

AL FAATEH UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF BOTANY

FLORA OF LIBYA

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AIZOACEAE

by **ABDUL GHAFUOR**

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AIZOACEAE

ABDUL GHAFOOR

Herbs or undershrubs rarely shrubs, usually succulent or xerophytic. Leaves stipulate or exstipulate, simple, opposite, alternate or whorled to crowded, mostly expanded at the base, often fleshy, or occasionally scale-like. Inflorescence axillary or terminal, lax dichasial cymes or dense clusters or subumbellate cymes. Flowers (1-) 2-sexual, actinomorphic, usually bracteate. Sepals (3-) 4-5 (-8), free or united into 4-5 (-8)-lobed calyx tube, green. Petals mostly absent. Stamens (3-) 5 or numerous, free, or occasionally basally united in fascicle, alternate with calyx lobes; anthers small, ditheous, longitudinally dehiscent; occasionally outermost whorl of petaloid staminodes present. Carpel 1 or 2-5 (-10) and syncarpous or rarely multicarpellate; ovary usually inferior, rarely superior, free or adnate to the calyx tube, 1-5-loculed, rarely multilocular, with 1-many ovules on basal, axile, apical or parietal placenta; style simple or absent, stigmas as many as carpels, patent. Fruit usually a loculicidal or circumscissile capsule, occasionally indehiscent and berry-like. Seeds \pm reniform, albuminous, embryo usually curved.

A family with c. 120 genera and nearly 1100 species, distributed mainly in Africa, S.W. Europe, Tropical Asia, W. Indies, Tropical and S. America and Australia; represented in Libya by 5 genera and 9 species.

The family is valued for many of its ornamental succulent pot or rockery herbs. Taxa marked with an asterisk (*) are known from cultivation in our area.

1. + Stamens free and inserted on rim of calyx tube.
Petaloid staminodes absent. Ovary superior 2
- Stamens united in 5 fascicles alternating with
calyx lobes. Petaloid staminodes present and
numerous. Ovary inferior 3
2. + Plant not covered by hyaline vesiculose
papillae. Leaves opposite. Styles 2, free.
Capsule circumscissile with lid splitting into 2
valves. Seeds never more than 4 1. *Zaleya*

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- Plant covered with hyaline vesiculose papillae. Leaves alternate, or very rarely opposite. Styles 4-5 (-10). Capsule splitting loculicidally into 4-5 (-10) or 8-10 (-20)- valves. Seeds more than 4 2. **Aizoon**

- 3.+ Flowers large 8-12 cm across. Stigmas 8-20. Fruit fleshy, indehiscent berry-like. Seeds embedded in mucilage. 3. **Carpobrotus**

- Flowers not more than 5 cm across. Stigmas less than 5. Fruit a woody capsule 4

- 4 + Leaves cordate at the base, finely papillate. Flowers tetramerous 4. **Aptenia***

- Leaves not cordate at the base, densely covered with hyaline, vesiculose papillae or projections. Flowers pentamerous 5. **Mesembryanthemum**

1. **ZALEYA**

Burm.f., Fl. Ind. 110. tab. 31. 1768.

Herbs, subsucculent, minutely papillose, prostrate to ascending. Leaves exstipulate, opposite, petiolate, lanceolate to oblanceolate or broadly elliptic to ovate-elliptic, entire. Inflorescence axillary, in cymose clusters. Flowers sessile to shortly pedicellate, bisexual, actinomorphic. Sepals 5, united into a short calyx tube, with 5, subapically mucronate, internally coloured, membranous margined lobes. Petals absent. Stamens 5-15, free, inserted on rim of calyx tube; staminodes absent. Ovary bicarpellary, syncarpous, superior, 2-loculed, each locule 2-ovuled; styles 2, free, stigma 2. Capsule circumscissile, splitting by a 2-valved lid, seeds never more than 4.

A genus of 5 or 6 species, distributed in Tropical and subtropical Africa, Asia and Australia; represented here by 1 species.

Zaleya pentandra (L.) Jeffrey in Kew Bull. 14:238.1960; Y.Nasir in Nasir & Ali. Fl. W. Pak. 41: 2. tab. 1, fig. A-D. 1973.

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Trianthes pentandra L., Mantissa, 1: 70. 1767; Boiss., Fl. Orient. 2: 766. 1872; Andrews, Fl. Pl. Anglo-Egypt. Sudan 1: 96. fig. 61. 1950; Ozenda, Fl. Sahara 204. 1958; *Trianthes govindia* Buch.-Ham. ex G. Don in Gen. Syst. 3. 72. 1834; *Z. govindia* (Buch.-Ham. ex G. Don) Nair in Bull. Bot. Surv. Ind. 8: 86. 1966; Hedge & Lamond, in Rech. f., Fl. Iran. 113: 4. 1975.

A prostrate to suberect, subsucculent, annual or perennial herb with papillose to glabrous, up to 30 cm or more long branches from the \pm woody base. Leaves with up to 20 mm long, \pm flattened, membranous-winged, basally sheathing, \pm pubescent petiole; lamina broadly obovate to oblong-elliptic, (7-) 10-35 (-40) x (3-) 6-25 (-27) mm, attenuate at the base, obtuse at the apex, papillate. Inflorescence axillary, (2-) 5-20-flowered cymose clusters, rarely flowers solitary. Flowers minute, c. 3-4 mm long, sessile or subsessile, greenish with pink or crimson tinge. Calyx tube c. 1 mm, turbinate, lobes triangular-oblong, 2-3 mm long, margins membranous white, mucronate near the apex. Stamens 5, alternating with calyx lobes, filaments dilated towards the base. Ovary papillate, styles linear, subspreading, persistent. Capsule oblong-rectangular, c. 3-4 mm long, exceeding the calyx, operculum with or without pointed crests. Seeds black, \pm orbicular, c. 1.5-2 mm in diameter, inconspicuously ribbed.

