AL FAATEH UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF BOTANY

FLORA OF LIBYA

10

20th. February, 1977

Editors:

S.I. ALI & S.M.H. JAFRI
Al Faateh University,
Faculty of Science,
Department of Botany, Tripoli.

MALVACEAE

by S. I. ALI

Illustrations by
Sami MAKAR

Fl.Lib.10:1-30.1977

MALVACEAE

S.I.ALI

Herbs, shrubs or trees, often mucilaginous, with at least some stellate hairs. Leaves alternate, simple, often palmately lobed, stipulate. Inflorescence racemose or cymose or flowers solitary. Flowers bisexual, actinomorphic. Epicalyx usually present. Sepals 5, gamosepalous, valvate. Petals 5, free or slightly united at the base, twisted. Stamens many, monadelphous; staminal tube enclosing the style; filaments free at the tip, each bearing a monothecous anther. Pollen grains echinulate. Pistil (2-) 5-many carpellary, usually in simple whorl, syncarpous, (2-) 5 to multilocular; placentation axile; styles free or united; stigmas as many or twice as many as the number of carpels. Fruit usually a schizocarp or a loculicidal capsule.

A family with about 80 genera and nearly 2000 species, distributed in the tropical and temperate regions of the world. In Libya, it is represented by 3 wild and 7* exotic genera.

1.	+ Epicalyx segments 6-9, rarely more	1. **Althaea**
	— Epicalyx segments 2-3	2
2.	+ Epicalyx segments free	2. **Malva**
	— Epicalyx segments connate at the base	3. **Lavatera**

1. ALTHAEA

L.,Sp.Pl.686.1753; Gen.Pl.ed.5.307.1754.

Annual or perennial stout herbs. Leaves simple, palmately lobed. Inflorescence a raceme or panicle. Flowers pedicellate. Epicalyx segments 6-9, united at the base. Petals obovate, entire or emerginate, up to 16 mm long. Staminal tube terete, hairy, anthers brownish purple. Pistil multicarpellary, multilocular; each carpel (locule) uniovulate; stigmas filiform. Fruit a schizocarp, mericarps indehiscent, 1-seeded.

A genus with 12 species, distributed in Africa, Asia and Europe; only two species are reported from Libya.

* See Appendix A for a key to cultivated members of this family found in Libya.

+ Flowers axillary, solitary; calyx 1.5 cm long; mericarps 10-15	1. **A.hirsuta**
— Flowers axillary, clustered in leafy spike-like racemes above; calyx 7-10 mm long; mericarps 9-10	2. **A.ludwigii**

1. **Althaea hirsuta** L.,Sp.Pl.687.1753; Boiss.,Fl.Or.1:824.1867; J.Cullen in Davis, Fl.Turk.2:420.1967; Tutin in Tutin *et al,* Fl.Europ.2:253.1968.

Annual, up to 60 cm tall, whole plant hirsute, hairs mostly simple, rarely stellate. Leaves 1-4 x 1.5-4 cm; lower leaves long petioled, cordate-orbicular, crenate or dentate becoming more deeply lobed above; upper leaves almost sessile, palmately 3-5-lobed; lobes linear, dentate or serrate. Stipules 5-8 mm long, entire, hairy. Flowers solitary, axillary. Epicalyx segments shorter or nearly as long as the calyx, accrescent. Calyx c. 1.5 cm long, accrescent, hirsute. Petals pink, white or violaceous, c. 1.5 cm long. Mericarps 10-15, glabrous, transversely rugose.

Syntypes: Described from France, Italy and Spain, Hort. Cliff. (BM); Herb.Linn.868/3 (LINN).

A-7 Wadi Kauf, *H.N.Le Houerou* 250365 (MPU).

Distribution: Southern Europe, N.Africa and S.W.Asia.

A species confined to the Gebel Akhdar area in Libya.

2. **Althaea ludwigii** L.,Mant.Pl.98.1767; Boiss.,Fl.Or.1:824:1867; Tackh., Stud. Fl. Egypt. ed. 2.353.1974.

Malva aegyptia L. subsp. *iljinii* Pamp. in Arch. Bot. (Nuova Ser.2) 12:37.1936. **syn.nov.**

Annual to perennial, decumbent herb, up to 60 cm long, pilose, hairs appressed and spreading. Leaves simple; petiole up to 5.5 cm long; lamina palmatisect, bigger lobes 3-4, up to 3.7 cm long, with smaller ± rounded lobes towards the tip, stellately pubescent, sometimes glabrous above. Flowers in

clusters, 1-many in the axil of each leaf. Epicalyx segments 7-10, c. 7 mm long, densely stellate-pubescent, hairs long. Calyx 6-10 mm long, densely stellate-pubescent, markedly accrescent in fruit. Corolla whitish or pink, petals 5-6 mm long, entire or retuse. Staminal tube hairy below. Fruit 6-8 mm across, mericarps 9-10, glabrous, lateral faces wrinkled.

Type: "Habitat in Sicilia, *D.Schreber*".

A-7 Sidi Omar Hagfet el-Bdehi, 24.3.1933, *R.Pampanini* 4938 (FI); Testata dell'Uadi el-Mrah, 22.3.1933, *R.Pampanini* 4937 (FI); Bir Tengheder a sud di el-Mechili, 21.3.1933, *R.Pampanini* 4936 (FI, MPU).

Distribution: N.Africa, Egypt, Palestine, Jordan, Iraq, Iran, Afghanistan, Pakistan and Russia.
Fl.Per. March-May.

2. **MALVA**
L.,Sp.Pl.687.1753; Gen.Pl.ed.5.308.1754.

Herbs. Stem hairy. Leaves subentire to palmately lobed. Epicalyx segments 2-3, free, linear to ovate or oblong. Petals emarginate or 2-lobed, purple, pink or white. Fruit a schizocarp, mericarps many, 1-seeded, indehiscent.

A genus with c. 40 species, mainly distributed in the north temperate region. In Libya it is represented by 5 species.

1.	+	Lower flowers solitary in the leaf axil or flowers in terminal clusters	1.**M.aegyptia**
	—	Lower flowers in groups in each leaf axil	2
2.	+	Dorsal face of ripe mericarps smooth or only faintly ridged, (petals c. 7 mm long)	2.**M.verticillata**
	—	Dorsal face of ripe mericarps distinctly reticulate	3
3.	+	Flowers 1.5-2.5 cm across. Petals 12-30 mm long	3.**M.sylvestris**
	—	Flowers c. 1 cm or less across. Petals 12 mm or less long	4

4.	+	Petals 10-12 mm long, staminal tube with numerous hairs, fruiting pedicels usually more than 10 mm long, angles of mericarps not winged	4.**M.nicaeensis**
	—	Petals 4-5 mm long, staminal tube subglabrous, fruiting pedicels usually less than 10 mm long, angles of mericarps winged	5
5.	+	Flowers usually in compact fascicles. Fruit 3-5 (-7) mm across; fruiting calyx enlarged; mericarp prominently winged	5a. **M. parviflora** var.**parviflora**
	—	Flowers 1-2, rarely more in loose fascicles. Fruit 2-3 mm across; fruiting calyx less enlarged; mericarp only slightly winged	5b. **M. parviflora** var.**microcarpa**

1. **Malva aegyptia** Linn.,Sp.Pl.690.1753; Durand and Barratte,Fl. Lib. Prodr.49.1910; Ozenda,Fl.Sahara Sept.Centr.328.1958 (**M.aegyptiaca**); J.Cullen in Davis, l.c. 406; Dalby in Tutin et al, l.c. 250; Keith,Prelim.Check List Lib.Fl.638.1973 (including vars.); Tackh, Stud.Fl.Egypt,2nd.ed.349.1974. (Fig.1).

Malva aegyptia Linn.subsp. *leiocarpa* Iljin in Fedtschenko, Not.Syst.Herb.Petrop.4:26.1923; Pamp.,Prodr.Fl.Ciren.317.1931.

Annual, erect to decumbent herb, up to 35 cm long strigose branches with stellate hairs. Petiole up to 3.5 cm long, lamina suborbicular in outline, deeply dissected into narrow lobes, hairy on the lower surface, hairs simple; stipules 5-8 mm long. Flowers solitary in the leaf axils or apparently in terminal clusters, but after the elongation of the axis, mostly a single flower on an elongated peduncle, in the axil of the leaf. Peduncle (in fruit) up to 6.2 cm long. Epicalyx segments 2, linear, 5-8 mm long. Sepals 7-11 mm long, triangular-ovate, acuminate, strigose at the base and the margin. Petals c. 7-11 mm long, lilac, glabrous; staminal tube pubescent. Mericarps glabrous, lateral sides transversely ridged, dorsal face flat.

Type: Described from Egypt.

