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About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Cereus giganteus the ^asahuaro

in a recent publication by Prof. J.J. Thornber and Frances Bunker called "The
Fantastic Clan" on page 12 they Near Victorville in southern California "Con
stellations" of huge masses of Sahuaro are a sight never to be forgotten.
Now what shall we say about this flowery language as a matter of fact?
The Sahuaro does not grow within a hundred miles of Victorville nor at all in
California except here and there along the Colorado river benches and then
only isolated. and never in "constellations" They must have mistaken the Joshua
Yucca brevifolia.
us for it, for this grows in "constellations" near Cajon pass. Prof. Thornb
ought to know this quotation is way
ber knows what he is talking about but the woman who wrote this on her geography.

I am glad to note that they do not accept Britton and Rose's flatulen
Cargagata a name proposed to honor that old business pirate, now dead. who
did not think much of the dedication of the proposed genus to him it is a qu
query how the sensible Rose came to allow himself to be used to flatter Carn
egie in proposing a new genus on this plant. the temptation to become a part
ner in getting out such books as this is great to botanists but I have dis
couraged women in doing this kind of work. Just now the American women in the
west has gone daffy on
west have the daffy on ~~west~~ this horrid family the Cacti. Because of the bea
beauty of the flowers. Now that they are using a little sense about dress w
we can hope for a return to sanity about other things. and not gush so much.

The book is well gotten out by the Macmillans.

I notice that the authors are also off in their Latin they pronounce the
Latin term for aged, senilis, with the first I shot in sound but it is long
and it should be pronounced ~~Seneyalis~~. ~~Sen-eye-lis~~. se neye lis. or by the Con
tinent method of pronouncing Latin would be sa-nee-les with accent on the
nee. but their pronunciation is a hybrid one not at all approved. if the En
glish method of pronunciation is intended then they should adhere to English
system for example they pronounce Johnsoni as Jon-sun e when it should be
jon-sun-i. they give aggregata as ah gra- gah tah when it should be ag gre-ga

gay-yah. Their pronunciation of Arizonica, is all wrong, the accent is on to
 o which is short o. in the antepenult.. They pronounce "lakeana as bal Kah n
 nah, when it should be blake ^{nah} app-ah Their Bonkeræe should not be bon-kerie
 but Bon-ker-ee.. Their cactaceæe should not bekak-tayde-e ad it si pronounced
 in English bot kakk tah ke-ay. Their pronunciation of the word cereus is the
 correct English way but if they were consistent they would adopt the Continen-
 tal ka-ra-eos. They mispronounce coccineus even in the English way for it
 should be kok-sin-e -us but by the Continental it would be Kok-kin-a-coos.
 Coville's should be in Eng list Co-vil-e i. Deserti should be de-ser-ti. and
 not dez-er-te Emoryi sho ld not be em-er e, but em-or- i i with the last i lon
 and the accent on the or if goda is pronounced right in English but in the con
 tinental would be foolge-dah hystri-cina should not be his-yrie-cena but his
 tri ci-na. They say in the text that macr ocentrus means long spined, but mac
 tes means thick and not long.. They do not give the true name of the flat
 cOpuntias which is platyopuntia the name platopuntia was given by Britton
 and Rose as an improvement on Engelmann, but Engelmann was a good scholar an
 and th other reveiwers were no scholars., Wherever the authrs use i in a
 -atin ending they make it ee instead of long i. They give the correct pronunc
 ciation of polyancistrus except the last u. and the an they blunder on robus
 ti spinas and call it ro-bus-tis pe-na insead of robusti- spina They give
 serpentinus as sr-pen-te-noos when it should be ser-pen-ti-nus. they err on
 spinosior making it spun-o-si or instead of spi-no-si-or. They misspell tet
 rancistra and also mispronounce it for the accent should be on the cis then
 mispronounce viridescens calling it -vir-i-deys-ens when it should be vir-i
 descens. They also mispronounce Wislizeni calling it wis-li-zeb-e when it
 should be wis-li-ze ni with accent on the ze. This is all frq in their Pro-
 nouncing vocabulary. on pages 189 and 190.

They do not give the locality of growth of some cacti. such as ^Echino-
 cactus Johanni which is the ^Aeverdam mts northern ^Aarizona on the Virgin
 river. and Searchlight nevada.

If they had no made such a botch of their pronuncuation the book would be u
 useful to the women enthusiasts on Cactus, because of the floery wording

Their descriptions of species are not always clear enough for determination and they have omitted important species. I approve very much of calling *Opuntia basilaris* the "Beavertail" cactus and I as emphatically disapprove of calling *Cereus Engelmanni* a strawberry cactus.

I am sorry for my friend Thorneber allowing himself to be drawn into such a mess, which is no credit to him.

In a savage review of this book Desert of the issue of April 1932 page 139 makes a criticism that is unjust, where it says that the book says that some cactus survive a temperature in winter of --25 degrees below zero which it characterizes as a gem of misinformation which is also a gem of misinformation for *Cereus viridescens* thrives on the denuded plains of Nebraska where the temperature of ten goes ^{to} 40 degrees below zero, and where also *Opuntia mesacantha* also grows. *Opuntia fragilis* also grows where the temperature often goes to 40 below and Also does *Echinocactus Simpsoni* in Utah..

My main criticism of the book is that there is too much gush in it and lack of coordination and ignorance of the rules of English pronunciation but the illustrations are fine and well chosen though the coloring is poor and the drawings are good except that opposite page 5. representing *Cereus Schottii* the old man cactus? Viejo.

I have heard more gush about cactus from women, ^{who} are carried away by the beauty of the flowers of this horrid and viciously pestiferous family than is contained in this book, and so I feel like sympathizing with my friend Thornber for getting entangled in such a mess, rather than condemning him by wholesale for it.

They say of *Opuntia chlorotica* that the name came from the green color of the joints, but reading the original description one would infer that the name was due to the yellowish-green pulp of the fruit, a rare thing. in *Opuntia*.

I do not find anywhere in the book a place where they say cactus thrives in temperatures 25-30 degrees below zero, a statement that would be correct if it they had made it, but they do say 25 to 30 degrees below freezing, which Desert assumes as the zero meant, but they evidently used this for Fahrenheit degree. It is true that freezing is the zero of the Centigrade thermometer but 25 to 30 degrees below this would not be the usual zero. I know for a fact that *Mamillaria Neo-Mexicana* and others like it grow in winter temperatures or exist in them many degrees below freezing as also does *Cereus viridiflorus* *Echinocactus Simpsoni* and *Opuntia Missouriensis*., even to 40 degrees below zero.

220 Pak,

places and 4 inches high in others. good stand. Plenty of water here. Got to Tucson by 6. p.m. and transferred to S. P; r.r. and so on home.

Dec 5. Now at Pannong, cold and still, Did not sleep much last night and feel as if stomach is upset badly. Probably have some infection from the exposure of the night at Orendain, but nothing serious yet. It surely seems good to be this near home.

Dec. 6. Got home duly and was atken with a serious attack of lumbago so that I could hardly get out of bed and it settled in some dead teeth causing abscesses, and my temperature ran up to $105\frac{1}{2}$ Degrees. so that I began to meditate myself to cure the grip attack, but felt rotten all day. Then had my teeth out and got better slowly till a doctor friend told me I had rheumatism, and so I began to eat oranges and cured myself at once but it was purgatory to me while it lasted.

Rhus Barclayoides N. Sp. 27095 La Barranca Guad. II-25. A slender and widely branching shrub, with almost filiform ultimate branches, glabrous with the exception of sparse hairs on the veins, petioles and ultimate branches which are sulcate. Petioles filiform 1-3 inches long, not winged. Leaflets always 3, elliptical, short-acuminate at both ends, low-crenate, almost sessile and winged to very base, 2-3 inches long, green above. Flowers in filiform compound racemes. Flowers 2 mm. wide, with rounded segments all alike. Stamens 5-10. Fruit not seen. This is manifestly allied to *Barclayana*.

Rhus Florita N. Sp. Florita Mts. M. Mex. Sept. 7 1903, Jones. Pomona Herb. No. 86113. Leaflets linear, apiculate and barely acute, smooth, sessile, the rachis conspicuously winged. Evidently near to *R. copallina*.

Sisymbrium Tularense N. Sp. Tulare, in waste places. March 10 1932. An erect annual, and glabrous throughout. Leaves thin, tapering into a short petiole, irregularly laciniate toothed or subhastate below, 3 inches long by an inch wide, acutish. Racemes terminal, often compound, subcapitate in flowers and more open in fruit, bractless. Flowers nearly white, 4 mm. long, narrow, erect. Sepals oblong and rounded, 2 mm. long, not spreading. Petals oblanceolate flat and tapering into the short claw, veiny, white. Pods about 2 inches long by 1 mm. wide, round, contracted between the seeds, sessile, with a stout beak as long as pod is wide, reflexed^x on stout pedicels 3 mm. long, crinkled, never straight. No. 29259.

Lesquerella purpurea Watson. This is one of the very few species of this genus that is perfectly defined by the white flowers turning pink and by its habit of growing under brush.

Sisymbrium playanum n. sp. ~~aff. *playanum*~~ ~~aff. *playanum*~~. Certain characters lead me to

place my specimen here. But there seems to be much confusion about this part of the genus. The character of stigma lobes over the septum ~~oblique~~ is again

2917

belied here. Annual plants with the habit of *Sisymbrium canescens* and ~~*Sisymbrium*~~
Caulanthus pilosus
~~*Sisymbrium hirsutum*~~, growing in Texas Canon Ariz. No. 25818. May 6 + 930.

