MISSOURI BOTANICAL GARDEN
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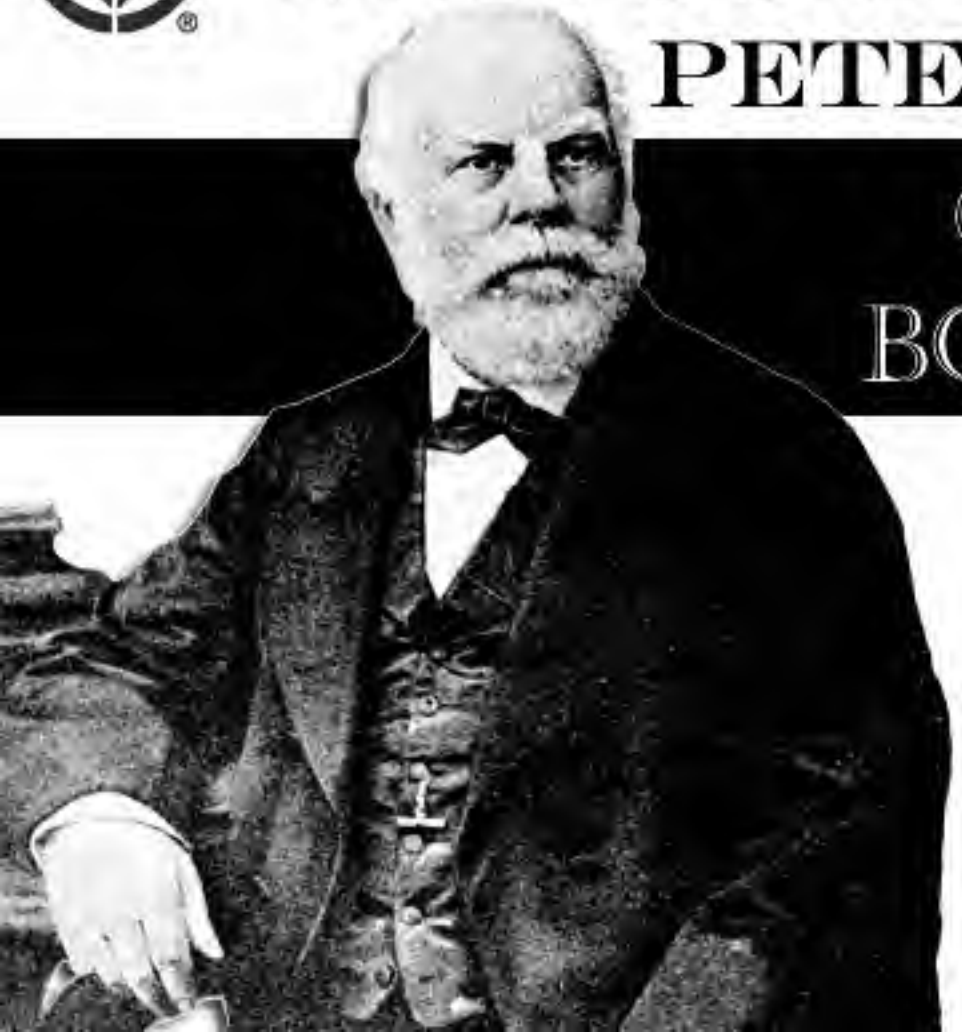

GEORGE ENGELMANN BOTANICAL NOTEBOOKS

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to Brave Salm a variety with 12 radial spines. The large areole, remote tubercles appear to distinguish the species well; and I would add, the short lanceolate groove from the areola upward.

Flowers large, yellow, externally greenish with a purple tinge in the single specimen before me, 2 3/4 I. long; with a very slender tube; sepals, even the upper ones remarkably obtuse, rounded; petals lanceolate, acute, not obtuse, and cuspidate as in Ferocactus pictus, which has also externally purplish flowers, with a much larger ovary &c.

6. E. uncinatus Hopf glauco-viridis vide pag 86
ovatus; costis 13 tuberculatis obliquis;
tuberculis compressis sulco transverso
distinctis, supra usque ad basin sulcatis;
areolis ~~ovato~~ ~~oblongulatis~~, junioribus albo-lanatis;
aculeis radialibus 8 ~~subulatis~~, ~~2~~ superioribus 3 brevioribus
teretibus uncinatis, purpureo-fuscis;
lateralibus superioribusque compressis,
basi stramineis, supra nitidis apice
fuscis, summis longioribus, latioribusque;
centrali ad basin angulato, ~~compresso~~
~~supra complanato~~, uncinato, ~~ita~~ erecto, long. s.. mus flavescente
flavescente albido apice fusco ruto;
floribus ab areola apicifera distantibus
ex basi tuberculi ortis; sepalis
exterioribus 25-30 ovato-triangulatis acutis
squamiformibus, longe acuminatis hyalinis,
medis 15-25 ovato oblongulatis obtusis, purpureo-nebulosis
margine membranaceo ciliatis superioribus 18-20 angustis
oblongis obtusis
lanceolatis, purpureis ~~albo-marginatis~~, petalis
20-30 linear-lanceolatis acutis purpureis; stylo
supra staminem numerosissimum exserto
stigmatibus 10 tuberculis ovatis, carneis
seminibus ~~obovatis~~ curvatis, parte superiore
subglobosa, opaco minute tuberculato; dorso carinato fuscis; testa inferne cylindrico laevi
lucido; hilo orbiculato (sed 0,8 I. long.)

0 1 2 3 4 5 6 7 8 9 10 cm
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collected also in 1849.

and on the River below.

Near El Paso Hf & also on Eagle Springs, on stony hills, and [illegible] nearly to the top of the mountains, commonly in tufts of grass or hidden among low bushes; × Fl in March and April. — Arts, 3–6 inches high, 2–3/4 in diameter, crowned with a tuft of the long whitish hooked spines. Areolar 8–12 lines distant. In our adult plants there are generally 3, or very rarely 4 lower hooked radial spines, 3/4 – 1 1/4 inch long; 5 upper spines are 1–1 1/2 inches long, paler and flattened and, what is unusual, the uppermost longer broader and paler than the others sometimes I find 6 upper spines, with the 3 outer and more slender ones appressed radial and the 3 inner and stouter spines assume the position of 3 upper central spines, when the 10 spines would be arranged as 3 lower and 3 upper radial and 4 central spines. The hooked central spine is 2–4 inches long, not annulated. Young plants have 6 or 7 radial and one central spine, all terete, and dark purplish with darker tips, all from 1/2 to 1 1/2 inches long; in some what older specimens the central spine elongates, and fully becomes flattened and whitish

(2 or 3 Cms distant from the Spines)

flowers 1–1 1/2 Inch long, dark purplish red, opening at mid day in bright sunshine.

— E. Arizonicus Hoffm (from northern Mexico?) is said to have 9–11 spines, of which 4 are central and 5 to 7 radial. The description say, nothing about the [illegible] central spine, but the flowers are described exactly like those of our plant —

"Plants at least 1000" yellow
Color, orange at tips
fruit ovate, 1 1/2 Inch long, fleshy
seed 0,8 Cm long, remarkably
curved — very different
from description there
see description on last page

A better arrangement of this section might be

1 E. setispinus	~~E.~~ setispinus
2. E. Wrightii	Wrightii
3, E unicinatus	Conjihamatus
4, E. brevihamatus	flexispinus
5. E Conjihamatus	brevihamatus
6. E. flexispinus	Unicinatus

Echinocactus laticostatus, n sp —

~~g~~ glaucescens, depresso-globosus, (vertice obtuse obtuse, umbilicato) costis 8 obtusissimis latissimis interareolas paulo depressis, ~~sulcis~~ simplicibus superficialibus acutis, areolis ~~suborbiculatis~~ basi truncatis, elevatis, juvenilibus albo lanatis, aculeis 6-8 robustis compressis, annulatis recurvatis, 5-7 radialibus subpatentibus rubellis demum cinereis ~~divaricatis~~ ~~demum divaricatis~~ ~~basi~~ ~~deorsum~~ flexo, centrali singulo robustiori deorsum flexo; floribus rectabilibus ex areolis denissime lanatis ortis, campanulatis, tubo quam longe densissime lanato, squamis exterioribus 60-70 subulatis ~~x~~ ciliatis et atro purpureo ~~lanatis~~ lanceolato-ciliatis apiculatis, interioribus 60 ovato-lanceolatis, mucronatis, ~~obtusis~~, petalis 36 oblongo lanceolatis, obtusis erosodenticulatis, purpureis, stylo supra staminibus numerosissimis flavo exserto rubello, stigmatibus 6-8 brevibus erecto patulis, bacca purpurea squamosa, lanata, densa involucrata, seminibus nigris opacis rugosis minutissime ~~tuberculosis~~; hilo obscuro.

Stony soils on the crest of hills, from the Pecos to El Paso and eastwards to Donana. Sept 1849. 1851. & 1852. (№ 218)
Brought by Dr Wright 1846 from El Paso and Chihuahua. ♄ = April & May (A remarkable and splendid species)

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nearly related to E. texensis with which it has in common the flattened rounded annulate spines, the woolly flower, the subulate exterior sepals and the succulent naked berry; easily distinguished by the smaller number of ribs, the somewhat more slender spines, the purple flower, and the seeds. —

2–8" high 3–6-dia

ribs divided by very shallow transverse grooves into something like tubercles.

The specimens which I have examined are all depressed, 1½–4 inches high and 2½ to 5½ inches in diameter; old specimens are said to become 6–8 inches high, oblong and even cylindric", Ribs in very young specimens 5; in all flowering ones which I have seen 8–sometimes 10 V. Areolae 6–10 lines distant, covered (the very broad) with thick long wool when young, Spines mostly 6 to 8, rarely 9; almost equal in length, ¾–1½ inches, but mostly 1 inch long. Flowers 2½ inches long of about the same diameter open only in bright sunshine; light purple, tube lighter (.3 l. long) globose, tips of sepals dark purple, naked, sticking out of the dense white wool which covers the greater part of the flower tube. Stamens 1266 in one flower. Berry juicy, but very soon drying up, and finally breaking off transversely leaving the base with most of the seeds hidden. The thick woolly seed when perfectly ripe (Aspen shovelled. ½ l. in diameter) globose.

Echinocactus horizonthalonius Lem is perhaps too nearly allied to our species it seems to be distinguished by the absence of a central spine and by the petals being lanceolate-linear as I very acute, pale rose-colour reach (Utah) the variety E. curvispinus Salm – with a broader lower spine seems to connect both forms.

see pag 222

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Echinocereus flexispinus ? Examination of specimens.

