and visible only with a lens; sometimes concentrated along the valleys and producing a semblance of channels.

Colours: Face, margins, islands, various shades of opaque milky pink, mauve or bluish pink, the margins sometimes obscurely banded in a slightly paler hue. Markings dull purple-red. Pellucid dots dull grey-green. Shoulders as for the face or duller bluish grey.

Size: Medium to large, up to 38 x 28 mm, mostly about 30 x 20 mm. Number of heads up to 12, mostly 2-3.

FLOWERS yellow, small to medium, up to 35 mm \varnothing , mostly 20-30 mm \varnothing . **Seed capsules** almost entirely 5-merous (97%). Profile boat-shaped, top \pm flat; face elliptic, up to 8,0 x 6,5 mm, mostly about 6,5 x 5,5 mm.

17.5 *Lithops schwantesii* var. *urikosensis* (Dint.) De Boer & Boom (1928) (Y). **Plate 14/3-6.**

COLLECTED by Ernst J. Rusch in August 1926, at Urikos.

DISTRIBUTION: SWA/Namibia, mostly in a triangular area to the W and NW of Maltahöhe, but with localities also near Duwisib, Helmeringhausen and Bethanien. Type locality Urikos, near the most north-westerly point of the range.

DESCRIPTION: A very distinctive colour variant, fairly easy to identify. It is intriguing to note that plants from the localities near Urikos (most northerly), Bethanie (most southerly) and Duwisib (almost in the middle), bear the closest resemblance to one another, and in fact are not distinguishable at all; whereas those from other areas are sometimes identifiable. **Profile** truncate, flat to slightly convex; fissure 6-12 mm deep, lobes conjunct. **Face** flush; \pm reniform; lobes \pm unequal; opaque; somewhat rugose. **Margins** mostly indistinct, but fairly regular. **Windows** absent, the face opaque, or only occasionally very obscurely translucent. **Channels** absent or only occasionally discernible as obscurely translucent suffusions in

the valleys; instead, usually a system of shallow **valleys**, fairly broad or reduced to narrow furrows, interconnected in a fine or coarse network. **Islands** manifest only as opaque humps surrounded by valleys or furrows. **Markings** in the valleys, a network of branched lines, dashes, hooks and/or dots, sometimes entire, sometimes broken and obscure. **Pellucid dots** usually absent or very obscure and visible only with a lens, otherwise relatively sparsely scattered over the whole face.

Colours: Face, margins, islands, various shades of opaque milky bluish, greenish or yellowish grey, occasionally with pink or buff tints; the margins sometimes obscurely banded in a slightly lighter or deeper hue. Channels (when visible) obscurely translucent bluish grey-green. Markings dark brownish or purplish red. Pellucid dots dull bluish grey-green. Shoulders milky bluish grey.

Size: Medium to large, up to 43 x 27 mm, mostly about 30 x 20 mm. Number of heads up to 15 or more, mostly 2-5.

FLOWERS yellow, small to medium, up to 35 mm \varnothing , mostly 20-30 mm \varnothing . **Seed capsules** usually 5-merous (93%), otherwise (7%) mostly 6-merous. Profile boat-shaped, \pm flat to very slightly convex; face elliptic to broadly elliptic, up to 9,0 x 7,5 mm, mostly about 7,5 x 6,0 mm.

18 *Lithops vallis-mariae* (Dint. & Schwant.) N.E. Br. (1925) (Y). **Plate 15/2-4.**

COLLECTED by Mrs Angela H. Beetz in 1923, on her father's farm Marienthal, i.e. "Maria-dale", hence *vallis-mariae* "valley of Maria".

DISTRIBUTION: SWA/Namibia, in a large quadrangular area to the north and east of Keetmanshoop, and bounded approximately by Berseba, a point some 30 km NW of Marienthal, Stampriet, and a point some 40 km N of Aroab. Type locality near Marienthal.

DESCRIPTION: A relatively uniform and easily identifiable species, whose characteristic feature is the very finely wrinkled top surface. **Profile** truncate, flat to slightly convex; fissure shallow, 5-10 mm deep, lobes conjunct. **Face** flush; elliptic to reniform; lobes \pm equal to distinctly unequal; opaque, the whole face very minutely wrinkled or extensively dotted with pin-pricks, these wrinkles and pin-pricks sometimes visible to the naked eye, sometimes only with a lens, occasionally not identifiable at all; slightly rugose. **Margins, windows** and **islands** absent or very obscure, islands manifest only occasionally as opaque areas surrounded by channels. **Channels** often absent, otherwise manifest as a number of impressed, obscurely translucent, dots, hooks and short lines, up to 1,0 mm wide but usually less than 0,5 mm, the ends of the lines and the dots sometimes quite deeply pitted; sometimes the lines and dots are reduced to very shallow furrows or a faint, barely impressed reticulation,