Plants erect, single, racemously branched above, and with branches ending in a short raceme of white flowers which elongates in age. Plants hirsute below with very slender white hairs spreading and not stellate, shorter on the leaves or almost absent on the upper ones. Leaves clustered at base, lyrate-pinnatifid into many crenate-toothed lobes, the terminal lobe ^{the} ~~xxxx~~ largest and least dissected. Lobes gradually reduced below and remote and with no auriculate basal ones, but with winged rachis. Stemleaves few and remote and inclined to have linear lobes. All leaves very thin and flaccid. Flowers in short racemes or pseudo-heads white, about 2 mm. long, in ^{oval} ~~xxx~~ buds. Sepals oblong, thin, spreading, white. Petals apparently oblanceolate to spatulate and longer than the sepals, and spreading. Anthers short, linear or narrowly oblong, about equaling the petals. Floral parts very deciduous. Young pods white, distinctly stipitate and with a capitate stigma which is lobed vertically to the septum. Pods arcuate-spreading on capillary and ascending pedicels 1 cm. long. Pods apparently squarish or thickened laterally, and with 3 ribs between which are 1-2 lower ones, 4-5 cm. long and 1.5 mm. wide, shortly stipitate below, and almost truncate at tip. reddish with age, many and about 1/4 to 1/2 inch apart, on a ^f ~~fruiting~~ rachis 4-6 inches long. To the eye the pedicels seem to arise from a pustulate ~~base~~ and white base, but this base is a ridge running up and down the rachis and culminating in the enlarged base of the pedicel. Seeds 1/2 mm. long, rather oblong-oval, on long and ascending stalks, many. This grows in the coarse granite gravel, and seems to be a winter annual, seeding in the fall before and sending up an early shoot and fruiting in the spring. It seems unlikely that this can be *Thelypodium auriculatum*. for it is not likely that its peculiar characters would escape collectors, but the ribs on the pod are those of *auriculatum*. The fact that the stigma lobes are prolonged over the septum as in *Thelypodium* would tend to place it there. But already two or more species of *Sisymbrium* have such lobes; In addition the whole habit is that of *Sisymbrium* and not *Thelypodium*. There is no near relation however to *S. altissimum*.

Sisymbrium micranthum (Watson). *Thelypodium micranthum* Watson. *Thelypo-*

dium longifolium var. *Catalinae* Jones. *Thelypodium longifolium* is manifestly a *Sisymbrium*. *Thelypodium linearifolium* is manifestly a good *Thelypodium*. There should be little difficulty in separating most if not all the true *Thelypodia* by the floral characters, from *Sisymbrium*. Whatever we shall do about this composite genus I am not yet prepared to say, but I see no reason for the wholesale splitting of Rydberg. *Thelypodium* flowers when fresh have saccate sepals erect and appressed, and a triquetrous and fleshy claw to the petals which ends abruptly in a thin and wavy blade set at right angles to the claw, and the anthers are narrowly linear and curved. The stigma lobes are mostly over the septum. The pods are narrow and inclined to be angular, never much flattened. The plants are mostly glabrous, never woolly. *Sisymbrium* has thin and soon spreading sepals and petals not saccate, and with slender claws tapering into a blade which is flat, and the anthers are short-linear. The stigma lobes are mostly over the valves. The pods are always narrow and inclined to be taper-pointed.

Yucca brevifolia Eng. The spring of 1932 has been one of the most remarkable in history for development of plant life on the deserts of south eastern California, and one in which the insect life has done the least injury. It is a well known fact that the flowers of *Yucca brevifolia* are a perfect hive of insect life in the early spring, for this is the earliest flowering species of *Yucca*, blooming with us in March. It is also a fact that the odor of the flowers is that of carrion. The result of this insect activity is the puncturing of the unripe fruit and the destruction of the seeds by worms. This produces the constrictions in the pods, particularly the fleshy-fruited species *bacata*, *Mohavensis* and *Schottii*, which inexperienced botanists have considered specific. An examination of these pods always shows the tracks of these punctures. The constrictions only occur at a certain stage in the growth of the pod. The pods are normally rounded in cross section, though inclined to be a little ridged along the sutures. When fresh the pods of *Brevifolia*, *Mohavensis* and *Whipplei* (which is a dry-fruited species) at least have a thin outer skin separated from the ovary proper by an area of fleshy pulp which is about half an inch thick, ^(except in *Whipplei*) and in *brevifolia* dries out quickly as it matures and becomes spongy. In *Mohavensis*, *bacata*, and *Schottii*, and *valida* it becomes juicy and is said to be "edible", but for the most part is so bitter that humans do not care for it. The pods of all the species readily fall off at maturity. *brevifolia* is the only one which is erect at maturity, the others all droop or are pendent. The pods of *brevifolia* are 3.5-4.5 inches long by 2 inches wide, and an almost perfect ellipse, but triangular-short-pointed and rounded at base, but sometimes they become rather oblong, occasionally there are obscure grooves along the sutures. They are 6-celled, there being the three groups of a conspicuous sutures separating two cells, and with very thin and papery ones separating others. The three main partitions split through the middle at ~~the~~ maturity and the ~~three~~ carpels so formed either fall off as such or again split, but rather tardily. The seeds are black and packed like cards in a deck the whole length of the pods. They are obliquely rhomboidal.

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about 1 cm. wide, by 1.25 cm long, and with rounded back and wider above, and 1 mm. thick, with sharp edges and shining. They are much prized by the squirrels, Mostly antelope chipmunk, and since the pods fall off at the slightest touch when ripe, the ground is littered by the debris, but with the seeds all gone. Immediately after ripening when the pods begin to fall apart the outer skin becomes wrinkled, and often reddened by the slow-drying juice. In handling at this time the pods are as soft as mush but the juice is very bitter, and I see no signs of their being eaten by a stock. This year there has been the minimum amount of insect damage so that everywhere the showy panicles of white pods are conspicuous. These panicles are about a foot long and wide, and deltoid-ovate in shape. There being 25 to 100 in a panicle. Usually the pods are so ~~damaged~~ punctured that the real shape is hard to determine. There is variation in the size of the pods of *brevifolia*. The measurements given above are from normal and perfectly formed pods of this year. There are some trees differing in no other respects that bear pods 2.5 inches long by an inch wide, but seem perfectly formed, and with perfect fruit. It is more likely that the smaller forms are the usual ones in dry years.

Yucca Mohavensis pods average from 4-5.5 inches long by 1.5-2 inches wide, and are rather tapering toward the very acute triangular tip. They are rounded or truncate at base and with 6 prominent nipples, the remains of stamens. At maturity they tend to become reddish and juicy. At first the pulp tastes somewhat sweet but becomes nauseating toward the last. The cell structure and seeds are about the same as in *brevifolia*, but the seeds are a half thicker and more rugose. The pods are pendent.

Yucca Whipplei. The pods are quite uniform in size. They are oblong, with nearly straight sides, 1.5-1 inch long by 1.25 inch wide, dark-green, truncate at both ends, or even retuse at tip, conspicuously 6-sulcate along the sutures, particularly the alternate ones. The pulp between the seeds and skin is 1-1.5 mm. thick, and the ^{alternate} partitions are as thick. As the pod ripens ^{this} area becomes cartilaginous, but at first it cuts

like cheese. and shows no sign of a cell wall. The seeds have the same shape but are a half smaller and less than 1 mm. thick. The pods are strictly erect, as in the other dry-pod species like elata.

I found the same facts as to frequency of pods in Mohavensis to prevail as in brevifolia this year on the southern slopes of San Jacinto peak, but most of them were riddled by insects, and rarely had a pod half of its seeds untouched by insects. This species also blooms early but about a month after brevifolia. As a rule one has to hunt a long time to find any pods of Mohavensis.

It was noticeable that the heat of the sun seemed to fry the juice out of the pods of this species, for they were dotted with hard and gum-arabic-like dried sap, but apparently not from insect punctures.

July 24th.

Yucca Mohavensis Sargent. A recent trip to Morongo valley, some 25 miles north of Indio California, was made to get a line on its variation there. Some three years ago I was out there when the plants were in bloom and I felt sure that ^{baccata} ~~huerta~~ *Y. huerta* grew there, and hybridized with *Mohavensis*. My last trip was made to get the fruit, and restudy the whole. I found that there is a real difference in the root system which may be of value in diagnosis. All forms of *Mohavensis* so far seen have the root system of *brevifolia*, that is, they are without true stolons, and the root is a wide topshaped (top end down) mass with rootlets coming out all over the edge and from the bottom. ^{flat} *Y. bacata* seems to produce true stolons and roots along their under side. I found that none of the Morongo valley forms are *baccata*. So this throws the existence of true *baccata* on the far side of the state toward Las Vegas Nevada. and nowhere near the Sierras.

The fruits of *Mohavensis* are manifestly narrower above and not of equal width throughout as in *brevifolia*.