Type: Arabia, cultivated at Uppsala from seed sent by Forskal (LINN).

This species has been reported from arid parts of South Libya (Tibesti) by Ozenda (l.c.).

Distribution: Southern Sahara, West and East Tropical Africa eastwards to India through Arabia, Iran, Afghanistan and Pakistan.

Fl. November-February.

2. AIZOON

L., Sp. Pl. 488. 1753; Gen. Pl. ed. 5. 216. 1754.

Prostrate to erect, diffusely branched, often succulent herbs or subshrubs. Leaves exstipulate, alternate or sometimes opposite, glabrous, papillate or hairy. Inflorescence axillary, often in stem forks, cymes or spikes or flowers solitary.

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Flowers sessile, subsessile or petioled, bisexual. Sepals united into a small, 4-5-lobed calyx tube. Petals absent. Stamens c. 15-20, episepalous, often in 2 or more whorls or united in 5 bundles, each inserted on calyx tube and alternate with calyx lobes. Ovary 4-5 (-10) - carpelled, superior, 4-5 (-10)- locular, each locule with 2-many pendulous ovules; styles 4-5 (-10), free. Capsule \pm woody, splitting loculicidally from apex downwards into 4-5 (-10) or 8-10 (-20) valves. Seeds numerous, reniform.

A genus of c. 15 species, distributed in the Mediterranean Europe, Africa, S.W.Asia and Australia; represented by 2 species in Libya.

- + Leaves alternate, shortly petiolate, oblanceolate-obovate to suborbicular. Calyx lobes triangular, less than 4 mm long **1. *A. canariense***
- Leaves opposite, sessile, oblong-lanceolate. Calyx lobes lanceolate, more than 5 mm long **2. *A. hispanicum***

1. **Aizoon canariense* L., Sp. Pl. 488. 1753; Durand & Barratte, Fl.Lib. Prodr. 99, 1910; Corti, Fl. Veg. Fezzan 98. 1942; Maire, Fl. Afr. Nord. 8: 277. fig. 1000. 1962; Keith, Prelim. Check List Lib. Fl. 1: 205. 1965 (Fig. 1, D-G).

Glinus crystallinus Forsk., Fl. Aegypt.-Arab. 95. 1775.

A prostrate, annual or perennial herb with finely papillose to velutinous, up to 30 cm long, c. 3-4 mm thick spreading stems. Leaves alternate, with up to 15 mm long petiole; lamina oblanceolate-obovate to suborbicular, (6-) 11-50 x (2-) 10-40 mm, finely papillose and \pm pilose on both sides, entire, narrowed at the base, apex obtuse or \pm bluntly acute-acuminate. Flowers sessile, solitary in leaf axils or dithotomies of the stem, c. 4-5 mm across, stellate. Calyx tube turbinate, c. 1 mm long, 5-lobed, yellow within, lobes triangular, c. 2-3 mm long, acute, hairy outside. Stamens usually 15 in 5 bunches of 3 each, inserted on rim of calyx tube, filaments filiform, c. 1 mm long, slightly united or not at the base, anthers ovoid-globose, c. 0.5 mm long, yellow. Ovary pentagonal; styles 5, free, c. 1 mm long, papillate and stigmatic, persistent. Capsule woody, usually pentagonal, c. 5-6 mm in diameter, red or pink, papillose, dehiscence valvular, valves inflexed, attached to central axis. Seeds blackish-brown, c. 1 mm long, concentrically ridged, shiny.

