

#### Tribe IV. **Cytineae.**

*Cytineae* R. Br. in Trans. Linn. Soc. XIX. (1844) 245.

Flowers small to medium sized, unisexual or bisexual, in terminal spikes, racemes or umbels, rarely individually. Perigone hollow or trochlear [pulley-shaped]. Stamens of the male flower united into a column which carries a stunted scar at the apex; Anthers dithecal, extrorse, parallel. Ovary one-locular, with several parietal septum-like placentae; Stigma on a thick style, broadly capitate; Ovules numerous, small, atropous, with only one complete integument. Fruit berry-like, multi-seeded; Seeds tiny, embedded in a sticky-slimy pulp.

7. **Cytinus** L. Gen. ed. 6. (1764) 566 (Druckfehler statt 576); Praelect. Ordin. pl. ed. Giseke (1792) 301 (*Hypocistis* [Ludwig, Def. gen. (1737) 24] Adans. Fam. II. [1763] 76; Spach, Hist. nat. végét. X. [18451] 551; Fourreau in Ann. Soc. Linn. Lyon Nouv. ser. XVII. [1869] 1458; *Thyr sine* Gleditsch, Syst. pl. [17645] 286; *Phelypea* Thunb. Nov. gen. pl. V. [17845] 81; *Citinus* All. Fl. pedem. II. [1785] 214; *Hypolepis* Pers. Synops. II. [1807] 598; ? *Hisbanche* Sparm. in Meissner, Gen. Comm. [18453] 275; *Haematolepis* C. Presl, Epim. bot. [1849] 238). – Flowers unisexual, without or with vestiges of the other sex, monoecious or dioecious. Perigone tubular, with 4-6 sections; tube at the base connected to the staminal column or the stylar column by perpendicular small bands (lamellae), which leave deep pits between themselves. Anthers 8-20 (?) (also 5-7 is indicated sometimes for *C. Hypocistis*, which however after Heinricher is probably wrong; 20 with *C. Baronii* and *C. malagasicus*, which do not apply meanwhile after Jumelle to *C. Baronii*, where only 9-10 exist), fastened around the summit of the staminal column, which has a remaining scar at the apex, narrow, dithecal, with extrorse, parallel, longitudinal dehiscing locules; Connective usually extending over the pollen locules. Ovary one-locular (variable at the top with *C. Hypocistis* and perhaps also with other species), formed from several carpels <sup>1)</sup>, with 8-14 undivided or branched out at the sides placentae; ovules very numerous, on the sides of the placentae, tiny, atropous, with one complete integument (exterior completely degenerated); Stigma spadiceous at the point of the stylar column, with just as many rays as there are placentae present. Fruit a berry with numerous tiny light-yellow seeds <sup>2)</sup> in a sticky pulp. – shoots simple or branched (rarely being missing), beset with scales. Flowers shortly pedicellate in terminal raceme, spike or umbel, usually with subtending bract and 2 prophylls: more rarely single and terminal, sometimes 3-4 surrounded by an envelope of 6 or more bracts [Hochblättern].

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1) After Lutz who shows, by cross sections of young ovaries of *Cytinus Hypocistis*, how the placental plates unite in the center. The arrangement shows clearly that with this genus that an originally multi-locular ovary is present, which however later changes in the process of development. The ovules sit on lateral extensions of both sides of the septa; by “mucilagination” of the central axis the ovule bearing internal parts of the septa later an apparently parietal placentation is brought about (placentation pseudopariétale, acquérant cette disposition par gélification d'un axe primitif formé par la réunion d'un certain nombre de cloisons) [placentation pseudoparietal, acquiring this provision by gelatination of a primitive axis formed by the meeting of a certain number of partitions].

2) Fr. Netolitzky, Anat. Angiospermen-Samen (1926) 108, *Cytinus Hypocistis* (Fig. 19): Epidermal cells of the seed coat flat, thick-walled with wall pores, which are missing at both seed poles and are replaced by small cellular tissue, which comes at least at the seed base from the nucellus. The from one- to two-layered, starch-free endosperm is enclosed by a membrane (embryo sac wall after Solms, remainders of the nucellus and internal integuments after Bernard in Journ. de Bot. XVII. [1903]), which probably corresponds to an internal cuticle. Embryo recognized with difficulty.