1. Devils Oliver, Wright July 8 1852 10-11 radial, 4 central spines
Lower radial 3/4-1 1/4", lateral 1 1/4-1 1/2" - upper 1 3/4-2" central
1 3/4-2, lateral hooked one 2" - most spines variegated, purplish with
white points, lateral spines whitish - all spines subterete,
none annulated. - 2-5 cylindric glands at base of flower
flower 3/4 Rich long, ovary with 35-40 scales, 9 l. long
& 6 broad scaly sepals purplish green with membranous
slightly ciliate margins; somewhat connate at base,
the N sepals 15 or 20 spathulate, obtuse, the slightly ciliate
upper ones oblong obtuse, & often mucronate; abt 15 or 20
greenish purple; petals 30 oblanceolate, obtuse, cuspidate
, rose-purple only mucronulate, yellowish with purple tips
at midrib outside; - style exsert about stamens but
four included in flower; stigma lobes 8, spreading
18 or 20; berry over one inch long with 35 or 40 scales,
seed obovate-globose, shining, very minutely pitted
(= that respect similar to E. Wrightii, but much larger
, 0,8 l. long; hilum narrowly oblong

2, Specimen = fruit; similar spines all terete, shorter
central only 1/2-2" all more or less purple, points
always whitish

3. Hills of San Pedro River 1849, July 13 - 14 radial 5 upper 1 lower
central, lower radial 1-1 1/2" lateral about 2"
upper 1 3/4 - 2 1/4" - Upper central spines 2 1/4 - 2 1/2
lower central 3 1/4 - 3 3/4 - -

flower 3 1/4" long, 40 lower 10-12 wide, 15 upper
sepals; petals obtuse, rose-purple mucronate
young fruit 1 3/4" long, oval, with 25 or 30 scales
seed very unripe

Only gray spines purplish, especially the upper
central and lower radial ones. - older spines gray;
stout spines indistinctly annulated, lower central and
one or 2 of the other are angular compressed

4. N 538 Rimpio to San Felipe Jun.

11–14 radial 3:1 central, all central spines angular
lower radial 1¼–2", lateral 2¼–2½" upper 1¾–2¾"
Upper central 2½–3" lower hooked central 3½–4"
— flower 2¾" long, very similar to the last (N 3)

5. D. Bigelow's Tepeaca July, on the Limpio

radial 11–14 central 3:1
most all spines annulated, all the shorter ones angular,
but mostly the central spines — Lowest spines
1¾–3." lateral 3½" upper 2¾–3¼" — Upper
Central 5" — Lower central 6½

A small specimen (young plant ?) has spines
only ¾" to 2" long!

flower 2¾" long, ovary with 20 ribs; in all
abt 35 lower 12 radial and 12–15 upper sepals and
25 petals — purplish outside — oblong, retuse, and
mostly mucronate

---

see page 110. : Varieties of E. flexispinus

A. crassispinus robustissimus
radialibus 8–11, centralibus 4, infimo elongato
angulato plus minus hamato,

B. gracilispinus
16–20, radialibus 12–14, centralibus 4–8
plus minus angulatis infimo elongato hamato

C. brevispinus
radialibus 8–11, centralibus 4, strictibus
cum infimo hamato radialibus vix
segmentibus

see page 110 & Lowest spine shortest and
stout of the rib, upper spines longer
+ with the exception and the most slender, lateral longest
of the 3 rib's lateral central spines shorter and mostly longer +
spines they are all more or less
purplish or variegated the 3 forms characterized above
show very much differ very much at first sight
pale points, and but it appears impossible to specifically
ashy gray shade

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Var d strict Cires between them apparte.
distinguish them (and they connect into ✕ upper radial
S. longihamatus) — I var d. lower spines 1–1½
lateral, ½–3, upper rostr 2½–4 and lower
4–5 inches long; the latter a and twice as thick stout
a) — the next form, ✕ Var β has longer ✕ often — with four spines
but more slender spines, lower and upper radial ✕ both more numerous
spines 1–3½, lateral 2–3½, upper
rostral 2–5, lower rostral 3–6½ inch long;
Var γ ~~is probably the form of the~~
young plant. ~~This is~~ not we find these
characteristic already
characteristic flowering when very young, and
long before the clusters of the mature
plant are fully developed; this is
also ~~usually~~ the case with S. uncinatus which
very often flowers when the rostral spine is quite small spines
yet short and slender, ~~even~~ though I must remark the figure accompanying the description from 1853 shows the flattened rostral spine ½–1¼ inch
upper spines 1½–2, lateral ones 1¼–1½; ~~upper~~
rostral spines all 1½–2 inches long.
The flowers of this form, now before me
are the largest of all. F Var δ ? see pg 120 F
flowers 2½–3½ inches long,
yellow, purplish externally ~~at the~~
the points and margins of the sepals & petals,
seeds 0,8 C. long, almost globose with a ramely oblong
hilum, ~~F~~

S. flexispinus Salm is a very different plant
with 30 ribs etc. —

perhaps not different from

This may be the same as Galeotti's
S. longihamatus from Mexico (what part?)
which is described as having 9 radial
& central sp. the hooked ones 4–5 inches long;
The description of the flower agrees
pretty well with our species. S. hamato-canthus
Muhlenpf. is according to Prince Salm a variety with
12 radial spines. —
flexispinus Salm Prot — see pag 110

* Between the flowers a few glands — which when very ex. are persistent & vigneous fluid — the ~~they become~~ ~~hold~~ — the ~~are~~ an observation of all species of this section

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E. flexispinus ♃? Leucacrisiacus

aculeis saepissime 12-15 gracilibus setaceis, laterales compressis, centrali superiore longissimo complanato, canaliculato-ve; floribus virescenti flavis, petalis lanceolatis acutis.

F Var? I may be a distinct species, but ~~the~~ means at present at my disposal, make it impossible for me to ~~satisfy~~ satisfy myself ~~that it is~~ ~~so. The~~ ~~The radial spines are more slender~~ ~~The areolae appear obtuse~~. The tubercles of the ribs are apparently less prominent the areolae orbicular, the radial spines (1-2 inches long) more slender, purplish, the lateral ones, about 5 compressed, the uppermost similar ~~to the upper~~ purplish, sometimes annulate & angular 2-2½ inches, the lower central ~~one~~ pale about 4 inches long, stouter & colourless or whitish afterwards ashy grayish, flat or channelled; ~~the~~ in flexispinus proper they are about the same size, apparently with narrower tube + always 5 obtuse carinate above ~~smaller~~, ~~with fewer~~ scarcely fewer apparently greenish yellow; petals lanceolate acute, (not obtuse mucronate). The flowers with part of a rib attached & spines were collected by Mr Wright in the same region in 1849 (No. 223.6), among the living plants brought 1852 there is one which appears ~~entirely~~ belongs here.

This may be P. sinuata see ~~p. 102~~ p. 227

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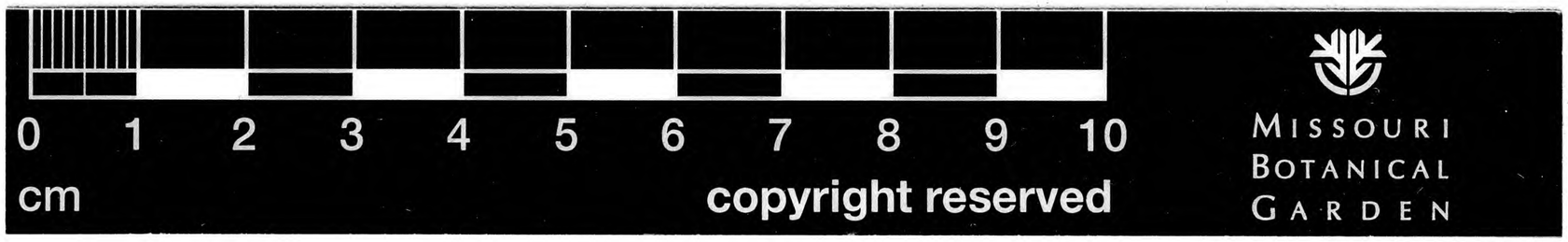
XXVII

§. 4 Intertexti.

19. *E. intertextus* E in B.C.R. V ovato-globosus, costis 13 acutis, interruptis, tuberculis ~~supra~~ sulcatis, aculeis rigidis rubellis ~~ad~~ apice fuscatis, radialibus 16-25 arcte adpressis, superioribus 5-9 tenuioribus subfasciculatis, infimo robusto brevi, centralibus 4 superioribus 3 ~~radialibus~~ superioribus ~~implicatis~~ excedentibus cum iis implicatis, inferiore singulo abbreviato porrecto; floribus parvis in vertice densecapitato congestis, ~~pallide~~ roseis; baccis siccis vix squamatis, seminibus scaphoideis.

β. dasyacanthus E. l. c. major, ovatus aculeis setaceis ~~tenuissimis~~ longioribus purpureo-caesiis, radialibus patulis, centrali inferiore ceteris paulo breviore ...



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Echinocereus Chrysocentrus Engelm. not Lemaire. Seed from El Paso to Sonora, mostly in valleys; also in North Sonora (on the Gila, Emory)

obliq-, 1,0 to 1,2 l. long hilum small, almost circular; seed black, shining ~~with~~ minutely ~~pitted~~ rather dotted pitted. Under a strong glass these dots are (more or less) circular grooves, leaving the centre as high as the general surface of the seed. Ovary with 80-90 rows

Dec. spec. 8-ribbed but has 13 ribs below, and 21 (new ribs originating in the intervals) on top - large specimen mostly with 21 ribs

Areolae 4-6 - 18 l. distant, remote with old plants upper central spines 1/4 - 2/3, lower hooked spine 2-3/4 inches long, sometimes twisted, ~~base~~

3 lower radial spines annulated, shorter 8-20 l. long, 3 upper annulate spines, somewhat weaker than the 4 lower 1/2 - 2 inches long, may also be considered as upper or abortitious central spines in young specimens they are wanting. - lateral setaceous spines 15-20 1/2 - 2 1/4 inch long spreading horizontally or both laterally - somewhat twisted

All the annulate spines are red ~~brown~~, with pale points

The setaceous spines are yellowish white

Dr. LeConte has collected seeds of an Echin. on the Gila named by him E. Wislizeni ~~to~~ seeds only 0,8 l. long pitted, curved hilum small, circular, strophe albumen ~~embryo hooked~~ - an unknown species E. LeConte; no dark with hooked spines ovate, seeds only 1,0 l. long

Echinocereus dasyacanthus Engelm. (The same as Emory's from the upper Gila river?) Case. Mex. 20 Nov 1852

ostiis 13 ~~tuberculatis~~ acutis, interruptis, plerumque obliquis; tuberculis supra tomentoso-sulcatis. areolis ovatis, junioribus albo tomentosis; maximis e purpurascente albis, radialibus ~~10-12~~ [19-22] pectinatis, ~~patentibus~~ plurisetialibus flexilibus, 4 superioribus 7-9 tenuioribus, setaceisque, albidis ~~subcadentibus~~ ~~conjunctis~~, ~~inferioribus~~ ~~brevioribus robustioribus~~ reliquis subaequalibus rectiusculis 4 V 3 superioribus ~~vix robustioribus~~ reliquis vix robustis, ~~longioribus~~ excedentibus inferiori simplo porrecto paulo breviore ~~clavidea provectiusculis~~; ~~divaricatis~~ deinde laxato congestis floribus minoribus, ~~Hab. to E. Intermediate~~ brevissimo 5-6 squamato, sepalis 20 late ovatis, rapidly albo marginatis, petalis 20-25 oblongis mucronatis,

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this belongs to L. intermedia

(purpurascentibus) + Gl. stem. — numerosissima vix separata, stigmatibus 7–8 purpurascentibus, exserta] basi globosa, sicca, aqueis ovaries-centibus subnuda, basi subpersistente, ~~irregulariter~~ circumscissa, seminibus ovatis — reniformibus laevissimis verrucosis — asperis, subopacis

"On stony ridges about Ll Coso coll. 1851 & 1852; fl. mostly in march."

