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NOTES ON UTRICULARIA

by

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A detailed account of the morphology and taxonomy of the genus *Utricularia* in Africa (south of the Sahara) and Madagascar is nearing completion. The following two new combinations may, however, be required for 'Prodromus of a Flora of South West Africa' before the publication of the above work.

Utricularia inflexa Forsk., Fl.Aegypt.Arab.Descr.Pl.9
(1775)

var. *inflexa*

Utricularia inflexa Forsk., Fl.Aegypt.Arab.
Descr.Pl.9(1775); - Vahl, Enum.1:196(1805). - Del.,
Fl.Aegypt.4(1814). - Roem.etSchultes, Syst.1:194(1817).
- Smith in Rees, Cyclop.37:no.29(1819). - A.DC. in DC.,

Prodr.8:4(1844). - Oliv. in Trans.Linn.Soc.29:123 (1875). - Boiss., Fl.Orient.4:3(1879). - Kam. in Engl. Bot.Jahrb.33:108(1902).

Utricularia thonningii Schumach. in Schumach. et Thonn., Beskr.Guin.Pl.12(1827). - A.DC. in DC., Prodr.8:4(1844). - De Wild. et Th.Dur., Reliq.Dewevr. 172(1901). - Stapf in Dyer, Fl.Trop.Afr.4,2:487(1906). - Th. et Hel.Dur., Syll.Fl.Congo 408(1909) partim excl. syn. *U. stellaris*. - Pellegr. in Bull.Soc.Bot.Fr.61:19 (1914). - Hutch. et Dalz., Fl.W.Trop.Afr.2:234(1931). - Andrews, Fl.Pl.Sudan 3:154(1956).

Utricularia stellaris L.f. var. *inflexa* (Forsk.) C.B.Cl. in Hook. f., Fl.Brit.Ind.4,2:329(1884). - Dur. et Schinz, Etud.Fl.Congo 1:214(1896). - De Wild. et Th.Dur., Contr.Fl.Congo 1,2:46(1900).

Utricularia inflexa Forsk. var. *remota* Kam. in Deutsch.Bot.Gesell.12:5(1894) et in Engl.Bot.Jahrb.33:109(1902).

Utricularia inflexa Forsk. var. *tenuifolia* Kam. in Deutsch.Bot.Gesell.12:5(1894) et in Engl.Bot.Jahrb.33:109(1902).

Utricularia oliveri Kam. in Deutsch.Bot.Gesell.12:5(1894) et in Engl.Bot.Jahrb.33:108(1902).

Utricularia oliveri Kam. var. *fimbriata* Kam. in Deutsch.Bot.Gesell.12:4(1894) et in Engl.Bot.Jahrb.33:108(1902).

Utricularia oliveri Kam. var. *schweinfurthii* Kam. in Deutsch.Bot.Gesell.12:4(1894) et in Engl.Bot.Jahrb.33:108(1902).

Utricularia inflexa Forsk. var. *major* Kam. in Engl.Bot.Jahrb.33:109(1902).

Utricularia thonningii Schumach. var. *laciniata* Stapf in Dyer, Fl.Trop.Afr.4,2:488(1906). - Fries, Wiss. Ergebn.Schwed.Rhod.-Kongo-Exped.1:299(1916).

[*Utricularia stellaris* sensu Perrier in Humbert, Fl.Madag.Lentib.3(1955) partim non L. f.] .

var. *stellaris* (L. f.) P.Taylor, comb. et stat. nov.

Utricularia stellaris L. f., Suppl.86(1781). - Willd., Sp.Pl.ed.4,1:113(1797) partim excl. syn. *U. inflexa* Forsk. - Roxb., Corom.Pl.2:42,t.180(1798). -