A-2 Al Awenia, c.7 km from Rumia, near barley field, prostrate, flowers light violet, 11.4.1974, *S.I.Ali* 2042 (ULT); El Asaba, 9.4.1974, *Gassem H.Faris* (ULT); **A-3**

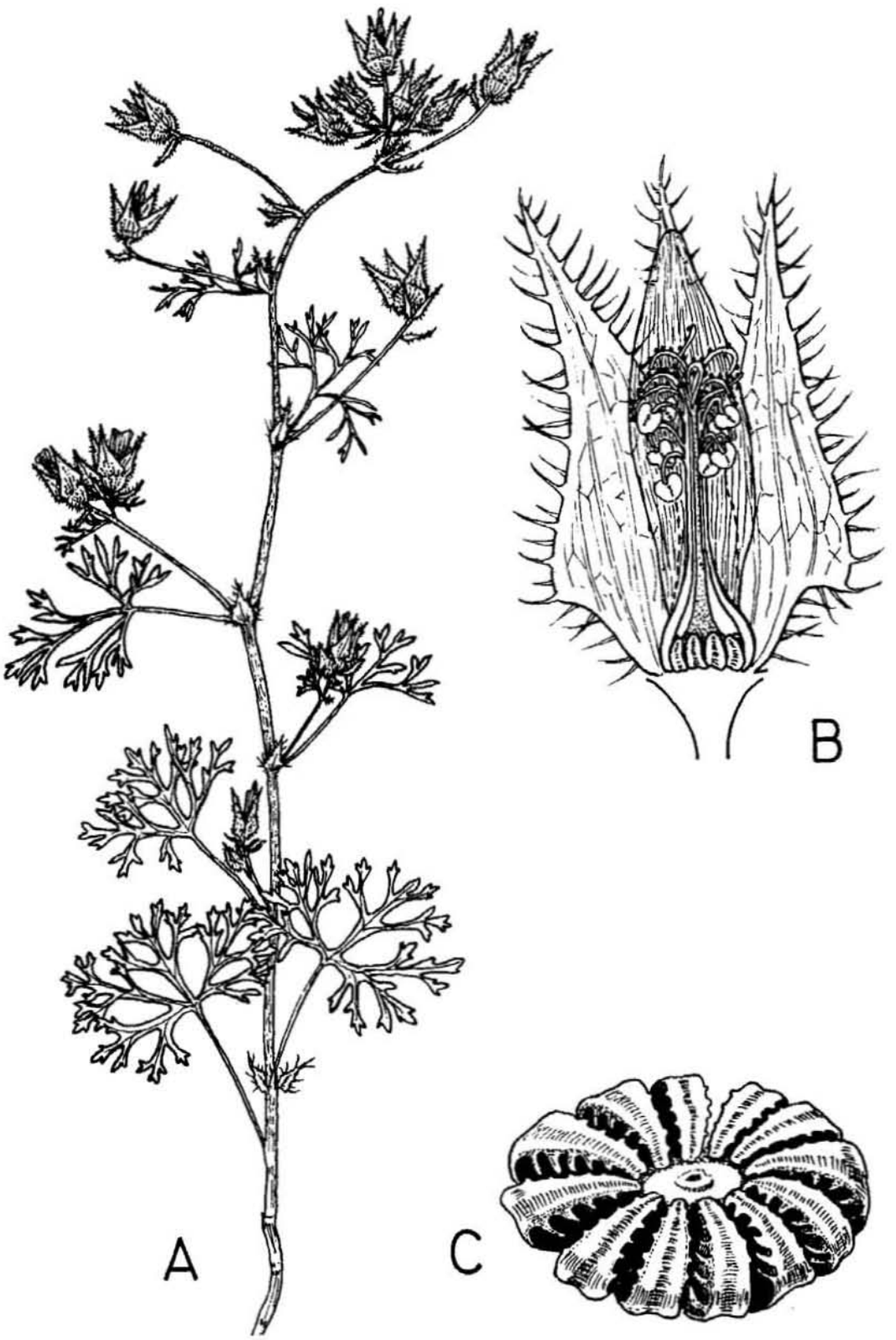


Fig.1 *Malva aegyptia:* A, Habit x 1; B, L.S. Flower x 7; C, Fruit x 10.

Tarhuna, Uadi Tersiva, Ras Maader, 1.4.1913, *R.Pampanini* 2033 (FI); **A-6** Tra Benghazi e Agedabia Sidi Ahmed el-Magrum, 7.4.1934, *R.Pampanini e R.Pichi-Sermolli* 4919 (G); **A-6** Benghazi, 7.1.1883, *G.Ruhmer* (P); Gebel Akhdar, Al-Bakur, near Tocra, 10.3.1968, *L.Boulos* 2099 (ULT); Qaminis-Benghazi Road, 9.3.1968, *L. Boulos* 1985 (ULT) in dumetis supra Barcem solo calcareo, 400 m, 21.4.1938. *R.Maire et M.Weiller* 309 (MPU); downland of altipiano near El Abiar, c. 300 m, 2.4.1939, *N.Y.Sandwith* 2278 (K); around El Abiar, 50-60 km E of Benghazi, 300 m, cornfields, annual, flowers pale-pink, 24.3.1970, *P.H.Davis* 49935 (E); **A-7** Below ruins of Shahat, 500-600 m, rocky limestone gulley, annual, flowers pink 26.3.1970, *P.H.Davis* 50021 (E;ULT); Solonta to Marawa (S.road from Derna to El Merj, 750 m, annual, flowers mauvish pink, 1.4.1970, *P.H.Davis* 50560 (E;ULT); Wadi Wardama near Beyda Litorea, Derna Province, 6.4.1939, *N.D.Simpson* 39392 (BM); Wadi Kuf, 1.4.54, *K.M.Guichard* KG/CYR/56 (BM); in dumetis inter Karmous et Tecnis, solo calcareo, 500 m, 26.4.1938, *R.Maire et M.Weiller* 311 (MPU); Al-Tamimi, S E Derna, 13.3.1968, *L.Boulos* 2299 (ULT); Wadi Derna, 14.3.1968, *L.Boulos* 2449 (ULT); Wadi Mahbool, coastal road from Beda to Derna, 1.3.1973, *S.I.Ali & S.A.Faruqi* 1150 (ULT); **A-8** Al-Tamimi, S E Derna, 13.3.1968, *L.Boulos* 2299 (ULT). Tamimi to Omm Rezem, 5-50 m, sandy wadis (flooded last autumn), annual, 30.3.1970, *P.H.Davis* 50290 (E, ULT); Mirsa Tobruk, 3-7 April 1883, *G.Schweinfurth* 3(P); Tobruk, 23.3.1933, *R.Pampanini* 4899 (FI); **B-2** Aboujian, 2 km before Kaleba, 8.4.1974, *S.El-Jaley* (ULT); 60 km S.E. of Giado, 675 m, sandy hammada, prostrate, annual, 18.3.1970, *P.H.Davis* 49618 (E, ULT); Kaleba, c. 30 km from Garian, barley field, sandy soil, flowers light violet, 10.4.1974, *S.I.Ali* 1893 (ULT); Gebel Nefousa, 39 KM FROM Giado to Yefren, 650 m, barley fields on sandy soil, 18.3.1970, *P.H.Davis* 49714 (E); **B-4** 25 km W.Syrte, 8.3.1968, *L.Boulos* 1940 (ULT); Gulf of Sirte, between Misurata and Bu-Gren, 20 m, poor sandy barley field in sebkha 23.3.1970, *P.H.Davis* 49869 (E); 60 km. N.W. ab appido Bouerat, 16.4.1938, *R.Maire et M.Weiller* 308 (MPU); **B-6** Tra Agedabia e Antelat a Bag Lia, 10.4.1934, *R. Pampanini e R.Pichi-Sermoli* 4927 (K).

Distribution: Libya, W.Mediterranean area and S.W.Asia.

Fl.Per. March-April. *Vern.* Kabbes, Kabbez, Khobaiza, Khoubbiza, Khubbayzah, Kobes.

2. **Malva verticillata** L.,Sp.Pl.689.1753; D.H.Dalby in Tutin *et al,* Fl. Eur. 2:251.1968; S.Hu, Fl. China, Malvaceae, 5.1955.

Annual, usually densely stellate-pubescent to glabrescent; stems ascending or decumbent. Leaves simple, petiolate, reniform to orbicular with 5-7 lobes, margin crenate to dentate. Flowers in clusters of 3-6. Epicalyx segments shorter than sepals, linear to ovate-oblong. Sepals triangular-ovate, c. 4 mm long, strongly accrescent. Petals c. 7 mm long, not more than twice as long as sepals, pubescent or glabrous. Staminal tube subglabrous. Fruiting pedicels less than 10 mm long. Mericarps pubescent, smooth or only faintly ridged.

Type: Described from China, Syria.