+flowering when only 1 or 2 inches high

— Simple, ovate, 1 to 6 inches high 1/2 - 3" in diameter; + areolae 3 lines distant; spines × all light purplish gray, principally towards the tip; upper radial spines lighter coloured ~~those~~ ~~weak~~, 6–7 l. long; lateral and lower spines 7–8 l. long, lowest stouter, hardly shorter; 3 or rarely 4 upper central spines directed upwards, 9–11 l. long, and lower central spine, 3–5 l. long. — Flowers + short one inch long, sepals dark purple with paler margins, petals similar, outer ones deeper, inner ones paler gradually lighter coloured; stamens more than 60; yellow half as long as petals # Fruit dry, globose, dark + brown diameter, topped by the withered flowers; almost crimson-red, and base mostly remaining sessile for a long time, while the top part separates more or less regularly across at the seed 0.9 l. long, testa pores or rather maculate, curved around the large hilum, almost opaque, shining only on the smooth margin of the hilum; albumen small, embryo curved, roots cotyledons short. — The appearance of this plant is much more that of a cereus than an Echinocactus, and

+ closely ~~usually~~ spreading ~~obliquely~~ obliquely

coloured ~~those~~ ~~weak~~

obsolete filiformly

with this belongs to the next + opening in the middle of the day, in bright sunshine.

flower is said to be very much like that of the next species

(Description of flower after preserved, notes — none seen.

Hyalin scales of the fruit transversely ovate, obtuse, hardly lacerate, entire to base, denticulate — ciliate easily rubbing off. In some specimens I found in their axills, loose wool which in others, is entirely wanting — an approach to the densely woolly axillae of the subsequent species of the pair of E. texanus!

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it considerably resembles C. Scopariorum so much so that I have given it the same name, the spines however are longer and weaker etc. —

I see last page: In young plants the radial spines about 15 more spreading, the lower central spine and often one or 2 of the upper ones wanting

Echinocactus intertextus n. globoso-ovatus costis 13 acutis interruptis, subobliquis, tuberculis oppositorum — solutis; areolis ovatis (in planta juniore augustioribus) approximatis arcuatis, plerisque rigidis, albido pilosis, radialibus 16-25 arcte adpressis (superioribus 5-9 rectis, inferioribus albis, 3 lateralibus rigidioribus, paulo longioribus, infimo robusto breviore, centralibus 4, 3 longioribus superioribus radialibus, superantibus, excedentibus, pungentibus — rectis, inferiore 1, angulo patento brevissimo; floribus in vertice densae lanatis coniectis, expansis ut supra bicoloribus.

Chihuahua, Dr. Wislizenus 1846, El Paso Dr. Wright 1851 & 52. (M 86). — H. March. et Sept.

Stem 1—4 inches high, and 2 Cattle Cs — diameter, areolae 3—4 l. distant; spines pale at base, reddish or rose coloured, with darker points, with the exception of the upper interiores spines which are paler; these are 2½—6 l. long, the latest spines are 4—7 l. ♄, lowest only 2—4 lin. long; upper central spines 5—7 and even 9 l. long lower one only about 1 l. long; in young plants the upper radial spines are more equal 13-15 in number and the central spine rarely wanting or all of

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Flower — see p. 122.
fruit and seed can not be distinguished
from that of the foregoing species.
However
I have seen none with woolly axillae
of the lowest sepals.
~~of the canal-stalks.~~ Though at first sight
~~it may appear to be more distinct both these~~
species appear so very dissimilar, they
nevertheless are very closely ~~related~~ connected, that
even intermediate forms may yet be dis-
covered. As at present advised ~~they are~~
~~is readily distinguished by the direction~~ from
C. interlexta is ~~the~~ readily distinct from the
~~other~~ foregoing species by the ~~shorter~~,
stouter ~~and~~ appressed ~~and~~ curved spines, and the more
globose shape; the arrangement of the ribs,
the tortuose grooves on the upper part of
the tubercles are the same in both, and so
is fruit and seed. — ~~In Parry &~~
~~In Parry Bloni Catalogue (1850)~~
~~pag 55. *C. Scheeri* is mentioned:~~
~~your plants raised from seed which two~~
collected
Mr Wright has both in 1851 — 1852
on the „ mountain pass of the Limpio"
a singularly similar plant, which
he notes as having „the small fruit
low on the plant!" — " Unfortunately
neither fruit nor flower was gathered,
which alone could decide the question.
~~both~~ The living specimen before me
from 2–4 inches high, 13 ribs tuberculate
and very very like those of *C. interlexta*,
14–19 radial spines, 3–6 lines long, 3 upper
central 6–8 l. lower central spine 2–3 in
one instance even 5 l. long; young plants
have abt 12 almost equal radial (2–3
l. lg) and no central spines. If this
after further examination should prove to be
a Cereus it will have to be named thus as *C. interlexta*.

× this would indicate a Cereus

areola 3 l. distant with orbicular

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1853

125

Echinocereus ~~a Engelmannii plant~~ ~~and~~ collected
near Pelayo between Chih. & Parras; it
Wisl Rep. 48

a very nearly related form, though it is larger & stouter
has 21 ribs, and stouter, 20–27 stouter, recurved spines
(1–1½ inches long). The tubercles
have the same crease to enlarged groove
on the upper side of each tubercle! The
numerous also
arrangement of the spines is similar.
~~and~~ The fruit and seed described by me
I have since ascertained to belong to
E. uncinatus. —

Echinocereus

I. Polyacanthi costae 13–21, tuberculatae, tuberculis superioribus
axillis numerosis, (plus quam 20–30)
summis setaceis, infimis robustioribus brevioribus, areol. subtus
superioribus elongatis, inferioribus tandem rotundatis, flores minores purpurei;
bacca sicca subcarnosa rarius deliscens. stipula exterior reniformis
(E. uncinatus is classed with the next group by Prince Salm membranacea
142 = § 6. Microgoni Rev. Salm

1. E. dasyacanthus
2. E. intertextus
3. E. unguispinus

II Hamati costae 13 tuberculatae,
axillei numerosi (12–20), latentes longiores, dein liberae
infimus brevior robustior, centrales plerumque 4
superiora elongatus hamatus, plerumque applanatus.
flores infra tubulosi; magni flavi; bacca
ramosa rarius
d. Gemini

(§ 3. Uncinati xx. Hamati Salm

sepal. exterior reniformis v. ovata, membranacea

4. setispinus
5. Wrightii
6. flexispinus
7. brevihamatus
8. uncinatus

~~E.~~ Maximi continua ~~Strictopetalus~~ Costae 21 caulis numerosi (20–30) diffomes, ~~ca~~ teretes longissime setosi, superiora breviores robustiores, centrales plures recti, inferiora robustiora hamatim; flores majusculi flavi, ~~v~~ Capsula ~~oblongata~~ pilosa dura.

9. E. Wilczeni

(10 E. Le Conteï ?)

III. Comigeri Costae 8–21 caulis puniores (6–13) subaequales, plus minus compressi, annulati, curvati, infimus nodus deficiens, centrales 1–4, inferiores (0 singulus) recurvatae deflexus; flores rosei v. purpurei, majores, sepala exteriora subulata, in axillis canligera barba miniata succosa

11. E. texensis.

12 E. laticostatus.

13 E. albispinus.

(§. 3. Ulacanthi X. comigeri Sclm.

~~14. E.~~

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galeot. Pr Salm pag 173

Echinocactus bicolor Gallois ? Tumbus acutis
globosus
Costis 8 ? tuberculatis, obliquis, ? areolis
orbiculatis; aculeis ~~radialibus~~ ~~albis~~ luteis recurvatis
nbellis
basi bulbosis ?, radialibus 9-10 ? lateralib
subpatentibus que tenuibus ~~rectis~~ ~~subulatis~~
si adsunt
~~centralibus~~; summo compresso
dilatato, chartaceo flexibili, ~~basi~~; centralib 4 patentib
subulatis.
~~Flores~~ ~~expansi~~ ~~albi~~ ~~rosei~~ ~~purpurei~~ ~~luteoli~~
summo latiusculo vertice sursum verso, 2 lateralib minus compressis,
3 ~~reflexis~~ ~~subulatis~~ ~~oblique~~ sursum ~~flexis~~,
nbellis sursum divergentibus
~~recurvatis~~, ~~reflexis~~ ~~deflexis~~ longiore
Chihuahua Dr Wislizenus. Specimen
before me 3 inches diameter, lateral
spines 6-8 lowest spine 4-6 lines long,
patent, flexible,
upper flat spine about 1 inch long 1 l. broad
not quite as broad
lower central spine a little longer, 2 upper
oblique central spines a little shorter. Sometimes
an additional flat spine is found above
(or behind) the first, but always weaker & shorter.
No flowers or fruit seen.
This seems to be E. bicolor A. Gibbsii ? see pag 223

A specimen has been sent to me by Prof Gray
in the year 1850 as coming from the New Mexican
Collection of Wright (1849), which has never
been again collected 1851 & 1852.
I suspect it rests on a mistake and is
an Echinopsis from South America, mixed
by mistake among Wrights collection.