Vahl, *Enum.* 1:196 (1805). - Roem. et Schultes, *Syst.* 1:194 (1817). - Smith in Rees, *Cyclop.* 37:no.30 (1819). - Roxb., *Fl.Ind.* 1:143 (1820) et 1:143 (1832). - E.Mey., *Comm.Fl.Afr.Austr.* 281 (1837). - A.DC. in DC., *Prodr.* 8:3 (1844). - Wight, *Icon.* 4:9, t.1567 (1850). - Oliv. in *Journ.Linn.Soc.* 3:174 (1859). - Dalz. et Gibs., *Bomb.Fl.* 135 (1861). - Oliv. in *Journ.Linn.Soc.* 9:146 (1865). - F.v. Muell., *Fragm.* 6:161 (1867). - Boiss., *Fl.Orient.* 4:3 (1879). - Bailey, *Synops.Queensl.Fl.* 361 (1883). - C.B. Cl. in Hook. f., *Fl.Brit.Ind.* 4:328 (1884) partim excl. var. *inflexa* (Forsk.) C.B. Cl. - Goebel in *Ann.Jard.Bot.Buitenz.* 9:89 (1890). - Kam. in *Engl., Pflanzenfam.* 4, 3b:112 (1895). - Trimen, *Fl.Ceylon* 3:267 (1895). - Dur. et Schinz, *Etud.Fl.Congo* 1:214 (1896). - Hiern, *Cat.Afr.Pl.Welw.* 1:785 (1900) partim quoad spec. Welw. 268 et 268a. - Bailey, *Queensl.Fl.* 1125 (1901). - Kam. in *Engl.Bot.Jahrb.* 33:107 (1902) et in *Warb., Kunene-Zamb.Exped.* 373 (1903). - Stapf in Dyer, *Fl.Cap.* 4, 2:433 (1904) et in Dyer, *Fl.Trop.Afr.* 4, 2:488 (1906). - Cooke, *Fl.Bombay* 2:316 (1905). - Pellegr. in *Bull.Soc.Bot.Fr.* 61:19 (1914). - Gamble, *Fl.Madras* 980 (1921). - Dinter in *Fedde Repert.* 24:367 (1928). - Pellegr. in *Lecomte, Fl.Gen.Indoch.* 4:470 (1930). - Hutch. et Dalz., *Fl.W.Trop.Afr.* 2:234 (1931). - Santapau in *Journ.Bombay Nat.Hist.Soc.* 49:217 (1950). - Perrier in *Humbert, Fl.Madag., Lentib.* 3 (1955) partim. - Andrews, *Fl.Pl.Sudan* 3:154 (1956) partim excl. syn. U. incerta Kam.

Utricularia stellaris L. f. var. *coromandeliana* A.DC., *Prodr.* 8:3 (1844).

Utricularia macrocarpa Wall. ex C. B. Cl. in Hook. f. *Fl.Brit.Ind.* 4, 2:328 (1884) pro syn.

Utricularia muelleri Kam. in *Deutsch.Bot.Gesell.* 12:5 (1894) et in *Engl.Bot.Jahrb.* 33:108 (1902).

Utricularia stellaris L. f. var. *dilatata* Kam. in *Deutsch.Bot.Gesell.* 12:3 (1894) et in *Engl.Bot.Jahrb.* 33:108 (1902).

Utricularia flexuosa Vahl var. *parviflora* Kam. in *Engl.Bot.Jahrb.* 33:110 (1902). - De Wild., *Etud.Fl. Bas et Moyen Congo* 1:75 (1903) sphalm. "var. *flexuosa*". - Th. et Hel. Dur., *Syll.Fl.Congo* 407 (1909) sphalm. "var. *flexuosa*".

Utricularia stellaris L. f. var. *breviscapa* Kam. in *Engl.Bot.Jahrb.* 33:108 (1902).

Utricularia stellaris L. f. var. *filiformis* Kam. in *Engl.Bot.Jahrb.* 33:108 (1902).

Utricularia trichoschiza Stapf in Dyer, *Fl.Trop.Afr.* 4, 2:488 (1906). - Hutch. et Dalz., *Fl.W.Trop.Afr.* 2:

234(1931).

STAPF (1906) considered *U. inflexa* Forsk., *U. thonningii* Schum. and *U. stellaris* L.f. to be distinct species and proposed a fourth *U. trichoschiza*. After a careful study of a very large amount of material (over 1.000 specimens) I find myself in agreement with C. B. CLARKE (1884) who recognised a single species and a variety. Unfortunately, he adopted *stellaris* for his typical variety, whereas in fact *inflexa* has priority by six years, making the above new combination necessary.