Yucca ^Whipplei

An examination of the root system of this species shows that it arises from the original seed area only a little enlarged with age. and not forming the disk-like area that characterizes brevifolia and Mohavensis. ^{In} The var. Parishii Jones, even in the biggest specimens ^{there} is still a small area, generally concave in cross section, formed by the bulging leaf bases as the flowering season approaches, ^{the cavity} ~~and then~~ normally does not produce any offshoots, and at the flowering period dies entirely, a true biennial habit, though it may take ten years to come to maturity. But the var. ^{ae}capitosa Jones produces buds at the junction of the leaf system with the root, ~~which~~ ^{all} intents and purposes are rhizomes, but only an inch or so long and with a tuft of rudimentary leaves at the end. This rhizome roots along the under side, and ^{when} ~~it~~ ^{matures} ~~it~~ ^{produces} ~~it~~ ^{other} rhizomes which become mature plants later on. The tuft of leaves which ultimately produces a flowering stalk dies ^{after flowering,} ~~at maturity~~ without affecting its offshoots. But the rhizomes so formed ^{do} not grow in length and become runners, but they form rosettes of leaves as in the mother species, the var. Parishii. The flowering habit is that of the Agaves, namely the storing of ^{the} ~~reserve~~ material in a bulbous enlargement at the bases of the leaves, which at flowering time produces a fast growing inflorescence.

Yucca baccata Eng. In trying to get a character that would separate this species definitely from Y. Mohavensis Sarg. I have had much difficulty, and have at times confused the two species in the field. The fruits of both are juicy and edible if one can endure the nauseating taste, and the pulp is about half an inch thick. This year has been an exceptionally fine one for fruit of the Yuccas, and the boring insects equally scarce. The fruits are reflexed or pendulous, and tend to be acuminate and particularly sharp-pointed. The constrictions in the fruits which are made so much of by various authors are nothing but wounds of insects causing atrophy of the parts. The fruits of baccata are closely pendent and appressed to the peduncle and so far as I have seen aduminate. Forms of Mohavensis are often little more than apiculate though with a tendency to be narrower above. Normal forms of baccata have blue leaves very much infolded or sulcate and arcuate, and rarely 2 ft. high, but

in exceptional cases they are 4 ft. long. Normally the stolons at the base are numerous, often 8-to 10, and come out at the ground and project along the ground on e to several feet, and eventually root below, and there is no evident sick at the base of the main stem, as in Mohavensis. Normally the trunk is less than a foot high, but rare instances reach 4 ft. high, and in never branches above the ground, a character also common to Mohavensis. Baccata comes in near the upper limit of Mohevensis (4000 feet) and continues far up and rarely into the deciduous oak (Transition of Merriam) zone. The flowers of baccata are always pearshaped, and the panicles linear. The fruits of both species are very hard to dry, and in the end become molasses colored. The pulp often sloughs off in drying. There is no likelihood of confusing any forms of the two species with brevifolia because of the leaves and the tendency of the stems to branch paniculately above ground. But brevifolia also has juicy pulp when fully developed, but this rapidly disappears leaving a cellular area at last, and the pods fall apart along the sutures when ripe, but are almost as long, though broader, as the others at maximum development, but usually are not half that size, and are never reflexed. The panicles of Mohavensis are normally ovate, and of all three species are sessile in the leaves. The root system is peculiar. Fair sized trees of brevifolia end at the ground in a flat disk 3-4 ft. diameter, from whose margin and under side innumerable cord-like rootlets go straight down into the ground and anchor it securely. You never see a tree uprooted by the wind. Y. Mohavensis has the same kind of a disk but much smaller, and rarely has more than 3 stolons which come out at the base of the leaves or disk and they are always short and do not root. At times it is impossible to segregate forms of baccata from Mohavensis except by the roots. The leaves of Mohavensis are normally much flatter, apple-green, and longer than in baccata., and the species thrives at a lower altitude.

I am not prepared at this time to give any data about the root system of macrocarpa or Schottii or valida.

Yucca brevifolia Eng. This year (1932) this plant is in a very flourishing condition, better than I ever saw before, and at this time of writing June 24th most of the ^{trees} ~~ed~~ have great heads of fruit in which nearly flower was fertile and set fruit, so that there are heads of fruit shining in the sunlight as if white. The fruits are fully grown and average about 4 inches long by 2.5 inches wide, oblong, rounded and not angled, rounded at base and bluntly triangular-acute at tip, light-green and smooth, free from insect punctures, and with walls about half an inch thick outside of the seed cavities, and texture a uniform pulp not woody and cutting as easily as cheese in cross section. The absence of a woody wall next the seeds is all that separates these fruits from the fleshy fruited *baccata* group, in fact the fruits are fully as large as those of *baccata*-Schottii. Ultimately when the fruits are ready to open all this pulp goes to make the cartilaginous texture of mature fruits, by shrinking into cartilage.

Streptanthus platycarpus Gray. This rather common annual is erect and about 2 feet high, and sparsely and alternately branched, each branch ending in an erect raceme a foot or less long. Pedicels stout though rather slender, and about as long as the calyx and ascending, rarely some reflexed, ascending to erect in fruit, enlarging upward. Pods normally erect though at times spreading. 8 cm. long by 5 mm. wide and 1 mm. thick, about straight, flat and smooth, minutely stipitate at the rounded base, and triangular-apiculate with the thick style. The surface uneven from being a little flattened between the seeds, normally glaucous, as is the whole plant. Seeds reddish, flat, 5 mm. wide, the very thin wing forming half the whole, smooth and cellular, in 2 rows but rows so much overlapping as to seem almost a single row, overlapping each other both ways and many. The valves are straight and flat and release at the ~~base~~ ^{bottom} but do not curl up in falling, they are 1-nerved in the middle. Flowers buds oval-ovate, flowers about 1 cm. long, and 1/3 as thick, oblong, cream-colored below and inclined to purplish at tips. Sepals rather lax, oblong, with triangular reflexed tips, saccate below, purplish above, the tips about 1/3 the whole. Petals on stout and triquetrous and fleshy claws which terminate in the thin blade abruptly which is spatulate and wavy and dark-purple veined, the veins spreading fan-shaped and branched, blades surpassing the sepal tips and about 4 mm long, and white between the veins. The flowers are normally about an inch apart, and perfectly smooth. The calyx falls early. The upper leaves have conspicuous and rounded ears and are slightly clasping. The curved stalk of the seed is equaled by the wing. The septum is without nerves, and the cells are minute and parallel with the length of septum, and with the lateral walls thin and straight, but the vertical ones are thick and inclined to be wavy. The cells of the wings of seeds seem papillary and nearly round. The lowest leaves are lyrate lobed, none of the leaves are hastate. often the pods are only 3 inches long. All of the flowers are somewhat but not conspicuously inflated. The lobing of stigmas is parallel with septum.

Streptanthus Ariz.
~~*Thelypodium*~~ *platycarpus* localities. Benson, Indian Hot Springs Tex.

Colossal Cave Ariz., Rodeo Ariz. The plants from all the localities were much alike in general characters. I saw nothing of ~~*Thelypodium*~~ *acuminatus* on which Greene founded his *Disaccanthus* species.

Caulanthus amplexicaulis

San Antonio peak, Calif. 6000 to 8000 ft.

alt. June 28 1931. This plant grows in sandy places by the roadside. It is annual, erect, widely and racemously much branched, and branches ascending ending in long and loose racemes with erect flowers and pendent pods. Pods nearly round in cross-section, filiform, lax, several inches long. Flowers ovate, inflated by the sepals bulging below the middle (saccate), and ^{purple} and dark in color and connivent at tip. Claws of petals rigid, erect, flat, thick, tapering up ward a little to the tip of the sepal, then ending abruptly in a crimped blade with stiff midrib and with sides very thin and wavy, purple along the center and nearly white on the margins, the blade arcuate and as long as the sepal and linear. Filaments, stout, papery, in three sets. One set very short, one set longer, and the other set nearly as long as the claws of petals. Anthers linear, arcuate and with sagittate base and yellow. Petal claws white. Filaments all distinct. Plants very open and airy. Notes taken from fresh plants.

2434

Coptis trifoliata leaves ^{all} evergreen.

Eriogonum pyrolaeifolium T. & G. var. *coryphaeum* T. & G. This plant is not well described by any of the authors treating *Eriogonum*. The most ^{marked} ~~marked~~ characteristic is the light-chestnut colored villous-wool covering the whole plant from the upper side of the leaves, peduncles and involucre and flowers, giving the appearance of glandularity. The under side of the leaves is covered by a dense and felted white wool. The flowers are normally white (not "red") as described by Jepson) with brown midribs ending ~~often~~ in pink tips. The variety ^{cory-} ~~variety-~~ *phaeum* has elliptical leaves acute or acuminate at both ends. This is common on bare clay knolls at Crater Lake.

Eriogonum Osbornae N. Sp. Frazier Park Calif, near Lebec. Oct. 6 1931.

Annual, prostrate from an erect base and very divaricately branched as in angulosum, forming open mats xx 3-4 feet in diameter. Leaves at all the nodes, lanceolate to ovate and with a long and acuminate base, or somewhat broader. woolly throughout except the smooth flowers. Involucres about 4 mm. long, signal and closepressed, Erect and many flowered, not evidently angled and with very short teeth. Flowers red-purple to whitish, reflexed, strongly striped in the middle. Sepals elliptical-oblong and rounded at tip, inclined to flare at tip, 2 mm long, calyx acute at base but not really stipitate. This has the habit and general appearance of angulosum but with sessile involucres, the flowers about as in gracillimum. One bare slopes by roadsides and up into the junipers or pinons, one covering the hills with pink. Dedicated to Mrs Osborn who has a summer home there, and who is an enthusiastic botanist. It is remarkable that a new species of *Eriogonum* can be found in California. But this is clearly new. Frazier Park is a unique area belonging really to the Mohave desert, but on the drainage of the San Joaquin and Bakersfield area, and on the eastern slope of Mt. Pinos at 5200 feet alt. just in the edge of the Lower Temperate life zone. They have two feet of snow there in the winter.