Globosus, costis 13 acutis, compressis,
tuberculis profundis, areolis magnis hemisphaericis
rectis, subulatis rigidis
aculeis validis 8-10, centrali rigido
r. 3-6 radialibus vix excedentibus.
Flos 2½ inch diameter, spikes
6-12 l. long; on the older parts of the
plant shorter, weaker, but more numerous,
Probably Echinopsis oxygona or perhaps E. multiplex

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see page 178

Grahami ssp ~~Schelhasii Hoff.~~

Mamillaria ~~Grahamii~~ tetrancistra

sub simplex, globosa v. ovata, tuberculis cylindricis parce compressis, axillis nudis, areolis orbiculatis aculeis radialibus sub-25 setiformibus, radiis albis, apice fuscatis, uno alterove superiore robustiore, longiore, centrali singulo sursum porrecto, altero robustiore, longiore rhamoso fusco-nigro.

Eastern slopes of the mountains about El Paso & southward. Spears all dead & without flowers & fruit 1-3 inches high, 1-2½ in diameter, tubercles 3 or 4 c. long, subcylindric, obtuse somewhat dilated, ~~radial spines, in number of 28-30, in longer ones~~ they are 23-25, in the form mostly in 21 spiral rows. Radial spines like slender awls, in smaller specimens 20-30 spreading, white, 2-4 l. long, without any stouter ones. In the largest specimens they number 23-25, 5-6 l. long; 1 or 2 stouter & darker and ~~spines~~ radials upwards 6-8 l. long. The central spine along longer than the others, 3-9 l. long, with a short or wide hook, the point being curved upwards while in the hooked Schumanni it is always curved backward or downward. ‡ This species + is nearly related with M. Carbata and also to M. Wrightii from Mexico, but this is described as a much larger globose plant 3-5 in. high, tubercles 6-10 l. long, radial spines 15-20 (axillary chiefly), 50 radial spines, white, the outer hair-like in several series, white & the inner stouter, brown tipped, the hooked spine of the central is curved downwards.

Mr Wright has observed near the Copper mines, northwest of El Paso a very similar Mamillaria, with only 12 radial white spines, the Cover ones with brown tips

‡ Is perhaps too near M. Schelhasii from Mexico, but this is described as a much larger globose plant 3-5 in. high, tubercles 6-10 l. long, radial spines 15-20 (axillary chiefly)

+ Note fl. of M. Carbata n. 84

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GEORGE ENGELMANN HERBARIUM
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4–5 l. long, and 2 brown central hooked spines of the same length. It may be named

M. diancistra, simplex, depresso-globosa, tuberculis extensis, areolis novellis albo-lanatis, omnibus aequilongis areolis 8–12 radialibus subsetaceis, albis, superioribus apice obscurioribus fuscatis, centralibus robustioribus, subbasi dilatatis divergentibus, uncinatis, fuscis basi pallidioribus, basin versus oblongo floris rudimento coronato.

Near the Coppermines Northwest of El Paso

Only specimen seen is just now flowering

1½ inches in diameter; tubercles 6 l. long

spines of nearly equal length, 4–5 l. long. — M. Zephyranthoides, from Oaxaca, is the only other species of this section with 2 hooked central spines; it is also Scheidweileriana and has 12–14 radial spines of the same length as the central spines; but plant much larger, tubercles 9–16 l. long, spines 5–10 l. long. — These three Mammillaria belong to the Section Cirrhifera; but none of them have pubescent spines, as many Cirrhiferae have.

In M. barbata as well as Grahami the central spines are much longer than the radial ones, but in diancistra they are of equal length. The stouter hooked upper radial spines which I found in M. Grahami, occurred in several other species and are described as appearing sporadic central spines; in M barbata however these spines sometimes number 10–15 and spread all round, sporadic in number

Mammillaria Echinus n sp. globosa (s. simplex,) ventricosa tuberculis conicis junioribus supra sulcatis, axillis villosis; areolis obviolatis, aculeis 20–30 radialibus recti s. paulo curvatis cinereo albidis apice pallide fuscatis; 4 centralibus extimis 20–30, radiantibus, intermixtis 3–4 robustioribus e basi incrassata subulatis, 2–3 superioribus sursum versis adpressis centrali validissimo porrecto, lutei? albi? floribus centralibus 2 & 20 lineari-lanceolatis acutis integris; stylo staminibus longe superante, stigm. 12 lobis oblongis viridibus centralibus depressis v. patentibus 2 & 20 longioribus

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floris sedimento coronatis; staminibus
ovato lanceolatis laevibus, loculis fuscis.
On Limestone hills, on the gentle slopes of the Pecos
and Ojo de Leon valley, Coll 859. 51. & 52.
A very pretty Opuntia related on one hand with
O. calcarata, and on the other with still more
with O. radiosa, but always simple

known; * still The numerous whitish slender but very stiff
laterally compressed base
spines are densely interwoven and closely
adpressed while the single central spine
the lower 5, the lateral 4 and the upper 6-8 l. long
6-7 lobed
stands straight out, giving the plant a
very peculiar aspect this resembling somewhat
globose
a sea urchin. Existing whereas the name which is
This central spine is stouter
at base and more regularly subulate
and 6-7 l. long
than that of any other of our species
The flowers were seen in 1849 but not
On the specimen coll in July 1849 flow
dead flowers and fruit are found; the former
are 1½ or perhaps 2 inch long, and show smooth
margins of the sepals and petals (different
from the acute sepals of O. radiosa etc)
over ½ inch long the seed
the fruit is about Shandy 0,9 l. long, and very
narrow, fasta piriformiaceous.

See next page

* The spines before me are 1½-2 inches in diameter; tubercles in 13 rows, 5-6 lines long; the groove on the upper side of the young tubercles very indistinct & soon obsolete, & sometimes the very

The 2-3 upper inner spines are closely adpressed and resemble the in direction the radial and may be taken for inner radial spines with as much justice as the central ones; they are closely adpressed to the radial ones, forming an inner series but are stouter, & long,

see page 212

Mamillaria pertinata simplex

globosa, ~~caespitosa parce tomentosa~~,
tuberculis e basi quadrangulata ovatis
abbreviatis, junioribus ~~teretiusculis~~ ~~subulatis~~ supra
~~longioribus~~ ~~sulcatis~~ ~~villosulis~~ nuda,
mox evanescente notatis, axillis nudis,
areolis oblongis, ~~juvenilibus~~ aculeis
sub-20 (16-24) plerumque ~~subsexradiatis~~ rigidis e basi bulbosa, lateraliter compressa
paullo recurvatis, omnibus radiantibus,
lateralo dorsum obscuris albidis apice subfuscatis,
floribus luteis ~~in~~ tomentosis
tortis floris sedimento coronatis.
seminibus fusco-atris, ovato lanceolatis,
laevibus lucidis.

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+/

In the same localities as the former, especially abundant on the hills near Ojo de Leon. — Near the latter, but much more nearly allied with M. conjecta from the Mts of Chihuahua, distinguished from it by its smaller size, greater number of spines, angulate and hardly tubulate tubercles etc. — Spines before me (collected 1849 .51 & 52) 1 — 1½ inches in diameter; tubercles 2 — 3 lines long and somewhat wider at base, 2 — 3 l. long and somewhat wider at base young ones often with a very slightly ~~villous~~ groove from half way down the upper angle, which disappears ~~as they get older~~. The whitish very stiff spines 3 — 4½ l. long, together with the elongated areolae somewhat resemble those of Cereus pectinatus, whence the specific name. The fruit is ovate 6 l long, the seed nearly 1 l. long, resembling that of the last species, but a little larger and darker. — Var β. was collected 1849 on the San Pedro River; tubercles very much like those of the ~~typical~~ form, but the upper tubercles are elongated, 5 — 6''' long, spines unequal, lower 6, upper 6 — 9 l. long, 4 — 5 in number. Both these Mammillaria are evidently very nearly related to M. conjuncta DC & M. radians DC. —

From the description M. conjuncta DC must be very nearly related to M. Echinus, but the same strongly tubulate central spines, but the upper two, which are very conspicuous and ~~suggested~~ the specific ~~name of the species~~, are homologous to the tubercles are very thick, wider at base than long etc. —

M. pectinata DC. M. radians DC. is very much larger plant than M. pectinata, 3 — 5 inches high; tubercles 3 — 5 l. long, wider at base, spines 5 — 6 l long — It is certainly a very unsatisfactory method to distinguish species by measurements, nevertheless in these plants where complete descriptions are often so incomplete, the dimensions of parts sometimes furnish valuable data. At all events M. radians DC. and M. pectinata are very nearly related species.

3 species this

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Exam. of specimens of Mam. radiosa and the related species.

1. Largest plant from El Paso, = coll. 1852, coll. 1851 ? simple ovate-globose, 2½" high, tubercles = 13 rows, larger, older ones 9‴ long sulcate, about ¾ down to the base, sometimes less. — Younger tubercles 6‴ long, sulcate about ⅔ and younger ones without a groove! axillae naked; 18 radial spines white, with yellowish tip, some very thin bristly spines above and one or two also at lowest end; 4 to 6‴ long 4–5 stouter central spines, reddish brown (rufous) 3–4 upward, outermost depressed, and one deflexed — all straight 6–7‴ long; upper younger tubercles with 20 rad sp 3–4‴ long, abt 4 central 4–4½‴ long at base white above reddish

2. ? simple (seems stem died) 1851, over 3" high, but tubercles only 6‴ long, sulcate only on the upper ⅓ and oft very slightly 20 rad 5 centr, all 4–5‴ long everyway similar to № 1.

3. 1851 two stems from one base; 1½" high, oval; tubercles 13 rows 4 l. long slightly sulcate in the upper ½ or ⅔; groove oft indistinct 30–35 radial sp thickly (at upper end some quite fine ones) 3–4‴ long; 6–8 central sp. in all directions loosely spread thickened outward at base; not one more prominent than the others; all spines whitish or somewhat yellowish tipped. Younger tubercles with 35 very thin hairlike bristles, 2½–3½‴ long, of which the 5–8 innermost are a little shorter than the rest.

4 1851 single specimen, simple, 1 inch diam 6½ high, tubercles in 13 rows slightly sulcate at the upper ⅓ or ¼; 3½" long 20–24 rad. spines thin bristly upper most hairlike, 3‴ long, 2–3 upper and 1 lower central; this is the only one which is at the upper half reddish brown, all the others are white — it is stouter, deflexed, conspicuous; all centr sp. a little longer than the others.

5. 1851 single, (the central part = spec № 11, which retains all the above 2" high 1" diameter; tubercles 13 rows oft thickly sulcate; or only on the lower tubercles 4½‴ long, upper only 3–3½‴, 20:21 radial 3–3¼‴ long, 3+1 central, all white except in the younger tubercles, where the upper half of the lower central sp is yellowish brown.