Most Important Literature: A. Brongniart, Observations sur les genres *Cytinus* et *Nepenthes*, in Ann. sc. nat. I. (1824) 29. – Hofmeister in Ann. sc. nat. 4. sér. XII. (1859) 35 (Entwicklung der Samenanlage). – G. Arcangeli, Sulla organogenia dei fiori del *Cytinus Hypocistis*, Livorno (1874). – H. Baillon, Sur le développement des *Cytinus*, in Bull. Soc. Linn. Paris (1874) 27. – Eichler, Blütendiagramme II. (1878) 535. – E. G. Baker (1888); siehe unten. – L. Lutz, Observations sur l'ovaire du *Cytinus Hypocistis*, in Bull. Soc. bot. France XLVI. (1899) 299. – Graf zu Solms-Laubach in E. P. 1. Aufl. ID. 1. (1889) 274; in Engler, Pflanzenreich Heft 5. (1901) 15. – P. Bargagli<sup>3)</sup>, Breve notizia sulla fecondazione e disseminazione del *Cytinus Hypocistis*, in Bull. Soc. bot. Ital (1900) 203. – Ch. Bernard, Sur l'embryogénie de quelq. pl. parasites, *Cytinus Hypocistis* L., in Journ. de Bot. XVII. (1903) 158 pl. VI. (normale Entwicklung des Embryosacks). – G. Nicolas, Une variation du *Cytinus Hypocistis*, in Bull. Soc. Hist. Nat. de l'Afrique du Nord III. (1912) 166 (am Grunde des Stammes der Wirtspflanze *Cistus monspeliensis* mit verkürzten Sprossen auftretend). – A. von Hayek, Über die Blütenbiologie von *Cytinus Hypocistis*, in Österr. Bot. Zeitschr. LXII. (1912) 238. – K. Fritsch, Untersuch. über die Bestäubungsverh. südeurop. Pflanzenarten, *Cytinus Hypocistis*, in Sitzungsber. Akad. Wiss. Wien, Math.-Naturw. Kl. CXXI. 1. (November 1912) 897 (Organisation mit Nektarien für den Besuch von Hummeln; aber Bestäubung und Befruchtung nicht beobachtet). – R. Marloth, Fl. South Africa I. (1913) 175. – B. Perotti, Contribuzione alla conoscenza dei rapporti fra *Cytinus Hypocistis* e *Cistus salvifolius*, in Annali di Bot. XIII. (1915) 151. – R. von Wettstein (siehe unten). – E. Heinricher, Die erste Aufzucht einer Rafflesiacee, *Cytinus Hypocistis* L., aus Samen, in Ber. Deutsch. Bot. Ges. XXXV. (1917) 505; Zur Kenntnis der Blüte von *Cytinus Hypocistis*, l. c. XXXV. (1917) 513; Zur Aufzucht der Rafflesiacee *C. H. L.* aus Samen, l. c. XLV. (1927) 644; Über das Aufsteigen des *C. H.* im Stamme der Wirtspflanze *Cistus*, in Beitr. Biol. Pflanzen XIX. (1931) 25. – Jumelle et Perrier de 10. Bâthie (see below).

*Cytinus* L. (1764) is the name conserved over *Hypocistis* Adanson (1763); Briquet, Règles internat. Nomencl. bot. éd. 2. (1912) 85.'

Κυτινος means pomegranate flower (flower of *Punica Granatum*); flos mali Punici (vgl. Thes. Ling. Lat. IV, 1594). Our genus is mentioned in Dioscorides as *Hypocistis* (Mater. med. ed. Sprengel 1. [1829] 119, cap. CXXVII):  
*φυεται δε παρα τας ριζας του χιστου η λεγομενη υποχιστις, υπ'ενιωων δε θρυβηθρον . . . η χυτινος χαλουμενη, ομοιοντι χυτινω ροιας. – υποχιστις vel υποχισθις est memorabilis ea herba, Cistorum radicibus adnascens, quae et hodie Cytini Hypocistidis nomine venit* (Sprengel, l. c. II. [1830] 401).

6 species, parasitic on roots, rarely on stems. 1 species in Mediterranean area, 2 in South Africa, 3 in Madagascar.

Sect.1. *Eucytinus* Bak. f. in Journ. Linn. Soc. XXIV. (1888) 465 (*Hypocistis* Adans. l. c.) – vegetative bodies normally on roots. Flowers monoecious (rarely bisexual), rarely dioecious, in one-member thick spikes, with 2 prophylls; perigone four-parted (rarely five-parted). Anthers 8-10<sup>1)</sup> (whether also sometimes 5-7?). Pollen grains individual, free. Placentae 8-10 (after Bernard usually 9 with *C. Hypocistis*), which branch out at the sides. - 2 species.