U. trichoschiza Stapf I consider no more than a slightly aberrant form of var. *stellaris*.

FERRIER (1955) cites no specimens but the sheets in the Paris herbarium annotated by him prove to be a mixture of var. *inflexa*, var. *stellaris* and a second, quite distinct species, *U. foliosa* L.

ANDREWS (1956) on my advice reduced *U. incerta* Kam. to *U. stellaris*. The specimen is sterile but I now consider it to be almost certainly *U. vulgaris* L., which occurs elsewhere in tropical and South Africa.

Utricularia gibba L., Sp.Pl.18 (1753)

subsp. *gibba*

Utricularia gibba L., Sp.Pl.18(1753). - Willd., Sp.Pl., ed.4, 1:113(1798). - Vahl, Enum.1:204(1804). - Pursh, Fl.Amer.Sept.1:16(1814). - Elliot, Sketch 1:22 (1816). - Nuttall, N.Am.Pl.13(1818). - Smith in Rees, Cyclop.37:no.41(1819). - Beck, Bot.N. and Mid.St.287 (1833). - A. DC. in DC., Prodr.8:11(1844). - A.Gray, Manual Bot.N.Un.St.287(1848). - Hemsley, Biol.Centr. Amer.2:470(1882). - Britton et Brown, Ill.Fl.3:193 (1898). - Small, Fl.S.E.Un.St.1091(1903). - Muenscher, Aquatic Pl.U.S.322(1944). - Shinners, Spring Fl. Dallas - Forth Worth Texas 353(1958) et auctt.Amer. Bor. fere omnes.

Utricularia gibbosa Hill, Veg.Syst.20:45(1772).

Utricularia obtusa Sw., Prod.Veg.Ind.Occ.14 (1788). - Willd.Sp.Pl.ed.4,1:112(1798). - Vahl Enum.1:199(1804). - Sw., Fl.Ind.Occ.1:41(1806)(sphalm. obtu-

sata). - Smith in Rees, Cyclop.37:no.40(1819). - A. DC. in DC., Prodr.8:10(1844). - Benj. in Linnaea 20:490 (1847) et in Mart., Fl.Bras.10:239(1847). - Hemsley, Biol.Centr.Amer.2:470(1882). - Kam. in Engl.Bot.Jahrb. 33:113(1902) et in Warb., Kunene-Zamb.Exped.374(1903). - Stapf in Dyer, Fl.Trop.Afr.4,2:495(1906). - Sylvén in Arkiv för Botanik 8,6:33(1908). - P.Taylor in Fl. Trin.and Tob.2,5:13(1955). - Leon et Alain, Fl.de Cuba 4:479(1957) et auctt.mult.Ind.Occ.et Amer.Centr.

Utricularia pumila Walt., Fl.Carol.64(1788).
Leon et Alain, Fl.de Cuba 4:479(1957).

Utricularia fibrosa Walt., Fl.Carol.64(1788).
- Vahl, Enum.1:199(1804). - Pursh, Fl.Amer.Sept.1:15 (1814). - Elliott, Sketch 1:20(1816). - Roem. et Schultes, Syst.1:196(1817). - Nuttall, N.Am.Pl.12(1818). - Smith in Rees, Cyclop.37:no.39(1819). - A. DC. in DC., Prodr.8:11(1844). - A.Gray, Manual Bot.N.Un.St.ed.6: 396(1890). - Britton et Brown, Ill.Fl.3:192(1898). - Muenscher, Aquatic Pl.U.S.322(1944). - Mason, Fl. Marshes Cal.737(1957) et auctt.mult.Amer.Bor.

Utricularia biflora Lam., Ill.1:50(1797). - Vahl, Enum.1:200(1804). - Pursh, Fl.Amer.Sept.1:15 (1814). - Elliott, Sketch 1:23(1816). - Roem. et Schultes, Syst.1:196(1817). - Nuttall, N.Am.Pl.13(1818). - Smith in Rees, Cyclop.37:no.44(1819). - A. DC. in DC., Prodr.8:10(1844). - A.Gray, Manual Bot.N.Un.St.ed.5: 319(1867). - Britton et Brown, Ill.Fl.3:193(1898). - Small, Fl.S.E.Un.St.1091(1903). - Muenscher, Aquatic Pl.U.S.322(1944). - Shinners, Spring Fl.Dallas - Fort Worth Texas 353(1958) et auctt.Amer.Bor. fere omnes.