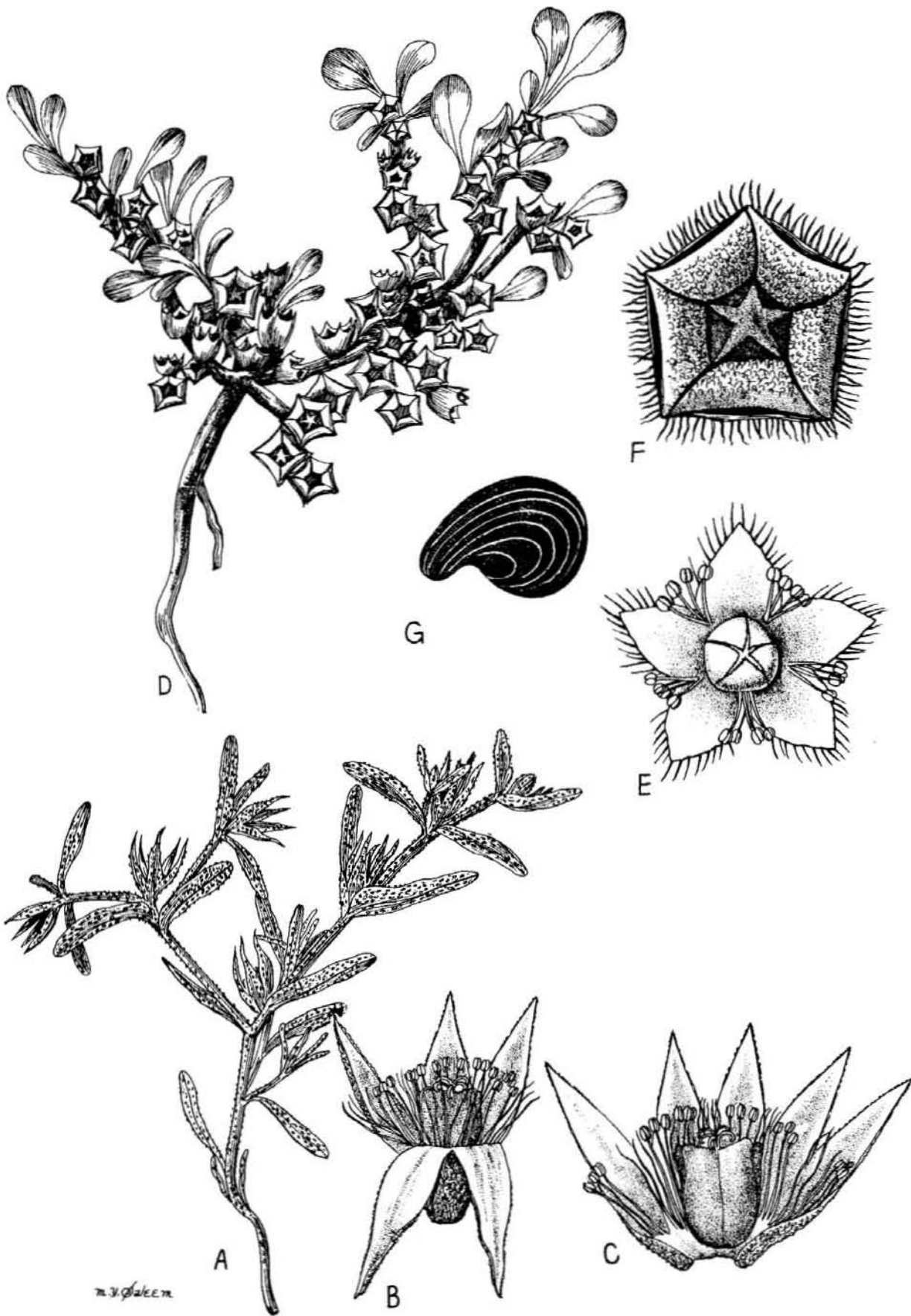


Fig. 1, ***Aizoon hispanicum***: A, Flowering branch x 0.5; B, Flower x 3; C, Dissected flower x 3. ***A. canariense***: D, Habit x 1.5; E, Flower x 8; F, Surface view of Fruit x 8; G, Seed x 25.

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Type: Canary Islands, Herb. Linn. 650.1 (LINN).

Reported by Keith (l.c.) as an exotic and said to be cultivated in West and S.W.Libya (Fezzan, Tripolitania).

Distribution: Canary and Cape Verde Islands, North, South and Tropical East Africa eastwards to Iran, Afghanistan and Pakistan.

Fl. November-June. Vern. Hadaq; Samh; Koshed el Belad; Tarassoult.

A very variable species in size of its vegetative and floral parts and degree of hairiness.

2. **Aizoon hispanicum** L., Sp. Pl. 488. 1753; Durand & Barratte, l.c. 99; Pamp., Pl. Trip. 71. 1914; Prodr. Fl. Cir. 186. 1931; Quezel & Santa, Nouv. Fl. Alger 1: 311. 1962; Maire, l.c. 8: 278; Keith, l.c. (Fig. 1, A-C).

Erect or suberect, annual herb, dichotomously branched, up to 25 (-30) cm tall, densely crystalline papillate, glabrous. Leaves sessile, opposite, oblong-lanceolate, 15-40 (-50) x 4-6 (-8) mm, papillose on both sides, semi-amplexicaule at the base, entire, apex obtuse. Flowers very shortly pedicelled, solitary in forkings of the branches and terminal, c. 10 mm across. Calyx tube turbinate-campanulate, c. 3-4 mm long, enlarged in fruit, 5-lobed, lobes lanceolate, 6-14 mm long, unequal, acute, crystalline papillose outside, glabrous. Stamens 5-15, free or in 5 bunches of 2-3 each, inserted in the calyx tube, filaments filiform, anthers ovoid-oblong, c. 0.75 mm long, yellow. Ovary obturbinate, 5-angled, truncate at apex; styles 5, free, subulate, papillate and stigmatic, persistent. Capsule \pm woody, obovate, c. 8 mm in diameter, pentagonal. Seeds rounded-reniform, black, c. 1 mm long, concentrically ridged, shiny.

Type: Described from Spain, Herb.Linn.650.2 (LINN).

B-1 Wadi Malah, c. 10 km from Nalut, 4.5.1972, *S.I.Ali & S.A.Faruqi* 297 (ULT); **B-4** c. 4 km from Bugrain (going towards Misrata), ground with pebbles, 28.4.1975, *S.I.Ali* 2469 (ULT); Salt Marsh near Al Kararim, 8.3.1968, *L.Boulos* 1913 (ULT); c. 75 km from Weshka, *S.I.Ali & S.A.Faruqi* 2239 (ULT).

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Distribution: Canary and Cape Verde Islands, S.W. Europe, North Africa eastwards to Iran and Russia (Transcaucasia).

A species of sandy and stony ground, found almost throughout Libya.

Fl. January-June. Vern. Rhassoul.

3. CARPOBROTUS

N.E. Brown in Phillips, Gen. S. A. Afr. Fl. Pl. 249. 1926.

Mesembryanthemum Linn. subgen. *Carpobrotus* (N.E. Br.) Maire et Weiller in Maire, Fl. Afr. Nord. 8:262. 1962.