2192

Eriogonum latifolium var. *cuneatum* n. var. Leaves elliptical-lanceolate and
acute and crisped on the margins, and at length smooth above; heads very dense.
28804.
Rockport Calif. and Alton Calif. July 12 1931. ~~1931~~

In my criticisms of Abrams flora, my remarks on Allium referred mostly to his general flora of California and not the Los Angeles flora, and which is a better product than the other. Those notes were written at a later date in an attempt to unravel the tangle of Californian Alliums. I do not abate anything of my criticism of his fitness to produce such a work. The general flora is evidently an attempt to forestall Jepson who is doing a flora of California, and doing it well in the main, and entitled to the field. Abrams last eruption, his second edition of the "Flora of Los Angeles" is a riot in the changes in names, and wholly unjustified. In his main flora Abrams seems to have enlisted various workers who are specializing on certain genera, and for this reason it should be good in those lines, but a hodge podge flora never is a success. To be worth much a flora should have the impress of only one personality from beginning to end.

in Abrams's flora of Los Angeles, revised edition p. 89 he says in the key

"Bracts fimbriate" Populus

"Bracts entire" Salix

The bracts of Salix are conspicuously toothed in *S. laevigata*. If he had written "Bracts not fimbriate" for Salix he would have been right. On the next page he says that *S. macrostachya* is common. On the contrary it is rather

rare.

1059

Nothoscordum striatum

The bulbs of this species are tunicated like *Allium*, and have the outer coats with parallel nervation vertical and with the meshes inclined to be spread and like *A. fibrillum* below. The seeds are black and shiny and inclined to be rugose on the back. They propagate by bulblets (in addition to the usual pods) arising from the outer edge of the rootin^g area at the base, but bulblets not on a rhizome. The bulbs seem occasionally to split through the middle vertically. The flowering stalks are ~~often~~ often twin, with the lower one very small.

3709 *Dalea Barrancae* N. Sp. 27230, La Barranca Guad. II-23. Slender annuals with filiform stems paniculately branched throughout. Leaves about 2 inches long, of 4 pairs of elliptical-linear leaflets narrowed below and sharply acuminate above, appressed-strigose, not over an inch long, most half as long, the petiole not longer than the lowest leaflet. Spikes terminal, half to an inch long, dense, on a filiform peduncle 2-3-times as long. ^{and bracts} Flowers long-silky with hairs a little twisted and seemingly beaded and white. Calyx 5 mm. long and equaled by the green bract which is broad at base and long-acuminate. Calyx conspicuously 10-black-nerved, with the lobes a little longer than the tube and subulate. Petals purple, barely longer than the calyx. Common among other weeds.

Dalea vetula Brandg. 27233 Primera Agua Sierra Gig. L. Calif. 10-19

Dalea diffusa 27232 La Barranca Guad. II-19
27234 Trail down lagunas 9-23

Dalea tomentosa 27228 Orendain Jalisco II-28

Dalea vermicea (rose) 27231 La Barranca Guad. I¹-19

Dalea sniiformis Jones 27229 Dec.

14416
Tragia scandens n. sp. No. 23300 Jones. Guaymas Sonora Mex. Jan. 26 1927.

I refer here also *Purpus* No. 419 Ixmiquelton in Herb. Calif. No. II0766, and *Braudegee* San Jose del Cabo Sept. 6 1893 Herb. Cal. No. II0760. also *Purpus* From Calmalla L. Cal. No. 20 Herb. Cal. No. II0800.

Plants filiform climbers, with ovate, ~~abarely~~ acute. and ~~daxxax~~ Coarsely dentate leaves, with cordate base on a petiole 1 cm. long. With short and filiform racemes.

Croton Alvaradoensis n. sp. No. 27827 Jones Gathered on the trail down the Lagunas on the west side, on Sept. 24 1930. Named for my guide Alvarado, a grand old man.

An open branched shrub, with leaves clustered at the ends of the twigs racemously. Leaves about 2 inches long, elliptical-lanceolate, acutish, inclined to be cuneate below, very strongly 3-nerved and with raised ribs below, finely spinulose-serrate with the teeth ending in a cluster of hairs, felted pubescent throughout, but with the upper surface dark, on stout petioles which are barely 1 cm. long. Fruits oblately globose or sub-didymous, finely and shortly felted and smooth, 3/4 inch wide by 1/2 inch thick, single, with seeds very large and single in each cell, and pictorially blotched and smooth. Flowers not seen. This seems near to *Masonii* Johnston.

Bernardia Mazatlana n. sp. No. 22626, Jones, Mazatlan. Nov. 20 1930. On hill-sides among rocks. Herbaceous but stems a little woody below, about a foot high, spreading and much branched. Pistillate spikes terminal, oblong 1/2 to 1 inch long, silvery-hairy, shortly and stoutly peduncled. Calyx lobes filiform. Staminate clusters narrowly linear and about an inch long, on filiform peduncles nearly as long ~~xxxxxx~~ and opposite the leaves and below the pistillate ones. Leaves thin, broadly ovate, from a truncate to ~~subcordate~~ subcordate base, an inch long, finely serrulate, low-veined and on a filiform petiole 1 c.m. long.

4433 *Jatropha cordata* (Ortega) Muell. 27547 Loreto L. Calif. 10-16

It is rather remarkable that Standley in his *Shrubs and Trees of Mexico* leave out all mention of the seeds in *Euphorbia*. The seed character is the most specific of any character in the genus.

hyalina.
Hutchinsonia new genus and new species.

Plants belonging to the Polypteris section and apparently allied to H.
pappus. Erect perennials, a little woody below. Corymbosely branched above

and clusters of flowers with 6-8 heads in a loose corymb and each on filiform
peduncles bracted with linear bracts and smooth. Leaves many pinnately dis-
sected into linear segments and inch or two long and ~~anther~~ minutely hairy, gradually
reduced above to linear bracts. Flowers white rayless without disk scales
with 10-25 flowers in heads half an inch high. Bracts oblong and rounded
and hyaline and lacerate at tip free, in a single series and ashy not in-
closing the akenes which are black and truncate at tip and 5-angled or round
and puberulent and linear ~~or~~ Corolla tube broadly oblong. Contracted below
a bulbous enlargement and the reduced again to the tube, its lobes triang-
ular and erect. Pappus of 5 scales with 10-13 strong ribs which end
in plumose awns. A person would want to place this in Actinella,
named for Mrs. Susan W. Hutchinson of Los Angeles the discoverer. ^Uathera
near peach Springs Arizona 1932.

Mrs Hutchinson was with me in the trip
to the Baboquivari mts Arizona in 1931, and is an indefatigable botanist

Suaeda fruticosa Forsk. 27560 Guaymas Sonora II 6. In salt marshes. I adopt
Suaeda instead of Dondia Adanson because Suaeda first had species described
with it. Dondia never had any species described with it for many years.
Suaeda ramosissima (Standley) Dondia Standley N. A. Flora. ~~Lyria~~ ~~Calif~~
in saline places. 27558 Loreto L. Calif. Nov. I

WORK DONE

Back to One
Holland
Back to
Wash
Holland
Dynamite
Fue
Cape
Andes

and green-striate, and as long as the chaff/Chaff very rigid, sharp, linear, convex, greenish white, 6-8 mm. long, erect, with sunken green grooves as if ribs, subtending the disk but not the ray flowers. Rays ovate, rigid, leathery, convex cross-section, 3-4 mm. long, yellow inside and light-colored outside, with many green ribs, grown to the obpyramidal and thick akene, which is triquetrous and 4mm. long and half as wide at tip. and truncate there, 7-10-striate with green and sunken ribs or channels, and with two horns on the outside at tip as if awns but no pappus, with the raised areas inclined to be corrugated. Disk akene oblong but a little wider above, flattened a little, and 7-grooved, black, warty or ribs, no pappus. Disk flowers small and greenish. Habit of a low Helianthus. I assume that this is *Sanvitalia Aberti* but the species is very poorly described in the Synoptical Flora.

Sanvitalia Aberti Gray. No. 28612. Dragoon Pass Ariz. Sept 2, 1931.

Involucral bracts scarcely distinguishable from the chaff, but thin and hyaline edged, green-tipped and green-striate and as long as chaff. Chaff very rigid, sharp, linear, convex, greenish-white, 5-8 mm. long, erect with sunken green grooves as if ribs subtending the disk akenes, but not the ray ones. Rays ovate, rigid and leathery, convex in cross-section, 3-4 mm. long yellow inside and light-colored on the outside and with many green ribs, grown to the tip and obpyramidal ane which is triquetrous and 4 mm. long, and half as wide at tip and truncate and 7-10-striate with green and sunken rib with two horns on the outside of the awns, the raised area included inclined to be corrugated. Disk akenes oblong and a little wider above, flattened a little and 7-grooved, and black and warty on the ribs and with no pappus. Disk flowers small and greenish. A bit of a low *Heliomeris*. Rays an inch long. Leaves lanceolate and strongly toothed, obtuse, Zinnia-like.

