





# The West American Scientist.

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Whole No. 117.

## PERIODICALS.

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Binghamton, N. Y.

### AMERICAN ECONOMIST:

No. 135 W. 23d st., New York, N. Y.

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Established 1884.

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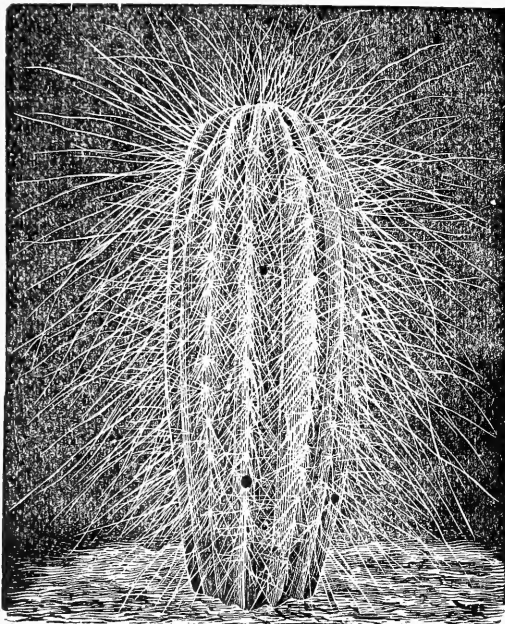
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**PILOCEREUS ALBISPINUS** Rumpl.  
 Foerster, handb cact, ed 2, 649.  
 KS nat pflzf III (6a) 180; Mon 187.  
*Cereus albispinus* S obs bot 5 (1822); HD ed 2, 45. Pf en 85. Foerster 385. Lab 341.  
*Cereus crenulatus* S HD ed 2, 45. Pf en 85. F 382. s obs bot 6 (1822).  
*Cereus crenatus* Lab 341.  
*Cereus octagonus et decagonus* Hort, Pf en 85.  
*Cereus acromelas* Otto Ind cact hort Berol 1833 fide Pf en 84 Curacao.  
 Variety **CRENATUS** Hort  
**PILOCEREUS COERULESCENS** Lem.  
*Pilocereus andryanus* Cels  
*Cereus aethiops* Haw phil mag 1830, 109.  
*Cereus mendory* Hort fide Pf en 85.  
*Cereus coerulescens* S HD 335. Pf en 85.  
*Pilocereus glaucescens* Lab in part.  
**PILOCEREUS CELSIANUS** Lem.  
 Lem cat Cels; Rev hortie 1862, 428.  
 Salm-Dyck cact HD ed 2, 40, 185  
 Foerster han b cact ed 2, 653  
 Labouret Monograph 276.  
 K Schumann nat pflzf III (6a) 186; Mon 179.  
*Pilocereus fossulatus* Lab rev hort iv sr 4, 25 (1855). Lem rev hort 1862, 418. F 660.  
 Croucher Gard chron 1873, 983 f.  
*Pilocereus foveolatus* Lab cat Cels 1858, non Lemaire.  
*Pilocereus Williamsii* Lem rev hort, 1862, 428.  
*Pilocereus Bruenowii et Kangerli* Haage jr ex Foerster handb cact ed 2, 651, 671.  
 Variety **LANGUINOSIOR** Salm  
**BRUENOWII** Karl Schumann.  
**GRACILIOR** KS.  
**WILLIAMSI** KS All Bolivia.  
**PILOCEREUS CHRYSACANTHUS** Web.  
 Tehuacan, Puebla, Mexico.  
*Pilocereus chrysomallus* Lem, is *Cephalocereus chrysomallus* fide KS.  
*Pilocereus columnn-trani* F, is *Cephalocereus columnn-trani* fide KS.  
**PILOCEREUS COMETES** Mittl.  
 Foerster handb cact ed 2, 357.  
 KS nat pflzf III (6a) 180; Mon 190.  
*Cereus cometes* Schied AGZ 8:339.  
*Pilocereus jubatus* S 1842, 24; ed 2, 40, 183.  
 Foerster 356; ed 2, 6 1. Lab 28  
 Lem rev hort 1862, 427.  
*Cereus flavicomus* S ed 2, 46, 202. F 387.  
 Labouret, Monogr 347 (1853).  
*Pilocereus flavicomus* Rumpl, F ed 2, 657.  
*Pilocereus auratus* Lab Gruson cat.  
 "San Louis Potosi."  
**PILOCEREUS DANTWITZII** Hge.  
 Haage, Gard chron 1873 17 f 1.  
 Van Houtte in Flore des Serr 13:33 t 2163.  
 Foerster handb cact ed 2, 657 f.  
 KS nat pflzf III (6a) 180; Mon 194.  
 Seitz?

?*Cactus lanatus* HBK nov gen et sp 6:68  
 ?*Cereus lanatus* DC prodr 3:461.  
*Pilocereus haagei* Poselger ms. Peru  
**PILOCEREUS DIVARICATUS** Lem.  
**PILOCEREUS ERYTHROCEPHALUS** KS.  
 KS Mon 195. Argentine Republic.  
**PILOCEREUS EXERENS** KS.  
 KS nat pflzf III (6a) 181; MfK 4:65; Mon 184 f 39.  
*Cereus exerens* Linke ex Pf en 99; Web dict 280.  
*Cereus virens* Pf en 99:—"C. erectus simplex 5 angu aris; sinubus acutis, tandem planis; costis rotundatis; areolis subremotis, iulvis, vix prominensibus, lanuginosis; aculeis 4-5 subulatis fulvis brevissimis deorsum spectantibus, centrali l horizontali fusco rigido."  
 Foerster 387. S 47. Lab 359 (non DC).  
*Cereus affinis* Hort Berol, Pf en 99.  
*Cereus warmingii* KS Fl Br 204.  
*Cereus articulatus* Hort non Pfeiffer.  
*Cereus tilophorus* Pf AGZ 3:380: en 100.  
*Cereus sublanatus* S 333; Pf en 100; Lab 360.  
 Foerster handb cact 401, ed 2, 687.  
*Pilocereus Houlettianus* Lem non houlettii.  
*Pilocereus oligogonus* Foerster cat Sencke; handb cact ed 2, 677. Lem rev hort 1862, 423.  
*Pilocereus virens* Lem III hort 1866, misc 20.  
 Mathss MfK 2:39 f.  
 We quote Schumann in above synonymy who calls it a Brazilian, while Pfeiffer says Mexico!  
**PILOCEREUS FIMBRIATUS** Lem.  
**PILOCEREUS FULVICEPS** Web.  
 KS Mon 176.  
*Pilocereus Hoppenstedtii* Web in part fide KS.  
 Tehuacan, Puebla, Mexico.  
**PILOCEREUS GOUNELLEI** Web.  
**PILOCEREUS HERMENTIANUS** L-C.  
 Lem et Cons III hort XIII t 469.  
 Foerster handb cact ed 2, 666.  
 KS Mon 186.  
*Cereus hermentianus* Monv III hort VI misc 1850. Lem Rev hort 186, 410.  
**PILOCEREUS HOPPENSTEDTII** Web.  
 Weber in cat Pfersdorff 1864.  
 Foerster handb cact ed 2, 667.  
 KS MfK 4:80; Mon 177.  
*Cephalocereus hoppenstedti* KS nat pflzf III (6a) 181.  
*Pilocereus hogendorpii* Reg in Gartenflora, 1859, 220 (non hoogendorpii).  
*Pilocereus lateralis* Weber.  
 Viejo is the Mexican name for this unique plant, the name signifying an old man, while *Pilocereus Houletti* is called vieja—the old woman—the one bearing an edible fruit, the other said by the natives to bear no fruit. El Viejo grows 15 to 20 feet high, rarely branching except from in uries sustained; of equal size at the top and bottom but of an enlarged diameter between. Ribs 19-25, ob-

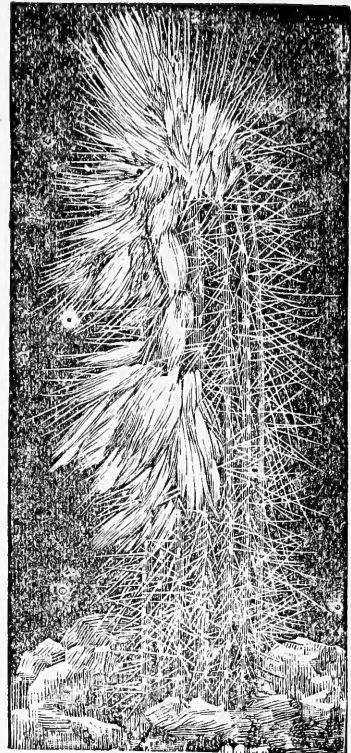


tuse, intervals very shallow, the number of ribs increasing with age by bifurcation and new ones appearing above the forks. Areolae one-quarter inch apart, small, young plants bearing 30 or more slender flexuous white spines  $\frac{1}{4}$ -9 inch long; spines at length deciduous or nearly so, the ribs often with a continuous woody ridge enclosing the areolae. Our illustration well shows the beauty of a young plant, but in no way depicts the mature growth; erect, the top slightly bent, and ornamented with a mass of whitish wool which continues on one side a third of the way down—the lower portion yellow from age. *Stats of Oaxaca and Puebla, Mexico (Orcutt 205).*



**CEREUS HOPPENSTEDTI.**

- PILOCERUS LANUGINOSUS** Rumphl.  
*Pilocereus lateribarbus* Rumphl. is  
*Cephalocereus columna-trianii* fide KS.  
*Pilocereus militaris* Eort, is *chrysomal-*  
*lus*.  
**PILOCERUS MORITZIANUS** L-C.  
**CEREUS PALMERI** Engelm.  
 "Stems branching, 3 or 4 angled, 12-15 dm high; spines in greenish-brown bunches; fruit greenish-yellow, its areolae bearing 5-8 stout spines. Type, Palmer 70 of 1869 in hb Mo bot gard. Sonora"—Coulter, Cont Na hb 3:01.  
**PILOCERUS PENTAEDROPHORUS** Cons.  
**PILOCERUS POLYGONUS** KS.  
**PILOCERUS POLYLOPHUS** S.  
**PILOCERUS ROYENII** Rumphl.  
**PILOCERUS RUSSELLIANUS** Rumphl.  
**CEREUS SARGENTIANUS** Orcutt.  
**PILOCERUS SARGENTIANUS** Orcutt  
**PILOCERUS SCHLUMBERGERI** Web.  
**PILOCERUS SCHOTTII** Lem.  
**CEREUS SCHOTTII** Engelm.  
 Stems 8-10 from the same base, 4-10 feet high, 4-5 inches in diameter, ribs 4-7, areo-



**PILOCERUS HOULETHII** Lem.

lae distant; spines on sterile part short, stout, 4-6 radials and 1 central; the spines on fertile part 1-4 inches long, pendulous, forming a reddish-gray beard, in which the flowers and small fruit are nearly hidden. Seeds large, with hooked cotyledons. Sonora.

Variety **AUSTRALIS** K. Brandegee.

"Stems more slender and upright than the northern forms; ribs in the fertile ends, often as many as 10; areolae smaller, and more distant, and the long spines commonly fewer and stouter; abortive spine or gland (?) below the acute base of areolae more conspicuous."—Katharine Brandegee, Zoe, 5:4.

Near Guaymas, Sonora (Orcutt).

**PILOCERUS SCOPARIUS** Pos.

**PILOCERUS SENILIS** Lem.

**CEREUS SENILIS** Salm.

Is *Cephalocereus senilis* Pf.

**PILOCERUS STRICTUS** Rumphl.

**PILOCERUS TETETZO** Web.

**PILOCERUS URBANIANUS** KS.

*Pilocereus Vellozoi* Lem, is *Cephalocereus melocactus* fide KS.

