

TAXONOMICAL REVISION AND DOCUMENTATION OF THE ENDOGENOUS SPECIES OF FAMILY MALVACEAE JUSS IN CAIM* WITH TWO NEW RECORDS TO THE FLORA OF EGYPT.

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ABSTRACT

This work includes the revision and documentation of the herbarium specimens of Family Malvaceae preserved in CAIM. These specimens revealed the presence of 9 genera and 23 species from which two species are new records to the flora of Egypt, these are *Abutilon indicum* and *Pavonia zeylonica*. In this revision the Latin names (Scientific names), the synonyms, specimens and the distribution of each species was provided. The Phyto-geographical regions were recorded from the herbarium specimens; also the Florestic categories were recorded. This family documentation was carried out by using high quality and affordable digital camera (BenQ DC C510) to give high-quality images to help in establishing database information for taxonomic researchers.

267 specimens were examined in this work to record the locality, date of collection, collector and specimen's number if it is present. Photographs for the examined herbarium dried plant specimens were taken and represented by a single sample for each species, in addition a CD contains the photographs of the 267 examined specimens was taken by the herbarium library of the Flora & Phyto-taxonomy Dept. to be available to all researchers for study and help to build a database system for the herbarium.

INTRODUCTION

Family Malvaceae is cosmopolitan, but especially tropical, herbs, shrubs or trees, usually stellate-hairy; leaves alternate, stipulate, lobed or divided, usually palmately lobed; flowers usually bisexual, actinomorphic, often conspicuous, axillary, solitary or in terminal inflorescences; epicalyx present or 0; sepals 5, rarely 3 or 4; petals 5, usually connate at the base and adnate to the staminal column; receptacle short or elongate into a central axis; stamens numerous, rarely 5, connate into a staminal column; anthers 1-celled; ovary superior, of 2-many carpels; placentation axile; style divided at apex into lobes or stigmas, as many as or twice the number of carpels; fruit a dehiscent capsule or schizocarp, rarely a berry; seeds usually hairy. 111 genera, 1800 species Mabberley 1997.

In Egypt, family Malvaceae according to Boulos 2000 comprises 10 genera and 32 species; while El - Hadidi *et al.* 1999, revised the indigenous taxa of Malvaceae represented in Cairo University Herbarium (CAI) and revealed the presence of 26 species belonging to 11 genera and four tribes; among these, *Malvella sherardiana* was a new record to the flora of Egypt.

The herbarium collections preserved in CAIM have been built up over the years by the efforts of numerous botanists and plant collectors who have searched from different localities to document the diversity and distribution of this family. Now, representatives of the examined species can be found in herbaria today, carefully mounted on sheets of archival quality paper, labeled with important information about them, and stored on shelves in cabinets.

* The Herbarium of the Flora & Phyto-taxonomy Researches - Agricultural Museum, Dokki - Egypt.

A specimen and its label are equally important. Smith & Earle (1971) stated that the specimen collected and pressed gives essential clues to its morphology; the extent to which the label documents and describes features of the plant and its habitat, the exact collection locality, the name of the collector and determiner, date of collection and the correct identification, ultimately determines a specimen's scientific value. There are often many other pieces of information that could be

extracted - which collection the specimen came from, for instance. Include these fields if you want to, but bear in mind those they all cost time, and they may have little real use (Zika 2005). Many Taxonomists were interested in this yield and introduced good results for documentation and surveying the different world herbaria (Holmgren *et al* 1990; Funk & Morin 2000; Funk 2002; Dalton 2003 and Rabie 2007).

MATERIAL AND METHODS

The specimens were examined in the CAIM (The Herbarium of the Flora & Phytotaxonomy Researches - Agricultural Museum, Dokki - Egypt). 267 specimens were examined to record the locality, date of collection, collector and number of each one. All the specimens were photographed by the digital

camera (BenQ DC C510) and preserved in CAIM as a start of complete database for the herbarium specimens of the flora of Egypt. The genera and species of the family were arranged according to Boulos 2000 with a reference to the species not represented in CAIM.

RESULTS AND DISCUSSION

1. *Malva* L.

This genus comprises five species:-

1- *Malva aegyptia* L., Sp. Pl., ed. 1, 690 (1753); Boulos, 2000, p. 93. Fig. 1

Specimens examined:

Mariut, 14.3.1913, B.G.C. Bolland no 539; West of Bourg el Arab, Mariut, 24.2.1923, N.D. Simpson no 584; Mariut, 16.3.1923, N.D. Simpson no 1969; Ikingi Mariut, 10.4.1926, M.Eff. Drar s.n.; El-Hammam, Mariut, 27.2.1929, J.R. Shabetai no 1197; Bahig, Mariut, 20.3.1934, J.R. Shabetai no 6097; Messaad, N. Sellum, 14.4.1934, J.R. Shabetai no 3068 and 3069; Burg El Arab, Mariut, 6.4.1935, J.R. Shabetai no 6096; Mersa Matruh, 8.3.1939, M. Drar s.n.; Burg El Arab, 5.2.1948, J.R. Shabetai no 7027; Burg El Arab, 5.2.1948, J.R. Shabetai no 7245; Suez Road, 21.2.1960, A. Khattab s.n.; Mâtruh- Sâlum K. 43, 4.3.1969, A. Abbas & A. El Shaer no 2459; Sidi Abd El Rahman, 14.2.1969, A. Abbas & A. El Shaer no 2297; Sidi Barrâni, 5.4.1969, A. Abbas & A. El Shaer no 2581.

Distribution:

Mediterranean region eastwards to Central Asia. In Egypt it was recorded from Mediterranean and Sinai regions.

2- *Malva parviflora* L., Sp. Pl., ed. 2, 969 (1763); Boulos, 2000 vol. 2, p. 94. Fig. 2.

Syn. *Malva flexuosa* Hornem., Hort. Hafn. 2: 655 (1815).

Distribution:

Europe, North Africa, temperate Asia; naturalizes in other temperate regions. In Egypt it was recorded from N, O, M, D, R, GE, S.

Specimens examined:

Victoria, Alexandria, 9.2.1917, M. Drar s.n.; Giza, 20.3.1922, N.D. Simpson no 841; El- Ma'adi, 11.3.1923, N.D. Simpson no 1836; Near Boulac Dacrour, 7.2.1924, N.D. Simpson no 2352; Wady el Arish, 14.3.1924, N.D. Simpson no 2521; Giza, 4.3.1926, N.D. Simpson no 3601; Bank of el Mahmudiya, 25.3.1926, N.D. Simpson no 3642; Giza fields, 16.5.1926, M. Drar no 532; El Arish, 29.1.1929, Khattab no 2057; Belat Dakhla, 15.3.1929, M. Drar s.n.; Wadi El Gedeirat N. Sinai, 14.3.1930, M. Eff. Drar no 966; Abu Simbel, 4.4.1931, J.R. Shabetai no 1545; Abrîm beyond Aswan, 7.4.1931, J.R. Shabetai no 1625; Amria, 16.4.1932, J.R. Shabetai no 1739; W. Akaw, Gebel Elba, S.E. Desert, 25.1.1933, M. Drar no 242; W. Darawein,