Utricularia aphylla Ruiz et Pavon, Fl.Peruv.1: 20(1798). - Roem. et Schultes, Syst.1:199(1817). - A. DC. in DC., Prodr.8:17(1844).

Utricularia tenuis Cav., Ic.5:24(1799). - Vahl, Enum.1:203(1804). - Smith in Rees, Cyclop.37:no.57 (1819). - A. DC. in DC., Prodr.8:10(1844). - Gay, Fl. Chil.4:364(1849).

Utricularia crenata Vahl, Enum.1:203(1804). - Smith in Rees, Cyclop.37:no.56(1819).

Utricularia furcata Pers. Syn.1:18(1805).

Utricularia bipartita Ell., Sketch 1:22(1816).
- Nuttall, N.Am.Pl.13(1818). - A. DC. in DC., Prodr.8: 10(1844). - Chapman, Fl.S.Un.St.283(1860).

Utricularia longirostris Le Conte in Ell.,

Sketch 1:21(1816). - Nuttall, N.Am.Pl.13(1818). - A. DC. in DC., Prodr.8:10(1844). - Benj. in Mart., Fl.Bras. 10:238(1847).

Utricularia gracilis H.B.K., Nov.Gen.et Sp.2: 225(1818).

Utricularia alba Hoffmg. ex Link, Jahrb.Gew. 3:54(1820).

Utricularia striata Le Conte in Ann.Lyc.N. York 1:75(1824). - Beck, Bot.N.and Mid.St.287(1833). - A. DC. in DC., Prodr.8:8(1844). - A.Gray, Manual Bot. N.Un.St.287(1848). - Chapman, Fl.S.Un.St.282(1860).

Utricularia integra Le Conte in Ann.Lyc.N. York 1:76(1824).

Utricularia fornicata Le Conte in Ann.Lyc.N. York 1:76(1824). - Beck, Bot.N.and Mid.St.287(1833). - A. DC. in DC., Prodr.8:11(1844).

Utricularia pallens St.Hil. et Girard in Ann. Sci.Nat.Sér.2,11:153(1839). - A. DC. in DC., Prodr.8:9 (1844). - Benj. in Mart., Fl.Bras.10:237(1847). - Sylvén in Arkiv för Botanik 8,6:35(1908).

Utricularia pallens St.Hil. et Girard var. *natans* St.Hil. et Girard in Ann.Sci.Nat.Sér.2,11:154 (1839). - A. DC. in DC., Prodr.8:9(1844). - Benj. in Mart. Fl.Bras.10:237(1847). - Warm. in Kjoeb.Vidensk. Meddel.1:3(1874). - Sylvén in Arkiv för Botanik 8,6: 35(1908).

Utricularia anomala St.Hil. et Girard in Ann. Sci.Nat.Sér.2,11:153(1839). - A. DC. in DC., Prodr.8: 10(1844). - Benj. in Mart., Fl.Bras.10:244(1847).

Utricularia gayana A. DC. in DC., Prodr.8:9 (1844). - Gay, Fl.Chil.4:363(1849).

Utricularia parkeriana A. DC. in DC., Prodr.8:9 (1844). - Hemsley, Biol.Centr.Amer.2:470(1882).

Utricularia emarginata Benj. in Linnaea 20: 489(1847). - Hemsley, Biol.Centr.Amer.2:469(1882). - Sylvén in Arkiv för Botanik 8,6:34(1908). - Chandler in Annals of Bot.24:549(1910).

Utricularia tenuifolia Benj. in Linnaea 20:304 (1847).

Utricularia secunda Benj. in Linnaea 20:308 (1847). - Hemsley, Biol.Centr.Amer.2:470(1882).

Utricularia spirandra Wright ex Griseb., Cat. Pl.Cub.161(1866).

Utricularia macrorrhyncha Barnhart in Bull. Torr.Bot.Cl.1895:515(1898). - Small, Fl.S.E.Un.St.1091 (1903).

Utricularia tricrenata Bak. ex Hiern, Cat.Afr. Pl.Welw.1:785(1900).