**PILOCERUS VERHEINEI** Rumphl.

**CEREUS WEBERI** Coulter.

"Plant about 10 m high, with a regular candelabra form of branching (2 main branches each producing near the base 2 other branches, all ascending), branches and main stem of same diameter, angled and glaucous; areolae 3-5 cm apart; spines stout, bulbous at base; radials 10 or 11, 2-5 cm long; central solitary, 6-10 cm long laterally compressed, sometimes a little deflexed; flowers lateral, white, 8-10

cm long; fruit 'as large as a small orange,' covered with small scales bearing axillary wool and spines. Type, Weber, material in hb Mo bot gard. 'A few miles south of Tehuacan', Puebla, Mexico."—Coulter, Cont Na hb 3:410.

#### PILOCEREUS SCOPARIUS Pos.

"A borescens ramosus 20-25 pedes altus, trunco diametro 2-3 pollicari. Ramis juniores nondum florentes 12-15 costati, costis obtusis crenulatis, areolis 8-12 lin. inter se distantibus nudis subprominentibus, aculeis radiantibus 5, centrali uno valido pollicari. Ramise iores flores producentes tenuiores 20-25 costati, costis humilioribus obtusioribus et multo magis confertis, areolis confertissimis, aculeis exterioribus 5-7; 10-12 lin. longis setiformibus brunneis, centrali uno. Flores rarisimi parvi subcampanulati rubicundi. Prope la Soledad.—AGZ 1853, 126.

Subgenus ECHINOCEREUS E. "Low and usually caespitose plants, mostly with numerous oval or cylindrical heads, short flowers, green stigmas, and spiny fruit; seeds subglobose, covered with confluent tubercles: embryo straight, with very short cotyledons.

#### CEREUS ACIFER Otto.

Echinocereus acifer Lem cact 57.

Echinocereus durangensis Pos ex F ed 2, 799.

Variety BREVISPINULUS Jac.

Variety DU ANGENSIS Hort.

Variety TENUISSPINUS Jac.

C. adustus E, is pectinatus var?

C. BLANCKII Pos AGZ 1853, 134:—

"C. e viridi nigricans 5-6 poll altus diametro sesquipollicari apice attenuatus, costis 8-10 verticaliter decurrentibus, areolis gibbis mammæformibus insertis, nudis, aculeis exterioribus 8-10 semipollicaribus fuscis, summis minimis, centrali uno pollicari. Prope Camargo."

#### CEREUS BERLANDIERI E.

Echinocereus berlandieri Lem cact 56.

KS nat 185: Mon 256.

Stems 1½-6 inches long, an inch thick, bearing sweet-scented purple flowers 2-4 inches in diameter; a native of southern Texas and Mexico.

#### CEREUS BRANDEGEEI Coulter.

Caespitose, often 2 feet or more across, consisting of few to many cylindrical heads mostly 6 or 8 inches high, 1½-2 in diameter, with 8 or 9 interrupted, strongly tuberculate ribs. The young spines frequently tinged with brilliant magenta, the older spines variable in color, often of an ivory white with centrals of a deep magenta—making a very handsome color-effect. "Spines at first variegated, dark and reddish, becoming more or less ashy-black; radials 10-16, rigid, terete, radiant, mostly uniform, 8-12 mm long; centrals almost always 4, very stout and prominent, 3-4 cm long, cruciate, conspicuously angled and compressed, sometimes twist-

ed, the lowest usually the most flattened and sword-like (2-3 mm broad): flowers red, 4-5 cm long, with conspicuous woolly and spine-bearing areolae over the ovary and lower part of the calyx. Type in hb Brandegee, El Campó Allemand and San Gregorio, Baja California."—Coulter, Cont U S Nat hb 3:389 (1 Ap 1896).

This has much the same aspect as *Cereus Engelmanni*, with similar variations in the color of the spines, and bears a similar edible fruit.

#### CEREUS CAESPITOSUS.

#### CEREUS CHLORANTHUS E.

#### CEREUS CINERASCENS P DC.

C. CIRRHIFERUS Lab mon 311:—

"Tige rameuse, tres-prolifere, caespitose: rameaux a 5 cotes arrondies, subtuberculees, convexes; sillons aigus; areoles rondes; 10 aiguillons extérieurs tres-ouverts, adprimés, ronds, blancs, transparents, noduleux a la base, 4 intérieurs eriges, également noduleux a la base, de memes couleurs que les autres, chamois a la base; tout contournees irregulierement. Rameaux de 5-6 et 10 cent, de long sur 3, 3 et demi de diametre; areoles espacees de 15 mm, nues ou garnies de tomentum court et rare; aiguillons extérieurs, 4 cm de long; aiguillons intérieurs, 4 et demi a 5 cm de long; tous noduleux et chamois a la base, blancs, transparents, contournees, quelques-unes contournees en forme de vrille s'appliquant sur la plant. Fleur tres-belle, grande, rouge cramoisi vif, dit-on. Mexique."

#### CEREUS CTENOIDES E.

#### CEREUS DASYACANTHUS E.

Echinocereus degandii Rebut cat.

Echinocereus dasyacanthus Lem cact 57.

Plant 5-12 inches high, densely covered with numberless delicately colored spines, and bearing large showy orange yellow flowers. El Paso, Texas, and Mexico.

Variety NEO MEXICANUS Coulter.

"Differs in the remote areolae (1.5 cm apart), fewer spines (11 radials and 4 centrals), which are much stouter, 10-12 mm long, radiating, scarcely (if at all) pectinate, and larger seed (1.5 mm in diameter). Type, Wright 306 in hb Mo bot gard. Southeastern New Mexico."—Coulter, Cont Na hb 3:384.

#### CEREUS DUBIUS E.

Echinocereus dubius Fed 2, 787 KS mon 276.

#### CEREUS EHRENBERGI Pfeiffer.

Suberect, flaccid, green; 6 obtuse repand-tuberculate ribs, areolae subremote, with short white wool; 8-10 radial spines, 4 longer erect centrals, all slender, rigid, light yellow. Real del Monte, Mexico.—Pf AGZ 1840, 282.

#### CEREUS ENGELMANNI Parry.

Engelmann's cushion cactus. Heads several (sometimes, though rarely, a hundred,) 4 to 12 inches high, cylindrical or ovate, with 11 to 13 ribs bearing bunches of about 13 pale radiating spines, and about 4 darker (yellow,

brown or black), stout and angular, straight or curved central spines, 1 to 3 inches long. Flowers very numerous, bright magenta, often 4 inches across, followed by delicious fruits, with much the same flavor of a strawberry, red, pulpy, filled with black seeds. Utah, California, Baja California and Arizona.

**CEREUS ENNEACANTHUS E.**

**CEREUS FENDLERI E.**

Bot mag t 6533; Weber dict 278.

Echinocereus fendleri Fed 2, 801.

A queer irregular caespitose plant of Arizona, New Mexico and Sonora, rarely more than 12 heads in a cluster, stems 3-4 inches in diameter and about 6 inches high, distinguished by the one usually black central spine, which often curves upward. Flowers magenta colored.

**CEREUS GLOMERATUS E.**, is *C. Maritimus* Jones.

**CEREUS KNIPPELIANUS Orcutt.**

Echinocereus knippelianus Liebn.

MFK 5:159, 170; KS mon 223 f 47.

*E. liebnerianus* Carp' Balt cact jour 2:262.

**CEREUS LEONENSIS Orcutt.**

Echinocereus leonensis Maths.

**CEREUS LONGISETUS E.**

Echinocereus longisetus Lem cact 57.

Is *viridiflorus* fide Orcutt rev 32.

**CEREUS MAMILLATUS Hge.**

**CEREUS MARGINATUS DC.**

"Stem simple or branching at apex, erect, dark green, 5-7.5 cm in diameter, ribs 5-7, obtuse, with acute intervals, woolly through the whole length on account of the confluent areolae; spines 7-9, short (4-6 mm) and conical, rigid, grayish (younger ones purplish-black, the central scarcely distinct from the rest); flower brownish purple, slender-tubular, 3-5 cm long; fruit globular and spiny. Type unknown. From San Luis Potosi southwest throughout Mexico. The stem is often covered with a woody crust, and the woolly confluent areolae are often double. It is said to be frequently used for hedges in southern Mexico."—Coulter, Cont Na hb 3:399. *Cereus gemmatus* Zuce ex Pfr Enum 96.

**CEREUS MARITIMUS M. E. Jones.**

"Caespitose, heads 5-20 in a bunch, which is often 2-3 feet in diameter and a foot high; each plant cylindrical, obovate or in small specimens almost round, 1½-4 inches long, three-fourths to 1½ wide; principal spines 4, straight, angled and somewhat twisted at base, 1-1½ inches long, beneath these are 8-10 very short spines which are either straight or hooked; spines light brown, except when young, then red at base, springing from a very short but copious wool; flowers light yellow, about 1½ inches long and wide; petals oblanceolate or obovate, rounded, margin irregular; ovary obovate, sessile or short stalked, covered with bunches of white or yellow, often hooked, short spines and crisped wool; fruit not mature. Encenada, Baja Cali-

fornia."—Jones, Am naturalist 17:973 (S 1883).

*Cereus glomeratus et flaviflorus* E. C. sanborgianus? *C. maritimus* Coulter, in part.

**CEREUS MOJAVENSIS Engelm.**

**CEREUS PACIFICUS E.**

*Cereus phoeniceus* var. *pacificus* Engelm, MS.

"Plant caespitose, 1-4 feet in diameter, few to 500 short stems (6-9 inches long and 2-2½ inches in diameter) in each, forming dense oval cushions; stems with 10-12 obtuse ribs, shallow intervals, and an equal number of internal ligneous fibers; radial spines 1-12 and of an average length of one-fourth inch, the 4 central spines larger, three-fourths to 1 inch long, slender, white; flower an inch across, including the ovary 1½ inches long, the oblong spatulate sepals bright red with a broad purplish mid vein; ovary and fruit with 25-30 spiny areolae; fruit fleshy with numerous small seed; stamens slender, as long as sepals; anthers small, red; style three-fourths inch long, stigmata 6-8, greenish."—Or W 2:46 (Je 1886).

Type locality. near Todos Santos bay, Lower California.

**CEREUS PECTINATUS E.**

Variety *CENTRALIS* Coulter.

"Plant 6-8 cm high; centrals usually 4, the lowest very short (3-4 mm) and correct, the upper 2 or 3 as long as the radials (sometimes longer), and recurved upward. Type, Wilcox of 1894 in Na hb. Arizona, near Fort Huachaca."—Coulter, Cont Na hb 3:386.

**CEREUS POLYACANTHUS Engelm.**

Echinocereus polyacanthus Fed 2, 790 f.

*Cereus leeanus* Hooker bot mag t 4417; Hems 543; Weber dict 278.

Echinocereus leeanus Lem cact 57; Fed 2, 823.

*Cereus multicostatus* Cels cat.

*Cereus pleignonus* Lab mon 317.

**CEREUS POSELGERIANUS A. Lke.**

Echinocereus poselgerianus A Lke AGZ 1857, 239; Fed 2, 779; KS nat 185: mon 257 (non pos-ri).

**CEREUS PROCUMBENS E.**

**CEREUS RIGIDISSIMUS Engelm.**

*Cereus pectinatus*, var? *rigidissimus* E Am ac pr 3:279; Mexican boundary R, 31; collected writings 136, 195.

Echinocereus candicans of catalogs.

The Rainbow Cactus of Southern Arizona and Sonora is noted for the beautiful and varied coloring of the all radiating and interlocking, extremely rigid and acute spines, the latest ones of each season being rose-colored, and the earliest ones a pale yellowish, thus forming variegated rings around the stems. Flowers 2½-3 inches high, 2 or 3 in diameter.