Gebel Elba, 29.1.1933, J.R. Shabetai no 2673; Dakhla Oasis, Rashda, 4.3.1934, J.R. Shabetai no 4360; Wady El Remla, n/ Sellum, 14.4.1934, J.R. Shabetai no 3073; Messaad n/ Sellum, 14.4.1934, J.R. Shabetai no 3074; Abu Kîr, n/ Alexandria, 22.4.1934, J.R. Shabetai no 3072; Wady Araba, 7.1.1935, M. Drar no 18; Khargeh Village, 25.2.1935, M. Drar no 142; Barîz, Kharga Oasis, 26.2.1935, M. Drar no 190; Matruh, 23.5.1935, M. Drar s.n.; W. Askhar, S. Galâla, 14.3.1937, J.R. Shabetai no 3571; n/ Assiût in Sugar Cane, 6.1.1939, J.R. Shabetai no 6918; Mersa Matruh, 8.3.1939, M. Drar s.n.; W. Heridin, S. el Arish, 4.4.1939, M. Drar s.n.; Wadi Digla, E. of Maadi, 18.4.1939, J.R. Shabetai no 5404; W. Feiran, Sinai, 3.5.1939, M. Drar no 192; El Arîsh, 17.1.1940, F. Basta & A. Khattab no 5967; Ashmûn in Wheat, 28.2.1942, J.R. Shabetai no 6341; W. Askhar, S. Galala, 14.4.1945, J.R. Shabetai no 6920; Giza, 10.3.1947, J.R. Shabetai no 6919; El Dokki, 4.3.1948, J.R. Shabetai no 6823; Abu Girgas, 23.5.1948, M. Drar s.n.; Alexandria, 26.4.1955, M. Drar no 202; Rafah, 9.4.1956, A. Khattab no 58; Matrûh- Salûm, 27.2.1958, F. Sa'ad s.n.; W. el- Maghara, N. Sinai, 23.4.1959, L. Boulos s.n.; Wady Araba, Red Sea, 5.3.1960, T. Hilali & A. Khattab s.n.; Abu-Sir, Burg el-Arab, 11.5.1961, A. Sharobim s.n.; Bir Housami; El- Mahariq; Kharga Oasis, 12.3.1962, F. Sa'ad no 940; Khour el- Allaqi, 21.3.1962, M. Abdallah *et al* s.n.; N. Abu Zenîma, S. Sinai, 13.4.1962, M. Abdallah no 534; Wadi Thâl, S. Sinai, 15.4.1962, M. Abdallah & S. Shalaby no 726 and 769; Abu Simbil, 14.3.1963, Abdallah *et al* no 1591 and 1616; El- Allâqi village, 17.3.1963, Abdallah *et al* no 1700; El-Dakka, 18.3.1963, Abdallah *et al* no 1733; 'Agig, North of Wadi El Natrun, 7.4.1963, A. Sharobeem & A. Khattab s.n.; Ras- El-Heekma, 16.3.1964, Niazi & Khattab s.n.; 12 K. East of Ma'adi, 16.3.1969, M. Abdallah & M. Costantin s.n.; Wady El- Liblab; Gabal el-Ahmar, 17.3.1969, R. Wissa *et al* no 3032; El Gebel El Asfar, After 12 Km from El Qalg, 18.5.1969, M. Costantin & M. Atta no 29; Om Sobih, El Agamy, 22.3.1969, R. Wissa & A. Nabih no 3157; Abu- Qir Road, 24.3.1969, R. Wissa & A. Nabih no 3270; El- Dikhe, 27.3.1969, A. Abbas & A. El Shaer no 2016;

El Hâmmam, 29.3.1969, A. Abbas & A. El Shaer no 2173; Desert Road Cairo/ Faiyûm, 30 Km. from Faiyûm, 1.4.1969, R. Wissa & A. Nabih no 3103; Kom Aushim, 17.5.1972, A. Abbas & M. Abdel- Hay no 3115; Ciba-Geigy Agrochemical Research Station At Kaha, 16.6.1973, A. Abbas & M. Mokhtar no 20047; Ciba- Geigy Agrochemical Research Station At Kaha, 5.7.1973, A. Abbas & M. Mokhtar no 110; Ciba- Geigy Agrochemical Research Station At Kaha, 25.9.1973, A. Abbas no 277; Ciba- Geigy Agrochemical Research Station At Kaha, 6.11.1973, M. Abdallah *et al.* no 3; Ciba- Geigy Agrochemical Research Station At Kaha, 19.3.1974, M. Costantin & H. Helmy no 367; Minshat Dahshûr Giza, 8.4.1974, M. Mokhtar & A. Hussein no 4; Rosetta, 6.5.1976, A. Ahmed & M. Sama'an no 106; Bûrg El- Arab, 21.5.1974, B. Hanna & M. Mokhtar no 54; Ikingi Maryût, 4.5.1976, S. El Khanagry & M. Mokhtar no 83; Idku, 11.10.1977, S. El Khanagry & M. Mokhtar no 274.

3- *Malva neglecta* Wallr.

Syll. Pl. Nov. 1: 140 (1824); El-Hadidi & Fayed 1994/95, p: 96; Boulos, 2000 vol. 2, p: 94. Fig. 3.

Syn. " *Malva rotundifolia* " sensu Täckh. Stud. Fl. Egypt ed. 2: 394 (1974).

Distribution:

Europe, North Africa, West Asia. In Egypt it was recorded from S. Specimens examined:

Convent Garden, Sinai, 7.5.1939, M. Drar no 553; W. El Arbain back of G. Katherina S. Sinai, 17.5.1980, A. Abbas no 11.

4- *Malva nicaeensis* All., Fl. Pedem. 2: 40 (1785); Boulos, 2000 vol. 2, p: 94.

Distribution: Mediterranean region, Arabia, Iraq, Iran; introduced into temperate regions. In Egypt it was recorded from N, M, S, weed of cultivation, waste ground.

Specimens examined:

The species is not represented by any specimens in CAIM.

5- *Malva sylvestris* L., Sp. Pl., ed. 1, 689 (1753); Boulos, 2000 vol. 2, p: 94. Fig. 4.

Distribution:

Europe, Mediterranean region, Asia; naturalized in some other temperate regions. In Egypt it was recorded from N, M, S, roadsides, edges of cultivation.

Specimens examined:

Mariout, 7.2.1913, B.G.C. Bolland no 541; Mariout 14.3.1913, B.G.C. Bolland no 540; Behig, 5.3.1914, B.G.C. Bolland no 542; Bahig, 24.4.1920, N.D. Simpson no 3255; El Borg N/ Behig, 12.3.1921, J.R. Shabetai Eff. s.n.; Amria (Mariout District), 24.4.1926, M. Drar s.n.; Ikingi Mariut, Mariut District, 17.11.1926, M. Eff. Drar no 699; Budkhula, Dakhla Oasis, 17.1.1929, J.R. Shabetai no 515; El Hammam, Mariut, 27.2.1929, J.R. Shabetai no 6307; Ain El Gederat, 12.4.1929, J.R. Shabetai no 855; Wadi El Gedeirat N. Sinai, 14.3.1930, M. Drar no 966; Burg El Arab, 8.3.1934, M. Drar & A. Khattab s.n.; Behig N. Mariut, 20.3.1934, J.R. Shabetai no 2885; Wady El Remla N. Sellum, 14.4.1934, J.R. Shabetai no 3071; Between Matruh & Barrani, 17.4.1934, J.R. Shabetai no 3070; Matruh, Grewla, 23.5.1935, M. Drar no 898; Zohreya