3) For fertilization perhaps *Bombus agrorum* Fab. var. *pascuorum* is possible; for seed dispersal, the very small, fruit-eating ant (*Formica*).

*C. Hypocistis* L. (*Asarum Hypocistis* L. Spec. pl. ed. 1. [ 1753 ] 442; *Hypocistis kermesina* [Guss.] O. Ktze. Rev. gen. II. [1891] 563), type species of the genus, widespread in the Mediterranean area from the Iberian peninsula to Asia Minor, Syria and Palestine; preferably in the proximity of the coasts, more rarely toward the inside of the country (is missing only in the extreme southeast); furthermore in Macaronesia.

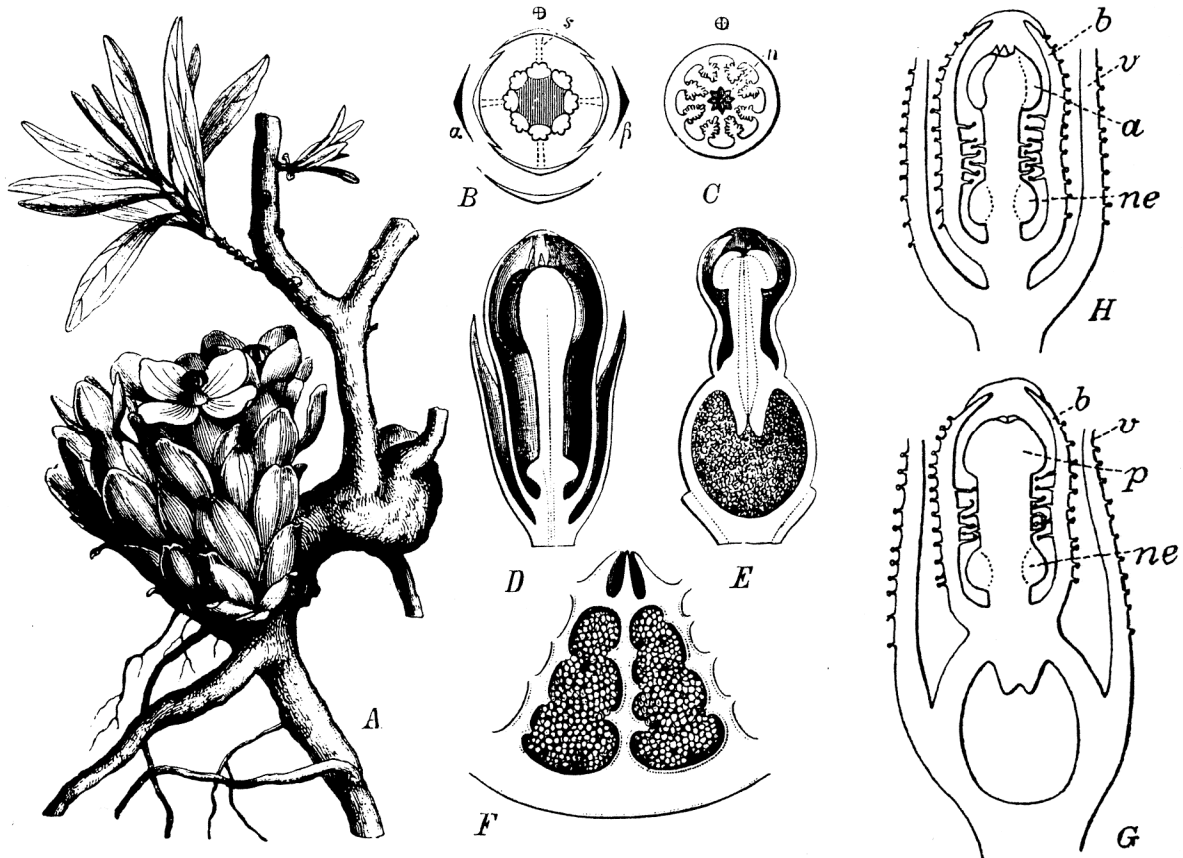


Fig. 146. *Cytinus Hypocistis* L. A plant on the root of *Cistus monspeliensis*. B diagram of the ♂ flower (in ♀ flower often left lateral tepal covers the lefthand front median side of the tepals with its right side), s connecting borders of the staminal column with the perigone tube. C cross section of the ovary, schematically; n stigmas. D ♂ flower in longitudinal section. E ♀ flower in longitudinal section. F cross section of the ovary. G longitudinal section of ♀ flower, H through the ♂ flower; b perigone, v prophyll, n stigma, ne nectary, a anther. A-F from E. P. 1. Aufl. III. 1, 281, Fig. 187; G-H from Hayek.