**CEREUS ROEMERI E.**

**CEREUS ROEITERI E.**

**CEREUS STRAMINEUS Engelm.**



**CEREUS SUBINERMIS** Hem.**CEREUS VIRIDIFLORUS** Engelm.

The Green-flowered *Cereus* of the Rocky Mountains is especially beautiful on account of the red, purple and white spines with which the plant is covered. Flowers numerous, quite large and showy, light-yellowish-green, very hardy and easily grown.

Genus **CLEISTOCACTUS** Lemaire.

*C. baumanni* Lem in III Hort viii Misc 35; Cact 59, based on *Cereus tweedii* Bot Mag t 4498.

*C. coubrinus* Lem in III Hort viii Misc 35; Cact 60, is *Cereus coubrinus*.

*C. rhodacanthus* Lem in I Hort viii Misc 35; Cact 61; is *Echinopsis rhodacantha*.

Genus **CONSOLEA** Lemaire.

*C. catacantha* Lem Rev Hort (1862) 174; Cact 91; is *Opuntia catacantha*.

*C. ferox* Lem Rev Hort (1862) 174; Cact 91; is *Opuntia ferox*.

*C. leucacantha* Lem Rev Hort (1862) 174; Cact 91; is *Opuntia leucacantha*.

*C. rubescens* Lem, Rev Hort ix Misc 26 (1862); Cact 90; is *Opuntia rubescens*.

*C. spinosissima* Lem, Rev Hort ix Misc 62; Cact 91; is *Opuntia spinosissima*.

Genus **CORYPHANTHA** Lemaire.

Based on the sub-genus *Coryphantha* Engelmann, of *Mammillaria*, and 24 species and one variety named, without descriptions, in *Les Cactees*, 34-35. *C. acanthostephes*, *aulacothele*, *calcarata*, *clava*, *cornifera*, *elephantidens*, *erecta*, *Lehrmanni*, *loricata*, *macromeris*, *ottonis*, *pycnacantha*, *raphidacantha*, *scheeri*, *schlechtendalii*, and *sulcolanata* are presumably based on species of *Mammillaria* of the same names. *C. daimonoceras* is probably *M. scolymoides*. *C. conspicua*, Engelmanni, *glandulifera*, *heteromorpha*, *Hookeri*, and *subanata* are nomina nuda. *C. brevimamma*, *exsudans*, *impex coma*, and *Nuttalli* are names credited to Lemaire in Foester (*Handb* ed 2). *C. ancistracantha* is named by Lemaire as a variety of *raphidacantha*. *C. glandulifera* and *heterophylla* Lem, in *Index Kewensis*, are evident y errors.

Genus **ECHINOCACTUS** Link & Otto.

"Flowers about as long as wide. Ovary covered with seploid scales, naked or woolly in their axils. Fruit succulent or sometimes dry, covered with persistent cal x-scales, sometimes enveloped in copious wool, and usually crowned with the persistent remnants of the flower. Seed obliquely obovate, black. Embryo curved over the small albumen, cotyledons parallel to the sides of the seed.—Mostly large, sometimes gigantic, globose or depressed, or ovate, or rarely subcylindric, simple or very rarely cespitose; bunches of spines on the more or less vertical ribs. Flowers contiguous to and above the spines, on the latest growth of the plant, often from the nascent woolly areolae and therefore more or less vertical, open only in sunlight."—E.

*Echinocactus acutangulus* Zucc, is corynodes.

*E. abrocentrus* Steibn. ?

*E. ACANTHION* Salm-Dyck.

"Caule globoso late viridi, costis numerosissimis (35-40) valde compressis parum undulatis ad pulvillos inflatis, pulvillis confertis junioribus albido-velutinis, aculeis superioribus 3 applanatis intermedio validissimo, cum centralibus 2 subulatis bifarie patentibus, basi stramineis superne fulvido-brunneis, inferioribus 8 multo gracilioribus patentibus albidis. Caulis robustus, validus, diametro quadripollicari et ultra, aculeis tectus pollicem ad sesquipollicem longis. Unica hucusque species est in hacce Sectione aculeis centralibus duobus Flores ignoti." HD ed 2, 161, 31.

**ECHINOCACTUS ACUTISSIMUS** O-D.

**ECHINOCACTUS ALBATUS** Dietr.

**ECHINOCACTUS ALTEOLENS** KS.

**ECHINOCACTUS AMBIGUUS** Mart.

**ECHINOCACTUS ANFRACTUOSUS** Mart.

**ECHINOCACTUS ARRIGENS** L-O.

**ECHINOCACTUS ASTERIAS** Zucc.

Is *Astrophytum myriostigma*.

**ECHINOCACTUS BEGUINII** Web.

**ECHINOCACTUS BICOLOR** Cal.

Near San Luis Potosi, Mexico.

Variety **SCHOTTII** Engelmann.

*Echinocactus bolansis* Runge, is bicolor.

**ECHINOCACTUS BREVIHAMATUS** E.

**ECHINOCACTUS CALIFORNICUS** Mon.

**ECHINOCACTUS CAPRICORNUS** Dietr

**ECHINOCACTUS CASTANEOIDES** Cels.

*Echinocactus castanensis* Hort, is bicolor.

**ECHINOCACTUS CENTETERIUS** Lem.

**ECHINOCACTUS CERATITES** Otto.

**ECHINOCACTUS CHILENSIS** Hildm.

**ECHINOCACTUS CHRYSACANTHION** KS.

**ECHINOCACTUS CHRYSACANTHUS** O.

Globose to cylindrical, with about 18 ribs and 10 flexuous annulated central spines 2 inches long, and 4 to many slender white radial spines. Flowers satiny yellow, more rarely crimson. Cedros Island.

**ECHINOCACTUS CONCINNUS** Monv.

**ECHINOCACTUS COPTONOGONUS** Lm.

Near San Luis Potosi, Mexico.

Variety **MAJOR** Salm-Dyck.

**ECHINOCACTUS CORNIGERUS** DC.

Near San Luis Potosi, Mexico.

**ECHINOCACTUS CORYNODES** Otto.

State of Rio Grande do Sul, Brasil.

**ECHINOCACTUS COXII** KS.

**ECHINOCACTUS CRISPATUS** DC.

**ECHINOCACTUS CUMINGII** Hopff.

Bolivia, South America.

**ECHINOCACTUS CURVISPINUS** Colla.

**ECHINOCACTUS CYLINDRACEUS** E.

**ECHINOCACTUS DENUDATUS** L-O.

Brazil, South America.

**ECHINOCACTUS DICHROACANTHUS** Mart.

ECHINOCACTUS DURANGENSIS Rge.

ECHINOCACTUS EBENACANTHUS Monv.

ECHINOCACTUS ECHIDNA P D-C.

ECHINOCACTUS ECHINOIDES Lem.  
Bolivia, South America

ECHINOCACTUS EHRENBERGII Pf.

ECHINOCACTUS ELECTRACANTHUS Lem.

Echinocactus ellipticus Lem, is bicolor.

ECHINOCACTUS EMORYI Engelm.

Cylindrical, rarely exceeding 2 feet in diameter and 6 feet in height; ribs sharp, usually tuberculate and 21 in number; radials 5 or more, usually 8, stout, annulated, terete, reddish, yellowish, white or ashy, commonly straight or curved inward, 1-2 inches long; the 1 central straight or more or less curved downward, 2-3 inches long, otherwise like the radials.

Gila Bend, Arizona, southward to near Guaymas, Sonora (Orcutt 2578, 2605).

Echinocactus equitans Scheidw, is horizontal.

ECHINOCACTUS ERECTOCENTRUS C.

ECHINOCACTUS FRINAEUS Lem.

State of Rio Grande do Sul, Brasil.

ECHINOCACTUS EXCULPTUS Otto.

ECHINOCACTUS FALCONERI Orcutt.

Plant cylindrical in age, 9-12 inches in diameter, usually under 2 feet high, light apple green in color, with a withered appearance (perhaps not normal); ribs tuberculate, acute, spirally inclined (hence called caracola, "snail", or biznaga caracola), usually 13, to rarely 17, intervals narrow and deep; radial spines 10 or less, grayish white, flattened, flexuous, 1-2½ inches long and laterally disposed; central spines 7, stout, strongly annulated, reddish brown, the 3 upper and 3 lower of about equal length, divergent, 1-3 inches long, terete or slightly angled, straight; the longest central erect, straight, flattened or channelled above, ¼ inch broad or less, varying from 1 to 6 inches in length sometimes on the same plant, uniformly about ½ inch at the tip turned downward at right angles with the main portion of the spine, forming a short hook. Named in honor of William Falconer. Type, Orcutt, No. 2303:—Batamotal, Sonora, Mexico.

Flower and fruit will be described later, but resemble those of *E. Wislizeni*, with which the plant has perhaps hitherto been confounded.

ECHINOCACTUS FLAVOVIRENS Scheidw.

Tehuacan, Puebla, Mexico.

ECHINOCACTUS FORDII Orcutt.

"Globose, 6 inches or more in diameter, with about 18 tuberculated narrow ribs closely set with clusters of stout ashy gray spines, 4 central, annulated, the longest 1¼ inches long, and hooked; 2 slender spines above with about 14 divergent radials; flower an inch across, about 32 rose purple petals in 2 series, 9 greenish stigmata, style tinged with red, filaments red at top and yellow at base, anthers orange yellow. Near Lagoon Head, Baja California. Named for

Lyman M. Ford, of San Diego, who has taken a great interest in cacti. Apparently the same plant was distributed in 1894, from near San Quintin Bay, as a form of *E. peninsulae*."—Orcutt Rev 81; 55 (nomen).

ECHINOCACTUS GIBBOSUS P DC.  
Argentine Republic.

ECHINOCACTUS GLADIATUS S.

ECHINOCACTUS GLAUCUS R.S.

ECHINOCACTUS GEISSEI Pos.

ECHINOCACTUS GRANDICORNIS Lem.

ECHINOCACTUS GRUSONII Hf m.

ECHINOCACTUS HAEMATACANTHUS Monv.

Tehuacan, Puebla, Mexico.

ECHINOCACTUS HASELBERGII F Hge sr.

Piazi, South America.

ECHINOCACTUS HASTATUS Hpffr.

ECHINOCACTUS HAYNEI Ot'o.

ECHINOCACTUS HETEROCHROMUS Web

ECHINOCACTUS HEXAEDROPHO-EUS Lem.

Near San Luis Potosi Mexico.

ECHINOCACTUS HILCENSIS Hfdm.

ECHINOCACTUS HORIZONTHALONIUS Lem

Near San Luis Potosi Mexico.

ECHINOCACTUS HORRIFILUS Lem.

ECHINOCACTUS HUMULIS R A Phil.

ECHINOCACTUS HYPTIACANTHUS Lem.

ECHINOCACTUS INGENS Zucc.

Plant 2-5 feet high, 1-2 in diameter, simple, or occasionally proliferous, forming enormous masses as much as 10 feet in diameter! Ribs 25-32, often bifurcate, acute, tuberculate-interrupted, areolae 1 inch long, an inch apart, or, in old plants, forming a continuous woolly ring along the ribs, the depressed top densely tomentose, enveloping the flowers and fruit. Spines all stout, annulated, straight, the 4 centrals of nearly equal length, 1¼ inch long, divergent, the radials three-fourths inch long or less, 3-4 above and 3 below the centrals—sometimes 2 or more additional radials, laterally disposed. Flower 2 inches across, 1 and three-fourths long; petals about 20, acute, ¼ inch broad, canary yellow, tipped with a tinge of rose; about 30 long narrow acute sepals and scales on the ovary with woolly axils. Anthers, filaments and style rich orange yellow; stigmata 7, ¼ inch long, spreading, style three-fourths inch long; anthers small, filaments short. Flowers deeply imbedded in the dense copious wool an inch long that fills the depressed top of the plant. Plant dark apple green, young plants especially decorated with broad horizontal bands of maroon on the ribs, zebra-like or the areolae on the ribs margined with bands of maroon. This is one of the largest of the viznaga plants, used in making "dulces." State of Puebla, Mexico (Orcutt 2337). Carloads of these plants are said to be annually used in the native confectionery shops.