Perennial, prostrate-procumbent, woody, glabrous herbs without glittering papillae or projections. Leaves opposite, sessile, distant, much fleshy, triangular. Flowers solitary terminal, pedicellate, large, showy. Sepals 5, united into turbinate, 5-lobed calyx tube, adnate to the ovary. Petals absent. Stamens numerous, united in 5 bunches, alternating with calyx lobes; staminodes very many, linear, free, petaloid. Ovary polycarpellary, syncarpous, inferior, 8-20-loculed, each locule with many anatropous ovules on parietal or basal placenta; stigmas sessile, 8-20, linear. Fruit a large, indehiscent, fleshy berry. Seeds obovate, embedded in mucilage.

Differs from *Mesembryanthemum*, in its large, multicarpellate flowers and fleshy fruit with seeds embedded in mucilage.

A genus with c. 24 species, distributed in S. Africa, Australia, New Zealand and Pacific Islands. It is represented in Libya by 2 naturalized species introduced from S. Africa as ornamentals.

- | | |
|--|----------------------------|
| + Leaves glaucous, broadest at or above the middle. Stamens purple | 1. <i>C. acinaciformis</i> |
| — Leaves not glaucous, not broadening above the base. Stamens yellow | 2. <i>C. edulis</i> |

1. **Carpobrotus edulis* (L.) N.E. Brown in Philips, Gen. S. Afr. Fl. Pl. 249. 1926; Tutin in Tutin et al, Fl. Europ. 1: 113. 1964. (Fig. 2, A-C).

Mesembryanthemum edule L., Syst. Nat. ed. 10. 1060. 1759; Bailey, Stand. Cycl. Hort. 2: 2041. fig. 2365. 1950; Maire, l.c.; Keith, l.c. 667.

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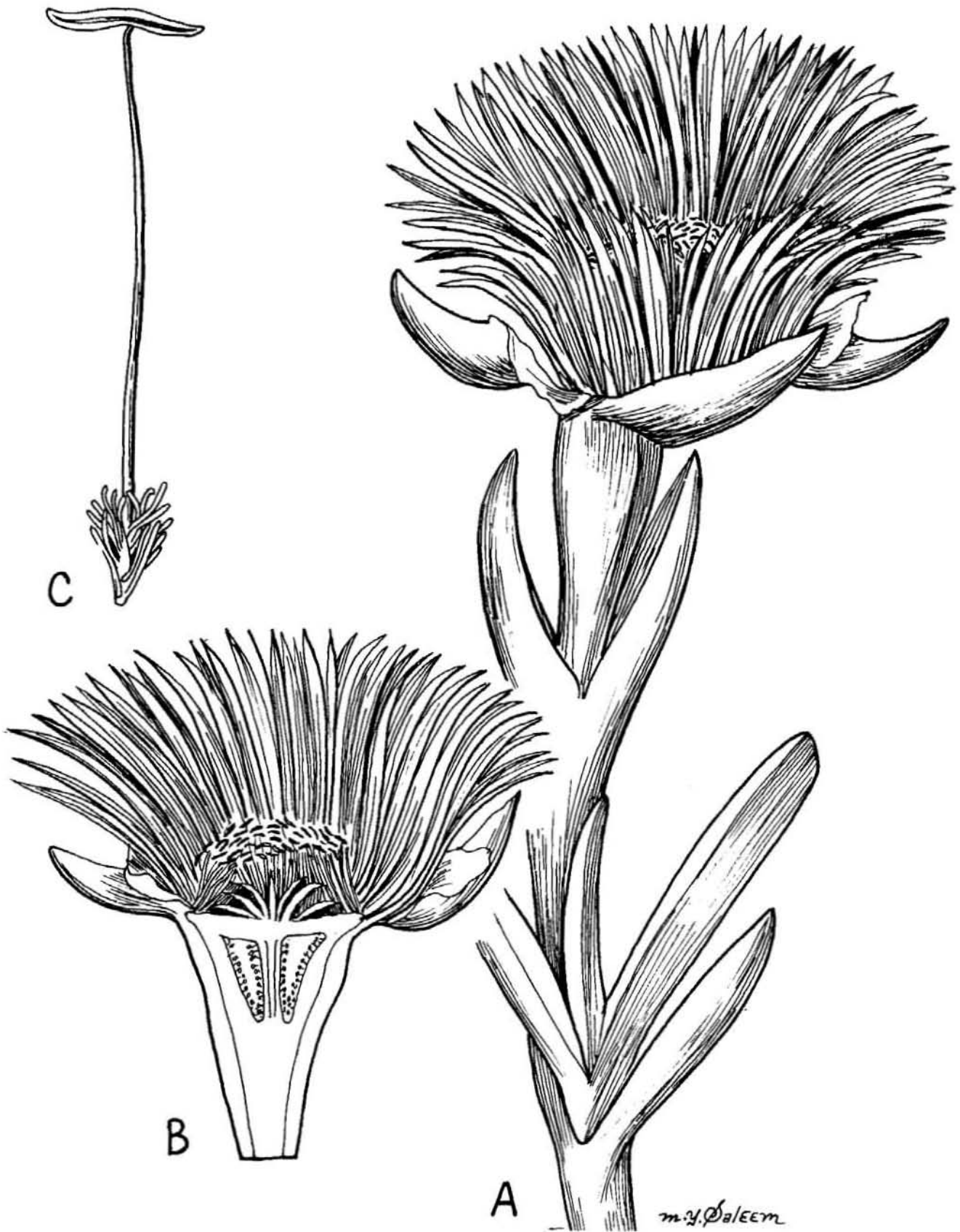


Fig. 2, **Carpobrotus edulis**: A, Flowering branch x 1; B, V.S. of flowers x 1; C, Stamen x 10.