A-8 Cyrenaica, Timimi to Omm Rezem, 5-50 m, sandy wadis (flooded last autumn), annual, ascending, 30.3.1970, *P.H.Davis* 50279 (E).

Distribution: A native of China, cultivated as a salad plant, widely naturalized in Europe and elsewhere.
Fl.Per. March-May. *Ver.* Khobbaze

3. **Malva sylvestris** L., Sp.Pl.689.1753; Durand and Barratte, l.c. 49.1910 (including vars.); Pamp., Prodr.Fl.Cir.318.1931 (including vars.); J.Cullen in Davis, l.c. 406; Dalby, in Tutin et al, l.c. 250; Keith, l.c. 639.1974 (including vars.).(Fig. 2).

Biennal to perennial, erect to decumbent, woody at the base. Stem hairy, hairs tuberculate and stellate. Petiole up to 13 cm long, lamina variable, suborbicular cordate to reniform, up to 4.5 x 6.5 cm, glabrous or hairy on both the surfaces, hairs simple and stellate, 3-7-lobed, crenate. Stipules up to 7 mm long. Flowers 1-4 in the axil of the leaf. Pedicel up to 2.5 cm long. Epicalyx segments 4-5 mm long. Spelas 6-8 mm long, stellate pubescent, teeth broadly triangular. Corolla 12-30 mm long, pink to purple, with darker veins, emarginate. Mericarp glabrous or hairy, rugose. 2n=42.

Type: Described from Europe, Herb Linn.870/22 (LINN).

A-2 Mangh el Bahar, 2 km before Kleaba, cult.field, sandy soil, common, flowers violet, 8.4.1974, *S.I.Ali* 1680 (ULT); Saffet, 13 km after Yafran, 9.4.1974, *A.M.Abdelrazig* 152 (ULT); Tagrenna, 5 km north of Yafran, 9.4.1974, *M.Godeh*

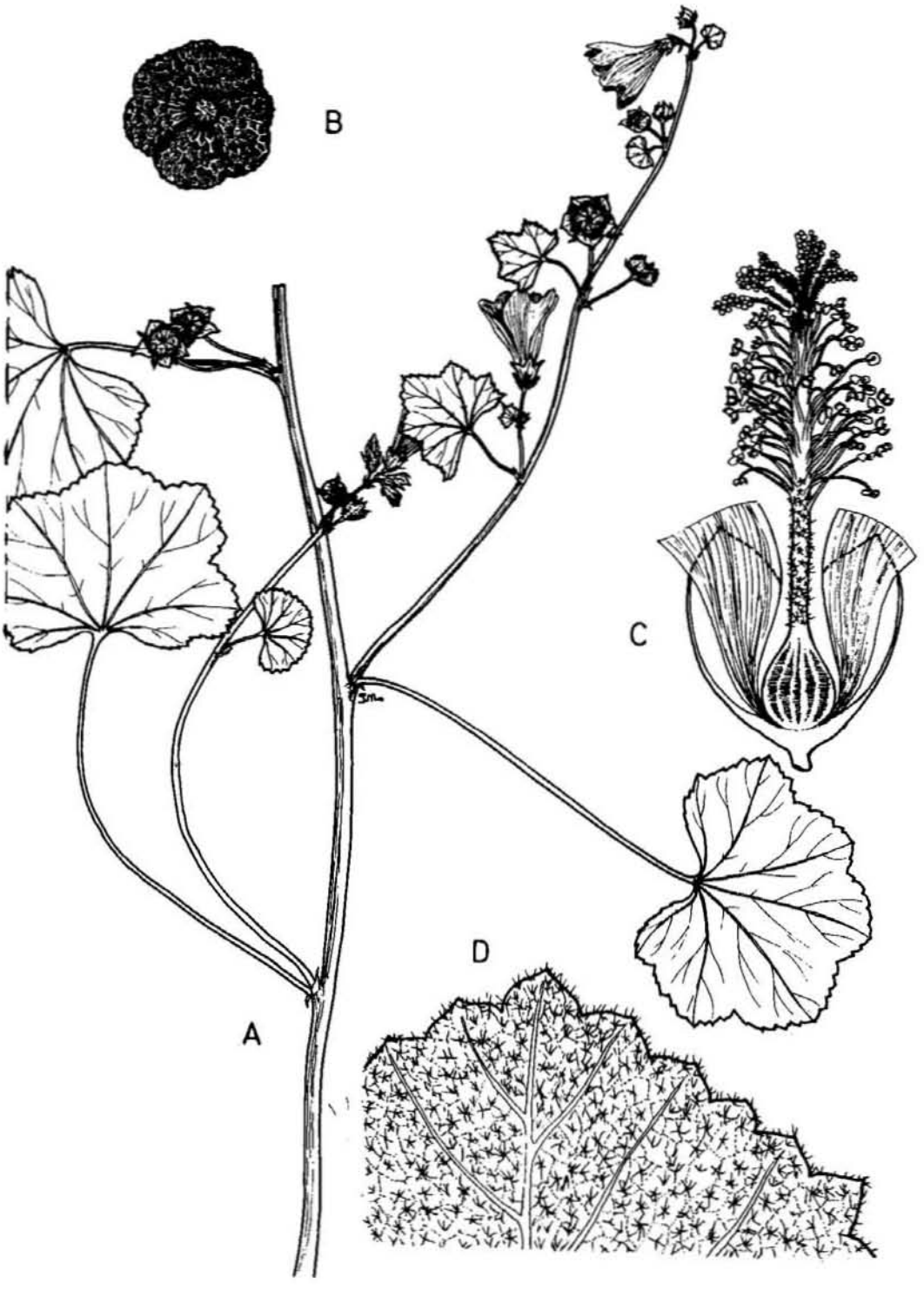


Fig.2 *Malva sylvestris:* A, Flowering and fruiting branch x 1/2; B, Fruit; C, Androecium and Gynoecium x 5; D, part of lower surface of leaf x 5.

(ULT); T:Gebel Nefousa, Rhnem-Iefren, 300 m, edge of field, flowers pink, 15.3.1970, *P.H.Davis* 49527 (E); **A-3** Garian, course sandy soil, 12.4.1974, *M.Godeh* 275 (ULT); between hill and Garian town, 3 km from hill towards Garian, 13.4.1973, *S.A.Faruqi* (ULT); 16 km, Wadi Majanin, dam road, 20.3.1974, *S.El-Juley* 46 (ULT) Abugilan mountain valley, among stones, prostrate-procumbent, flowers violet-pink, 17.3.1973, *S.I.Ali* 1671 (ULT); Janduba, c. 13 km from Garian, roadside, loamy soil, near cultivated field, prostrate, flowers pink-violet with darker veins, 17.4.1973, *S.I.Ali* 1585 (ULT); Ghiran, 1400 m, 10.4.1886, *A.Letourneux* (P); Bugheilan, common weed, Azizia plain, up to 2 ft, 30.3.1952, *K.M.Guichard* KG/LIB/309 (BM); Tarhuna, Uadi Msaaba a Kasr Doga, 18.3.1913, *R.Pampanini* 860 (FI); Mascellata, Cussabat, nelle messi, 10.4.1913, *R.Pampanini* 2663 (FI); Djabal Nefusa etwa 28 km sudlich von Garyan, um 600 m MH (Tripolitanian), 29.5.1955, *W.Meckelein* M 23 f (B); Ain Zara, 6.4.1886, *A.Letourneux* (P); **A-6** Benghasi, 1.1883, *G.Ruhmer* (P); Benghazi, 3.3.1916, *V.Zanon* (FI); near Benghazi, 26.2.1952, *Fletcher* 16 (BM); desert near Tocra, erect, 15.4.1939, *N.D.Simpson* 39621 (BM); **A-7** Ruins of Cyrene (Shahat), 600-650 m, among ruins of sanctuary, annual, flowers purple, 26.3.1970, *P.H.Davis* 50080 (E); Cirene (Shahat), 28.4.1926, *V.Giannattasio* (FI) near Sidi Ahmed el Magrun, in barley cultivation, 1.4.1939, *N.D.Simpson* 39157 (BM); near Slonta (S.road from Derna to El Marj (Barce), 850 m, Phrygana and weedy places, annual, flowers mauve, 1.4.1970, *P.H.Davis* 50542 (ULT,E); Derna, gennaio-aprile 1912, *M.Longa* (FI); **A-8** Tobruk costa sud marginibus agrorum, 1.3.1913 et 12.2.1914, *A.Vaccari 139 (FI)*; **B-4** Syrte, on sand dunes, among *Retama*, 20.4.1939, *N.Y.Sandwith* 2706 (K).

Distribution: N.Africa to S.W.Asia, W. Europe.

Fl.Per. March-May. *Vern.* Hobbess, Khubbez, Khobbaze.