6. (Spec № 4. 1851 supposed to be M. tuberculosa — small spec. oval 1" high) tubercles (which in all forms are more cylindric) are oval, 2‴ long, ½ as diameter, grooved to the base, or axill, which in young tubercles is somewhat woolly (as is always the lowest end of the groove) spines radial more rigid than in all forms! 16–19 + 2–2½‴ long centr 1–3 2–4‴ long stouter, reddish at the end,

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Centrals 35 /
3-6‴ white or dark tipped, only the 2 lateral spines are reddish brown with black at end! — largest upward. — Fruit one 9‴ long 6‴ = diameter, without the remains of flower, green, very juicy, seed obovate or almost obhemicolate, compressed yellowish brown (fulvous) tuberculate, about 0.3‴ long or 0.7 3/4‴ aureolla naked

28 Live pl 1852 small globose, simple, Tub slightly pointed ; 23-26 rad sp. 2 central

29. Large live spines 1852 slender branched from base, 5‴ high 1/2 diameter 13 rows tubercles deeply sulcate, somewhat erect, rigid, slightly compressed, 3‴ long shorter at base and silky woolly. — 28-30 rad. Sp. 2/2-3/2‴, Lower as in most of these species stouter, not as crowded, and rather short; upper thinner, gracile, a little longer with very short & slender ones mixed, crowded towards the upper margin of the areola. — Central 6-8, 3-7‴ upper slender, 3-4; 4 lower stouter, longest directed upwards, darker, 2 lateral upwards shorter, 1 downwards shorter stouter: only the larger inner spines with purplish tips, the longest upwards greyish purple. Dead flowers

30. Live spec. 1852 corresponding older ones, 2 3/4‴ high 1/2 diameter, tubercles as above = 29. broadly rhomboidal base, each apparently 13 rows; deeply sulcate, axills tomentose 25-26 rad sp weak, white 2-4‴ upper most weaker, shorter & longest 9 inner spines, especially the larger ones the greater part black 5 upper and outer weaker, paler, 6-7‴; 4 inner and lower stouter, 3 upwards 6-8‴; lower porrect (straight) 6‴ long (appearance much like M Coniduca

31. Dead pl. 1851 simple conic 1 1/2‴ high, tub 2‴. 25-28 rad sp. 2-4‴ long 8-9 central sp 4-9‴ short stouter, below, weaker upper most, longest also upward (see 29) colour of rad white of central rose colour, or with greyish purple with dark black purple inward tip. dry fruit oval 3 l. long, seeds of fl. same length, seed brown, very small globose obovate, 0.4‴ long!

lower tubercles = 21 upper 13 rows

" Rocks at Eagle spring, simple or commonly very proliferous "

32. Dead pl. 1851 3‴ high 1/2 diam 4 globose tubercles at base; the latter with fruit, exactly like 31. 26 rows 8 central 4-6‴ V. in every respect like 31; central spines all spreading, especially in older tubercles, which are 3-3 1/2‴ long. Young spines on top of plant most all directed upwards, which gives the plant

a crested appearance — This crest is blueish purple or grayish-purple, quite peculiar; the central spines on the lower areolar tubercles loose this purple tinge and are gray — and spreading, so that they are not so conspicuous.

Mam Santa Fe, Fendler. tubers 6‴, 16 rad sp 4–7‴ stout 4 central, 7–8‴ 3 upper weaker, 1 erect or deflexed stout, longest all purple from base, — Another tub. 4‴ 26 rad sp 3–6‴, centr 3–4 5–6‴ purplish, — Seed reddish or rather yellowish brown 9, 11/8 compr.

Mam Chihuahua tubers 4‴, 12–13 rad sp 3–6‴ with dark tips; 6 central 5–7‴ purple at base, & tip variegated with white or entirely purple. — Another 16–17 rad sp. Dark Tips 2–6‴ long 5–6 central, pale purple at base, Dark tips, variegated 6–7½‴ tubercles subrotate, tomentose groove when young

[12 fl. Taylor 2–4
14–16 1847 3–4]

Mam vivipara missouri 1852. rad. sp white 16–17 central 3 upward, 1 downward, purple from base, upward Darker at tip — Tubercles 2–3½‴ very little subrotate

Mam. radiosa Texas tubercles subrotate, slightly & partly subtet. axially naked — 20–30 rad. Spines 4–5 central, one of which is turned downward

Arrangement of The Mam. ~~vivipara similis~~ arachnoidea.

M. conoidea D C tub. subr, ax. subnud — Ac. rad 12–16 cent 1–5

M. sphaerica Mart. ax. subnud A. rad 12–18 cent 1–2 (rarely 3–4)

M. vivipara Haw tub subrotate ax nud A. rad 12–16 cent 3–4

M. strobiliformis Scheer subrot ax subnud A. rad 20–25 cent 3–4

M. radiosa Engelm tub subrotate ax nud, A. rad. 20–30 cent. 4–5

M. borealis Fendl. Wisl. " " A. rad. 12–20. cent. 4–6 variegat 12–36; 3–½

M. nova mexicana " " " 20–30; cent. 3–6

M. Pottsii (Scheer) " " 4 ~~30–36; cent 6; 12~~

M. ~~dolyacantha~~ rigida lentic subcont, axillis sub villosis A. 25–35 ; 7 ; 14

M. tuberculosa prosph subr. villi villos. 20–30 ; 3 ; 9

M. Pottsii cylindr. lenissime subr. ax. subvilli rigid ∞ ; 7

straight mostly stiff spines, the larger ones mostly

All have ~~the radial spines white, often~~ tipped with darker purplish or brown or black; radial spines white, often tipped dark; fewer and stiffer & shorter below, more numerous, crowded, weaker, longer often with a number of very weak & short ones above; Central spines darker, stouter, longer from 1 to 3 to 12 or 14, one mostly deflexed, stouter and rather shorter than the balance. These darker upward the longest, central spines nearly light at base, and ~~Dark~~ darker red, purple, brown, blueish purple upwards, at tip purplish black.

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~~32 Specimens examined~~ in most of them 139

flowers purple or rose, sepals arachnoid fimbriate, fully entire, all lanceolate or linear-lanceolate; fruit oval, green crowned with the flower — seed obovate (oblanceolate or nucleolus fulvous, fuscous or almost blackish —. Tuberculate.)

Specimens on the last page described, arranged.

Mamillaria radiosa β. *borealis* №1 tab. 6-9‴ pp. 18-20 : 4-5

2. 6‴ · 20 : 5

β *novomexicana*

3.	— 4‴	30-35 : 6-8		
4	— 3½‴	20-24 : 3-4		
5	3-4½‴	20-21 : 4		
7	6‴	30 : 6-8		
12	5-6‴	30-36 : 6-9		
13	6‴	34-35 : 8-12		
14	6	23 : 4-6	sem	0‴.6 fusc
15	———	33 : 10-12		
17	——	26-30 : 4-6	··	0‴.8 fusc
26	———	40 : 3		
27	3	22-25 : 6-7	··	0‴.8 fulv
28	——	23-26 : 2		

Mam. Dasyacantha vera 11 4 26 : 7-9 · 0‴.6 nigr

microsperma 16 3-3½ 22-25 : 5-7 · 0‴.4 · nigr

dubia (near *novomexicana* 8 5 25-30 : 7-8

9 30-35 : 8

10 32-35 : 12-14

Mam tuberculosa 6 2‴ 16-19 : 1-3

18 2½ 30 : 3-4

19 3-4 20-23 : 5

20 4-5 25-28 : 5-8

21 2½-3 22-24 : 7

22 3-4 25— : 6

25— 1½ 18-20 : 4

29 3 28-30 : 6-8 ·

31 2½ 25-28 : 7-9 · 0‴.4 fusc

32 26 : 8-9

conica 30 2½ 25-26 : 9

dubia ? 23 4 23 : 3

" ? 24 2 27 : 3

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~~Stenandra relatae Mammillaria~~ Mam. polla

Mam. arachnoideae

× axillis nudis juvenilibus s. nudiusculis

Mam. radiosa simplex s. adhuc parce prolifera ovata s. ovato-cylindrica; tuberculis laxis patulis supra sulcos laxe breviore s. brevissimo novello villosulo saepe indistincte notatis; × areolis obtuse albo-tomentosis; aculeis rectis rigidis numerosis; exterioribus patentissime radiantibus albidis apice saepe pharetratis, inferne nigricantibus superne longioribus tenuioribus (cum) brevissimis adpressis numerosissimis aculeis (12-36) intermediis robustioribus, plus minus purpureis (longioribus) persistentibus (3-12) centralibus plurimis parcissime versis, longioribus, rigido deflexo, brevi robustiore; floribus ~~exacte~~ subcentralibus (non nisi centralibus); sepalis dorsi fuscatis et petalis integerrimis linearis lanceolatis acuminatis saepe exsiccatis; stylo staminibus superante exserto, stigmatibus purpureis subulatis, obtusis 5-9; baccis oblongis nudis, floris nudi coronati, seminibus fulvis, fusco-ve obovato-oblongatis compressis tuberculato-punctatis.

2. Texana ovato-cylindrica tuberculis albis, apice nigricantibus aculeis radialibus 20-30, centralibus 4-5 plus minusve fuscatis; floribus majoribus sepalis 20-50, petalis 30-40 stylo staminibus longe superantibus Plant Lindh. pl. 6 Porta Journ Nat Hist. VI. p. 196

β. borealis (ovata, v. subglobosa, aculeis radialibus 12-20, centralibus 3-6 e basi purpurea - floris s. saepe medio albi-maculatis; floribus minoribus, sepalis 25 petalis 30, stylo staminibus paullo superato semper minoribus foliis. (M. radiosa var Plant Fendl in Mem Am. Acad pag 49 (Wislz. Mem. pl. 6) Wislz. Mem. pag 75 & 74. —

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7. Liv. pl. 1852 3½" high 2" diameter, proliferus at base, with 7 young shoots. a, main plant; tubercles 6‴ long grooved almost to base; grove in young ones to mucrone, especially at bottom, but axillae naked; 30 rad. spines, upper longer, shorter 6-8‴ long, undermixed with weaker ones, lower gradually shorter, lowest only 3‴ long; lower white, upper often tipped with brown; Central spines 6-8 upper Longest 8-9‴ lower 5-6‴; all at last white, reddish in the middle and blackish brown at tip. — b. Branches from the middle of a tubercle (lower end of tubers?) only at base of plant. ovate 10" in diameter; tubercles 2½-3 l. long, no groove perceptible radial spines 22-28, more equal 2-3‴ long, central none or 1-4 (one deflexed). a. Cent. Longer — Tubercles in all in 13 rows, old & young on the lowest part of the old plant (tubercles of old tubercles) 21 rows

8. Liv. pl. 1852. simple 2½" high, 2" diam. Tubers 5‴ long grooved to the axilla which remains woolly for a long time — finally glabrous 25-30 radial sp white, upper shorter longer 6-7‴ with brown tip; lower white, 3‴ short; 7-8 central spines in a circle, upp longer 10-11‴; lower shorter, 6‴, all loosely radiating; longer than the corresp. exterior spines, all below white, with purple in middle and dark purplish brown on tip. — About 13 rows — scars at last = 21 rows — Appearance like Echin. Disacanthus (purpureo-racemosus!)