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A woody prostrate herb, with much spreading, articulate, angular, thick stems. Leaves opposite, triquetrous, 8-12 x 1-1.5 cm, connate at the base, dorsal angle or keel inconspicuously serrulate or entire, tapering gradually from base to the acute apex, fleshy. Flowers long pedicelled, solitary, terminal, rose-purple, 8-10 cm across. Calyx lobes unequal, leafy, 2 longer than staminodes, 3 smaller with scarious margins. Stamens yellow, hairy at the base; staminodes numerous, linear-lanceolate, emarginate to denticulate at the apex. Ovary adnate to calyx tube, 12-loculed; stigmas 12. Berry large, edible.

Type: Described without indication of locality.

Distribution: A native of South Africa, now naturalized in parts of Tropical America, Europe and North Africa.

Introduced. Grows well along the sea coast and El-Faateh university campus and is a very good sand binder.

Fl. March-July. Vern. Widdana

2. **Carpobrotus acinaciformis** (L.) L. Bolus, Fl. Pl. S. Afr. 7, sub tab. 247. 1927; Tutin in Tutin et al, Fl. Europ. 1: 112. 1964.

Mesembryanthemum acinaciforme L., Sp. Pl. 485. 1753; Bailey, Stand. Cycl. Hort. 2041. 1950; Maire, l.c. 263.

A woody prostrate succulent herb, with articulate, up to 2 m long, angular stems. Leaves opposite, triquetrous, 5-8 x c. 1-1.5 cm, neither connate nor truly perfoliate at the base, curved and thicker on dorsal horny edge, glaucous, broadest at or above the middle, abruptly contracted to the acute apex, fleshy. Flowers solitary, terminal, purple, c. 12 cm across. Calyx lobes subequal, leafy, longer than staminodes. Stamens with purple filaments; staminodes numerous, linear-lanceolate. Ovary adnate to calyx tube, 14-loculed; stigmas 14. Berry \pm globose, c. 1.5 cm in diameter.

Type: Described from Cape, South Africa.

A-7 Shahat, Al Baida, on rocks, very common prostrate succulent plant, fls. large, dried, 26.10.1975 S.M.H.Jafri 6104 (ULT).

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Distribution: A native of South Africa, naturalized in South and S.W. Europe, Libya and probably elsewhere.

A rock species in the Gebel Akhdar area of Libya.

Fl. March-August. *Vern.* Widdana

4. APTENIA*

N.E. Brown in *Gard. Chron. ser. 3*, lxxxiv: 313.1928.

Mesembryanthemum Linn. Subgen. Aptenia (N.E. Brown) Maire et Weiller in Maire, *Fl. Afr. Nord.* 8:258.1962.

Perennial, prostrate, glabrous herb. Leaves petiolate, opposite, entire, flat, finely papillate. Flowers solitary, axillary or terminal, small, epigynous. Sepals 4, united into a narrowly turbinate, 4-lobed calyx tube adnate to the ovary. Petals absent. Stamens numerous, united in 4 bunches alternating with the calyx lobes, anthers oblong; staminodes many, filiform. Ovary tetracarpellary, syncarpous, inferior, 4-loculed; stigmas 4, sessile, filiform. Fruit a \pm tetragonal, woody 4-loculed capsule dehiscent by 4 wingless valves. Seeds numerous, rounded.

A south African genus with only one species introduced as an ornamental and now naturalized in many parts of the world.

**Aptenia cordifolia* (Linn.f.) N.E. Brown, *Journ. Bot. (London)* 66: 139. 1928; Tutin in Tutin et al, *Fl. Europ.* 1: 113. 1964; Keith, l.c. 244. (Fig. 3)

Mesembryanthemum cordifolium Linn. f., *Suppl.* 260. 1781; Durand & Barratte, *Fl. Lib. Prodr.* 98.1910; Pamp., *Pl. Trip.* 71.1914; Maire et Weiller, l.c. fig. 966; Keith, l.c. 667.

A prostrate-procumbent, succulent perennial, with \pm woody, up to 50-60 cm long, spreading, finely papillate stems from the woody root stock. Leaves with c. 1 cm long petiole; lamina broadly ovate, 1.8-2.5 x 1.5-2 cm, cordate at the base,