Mrs. Anna B. Nickels mentions a single plant sent to Errore that weighed four tons! Dr. C. C. Perry cites the woolly or silk-like substance produced so abundantly at its depressed summit, as col-

lected and employed for stuffing pillows, and Don Louis Eschauzier complains of having had to pick spines out of beds made of this material. Ribs said to vary from 20 to 60 in number. Greatest recorded height 9 feet, diameter 9½ feet.

**ECHINOCACTUS INTERTEXTUS** Em.

**ECHINOCACTUS JOHNSONII** Engelm.

Johnson's hedgehog cactus was named for J. E. Johnson, an early Mormon naturalist, who discovered it about S.

George in southern Utah. It is a rare and handsome plant, 4 to 7 inches high, oval, 3 to 5 inches in diameter, densely covered with stout reddish-gray spines—turning deep red when wet. The flower is about 2¼ inches broad, of a rose purple normally, but some plants which opened their flowers while packed in a box away from the light leave light yellowish-green petals marked with deep maroon at base. Anthers pale primrose yellow; filaments ½ inch long, the inner ones white, outer ones reddish. Growing in out-of-the-way desert places in Nevada, Arizona, and California, it costs much trouble to secure this beautiful species.

**ECHINOCACTUS JUSSIEUI** Monv.

**ECHINOCACTUS KRAUSEI** Hildm.

**ECHINOCACTUS KUNZEI** F.

**ECHINOCACTUS LAMELLOSUS** Dietr.

**ECHINOCACTUS LECONTEI** Engelm.

Plant 3-4 feet high, about one-third that in diameter, clavate; flower 2 inches long, lemon yellow. Type locality on the lower parts of the Gila and Colorado rivers, and in Sonora. The Mohave and Colorado Desert plants, usually referred to this species, seem to me distinct. This now seems to me distinct from either *E. Wislizeni* or *E. cylindraceus*.

Our colored portrait fairly well represents a young plant from Arizona, but does not show the distinguishing characteristics.

**ECHINOCACTUS LENINGHAUSII** KS.  
Brazil, South America.

**ECHINOCACTUS LEUCACANTHUS**  
Zucc.

**ECHINOCACTUS LIMITUS** Engelm.

**ECHINOCACTUS LONGIHAMATUS** Gal.

**ECHINOCACTUS LOPHOTHELE** S.

**ECHINOCACTUS McDOWELLII** Rebut.

**ECHINOCACTUS MACRODISCUS** Mart.  
Near San Luis Potosi, Mexico.

**ECHINOCACTUS MALLETTIANUS** Lem.

**ECHINOCACTUS MARGINATUS** S.  
Bolivia, South America.

**ECHINOCACTUS MATHSSONII** Berge.

**ECHINOCACTUS MEGALOTHELOS**  
Seicke.

Paraguay Republic, South America.

**ECHINOCACTUS MONVILLEI** Lem.

Paraguay Republic, South America.

**ECHINOCACTUS MICROMERIS** Weber.  
Weber, Bios dict 804. K Br Zoe 5:5.  
*Mammillaria micromeris* E. *Epithelantha micromeris* Weber.

**ECHINOCACTUS MICROSPERMUS**  
Web.  
Argentine Republic.

**ECHINOCACTUS MINUSCULUS** Web.  
Argentine Republic.

**ECHINOCACTUS MITIS** R A Phil.

**ECHINOCACTUS MULTICOSTATUS**  
Hildm.

**ECHINOCACTUS MULTIFLORUS** Hook

**ECHINOCACTUS MURICATUS** Otto.  
Brazil, South America.

**ECHINOCACTUS MUTABILIS** F.

Peru, South America.

**ECHINOCACTUS NAPINUS** R A Phil.

**ECHINOCACTUS NEFRELIANUS**  
Monv.

**ECHINOCACTUS NIGRICANS** D'ér.

**ECHINOCACTUS OBVALLATUS** P DC.

**ECHINOCACTUS OCCULTUS** R A Phil.  
Chile, South America.

**ECHINOCACTUS ODIERI** Lem.

**ECHINOCACTUS OLIGACANTHUS** S.

**ECHINOCACTUS ORCUTTII** Engelm.

"Heads cylindrical, 10-18 inches in diameter, bulging in the middle, growing single or a few and 2-3½ feet high, sometimes often caespitose, more rarely proliferous at base, with 13 when young, to usually 20 or 22 obtuse tuberculate ribs and a woolly, spineless, depressed top; spines stout, reddish, straight or recurved, all annulate, usually 9 radiating and 4 stouter central ones; flowers deep dull crimson with greenish or lighter colored margins to the petals, 2 inches long, otherwise as in *E. viridescens*: stigmata green, 16-20; fruit pulpy, crimson, scaly, with numerous small seeds."—Or W 2 :46 (Je 1856).

Type locality: Palm valley, Lower California.

**ECHINOCACTUS CRNATUS** P DC.

**ECHINOCACTUS OTTONIS** L-O.

Brazil, South America.

**ECHINOCACTUS PAMPEANUS** Speg-  
azz.

**ECHINOCACTUS POPYRACANTHUS** E.

**ECHINOCACTUS PARRYI** E.

**ECHINOCACTUS PENINSULAE** Eng.

Globose to cylindrical, rarely over 18 inches in diameter, rarely attaining a height of 8 feet; the 12-21 compressed tuberculated ribs set with clusters of dull red spines; contra's 7, stout, the stoutest not rarely 4-6 inches long and ¼ inch broad hooked.

**ECHINOCACTUS PENTACANTHUS**  
Lem.

Near San Luis Potosi, Mexico.

**ECHINOCACTUS PEPINIANUS** Lem.

**ECHINOCACTUS PFEIFFERI** Zucc.

**ECHINOCACTUS PHILIPPII** KS.

**ECHINOCACTUS PHYLLACANTHUS**  
Mart.

**ECHINOCACTUS PHYMATOTHELOS**  
Pos.

- ECHINOCACTUS PILOSUS** Gal.  
Near San Luis Potosi, Mexico.
- ECHINOCACTUS PLACENTIFORMIS** KS.
- ECHINOCACTUS POLYANCISTRUS** EB  
The Hermit cactus, so-called because it is rare to find more than one in a place, is a strikingly beautiful cactus which I have seen only on the Mohave desert in its wild state. The largest plant I have seen is 18 inches high and 4 inches in diameter; each tubercle bears three to seven hooked, round, brownish-pink spines, with which are interspersed fewer ivory white spines, not hooked, very pleasing in contrast. Flower over 2 inches long, of equal width, petals bright magenta, green at base, filaments and stigmata green, anthers white. They were once catalogued at \$15 apiece, and are still rare in collections, unfortunately seldom long surviving transplanting from their native sands. Too much moisture soon proves fatal.
- ECHINOCACTUS POLYCEPHALUS** E.  
Heads many from a single base,  $\frac{1}{2}$ - $2\frac{1}{2}$  feet high, globose to cylindrical, ribs 13-21, acute; circular areolae bearing 8-12 stout compressed annulated, curved reddish gray spines, all radial, or 4 stouter central ones; flowers enveloped in a mass of dense white wool,  $\frac{1}{2}$  inches long, petals about 30, lance-linear, yellow; about 100 rigid dark pointed sepals upon the ovary, hidden in the wool, those of the tube similar and equally numerous; stigmas 8-11, linear; fruit dry, full of angular wrinkled and minutely tuberculate seeds 4 mm long. Gravelly soil on the Mohave and Colorado deserts, in California, flowering in F, fruiting in Mr.
- ECHINOCACTUS POTTSII** S.
- ECHINOCACTUS PUMILUS** Lem.
- ECHINOCACTUS RECURVUS** L-O.  
Oaxaca, Mexico.
- ECHINOCACTUS RINCONADENSIS** Pos.
- ECHINOCACTUS ROBUSTUS** L-G.  
Tehuacan, Puebla, Mexico.
- ECHINOCACTUS SAGLIONIS** Cels.  
Argentine Republic.
- ECHINOCACTUS SAUSSIERY** Web.
- ECHINOCACTUS SCHICKENDANTZII** Web.  
Argentine Republic.
- ECHINOCACTUS SCHILINZKYANUS** F Hge jr.  
Paraguay Republic, South America.
- ECHINOCACTUS SCHUMANNIANUS** Nic.  
Paraguay Republic, South America.
- ECHINOCACTUS SCHEERII** Sm-Dyk.
- ECHINOCACTUS SCOPA** L-O.  
Brazil, South America.
- ECHINOCACTUS SELLOWII** L-O.  
State of Rio Grande do Sul, Brasil.
- ECHINOCACTUS SENILIS** R A Phil.  
Chile, South America.
- ECHINOCACTUS SETISPINUS** E.
- ECHINOCACTUS SILBERI** Engelm.
- ECHINOCACTUS SIMPSONI** Engelm.  
Hedgehog Cactus of Colorado; the spines, ranging from white through shades of straw, yellow and brown, nearly hide the plant; flowers shell-pink to bright rose in color.  
Variety **MINOR** Engelmann.  
Button or Snake Cactus: spines arranged in beautiful star-shaped clusters; flowers pale rose.
- ECHINOCACTUS SINUATUS** Dietr.
- ECHINOCACTUS SMITHII** Mueh.  
Near San Luis Potosi, Mexico
- Echinocactus tetracanthus** Lem, is Sellowii.
- ECHINOCACTUS SUBMAMMULOSUS** S Lem.  
South America.
- ECHINOCACTUS SUBNIGER** Pos.
- ECHINOCACTUS TABULARIS** C ls.
- ECHINOCACTUS TETRAPHYUS** Otto.
- ECHINOCACTUS TEXENSIS** Hoepf.  
**Echinocactus tricolor** Hort, is bicolor.  
**Echinocactus tricornis** Monv, is alteoens
- ECHINOCACTUS TRICUSPIDATUS** Scheidw.
- ECHINOCACTUS TROLLIETI** Rebut.  
Is unguispinus.
- ECHINOCACTUS TULENSIS** Pos.
- ECHINOCACTUS TURBINIFORMIS** Pf.
- ECHINOCACTUS UNCINATUS** Gal.
- ECHINOCACTUS UNGUISPINUS** Engm
- ECHINOCACTUS VILLOSUS** Lem.
- ECHINOCACTUS VIRIDESCENS** Nutt.  
The Turk's Head cactus, that occurs at San Diego, California; very variable, but usually depressed, less than a foot in diameter, with strong, annulated reddish spines; 13 to 21 ribs; fruit greenish or sometimes tinged with magenta, very sour, enclosing numerous black seeds.
- ECHINOCACTUS WHIPPLEI** E. & B.  
Whipple's hedgehog cactus is only 2 to 5 inches high, ovate-globose, characterized by seven compressed white radial spines and four broad hooked central spines. Flower  $1\frac{1}{2}$  inch long, petals and filaments pale straw color, the style and seven stigmata green.
- ECHINOCACTUS WILLIAMSII** Lem.  
Anhalonium williamsii Boerster handb 233  
Lophophora williamsii et var. lewinii Coulter nat hb cont 3:131.
- The Mescal Button, or Turnip cactus, as it is sometimes called (which forms the type of Coulter's genus Lophophora) is a small spineless plant with pretty rose-colored flowers. The plant rarely exceeds 3 inches in diameter, little appearing above the surface of the ground, but when eaten it pro-

The West American Scientist.