4. **Malva nicaeensis** All.,Fl.Pedem.2:40.1785; Durand and Barratte, Fl.Lib.Prodr.49.1910; Pamp.,Prodr.Fl.Cir.319.1931; J.Cullen in Davis, Fl.Turk.2:406.1967; Dalby, in Tutin et al, Fl.Eur.2:251.1968; Keith, Prelim.Check List Lib.Fl.639.1974.(Fig.3).

Annual or biennial, stem erect or ascending, strigosely hairy with simple hairs. Stipules c. 3 mm long, hairy on the margin; petiole up to 4 cm long; lamina suborbicular, often 3-5-lobed, crenate, up to 2.5. x 3 cm, glabrous to hairy above, sparsely hairy below. Epicalyx c. 3 mm long. Calyx 3.5-4 mm long, pubescent, teeth broadly triangular, c. 2 mm long; enlarging in fruit. Petals 8-12 mm long,

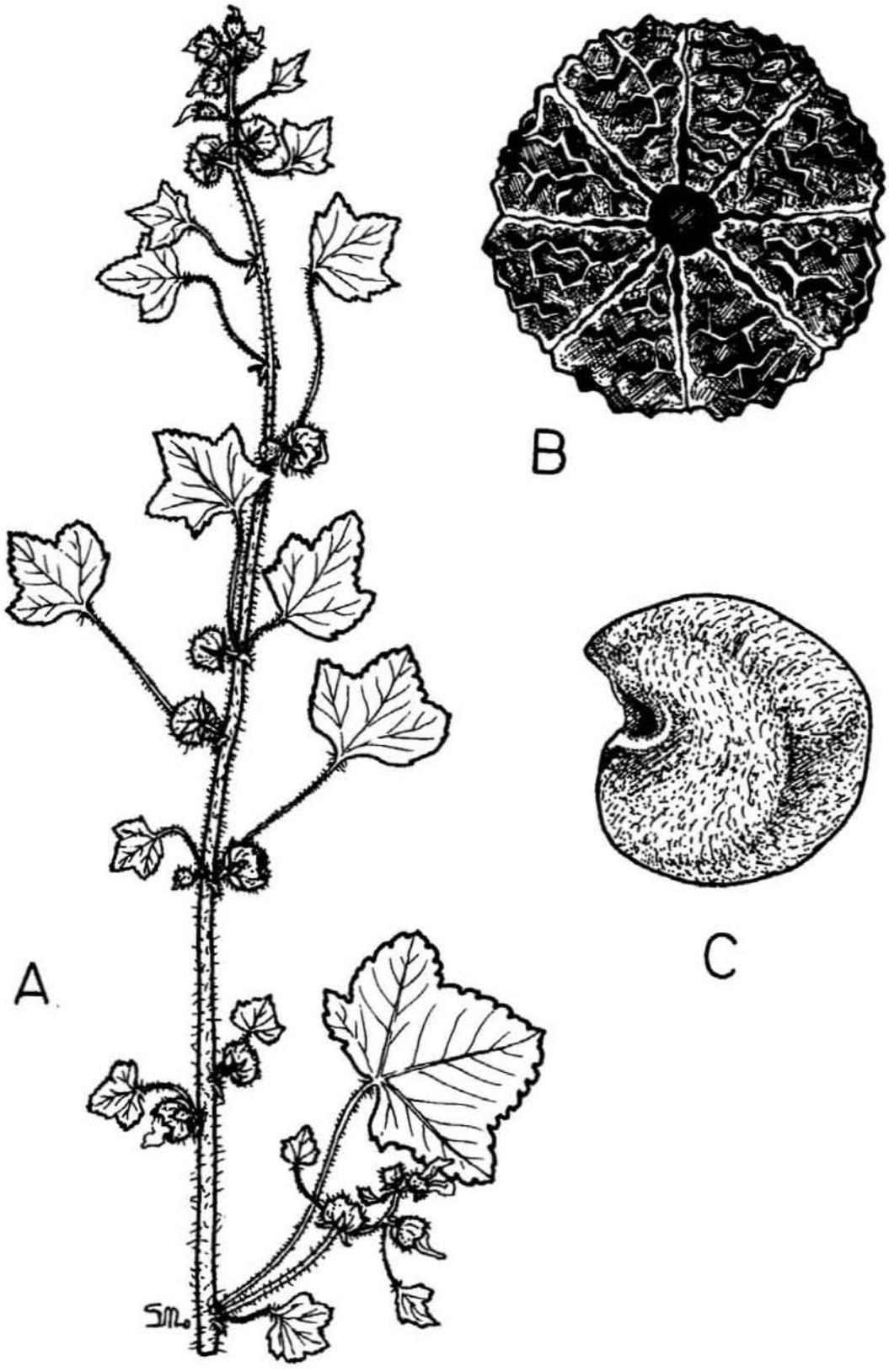


Fig.3 *Malva nicaeensis:* A, Flowering and fruiting branch x 1; B, Fruit x 10; C, Seed x 20.

white, violet to lilac-pink. Mericarps hairy or glabrous, reticulate, adjacent margins smooth.

Type: Described from Nice (France).

A-6 Benghazi, 1.1883, *G.Rulmer* (P); Zawia-tul-Qasur, between El Marj and Taknes, prostrate, flowers white, 17.6.1972, *S.I.Ali 521 (ULT);* **A-7** Baiada, c. 55 km from Beda, towards El Marj (northern road), roadside, prostrate, flowers light violet, 23.6.1972, *S.I.Ali* 883 (ULT); Susa (Apollonia) sandy ground with small stones, prostrate, flowers white, 20.6.1972, *S.I.Ali* 783 (ULT); Susa (Apollonia), sandy ground with small stones, flowers violet, 20.6.1972, *S.I.Ali* 801 (ULT).

Distribution: N.Africa, S.Europe, Russia (Crimea, Transcaucasia), Syria, Arabia, Iran, Afghanistan and Pakistan.
Fl.Per. April-June. *Vern.* Khobbaze.

5. **Malva parviflora** Linn.,Demonstr.Pl.18.1753; Durand and Barratte, 50; Pamp.,l.c. 319; Ozenda, l.c. 328; J.Cullen in Davis,l.c. 407.1967; Dalby in Tutin et al, l.c. 251.1968; Keith, l.c. 639.1974; Täckh.,l.c. 349.1974.(Fig.4).

a) var. **parviflora**

Annual, prostrate, procumbent to erect, stem sparsely stellate-pilose. Petiole up to 11.5 cm long, lamina suborbicular-cordate, up to 3 x 5 cm, shallowly 5-7-lobed, crenate, sparsely pilose below, sparsely pilose to glabrous above, hairs stellate. Flowers borne in fascicles in leaf axils, pedicels variable in size. Epicalyx segments 4-5 mm long, linear to lanceolate. Sepals orbicular-dentate, pubescent, accrescent in fruit. Petals 4-5 mm long, white to light lilac blue. Staminal tube subglabrous. Fruits (3-) 3.5-5 (-7) mm across. Mericarps glabrous or pubescent, strongly reticulate, adjacent margins winged.

Type: Described from Barbary, Herb.Linn.870/17 (LINN).

A-2 Goddaim, c. 35 km from Tripoli, procumbent, weed of orange orchard, common, flowers white, slightly bluish on drying, 19.5.1972, *S.I.Ali* 430 (ULT); Eloninia, 30 km from Garian, rocky habitat, prostrate, 10.4.1974, *M.Godeh* 184 (ULT); Wadi Latal, roadside sand, common, prostrate, flowers white, 4.5.1972, *S.I.Ali* 243 (ULT); **A-3** Tripoli University, barley field in front of the Faculty of