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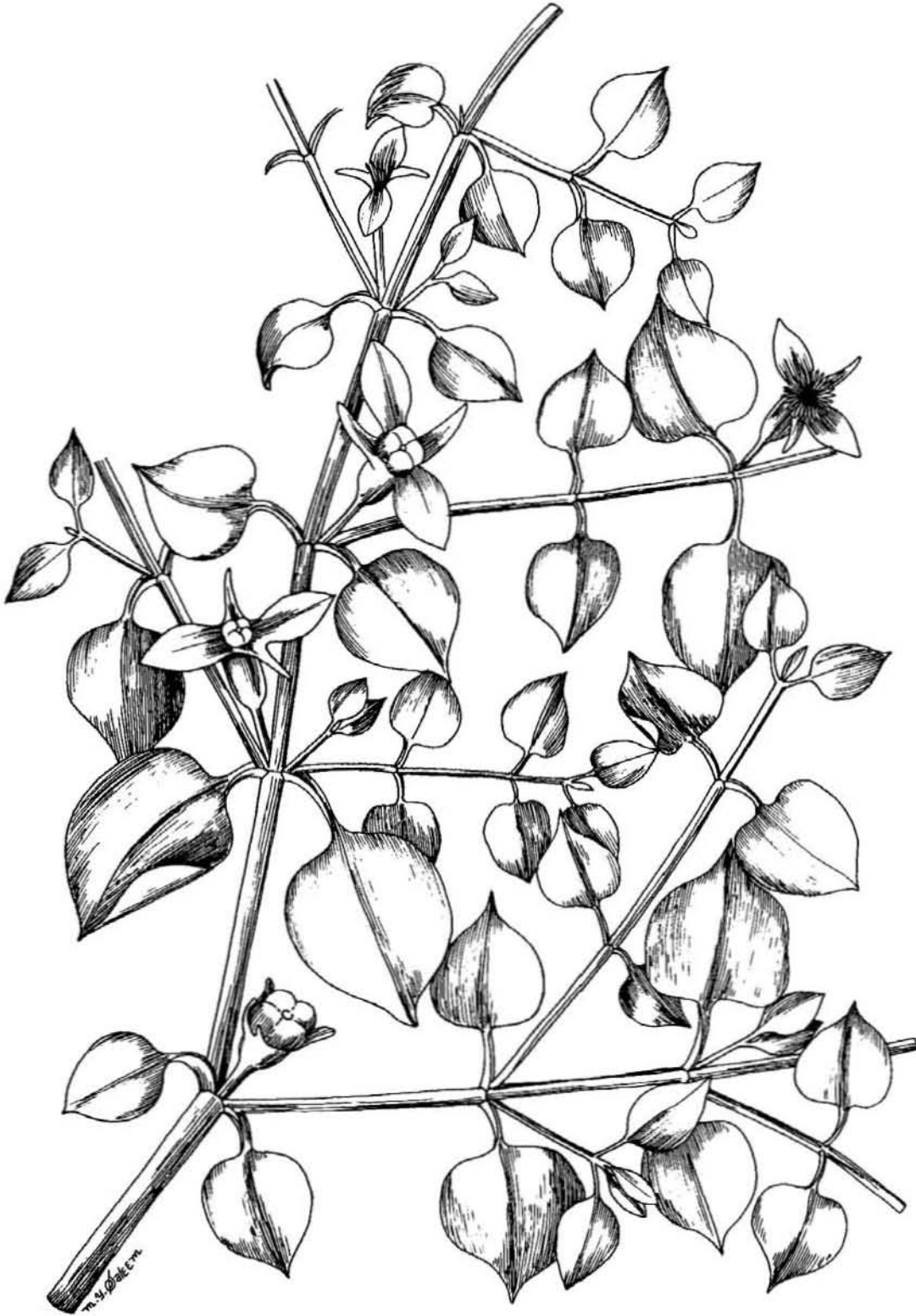


Fig. 3, *Aptenia cordifolia*; Flowering and fruiting branch x 1.

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entire, shortly acuminate-acute at the apex. Flowers axillary and terminal, solitary, pedicellate, purple, c. 1.5 cm across. Calyx tube obconical, 4-lobed, 2 large leafy and ovate-lanceolate, 2 smaller, \pm triangular, Staminales purple, linear, united at the base, shorter than the larger calyx lobes, Ovary obconical, partly free from calyx; stigmas white, sessile. Capsule partly enclosed in calyx. Seeds compressed, obovate, 1.5 x 1.25 mm, dark brown.

Type: Described from South Africa.

Reported to be cultivated in Tripoli by Pampanini (l.c.) and by Keith (l.c.) in Libya.

Distribution: A South African species, naturalized in S.Europe and parts of N.Africa along the coast of Mediterranean.

It is commonly grown in pots as an ornamental.

Fl. March-July.

5. MESEMBRYANTHEMUM

L., Sp.Pl.420.1753; Gen.Pl.ed.5.215.1754.

Mesembrynum Adans., Fam.Pl.2:242.1763; *Gasoul* Adans., Fam.Pl.2:243.1763;
Mesembryanthemum L.subgen. *Crypophytum* (N.E.Brown) Maire et Weiller in
Maire, Fl.Afr.Nord.8:254.1962.

Annual or perennial, prostrate herbs with large, glittering hyaline vesicle-like papillae or projections all over. Leaves alternate or opposite, all sessile or basal short petioled, fleshy, flat or \pm cylindrical. Flowers epigynous, white, red or yellow, solitary or cymose. Sepals 5, united into a turbinate, 5-lobed calyx tube adnate to the ovary. Petals absent. Stamens numerous, united in bunches and alternating with calyx lobes, anthers oblong; staminodes numerous, linear, united at the base, petaloid. Ovary pentacarpellary, syncarpous, inferior, 5-loculed, placentation parietal, stigmas 5, sessile, filiform. Fruit a pentagonel, 5-winged, \pm woody or hardened, apically depressed capsule dehiscent stellately by 5 valves. Seeds minute, not embedded in mucilage.

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A large genus of c. 350 species, mostly distributed on sandy coasts of Africa, Canary Islands, South Europe, Turkey and Middle East. Represented here by 3 species.

- | | | |
|----|---|---------------------------|
| 1. | + Leaves flat, spatulate-obovate to almost orbicular, 8-15 x 5-6 cm, undulate | 1. M. crystallinum |
| | — Leaves ± cylindrical, gradually narrowing towards apex | 2 |
| 2. | + Leaves less than 4 mm across | 2. M. nodiflorum |
| | — Leaves more than 5 mm across | 3. M. forskahlii |

1. **Mesembryanthemum crystallinum** L., Sp. Pl. 480. 1753; Durand & Barratte, Fl. Lib. Prodr. 98. 1910; Pamp., Pl. Trip. 72. 1914; Prodr. Fl. Cir. 186. 1931; Quezel & Santa, l.c. 1: 310; Maire et Weiller in Maire, l.c. 255. fig. 995; Keith, l.c. 667. (Fig.4,A-B).