Utricularia bifidocalcar Good in Journ.Bot.62: 161(1924).

subsp. exoleta (R. Br.) P.Taylor, comb. et stat. nov.

Utricularia exoleta R. Br., Prodr.430(1810). - Smith in Rees, Cyclop.37:no.38(1819). - A. DC. in DC., Prodr.8:7(1844). - Benth., Fl.Austral.4:526(1869). - C. B. Clarke in Hook. f., Fl.Brit.Ind.4,2:329(1884). - Aschers. in Deutsch.Bot.Gesell.4:404(1886). - Forbes et Hemsley, Index Fl.Sin.2:223(1890). - Goebel in Ann. Jard.Bot.Buitenz.9:91(1890). - Trimen, Fl.Ceylon 3:268 (1895). - Hiern, Cat.Afr.Pl.Welw.1:786(1900). - Kam. in Engl.Bot.Jahrb.33:112(1902) et in Warb., Kunene-Zamb. Exped.373(1903). - Stapf in Dyer, Fl.Cap.4,2:435(1904) et in Dyer, Fl.Trop.Afr.4,2:495 et 575(1906). - Koorders. Exkursionsflora von Java 3:204(1912). - Coutinho, Fl. Port.572(1913). - Pellegr. in Bull.Soc.Bot.Fr.61:20 (1914). - R.E. Fries, Wiss.Ergebn.Schwed.Rhod.-Kongo-Exped.1:301(1916). - Ridley, Fl.Malay Penins.2:491 (1923). - Merrill, Enum.Philipp.Pl.3:466(1923). - Dinter in Fedde Repert.24:367(1928). - Pellegr. in Lecomte, Fl.Gen.Indoch.4:473(1930). - Hutch. et Dalz., Fl.W.Trop.Afr.2:234(1931). - Perrier in Mém.Inst.Sci. Madag.B,5:190(1955) et in Humbert, Fl.Madag.,Lentib.6 (1955). - Andrews, Fl.Pl.Sudan 3:154(1956) et auctt. mult.As.et Afr.trop.

Utricularia diflora Roxb., Hort.Beng.4(1814).

Utricularia diantha Roxb. ex Roem. et Schultes, Mant.1:169(1817). - Wight, Icon.4:9,t.1569(1850). - Miq., Fl.Ind.Bat.2:999(1859). - Oliv. in Journ.Linn. Soc.3:176(1859) et 9:147(1865).

Utricularia biflora Roxb., Fl.Ind.1:144(1820) et 1:143(1832).

Utricularia roxburghii Spreng., Syst.1:52(1825).

Utricularia pauciflora Blume, Bijdr.739(1825).

Utricularia ambigua A. DC. in DC., Prodr.8:9
(1844).

Utricularia pterosperma Edgew. in Proc.Linn.
Soc.1:352(1847).

Utricularia conferta Hassk. in Natuurck.
Tijdschr.Nederl.Ind.10:90(1855) et in Retzia s.Obs.
Bot.Pugil.1:90(1855). - Miq., Fl.Ind.Bat.2:998(1859).

Utricularia sumatrana Miq., Fl.Ind.Bat.2:
998(1859).

Utricularia saharunporensis Royle ex Oliv. in
Journ.Linn.Soc.3:176(1859) pro syn.

Utricularia elegans Wall. ex Oliv. in Journ.
Linn.Soc.3:176(1859) pro syn.

Utricularia gracilis Lepr. ex Oliv. in Journ.
Linn.Soc.9:147(1865) pro syn.

Utricularia exoleta R.Br. var. *lusitanica* Kam.
in Engl.Bot.Jahrb.33:112(1902).

Utricularia riccioides A.Chev. in Bull.Soc.
Bot.Fr.Mém.8:187(1912). - Pellegr. in Bull.Soc.Bot.Fr.
61:20(1914).