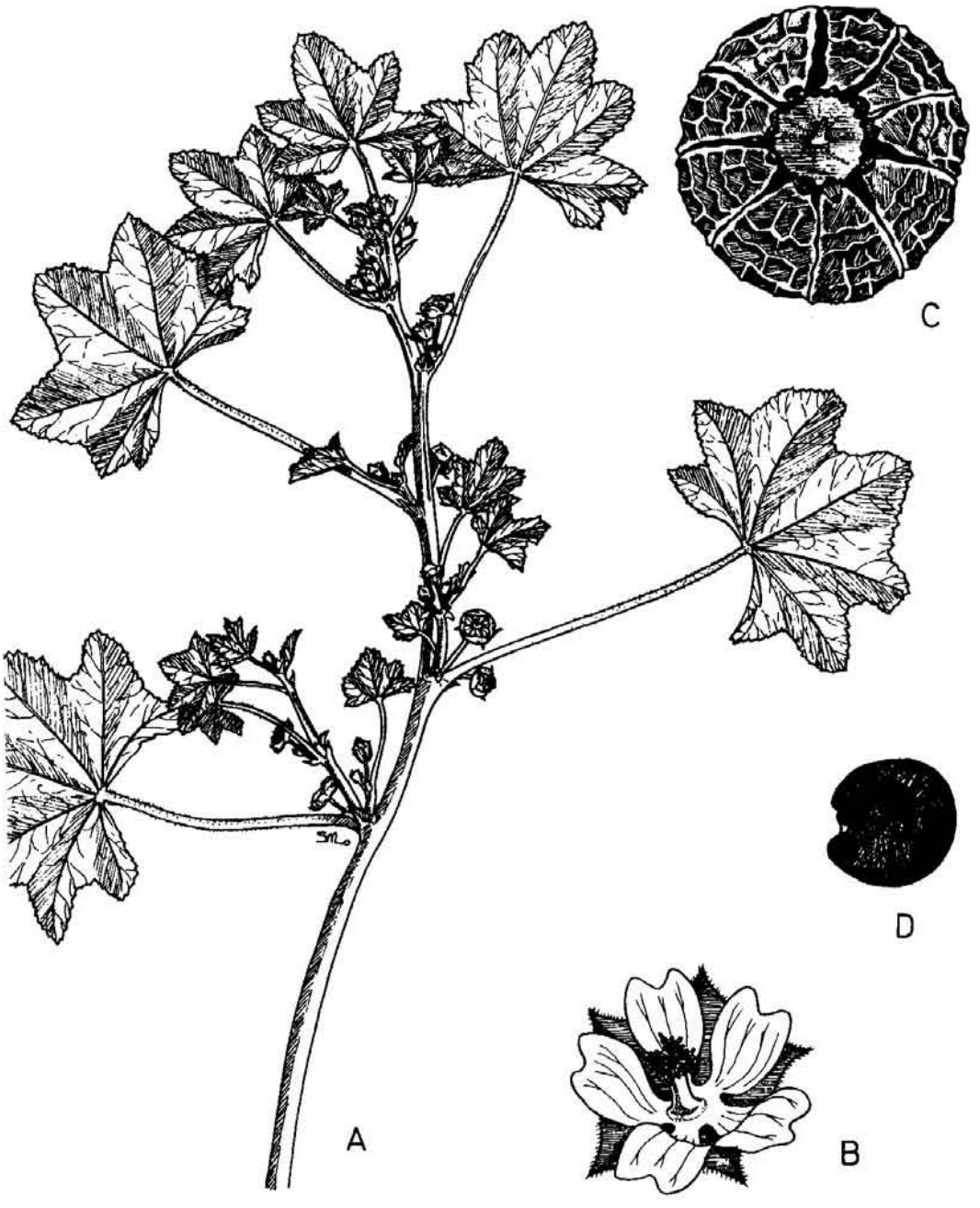


Fig.4 *Malva parviflora:* Fl A, Flowering and fruiting branch x 1/2; B, Flower x 3.5; C, Fruit x 5; D, Seed x 7.5.

Science (El Farnaj), flower violet, 6.3.1974, *Gossem H. Faris* 40 (ULT); Circa Tripoli, 9.4.1886, *A.Letourneux* (P); Garian, Kasr Garian, 26.4.1913, *R.Pampanini* 3893 (FI); Bugheilan, 30.3.1952, *K.M.Guichard* KG/LIB/307 (BM); Tarhuna, Abiar Milgah sul Ras Ter, 19.3.1913, *R.Pampanini* 1179 (FI); Garian, Orben, Suk Itnin, 200 m, 24.5.60, *Khalifa & Karamanli* 662 (K); **A-4** W. of Misurata, open shade in sparse scrub land, sand, prostrate, just above sea level, 19.2.1966, *J.C.Archibald* 905 (E); **A-6** Benghazi, 21.3.1916, *V.Zanon* (FI); Benghazi, 1.1883, *G.Ruhmer* (E,G,P); Merg, El Gharib, 26.3.1922, *A.Mangini* (FI); Merg, Piana a S. di Merg, 22 marzo 1922, *A.Mangini* (FI); **A-7** Cirene, es-Sneibat, 11 maggio 1922, *A.Mangini* (FI); Derna, viavaio di Derna, primavera 1922, *A.Mangini* (FI), **B-4** Kabila Forgian, Sirte, 50 ft,6.2.61, *Khalifa el Karamanli* 859 (K); Gulf of Sirte, nr. Buerat el Hsun, 20 m, waste ground, annual, flowers mauve, 23.3.1970, *P.H.Davis* 49837 (E); 25 km W Syrte, 8.3.1968, *L. Boulos* 1943 (ULT); **E-3** Mourzouk, 29.4.1953, *K.M.Guichard* (BM).

Distribution: Libya, Mediterranean area, Syria, Arabia, Iran, Turkestan, Afghanistan, Pakistan.
Fl.Per. March-May. *Vern.* Chobbesa, Ergiga, Chobbeza, Erghiga, Khobeez, Khoubbiza, Khobesa, Khobbaze.

b) var.**microcarpa** (Pers.) Loscos, Trat.Pl.Aragon 2:203.1877.

M.microcarpa Desf.Tabl.bot.Mus.Hist.Nat.Paris ed.1.144.1804. *nom.nud.*; Pers.,Syn.2:251.1807.

Differs from var. *parviflora* in having smaller fruit 2-3 mm in diameter, less enlarged fruiting calyx, and mericarps only slightly winged.

Holotype: Herb.Persoon s.n. L 908.137-24 (L).

A-6 Dariana, c. 40 km from Benghazi, c. 1/2 km from sea, saline flat, limestone blocks, common, soil dark brown, 16.6.1972, *S.I.Ali* 496 (ULT); **A-7** Zawia-tul-Qasur (between El Marj and Taknes), 17.6.1972, *S.I.Ali* 509 (ULT).

Distribution: Almost the same range of distribution as the type variety.
F.Per. April-May. *Vern.* Same as the previous variety.

3. LAVATERA

L.,Sp.Pl.690.1753; Gen.Pl.ed.5.308.1754

Herbs or shrubs. Flowers axillary, solitary or in clusters. Epicalyx segments 3, united at the base. Calyx 5-fid. Petals showy, emarginate. Pistil polycarpellary, ovary in a single series round the style. Stigmas filiform, receptive on the inner face. Fruit a schizocarp; mericarps indehiscent, 1-seeded.

A genus with c. 45 species, widely distributed, from Canary islands, along the Mediterranean to N.W.Himalayas, Russia (Central Asia, Siberia) Australia and N.America; represented in Libya by 2 native and 2 introduced species.

1.	+	Flowers fasciculate in leaf axils	2
	—	Flowers usually solitary (rarely 2) in leaf axils	3
2.	+	Plants woody at the base, epicalyx accrescent and spreading in fruit, ultimately becoming longer than the calyx	4.**L.arborea***
	—	Plants herbaceous, epicalyx neither accrescent not spreading in fruit, shorter than the calyx	1.**L.cretica**
3.	+	Epicalyx invaginated at insertion of pedicel, shorter than the calyx, mericarps muricate	2.**L.bryoniifolia**
	—	Epicalyx not invaginated at insertion of pedicel, subequal to calyx, mericarps rounded above	3.**L.olbia***

1. **Lavatera cretica** L.,Sp.Pl.691.1753; Durand and Barratte,l.c. 50; Pamp.l.c. 317; J.Cullen,l.c. 409.1967; R.Fernandes in Tutin *et al,* l.c. 251. 1968; Keith, l.c. 601.1974; Tackh., l.c. 351.

Annual or biennial, stem erect. Petiole up to 12 cm, lamina suborbicular cordate, up to 20 cm in diameter, 5-7 lobed, serrate, thinly hairy on both the surfaces. Flowers in fascicles in the leaf axil, pedicels unequal, 8-15 mm long. Epicalyx segments 4-6 mm long, ovate, united c. 2 mm at the base. Calyx 7-8 mm long, pilose, hairs stellate. Petals 10-20 mm long, lilac-pink. Mericarps 7-11, rounded, faintly rugose only at the margins.

* introduced taxa.

Type: Described from Crete, Herb.Linn.871/10 (LINN).

A-7 Cirene - U.Buten, 18.4.1933, *R.Pampanini* 4867 (FI); Cirene-U.Belgadir, 26.4.1934, *R.Pampanini e R.Pichi-Sermollli* 4868 (FI); Messa a ovest di Cirene U.Tmista, 29.4.1934, *R.Pampanini e R.Pichi-Sermolli* 4869 (FI); el-Beda-U.Scisu, 7 Mag.1934, *R.Pampanini e R.Pichi-Sermolli* 4871 (FI); in faucibus amuis Derna, 25.4.1938, *R.Maire et M.Weiller* 1707 (MPL).
Iter Cyrenaicum, 1887, *P.Tanbert* 658(P); Circa Cyrenem, solo calcareo stercorato, 600 m, 22.4.1938, *R.Maire et M.Weiller* 1707 (MPL).