Cryophytum crystallinum (L.) N.E. Brown in Phillips, Gen. S. Afr. Fl. Pl. 245. 1926.

Annual, procumbent, much branched herb, densely beset with glittering silvery crystal-like papillae, and up to 60 cm long spreading branches. Leaves flat, fleshy, opposite and short petioled towards base, alternate and sessile towards apices, spatulate-obovate to almost orbicular, 8-10 x 5-6 cm, margins undulate. Flowers solitary axillary or in 3-5-flowered terminal cymes, small, c. 2-3 cm across, whitish or light pink, pedicel c. 1 cm long. Calyx tube subglobose, 5-lobed, lobes unequal, 3 outer large, leafy, shortly acuminate, 2 inner broad ovate, obtuse with membranous margins. Staminodes linear-subulate, united at the base, longer than the sepals. Ovary conical. Capsule obovoid-subglobose, c. 1.2 cm in diameter, 5-angled, ± fleshy when unripe, stellate after dehiscence. Seeds compressed, somewhat circular-reniform to subdeltoid.

Type: Habitat in Africa?

A-2 Talil beach, c. 10 km from Sabrata, rocky slopes, common, fls. white, *S.M.H.Jafri* 6681 (ULT); **A-3** Leptis Magna, 4.3.1975 *S.I.Ali* & *S.A.Faruqi* 2559 (ULT); Leptus Magna, prostrate, stamens white, leaves thick fleshy covered with

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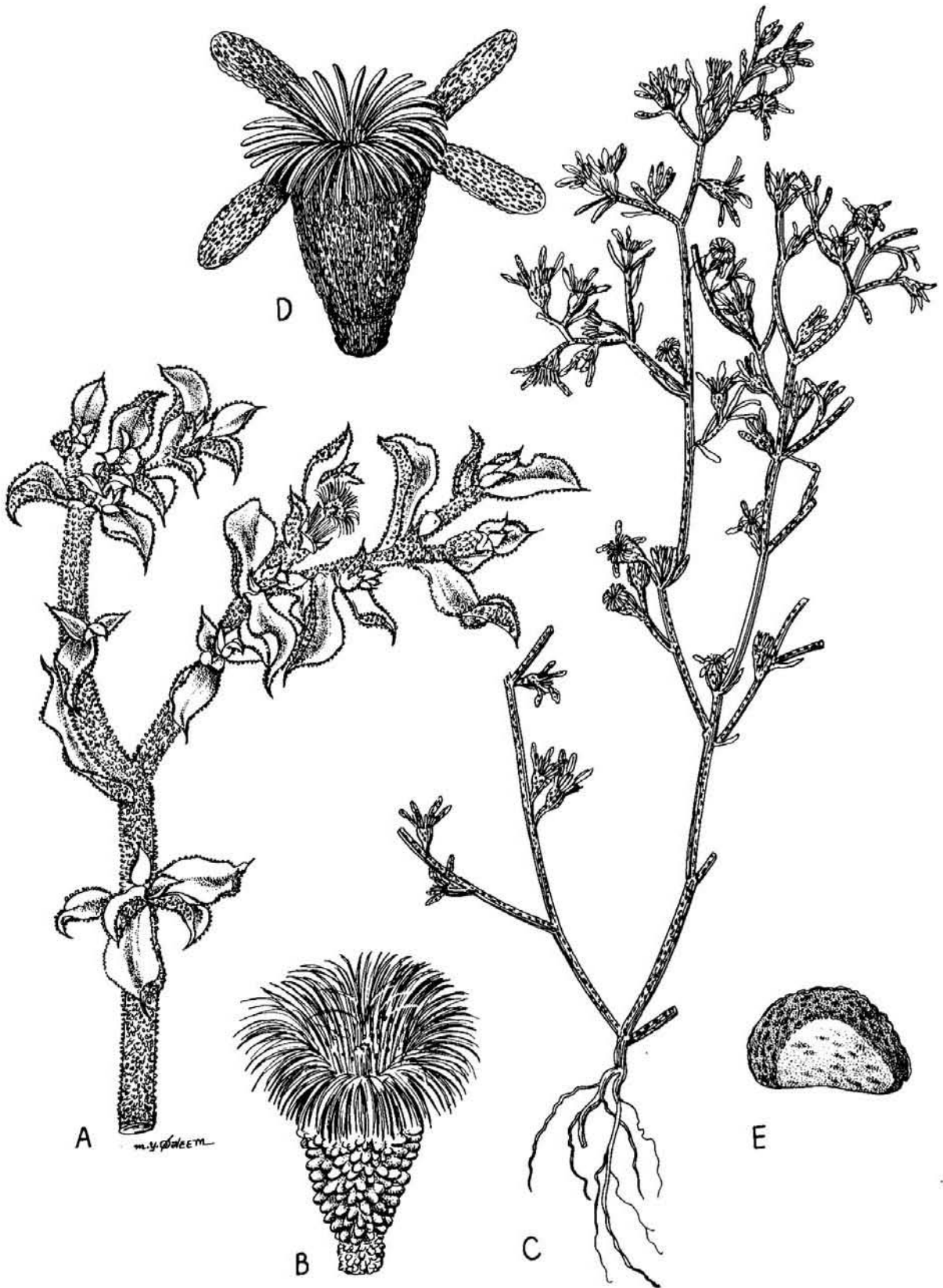


Fig. 4, *Mesembrianthemum crystallinum*: A, Flowering branch x 0.5; B, Flower x 1.5. *M. nodiflorum*: C, Habit x 0.5; D, Flower x 4; E, Seed x 25.