STAPF (1906) identified the smaller flowered of the above two taxa with the Australian and Asian *U. exoleta* R.Br. and the larger flowered with the West Indian *U. obtusa* Sw. An examination of the South and Central American material of *Utricularia* proves that the latter is widespread, under a great variety of names, in those areas. Further research shows that the North American *U. biflora* Lam. is identical with *U. obtusa*. Most recent North American authors, (e.g. ROSSBACH (1939), THOMSON (1940), MUENSCHER (1944), FERNALD (1950)), recognise two further species allied to *U. biflora* - *U. gibba* L. and *U. fibrosa* Walt., the former being distinguished mainly by its smaller short-spurred flowers, the latter by its larger flowers and tuberculate seeds. At least one recent American author (SHINNERS 1958) has suggested that *U. biflora* and *U. gibba* are not in fact distinct, and a careful examination of a large quantity of material leads me to agree that they are mere forms of one variable species. *U. fibrosa* appears at first sight to be more distinct, but seeds which are tuberculate to a varying degree are to be

found on specimens both from South America and Africa which do not possess the other characters of *U. fibrosa*. Moreover, in several specimens from tropical Africa, smooth and tuberculate seeds are present in the same capsule.

'*U. exoleta* R.Br.' has a very wide distribution, from Portugal and north Africa, throughout tropical and South Africa, Madagascar, tropical and subtropical Asia and Australia, but it is absent from America. Most of the synonymy given above has been accepted by previous authors. It is more or less constantly distinct from *U. gibba* in its smaller corolla with a relatively narrower upper lip. Intermediate forms are, however, not infrequent both in Africa and Asia. I feel that to give it the rank of subspecies is more indicative of the probable relationship between the two entities.

Some of the very wide variation in the size and shape of the corolla of *U. gibba*, between different populations, within individual collections and in a single inflorescence are shown in figs. 1-3.

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ROSSBACH: Rhodora 41 (1939).
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MUENSCHER: Aquatic Pl. of the U.S.A. (1944)
FERNALD in A. Gray: Manual of Botany ed. 8 (1950)
PERRIER DE LA BATHIE in Humbert: Fl. Madag., Lentibulariaceae (1955)
ANDREWS: Fl. Pl. of the Sudan (1956)
SHINNERS: Spring Flora of the Dallas - Fort Worth area, Texas (1958).