garden, 23.1.1937, M. Mahdy no 342; Mersa Matruh, 9.3.1939, M. Drar s.n.; Saqiet Mekki, Giza, 24.3.1939, A. Khattab per J.R. Shabetai no 5891; W. El Arish, 5.4.1939, M. Drar s.n.; W. Ain el-Gedeirat, 6.4.1939, M. Drar s.n.; El Amriya in Barley, 1.3.1944, J.R. Shabetai s.n.; El Amriya, 24.2.1948, J.R. Shabetai no 6825 & 7033; Amria, Desert Road Cairo – Alexandria, 6.4.1948, J.R. Shabetai no 6824; Sides of Cairo – Alex. Desert Road in Barley near Amriya, 18.4.1950, J.R. Shabetai no 7351; Burg el Arab, 17.3.1960, A. Khattab no 28; Salum, Sidi Omar, 16.4.1963, H. Abdel Megid & S. Shalaby no 52; Ras-El- Heckma, 16.3.1964, Niazi & Khattab s.n.; Alex.- Cairo desert Road about 40 Km. from Alex., 25.3.1969, R. Wissa & A. Nabih no 3396; El Hammâm, 27.3.1969, A. Abbas & A. El Shaer s.n.; The road between Mtrûh- Alexandria, 21.4.1971, A. Abbas & A. Khattab no 48; El Hauwârîya, 21.5.1974, H. Helmy & M. Mokhtar no 15; El Hauwârîya, 4.5.1976, M. Abd el Fattah no 31; Ikingi Mariût, 4.4.1980, H. Helmy *et al* no 14; 'Agiba, 14.4.1980, H. Helmy *et al* no 175.

2. *Lavatera* L.

This genus comprises one species:-

1- *Lavatera cretica* L., Sp. Pl., ed. 1, 691 (1753); Boulos, 2000 vol. 2, p: 96.

Distribution:

Atlantic Islands, Mediterranean reg-

ion, Sinai. In Egypt it was recorded from N, M, S, waste ground, edges of cultivation.

Specimens examined:

The species is not represented by any specimens in CAIM.

3. *Malvastrum* A. Gray, nom. conserve.

This genus comprises one species:-

1- *Malvastrum coromandelianum* (L.) Garcke, Bonplandia 5: 295 (1857); Boulos, 2000 vol. 2, p: 96.

Syns. *Malva coromandeliana* L., Sp. Pl., ed. 1, 687 (1753).

Malva tricuspidata R. Br. In W. T. Aiton, Hort. Kew., ed. 2, 4: 210 (1812).

Malvastrum tricuspidatum (R. Br.) A. Gray,

Pl. Wright, 1: 16 (1852).

Distribution:

Tropical regions. In Egypt it was recorded from N (Cairo and El- Saff); weed of cultivation.

Specimens examined:

The species is not represented by any specimens in CAIM.

4. *Alcea* L.

This genus comprises four species:-

1- *Alcea striata* (DC.) Alef., Österr. Bot. Zeitschr. 12: 253 (1862); Boulos, 2000

vol. 2, p: 97.

Syns. *Althaea striata* DC., Prodr. 1: 437 (1824).

Althaea haussknechtii Boiss., Fl. Orient. 1: 830 (1867).

Two subspecies occur in Egypt:

Subsp. *Striata*. Fig. 5.

Specimens examined:

Taboah El Maru, Ruting belonging to Wadi Ramligi, 5.9.1926, Alfred Kaiser no 339.

Subsp. *rufescens* (Boiss.) Cullen, Notes Roy. Bot. Gard. Edinb. 27: 216 (1967). Fig. 6.

Syns. *Althea rufescens* Boiss., Diagn. Pl. Orient., ser. 2, 1: 102 (1854). *Alcea rufescens* (Boiss.) Boiss., Fl. Orient. 1: 828 (1867).

Specimens examined:

Deir El- Arbain, Sinai, 23.3.1927, Alfred Kaiser no 670; W. Ain El- Gedeirat, 6.4.1939, M. Drar s.n.; Gebel Catherina, Sinai, 6.5.1939, M. Drar no 494; El- Bustan Garden Convent, Sinai, s.d., M. Drar no 381.

2- *Alcea acaulis* (Cav.) Alef., Österr. Bot. Zeitschr. 12: 251(1862); Boulos, 2000 vol. 2, p: 98. Fig. 7.

Syn. *Althaea acaulis* Cav., Diss. 93 (1786).

Specimens examined:

Burg El- Arab, Mariut, 31.3.1934, M. Drar s.n.

3- *Alcea apterocarpa* (Cihac.) Boiss., Fl. Orient. 1: 830 (1867); Boulos, 2000 vol. 2, p: 98

Syns. *Althaea apterocarpa* Cihac., Asie Min., Bot. 1: 180 (1860).

Alcea lasiocalycina Boiss., Fl. Orient. 1: 830 (1867).

The species is not represented by any specimens in CAIM.

4- *Alcea rosea* L., Sp. Pl., ed. 1, 687 (1753); Boulos, 2000 vol. 2, p: 98

Syns. *Alcea ficifolia* L., Sp. Pl., ed. 1, 687 (1753).

Althaea rosea (L.) Cav., Diss. 91 (1786).

Althaea ficifolia (L.) Cav., Diss. 92(1786).

The species is not represented by any specimens in CAIM.

5. *Althaea* L.

This genus comprises one species:-

1- *Althaea ludwigii* L., Mant. 98 (1767); Boulos, 2000 vol. 2, p: 100. Fig. 8.

Specimens examined:

At the head of Wady Qena, N. Galala, 11.4.1924, N.D. Simpson no 2743; Wadi Qa'a,

south of Gebel Abu Shâma, 13.3.1929, N.D. Simpson no 6556; Dakhla Oasis, 15.3.1929, M. Drar Eff. s.n.; W. Heridin, S. El Arish, 5.4.1939, M. Drar s.n.; Nekb, N.C. Sinai, 10.5.1939, M. Drar no 708; El Kuntilla, N.C. Sinai, 14.5.1939, M. Drar no 892;.

6. *Sida* L.

This genus comprises four species:-

1- *Sida alba* L., Sp. Pl., ed. 2, 960 (1763); Boulos, 2000 vol. 2, p: 100. Fig. 9.

Syn. *Sida spinosa* L., Sp. Pl., ed. 1, 683 (1753), pro parte.

Specimens examined:

Bashtil on the Zomor Canal, 12.5.1922, N.D. Simpson no 1247; Bilbeis, 4.1.1926, N.D. Simpson no 3546; Ausîm, 20.8.1928, Khattab per Shabetai no 123; Bilbeis, 23.9.1930, J.R. Shabetai no 4475; Faraskûr, 16.10.1930, J.R. Shabetai no 2273;

Dakhla Oasis, Rashda, 4.3.1934, J.R. Shabetai no 4362; El Faiyum, Dar El Ramad, 19.6.1955, A. Khattab no 234; El Khanka N., 20.10.1965, A. Khattab s.n.; Fariskour, Damietta, 22.10.1967, A. Abbas & A. Khattab s.n.; Gebel El Zina Shakshoûk N. Faiyum, 14.8.1972, A. Abbas & M. Abdel Hay no 3177; El Misharrak N. Faiyum, 15.8.1972, A. Abbas & M. Abdel Hay no 3193; Ciba- Geigy Agrochemical Research Station At Kaha, 11.6.1973, M. Abdallah *et al* no 33; Ciba-Geigy Agrochemical Research Station At

Kaha, 5.7.1973, A. Abbas & M. Mokhtar no 90 and 125; Ciba- Geigy Agrochemical Research Station At Kaha, 18.7.1973, A. Abbas & M. Mokhtar no 149; Ciba- Geigy Agrochemical Research Station At Kaha, 15.8.1973, A. Abbas & M. Mokhtar no 198 and 213; Ciba- Geigy Agrochemical Research Station At Kaha, 25.9.1973, A. Abbas & H. Helmy no 241; Sinnûris, Faiyum, 19.11.1980, A. Abbas & H. Helmy no 3; El- Zarabi, Abu Tig, 26.11.1993, Abd El Halim Abd El Mogali no 1558.