9 Liv pl. 1852 simple 2" high, very similar to 8 — but grooves less distinct and axillae more naked; spines a little shorter, longest central only 4‴ — rad. 30-35 central 8.

10. Dead, Lagh spring 1851. 2" high, oval; similar to 8 & 9 radial spines white brittle, upper ones much longer, with light brown tips; 32-35, upper 7-9‴ lower 4-5‴; inner central spines 12-14 longer than the outer, upper 9-12‴ longer than the lower, 6-9‴ all loosely patulous, the exterior almost radiating, one central 6-10‴ erect in the centre of the areole (not deflexed. Inner spines purplish brown with dark at base at tip

w. 6. Dead 1852 oval simple 2½" high tub. for 7‴ long 13 rows 25-28 rad sp - 6-9 central 6-10‴ long tubers to base with villous

11 Dead 1851 globose, simple 1¾" high; tubercles abt 4‴ (shrivelled) upper ones with woolly grove; abt 26 radial spines, fewer below 3-4‴; above the longer and the smallest crowded together, 3‴-6‴ most all with purplish brown tips. Inner spines 7-9 purple almost to base, very dark towards the tip, 6-8‴ one more central

over

134 On this specimen a central fruit was found, oval, crowned by the remains of the flower. These indicate white fringed sepals; the fruit is oval, only 3½‴ long; the remains of the flower about the same length, — but both may have been shrivelled. The fruit is full of ripe seed, which differ from that of the related plants.

a. M. radiosa: sem. ovato-oblanceolata, compressa sorobiculata 1.0 l. longa fulva

b. M. Santa Fe. sem. ovato-oblanceolata compressa sorobiculata 0.7 l. longa fulva

c. M № 11. sem globoso-ovata triangulata, sorobiculata 0.6 l. long atro fusca

a & b are equal, but b much smaller; c. is shorter even than b, but much thicker, convex on the back, sides flat, forming a cross section

12. Liverpl. 1852 large specimen with 4 larger and 2 or 3 smaller heads; heads ovate 2-3‴ high, 1¾-2½ diameter. Tubercles 5-6‴ long, subulate to the base, and. spines 30-36, lower much shorter 3-4‴ upper unequal, but mostly longer, 5-9‴, inner sp. 6-9 shorter, principally the upper most longest, 7-10‴ only the largest spines with brown tips, internal & external

A young branch has tubercles 3 l. long, 30-35 short, thin, white spines, 2-3‴ long

13 Dead pl. 1852 simple, 4‴ high 2‴ diameter; tubercles subulate to base, 24-35 very weak radial spines 3-5‴ long, more crowded but not much longer at the upper end; inner spines 12 in a circle, spreading 4-9‴ long and 1-3 internal, central 5-8‴ long even the lowest dead spines of this plant show the same arrangement. — There are 2 other specimens almost exactly alike, rad sp 3-6‴; 8-9 inner sp, 5-8‴; the 2 innermost a little darker at tip; the longer ones upward, the shorter ones downward. One of these remains had 4 central flowers; shrivelled up, and in that state only 7 or 8 l. long; about 16 oblong-lanceolate mucronate + hairy-fimbriate sepals, and 20 linear denticulate-fimbriate petals.

14 Dead pl. 1852: oval, only 1¼ inch high; 5 fruits, central, not ripe, shrivelled, only 6‴ long oval; fl. on top a little longer, with very much hairy fimbriate sepals; seeds obovate, little compressed, rounded, fuscous (not fulvous) sorobiculate, a little more than 0.6‴ long; same size as seed of Tenore's Santa Fe specimen, but somewhat less compressed, with larger pitted dots, and much darker colour.

Tubercles, (upper ones) 6‴ long, with a lanceolate groove to the

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to the base, above th floriferous axilla woolly; — 23 rad. spines, 4-8‴ the longest & some of th weakest & shortest, above; fewer & shorter ones below; central spines 4, 3 exposed, 1 3‴ downward or erect 6-8‴. — A little lower the tubercles are shorter, with the same number of rad. sp. more equal, & 4-6 radiating inner spines, a little longer than the external sp. all 3-5‴ long Lower down yet on the plant 22-26 rad sp 2-3‴; 2-8 inner all radiating, 3-4‴ long, longest downward

15. Dead specimen, only spines; 1851? 33 rad. sp. upper longest 3-8‴ 10-12 inner short; upper longest 5-10‴; 1 central, erect, or directed upwards — Lower tubercles with 25-28 exterior 3-5‴ & 5-7 interior shorter, longer spines radiating 5-7‴

16. Live pl. 1852 globose simple ¾" in diameter, tubercles 3-3½‴ grooved to base long; spines soft hairlike, 22-25 exterior sp 3-5‴; longest upwards, 5-6 interior, 4-8‴; longest upward, over half of the dark purplish brown external sp. all tipped with brown. Shrivelled flowers 5‴ long, with blackish sepals; shrivelled fruit only 2‴ long; seed black, ovate-globose not triangular; in volume similar to 11, but much smaller only 0.4‴ or 0.4½‴ in its longest dimension; also the size of seed of M. tuberculosa but almost black, testa coarse alveolate

17. Dead plant, San P. Drac 1851 simple, oval; 26-30 rad sp. 3-6‴ 4-6 central, 3-5 upper 6-8‴; 1 erect 6‴ long; seed brown rough 0.8‴ long exactly like that of No 14 but a little larger.

18. Dead 1852 small simple globose 1 inch diameter tubercles 2½‴ oblong ovate deeply grooved, axilla very woolly; 30 radial 3-6‴ 3:1 central sp. 4-7‴; 2 or 3 upper ones radiating, longest, lower one erect or a little deflexed.

19. Dying 1852 simple, oval 1¾" high; tub. obl. 4‴ strongly imbricate, axilla even in the older ones very villous; 20-23 rad sp stiff, 3-5‴ long; 4:1 central red, purple brown above, 3-6‴ sepals fimbriate

20 Dead 1851. cylindric, branched at top 3" high 2½ diameter; tubercles 13-21 rows; oval, depressed, sulcate to base with very woolly axilla 4-5‴ long 25-28 rad sp mostly coloured at tip 2-4‴ longest & weakest above; 5-6 inner, longer above, all radiating, 3-6‴ or one central, directed upwards; all inner spines purplish, pale at base, dark at tip. On younger branches 16 subequal radial spines 2‴ weak, 2 central; a longer upward 3½‴ and a shorter downward 2‴

136/ This like the last is apparently all the specimens of this species remarkably for the hard compact structure of the plant, so that even in drying the tubercles retain their shape.

21. Seed 1851. Perote & Ojo de Leon on stony hills common. Several oval heads from one base, each 1/4 or 1/2 inch long tubercles hard triquous subrate, grooves in the young very woolly, axills woolly; tubercles 2 1/2 - 3‴. 22-24 rad. spines almost equal, 2 1/2 - 3‴, a few very weak & short upwards. 4 stouter & upward 2 or 3 weaker inner spines (the latter might be taken for extensions of the longer) the longer 4-5‴ upward one short but, stout downwards 3‴ long; — centrals 25-27 rad & 4 central one of which downward; — rad white, longest with brown tips; central which at base purple & brown above. —

Young tub. with 2 - 3 central spines; the longest always upwards

22. Seed 1852 Many (6-8) oval heads — Each 1 1/4 - 1 1/2 inch high — Oldest tubercles still deeply sulcate, abt 4‴ long and at base almost of same diameter, somewhat compressed retaining their shape entirely in 13-21 rows. Tub. 3‴ subrate axills very woolly — spines radial 25, 2 1/2 - 3 1/2‴ upper a little longer but rather weaker than lower ones, and some short and very weak, central spines 6 stouter, and 3 upper ones weaker, almost meeting with the radial sp; 4-5‴

23 Seed 1851 Perote. Oval simple 1‴ high; 23 radial, white with brown tip, 3 central, 2 upward, 1 downward, purple tips. Tubercles 4‴

24 Seed 1851 6 young shoots on an old stump, each globose 6‴ high; tubercles 2‴; spines all radial, about 30, in others 3 central spines are diverging subulate, subtiny, 2 upper & 1 lower shorter one no wool in the axills

25, Seed 1852. 2 plants each with 2 heads 1/2 - 1‴ high, oval; tuber. 1 - 1 1/2‴ long subrate; central purplish spines striking up upright; 12-20 radial 2 - 3‴ 3 : 1 central, 2 1/2 - 3 1/2 l. long.

26 Live pl. 1852 simple, oval, 1 3/4‴ high 1‴ diameter; tubercles 21 rows below close, with short red spines abt 40, 2‴ long, & 3 inner a little stouter, all white; — upper tubercles 2 1/2‴ long, slightly subrate, darker axills 15 red sp 2-4‴ 7 central subtiny spines 3-5‴ long, reddish, darker at tip

27 Live pl. 1852 simple, oval 1 1/4‴ high with one rounded lateral joint; tubercles 3‴ long slightly subrate 13 rows axills naked; red sp 22-25 2-5‴ long; white, some with brown tips; inner sp 6-7 radiating

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1853

β novo-mexicana ovata ~~s~~ ovata x subcylindrica

aculeis subalbis 20-36 (plerisque sub 30)
centralibus 3-12 (plerumque 6-9) basi
albidis ~~supra~~ purpureo-rubris, ceteris apicem
fuscatis; floribus majoribus seminibus minoribus
fulvis, fuscisve. —

by Lindheimer

Var α has been found in sterile sandy
soil on the Nueces River (tributary of the
Guadaloupe in Western Texas; β. has been
collected by Mr Wright in all his expeditions in
southern New Mexico and between El Paso
and San Pedro River; γ was found by
Wislizenus from the Chiguagua mountains westward
to Santa Fe, and by Fendler from Bents Fork
to Santa Fe. — Wright also found
the different forms of which are often so unlike
one another and approach so near to other
species that it is difficult to class them correctly.
They differ very much in the number of spines, size
~~of the flowers~~ of flowers & seed,
but transitions forms appear to connect the
all are simple or ramose from the lower part of the stem or even almost
the subterranean stem; ~~never~~ never more than in the region of the insertion
extremes. ~~In~~ In all the tubercles are ~~closely~~ arranged
the groove incomplete, not extended to the base
of the tubercle very short or indistinct; spines rigid; fruit juicy
seeds elongated and much compressed. ~~Var~~ ½-1 line long