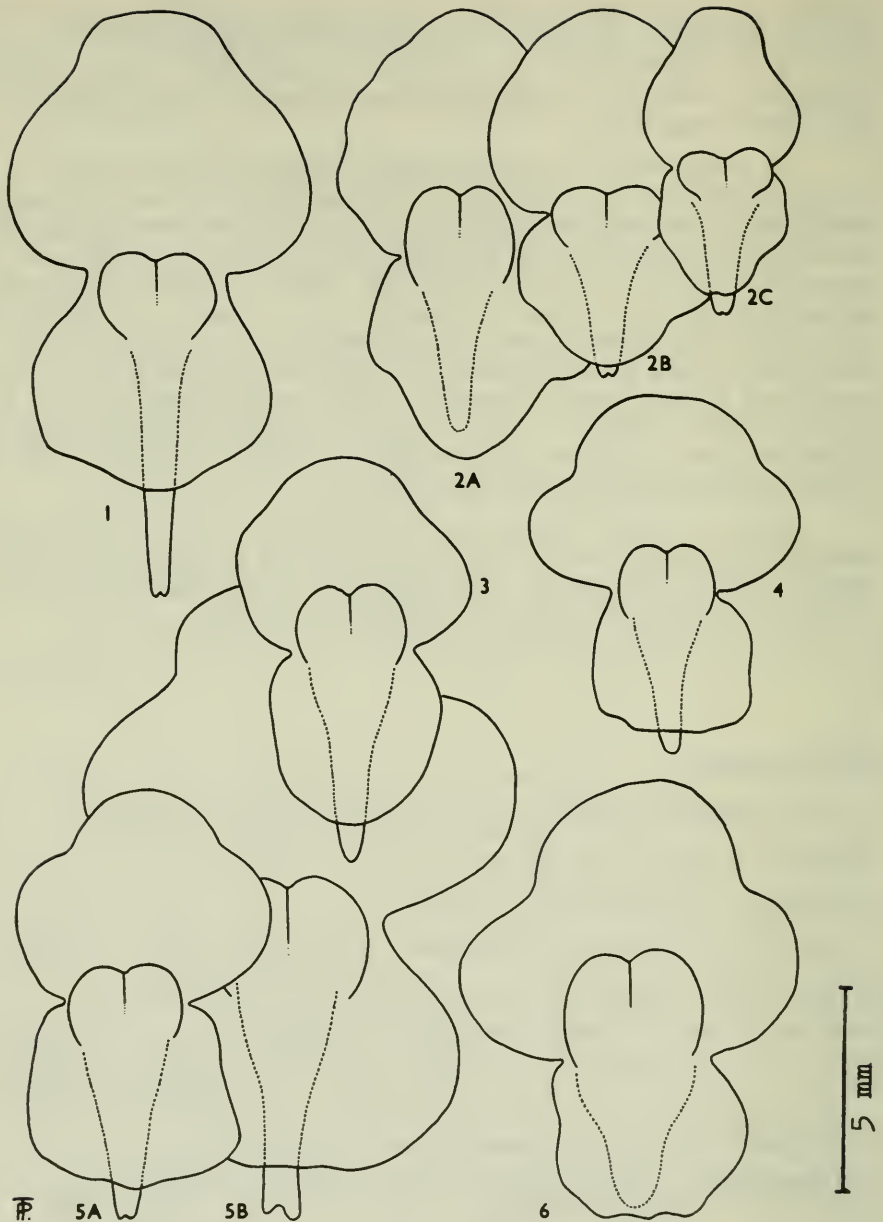


Fig. 1. *Utricularia gibba* subsp. *gibba*: 1 STEARN s.n., Jamaica; 2 A, B & C Trinidad Herb.15174, Trinidad; 3 SANDWITH 1020, British Guiana; 4 LANJOUW 1098, Surinam; 5 A & B MIKULA 3583, Virginia; 6 MIKULA 3219, Virginia.