Distribution: Libya, Mediterranean area, Arabia.
Fl.Per. April to May.

2. **Lavatera bryoniifolia** Miller, Gard.Dict.ed.8, no. 11. 1768; J.Cullen in Davis, l.c. 409; R.Fernandes in Tutin *et al*, l.c. 252.1968.(Fig.5).

L. unguiculata Desf., Tabl. 145.1804, *nom. nud.;* Desf. ex Pers., Syn. Pl. 2:252.1806; Hist. des Arb. 1:471.1809; Pamp. l. c. 317.1931; Keith, l. c. 601.1974. *L. tomentosa* Dum.-Cours., Bot. Cult. 3:48.1802 et ed. 2,5:74.1811; *L. olbia* auct. non L.: Pamp. Prodr. Fl. Ciren. 317.1931; *L. olbia* ssp. *cyrenaica* Pamp. in Arch. Bot.12(1) (nov. ser.2):37.1936. *L. olbia* ssp. *cyrenaica* Pamp. var.*vestita* Pamp. in Arch. Bot.12(1) (nov.ser.2):37.1936.

Woody perennial, up to 3 m tall, stem much branched, young branches stellate tomentose. Petiole up to 3 cm long, lamina 5-lobed, up to 7 cm long, lamina of the upper leaves hastate, all crenate, indumentum dense, hairs stellate. Flowers mostly one rarely 2, in the leaf axil. Pedicel 3-10 mm long, densely stellate-hairy. Epicalyx cup-like, 8-10 mm long, densely stellate-hairy, invaginated at the point of insertion of the pedicel, segments very abruptly acuminate. Calyx 13-15 mm long, densely hairy, teeth acuminate. Petals 20-25 mm long, pink or pink-violet. Mericarps muricate, not rugose.

Type: Locality not stated (BM).

A-6 Fra Barce e el-Garib: esc-Scehami, 19.4.1933, *R.Pampanini* 4883 (FI); Fra el-Garib e Tolmeta: U. el-Fahaga, 14.4.1933, *R.Pampanini* 4882, Type of *L.olbia*



Fig.5 *Lavatera bryoniifolia:* A, Flowering and fruiting branch x 4; B, L.S. Flower x 1.6.

ssp. *cyrenaica* Pamp. var. *vestita* Pamp. (FI,G,K); **A-7** Abu Dher, c. 24 km from Baida, stony roadside, erect, c. 1.5 m, much branched, flowers pink, 19.6.1972, *S.I.Ali* 662 (ULT); U. el-Atrun, 14 Maggio 1934, *R.Pampanini e R.Pichi-Sermolli* 4878, Type of *L.olbia* ssp. *cyrenaica* Pamp. (FI,G,K); Altipiano Cirenaico: Uadi el Cuf, 24 Maggio 1937, *Servizi Agrari Cirenaica* 18 (FI).

Distribution: Libya, Sicily, Greece, Aegean region, Turkey, Palestine.
Fl.Per. May-june.

3. **Lavatera olbia** L.,Sp.Pl.690.1753; Pamp.l.c. 317.1931 p.p.; Quezel and Santa, l.c. 629; Keith, l.c. 601.

Shrub, up to 2 m tall, branches hispid, hairs stellate. Petiole up to 7 cm; lamina up to 15 x 13 cm, 3-5-lobed. Flowers solitary axillary. Pedicel 2-7 mm. Epicalyx 7-13 mm long, segments ovate, shortly acuminate. Sepals 10-15 mm, ovate acuminate. Petals 15-30 mm, purple. Mericarps tomentose or hispid, rounded on the top.

Type: ''Habitat in Olbia insula Gallaprovinciae'', Herb.Linn.871.2 (LINN).

Distribution: Libya (cultivated), Portugal, Spain, Italy, France, Balearic Islands, Corsica and Sardinia.
Fl.Per. February-March.

Lavatera olbia L. is not known in the wild state in Libya. Pampanini's records (l.c.) are based on misidentifications of *L.bryoniifolia* L. (see under *L.bryoniifolia* L.).

4. **Lavatera arborea** Linn.,Sp.Pl.690.1753; Durand and Barratte, l.c. 50.1910; J.Cullen in Davis, l.c. 2:409.1967; R.Fernandes, in Tutin et al, l.c. 252.1968; Keith, l.c. 601.1974.

Biennal or short lived perennial, about 3 m tall, woody at the base, young parts stellate-tomentose. Petiole up to 13 cm; lamina up to 20 cm, orbicular-cordate, 5-7-lobed, crenate, sparsely stellate-pilose on both the sides. Flowers in axillary cluster of 2-7. Pedicel 1-2.5 cm. Epicalyx — segments 3, 8-10 mm, suborbicular to

ovate — oblong, united up to half of their length, longer than the calyx, accrescent. Sepals c. 4 mm, deltoid, acute. Petals 15-21 mm, violet with darker veins at the base. Mericarps 6-8, glabrous or tomentose, transversely rugose.

Type: Described from Italy, Herb.Linn.871/1 (LINN).

Distribution: Mediterranean region and coast of Western Europe up to Ireland and Atlantic Islands.

In Libya, cultivated in gardens, at Tripoli and sometimes found as an escape from cultivation.

Fl.Per. April-May. *Vern.* Chobbeza, melliha.

Appendix A

1.	+	Fruit a capsule, staminal tube 5-toothed at the apex	2
	—	Fruit a schizocarp, staminal tube split up into many filaments at the apex (teeth not present)	5
2.	+	Style with 5 branches	3
	—	Style not branched; (epicalyx segments 3, large, leaf-like)	4.**Gossypium***
3.	+	Calyx irregularly 2-3 lobed, splitting on one side, deciduous	5.**Abelmoschus***
	—	Calyx regularly 5-toothed or 5-lobed, not splitting, persistent	4
4.	+	Trees, lepidote hairy	6.**Lagunaria***
	—	Herbs or shrubs, stellate or simple hairy or glabrous	7.**Hibiscus***
5.	+	Column of stamens bearing anthers below the top and more or less along the sides, the apex itself sterile and 5-toothed, stigmas twice as many as carpels	8.**Malvaviscus***
	—	Column of stamens bearing anthers only at or very near the apex; stigmas as many as carpels	6
6.	+	Epicalyx segments 6-9 rarely more	7
	—	Epicalyx segments 2-3	8

7.	+	Staminal tube terete; petals 9-16 mm; anthers purple or brownish purple; mericarp 1-loculed	1.**Althaea**
	—	Staminal tube 5-angled; petals 30-50 mm; anthers yellowish; mericarp sub-bilocular	9.**Alcea***
8.	+	Each carpel 2-3-seeded, differentiated into a dehiscent smooth apical part and an indehiscent reticulate basal part	10.**Sphaeralcea***
	—	Each carpel 1-seeded, not differentiated as above	9
9.	+	Epicalyx segments free	2.**Malva**
	—	Epicalyx segments connate at the base	3.**Lavatera**

4.GOSSYPIUM

L.,Sp.Pl.693.1753; Gen.Pl.ed.5.309.1754.

Herbs, subshrubs to small trees, branches irregularly dotted with oil glands. Leaves alternate, petiolate, simple, palmately 3-9-lobed, gland-dotted, stipulate. Flowers pedicellate, actinomorphic, bisexual. Involucre of 3 or 5-7 bracteoles (or epicalyx), free or united, entire to incised. Calyx cup-shaped, truncate, undulate or 5-toothed. Petals white, yellow or purplish, convolute. Stamens many, monadelphous. Pistil 3-5-locular. Fruit a loculicidal dehiscent capsule. Seeds usually covered with shorter hairs (down or fuzz) and longer hairs (lint).

A genus with c. 30 species, distributed in tropical and subtropical regions of the world; represented by four cultivated species in Libya.

1.	+	Epicalyx segments entire, coarsely toothed or serrate, teeth rarely thrice as long as broad	2
	—	Epicalyx segments coarsely toothed or serrate, teeth more than thrice as long as broad (laciniate)	3
2.	+	Epicalyx segments closely investing the flower, longer than broad, entire or with 3-4 coarse teeth near the apex	1.**G.arboreum**
	—	Epicalyx segments flaring widely from the flower, usually broader than long, the upper margin with 6-10 teeth	2.**G.herbaceum**

3. + Staminal column short, anthers loosely arranged, anther filaments longer above than below — 3.**G.hirsutum**

— Staminal column long, anthers compactly arranged, on short filaments which are almost of the same length — 4.**G.barbadense**

1. **Gossypium arboreum** L.,Sp.Pl.693.1753; Hutchinson, Silow & Stephens, Evol.Gossyp.32.1947; Keith,l.c.524.

Perennial, much branched shrub or small tree, or annual shrublet. Leaves 5-7 lobed, 2/3 - 4/5 cut, with small accessory lobes in the sinuses; lobes ovate, oblong or curvilinear, acute, slightly constricted at the base. Staminal column long, anther filaments short.