2- *Sida rhombifolia* L., Sp. Pl., ed. 1, 684

(1753); Boulos, 2000 vol. 2, p: 100.

The species is not represented by any specimens in CAIM.

3- *Sida acuta* Burm. F., Fl. Ind. 147 (1768); Boulos, 2000 vol. 2, p: 100.

The species is not represented by any specimens in CAIM.

4- *Sida ovata* Forssk., Fl. Aegypt.-Arab. 124 (1775); Boulos, 2000 vol. 2, p: 100.

The species is not represented by any specimens in CAIM.

7. *Abutilon* Mill

This genus comprises six species:-

1- *Abutilon theophrasti* Medik., Malenfam. 28 (1787); Boulos, 2000 vol. 2, p: 102.

Syns. *Sida abutilon* L., Sp. Pl., ed. 1, 685 (1753). Fig. 10.

Abutilon avicenna Gaertn., Fruct. 2: 251, t. 135, f. 1 (1791).

Specimens examined:

Gebel El Awam, North of Damietta, 31.7.1922, N.D. Simpson no 1467; Kafr Hakim, 23.6.1927, N.D. Simpson no 5113; Kafr El- Manazla E. near Faraskur, J.R. Shabetai no 5367; Kom Bera, 1.7.1929, J.R. Shabetai no 255; Zagazig, 15.8.1930, J.R. Shabetai no 3883.

2- *Abutilon longicuspe* Hochst. ex A. Rich., Tent. Fl. Abyss. 1: 69 (1847); Boulos, 2000 vol. 2, p: 102.

The species is not represented by any specimens in CAIM.

3- *Abutilon pannosum* (G. Forst.) Schldl., Bot. Zeitung (Berlin) 9: 828 (1851); Boulos, 2000 vol. 2, p: 102. Fig. 11.

Syns. *Sida pannosa* G. Forst., Commentat. Soc. Regiae Sci. Gott. 9: 62 (1789).

Abutilon asiaticum Guill. Perr. in Guill. et al, Fl. Senegamb & Tent. 67 (1831) (non *Sida asiatica* Linn.); Abedin 1979, p: 71. *Abutilon glaucum* (Cav.) Sweet, Hort. Brit., ed. 1, 54 (1826).

Abutilon muticum (DC.) Sweet, Hort. Brit., ed. 2, 65(1830).

Specimens examined:

El - Gozayyereh, n. Asswan, 30.11.1920, M. Drar no 4213; Ain Serag, Kharga Oasis, 23.1.1924, N.D. Simpson no 2375; Esna Barrage, 1.1.1927, M. Drar s.n.; Kom Ombo, 13.2.1927, N.D. Simpson no 4436; Foot of Gebel Elba, North of the road to the Well, 16.3.1928, N.D. Simpson no 6274; W. Aidib north of Gebel Elba, 9.4.1928, N.D. Simpson no 6431; Dakhla Oasis, 13.4.1928, N.D. Simpson no 6054; Ain Serag, Kharga Oasis, 16.4.1928, N.D. Simpson no 6104; Kharga Oasis, 16.10.1928, M. Drar s.n.; Abu Simbel, 4.4.1931, J.R. Shabetai no 1561; Gebel Elba, 2.1932, M. Drar no 264; Luxor, 16.3.1932, M. Drar s.n.; Gebel Elba, 26.4.1932, M. Drar s.n.; Gebel Elba, 18.1.1933, J.R. Shabetai no 2668; W. Rabdeit, Gebel Elba, 22.1.1933, J.R. Shabetai no 2667; Hindaw, Dakhla Oasis, 3.3.1934, J.R. Shabetai no 7561; Rashda, Dakhla Oasis, 4.3.1934, J.R. Shabetai no 4359; Tenaideh, Dakhla Oasis, 5.3.1935, M. Drar no 272; Wady Aidieb, Gebel Elba, 27.2.1938, J.R. Shabetai no 5191; Qena, E. Nag' Eayada, 9.1.1939, F. Basta & A. Khattab s.n.; Toshka W., 19.9.1944, J.R. Shabetai no 7556 and 6360; El- Kaser, Dakhla Oasis, 24.4.1961, M. Abd Allah s.n.

4- *Abutilon figarianum* Webb, Fragm. Fl. Aethiop.-Aegypt. 52 (1854); Boulos, 2000 vol. 2, p: 104. Fig. 12.