Rustler's Park Chiricahua mts. Ariz. (has) but apparently the same speci

These extracts from Contributions no 18 are issued now yhe preserve the priority of my manuscript names. The completed number will not be issued for some months.

Lup.

Bidens pedata Brandege. No. 27779, found on trail down the "lagunas on cliffs. Sept 24 1930. Tufted erect shrub about 2 feet high, with innumerable filiform and dissected, smooth leaves 2-3 inches long. Stems produced into long and peduncle-like and simplefloral peduncles about a foot long, ending in 1-2 rudimentary leaves and a few cymosely arranged heads on filiform pedicels 1-2 inches long. Heads half an inch wide, with few and short orange rays. Akenes with two coarsely ~~barbed~~ and retrosely barbed awn and no crown. Not at all fleshy. It belongs with the Seemani group.

^{Def.}
Bidens Parrancae N. Sp. No. 27757. La Parranca Guadalajara. Nov. 23 193

A weak and much branched annual, 1-2 ft. high, with almost bipinnate leaves with lanceolate and incised segments acuminate and 2-3 inches long and very thin, in a petiole 1 cm. long, opposite, upper ones simple or 3-lobed, linear-elliptical, 1-2 inches long. Heads few, cymose and on filiform pedicels 2-3 inches long. heads 1/2 cm. wide, oblatly spherical, outer linear and ciliate. Rays about 1 cm. long, white, with yellow veins, cuneate-obovate, several notched. Akenes linear, less than 1 cm. long, 4-angled and smooth. Awns 1-2 mm. long, yellow. Plants with the habit of *Coreopsis parthenioides* but near *B. bipinnatifida*. A conspicuous annual in fields.

^{Def.}
Bidens Orendainae N. Sp. No. 27770, Orendain Jalisco Mex Nov 27 1930. On bottoms in fields. Like the above in rays and peduncles but leaves regularly 3-5-pinnatifid into narrowly lanceolate and long-acuminate divisions, with appressed and regular and very sharp teeth evenly spaced. Heads about the same or smaller. Outer bracts almost filiform. Akenes linear-acuminate but hardly beaked, 1 cm. long hispid and sharply warty above. Ray akenes seemingly wider. Tips of akenes with a few flattish scales or hairs and no awns. This seems intermediate with *Cosmos*. Several species of *Bidens* show a tendency to have diverse akenes with warty sides ^{or} and backs, tending toward *Heterospermum*. 4277

Bidens pedata Brandg. (Look up the name) No. 27779 Jones. Trail down the Llagunas L. Calif. , on cliffs. Sept. 24 1930. A tufted and erect shrub about two feet high, with innumerable filiform dissected leaves 2-3 inches long and smooth. Stems producing long peduncle-like and simple floral peduncle a foot or so long and ending in 1-2 rudimentary leaves and few cymosely arranged heads on true peduncles ^{and filiform} 1-2 inches long. heads 1/2 inch wide, with few short and orange rays. Akenes with 2 coarsely and retrorsely barbed

awns, and no crown, Not at all fleshy. this belongs in the *B. Seemani* group

Porophyllum nodosum n. sp. La Paz, L. Calif. Nov. 15 1926.. Leaves simple filiform, nodose, 1-2 inches long. Heads widely paniced, on filirom peduncles. Plants 2-3 ft. high. Flowers less than 10. Pappus a little tawny.

Akenes scabrous and with beak 1 mm. long. Scales linear 1-5 mm. long, the inner with hyaline margins. No. 22684.

Encelia anomala n. sp. No. 27715 Jones. Arroyo Undo, Sierra Giganta mts.

Oct. 25 1930, and No. 27716 Jones. Cayuca ranch, Sierra Giganta mts.

Annual, erect, , 2-3 ft. high, widely branched throughou t and wiyh opposite leaves and slender stems. Leaves very rough with stiff and appressed

short hairs, inclined to be hastate to broadly ovate, with few coarse and a ascenading sharp teeth, and acuminate, with base cuneate into a slender and low-winged petiole 1/2 to an inch long.

Hairs with a pustulate base and acuminate, upper side of leaves less pubescent. Stems elongated. Peduncles and bracts conspicuously striate. Bracts

flat, rounded, oblong-oval, 6-8 mm. long, appressed, almost in 1-2 rows.,

shaggy-hairy above., about 12. Receptacle conical. Chaff very thin and hyaline, truncate, 3-nerved, sooth and shining, twice as long as akenes

and with tips inclined to be purple or green. Corolla tube broadly linear

and with the lobes triangular and greenish, and stamen tube black. Akenes

broadly linear, inclines to be squamish when mature and with a strong midri truncate, 3-4 mm. long and a little wider above, high-warty

all over when mature and smooth. Peduncles 4-6 inches long, single at the ends of the branches. Rays persistent, rather rigid, golden-yellow, emarginate, broad, 1/2-3/4 inch long, about 10, fertile. This has the habit of

~~Encelia~~ *Verbesina encelioides* but bracts more numerous, and with no sign

of wings. It grows ad a weed around the corralls.

936

Actinomeris 27702 La Barranca Guad. II-19, and 27740 Same loc. II-21, and 27702a Same loc. II-12 are hardly identifiable. But apparently new.

Eupatorium acipiens N. Sp. 27787 Guaymas, Son. II-6 Plant with the habit of *Aster canescens*, but leaves entire and hastate and about an inch long and opposite. Stems fastigiate branched, and each branch ending in a single or few heads 1 cm. long and 5 mm. wide, purplish, rayless. Involucral scales in several series successively shorter and the outer ones green ovate and with spreading tips, striate, the inner ones linear and puberulent above as are all the others. Achenes sharply quadrangular, inclined to be ciliate on the angles. Pappus dirty-white, almost plumose.

Mikania anomala N. Sp. 27807 La Bar. II-21, 27810a Same loc. II-24
27806 Guad. II 24,

Perepyllum purpureum N.Sp. 27777 La Barranca Guad. II-21- An erect shrub about 3 feet high, corymbesely branched above, smooth throughout except the upwardly hairy akenes. Leaves coriaceous, elliptical, obtusish, entire 1-2 inches long by 1.5 cm. wide, on a stout petiole 1/5 the blade, somewhat reduced above, but never reduced to bracts. Heads few at the ends of filiform ultimate branches, in cymes. peduncles an inch long and filiform and with a knot at the end, the heads being early deciduous. Heads 12-14 mm. long and 2 mm wide, few-flowered. Akenes black, finely striate, very shortly-hairy, obscurely contracted at very tip. Pappus a little over half the length of akene, sericeous, scabrous. Rarely the lower leaves become an inch wide. There are several species resembling this but none very near it. This has the general character of retundifolium but pappus only scabrous, leaves very different and flowers of ~~the~~ ^{that} species are greenish. The bract of both species have the two to three large and oblong oil glands, each.

Bidens Barrancae n. sp. No. 27757. Jones. La Barranca Guadalajara. Nov. 23 1930. A weak and much branched annual, 1-2 ft/ high., with almost bipinnate leaves., with lanceolate and incised segments acuminate, , 2-3 inches long. Very thin, on a petiole 1 cm. long, opposite. Upper leaves simple 3-lobed, linear-elliptical, 1-2 inches long. Heads few, cymose, on filiform pedicels 2-3 inches long. Heads 5 mm. wide, oblately spherical. Outer bracts linear and ciliate. Rays about 1 cm. long, white with yellow veins, unequally-ovate, several notched. Achenes linear, less than 1 cm.

less than 1 cm. long, 4-angled and smooth. Awns 1-2 mm. long, yellow. plant with the habit of *Vereposia parthenioides* but near *B. bipinnata*. a conspicuous annual in fields.

Leaves 3-5-parted and 3-4 inches long. Involucral leaves oval, lacerate, 2-2.5 mm. long, only the innermost linear and acutish. Heads short-peduncled. Branches many as in *bigelovia* and shrubby below.

Bidens Orendainae n. sp. No. 27770 Jones. Orendain Jalisco Mex. Nov. 27 1930. on bottoms., infields. This is like the above in rays and peduncles but the leaves regularly 3-5-pinnatifid into narrowly lanceolate and long-acuminate divisions, with appressed and regular and very sharp teeth evenly spaced. Heads about the same as the above species or smaller. Outer bracts almost filiform. Akenes linear-acuminate but hardly beaked, 1 cm. long, hispid and sharply warty above, the ray ones seemingly wider. Tips of akenes with a few flattish scales or hairs and no awns. This seems intermediate with *Cosmos*. Several species of *Bidens* have a tendency to diverse akenes with warty sides or back, tending toward *Heterospermum*.

Verbesina Cayucensis n. sp. No. 27718 Jones. Cayuca ranch L. Calif ⁱⁿ near Sierra Giganta Mts. Oct. 23 1930. An annual ^{herb} ~~plant~~ growing in open places. Erect and slender, with the habit of *V. encelioides*, whole plant ashy-pubescent with curved and short hairs even to the ciliate margins of the ^{nerved} bracts. Leaves ovate-lanceolate to lanceolate, 3-4 inches long, flat and thin and acuminate, inclined to be lacinate-toothed below and 3-nerved, on a stout and margined petiole 15-15 mm. long. Stems branching above cymosely into few and elongated rays, with one to few heads on peduncles 1-3 inches long and erect. Proper bracts hardly 1 cm. long, oval-oblong, rounded and flat, about 8, green; then there is an inner series of as many or more which are hyaline and a little longer, and some of them subtending the few linear and yellow rays, which are 1 cm. long or very short. Ray akenes elliptical, flat wingless, nearly smooth, destitute of pappus, but with a tuft of hairs at the junction with the pilose corolla. Disk akenes very flat and thin-winged and ending in lacerate edges and with face upwardly pilose, and tipped with a distinct crown from which arise 2 stout, persistent awns as long as the ~~kenes~~ ovate-lanceolate akenes. No scales, but corolla tube constricted below and very pilose there. The awns of *encelioides* are evanescent and hair-like when present, and the akenes with corky wings, and with narrow bracts.