E-1 Ghat, cultivated tree c. 3 m tall with pink-red flowers, 24.2.76, *S.M.H.Jafri* 6321 (ULT).

Distribution: Native of Indo-China, Burma, Malasia, Indonesia, China, Formosa, Manchuria, Korea, Japan, Bangladesh, India, Pakistan, Arabia, Madagascar, Mozambique, Angola, Sudan.

According to Keith (l.c.) it is cultivated as an ornamental plant in Sidi Mesri. *Vern.* Goton, Goton bornau, Tabduk.

Gossypium herbaceum L.,Sp.Pl.693.1753; Hutchinson, Slow & Stephens l.c. 34; Keith, l.c. 525.

Perennial shrub or undershrub. Leaves 3-7-lobed, 1/2 or less cut, lobes ovate rotund to rounded, usually only slightly constricted at the base, without accessory lobes between the main lobes. Anther filaments short.

Distribution: Probably native of Arabia and Asia Minor, cultivated in Fezzan and some parts of Cyrenaica. *Vern.* Ghars, Goton, Goton Fezani, Tabduk.

2. **Gossypium hirsutum** L.,Sp.Pl.ed.2.975.1762; Hutchinson, Silow & Stephens, l.c. 40.

Subshrub with few or no vegetative branches. Leaves large cordate, 1/2 or less cut into 3-5 lobes, lobes broadly triangular acuminate, not constricted but not or only slightly overlapping at the sinuses, lateral lobes divergent, base cordate. Staminal column short, anthers loosely arranged, the upper filaments ascending, usually longer than lower.

Distribution: Native of Tropical America.

According to Keith (l.c. under *G.purascens)* it is cultivated in Fezzan.

Vern. Ghars; Nabbat.

Keith (l.c. 525) has reported *G.purpuracens* Poir. from Libya. This name has been applied to a race of *G.hirsutum* L. since Watt's monograph of 1907. However, according to current interpretations, Poiret described a form of *G.barbadense* L. as *G.purpurascens* Poir.

4. **Gossypium barbadense** L.,Sp.Pl.693.1753; Hutchinson, Silow & Stephens l.c. 48.

G.vitifolium Lam.,Encycl.Meth.2:135.1786. *G.brasiliense* Macf., Fl. Jam. 1:72. 1837.

Perennial shrub or annual subshrub. Leaves 2/3 cut into 3-5 lobes, lobes long, tapering, acuminate, slightly constricted at the base, the sinuses usually thrown up in folds. Staminal column long, anthers closely packed on short filaments of almost uniform size.

Distribution: Native of Tropical America, cultivated in Fezzan and some parts of Tripolitania.

Vern. Ghetten, Goton.

5. ABELOMOSCHUS

Medik. Malv.Fam.45.1787

Annual or perennial herbs. Leaves stipulate, simple, palmately veined. Flowers solitary axillary or in racemes. Epicalyx of many episepals. Staminal tube divided below the tip into numerous filaments, bearing anthers to the base. Style with 5 cushion-like stigmas. Fruit a capsule, several times longer than calyx, dehiscing by 5 valves.

A genus with 15 species distributed in tropical Africa, Asia and Australia; represented in Libya by 1 cultivated species.

Abelomoschus esculentus (L.) Moench.,Meth.Pl.Horti Bot.617.1794; Borssum Waalkes in Blumea 14(1):101.1966.

Hibiscus esculentus L.,Sp.Pl.696.1753.

Native of Tropical Asia, commonly cultivated as a vegetable in Libya.
Vern. Bamia; Gombbo

6. LAGUNARIA

G.Don, Gen.Syst.1:485.1831.

A monotypic genus, native of Norfolk Island, Howe Island and E.Australia.

Lagunaria patersonii G.Don, Gen.Syst.1:485.1831. (Fig. 6).

Tree, up to 15 m tall. Leaves simple, entire, 5-10 cm long, ovate to oblong, obtuse, greyish white on the lower surface. Flowers solitary axillary, c. 6.2 cm across, violet-pink. Fruits c. 3 times longer than calyx.

Cultivated as an ornamental tree throughout the maritime zone.
Fl.Per. April-June. *Vern.* Budrat al afreet.

7. HIBISCUS

L.,Sp.Pl.693.1753; Gen.Pl.ed.5.310.1754.

Herbs, shrubs, rarely trees. Leaves palmately veined, entire or palmately lobed. Inflorescence axillary, solitary or paniculate. Flowers bisexual, pentamerous. Episepals many, rarely few, often narrow, free or united. Calyx gamosepalous, 5-toothed or-lobed. Corolla polypetalous, usually campanulate, showy. Stamens monadelphous, staminal tube truncate or 5-toothed at the tip. Pistil pentacarpellary, syncarpous, ovary pentalocular, axile placentation, loculi 3 or more ovuled, styles 5. Fruit a 5-valved, dehiscent capsule, usually slightly or not exceeding the calyx. Seeds reniform, subglobose.



Fig.6 *Lagunaria patersonii:* A, Flowering and fruiting branch x 3/4; B, L.S. flower x 11/2; C, Lepidote hair x c. 75.

A genus with c. 300 species, distributed in the tropical and temperate countries of the world; represented in Libya by 6 exotic species.

1.	+ Calyx inflated	1.**H.trionum**
	— Calyx not inflated	2
2	+ Calyx fleshy	2.**H.sabdariffa**
	— Calyx not fleshy	3
3.	+ Plant spinescent	3**H.cannabinus**
	— Plant not spinescent	4
4.	+ Petals adnate to staminal column up to 1 cm	4.**H.arnottianus**
	— Petals adnate to the staminal column only at the base	5
5.	+ Petals deeply cut and fringed, flowers drooping	5.**H.schizopetalus**
	— Petals not deeply cut, flowers not drooping	6
6.	+ Plants with dense stellate hairs. Flowers changing colour from white or pink to deep red.	6.**H.mutabilis**
	— Plants nearly glabrous. Flowers not changing colours.	7.**Hibiscus rosasinensis**

1. **Hibiscus trionum** L.,Sp.Pl.697.1753; Bailey, St. Cyclop. Hort. 2:1484. t. 1830. 1963; Keith, Prelim. Check List Lib. Fl. 554. 1974.

One of the 2 species with inflated calyx. Annual, 30-60 cm tall, branches spreading, some becoming prostrate. Leaf 3-5-lobed. Flowers, solitary axillary, pale yellow or white with dark brown centre.

A central African plant, widely cultivated as an ornamental or a weed of cultivated areas, in warmer region of the old world.

2. **Hibiscus sabdariffa** L., Sp. Pl. 695. 1753; Bailey, Stand. Cyclop. Hort. 2:1485. 1963; Keith, l.c. 554.

Annual, 1.5-2.0 m tall, branches subglabrous, reddish. Lower leaves ovate entire, upper digitately 3-lobed, sometimes the lateral lobes are lobed again. Flowers solitary axillary, subsessile. Bracts and calyx red. Corolla yellow.

A native of Old World Tropics, widely cultivated for fleshy calyces.

The calyces are used for the preparation of sauce jelly, jam or a cooling drink.

Vern. Sabdariffa.

3. **Hibiscus cannabinus** L., Syst. Nat. ed. 10. 1149. 1759; Bailey, Stand. Cyclop. Hort. 2:1485. 1963. Keith, l.c. 553.

Annual or perennial, 30-100 cm tall, branches glabrous and prickly. Lower leaves cordate, entire, upper deeply palmately divided into narrow serrate lobes. Flowers solitary axillary, yellow or red with a crimson centre.

A native of Old World Tropics, cultivated in Fezzan.

Cultivated for stem fibres and the leaves are used as a vegetable.

Vern. Belubelu.

4 **Hibiscus arnottianus** A.Gray, Bot.U.St.Expl.Exped.1:176.1854. Bailey, Stand. Cyclop.Hort.2:1487.1963; Keith, Prelim.Check List Lib.Fl.553.1974.

A large shrub or a small tree, 6-10 m tall. Leaves 10-15 cm long, ovate, entire. Flowers solitary axillary, white sometimes with pink veins, petals 7.5-10 cm long.

A native of Hawaii, reported from Tripolitania by Keith (l.c.).

An ornamental plant.

5. **Hibiscus schizopetalus** (Mast.) Hook.f.in Curtis, Bot.Mag.3:36.t.6524.1880; Bailey, Stand.Cyclop.Hort.1487.1963. Borssum Waalkes l.c. 73.1966.

H.rosa-sinensis var. *schizopetalus* Mart., Gard.Chron.n.s.12:272, fig.45.1879.

Tall shrub with slender drooping branches. Leaves 5-7.5 cm long, ovate-elliptic, dentate, acute or acuminate.Flowers solitary axillary, hanging by a jointed peduncle, red or orange-red, petals recurved, multisect.