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**ECHINOCACTUS WIPPERMANNII** Mueh.

**ECHINOCACTUS WISLIZENI** Engelm. Variety **ALBISPINA** Tourmey. Variety **DECIPIENS** Engelmann.

**Genus ECHINOCEREUS Engelmann.**

Included under the genus *Cereus*.

*E. Berlandieri* Lem, is *Cereus Berlandieri* E.

*E. Blankii* Palm, is *Cereus Blankii* Pos. *Echinocereus conglomeratus* F, is *Cereus polyacanthus*.

*Echinocereus leeanus* Lem, is *Cereus polyacanthus*.

*Echinocereus leonensis* Maths, is *Cereus leonensis*.

*E. Leptacanthus* KS, is *Cereus leptacanthus* S.

*Echinocereus Merkeri* Hiidm, is *Cereus Merkeri*.

*Echinocereus paucispinus* Lem, is *Cereus polyacanthus*.

*E. procumbens* Lem, is *Cereus procumbens* E.

*E. pulchellus* KS, is *Cereus pulchellus* Pf

*E. Salm-Dyckianus* Scheer, is *Cereus Salm-Dyckianus* Web.

*E. Scheeri* Lem, is *Cereus Scheeri* S.

*E. subinermis* S, is *Cereus subinermis*.

*E. tuberosus* Ruml, is *Cereus tuberosus* Pos.

**Genus ECHINOPSIS Zuccarini.**

Included under the genus *Cereus*.

**ECHINOPSIS AMOENISSIMA** Wend.

**ECHINOPSIS CATAMARCENSIS** Web.

**ECHINOPSIS CINNABARINA** Lab. Bolivia, South America.

**ECHINOPSIS DROEGEANA** Berge.

**ECHINOPSIS DJICIS-PAULI** F.

**ECHINOPSIS EYRIESII** Zucc.

**ECHINOPSIS FORMOSA** Jac.

**ECHINOPSIS GEMMATA** KS. Brazil, South America.

**ECHINOPSIS HUOTTII** Lab.

**ECHINOPSIS KUOTTII** Schlumb.

**ECHINOPSIS LAGEMANNII** Dietr.

**ECHINOPSIS LEUCANTHA** Walp.

**ECHINOPSIS MULLERI**. A hybrid, of rapid growth, blooming early, and with its large satiny rose-colored flowers is justly called the finest of its class.

**ECHINOPSIS MULTIPLEX** Zucc. Brazil, South America.

**ECHINOPSIS NIGRICANS** Link.

**ECHINOPSIS OBREPANDA** KS. Bolivia, South America.

**ECHINOPSIS OXYGONA** Zucc. Brazil, South America.

**ECHINOPSIS PENTLANDII** S. Peru, South America.

**ECHINOPSIS RHODANTHII** Hort.

**ECHINOPSIS RHODACANTHA** S.

**ECHINOPSIS ROHLANDII** Hort.

**ECHINOPSIS SALMIANA** Web. Variety **EPIDGESII** KS.

**ECHINOPSIS SCHICKENDANTZII** Web.

**ECHINOPSIS SIMPLEX** Niedt.

**ECHINOPSIS TOUGARDII** L'Her.

**ECHINOPSIS TUBIFLORA** Zucc. Variety **NIGRISPINA** KS.

*Echinopsis turbinata* Zucc, is *gemmata* fide KS.

**ECHINOPSIS VALIDA** Monv. Paraguay Republic, South America.

Variety **FORBESII** R. Mey.

**ECHINOPSIS WILKENSII** Hort.

*Echinopsis zuccarini* (zuccariniana) Pf, is *tubiflora* fide KS.

*Epithelantha micromeris* Web, is *Mammillaria micromeris* Engelmann.

**Genus EPIPHYLLUM Pfeiffer.**

**EPIPHYLLUM ALTENSTEINII** Pfr.

**EPIPHYLLUM GUEDNEYRI** Houl.

**EPIPHYLLUM MACKOYANUM** Hort.

**EPIPHYLLUM OBOVATUM** E.

**EPIPHYLLUM RUSSELLIANUM** Hook.

**EPIPHYLLUM TRUNCATUM** Haw. Inch, Crab, or Lobster Cactus; a native of Brazil, popular as a house plant.

**GRUSONIA CEREIFORMIS** F Rchb, is *Opuntia cereiformis* Web fide KS.

Genus **GYMNOCALYCIUM** Pfeiffer.

*G. gibbosum* Pf, is *Echinocactus monvillei*.

*G. reductum* Pf, is *Echinocactus gibbosus*.

*G. villosum* F, is *Echinocactus villosus*.

**Genus LEPISIUM Pfeiffer.**

The published species, as far as known, are considered as synonyms of *Rhipsalis*.

**Genus LEUCHTENBERGIA Fisch.**

**LEUCHTENBERGIA PRINCIPIS** Fisch. Near Zimapan, Mexico.

**Genus LOPHOPHORA Coulter.**

**LOPHOPHORA WILLIAMSII** Coulter. See *Echinocactus williamsii*.

**Genus MALACOCARPUS Salm.**

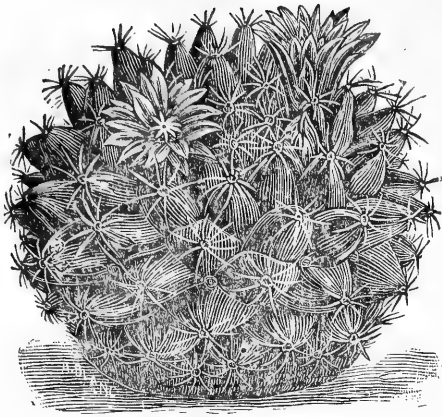
Nearly all the published species are considered as synonyms of *Echinocacti*, of the same specific names.

The identity of *M. Martini* Labour, (ex Foerster, Handb Cact ed 2, 1:454) and habitat are unknown.

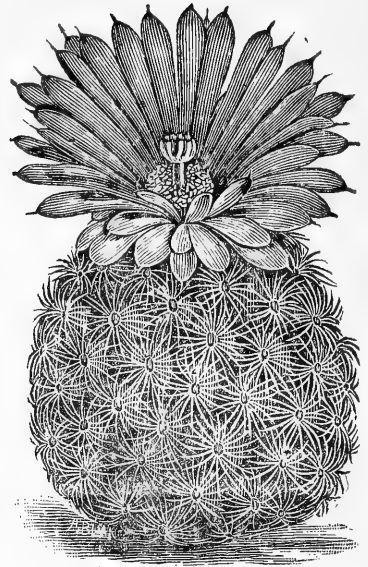
**Genus MAMMILLARIA Haworth.**

"Flowers about as long as wide; the tube campanulate or funnel-shaped. Ovary often hidden between the bases of the tubercles, as well as the exsert succulent berry, naked. Seeds yellowish-brown to black, exalbuminous or nearly so. Embryo mostly short and straight, with extremely short cotyledons parallel to the sides of the seed.—Small, more or less globose or oval simple or cespitose plants, the spine-bearing areolae borne on cylindrical, oval, conic, or angular tubercles, which cover the body of the plant. Flowers form a distinct woolly or bristly areola at the base of these tubercles, fully open in sunlight, mostly only for a few hours."—E.

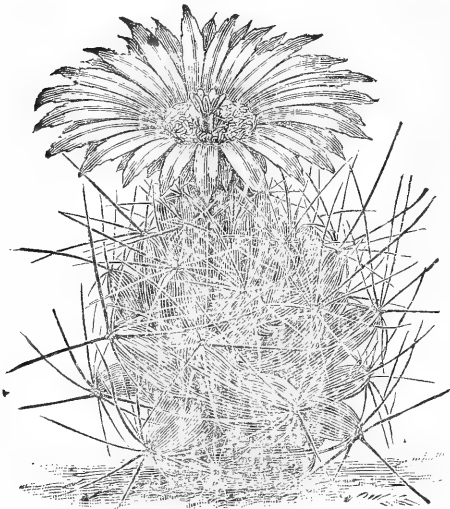
Subgenus **COCHEMIEA**. Plants cylindrical, usually much elongated, with watery juice, and grooveless tubercles. Flowers mostly in a ring near the vertex, several times longer than broad,



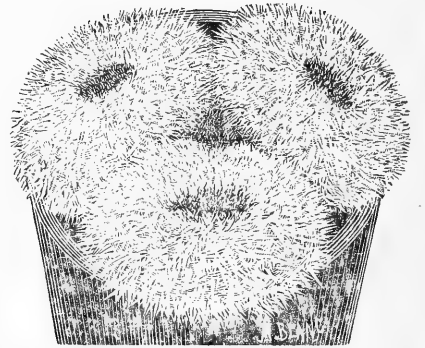
MAMMILLARIA MEIACANTHA Engelm.



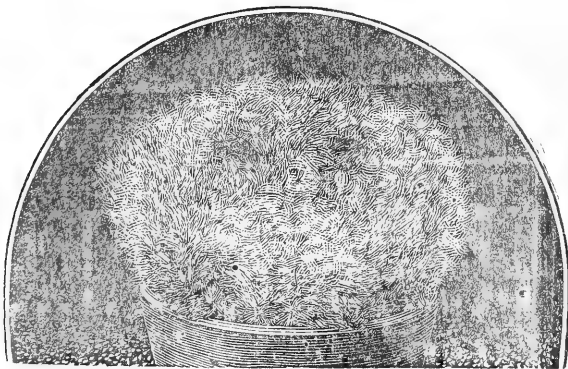
MAMMILLARIA PECTINATA Engelm.



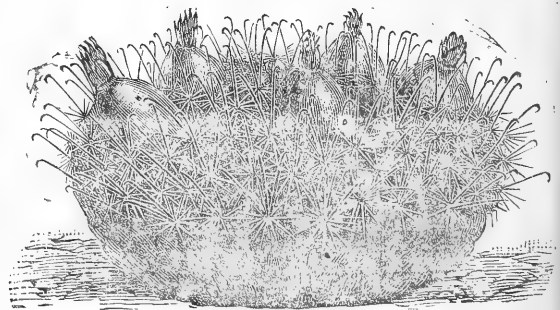
MAMMILLARIA MACROMERIS Engelm.



MAMMILLARIA BOCASANA Poselg.



MAMMILLARIA LASIACANTHA Engelm.



MAMMILLARIA WRIGHTII Engelm.

scarlet, tubular, slender, somewhat curved, and oblique with spreading, unequal, petaloid sepals, so making the flower apparently double as in *Cereus flagelliformis*. Stamens and style red, exerted.

**MAMMILLARIA HALEI** Brandegee.

Caesitose, stems 8-10, about a foot high, 2-3 inches in diameter, straight, covered with dark-colored straight spines; tubercles short, rounded, woolly in the axils; spines 15-25,  $\frac{1}{2}$  inch long, with 3-4 of the interior ones stouter and an inch long; flowers an inch long, vertical from the axils of young tubercles, scarlet; sepals all scarlet, petaloid; anthers scarlet, filaments exerted, yellowish, stigma scarlet; fruit red, clavate,  $\frac{1}{2}$  inch long; seeds smooth. A handsome species, seen only upon Magdalena and Santa Margarita Islands, where it is very abundant."—Brandegee *Cal ac pr sr* 2, 2:161, t 6.

**MAMMILLARIA PONDII** Greene.

"From a few inches to a foot high, simple or with a few oval or cylindrically elongated branches; growing parts tomentose; radial spines 20-30, white, slender; central 4 or 5, the longest more than an inch in length, rigid and strongly hooked, dark brown above the middle; flowers nearly 2 inches long, bright scarlet. Near *M. Goodii*gii, and differing from it in its large size and brilliantly colored large flowers. The plants were in flower in February. The species comes from the southwestern part of Cedros Island."—Greene *Pictoria* 1:268 (20 Mr 1889).