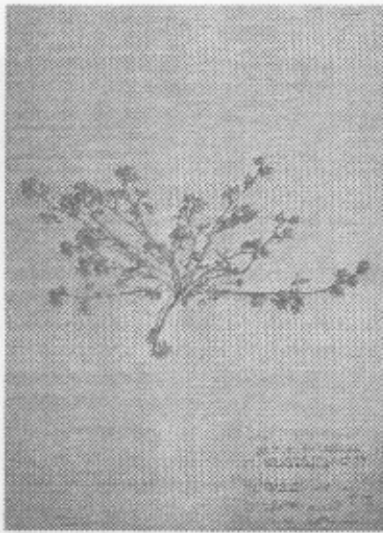


Fig. 1: *Malva aegyptiaca*



Fig. 2: *Malva parviflora*



Fig. 3: *Malva rotundifolia*

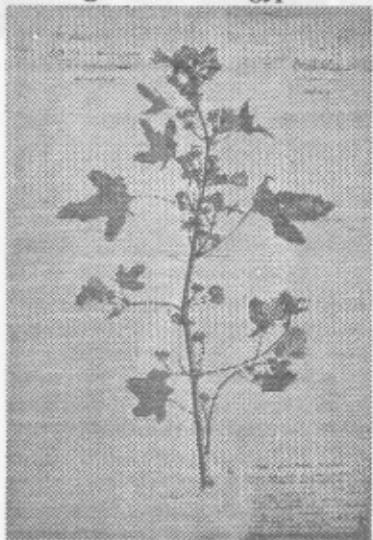


Fig. 4: *Malva sylvestris*



Fig. 5: *Alcea striata*
subsp. *rufescence*

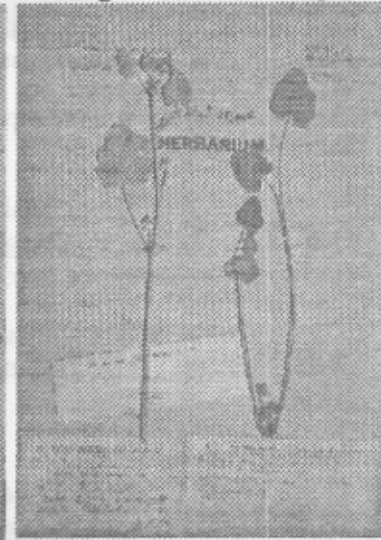


Fig. 6: *Alcea striata*
subsp. *striata*



Fig. 7: *Alcea acaulis*

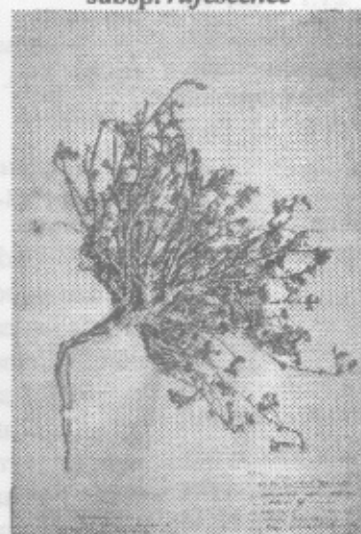
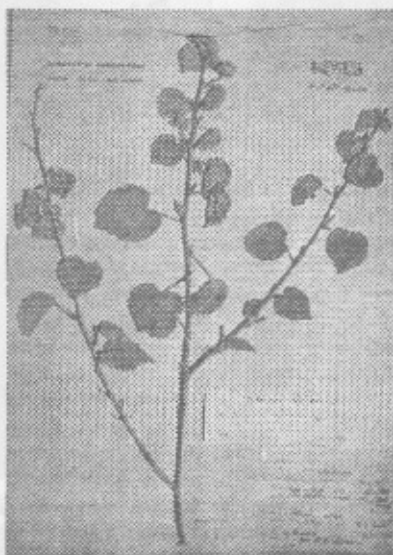
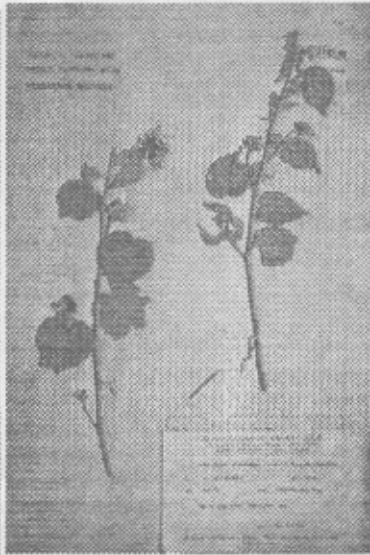
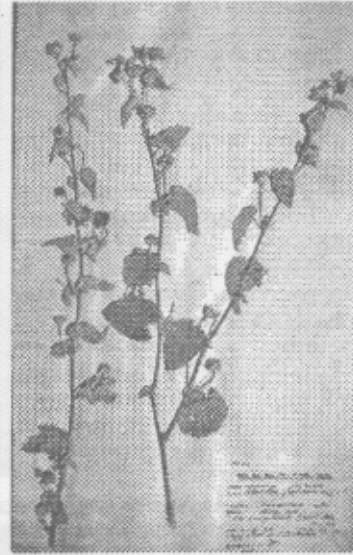


Fig. 8: *Althaea ludwigii*



Fig. 9: *Sida alba*

Fig. 10: *Abutilon theophrasti*Fig.11: *A. pannosum*Fig. 12: *A. fruticosum*

The species is not represented by any specimens in CAIM.

5- *Abutilon fruticosum* Guill. & Perr. in Guill., Perr. & Rich., Fl. Senegamb. Tent. 1:70 (1831); Boulos, 2000 vol. 2, p: 102.

Syn. *Abutilon denticulatum* (Fresen.) Webb, Fragm. Fl. Aethiop.-Aegypt. 51 (1854).

Specimens examined:

Wady um El Abas, 1924-1925, Murray no 3344; Esna Barrage, 1.1.1927, M. Drar s.n.; Mzeriq, Sinai, 22.11.1927, Alfred Kaiser no 920; Gebel Elba, 21.1.1933, M. Drar s.n.; Wady Rabdeit, Gebel Elba, 21.1.1933, J.R. Shabetai no 2666; Wady Ideib, Gebel Elba, 27.2.1938, J.R. Shabetai no 5190; Gebel Hamra Dom, 9.2.1932, M. Drar s.n.;

6- *Abutilon bidentatum* A. Rich., Tent. Fl. Abyss. 1: 68 (1847); Boulos, 2000 vol. 2, p: 104. Fig.13.

Specimens examined:

Dakhla Oasis, 13.4.1928, N.D. Simpson no 6028 and 6034; El- Rashda, Dakhla Oasis, 6.11.1929, M. Drar s.n.; Wady Angabya (Da. Sept.), 25.5.1945, P. Davis per J.R. Shabetai no 6633; Wady Angabya, K 24 Suez Road, 15.11.1945, P. Davis per J.R. Shabetai no 6308.

*7- *Abutilon indicum* (Linn.) Sweet, Hort. Brit.ed. 1. 54. (1826); Abedin 1979, p: 69. Fig. 14.

Syns. *Sida indica* Linn., Cent. Pl.2:26. 1756.

Sida populifolia Lamk., Encycl. 1:7 1783.

Abutilon populifolium (Lamk.) Sweet. Hort, Brit. Ed. 1.53.1826.

Abutilon indicum var. *populifolium* (Lamk.) W. & A. ex Mast. in Hook. f., Fl. Brit. Ind. 1: 326.1874.

Abutilon indicum var. *microphyllum* Hochr., Ann. Cons. Jard. Bot. Geneve. 6:20.1902.

Abutilon badium Hus. & Baq., Phytion 15(3-4):229. 1974.

Undershrub to shrub, 0.5 to 0.3 m tall, stellate pubescent, intermingled with small, simple, spreading hairs at least on the young parts. Branches usually green sometimes purplish. Leaves 2-18.5 cm long, 1.5-16 cm broad, cordate at base, acute to long acuminate at apex, serrate to crenate, 7-9nerved, sometimes 3-angular, stellate pubescent, velutinous and cinereous on both sides, sometimes green above, petiole 2 to 18 cm long, stellate pubescent mixed with sparse, weak, simple,

spreading hairs; stipule linear, 2-5 mm long. Flowers axillary, solitary; pedicel 1.5-8 cm long, jointed near the apex. Calyx 7-11 mm long, not or slightly accrescent in fruit, ultimately reflexed, fused at the base or nearly to the middle, pubescent on both sides; lobes lanceolate to ovate, acute to acuminate, 4-5 mm broad. Corolla orange-yellow or yellow, 2.5-3.5 cm across; petals obovate, 1-1.5 cm long, stellate pubescent. Fruit. Cylindric truncate, 1.5-2 cm across, stellate pubescent; mericarps (14-) 15-20, 10-18 mm long, 7-9 mm broad, acute or somewhat acuminate at

the back, erect at maturity and not spreading stellately, dehisce after separating from the central axis.

Lectotype: H.U., Linn. Herbs. N. 866.

Distribution: Tropics and subtropics of New and Old Worlds.

Specimens examined:

Gebel Elba, West of the Well track, 27.3.1928, A. Khattab no F 3888.

* New record to the flora of Egypt.

8. *Pavonia* Cav.

This genus comprises five species in Boulos 2000 and there is a new record species to the flora of Egypt (**Pavonia zeylonica*).

1- *Pavonia hirsuta* Guill. & Perr., Fl. Senegamb. Tent. 1: 51 (1831).

Distribution: De; stony soils. Egypt, Sudan, West and Southwest tropical Africa.

Specimens examined:

The species is not represented by any specimens in CAIM.

2- *Pavonia kotschy* Hochst. ex Webb, Fragm. Fl. Aethiop.-Aegypt. 43 (1854); Boulos, 2000 vol. 2, p: 105. Fig. 15.

Distribution: GE; rocky wadis and hillsides. Southeast Egypt, Sudan, Arabia.

Specimens examined:

W. Ideib, Gebel Elba, 5.2.1933, J.R. Shabetai no 2675; W. Daqalieb, G. Elba, S.E. Desert, 5.2.1933, M. Drar no 309.

3- *Pavonia burchellii* (DC.) Dyer, Kew Bull. 1932: 152 (1932).

Syns. *Althaea burchellii* DC., Prodr. 1: 438 (1824).

Pavonia kraussiana Hochst., Flora 27: 293 (1844).

Distribution: N; edges of fields. Egypt, Sudan, Ethiopia, Eritrea, tropical East and South Africa, Arabia.