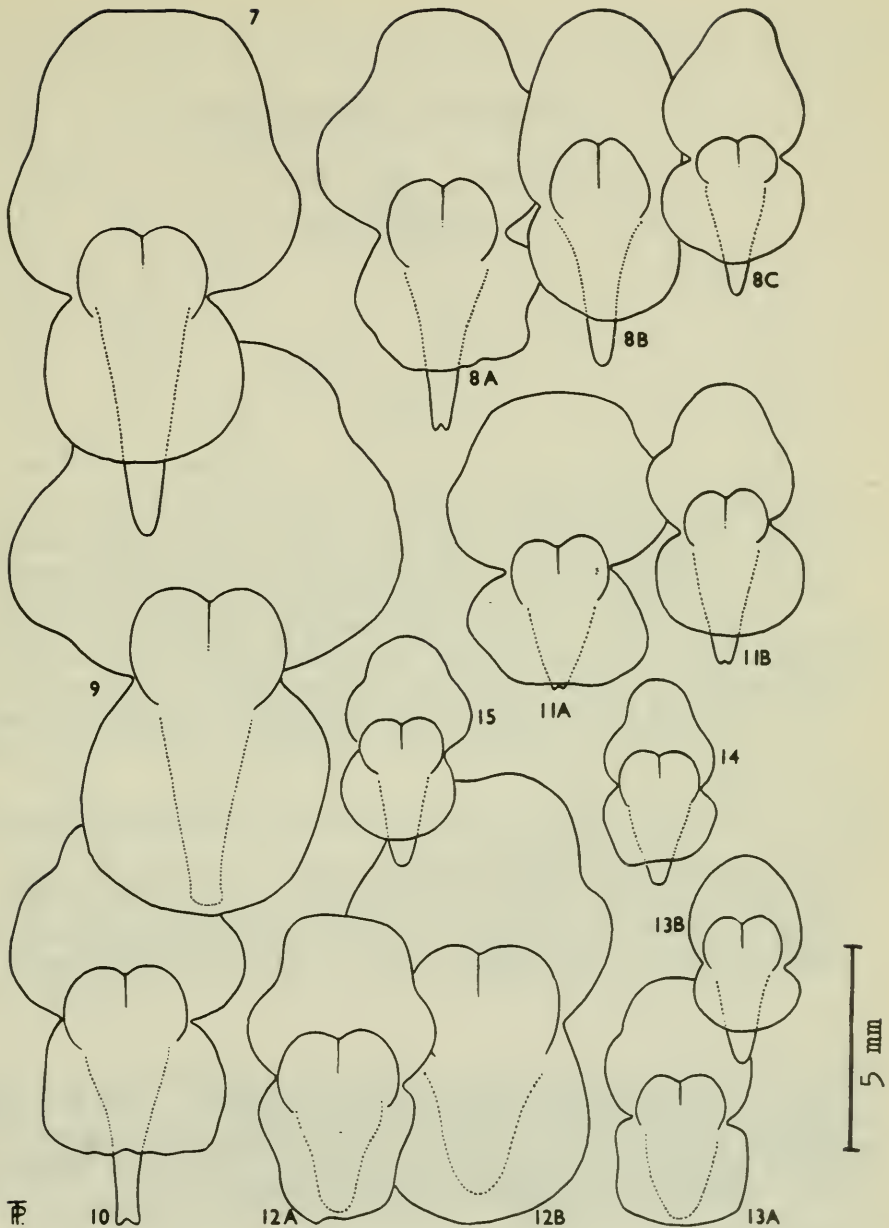


Fig.2. *Utricularia gibba* subsp. *gibba*: 7 RICHARDS 5703, Northern Rhodesia; 8 A, B & C RICHARDS 6383, Northern Rhodesia; 9 BRENAN & GREENWAY 8073, Northern Rhodesia; 10 BRENAN & JONES 8598 A, Nigeria; 11 A & B, RICHARDS 6251, Northern Rhodesia. - subsp. *exoleta*: 12 A & B LIND 184, Uganda; 13 A & B HEPPEL 2660, Sierra Leone; 14 MEIKLE 1021, Nigeria; 15 ADAMES 201, Sierra Leone.

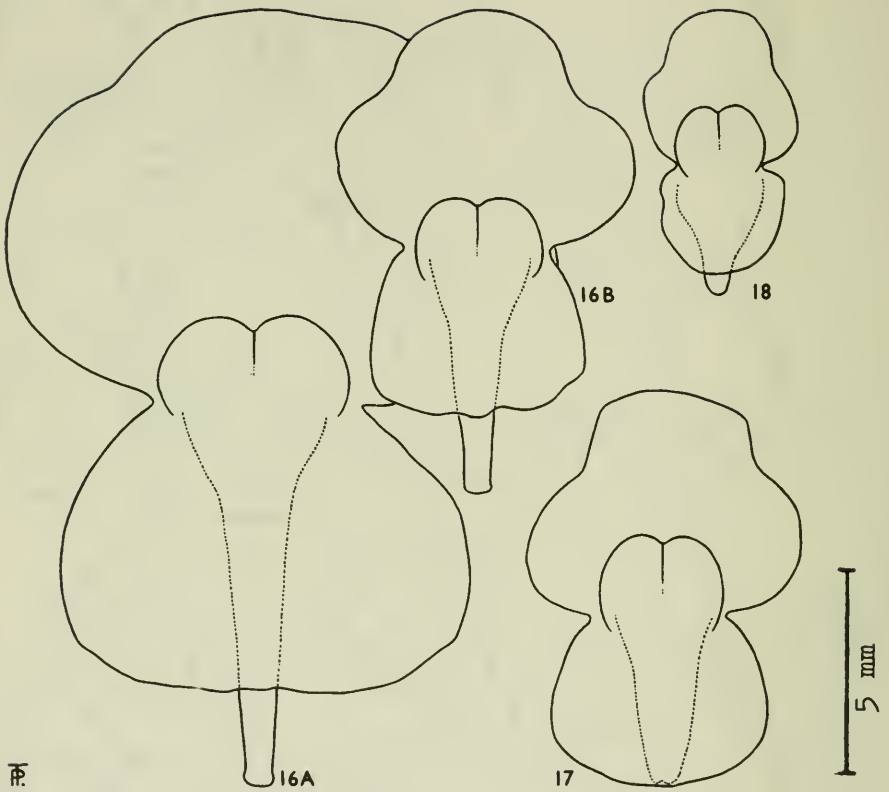


Fig. 3. Utricularia gibba subsp. gibba: 16 A & B two corollas from the same inflorescence, cultivated at Kew, origin unknown; 17 ?subsp. gibba: YAPP 378, Malaya. - subsp. exoleta: 18 BARNES s.n., India.

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