Fruit 20 mm long, 10 mm in greater diameter, greenish, base imbedded in wool, remains of flower persistent, pulp slightly acid, greenish (May 6, 1891): seeds 0.5 mm in diameter.

**MAMMILLARIA ROSEANA** Bndg.

"Stems numerous from the root, spreading, curved, ascending, one-third to 2 mm long, 4 cm thick; mamillae arranged in quincunxial order, 15 mm apart, cylindrical, 12 mm long, white-woolly in the upper axils; pulvinae finely pubescent; radial spines 7-9 in number, 9-12 mm long, brown or straw colored, the single central spine 25 mm long, curved, hooked at the tip; flowers from the axils of the upper mamillae, 3 cm long; sepals and petals bright scarlet, joined into a tube, spreading at their tips, in several series; stamens and style scarlet; style branches 5-7; fruit scarlet, pyriform, 6-8 mm long; seeds black, pitted; cotyledons united, only a depressed line at their tips; albumen none.—Throughout the lower elevations of the Cape Region and northward to Calmali. This cactus is one of the most showy of Lower California. Dr. Palmer collected it at La Paz and it is No. 139 of the list from that place in *Contr. U. S. Herb. No. 3*, catalogued by Mr. Pose, for whom it is appropriately named. The stems pendent from rocks at Comondu are sometimes 6 feet long. This species and *M. Halei* of Magdalena and Santa Margarita Islands have similar flowers, fruit and seeds. The seeds of *M. Halei* were wrongly described as smooth; they are pitted in the same manner as those of this species."—Br Zoe 2:19 (Ap 1891).

**MAMMILLARIA SENTIENS** Lodd.

Stem columnar, 2 dm high, 5 cm diameter, prothierous at base in age, axils naked, brilliant green; areoles tomentose, tomentum & spines white; radials very numerous, flexible, criniform, 4-6 centrals stronger, the upper hooked. "Grows on palms, San Luis Potosi."

Variety **HASSELOFFII** S [*M hasseloffii* Eh].  
Spines more numerous, all criniform.

Variety **LINKEI** S [*M linkei* Eh].

Central spines all hooked.

**MAMMILLARIA SETISPINA** E.

"Cactus setispinus; fasciculate and ascending, simple or branched at base, the stems about 70 cm high and 3.6 cm in diameter, densely covered with remarkably long stout spines: tubercles short and broadly conical, with axillary wool; spines white, with black tips; radials 10-12, widely spreading, very unequal, 10-34 mm long, slender and flexuous; central spines 1-4, more rigid and much longer (20.5 mm), the upper ones straight, the lowest one longest and hooked (usually upwards) and often variously curved and twisted; fruit obovate and scarlet, 30 mm long; seeds black and pitted. Type, Gabb 15 in *Herb. Mo. Bot. Gard. Rocky or gravelly soil, San Julio canyon, and in the vicinity of San Borgia, Lower California.*"—Coulter *Cont U S Nat Hb* 3: 106 (10 Je 1894).

Subgenus **CORYPHANTHA**. Plants globose or elongated, often robust, with watery juice. Tubercles (in age) grooved on the upper side. Flowers as in *Eumammillaria*, but some at the extremity of the groove in the axils of young tubercles, usually near the vertex of the plant.

**MAMMILLARIA ALVERSONI** Hort.

The Fox-tail cactus is of robust branching habit, densely covered with long stout straight spines, usually tipped with black or black half way down, shading into red, but often pure ivory white throughout. The large rose purple flowers are quite showy. The largest of some fifty plants was a cluster of six heads measuring 3 inches in diameter and about 8 inches high.

See *radiosa*.

**MAMMILLARIA ARIZONICA** Engelm.

See *radiosa*.

**MAMMILLARIA COMPACTA** E.

Depressed-globose, 5-10 cm diam, simple; tubercles short-conical, crowded, 8 mm long; radials 13-16, rigid, recurved & appressed, interwoven with adjacent clusters, whitish or horny, 10-20 mm long; central erect, often wanting; fis 3-3.5 cm long and broad, yellow; fruit oval, green; seeds 1.4 mm long, smooth, yellow. Chihuahua.

**MAMMILLARIA CONOIDEA** P DC.

Ovate-conical, simple, 3.5-10 cm high, 4-7 in diameter below with densely woolly vertex; tubercles close, ovate, 12 mm long, axils at first woolly; radials 10-16, ashy to white, straight, stout, 6-10 mm long; centrals 3-5, 10-16 mm

long, the lower one more rigid, 15-20 mm long, brownish-black; fls deep purple, 2-3 cm long & wide. San Luis Potosi; Coahuila; Nuevo Leon.

MAMMILLARIA CORNIFERA P DC.

MAMMILLARIA DASYACANTHA E.

Mamillaria echinus E. is radians.

MAMMILLARIA ELEPHANTIDENS Lem.

MAMMILLARIA MACROMERIS E.

MAMMILLARIA MISSOURIENSIS

Sweet hort Brit 171 [1827].

M simplex T-G Fl N Am 1:553 [1840].

M nuttallii E pl Fend 49 [1849].

M notesteinii Britton Torr cl b 18:367 [1891].

Cactus mamillaris Nutt Gen 1:295 [1818] non L.

Globose, 3.5 cm diam., simple; mammae ovate, 12-14 mm long, slightly grooved; radials 13-17, straight, whitish, unequal, setaceous, 8-10 mm long; central more robust, longer, puberulent, or wanting; fls 2.5 cm long, stigmas 2-5; fruit globose, scarlet, 6-8 mm diam., seeds globose, black, pitted, 1.1 mm diam. Montana, Kansas, Colorado, Nebraska, South Dakota.

Star Cactus; dwarf; flowers yellow or salmon color.

MAMMILLARIA NICKELSAE K Br.

"Soon and densely caespitose, glaucous and often purplish, 4-6 cm high, hemispherical or globose; tubercles 10-12 mm long, becoming quite as broad and umbriated; spines 14-18 and radial, slender, at first yellowish with darker tips, later all gray; lower spines 8-10 mm long, the upper one-third longer, stouter, extending into the groove and forming a fascicle, the clustered fascicles making an upright tuft at the vertex; flowers 5-7 cm in full expansion, said to be bright yellow with red center; fruit unknown. Southward from Laredo, Texas. Named for the collector, Mrs. Anna B. Nickels, and offered in catalogues as M. Nickelsii. Evidently closely related to M. sulcata Engelm.'—Katherine Brandegee, Zoe, 5: 51 (ag 1900).

Mamillaria pectinata E. is radians.

M. POTTSII Scheer ex Salm HD ed 2, 04.

Cylindrical, 3-3.5 cm high, 2.5-3 diam., somewhat branching; tubercles ovate, obtuse, lightly grooved, axillary only, radials slender, white, very numerous, rigid; centrals 6-12, stouter, fls pinkish; scarlet, clavate fruit. Texas; Chihuahua; Durango.

Cactus pottsii OK rev gen pl 261; Coulter 118.

Mleona Pos AGZ 1853, 94:—"stelligere M. caule cylindraceo interdum prolifero diametro pollicari 4-5 poll. alto glauco, mamillis brevibus confertis; axillis lacunatis, areolis nudis, aculeis exterioribus permultis intertextis albidis, centralibus 8-12, exterioribus superantibus flavescens, summo subcurvato albo subpurpurascens." Nuevo Leon

MAMMILLARIA RADIANS P DC.

MAMMILLARIA RADIOSA E.

M. alversoni, arizonica, chloantha, deserti

MAMMILLARIA RECURVATA E.

MAMMILLARIA STROBILIFORMIS Shr.

MAMMILLARIA SULCOLANATA Lem.

MAMMILLARIA VIVIPARA Haw.

Purple and white spines cover the en-

tire plant; flowers bright purple, 3.5 cm long and broader when fully expanded, showy. Montana, Nebraska, Colorado, Idaho, Washington and British America—consequently one of the most hardy species known.

MAMMILLARIA WISSMANNII Hildm.

Section G ANDULIFERAEE. Cylindrical or oval; mammae cylindrical, long, or oval and more or less globose; grooves bearing more or less conspicuous glands, the grooves often absent in young plants, the glands sometimes on the axils or at the base of the tubercles.

MAMMILLARIA ASTERIAS Cels.

MAMMILLARIA BREVIMAMMA Zucc.

Near Zimipan, Mexico.

MAMMILLARIA CLAVA Pf.

"Clavato-columnaris, intense viridis; axillis tomento denso albo et glandula simplici reticella instructis, mox planissimis, nudis; mamillis elongatis erectis, dorso sulcatis, basi oblique tetragonis; areolis albo-villosis infraapicalibus; aculeis rectis, corneis, subaequalibus, radiantibus 7, centrali 1, paulo longiore, crassiore."—Pfr AGZ 1840, 282. Mexico—Ehrenberg.

Bot mag t 4358 Otto & Dietr AGZ 1845, 234-5.

M dolichocentra Lem.

MAMMILLARIA DOLICHOCENTRA Lm

Two distinct species have been figured under this name by Foerster, Schumann, & Lem.

See clava.

MAMMILLARIA ERECTA Lem.

MAMMILLARIA GLANDULIGERA

Otto ex Dietr AGZ 1848, 298:—"obovata, subglaucescens axillis nudis; mamillis brevibus, pyramidatis, subteretibus, albidopunctatis, dorso glandular rosco albo instructis; areolis subnudis; aculeis exterioribus stellatim dispositis numerosis flavescens, demum albi, centralibus ternis vel quaternis subulatis fuscis, unico patente, ceteris erectis. Mexico."

Is Ottonis fide KS.

MAMMILLARIA MACROTHELE Mart.

Near Zimipan, Mexico.

MAMMILLARIA OTTONIS Pf.

"Globosa simplex obscure griseo-virens; axillis fasciculo lanæ albæ et glandula rubra tomento albo cincta instructis; mamillis crassis mammaeformibus, basi interdum confluentibus, dorso usque ad glandulam sulcatis; areolis junioribus albo-villosis; aculeis radiantibus 11-12 subaequalibus rigidis rectis, 2 summis gracilioribus suberectis, flavescens, apice fusc., tandem fusco-cinereis, centralibus 3 rarius 4, (summo plerumque deficiente) subdecussatis, rigidioribus, corneis, infimo longissimo patente recurvulo."—Pfr AGZ 1838, 274. Mineral del Monte, Mexico—Ehrenberg.

MAMMILLARIA SALMDYCKIANA

Scheer ex Salm HD ed 2, 134 [1850].

M Scheerii Muehpf AGZ 1947, 97, non 1845.

M robustipina Schott ex E.

M [Cactus] brownii Toumey bot gaz 22:253.

See Orcutt rev 77-78 for descriptions; it is time the name scheerii were dropped for this rare



plant of Sonora. New Mexico, Chihuahua. Texas and Arizona: the plants from San Luis Potosi is a distinct species.

**MAMMILLARIA SCHEERII** Muchl. p. f.

"Globosa multiplex: mammillis subglobosis superne sulcatis; aculeis radiantibus 20-22 albis adpressis subdistichis, centralibus 4 rectis fuscis. infimo valde elongato 8-10 lin. longo"—AGZ 1845, 346; 1846, 373, is polymorpha [conoidea].

See salmdyckiana.

Subgenus **DOLICHOTHELE** KS.

**MAMMILLARIA LONGIMAMMA** P. SC.

**MAMMILLARIA SPHAERICA** S.

Subgenus **LACTESCENTES**. Plants depressed-globose, rarely a little elongated; juice milky; tubercles usually angular and somewhat leathery. Flowers as in Eumammillaria, but mostly small.