Var Texana is 2-~~4~~ inches high — ½-2 inches in diameter. tubercles 4-6 l. long
≐ 13 rows colored from the base but darker above, ~~and~~ mostly purplish brown
exterior spines 3-4, interior 4-6 l. long v. fl. 1½-2½ inches
in diameter long v. — Var novomexicana I have seen from ½-2
red fully 1 line long
to 4 inches high — tubercles 1-2½ in diameter. tubercles
from 3-6 lines long; exterior spines very variable in length & number
in smaller specimens the exterior are 2-4 and the interior 3-6 l.
long; in larger ones the former are often 3-8 and the
latter 5-10 l. long. The interior spines are often white
only with dark brown tips, but mostly ~~white~~ dark brown, purple
in the middle and purplish black at tip. — flowers not
seen; seeds 0,6-0,8 l. long. The ~~smaller~~ seeds & large number
of shorter spines distinguish this from the texan form. —
& smaller seeds

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Var. borealis is ~~almost~~ globose the northern form and appears somewhat to M. vrijana in the mostly smaller size ~~of the plant~~ and the smaller number of spines — but the spines are much stouter, the ~~teats~~ tubercles not ~~obovate~~ papilliform, flowers much smaller &c. — ~~spread~~ ovate or mostly globose, 1–2½ ins in diam tubercles 4–6 or 7 l. long; ~~central~~ radial spines 5–9 l. long; ~~the~~ ~~outer~~ purple from the base, ~~the~~ variegated with white, ~~the~~ with lighter tips; flowers only 10–11 l. long, seeds ca 0,6 l. long fulvous. —

Mammillaria dasyacantha n. sp. simplex

ovato subglobosa, tuberculis laxis, ~~in~~ radiis lateribus usque adhesivis sulcatis, axillis subarctoidis, demum nudatis, areolis orbiculatis, novellis albotomentosis aculeis ~~radiis~~ ~~centralibus~~ ~~tenuibus~~ ~~subulatis~~ ~~subulatis~~ ~~tenuibus~~; numerosis, extensibus patulis 22–26 ~~capillaceis~~ albis, apice sphacelatis, intensibus 7–13. patulis extensibus supernis ~~centralibus~~ ~~supra~~ albis s. papyraceis ~~centralibus~~ supra. si ~~centralibus~~ — papyraceis, ~~subulatis~~ apice ~~atropurpureis~~ albis centrali singulo aequilongo porrecto saepe deficiente; ~~flore~~ flore unico papyraceo, sepalis ~~extensibus~~ arachnoideo — fuscescentibus; ~~fructu~~ ovato pyriformi, seminibus obovato globosis subtuberculatis, nigricantibus.

Several specimens were collected 1851 & 1852 near El Paso and at Eagle spring. 1½–2½ ins high a little less in diam. tubercles 13 rows, 4–5 l. long; grooves to the base, hairy when young, of very slight ~~texture~~ ~~of spines~~ axilla more or less woolly, ~~at~~ becoming naked with age, or of the very soon. ~~Extreme~~ ~~type~~ Spines mostly not as regularly radiating, more closely spread exterior as well as interior ones. much more slender than in the other 2 species, of the capillary, or soft — Exterior spines

3-6 or even 9 l. long . rim spines in a circle corresponding with the outer ones, but darker & longer; upper 8-12 lower 6-9 l. long, or in some specimens shorter and slenderer. Central spine erect 6-10 l long or wanting purple from base or in the darker at tip. Central fruit central in a tomentose vertex (dried ♀ 8 shrivelled only 2½ l long) seeds (globose or somewhat triangular,) in one sp 0.6 in width 0.4 in diam (22-25) long Black' — The spines with the small seeds are only 1½ inch high, slender & weaker spines. Other specimens with stouter & longer spines but the stronger more radiating & Well distinguished by its shape and purplish brown fruit unfortunately with ♀ flowers the soft weak spines, the rim somewhat like some forms of M. radiosa but this species always the outer, central spine of the present long & erect, not deflexed & black seed. —

Mamillaria tetracentra n sp

see pag 213

ovata s. ovato-cylindrica, simplex ~~plerumque~~ (raro cespitosa) ad basin v parce proliferans, tuberculis elasi rhombeis ovatis (sub conicis), obtusis subtus compressis, usque ad basin ~~fibrosa~~ (demum subcorneis persistentibus) ~~denudata~~ fibulis inferne ~~nudis~~ pubem tectam areolis oblongatis novellis albotomentosis, demum nudis; aculeis ~~radialibus~~ extrorsis v 20-30 v strictis albis subinde apice phaeolatis, ~~centralibus~~ vix radialibus, interioribus 5-9 longioribus supra carne purpureis apice obtusis. Phaeidiorum superiorum longioribus, erectis ~~patentibus~~ versus plantae apicem convergentibus similantibus, inferiore brevior robusto porrecto s plerumque ♀ in ventre declivi v laxo (16-18) v deflexo; floribus v parvis, sepalis v lanceolatis acutiusculis - fuscescentibus, petalis 10-13 lanceolatis subintegris dilute roseis ~~purpureis albescentibus~~; ♀ fructus parvi, seminibus obovoideo-globosis, (fuscis v fuscis) scrobiculatis minimis,

but see pag 213

From the Peros to Ojo de Leon, Eagle spring and El Paso, on the higher mountains; 1849. 51 & 52, ♂ Stem 2-5" high - 1-1½ diameter; tubercles generally about 3" long, the shorter rarely in very vigorous plants as long as 4 or even 5 l. longer, 11-13 or below 21 rows, like the whole body of the plant of a spongy or rather corky texture, almost dry,

3516

and therefore not shrivelling = dying.
Old tubercles loose their spines, but
remain persistent on the lower part
of the plant, retaining their shape,
whence it appears covered by tubercles.
Radial spines generally 22-26, rarely less than
20 & never more than 30 in the numerous
specimens examined by me. — Radial spines
thin, but stiff, mostly 2-4 (lowest and a
few upper 2, upper 3-4) lines long; ~~central~~
~~spines mostly~~ rarely upper most rarely
5 or even 6 lines long; central spines
lower 3-4 upper 5-7 and in a few specim.
even 8 or 9 lines long; those of the upper
most tubercles crowded together, erect
forming a grey-purplish tuft
which together with the cylindric growth
of the tubercles appears of the
lower part of the plant readily
characterizing this species. His +
A species recently sent to Europe
from Chihuahua, and described
under the name of M. Potteri by Scheer
(Salm Cact 1850 pag 104) appears to
come very near to our species, but
is distinguished by its "very slightly grooved
tubercles and the tubercles being
supra levissime sulcatis" and axilla
"sublanuginosis". — Mam. strobeliformis
Scheer l.c. apparently from the same region is
also cylindric, with more tubercles,
almost naked axilla, 20-25 yellowish brown
radial & 1-4 central spines of the same
colour. — M. sphacelata Mart & M.
radiosa DC also appear nearly related
forms — but have only 12-18 radial spines
and the flowers of none of those must
appear to be described, nor the seeds, so

+ further distinguished from all the closely related species by the very woolly groove of the tubercles with only after several years become naked

it is cylindric & inch high & has more tubercles,

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Centuria 37 · 1853 765

· that it seems doubtful whether the
belong to our section of Arachnoidea
of which I know nothing but 3 species
here described at Mt. Vernon. —

Mam. macromeris L. Ind Rep note 15.

Char. emend.: simplex s. e basi parce ramosa prolifera
s. ramis plus minus inferioribus
s. ~~caespitosa~~, laete viridis ovata v. tuberculiformi (laxis, magna papilis, e basi dilatata elongatis,
teretibus, inermis, ~~ad medium ultra~~ sulco
supra sulco tenui (junior ~~bilacto~~, demum nudo)
ad medium ultra usque ad ~~lacto~~ et arcolato tomentosa
~~floriferam~~ supra ~~terminata~~ medium prolixo notatis; axillis nudis,
arcolis junioribus albo tomentosis; aculeis teretibus
elongatis, teretibus s. robustioribus demum
angulatis compressive, rectis s. paulo
curvatis, exterioribus 10 ad 12 (raris
13-15-17) ~~lanceolatis~~ albidis, albidis
s. flavescentibus subinde rubellis, apice
~~sphaerulatis~~, inferioribus saepe paulo brevioribus,
centralibus vel 4 (in plantis junioribus saepe 1-3)
longioribus, basi bulbosis, plerumque nigrantibus
~~subinde~~ raro roseis fuscis ve; floribus
ex imo sulco fuliginoso orlis
~~axillaribus~~ ~~sparsis~~ maximis, ± coccineis
purpureis, v sepalis 20-30 lanceolatis, superioribus
oblongis-fimbriatis, petalis 20-25 oblongo
lanceolatis, ~~versus apicem~~ denticulato-fimbriatis,
mucronatis, ~~stylo supra stamina~~ longe
exserto ~~stigmatibus~~ 7-8, ovario globosa, floriferum ovario
squamis parvis ciliatis instructo, viridi, semifusoris ovato-globosis, laevibus

In the Valley of the Rio Grande from
Donana (Wright 1846) to El Paso and below to the Canon, in loose sand
mostly on hillocks confined by the roots of Algarobia;
also east as far as the Pecos (Wright) fl. July & Aug.
— A splendid species 2 - 4 inches high.
Tubercles ~~2~~ 3 base or sometimes more crowded
in 8 rows very different in size, from 6 or 7 to 10 or 12
(Torr. sometimes even 15 lines) wide at base. Radial spines from 6-20 l. long.

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gray or all over with the upper whole pale yellow rose colored; radial spines mostly 5-6 ~~the Central one~~ 1-2¼ inches long the lowest longer and stout the rest ~~—~~ mostly black but in some specimens pale reddish or brown, tipped with black— straight or somewhat curved or twisted. In young plants the 10 radial spines are 3-6 l. and the single central 6-12 l. long. Areolae always naked and flowers springing from the woven villous end of the ~~tubercles~~ groove, on the middle or lower third of the tubercle; 2½-3 inches long and of the same diameter, rose colored (~~Wright~~) or carmine verging to purple (Wright) darker red in the center and toward the tip. Among the lengths of specimens I find an occasional fruit, globose, bright red (not fully formed) yellowish brown and apparently smooth—

Bigelow

Among Mr Wright's specimens the fruit was found, globose 6-7 l. ± diameter topped with part of the dried flower and differing so far as known from all other Mamillarias by ~~having~~ being invested with 5 regular triangular white scales thereby differing from the character of the genus and approaching Echinocactus, from which it differs so widely, in every other respects seeds 06-07 l. longis Salm Cact. 1850 pag. 133

Mamillaria Schiedeana Muehlenpf.