1) after Ch. Bernard (l. c. 169) the number 10 is constant with *C. Hypocistis*, whereas 8 or fewer occur particularly in the terminal flowers that are not fully developed. - Heinricher also determined the number of 10 and doubts a reduction under 8. - Heinricher (l. c. 517) found well developed anthers on the Columna genitalis of a female flower; perhaps after examination of extensive material it would result that such "hermaphrodite flowers" arise more frequently with *Cytinus* in the transition zone from the male to the female flowers.

R. von Wettstein (Studien über die syst. Gliederung von *Cytinus Hypocistis* L.; in Ber. Deutsch. Bot. Ges. XXXV. [1917] 86-99, T. II) differentiates between 5 subspecies; this arrangement, for which are possible such morphological characters as flower color, as well as size, color and pubescence of the bracts and prophylls, is connected with the parasitism of different host plants. – 1. Subspec. *ochraceus* Gussone (Fl. Sic. synops. II. 2. [1844] 618). In addition belongs *Hypocistis lutea* Fourreau (1869) and *C. Hypocistis* var. *lutea* Briq. Prodr. Fl. Corse I. (1910) 438; furthermore probably *Hypocistis varia* Clusius (Rar. aliquot stirp. p. Hisp. obs. hist. [1576] 161; Rar. pl. hist. [1601] 79). Flowers rather small, the bracts and prophylls present at full anthesis not very outstandingly, perigone ocher to light-yellow; overcrowded stem leaves, bracts and prophylls yellowish or orange colored or ± scarlet; bracts, prophylls and flowers ± closely occupied with short obtuse hairs. On the white-flowering *Cistus* species of the Sect. *Stephanocarpus* and *Ledonia*, *Cistus monspeliensis* L. and *C. salvifolius* L. (Fig.: Sibthorp, Fl. Graeca X. [1840] t. 938; Hooker, Exotic Fl. III. [1827] t. 153; Reichenbach, Icon. fl. Germ. XI. [1849] t. 540). Southern France, Spain, Italy; obviously distributed in the Mediterranean area, particularly in the west. J. Gay (in Bull. Soc. bot. France X. [1863] 310) clearly recognized the differences between *ochraceus* and *kermesinus*. 2. Subspec. *kermesinus* Gussone (l. c. 618). Here *Hypocistis rubra* Clusius (Rar. stirp. p. Hisp. obs. hist. [1576] 134, Rar. pl. hist. [1601] 68; *Hypocistis rubra* Fourreau (1869); *Cytinus Clusii* Nyman, Consp. Fl. Europ. [1881] 645). Flowers ivory-white, rarely outside reddish; stem leaves, bracts and prophylls carmine to cherry-red. Plant taller and slimmer than subsp. *ochraceus*, flowers at full anthesis still protruding less than the bracts. In red-flowering species of the section *Eucistus*, *Cistus albidus* L. and *C. villosus* L. distributed from Spain, Southern France and Italy to Greece, Turkey, and Asia Minor. Documented in the Caucasus area (Pitsunda): J. J. Muszynski in Monit. Jard. Bot. Tiflis (1920) 37. *Hypocistis hypocistis* (L.) var. *kermesinus* (Guss.) Lindinger (Beitr. Kenntn. Fl. Kanar. Ins. [1926] 258). 3. Subspec. *canariensis* Webb et Berthelot (as var.). Flowers white, bracts and prophylls carmine; stem leaves, bracts, prophylls, perigone completely glabrous; flowers at full anthesis protruding over the bracts and s; plant often very richly flowered. On *Cistus symphytifolius* Lam. var. *vaginatus* (Dryander) Grosser on the red-flowering Sect. *Rhodocistus*. On the Canary Islands. Whether also on *C. monspeliensis* L.? 4. Subspec. *macranthus* Wettst. Flowers large, the bracts and prophylls greatly exceeding [the flowers], intensively yellow; all parts pubescent; stem leaves, bracts and prophylls carmine to vermilion-red. On *Halimium* species in North Africa (Tunis, Algiers). Probably belonging here *Hypocistis lutea* Clusius (l. c. 143). Perhaps in south Spain. 5. Subspec. *orientalis* Wettst. Similar to Subspec. *macranthus*, distinguished from it by the following characteristic: ♂ flower with upward gradually extended funnel-shaped tube, those under the perigone clefts not constricted (with subspec. *macranthus* the tube is constricted above, bulbous below); bracts narrow, only a little concave; bracts of the female flowers, whose ovary is slightly bulbous, towering slightly above it or not, oblong, blunt. Only known from Crete; on *Cistus parvifolius* Lam. (Sect. *Ledonella*). After R. von Wettstein is found *Cytinus Hypocistis* perhaps also on *Fumana thymifolia* (L.) Hal. A special Subspec. is *lutescens* (Batt.) Maire, Catal. pl. Maroc II. (1932) 172 (*Cytinus Hypocistis lutescens* Battandier, Fl. Algérie [1890] 790); after Battandier a small plant of rather lively yellow, scales at the apex red-brown, calyx very papillose with rather narrow lobes; generally on yellow-flowering species: *Fumana viscosa*, *Helianthemum pomeridianum*, *H. lavandulaefolium*, after Battandier; after Maire in Morocco on *Helianthemum glaucum*, *Halimium rhiphaeum*.