Stephanomeria Mexiae N. Sp. Mrs. Mexia No. 2506a. Baruschil north of Minaco Chihuahua, in dry washes. Flowers purple. Plants 1-2 ft. high, erect from an erect and tuberous root, inclined to be woody below, and with several simple stems below from the root. Leaves rosulate below, linearoblanceolate on short and winged petioles, gash-toothed, floccose-wooly with deciduous wool. Stem leaves linear, not over an inch long, entire, reducing above to very small bracts, racemosely branched above and with few large heads on slender peduncles. Bracts at base of heads linear, involucrel ones 6-10 mm. long, smooth and hyaline on the edges. Stamen tube elongated and hyaline. Styles black or dark-red. Pappus copious plumose to base, not scaly below. Akenes linear, truncate, smooth. Styles linear, quite broad and yellow.

9476

Bidens anthracoides 27767
Heterospermum anomalum N. Sp. 27745 The Laguna Laguna mts. L. Calif. 9-2
 Growing in sandy places. A weak and widely branched annual, erect, a
 foot or two high, nearly smooth, with conspicuous yellow flowers. Leaves
 about 2 inches long, opposite, petioled, palmately compound, and with the
 secondary divisions pinnately dissected into filiform and long lobes, or
 the upper leaves simply pinnately dissected. Flowers cymesely arranged on
 long peduncles 3-6 inches long. Heads about 1 cm long and wide, with double
 involucre. Outer bracts linear, green and thin, and nearly as long as
 the inner, tapering but obtusish, in one series. The inner bracts twice
 as wide (about 1 mm. wide), linear, purple, rather convex, narrowly white
 margined, narrowed toward tip and rounded there and with a woolly margin.
 These pass into narrower bracts subtending the akenes. Rays conspicuous,
 entire, dark-striped, elliptical 1 cm. long, 3 mm. wide, fertile, their
 akenes almost linear but larger above and rounded at tip, and smooth, an-
 awnless, several nerved on the inside and 1-nerved on the outside, lentic-
 ular in cross-section, black, about 3 mm. long. The next series (disk)
 akenes has a row of narrowly linear akenes sometimes fertile that are
 covered with spiny warts, no wings, and with 3 stout and subulate persist-
 ent awns, nearly as long as the akenes. The inner rows of akenes are seem-
 ingly mostly sterile but narrowly 5-winged and smooth. This had the appearance
 of being a *Bidens*, but the ray akenes would put it in *Heterospermum*, and
 partly closes the gap toward *Bidens*.

9/91. Aspilia grosse-serata N. Sp. No. 27778 La Barranca Guad. 11-17, near A. xylopoda Greenman. Caecare and erect from a rather woody root. Racemously branched above into slender and racemously branched laterals ending in filiform peduncles with narrow bracts. Leaves ovate-lanceolate-acuminate, 3-5 inches long, 3-nerved above the base, very rough with minute and raised papillae which on the nerves terminate in long and very slender white hairs. The stems and petioles are white with them. Leaves incisely and rather remotely serrate, and the teeth below sometimes becoming almost lobes. The lower part of leaves narrowed into a very wide and rather eared and sessile base. Upper leaves reduced to nearly linear bracts. Involucres scales forming in a single series, but the outer row irregular in length and all like the leaves in pubescence, then gradually passing into the bracts of the receptacle which are hyaline except for a green midrib. these bracts closely embrace the akenes. The akenes are flat and apparent without wings and upwardly pubescent but rather hairy on the margins, and linear and truncate at tip, and on the angles arise single ^{subulate} awns which flare at very base and then turn up and are nearly as long as the corolla on the disk flowers. The ray flowers are sterile and the abortive akenes smooth and without pappus. the rays are nearly an inch long and obovate and purple. The corolla is abruptly contracted 2mm above the base. The corolla lobes are sparsely pubescent with long white hairs. This does not seem to be any of the described species. It would seem to be near to A. xylopoda Greenman from Durango, but the species of Aspilia seem to be very diverse. It certainly has little in common with angustifolia.

9196 *Tillandsia lufaeformis* Benth.

Helianthus megakalylla N. Sp. 27705-La Barranca Guad. II-23. a common weed in all the fields, annual and resembling *Helianthus annuus* in habit and growth, 4-6 ft. high and widely branched above. Velvety-pubescent throughout, but stems less so, and upper peduncles white-silky-long-hairy. Pubescence on the upper side of leaves short from pustulate base. Leaves deltoid to ovate, low-crenulate, thick, 3-nerved, on stout petioles half long as blade, the whole a foot or less long, reduced above and inclined to be acuminate. petioles very narrowly winged. Involucra scales ovate to lanceolate, acute, green, ashy. heads an inch wide and nearly as high rays yellow, elliptical, an inch long. Heads few on stout peduncles. akenes turgid and truncate above, rather angular 3-4 mm. long, black, closely appressed-hairy, and sparsely so. Pappus a ring of erose scales not over 1 mm. long, and no awns. Chaff of the receptacle acerose, and inclined to be toothed on the lower edge. It is hardly conceivable that this could have been overlooked by Pringle, but it certainly is not a *Helianthus*.

Perophyllum rotundifolium N. Sp. No. 27777 ^QOrendain Jalisco. Nov 27 1930
Whole plant green, rather shrubby below, 3-4 ft. high and erect, branching
from the upper axils, and the slender branches about six inches long and
again branched, and ending in subumbellate clusters of 3-¹⁰40 heads on fili-
form and minutely bracted pedicels 1-2 cm. long. Heads rather cuneate, 1-1.5
cm. long, the 5-6 scales about a cm. long and with 2-3 narrowly oblong and
large glands. Akenes about 6 mm. long, linear but rather tapered above,
pubescent, faintly ribbed with yellow, Plumose pappus nearly as long. Leaves
oval, 2 inches long, venose, smooth, palmately veined below, the upper ones
reduced and inclined to be obovate and about 1 cm. long. Inflorescence con-
spicuously leafy. Prairies.

9316

~~Mikania anomala N. Sp. No. 27886. Guadalajara Nov. 26 1930. Along ditches.~~ *Elephantopus spicatus* is my No. 23346 and bot Carolinianus as I gave it.

Bebbia filifolia N. Sp. No. 27743. Cayuca ranch, L. Calif. Sierra Giganta mts. Oct. 23 1930. Tall shrub, not at all spinose, with filiform leaves 3-5-parted and 3-4 inches long Involucral leaves oval, lacerate, 2-5 mm long only the innermost linear and acutish. Heads short-peduncled. Branches many (as in *Bigelovia*) and shrubby below.

9244

9216

My. No. 23412 is *Zexmenia Seemani* Gray

9216 *Zexmenia micacantha* Humb.
Zexmenia subumbellata N. Sp. 27788 Orendain Jalisco 11-27

Zexmenia pustulata N. Sp. Erect herbs 3-4 ft. high, few-branched above. Leaves opposite, ovate-lanceolate, nearly sessile 2-4 inches long, entire, densely serrate, rugose below and apparently pustulate above and roughly and minutely pubescent beneath. Stems low-winged on the angle oppositely and shortly branched above. Heads few, in irregular cymes, the central ones nearly sessile, the lateral ones variously long-rayed on stout peduncles 1-2 inches long. Heads yellow, half an inch wide and nearly spherical, with the yellow linear rays about as long. Bracts successively shorter out ward but not in evident ranks, with the tips reflexed, thick, green, rounded, very rough, gradually passing into hyaline, obovate, a little lacerate, yellowish and thin inner bracts, which in turn pass into the conduplicate, variously lacerate scales subtending the black akenes which are Obovate-lanceolate, smooth, slightly nerved, and very thinly

Zex.

winged at least above, the wings terminating on the angles of the rather truncate akenes in a raised area and then jointed to a subulate awn as long as the akene at each angle, but with no accessory pappus. The center of the end of the akene at the junction with corolla is raised, sometimes as a pseudo-beak 1 mm. high on which the corolla rests in an enlargement which immediately contracts into a neck for 1 mm. length and then expands into the usual corolla tube of the *Helianthus* type. Corolla puberulent. Stamen tube not black. The ray akenes are not as winged as the disk. The general appearance of the plant suggests *Silphium perfoliatum*. This does not fit well in the genus but the involucral scales compel its place here, though it might go in *Verbesina*.