**MAMMILLARIA ANGULARIS** L.-O.

**MAMMILLARIA CAPUT-MEDUSAE** Otto.

Near Zimipan, Mexico.

**M. DIACENTRA** Jacobi AGZ 1856, 91.

"Angulosæ tetragonæ. Caule sphaerideo, subumbilicato saturate viridi lactescente. Mammillis ad basin rhomboideis, obtuse pyramidalibus apice late aliter applanatis; pulvillis ovalibus glabris subapicalibus; axillis junioribus nudis, dein floccose albo-lanatis, serius cænuo nudis. Setibus radialibus 5-6, diaphane albidis apice subsphacelatis, serius ubique albidis, subulatis vix patulis, subtus et inferne recurvulis radiantibus positis, 2 aut 3 superioribus brevissimis, 3 inferioribus altero tanto longioribus; aculeis centralibus 2, multo validioribus longioribusque, junioribus cinereo-brunneis apice nigris, dein carne cinereis apice nigricansibus, superiore erecto sensim recurvato, inferiore recte patente inferne recurvulo, utroque earum basin semi terete, apice rotundato, inferiore fere altero tantum longiore. Flores parvuli rubicundi, tubo brevissimo, circa ovarium ventricose dilatato, superne coarctato, petalis lanceolatis breviter recurvatis, roseis cum linea media purpurea. Stamina filamenta rosea antheræque sordide flavæ; stylus staminibus longior roseus, stigmatibus 6 cæcoloribus. Floret mensibus Junio et Julio. Planta descripta altitudine tripollicari diametroque poll. 3½. Aculeorum radialium 2 aut 3 superi lin. 1, ceteri 3, lin. 2 longi; aculeum centrale superior lin. 6-8 longus, inferior pollicari seti utra."

**MAMMILLARIA FORMOSA** Scheidw.

**M. FUNKII** Scheidw AGZ 1841, 43.—

"Lactescens, robusta, umbilicata, læte viridis; axillis nudis, tandem criniferis; crinibus albis apice nigrescentibus ex mox unicoloribus; mammillis pyramidato-tetraedris; areolis inf a apicem mammillarum immersis, nudis, junioribus vix tomentosus; aculeis 8 maxime inæqualibus, centrali 1 longissimo incurvulo, nascentibus fuscis, tandem griseis. Truncus 3 poll 10 lin altus, diametro 6 pollicari; aculei exteriores ¼-1-2 lin. longi, centralis ½-6 lin. longus."

Mexico.

**MAMMILLARIA GABBII** Engelm.

Cactus gabbii Coulter, U S Na Hb cont 3:109:—"Globose, 5-10 cm in diameter, sim-

ple, tubercles cylindrical, slender, 12-14 mm long, with woolly axills; radial spines about 13, 5-8 mm long, lower ones longer and stouter, especially the latest ones pectinate; the central shorter, straight and robust; flowers small, yellowish-red; fruit unknown.—Type in Herb. Mo. Bot. Gard. Among rocks, from San Ignacio to Mission San Fernando, Lower California."

Near San Quintin bay, Baja Cal. (Orcutt).

Cactus brandegei Coulter, U S Na Hb cont 3:76.

**MAMMILLARIA GEMINATA** Scheidw.

"Lactescens, truncus geminato; vertice umbilicato; axillis lanatis; mammillis tetragono-polyædricis, viridibus; areolis junioribus lanatis, dein nudis; aculeis exterioribus 6 rectis, stellatis, apice nigrescentibus; centrali 1 validiore curvula nigro. Mammillæ 4 lin. longæ; aculei exteriores 2½ lin. longi, centralis longitudine 3 lin."—AGZ 1841, 42. 5000 ft alt near Oaxaca, Mex.

**MAMMILLARIA GIGANTEA** Hildm.

**MAMMILLARIA GUMMIFERA** E.

**MAMMILLARIA HEESEANA** Mac Dow.

**MAMMILLARIA HEYDERI** Muehlenp. f.

"Globosa, viridis, vertice impresso, axillis junioribus lanatis, mammillis conicis, elongatis, 6 lineas longis, 3 lineas latis, areolis junioribus albo-tomentosis apice mammillarum dispositis; aculeis radiantibus 20-22 albis setaceis, inferiori robustiori paululum elongato, centrali 1, erecto corneo basi apiceque fusco 2½-3 lineas longo."—Mhl. p. f. AGZ 1848, 20. Texas.

Regel Gartenflora 1880, 52, f.

Scheele. Roem Texas, 435 (1849).

**M. KRAMERI** Muehlpf AGZ 1845, 347:

"Globosa, basi tandem prolifera: axillis lanatis; mammillis angulosis pyramidalis, junioribus lanatis; aculeis exterioribus 4-5 rigidis, centrali 1 elongato 1½-2 poll. longo, omnibus albis apice nigris. Die pflanze ist aus Mexico, und erhielt ich dieselbe vom Kramer in Hamburg, unter den Namen M. macrantha."

Runge sent under this name from San Luis Potosi, which bore flowers ¾ inch long, ½ inch across, 12 maroon purple sepals, 16 white petals with maroon midvein; 6 stigmata, style, filaments and anthers white

M. Schmidtii (schmittii) Ske.

**M. LEUCOTRICHA** Scheidw AGZ 1840, 338:

"M. lactescens, simplex vel cæspitosa, cylindrica, vertice umbilicato; mammillis pyramidalibus quadrangularibus; axillis primo nudis, tandem lana abundantibus; aculeis criniformibus, albis munitis; areolis rotundis lana alba instructis; aculeis exterioribus 6, centrali 1, omnibus rigidis subæqualibus fuscis, tandem carneis apice sphacelatis. Fructus pyriformis; flores adhuc ignoti." Mexico.

Jacobi AGZ 1851, 11.

See maschalacantha.

- M. MASCHALACANTHA Cels.  
 M. mutabilis levior Salm, HD ed 2, 120.  
 Cactus mutabilis OK  
 M. leucotricha (leucocarpa) Scheidw.  
 Variety LEUCOTRICHIA Monv.  
 M. mutabilis et funkii Schdw.  
 M. Senkei Foerst.  
 Variety XANTHOTRICHIA Monv.  
 M. xanthotricha Schdp. Cactus xanthotrichus OK. M mutabilis xanthotricha S.  
 M PALLESCENS Scheidw AGZ 1841, 42.  
 "Lactescens, cylindrica aut ovata; vertice umbilicato subacu eis abscondito; axillis maxime lanatis, lana aculeis adhaerente et mammillis involvente; areolis tomentosus, tandem nudis; mammillis polyaedris, laete viridibus, mox pallescentibus; aculeis 4 cruciatim dispositis, angulatis, recurvis, supremo maximo subtorto, omnibus rigidis, carneis." 5600 ft alt Tehuacan.  
 MAMMILLARIA MEIACANTHA E.  
 MAMMILLARIA SEMPERVIVI P DC.  
 Near Zimapan, Mexico.  
 MAMMILLARIA TROHARTII Hilldm.  
 MAMMILLARIA UNCINATA Zucc.  
 Schumann includes the following in this group, but as known to us all are not milky.  
 M. CELSIANA Lem.  
 M. PRAELII Muehlenpf.  
 M. PYRRHOCEPHALA Scheidw.  
 M. ZEYERIANA F Haage jr.  
 M. CENTRICIRRHA Lemaire.  
 M. CROCIDIATA Lemaire.  
 M. KARWINSKIANA Mart.  
 MAMMILLARIA BICOLOR Lehm.  
 Near Zimapan, Mexico.  
 Variety NIVEA KS.  
 MAMMILLARIA CARNEA Zucc.  
 Near Zimapan, Mexico.  
 MAMMILLARIA ELEGANS DC.  
 MAMMILLARIA LAVOVIRENS S.  
 MAMMILLARIA HAAGEANA Pf.  
 MAMMILLARIA MELALEUCA Karw.  
 MAMMILLARIA MELANOCENTRA Pos.  
 MAMMILLARIA MUTABILIS Scheidw.  
 MAMMILLARIA NIVOSA Link.  
 MAMMILLARIA OBSCURA Hilldm.  
 MAMMILLARIA PARKINSONII Eh.  
 MAMMILLARIA PERBELLA Hilldm.  
 MAMMILLARIA PHYMATOTHELE Berg.  
 MAMMILLARIA POLYEDRA Mart.  
 MAMMILLARIA SEITZIANA Mart.  
 Near Zimapan, Mexico.  
 MAMMILLARIA SIMPLEX Haw.

Subgenus EUMAMILLARIA. Plants globose or elongated, with watery juice, and cylindrical or conical grooveless tubercles. Flowers borne usually in a ring near the top of the plant, cup-shaped or

expanded, as broad or broader than long. Sepals appressed. Stamens and styles shorter than the corolla.

- MAMMILLARIA ACICULARIS Lem.  
 MAMMILLARIA ACTINOPLEA Eh.  
 MAMMILLARIA ALPINA Mart.  
 MAMMILLARIA AMABILIS Eh.  
 MAMMILLARIA AMBIGUA G. Don.  
 MAMMILLARIA AMOENA Hopff.  
 MAMMILLARIA ANCISTRATA Schelh.  
 MAMMILLARIA ANCISTRIA Walp.  
 MAMMILLARIA ANDREAE Pf.  
 MAMMILLARIA ARGENTEA Fenn.  
 MAMMILLARIA ARICTINA Lem.  
 MAMMILLARIA ARMILLATA K Br.  
 "Stems somewhat attenuate, reaching 3 dm in height, 4-5 cm in diameter, usually in clusters of 3-12, from the base, often branching above; tubercles somewhat leathery in texture; conical, somewhat angled; axils setose and sparsely woolly; radial spines 9-15, 7-12 mm long, the inner half whitish or grayish; centrals 1-4, 10-20 mm long, the lower one hooked and longer, all, and the outer part of the radials dark brown, yellowish or gray; flowers 1-2 cm long, scarcely spreading; flesh color; fruit red, clavate, 1½-3 cm long; seeds coriaceous, dull black, about 1 mm long, obliquely obovate, constricted above the more slender basal portion; surface covered with minute, not closely contiguous pits, the intervening spaces minutely wrinkled; hilum basal, narrow. San Jose del Cabo, Baja California. The name is in allusion to the dark bands which encircle the plant, giving it much the appearance of a raccoon's tail."—Katharine Brandegee, Zoe, 5:7 (Je 1900).

- MAMMILLARIA ATORUBRA Eh.  
 MAMMILLARIA ATROSANGUINEA Eh.  
 MAMMILLARIA AULACANTHA P DC.  
 MAMMILLARIA BADISPINA F.  
 MAMMILLARIA BARBATA Engelm.  
 MAMMILLARIA BARLOWII R-K.  
 MAMMILLARIA BELLATULA F.  
 MAMMILLARIA BERGENII Eh.  
 MAMMILLARIA BERGII Mig.  
 MAMMILLARIA BIFURCA Dietr.  
 MAMMILLARIA BINOPS Hge.  
 MAMMILLARIA BOCASANA Pos.

This beautiful plant is covered with the finest tender hair like spines.

Near San Luis Potosi, Mexico.

- MAMMILLARIA CANDIDA Scheidw.  
 MAMMILLARIA CARRETII Rebut.  
 Is Pringlei.

- MAMMILLARIA CONICA Haw.  
 MAMMILLARIA DECIPIENS Schw.

Loose tubercled small growing species with delicate & pretty yellow fls.

- MAMMILLARIA DIOICA K. Brandg.