The name *Hypocistis* is among other things with Tournefort (Inst. Coroll. [1703] 46, t. 477). - illustrations: L Trattinnick, Thes. bot. (1819) t. 29; Schnizlein, Icon. I. (1844) t. 40; Hooker, Exot. Fl. II. (1825) t. 153; Reichenb., Icon. Fl. Germ. X. (1849) t. 540; Schlechtendal, Langethai und Schenk, Fl. Deutschl. ed. 5. XXII. (1885) t. 2195; Fiori e Paoletti, Ic. Fl. Ital. (1898) 110. – A. Kerner, Pflanzenleben 1. (1890) 183, 189: “the scale-like leaves, which dress the stem of this

parasite, are scarlet colored, and the *Hypocist* is not isolated, but occurs in large quantities, such that one sees flaming red partly shining out from the gaps of the rock-rose stocks, through which one already from a distance becomes attentive to the occurrence of the parasite". - O. Penzig (Pflanzenzootologie 2. Aufl. III. [1922] 186) mentions the following deformations of *C. Hypocistis*: after Clos an abnormal form, where exists a stem without the usual scales. After A. Liron hermaphrodite flowers, in which develop on one side of the styler column anthers and on the other side stigmas. Chatin described a kind of hypertrophie of the placenta in which the ovules were aborted.

In this section also belongs the South African *C. capensis* Marloth (in Trans. Roy. Soc. S. Africa II. 3. [1912] 237; Fl. S. Africa 1. [1913] 175, t. 43), there one finds it in the Cape Flats inhabiting the roots of the composite *Metalasia muricata*; in contrast to *C. Hypocistis* it is dioecious. The sections of the dark-wine or magenta-red perigones are occupied with short lobed or variously divided hair structures.

E. Heinricher (see above) succeeded in growing *C. Hypocistis* from seeds. In July 1913 seeds from Athens were sown in 37 pots with different *Cistus* species in the way that, by blending the earth with the dust-fine seeds, to which were brought a somewhat opened root system of the host plant. In January 1917 the emerging inflorescences became recognizable as *Cytinus*, in the followed March still another two, both with *Cistus populifolius* as host plant from one of the pots from the first time. The developmental duration of the parasite up to mature flower required over three years; it is impossible to pursue the development more exactly since it obviously runs completely within the feeding root. In addition Heinricher cultivated the parasite on excavated afflicted host plants, which were with him on the island Lussin; they came to flower. Whether the *Cytinus* forms insist on so close a specialization with certain host plants, as Wettstein assumes, Heinricher appears doubtful; it would also be possible that from the seed of the same *Cytinus* mother plant under the influence of material peculiarities could be due to a difference in the coloring of the descendants of the host plant. In January 1927 he demonstrated a plant from *Cistus salvifolius* (?) that for the first time had a male inflorescence, thus only to 14 years. - Heinricher proved that the parasite can also migrate into the trunk.