Macalia coriacea n. sp. Orendain Jalisco on prairies. Nov. 28 1930
Plants coarse. 3-4 ft. high and erect from a thick root. Leaves rosulate, we
~~think~~ very thick and leathery and venose and smooth., laciniately cut into
6-7 very broad and cut and sharply toothed lobes, and with petiole winged
above. Leaves a foot or long and wide, with rounded sinuses or cordate, the
lower pair of divisions with 4-6 parallel nerves, inclined to be erect on
petioles as long the blades and which are slightly chestnut-woolly below at
the slightly enlarged base. Stem leaves 3-5, slightly clasping with sheaths
2-3 inches long, abruptly tipped with a sharply and spinulosely cleft and
linear prolongation 1-2 inches long which passes into similar spinulosely
serrate outer bracts. Proper bracts about 1 cm. long, equal, convex, broadly
elliptical, inclined to be lighter colored, faintly many-nerved, smooth, a
little lacerate on the margins and with tip dissected into a tuft of hairs
about as long as the white pappus, in two rows. Heads fully half an inch
wide and high, very many-flowered. Lobes of corolla very long and linear. P
Pappus almost plumose. The plants remind one of the compass plant (*Silphium*
laciniatum) of the prairies of Iowa.

Silph.

Cacalia ciliaria n. sp. Orendain, Jalisco on prairies, Nov. 28 1930.
Stems coarse, 3-4 feet high, erect from a thick root. Leaves reniformly
very thick and leathery, and venose and smooth, laciniately cleft into 6-7
very broad and cut and sharply toothed lobes, and with the petiole winged
above. Leaves a foot or more long and wide, with rounded sinus or cordate, the
the lower pair of divisions with 4-6 parallel nerves, inclined to be erect
on petioles half as long as the blades. Petioles chestnut colored and wooly
below at the slightly enlarged base. Stem leaves 5-6, slightly clasping, with
with sheaths 2-3 inches long, abruptly tipped with a sharply and spinulose
cleft and linear prolongation 1-2 inches long, which pass into similar spinu-
losely serrate outer bracts. Proper bracts about 1 cm. long, equal, convex
broadly elliptical, inclined to be lighter colored, faintly many-nerved,
smooth, a little lacerate on the margins and with tip dissected into a tuft
of hairs about as long as the white pappus, in 2 rows. Heads fully half an
inch wide and high, very many-flowered. Lobes of corolla very long and
linear, and pappus almost plumose. Plants remind one of the compass plant
(*Silphium laciniatum*) of the prairies of Iowa.

9409

fimbriata

Dysodia cucullata Gray (See spelling), No. 27784. La Barranca Guadalupe, Mex. Nov. 16 1930. plants erect and tufted from perianth roots, corymbose and conspicuously
broadly branched above, striate-angled. Leaves sessile, green, 1-2 inches long, fimbriately pinnate almost to the midrib with nearly linear segments rather broader above and very sharply cut and ending in long and flexible setae or hairs. Stems branching at tip into several filiform peduncles, 3-5 ^{inches} ~~ft.~~ long, and bracted and each ending in a single head. Involucres obconic, 1 cm. long, of nearly distinct and dotted scales (leaves not glandular-dotted) and several accessory outer and green bracts dissected into long setae Rays fertile, saffron-yellow, 1 cm. long, Oval. Akenes linear, finely 15-ribbed, about smooth, truncate at tip, with about 5 inner pappus scales dissected nearly to the base into 5 or more ^{unequal} setae, and with 5 spatulate outer scales spatulate and 1/2 mm. long. Pappus much as in *D. Cooperi*, but with the truncate scales absent in *Cooperi*. General aspect of plants that of *Aplopappus spinulosus*.

9312

Hybanthus peninsularis n. sp. East of Todos Santos at Berrego ranch,
No. ? at Cayuca Ranch
Sept. 30 1930. Also Sierra Giganta mts. Oct. 23 1930. No. ?

A tufted perennial 2 ft. high, inclined to be shrubby below. Racemosely branched throughout, and stems weak and herbaceous, ashy on young parts with short and incurved hairs, as if minutely woolly. Leaves roughened on the ribs lanceolate-acuminate, coarsely toothed, variously cuneate below, narrower above, thin, on a petiole 1 cm. long, 2-3 inches long. Flowers in short and terminal racemes, and single in the axils of reduced leaves, on pedicels 5 mm. long, spreading, dull-white. Calyx lobes elliptical and acute, inclined to lanceolate, 2 mm. long, as long as the globose pods, ashy, hyaline on the margins, green in the center, and 1-nerved. Petals white, barely as long as calyx, with the V-shaped blade like apex. Pods rather oblate, smooth, green and pointless, 3-valved, with smooth and large, light-yellow, smooth, and triquetrate seeds

6271

Pebbia filifolia n. sp. No. 27783 Jones, Cayuca ranch, ^{dulla Giganta mts.} ~~Sierra Giganta mts.~~
L. Calif. Oct. 23 1930. A tall shrub, not at all spinose, with filiform

Cosmos sulphureus Cav.

~~Bidens~~ 27752 La Barranca Guad. II-16. Erect plants

branching above, and with the branches terminating in single pedunculate
and large heads, on peduncles often a foot long. plants almost smoth. Leaves lance-

olate to ovate, bipinnate into oblong segments which are acute and aceros
narrowly

petioles beset with long, tapering and glat hairs, and the midribs with
scattered, spreading and very short ones. heads in flower an inch long

and in fruit nearly 2 inches long, with conspicuous orange rays an inch
long. Flowers abut 15. Akenes aboutn25 mm. long, linear-fusiform, taperin

below the middle into a filiform beak nearly 15mm. long, which is scabrot
the body of the akene is roughened with the sub-pustulate bases if nast

cent hairs, the rudimentary hairs of the beak are upturned and of the
two short and subulate awns downwardly barbed at tip. This species is

manifestly closely allied to *Bidens Bigelovii* and *bipinnata*, both of
which have rudimentary beaks. The heads have several bracts among the ake

akenes, this is also true of some *Bidens*.

4257

Lagophylla aurea N. Sp. = *H. eruginosa* Kuntze, var. *seabullii* (Jepson)
slender and strictly erect and glabrous annual,

dichotomously branched into an open and almost capillary panicle. Leaves linear 2-3 inches long by 2-3mm. wide and acute and entire, rigid, sessile, gradually reduced above, and often with a single tack-shaped gland at tip. The plant perfectly smooth and with reddish branches. Heads solitary on capillary and bracted pedicels, oval, about 1/2 inch long, bright-green. Fertile akenes 3-5, embraced by the boat shaped and green and smooth scale which has long and rather cobwebby fringe of white hairs on the inner margin, the akenes being obovate, obcompressed and arcuate, and rounded and epappose, black and smooth. Flower a rigid and yellow ray 3-6 mm. long and 3-rayed. Disk flower without pappus, flowers white or pinkish, the ray flowers seem imbricated. Plants 2-3 feet high Pitt river bridge, California. July 16 1931. *Compton, Kenty, & Collins*

9294

Palafoxia linearis var. *gigantea* N. V ar. Sand Dunes west of Yuma. Sept. 26-1931.
 plants 3-6 feet high, erect, single. Leaves 4 inches long by 3/4 inch wide,
 linear-lanceolate and acuminate, flat, shining on the upper surface when green.
 Heads 1 1/2 inches long, large, the pappus almost wholly exerted and 1/3 the
 whole, with the outer scales almost wholly destitute of hyaline margin and
 all of them ending in a spine. Stems striate. This has been referred to the
 species, but is about as good a species as any of the accredited ones. It is
 very robust, but not shrubby.

Gray

I think that *P. leucophylla* is the same as *P. arenaria* Brandegea, and is
 characterized by the linear-oblong and blunt leaves. I can see no use in
 keeping up *Polypteris*.

9147

Franseria acerifolia N. Sp. 27765 Ayuca ranch Sierra Gig. L. Cal. 10-23
27764 Arroyo Unao Sierra Gig. L. cal. 10-26.

A slender and erect shrub openly branched, but not rigid, 6-8 ft. high. paniculately branched above, and with the slender branches ending in ovate panicles a foot or less long. Branches of panicles racemose and either wholly staminate or staminate above. Staminate heads globose, many flowered and each flower on a pedicel 1 mm. long, the involucre rotate and with 8-10 bracts shorter than the ~~fixxxx~~ heads, and strigose. ^{slender} Fertile flowers few, woolly with about 10 light-yellow and hooked spines. stems, petioles and midribs densely and very shortly rough-pubescent with whitish hairs, the lower sides of leaves with similar but less dense pubescence, the upper side papillose with sharp warts. Leaves ovate in outline, a foot or less long, on stout petioles rarely an inch long, alternate, pinnately 7-9-lobed to below the middle, with the lower one or two pairs of leaflets much reduced, all lobes triangular-acuminate, and irregularly and sharply serrate, the terminal leaflet much the longest. Flowers yellow. Heads on capillary peduncles.

9155

Zinnia Barrancae N. Sp. No. 27698, La Barranca Guadalajara Mex. Nov.
17 1930. Tall and erect, 3 ft. or more high, with simple stems puberulent.
Leaves pustulate-acerose on both sides, 4-6 inches long by 2-3 wide, oblong
lanceolate, shortly acuminate, rough-veined below, minutely crenulate. Flow-
ers terminal, cymose, the central heads bracteate at. Peduncles 4-6 inches
long and stout. Heads 1 cm. long and wide, grayish with white pubescence in
lines. Bracts ovate, 6-8 mm. long, acute, closely appressed, and the inner
series with greenish, expanded and reflexed tips. Rays red-orange, 1 cm
long, spreading. Akenes flat, deeply notched and with tips acuminate into
a rigid awn upwardly ciliate, 4 mm. long. Awns about half as long. Ray aken-
es triquetrus and slightly winged and with awns shorter.