M. Goodridgii Engelmann (not Scheer?). Small globular species, closely set with brownish or white spines, the central one curved

into a hook. The delicate yellowish white flowers are succeeded by the club-shaped, scarlet berries that possess the flavor of wild-wood strawberries, and are sometimes called "hep-pitallas," the "Ilavina" of the Mexicans.

**MAMMILLARIA ELONGATA** P. DC.

**MAMMILLARIA FLAVA** E.

**MAMMILLARIA FORDII** Orcutt.

Ovate, 2 inches in diameter, and about 3 high, rarely branching at base; tubercles obtuse,  $\frac{1}{4}$  inch across, short, 12 radial spines cuneous,  $\frac{1}{8}$  -  $\frac{1}{4}$  inch long, the solitary central black and hooked,  $\frac{1}{4}$  inch long; flower an inch long, white with about 9 petals and 9 sepals—the latter with purplish midvein on the back, 6 stigmata of a brownish green style greenish, filaments white and anthers orange yellow; flowers in July; Baja California on the west coast, collected for L. M. Ford, 1899. Near *M. Goodridgii*.

**MAMMILLARIA FULIGINOSA** S.

**MAMMILLARIA GLOCHIDIATA** Mart.

**MAMMILLARIA GOODRIDGII** Scheer.

**MAMMILLARIA GRACILIS** Pf.

**MAMMILLARIA GRAHAMII** E.

1 to 3 inches high, subglobose, simple or branching from the base; tubercles ovate, axils naked; radial spines in one series, 20 to 30 in number, 3 to 6 lines long, rigid and whitish, surrounding a stouter and longer hooked brown one. Flowers small, nearly 1 inch wide, reddish; berry oval, green, with small pitted seeds. The well-known "Arizona Strawberry" or small Fishhook Cactus of N. M., Arizona and Utah, rare in California.

**MAMMILLARIA GRUSONII** Runge.

**MAMMILLARIA HUMBOLDTII** Eh.

**MAMMILLARIA INCURVA** Scheidw.

**MAMMILLARIA INTRICATA** Otto.

**MAMMILLARIA LASIACANTHA** E.

Variety **DENUDATA** Engelmann.

*Mammillaria leona* Pos. is *Pottsii*.

**MAMMILLARIA LESAUNIERI** Rebut.

**MAMMILLARIA MAELENII** S.

**MAMMILLARIA MAINAE** Br.

"Hem spherical to ovate, simple, or sparingly branched from the base, reaching a height of 10 cm; tubercles glaucous, somewhat incurved, cylindrical, becoming conical, 1-1½ cm long, often bright red in the naked axils; radial spines, 10-15, yellowish, becoming white, slender, scarcely pungent, 6-10 mm long, the upper rather the shorter; centrals 1-2, both hooked, rarely an additional upper one; lower central, usually the only one, nearly twice as long as the radials, stout and strongly hooked, pect. brown below, blackish above, somewhat twisted; the second central when present, widely divaricate, ascending, weaker and shorter; flowers in crown at upper part of stem, pinkish-white or flesh-color, 1-1½ cm in length, including the ovary; style whitish, deeply, few-lobed fruit red, globular, to obovate, shorter than the tubercles; seeds dull-black, punctate, a little more than 1 mm long, obovate, with narrowly-linear basal hilum. Named for the collector, Mrs. F. M. Main, who found it in Sonora, south of Nogales. It has been

offered by dealers as *M. Galestii* Scheid, to which it is not at all related."—Katharine Brandegee, *Zoe*, 5:1 (ag 1909).

**MAMMILLARIA MICROMERIS** E.

mushroom cactus, found in Texas, resembles a silk-covered button, and can be handled without gloves. The delicate, starry net work of snowy-white spines over the green plant gives it a very beautiful appearance.

Variety **GREGGII** Engelmann.

**MAMMILLARIA MINIMA** Reichb.

Mexican species, cylindrical, forming numerous heads around the base, which readily take root when detached. About 20 slender white spines radiate from the center of each hemispherical tubercle, enveloping the plant like a bit of delicate lace; no central spine.

**MAMMILLARIA NICHOLSONII** Mac Dow.

*Mammillaria nogalensis* Runge cat, is *recurvata* E.

**MAMMILLARIA OLIVIAE** Orcutt.

Globose to ovate, 2½ inches in diameter, 3 inches high, simple or rarely branched or cespitose; tubercles ovate,  $\frac{1}{4}$  inch long, axils naked; radials 25-36, snowy white, slender, rigid,  $\frac{1}{4}$  inch long, upper ones shorter; centrals 1-3, the lower one only an eighth of an inch long, erect, rigid, white or tipped with chocolate brown; the two upper centrals slender, white or rarely tipped with brown, 3 times as long, closely resembling the radials; lower central rarely longer, but occasionally even  $\frac{1}{2}$  inch long, slender or flexuous, brownish and hooked upward—more frequently seen on the lower outer tubercles of young plants; fruit scarlet, clavate, with small seeds. Type, Orcutt, No. 2602:—Of snowy whiteness from its numerous interlacing spines; dedicated to the author's life partner, who has accompanied him in thought on the mountains and deserts of Arizona, where this beautiful plant occurs.

*Mammillaria petersonii* Hildm, is *Heesiana*.

*Mammillaria pfeifferi* Booth, is *rhodantha*.

**MAMMILLARIA PHELLOSPERMA** E.

**MAMMILLARIA PLUMOSA** Web.

**MAMMILLARIA PRINGLEI** K Br.

Katharine Brandegee, *Zoe*, 5:7, publishes this name (based on *Cactus Pringlei* Coulter), and states that it seems to scarcely differ from *M. Carretii*.

**MAMMILLARIA PUSILLA** Sweet.

**MAMMILLARIA RHODANTHA** L-O.

Oblong or subcylindrical, 30 cm high, 7.5-10 in diameter, often bifurcate; tubercles conical, 12 mm long, 8 in diameter; with woolly axils; radial spines 16-20, bristle-like, white, the lower 8-10 mm long; central spines 6 or 7, rigid, whitish with black tip, 12 mm long; flowers rose-color, 12 mm broad; fruit 2.5 cm long, cylindrical. Mexico.

**MAMMILLARIA SPHACELATA** Mart.

**MAMMILLARIA SPINAUREA** S.

**MAMMILLARIA SPINOSISSIMA** Lem.

**MAMMILLARIA STELLA-AURATA** Mt.

**MAMMILLARIA THORNBURI** Orcutt.

Cylindrical,  $1\frac{1}{4}$  inch in diameter, usually 2-3 inches high, erect, with 8 or 9 spiral rows of tubercles, axils naked; 13-18 slender white or brown tipped radials  $\frac{1}{4}$  inch long; usually 1 slender flexuous hooked central one-fourth to three-fourths of an inch long, tipped with brown; fruit clavate, scarlet, containing minute black seeds. Tips of tubercles olive green, base and axils and sunken portion of plant tinged with purple; radials usually 13, the upper sometimes the longest, often brown nearly to the base; central occasionally brown, usually the lower half white or yellowish, often hooked upward, but often twisted and turning in every direction. Plant proliferous at base, forming numerous offsets in the axils of the buried or lower tubercles; these quickly take root and usually soon sever connection with the parent, thus forming dense compact masses of old and young plants, usually 10-50—but in one, perhaps not exceptional case, I counted 110 distinct plants, in a cluster—all apparently originating from the tallest individual in the group. Occasionally a plant, from injuries sustained, becomes bifurcate or forms a number of aerial heads which remain permanently attached—but which usually form roots of their own and eventually survive the death of the parent. More than 1 central spine appears very rare, but 2 or three sometimes appear from the same small woolly areola, one or all hooked, of equal or varying length. The largest plant among over 1,000 was  $1\frac{1}{2}$  inch in diameter and nearly a foot high! Type, Orcutt, No. 2583:—Arizona. Curiously the same plant was found a few days earlier than by the author by Prof. J. J. Thornber, and planted in the cactus garden of the University of Arizona, and this interesting addition to the cactus flora of the United States may therefore appropriately bear his name.

**MAMMILLARIA TOALDOAE** Lehm.**MAMMILLARIA UMBRINA** Eh.**MAMMILLARIA VALIDA** Web.**MAMMILLARIA VENUSTA** K Br.

"Simple, becoming caespitose in clusters of, in extreme cases, as many as 40; heads 2-4, very rarely, in center of large clusters, 6 cm high, a little less in diameter; tubercles thick and short, concave at the end, greenish, purplish to nearly white, glaucous; axils only slightly woolly, soon marked; radial spines, 9-15, stout, 6-12 mm long; centrals typically solitary, 10-15 mm, sometimes 2 or 3, in a single specimen 4, porrect-spreadig, the 3 upper very short; flowers about 4 cm in diameter, rose-color, widely spreading, tube very short; petals lanceolate acute, recurved-spreading; style-branches 5, apparently rosy brown; fruit  $1\frac{1}{2}$ -12 cm long, scarlet, linear, circumscissile some distance above the base, nearly dry; seeds oblong-obovate, rather less than one mm long, constricted above the basal portion, which is half as long and nearly as wide as the upper; surface dull, minutely pitted, the pits much obscured by delicate intervening striae; hilum basal, large and triangular.

"Collected by Mr. T. S. Brandegee in the vicinity of San Jose del Cabo, Baja California, in Sept. 1890. (No. 240, M. Goodrichii, of 'Flora of the Cape Region'); again Sept. 1893, and for the third time last year in numerous living specimens. The spines are from pure white, barely tipped with brown, to dark brown, whitish only near the base. The flowers, which appear in September, hide the whole plant, and it is of such low growth as to look like a beautiful cluster of flowers springing from the sand. The fruit appearing in winter is nearly dry and falls very readily when ripe, leaving most of the seeds in the axillary cup. It is the only circumscissile Mammillaria known to me."—Katherine Brandegee, Zoe, 5:8 (Je 1900).

**MAMMILLARIA VETULA** Mart.**MAMMILLARIA WILCOXI** Tourmey.

Usually simple, depressed-globose; 14-16 slender subulate whitish radials 10 mm long; solitary hooked central brownish; axils naked. Fruit (16 O 1896) flesh color faintly tinged with carmine, the black seeds showing through the transparent epidermis. Near Congress and Benson, Arizona (Orcutt).

**MAMMILLARIA WILDII** Dietr.**MAMMILLARIA WRIGHTII** E.**MAMMILLARIA ZEPHYRANTHOIDES** Scheidw.

Mamillopsis senilis Web, is Mammillaria senilis Lodd.

**Genus MELOCACTUS De Candolle.**

Globose fleshy plants 1-3 feet in diameter, regularly ribbed, ribs bearing clusters of spines, surmounted with a woolly cylindrical cap closely set with softer spines, upon which the small tubular red or rose-colored flowers are borne. Of little value horticulturally and rarely cultivated with success. Generally found in rocky or sandy dry situations in tropical America and West Indies.

**MELOCACTUS VIRIDESCENS** Nutt.

Nuttall ex Tschum in J Bost Soc Nat Hist 5:293 (1845).—A synonym of Echinocactus viridescens.

The Melocacti are natives of the West Indies, and tropical America.

Genus MYRTILLOCACTUS Console.  
**MYRTILLOCACTUS GEOMETRIZANS** C  
Cereus geometrizans Mart.  
Cereus cochal Orcutt.

**Genus PELECYPHORA Ehreub.****PELECYPHORA ASELLIFORMIS** Ehrenb.

The Hatchet cactus is a little gem from Mexico, so-called from the shape of the tubercles. It bloomed in San Diego on May day, scarce  $\frac{1}{2}$  inch in length and breadth, with thirteen bright magenta colored petals and seven or eight pale lavender sepals, the four stigmata white, style and filaments tinged with purple, and anthers bright orange. The largest plant

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