Use: The juice of *Cytinus Hypocistis* (Hypocist) from the whole plant in form of an extract and particularly the fruits (Succus Hypocistidis, Hypocistis juice, Zistensaft) serves as an astringent means against blood flow, dysentery and also surface wounds; the extract came into the trade in former times as black-red cakes (Kosteletzky, Allg. med. pharm. Flora 11. [1833] 320; H. Karsten, Pharm. med. Bot. [1883] 445; Moeller und Thoms, Real-Enzykl. Pharmazie IV. [1905] 250). The young plants are eaten like asparagus. Lindley (Nat. Syst. ed. 2. [1836] 393): "Cytinus contains gallic acid, and, according to Pelletier it has the singular property of precipitating gelatine without containing tannin". J. Pelletier, Examen chim. du suc d'Hypocistis, in Bull. Phatm. V. (1813) 289.

Sect. 2. *Hypolepis* (Pers.) Bak. f. 1. c. 465; Solms Laubach in Engler, Pflanzenreich number 5. (1901) 16 (*Hypolepis* Pers.; *Phelypea* Thunb.; *Haematolepis* C. Presl). Vegetative body close-clustered branching, on roots of shrubs or subshrubs or on trunks; sometimes vegetative bodies nearly missing (plant stemless). Flowers dioecious, individual or to 3-4 surrounded by an involucre of bracts (after Solms-Laubach the branches of the stem are one-flowered); usually 2 prophylls. Perigone six-parted (rarely five-parted). Anthers 7-20 (or only 8 to 10 ?); Pollen in tetrads. Placentae simple, normally.

4 species in South Africa (1) and Madagascar (3). - *C. sanguineus* (Thunb.) Harms (*C. dioicus* Juss. Ann. Mus. Paris XII. [1808] 443; *Phelypea sanguinea* Thunb. 1784; *Hypolepis sanguinea* Pers. [1807]; *Haematolepis sanguinea* C. Presl [1849]; *Hypocistis sanguinea* [Thunb.] O. Ktze.), on the roots of *Agathosma*, *Selago*, *Eriocephalus*, *Relhania*, with orange, reddish or yellow flowers, from the southwest Cape country to Kaffraria. Griffith in Trans. Linn. Soc. XIX. (1845) 323. Illustrations: Hook., Icon. pl. IV. (1841) t. 336; Marloth, Fl. S. Afr. I. (1913) t. 43. - *C. dioicus* might be close to: *C. malagasicus* Jumelle (in Ann. Faculté des sc.

Marseille XXIII. 2. [1915] 38, pl. IV), which has about 20 anthers in the staminal column, contrary to *C. dioicus* which has 7-8. Two rows of 3 bracts each envelope a 3-flowered group of glabrous male flowers. This species grows in Madagascar on the roots of a tree, which perhaps belongs to *Dombeya*. – *C. Baronii* Bak. f. is missing a clear vegetative body or it is very short; numerous bracts form an involucre around the glomerule of 3-4 flowers (after Solms Laubach: “Proles brevissima, squamis ut videtur sparsis obsita, fasciculatim ramosa, ramis ternis vel quaternis squamosis flore unico terminatis”); flowers whitish, anthers after Baker f. 20 (after Jumelle 10), placentae 9-12. In Madagascar on the trunk of a *Dicoryphe* (Hamamelidaceae), also found on a Rubiaceae. – Baker f. based his *Botryocytinus* on this species (in Journ. Linn. Soc. XXIV. [1888] 466). – *C. glandulosus* Jumelle (in Compt. Rend. Acad. Sc. Paris CLXXVII. [1923] 1431) has brownish glomerules; perigone five-parted (therefore it Sect. *Pentacytinus* Jumelle), 10-12 anthers, 10-13 placentae; on bracts and perigone sections characteristic [peculiar?] thick, capitate-like hair, which are sometimes 2 or 3 divided, on wart-like emergences. In Madagascar (Tsaratanana), as both a root parasite and also on the lower parts of the trunk of the host plant (*Croton*).