Specimens examined:

The species is not represented by any specimens in CAIM.

4- *Pavonia arabica* Hochst. ex Steud., Nomencl. Bot., ed. 2, 2: 279 (1841).

Distribution: GE; stony wadis and hillsides. Southeast Egypt, Sudan, Ethiopia to West Africa, Arabia, Northwest India.

Specimens examined:

The species is not represented by any specimens in CAIM.

5- *Pavonia triloba* Guill. & Perr. in Guill., Perr. & Rich., Fl. Senegamb. Tent. 1: 50 (1831). Boulos, 2000 vol. 2, p: 107. Fig. 16.

Distribution: GE; rocky wadis and hillsides. Southeast Egypt, Sudan, Arabia.

Specimens examined:

Gebel Elba, S.E. Desert, 13.2.1932, M. Drar no 288; Gebel Elba, S.E. Desert, 14.2.1932, M. Drar no 334; W. Rabdit, G. Rabdit, S. of G. Elba, 21.1.1933, M. Drar no 109; W. Demit, S.E. Desert, 5.2.1933, M. Drar no 308; Entrance of Wady Ideib, Gebel Elba, 26.2.1938, J.R. Shabetai no 5194.

*6- *Pavonia zeylonica* (Linn.) Cav., Diss.3:134. t.48.f. 2 (1787); Abedin 1979, p:98.

Syn. *Hibiscus zeylonicus* Linn., Sp. Pl. 697 (1753).

A profusely branched, hispid, undershrub. Stem, petiole and pedicel with short, simple and stellate hairs mixed with long, spreading, simple, sometimes tubercled hairs. Leaves 1.5-3 cm long, 1-2.5 cm broad,

upper leaves lanceolate to ovate, entire, lower ones usually 3-fid to partite, shallowly cordate or truncate at base, upper surface usually simple hairy and lower stellate; lobes oblong or obovate, entire or irregularly toothed, middle one longest; stipules 3-5 mm long, filiform; petiole 1-4.5 cm long. Flowers axillary, solitary; pedicel 2-4 cm long, articulate near the apex; epicalyx segments 8-11, 10-13 mm long, free, filiform, ciliate. Calyx 4-6 mm long, fused at the base, stellate pubescent; lobes lanceolate, acute. Corolla c. 15 mm long, pink. Fruit \pm 5 mm across, pubescent, globular; mericarps 5, winged, 4 mm long, dorsally 4 mm broad, radial glabrous, smooth or somewhat wrinkled, 3

mm broad. Seed 1.5 mm long, 1 mm broad, reniform, dark brown, minutely pubescent.

Holotype: Herb. Herm. Vol. IV . fol.51. Linn.n.286.

Distribution: Ceylon, India, Pakistan, S.E. Arabia, Tropical Africa and Mauritius.

Specimens examined:

W. Kansisrob, Gebel Elba, 25.1.1933, J.R. Shabetai no 2677; W. Daqalieb, Gebel Elba, 4.2.1933, J.R. Shabetai no 2676; Wady Ideib, Gebel Elba, 8.3.1938, J.R. Shabetai no 5195.

*New record to the flora of Egypt.

9. *Hibiscus* L.

This genus comprises four species:-

1- *Hibiscus micranthus* L. f., Suppl. 308 (1781); Boulos, 2000 vol. 2, p. 108.

Specimens examined:

Gebel Elba middle, on the way of the well, 8.3.1928, N.D. Simpson no 6300; Gebel Rabdeit, Gebel Elba, 21.1.1933, J.R. Shabetai no 2670; Gebel Dagalaieb, Gebel Elba, 4.2.1933, J.R. Shabetai no 2669; Gebel Ideib, Gebel Elba, 7.3.1938, J.R. Shabetai no 5192.

Hibiscus micranthus L. v. *genuinus* Hochr. Fig. 18.

Specimens examined:

G. Elba, S.E. Desert, 12.2.1932, M. Drar no 254.

Hibiscus micranthus L. v. *ovalifolius* Hook. Fig. 19

Specimens examined:

Sinai, 1930, Alfred Kaiser no 489; W. Kansisrob, G. Elba, S.E. Desert, 26.1.1933, M. Drar no 172; W. Kansisrob, G. Elba, S.E. Desert, 4.2.1933, M. Drar no 304; Gebel Shellal, S.E. Desert, 10.5.1936, M. Drar no 57.

2- *Hibiscus sabdariffa* L., Sp. Pl., ed. 1, 695 (1753).

The species is not represented by any specimens in CAIM.

3- *Hibiscus trionum* L., Sp. Pl., ed. 1, 697 (1753); Boulos, 2000 vol. 2, p. 108.

Syn. *Hibiscus ternatus* Cav., Diss. 172 (1787). Fig. 20.

Specimens examined:

Zifeiter el Mashtûl, Shebin el Qanatir, 19.5.1922, N.D. Simpson no 1285; Damietta, 1.8.1922, N.D. Simpson no 1492; Gemmeiza, 30.8.1922, N.D. Simpson no 1572; Deir El Azab, Fayoum, 4.11.1928, M.Eff. Drar no 535; Nag'e Ayed, Nagá Hammadi, 10.10.1930, J.R. Shabetai no 2969; Duky, Cairo, 21.6.1931, M. Drar s.n.; Shubra, 24.7.1931, M. Drar no 315; Dokki N., 21.3.1932, M. Drar s.n.; Giza S. Sakiet Mekki, 2.2.1933, M. Drar no 2382; Baharia Oasis Mendrisha, 16.7.1933, M. Drar no 21; Rosette n/Alex., 21.8.1937, J.R. Shabetai no 6098; Shubra in a Maize field, 5.9.1939, J.R. Shabetai no 6337; Baragil, 4.12.1939, J.R. Shabetai no 5993; Bulac El Dakrûr, 6.12.1939, J.R. Shabetai no 6917; Dokki Farm in a Tomato field, 17.7.1947, J.R. Shabetai no 6756; Dokki in fields, 20.7.1947, J.R. Shabetai no 6916; Shubra El Balad, in a Tomato field, 18.12.1947, J.R. Shabetai no 6757; Ministry's farm, Dokki, 28.8.1951, J.R. Shabetai no 1627; Shooting Club, Dokki, 27.9.1952, A. Khattab no 189; Dokki Farm, 6.10.1952, A. Khattab no 4; Kom Ombo / near Aswan, 5.12.1954, Badiè Abdel Malik s.n.; Mazra'it el Baragil 5 Km W. Imbaba, 11.1.1958, F. Sa'ad no 31; Kom Ombo, 12.5.1959, M. Abdallah s.n.; Kafr El Dawar,

24.10.1960, Abbas & Khattab no 91; Minshât Sinnûris, N. Fayoum, 17.5.1972, A. Abbas & M. Abdel Hay no 3105; Qalamshah, N. Fayoum, 13.8.1972, A. Abbas & M. Abdel Hay no 3135; Gebel El Zina- Shakshuk, N. Fayoum, 14.8.1972, A. Abbas & M. Abdel Hay no 3173; Ciba- Geigy Agrochemical Research Station At Kaha, 11.6.1973, M. Abdallah *et al* no 7; Ciba- Geigy Agrochemical Research Station At Kaha, 11.6.1973, M. Abdallah *et al* no 32; Ciba- Geigy Agrochemical Research Station At Kaha, 11.6.1973, M. Abdallah *et al* no 38; Ciba-Geigy Agrochemical Research Station At Kaha, 16.6.1973, A. Abbas & M. Mokhtar no 20060; Ciba- Geigy Agrochemical Research Station At Kaha, 5.7.1973, A. Abbas & M. Mokhtar no 92; Ciba- Geigy Agrochemical Research Station At Kaha, 5.7.1973, A. Abbas & M. Mokhtar no 115; Ciba- Geigy Agrochemical Research Station At Kaha, 18.7.1973, A. Abbas & M. Mokhtar no 176; Ciba- Geigy Agrochemical Research Station At Kaha, 15.8.1973, A. Abbas & M. Mokhtar no 209; Ciba- Geigy Agrochemical Research Station At Kaha, 25.9.1973, A. Abbas & M. Mokhtar no 292; Ciba- Geigy Agrochemical Research Station At Kaha, 25.9.1973, A. Abbas & H. Helmy no 240; Ciba- Geigy Agrochemical Research Station At Kaha, M. Costantin *et al* no 390; Warraq El Arab &