9/4/66 Sanvitalia longepedunculata N. Sp. 27761 La Barranca Guad. 11-19. A
and 27719 "

widely branched and erect annual. Leaves ovate, inclined to be acuminate at both ends, sparsely crenate-serrate, on short petioles, 2-3 inches long and thin. Inflorescence of few filiform peduncles, 2-3 inches long, cymose.

heads ovate with conical receptacle. Rays none. Disk flowers very many, whitish. Chaff on receptacle papery, and embracing akenes and with hyaline margins. Akenes flat, thin, smooth, narrowly winged on the margins and long pilose there with ascending hairs, emarginate, with a low crown and single and capillary awns on the corners. A weed in fields.

9/15/6

See description
Sanvitalia Aberti Gr. Dragoon pass Ariz. Sept. 24 1931. Involucral bracts
scarcely distinguishable from the chaff, but thin and hyaline-edged, green-tipped

9/57 *Viguiera magnicapitata* N. Sp. 27701 La Barranca Guad. II-23. Plants with the habit of *Rudbeckia laciniata*, erect, tall, 3-4 ft. high and simple. Leaves very thick and leathery, and low-rugose, very scabrous on both sides and with hairs pustulate at base and short and rigid. Leaves narrowly elliptical, and acuminate at both ends, alternate, almost sessile, strongly 3-nerved, entire, 4-6 inches long by 1-2 inches wide, many. Heads nearly sessile and single in the upper axils, 1-2 inches wide, very rigid. Outer involucral scales ovate-lanceolate-acuminate, rather lax and canescent with rigid white hairs, an inch or less long. Disk scales rigid, linear, almost pungent, inclined to be scabrous. Disk akenes linear, triquetrous, puberulent, truncate, capped on the angles by subulate scaly and triquetrous awns as long as the akenes which are scale-like at base and toothed, and by single intermediate scales that are oblong and rectangular, truncate and crenate and rarely 1 mm. long, and white. Plants too old to determine the ligules.. A very remarkable plant. Pappus persistent. Growing on the prairie.

9/69 *Sclerocarpus Triunfonis* N. Sp. 27717 Triunfo L. Calif/ 10-6. A weakly erect annual branching above, with opposite, slender-petioled, thin, triangular-acuminate, coarsely serrate leaves about 3 inches long, finely pubescent with appressed and ascending hairs. Heads cymose, few on slender pedicels, yellow. Involucral scales about 6, ovate and stalked, green, spreading, ashy with fine and appressed pubescence. Disk scales spatulate with whitish tips, very pubescent and long-ciliate, short. Rays deltoid and yellow half an inch long, on a long and filiform stalk, pubescent without. Ray akenes obliquely obovate, about 3 mm. long, warty and pilose black but nearly round in cross-section. Stamens separate, linear, yellow tipped. The plant has the general appearance of *Verbesina encelioides*. *Sclerocarpus* ~~XXXXXX~~ *spatulatus* Rose Cont. N. Herb. I 103 is so poorly described that it cannot be identified.

erbesina ampla N. Sp. 27780 Tall plants shrubby below, with ample corym-
terminal inflorescence, of many heads 1 cm. long, and yellow rays. Leaves
opposite,
a foot or less long, rather triangular in outline, with veins very strong
and raised and pinnate, 3-5-lobed, with the lower pair of lobes much the
largest and triangular-acuminate, and coarsely frw-toothed, upper surface
papillose-scabrous with rudimentary hairs, and lower surface ve, vety with
short hairs. Laves cuneate into the winged petiole an inch or two long.
wings of stems 1 mm. high, rounded and thick, evident to the inflorescence
Heads very many on pedicels an inch or less long. Bracts in 3-4 series, 1
linear to oblong and acutish and puberulent and laerate, and yellowish.
The receptacular scales very narrow and hyaline and with greenish puberu
of
and not acerose tips. Ray akenes yellow and ovate, about 1 cm long, the
akene cuneate, 3-4 mm. long, a little flattened and smooth and with a
very broad ~~max~~ and papery ear on each side. Disk akenes linear, much fl
flattened, narrowly winged below, slightly wider above, awms strong and
fully as long or longer than the akenes and subulate. Proper tube of
corolla short and hairy. Stamen-tube black and white striped and ending
in ovate ears. Also No. 27699

27707 ^{9/58} *Viguiera tomentosa* Triunfo L? Calif. 10-7

Viguiera triangularis N. Sp. Arroyo Undo Sierra Gig. L. Cal. 10-26
and cymose

A shrub 2-3 ft. high, with simple stems and branching inflorescence.

Slender stems ashy, not winged but angled. Leaves opposite, 3-nerved,
and hoary

on slender petioles half an inch long, not winged. Leaves shining

on both sides but roughened by minute and rudimentary hairs on the
nerves, acuminate, low-crenate-serrate., very rugose., about 3 inches

long, almost truncate at base, reduced above. Heads few, on almost fil:

pedicels 1/2-3 inches long. Involucral bracts narrowly linear and lax,

Vig. tri.

1 cm. long, about in one series, much longer than the disk scales which are linear, strongly-nerved, acute, and rather pilose on the margins.

Rays elliptical, an inch long, yellow, seemingly neutral and with lacerate scales at tip of akene and no awns. Disk flowers brown. The akenes with two stout and lacerate below scales or awns as long as akene on the angle and with a few shorter linear and lacerate scales between. Corolla tube pubescent. Involucra; scales ashy. This is manifestly related to *V. cordifolia*.

9197 *Viguiera longiligul* N. Sp. No. 27708 La Barranca Guad. 11-15. A somewhat shrubby based herb 3-6 feet high, paniculately branched above, rather corymbosely. Leaves opposite, 4-6 inches long, 3-nerved silky-velvety below and nearly smooth above but covered with pustules, shortly-acuminate cuneate into a slightly winged petiole above, petiole about an inch long, upper leaves much reduced and inclined to lanceolate. Heads rather cymose on filiform pedicels 4 inches or less long, few, with golden-yellow rays about an inch long and elliptical. Involucral bracts linear spreading but not flat, 1 cm. long somewhat irregular, longer than the ribbed disk ones which are rather setose at tip and closely inclosing the akenes. Akenes of ray seemingly neutral either without pappus or with short scales. Ray akenes flat long-shaggy on the margins and pubescent on the face, with two subulate awns or scales with lacerate margins and some shorter inner scales also lacerate. Corolla tube pubescent.

9166 *Eclipta alba* L. 27730 Cabo 9-14

6940 *Aster exilis* 27756 La Barranca Guad. 11-20

Anaphalus margaritaceus 27755 Orendain Jalisco 11-27

8982 *Gnaphalium purpureum* 27722 The Laguna Laguna mts. L. Cal. 9-22

8901 *Erigeron Canadensis* L. The Laguna Laguna mts. L. Cal. 9-22

8992 *Gnaphalium decurrens* 27721 The Laguna Laguna mts. H. Cal. 10-20

8400 *Aster spinosus* 27782 Primera Agua Sierra Gila

Verbesina ~~altissima~~ ^{crocata} N. Sp. 27704v La Barranca Guadalajara mex. Nov. 19
 Ip30. A widely branched shrub, 6-8 ft. high, with branches at right angles
 to the stems and winged leaves inclined to be hastately 3-5-lobed and
 coarsely and irregularly sharp-toothed, and acuminate, with broad and
 winged petioles 1-2cm long, and decurrent on the stems, dark-green, rough-p
 pubescent with very sharp and tapering hairs from a pustulate and shining
 base as if beaded. Peduncles stout, cymose and terminal, ashy, erect with
 single heads oblatelly globose, an inch wide, dark-yellow to black, rayless
 but apparently with fertile rayflowers and with very thin-winged and smooth
 and black an flat akenes with two awns and no scales. Chaff flattish, not
 embracing the akenes. Flowers yellow. Disk akenes without wings, linear.
 Involucral scales many, unequal, linear, acute, rough, closely appressed
 flowers very many. A very unique plant, growing on rocky slopes.

~~Verbesina altissima~~ ^{See 9218} ~~N. sp.~~ ^{crocata} No. 27704 Jones. La Barranca Guadalajara mex. No
 Nov. 19 1930. A widely branched shrub, 6-8 ft. high, with the branches at r
 right angles to stem and winged. Leaves inclined to be hastately 3-5-lobed
 and coarsely and irregularly sharp-toothed and acuminate, with broad and
 winged petiole 1-2 cm. long, and decurrent on the stems, dark-green, rough-
 pubescent with very sharp and tapering hairs from a conspicuously pustulate
 base and shining as if beaded. Peduncles stout, cymose and terminal, ashy,
 erect, with single heads oblatelly globose, an inch wide Dark-yellow or black
 rayless, but apparently with fertile ray flowers, and with many thinly
 winged and smooth and black and flat akenes with 2 awns and no scales. Chaf
 of receptacle flattish, not embracing the akenes. Disk flowers yellow, and
 disk akenes linear and without wings. Involucral scales many, unequal, lin-
 ear, acute,, rough, closely appressed. Flowers very many in the heads.
 this is a very unique plant growing on rocky slopes It takes a great stretch
 of the imagination to admit this as belonging to any known genus. It seems
 at times to be almost a climber. It reminds one of *Aemophila*
 aurita an herb, which is itself a botanical caricature.