The development of the parasite *C. Hypocistis* in the host plant and its influence on its tissue is particularly represented in the following work: A. Fraysse, Contribution à la biologie des plantes phanérogames parasites (Montpellier 1906). – in Part 3 of this work the development of *Cytinus Hypocistis* is discussed (after C. Queva in Bot. Centralbl. Bd. 102. II. [1906] 52). Germination of the tiny seeds was not observed. In the host plant the parasite consists of a cord-shaped thallus between the wood and cambium of the feeding root. It consists of 2 tissue plates, which are separate by a meristematic zone (zone génératrice). In it lain against the wood of the host plant forms the tracheid and vessel tissues; the peripheral elements of the thallus develop absorption filaments. The parasite progressing with the host plant does not cause trauma. The wood of the stricken parts fills with tyloses and slime. The stem consists of the superficial tissue of the thallus and the bud which endogenously breaks through the stricken root; the phloem of the stem is parenchymatous, without seive tubes. The scales have on their upper surface stomata; they receive from the stem a ramifying bundle. The plant does not contain starch, however sugar and tannin. The course of the thallus in the host plant is due to a mechanical effect in connection with the chemical effect of diastase, which loosens cell walls. – confirmations and additions supplied this work: R. Perotti, Contribuzione alla conoscenza dei rapporti fra *Cytinus Hypocistis* e *Cistus salvifolius*, in Annali di Bot. XIII. 2. (1915) 151-156 (mit 3 Fig.). The irregular process and the deformation of the wood elements of the host plant caused by the parasite, particularly the vessels, are described.

8. **Bdallophyton** Eichler in Bot. Zeitung XXX. (1872) 709, t. 8 A (as genus of the Balanophoraceae), in DC. Prodr. XVII. (1873) 301 (placed in the Cytineae); Solms Laubach in E. P. 1. Aufl. III 1. (1889) 282 (*Scytanthus* Liebmann in Förh. Skandin. Naturf. 4. Möde 1844 [1847] 177; Solms-Laubach in Pflanzenreich Heft 5 [1901] 17). – flowers hermaphroditic or dioecious, without prophylls, in spikes; perigone superior, through the fused together lobes, then irregularly torne open in 5-9 lobes, campanulate, without connecting borders at the base of the column. Anthers 8-10, around the apex of the column nearly parallel, with pointed or blunt connective; pollen single-celled. Stigma shieldlike, radiately striped, indistinctly lobed; placenta simple, plate-like, 5-14.

The name *Scytanthus* Liebm. cannot be accepted, there it the older genus *Skytanthus* Meyen (Reise I. [1834] 376) given to the Apocynaceae and both names are in this regard orthographic variants of the same derivative; σχυτος skin or leather ανθος flower. The name *Bdallophyton* is derived from βδάλλω (suck).

4 species in Mexico, partly still unsatisfactorily known. – **A.** Perigone exterior glabrous. – **Aa.** connective of the anther subulate [awl-shaped] beaked: *B. americanum* (R. Br.) Harms (*Cytinus americanus* R. Br. [ 1845 ]; *Bdallophyton ceratantherum* Eichl.; *Scytanthus americanus* [ R. Br. ] Solms Laubach), in the province Huasteca; perigone soon 3-5 divided, soon seen as 8-9 divided. – **Ab.** Connective blunt: *B. Andrieuxii* Eichl. – **B.** Perigone outside scaly or granulated. Fruits fused. – **Ba.** Flowers hermaphroditic. Anthers blunt: *B. oxylepis* (Robinson) Harms (*Cytinus oxylepis* Robinson in Proc. Amer. Acad. XXIX. [ 1894 ] 321), on roots of *Bursera*, in Zapotlan (Jalisco) on lava; Fruits themselves at the base of the bracts grown together into a fleshy mass as with the pineapple, which is towered above by the points of the bracts; flowers of the same plant hermaphroditic and carpellate; perigone 6-lobed; stigma radiate capitate, irregularly lobed. – **Bb.** flowers dioecious. Connective beaked: *B. bambusarum* (Liebm.) Harms, in the thick bamboo forest between Papatla und Paso del Correo; Perigone 7-8-lobed, anthers 9, placentae 9; ovary of the female flower grow down together with one another. Fig. 147.



Fig. 147. *Bdallophyton bambusarum* (Liebm.) Harms. ♀ and ♂ plant together with anthr head. - from Pflanzenreich No. 5, 18, Fig. 13.

Supplement: S. 276 is as synonym of 7. For *Cytinus* add: *Hypocistis* Miller, Gard. Dict. Abridg. ed. 4. (1754); *Hippocistis* Cl. Druce in Rep. Bot. Exch. Club Brit. Isles III. 5. (1914) 432 (after index Kew. Suppl. V).