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shining white glands, 23.3.1972, *S.I.Ali* 55 (ULT); **B-6** Near Benghazi, subsaline and sandy ground, common, fruiting stage, 27.10.1975, *S.M.H.Jafri* 6165 (ULT); Deriana, c. 40 km from Benghazi, c. 200- 300 km from the sea, prostrate, petaloid stamens white, 16.6.1972, *S.I.Ali & S.A.Faruqi* 474 (ULT)

Distribution: South and North Africa, Canary Islands, Australia, South Europe.

Cultivated in many other countries, as an ornamental for its glittering leaves.

Fl. April-August *Vern.*: Lissan el homar; Rhassoul Kebir.

2. **Mesembryanthemum nodiflorum** L., Sp. Pl. 480. 1753; Durand & Barratte, l.c. 98; Pamp., Pl. Trip. 72. 1914; Prodr. Fl. Cir. 186. 1931; Maire et Weiller in Maire, l.c. 256. fig. 996. 1962; Keith, l.c. (Fig. 4, C-E).

Cryophytum nodiflorum (L.) Bolus in S. Afr. Gard. 17: 327. 1927

Annual, much branched, prostrate succulent herb, densely beset with shining hyaline silvery papillae and up to 30 cm long, cylindrical spreading branches. Leaves \pm cylindrical-semicylindrical, fleshy, opposite towards base, \pm alternate towards apices, sessile, oblong, 10-25 (-30) x 2-4 mm, narrowed and \pm amplexicaule at the base, apex obtuse, glaucous. Flowers axillary, leaf-opposed or terminal, solitary, c. 1.5-2 cm across, very shortly pedicellate, bibracteolate, yellowish-white. Calyx tube \pm turbinate, 5-lobed, lobes unequal, linear, obtuse, leafy. Stamens 15; staminodes linear, united at the base, white to yellow, shorter than sepals. Ovary 5-angled; stigmas 5, sessile. Capsule obovate-turbinate, c. 8 mm long. Seeds triangular, compressed.

Type: Described from Egypt and Naples, Herb. Linn. 649.1 (LINN).

A-7 c. 5 km from Susa on way from Shahat, prostrate, flowers white, 20.6.1972, *S.I.Ali* 773 (ULT); **A-8** Libya C: Timini to Omm Razem, 5-50 m, sandy wadis (flooded last autumn), annual, leaves semi-terete, flowers white, 30.3.1970, *P.H. Davis* 50258 (E; ULT); 60 km before Tobruk, stony ground, roadside, common, prostrate, 24.10.1975, *S.M.H.Jafri* 6059 (ULT); **B-1** Wadi Malah, c. 10 km from Nalut, prostrate, white flowers, 4.5.1972, *S.I.Ali & S.A.Faruqi* 688 (ULT); near Al Kararim, 8.3.1968, *L.Boulos* 1910 (ULT).

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Distribution: Canary Islands, coasts of Mediterranean, Syria, Sinai, Palestine and Arabia.

Common along the sea shore and salty marshes.

Fl. March-July *Vern.*: Rhassoul, Rhasul, Rhassoul Kebir.

3. **Mesembryanthemum forskahlii** Hochst. in Schimp., Pl. Arab. exs. ed. 2. 1832; Maire, l.c. 260.

M. geniculiflorum Forssk., Fl. Aeg.-Arab. 98.1775 - non Linn.; *Opophytum forskahlii* (Hochst.) N.E. Brown, Gard. Chron. 84. 253. 1928.

Annual, dichotomously branched, papillose, erect herb. Leaves opposite, sessile, subterete to terete, fleshy, 15-20 x 5-10 mm, gradually narrowing from amplexicaule base towards obtuse apex. Flowers solitary, in dichotomies of stem and terminal, c. 1.5 cm across, shortly pedicellate, 2-bracteolate, white. Calyx tube pyriform, 5-lobed, lobes unequal, 2 larger ones terete and leafy. Stamines white, much longer than calyx lobes. Ovary semi-inferior, much swollen, club-shaped, 5-angled; stigmas 5, sessile. Capsule club shaped, c. 8-10 mm long. Seeds brown, compressed, \pm deltoid, c. 0.75 mm long.

Reported from C-4 Sokna by Trotter (Fl. Econ. Lib.) and Maire (l.c.) has reported a specimen collected by Zuffardi from Tripolitania.

Distribution: Arabia, Egypt and Libya.

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A.canariense L. 3
A.hispanicum L. 6
Apetnia N.E.Brown 10
A.cordifolia (L.f.) N.E. Brown 10
Carpobrotus N.E.Brown 7
C.edulis (L.) N.E. Brown 7
C.acinaciforme (L.) E. Bôris 9
Cryophytum crystallinum (L.) N.E. Brown 13
C. forskahlii (Hochst) N.E. Brown 16
C. nodiflorum (L.) Bolus 15
Gasoul Adans. 12
Glinus crystallinus Forsk. 3
Mesembryanum Adans. 12
Mesembryanthemum L. 12
M.subgen. Aptenia (N.E.Br.) Maire et Weiller 10
M. subgen. carpoprotus (N.E. Brown) Maire et Weiller 7
M. subgen. Cryophytum (N.E.Br.) Maire et Weiller 12
M.acinaciforme L. 9
M.cordifolium L.f. 10
M.crystallinum L. 13
M.edule L. 7
M.forskahlii Hochst 16
M.nodiflorum L. 15
Trianthea govindia Buch.-Ham. ex G. Don 3
T. pentandra L. 3
Zaleya Burm.f. 2
Z.pentandra (L.) Jeffrey 2
Z.govindia (Buch.-Ham.ex G.Don) Nair. 3