Warraq El Hadr, Imbaba, 15.7.1974, H. Helmy & R. Higazi no 4; Sinnuris, Oberg Road, 24.6.1980, A. Abbas & A. El Hediny no 10; El- Zarabi, Abu Tig, 26.11.1993, Abd El Halim Abd El Mogali no 1561.

4- *Hibiscus vitifolius* L., Sp. Pl., ed. 1, 696 (1753); Boulos, 2000 vol. 2, p: 109. Fig. 21
Syns. *Hibiscus heterotrichus* DC., Prodr. 1: 450 (1824).

Fioria vitifolia (L.) Mattei, Bol. R. Orto Bot. Palermo 2: 71 (1916).

Specimens examined:

Foot of Gebel Elba, near Bîr Kansisrob, 17.3.1928, N.D. Simpson no 6289; Foot of the mount, W. Kansisrob, Gebel Elba, 24.1.1933, J.R. Shabetai no 2671; W. Ideib, Gebel Elba, 31.1.1933, J.R. Shabetai no 2672; W. Yehmit, Gebel Elba, S.E. Desert, 12.9.1936, M. Drar no 114; Gebel Hikwâl, Gebel Elba, 28.2.1938, J.R. Shabetai no 5193; W. Akaw, Gebel Elba, 27.10.1956, A. Khattab no 591.

Hibiscus vitifolius L., v. *genuinus* Hochr. Fig. 22.

W. G. Elba, S.E. Desert, 13.2.1932, M. Drar no 263a.

10. *Gossypium* L.

This genus comprises one species:-
1- *Gossypium herbaceum* L., Sp. Pl., ed. 1, 693 (1753).

Syn. *Gossypium arboreum*, sensu Täckh., Stud. Fl., Egypt, ed. 2, 356 (1974);

Greuter *et al.*, Med-Checklist 4: 235 (1989);
Boulos, Fl. Egypt
Checklist 93 (1995).

Specimens examined:

The species is not represented by any specimens in CAIM.

11. *Malvella* Jaub. & Spach.

This genus comprises one species:-
1- *Malvella sherardiana* (L.) Jaub. & Spach, Ill. Pl. Orient. 5:46 (tab. 444)(1855).

Basionym: *Malva sherardiana* L., Sp. Pl. ed. 2: 1675 (1763).

Sida sherardiana (L.) Benth., Four. Linn. Soc. Bot. 6: 101 (1862).

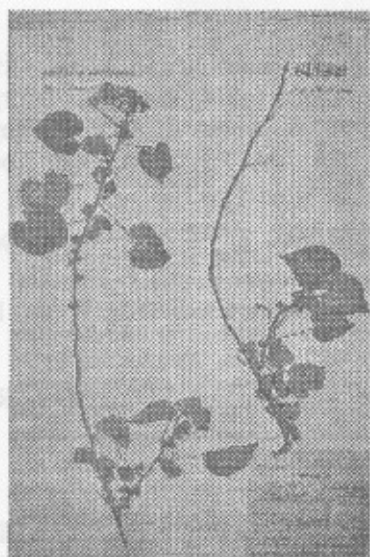
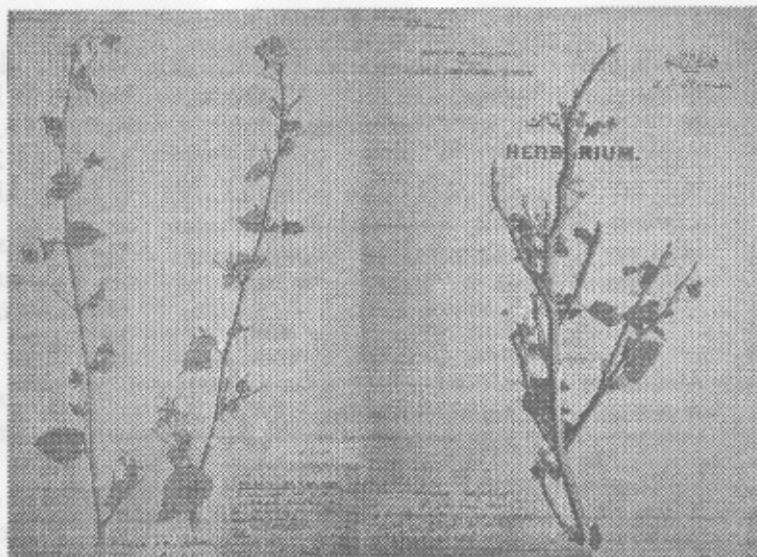
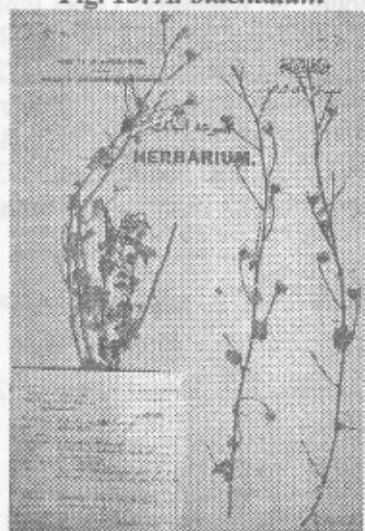
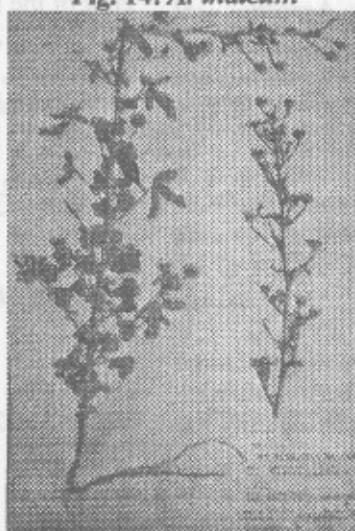
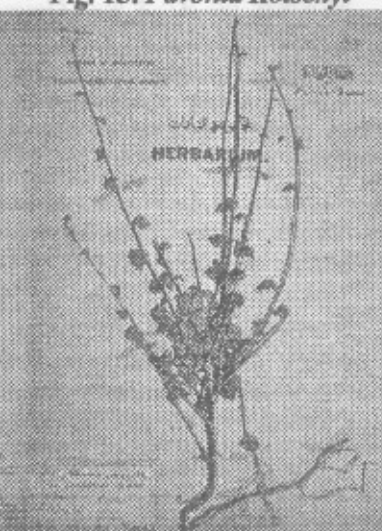
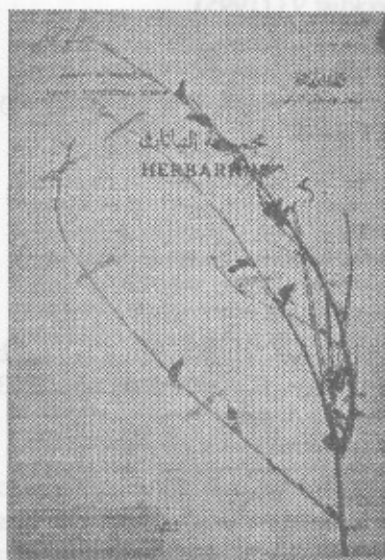
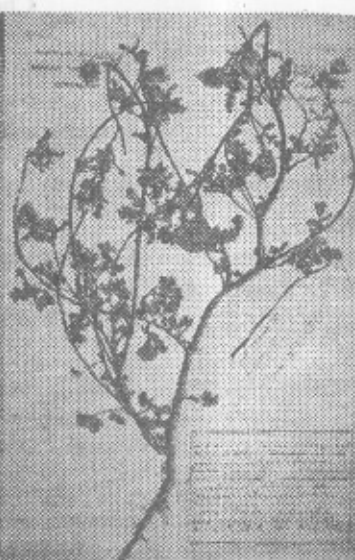
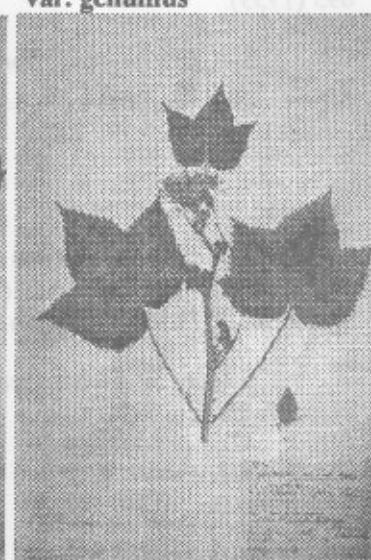
Distribution: Waste places and fields; recorded once from Dakhla Oasis of Egypt.