B. ~~Wrightii~~ validus vide pag 99

M. Schiedeana is ~~I suppose~~ to be Salm's description from our plant by the shorter (8-11) and fewer radial spines and the single "much longer (1 inch long)" central spine; it is globose, 3-4 inches in diameter, flowers of the same size as ours ~~with~~ apparently entire (?) sepals, ~~—~~ and red striated yellow petals. The areolae are described as naked; while in our plant we find the young ones very thickly covered with Cotton wool, which disappears by age. Nevertheless I consider ours only as a northern form of the Chihuahuan species, with more numerous and shorter spines, which ~~appearance~~ character very often distinguishes

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northern forms (compare eg. ~~Ec odorat~~ Echinocactus flexispinus) & setispinus etc.

Mammillaria hemisphaerica Engelm. & Bigelow in Bost. Journ. VI. p. 198. The numerous specimens are from 2–5 inches in diameter, from a tuberous caudex hemispherical or sometimes more or less flattened; tubercles 5–7 C. long; with 9 or 10 or in the specimens 10–14 radials spines from 2 to 3 or in some even 5 lines in length, the lower a little longer & stouter; central spine very short 1 C. long or sometimes as long as 3 or 4 C. All scarcely in the lower or the central spine darker, towards the ends. As there are no fruits on these plants the seeds which will distinguish M hemisphaerica & M applanata can not be compared, we must rely on the small number of spines to identify the plant. Found on stony hills ~~from~~ El Paso ~~eastward~~ eastward

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M applanata Engelm. in A. & G. Pl. II in Bost. Journ. VI. p. 198 Char. emend. Simplex depressa-globosa, tuberculis elongato pyramidatis subquadrangulatis, axillis nudis s. parce pilosis; areolis junioribus plus minus albo tomentosis, aculeis rectis, radialibus 14–20 inaequalibus, inferioribus robustioribus longioribus, (angulo) oculari robusto obscuro vel albido; floribus sordide albidis s. rubellis, ovario glabro s. basi parce piloso; sepalis 8–13 lanceolatis acutis vel obtusiusculis; petalis 12–18 oblongo-lanceolatis, mucronatis integris s. minutissime erose apice denticulatis; stigmatibus 5–8 flavido-rubellis staminibus brevioribus flavis s. rubellis exceditubus; baccis elongato clavatis, seminibus parvis ovatis, rugulosis. ~~Tuberculis totis plantis~~ var. plerique

α. vera ~~caudice plerumque depresso~~, aculeis applanato, areolis junioribus dense lanosis, aculeis numerosioribus (15–20) seminibus majoribus subglobosis Mappl. & C. C.

β. hemisphaerica aculeis hemisphaerico. areolis junioribus parce tomentosis, aculeis paucioribus (9–12) seminibus minutis oblongo obovatis, M. hem. & C. C.

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3517

flavis v. nubellis

Mamillaria meiacantha vide pag 88

& 103. — Caespitosa, simplex, hemisphaerica v. vertice depressa; axillis nudis, tuberculis quadrangulato-pyramidatis compressis, basi produtis, arcolis junioribus albido-~~tomentosis~~ villosis mox ~~pendulis~~ nudatis, aculeis paucis (6-9) rigidis, rectis v. recurvatis albidis (demum obscuris) apice sphaeulatis. centrali simplo erecto v. sursum-flexo cum reteris radiantibus, inferioribus patulo longioribus ~~v. summo erecto~~ ~~centrali~~ i

flavibus see p. 88

basi ... seminibus fuscis ovato globosis, rugosis

New Mexico, Brought home by the Mormon volunteers, 1847; in valleys between the San Pedro and Peros Rivers Wright 1851. and stony hills from the Pass east to the Peros 1852 i — Very nearly allied to M. applanata, but distinguished by the fewer and much stouter spreading spines. Specimens before me 1-5 inches ± diameter; tubercles 13 or 21 rows; 4-9 l. Cog, strongly quadrangular, rounded compressed from above; ~~the spines~~ 7-9 "Cog. Spines fewer (whence the name) the ± 4 ity relatively stouter; 5-9, but mostly 6, - lowest mostly ± 4 the longer the Central ~~Spines~~ upper stout ~~or short~~ other ~~Those~~ is no Central spine, ~~but absent~~ when ever ~~this is present~~, one apparently occasionally taking the place of the others Central spine short, stout erect, or often turned upwards and taking the place of the always absent upper radial spines, ~~radiating with~~ Flowers Specimens 3-5 "Cog.: Flowers see pag. 88. Fruit pg 103.

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Cact 38./ see pg 159. 1853 49.

Mam. calcarata on fertile soil
in the valley of the Nueces —
not distinguishable from the specimens collected
on the Colorado and Guadalupe — Texas,
Proliferous — of the capitose, rarely simple
heads; radial spines 8–10, (4–6 l. long straight)
central spine stouter, round, ~~stiletto-form~~,
of the same length; often wanting; all white
and usually with dark tips. — 2 or radial spines of 2 central
spines 1 is one of the 3 to 4, straighter
& weaker. —

The Texan form has 10–12 radial spines 6–7 or the upper even smaller
8 or 9 l. long; central spine stout, round downward, 5 or 6 l. long, or
wanting; sometimes a second central spine is just above the first and
directed upward

Mammillaria.

I Chlorocarpae berry oblong, green, ripening pale red, fleshy, naked at base
persistent

1. Seminibus laevibus
1a. Aculeis omnibus radiantibus tuberculis abbreviatis
Mam §.6. Centrispinae

3. M. compacta
4. M. pectinata
b. aculeo centrali singulo, tuberculis ovato cylindraceis
Mam §.11. Aulacothelae

6. M. calcarata
5 M. Echinus

2 Seminibus corbiculatis
a. aculeis centralibus pluribus radiis (arachnoideae
Mam §.6. Centrispinae in part

7. M vivipara
8. M. radiosa α texana β. novomexicana γ. borealis
9. M. tuberculosa
10. M. dasyacantha
c. aculeis centralibus singulis obsive hamatis (Mam. §2. Cirrhiferae Sulc.
14. M barbata
12 M. Grahami
13 M. d'ancistra

3. dubiae sectis Erythrocarpae these two must come at the head
1. 12. M. macromeris fruit elevato, sem. fulvis s. #3 1 & 2 sem. laev. tuberculis
elongatis, aculeis
2? 13 M. Scheeri var Wrightii

II. Erythrocarpae see next page

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150

II Erythrocarpae, baccæ nudæ

1. baccæ elevatæ sem. passim fulcris ve
cortescentes

14. M. gummifera — Mam § 6. Centrispinae ⅓ part

15. M. applanata

16. M. hemisphærica

17 M. meiacantha

2. baccæ elevatæ, semi nigris, duris

18. M. leiacantha — Mam § 3. Polyacanthae

19. M. micromeris — "

20. M. tetracistra — Mam § 4. Leiocarpae Polyacanthae Heterochlorae

3. baccæ globosæ, semi nigris duris

21. M. similis β. robustior — Mam § 6. Centrispinae ⅓ part

22. M. Nuttallii — " "

dubiæ sedis

23 M. pepyrocantha.

---

on the 14th of Dec 1852 I sent Manuscript to A. Gray with the following contents.

Geographical introduction

Mamillaria

§ 1. Chlorocarpeae

† baccæ squamatæ

1. M. macromeris E.

2. ? M. Scheeri Mühl β. Wrightii

†† baccæ oblongæ nudæ

* sem. lævibus

a. tuberculis abbreviatis, aculeis radiatis

3. M. pectinata n. sp.

β. cornuta

b. tuberculis cylindraceis, aculeis centralibus 1. pluribus

4. M. Echinus n sp

5. M Calcarata

** sem. tuberculatis

a. aculeis centralibus plurimis rectis

6. M. radiosa E. et Texana

β. Novomexicana.

γ. Boscalis

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7. M. tuberculosa n. sp.

8. M. dasyacantha n sp

b. areolēis centralibus unicostis

9. M. Gracharis n sp

10 M. dianoistra n sp

§ 2. Erythrocarpeae

† bacca elevata, succulenta sem fusc.

11. M. applanata L. α vera

β. hemisphaerica

12. M. meiacantha n sp

†† bacca elevata, succ. aquea, sem nigri

13. M. lasiacantha n. sp. α. minor

β. denudata

14. M. micromeris n sp

††† bacca subglobosa, sem. nigr.

15. M. similis

Echinocactus

§ 1. Polyacanthi

1. E. dasyacanthus n sp

2. E. intertextus n sp

§ 2. Hamati

* geminiflori

3. E. setispinus L.

4 E. Wrightii n sp

5 E. flexispinus C α crassispinus

β. gracilispinus

γ. brevispinus

δ ? leucacanthus

6. E. brevihamatus n sp

7 E. uncinatus Hopf

** isolantes

8. E. Wislizeni L.

§ 3. Cornigeri

9. E Texensis Hopf

10. E. reticostatus n sp

11 E. albispinus n sp.

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MISSOURI BOTANICAL GARDEN

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3518

vermiculum

Anhalonium ? found by Dr Parry, & Bigelow and Mr A Schott in Sept 1852 near the Rio Grande, not far from the mouth of the Pecos, on hard gravelly limestone hills near salty springs, & Goodenough Devils river & Pecos; Cañon of the Rio Grande (Parry)

flow in October (send fl?)

Stem hemispherical or globose, rarely above the surface, lower part top shaped. 2–4½ inches in diameter; Tubercles (12–25 Bigelow) projecting almost horizontally, at base somewhat triangular, obtusely carinate on the outer lower surface, upper surface with several (3 Bigelow) longitudinal grooves, which are irregularly transversely cleft (upon tubercles q l. long) areolate; margin also irregularly fissured (Parry) Areola oblanceolate (Big) & hairy (B), bedded with long woolly fibres (Parry), formed by a cleft of the two inner lobes (Big)

surrounded by long silky wool; & wool

flowers pink or rose-colored exterior sepals whitish fleshy. — abt 1 inch long & in diameter

Ovary 3 l. long 2 l. wide central (immersed) tube 4–6 l. long lower sepals 12, in lower one Linear-lanceolate, upper ones spathulate entire; upper sepals 8 coserotaneous, spathulate, mucronate, 6–9 l. long 2 l. wide; petals Linear-spathulate 9 l. long 2 l. wide rose, somewhat lower

Stamens numerous, white, anthers orange; Stigmata 4 connate, not shorter than petals, erect-spreading, fimbriate-shaped — 5–10 parted, light yellow

fruit oval; ripens with the flowers

seed black

Axillae ?

Groves hairy ?

fruit ? immersed ?

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