A native of East Tropical Africa (Kenya and Tanganyika), commonly grown in the warmer parts of the world, introduced in the Agriculture farm of the University of El Faateh.

A beautiful ornamental shrub.

6. **Hibiscus mutabilis** L.,Sp.Pl.694.1753; Bailey, Stand.Cyclop.Hort.2:1088.1963; Keith l.c. 554.

Large shrub or tree, up to 3 m tall. Leaves ovate to broad-ovate, 10-20 cm across, palmately 3-5-lobed, lobes 1/2 or less deep, crenate-dentate. Flowers in axillary clusters, each 7.5-10 cm across, changing colour from white, pink to red.

A native of China, cultivated in tropical and subtropical regions of the world. Commonly cultivated as an ornamental plant in coastal towns of Libya.

A beautiful ornamental shrub or a small tree.

Fl.Per. September-December.

7. **Hibiscus rosa-sinensis** L.,Sp.Pl.694.1753; Bailey, Stand. Cyclop.Hort.2:1488. 1963; Keith, l.c. 554.

A shrub or a small tree, up to 3 m tall. Leaves ovate, 7.5-12 cm long, dentate, acuminate, subglabrous. Flowers solitary axillary, 10-15 cm across, red, white or buff etc., sometimes double.

Probably a native of China, but now cultivated in all the warm regions of the world. In the coastal towns of Libya it is one of the most common ornamental shrubs.

A beautiful, hardy ornamental plant.

Fl.Per. Almost throughout the year.

8. MALVAVISCUS

Fabr., Enum.Meth.Pl.155.1759.

Shrubs or small trees, hispid or pubescent. Leaves cordate or subcordate, entire, dentate or shallowly lobed. Flowers on axillary peduncles. Episepals many. Calyx 5-fid. Corolla red, petals mostly not spreading. Stamens monadelphous, column truncate or 5-dentate, with many filaments. Pistil, 5-carpellary, 5-locular, each 1-ovulate, style branches 10, stigmatose at apex. Fruit berry-like, ultimately drying and separating into mericarps.

A genus with about 20 species, distributed in warm regions of the new world, locally represented by 1 introduced species.

Malvaviscus arboreus Cav.Diss.3.t.48.f.1.1787.

Hibiscus malvaviscus L., Sp. Pl. 694. 1753; Bailey, Stand. Cycl. Hort. 1975. 1963; Man. Cult. Plants 661. 1968.

+ Leaves usually 3-5-lobed, 5-11 cm long. Corolla 2-3 cm long	(i)var.**aboreus**
— Leaves entire, rarely 3-lobed, 10-20 cm long. Corolla 6-7 cm long	(ii)var.**penduliformis**

i) var.**arboreus**

Distribution: Tropical America from Mexico to Peru and Brazil, widely cultivated throughout the world.

ii) var.**penduliformis** (DC.) Schrey, Ann.Miss.Bot.Gard.29:223.1942, Borssum Waalkes l.c. 133.

Malvaviscus penduliformis Mocino & Sesse ex DC., Prodr. 1:445.1824.

Shrub, branches greyish tomentose. Leaves ovate - lanceolate, stellate - pubescent on both surfaces. Flowers convolute in the bud, not fully opening, penduliform.

Distribution: From Mexico to Columbia; widely cultivated as an ornamental plant, common in the gardens of Libya along the coast.

9. ALCEA

L.,Sp.Pl.687.1753; Gen.Pb.ed.5.307.1754

Perennial herbs with erect tall stems. Inflorescence terminal spike-like raceme. Epicalyx segments 6-9, united below, equal to or smaller than the sepals. Petals 30 cm or more, emarginate. Staminal tube 5-angled, anthers usually yellowish. Pistil 18-40-carpellary, syncarpous, each carpel divided by a septum into an upper empty chamber and lower 1-ovuled chamber, stigmas filiform. Fruit a schizocarp, mericarps many, 1-seeded.

A genus of about 60 species, distributed from the Mediterranean region to Central Asia, locally represented by only 1 cultivated species.

Alcea rosea L.,Sp.Pl.687.1753; Zohary, Israel J.Bot.12:12.1963.

Althaea rosea (L.) Cav., Diss.2.91.t.28.f.1.1786; Borssum Waalkes in Blumea 14(1):151.1966.

Erect, up to 2.5 m tall, stem tomentose pubescent, becoming glabrescent. Lamina 3-5-lobed, cordate-orbicular to rhombic, scabrid. Epicalyx segments smaller than sepals. Petals 30-50 cm, pink, rarely white or violet.

Native in Asia Minor (Borssum Waalkes, l.c.1966), widely cultivated as a garden ornamental.

10. **SPHAERALCEA**

A.St.Hil.,Fl.Bras.Mer.1:209.1827

Shrubs or herbs mostly with grey stellate-pubescence. Leaves petiolate, usually lobed. Flowers axillary, solitary or in cymose clusters or in terminal racemes or spikes. Epicalyx with 2-3 segments or completely free. Calyx 5-lobed. Corolla violet, flesh-coloured or red. Staminal tube divided into many filaments at the top. Fruit breaking into a number of mericarps, each 2-3-seeded, 2-valved, differentiated into a dehiscent smooth apical part and an indehiscent reticulate basal part.

A genus with c. 100 species, distributed in warm regions of America and S.Africa, locally represented by one cultivated species.

Sphaeralcea umbellata (Cav.) G.Don, Gen.Syst.1:465.1831; Bailey, Man.Cult.Pl.659.1968.

Malva umbellata Cav.,Ic.1:64.t.95.1791.

Erect branched shrub 1-3(-6) m tall, densely stellate-pubescent. Petiole up to 10 cm long, lamina rotund-ovate, 7.5-20 cm long, cordate, somewhat 7-lobed, crenate, stellate-pubescent, specially on the veins. Lobes of epicalyx distinct, 7-10

mm long, abruptly narrowed into claw. Calyx c. 15 mm long. Petals scarlet, white at base, obcordate, 2.5-3. cm long. Staminal tube white.

A native of Mexico, cultivated as a garden shrub in Tripoli.
Fl.Per: Throughout the year.

Acknowledgements:

We are grateful to the authorities of the following herbaria for herbarium and library facilities: Herbarium Universitatis Florentinae, Florence, Conservatoire et Jardin botaniques, Geneva, Botanischer Garten und Botanisches Museum, Berlin-Dahlem, Museum National d'Histoire Naturelle, Laboratoire de Phanerogamie, Paris, Institut de Botanique, Universite de Montpellier, Montpellier, Royal Botanic Gardens, Kew, British Museum (Natural History), London and Royal Botanic Garden, Edinburgh. Our thanks are also due to Mr.B.L.Burtt, Mr.I.Hedge and Miss J.Lamond for going through the manuscript and offering valuable suggestions.

INDEX TO MALVACEAE

Abelomoschus Medik. 21
A.esculentus (L.) Moench. 22
Alcea L. 27
A.rosea L. 28
Althaea L. 1
A.hirsuta L. 2
A.ludwigii L. 2
A.rosea (L.) Cav. 28
Gossypium L. 19
G.arboreum L. 20
G.barbadense L. 21
G.brasiliense Macf. 21
G.herbaceum L. 20
G.hirsutum L. 20
G.vitifolium Lam. 21
Hibiscus L. 22
H.arnottianus A.Gray 25

H.esculentus L. 22
H.cannabinus L. 25
H.malvaviscus L. 27
H.mutabilis L. 25
H.rosa-sinensis L. 26
H.rosa-sinensis var. *Schizopetalus* Mart. 25
H.sabdariffa L. 24
H.schizopetalus (Mast). Hook.f. 25
H.trionum L. 24
Lagunaria G.Don 22
L. patersonii G.Don 22
Lavatera L. 14
L.arborea L. 17
L.bryoniifolia Miller 15
L.cretica L. 14
L.olbia auct.non L. 15
L.olbia L. 17
L.olbia ssp.*cyrenaica* Pamp. 15
L.olbia ssp.*cyrenaica* Pamp var.*vestita* Pamp. 15
L.tomentosa Dum-Cours. 15
L.unguiculata Desf. 15
Malva L. 3
M.aegyptia L. 4
M.aegyptia L. subsp. *leiocarpa* Iljin 4
Malva ambigua Guss.
M.nicaeensis All. 9
M.parviflora L. 11
M.parviflora L. var.**microcarpa** Desf. 13
M.parviflora L.var. **parviflora** 11
M.sylvestris L. 7
M.sylvestris L.var.*mauritiana* (L.) Boiss.
M.umbellata Cav. 28
M.verticillata L. 6
Malvaviscus Fabr. 26
M.arboreus Cav. 27
Sphaeralcea A.St.Hil. 28
S.umbellata (Cav.)G.Don 28