Known from the Mediterranean to S.W. Asia.

Specimens examined:

Dakhla Oasis, Hidaw, Bîr El Sheikh Badran, 6.3.1934, J.R. Shabetai no 4363 (CAIM).

Note: *Malvella sherardiana* is a new record to the flora of Egypt from Dakhla Oasis. It was erroneously identified as *Malva rotundifolia* L. which is a different taxon.

Fig. 13: *A. bidentatum*Fig. 14: *A. indicum*Fig. 15: *Pavonia Kotschyi*Fig. 16: *P. triloba*Fig. 17: *P. zeylonica*Fig. 18: *Hibiscus micranthus*
var. *genuinus*Fig. 19: *H. micranthus*Fig. 20: *H. trionum*Fig. 21: *H. vitifolius*
var. *ovalifolius*

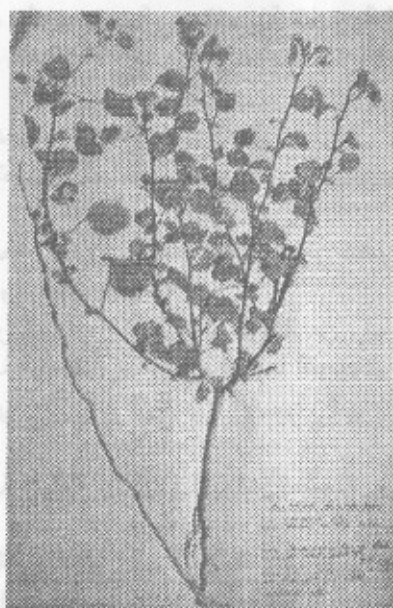


Fig. 22: *H. vitifolius*
var. *genuinus*

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REFERENCES

- Abedin, S. (1979): *Malvaceae* No. 130 in Nasir, E & Ali, S.I (eds.) *Flora of West Pakistan*, Karachi.
- Boulos, L. (2000): *Flora of Egypt*. Vol. 2. Geraniaceae-Boraginaceae. Cairo: Al Hadara Publishing: 325 pp.
- Dalton, R. (2003): Natural history collections in crisis as funding is slashed. *Nature* 423: 575.
- El-Hadidi, M.N.; Hosni, H. A.; El-Hadidy, A. M. H. and Arafia, S. (1999): *Malvaceae* in the *Flora of Egypt*. 1. Systematic revision of the indigenous taxa. *Taechholmia* 19: (2): 127-146.
- Funk, V.A. (2002): The Importance of Herbaria. *Plant Science Bulletin* 49: 94-95.
- Funk, V.A. and Morin, N. (2000): A survey of the herbaria of the southeast United States. *SIDA, Misc.* 18: 5-52.
- Holmgren, P.; Holmgren, N.H. and Barnett, L.C. (1990): *Index Herbariorum*. Part 1: The Herbaria of the World. Eighth Edition. NewYork Botanical Garden, Bronx. 693 p.
- Mabberley, D.J. (1997): *The plant - book*, ed. 2. Cambridge Univ. Press. London.
- Rabie, S.H. (2007): Revision and Documintation for the specimens of the wild species of Plantaginaceae Juss. in CAIM*, Egypt. *J. Appl. Sci*;
- Smith, E. and Earle, Jr. (1971): *Preparing Herbarium Specimens of Vascular Plants*. U.S.D.A. Agriculture Information Bulletin No. 348 p. 86. Washington, D.C.
- Täckholm, V. (1974): *Student's Flora Of Egypt*, ed. 2. Cairo Univ. Beirut.
- Zika, P. (2005): Noxious weed specimens needed for herbaria. *Douglasia* 29(4): 2.

مراجعة وتوثيق لعينات الأنواع البرية من الفصيلة الخبازية في معشبة قسم بحوث الفلورة وتصنيف النباتات مع تسجيل نوعان جديان للفلورة المصرية.

محمد عبد الفتاح محمد سليمان، علي عبد العاطي حمودة ، عبد الحليم عبد المجلي محمد
قسم بحوث الفلورة وتصنيف النباتات - معهد بحوث البساتين - مركز البحوث الزراعية

- يهدف هذا البحث إلى مراجعة وتوثيق العينات المعشبية التي تنتمي إلى الفصيلة الخبازية المحفوظة بمعشبة قسم بحوث الفلورة وتصنيف النباتات.
- أمكن من المراجعة والحصص للعينات المعشبية المحفوظة عن وجود ٩ أجناس، ٢٣ نوع من بينها نوعان يعتبران تسجيل جديد يضاف إلى الفلورة المصرية وهما "ابوتيلون إنديكم، بافونيا زيلونيكا".
- تمت مراجعة الأسماء العلمية اللاتينية، المرادفات الأسمية، العينات المعشبية وتوزيع كل نوع منها وعمل التصحيح اللازم.
- تم تسجيل المناطق الجغرافية النباتية من واقع البيانات المسجلة على العينات المعشبية وكذلك المجموعات النباتية.
- تم تصوير العينات المعشبية باستخدام كاميرا رقمية عالية الجودة تمهيدا لعمل قاعدة بيانات مزودة بالصور الواضحة للعينات المعشبية حتى تكون متاحة للباحثين في هذا المجال ولمزيد من الدراسة.
- تم فحص ٢٦٧ عينة معشبية مع تسجيل أماكن جمعها، تاريخ الجمع، اسم الجماع، رقم العينة إن وجد.
- تم حفظ ٢٦٧ صورة رقمية للعينات المفحوصة على إسطوانة مضغوطة (CD) وذلك لتحتفظ في مكتبة القسم بحيث تكون متاحة لكل الباحثين للدراسة مع تمثيل كل نوع بصورة واحدة فوتوغرافية في هذا البحث.