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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.

NEW SPECIES

Missoliodos cylindrica (3784) N. Gen and N. Sp. No. 27223.

Guadalajara, Mex. Nov. 27, 1930. In moist fields, creeping and rooting, with the habit of *Desmodium*. Stems filiform, 2-4 ft. long, with long internodes. Stipules green, rigid, nerved, scerose, 2-4 mm. long. Leaves small, 1-2 in. long, of three leaflets which are elliptical, 1-1.5 cm. long, thin, venose, rounded at both ends, entire and without stipules, puberulent, on a rachis about as long as the leaflet, the terminal leaflet about 2-3 mm. from the pair, darker above and veiny. Flowers in slender axillary racemes six inches long, and in fruit separated by about 1 cm. and subtended by triangular bracts 1-2 mm. long. Pedicels reflexed in fruit and 6 mm. long. Calyx about 1 mm. long, triangular in longitudinal section and with triangular lobesses long as tube. Flowers apparently very small. Fruit filiform, 1-2 in. long, off six joints almost cylindrical but a little constricted at the joints, very slightly flattened laterally, longitudinally striate and very shortly crisp-hairy; each joint about 4 mm. long by 1 mm. thick, with rather prominent but not winged sutures, all alike; no wing on the terminal one but it is acuminate, shortly stipitate. Flowers absent.

NOTES AND REVIEWS

Filix Adanson Fam. This genus not having any species appended to it by Adanson, must stand on the first description of it by others where species were given with it. This would be that of Gilib. Exerc. 1792 where he describes *Athyrium filix-foemina*. This then becomes the type of *Filix*. So the contest is between *Filix* and *Athyrium* as to priority and not with *Cystopteris*. Therefore Maxon's and Underwood's references of *Cystopteris* to *Filix* are unwarranted.

Nothoscordum striatum. This plant has much the same habit as *Allium* and the markings of the bulb are about as in *A. Blanderi* or *hyalinum*. The bulbs when mature are about an inch long, ~~and~~ ovate, and with the thin coats of the onions. At the junction of the base of bulb to the

roots, bulblets are produced outside of the coats, are ascending and sharp-pointed, several of them to a bulb, and white.

Androstephium violaceum Torr. This has the same kind of propagation as Nothoscordum, but the bulb coats are thick and very fibrous with many vertical ribs.

In Coulter's Flora of Texas he left out the genera Cooperia, Grinus, and Zephyranthes on page 430. But he put them in the key on page 429.

AMSONIA by WOODSON (asked under Review)

In this recent brochure things have been brought up to date and the species revised, but in my opinion, too many species have been recognized in the genus. There are in all probability few genera younger than Amsonia, and the so-called species are too confluent for good species, but the collections are as yet too meager for certainty in defining the proper limitations. I am sure that Amsonia brevifolia and tomentosa are only forms of the same species. The characters given by Woodson do not hold out. I have seen acres of them and studied them in the field fully.

The geological maps accompanying the brochure are open to serious criticism. Mr. Woodson does not pretend that the maps are his own, but says they are copied from ^{sources} which he considered authentic; my criticism is therefore not aimed at Woodson but at the author of the maps, who is unknown to me.

Any attempt to account for the origin of species geologically must as a basic fact have accurate information on the geology involved.

I have been an active field geologist for fifty years and have traversed most of the regions involved and studied them in detail, besides being familiar with the explorations and reports of Government geologists of the 40th parallel, the Grand Canyon of the Colorado, Wheeler's and Hayden's reports, and the geology of the Henry mountains. I have also been personally acquainted with the men, ^{and} Emmons, Dutton, Gilbert who did most of the work. I say without any reservation that the outlines of

the continent in Cretaceous times as published by Woodson are wrong, no such areas ever having existed above the ocean level in those times. Later on I will take up this matter in detail.

It is natural to want to find the origin of species during geological time, but up to the present there is too little authentic material on which to work, and in addition, the paleobotanists who have described most of the species are not competent systematists, and their results are mostly guesswork rather than established facts. I have had a chance to check up on the work of Knowlton and Ward on certain geological formations. Take, for example, Knowlton's work on the Tertiary flora of the upper Snake region. There are certain regions of exposures in which fine leaf impressions are to be found. Knowlton figured and described certain genera as *Populus*, *Salix*, etc, making numerous species based on those impressions. Now what competent botanist would dare to identify any species of *Populus* on the leaves alone, knowing the species as they grow all around him? And yet here is a paleobotanist who does not hesitate to name a species from the leaves alone. I seriously doubt if he even knew what were *Populus* and what were *Salix* species. No field botanist of today could identify certain leaves which I might furnish from *Populus angustifolia* and *Populus dimorpha* and tell even the genus to which they belong. When a person does not know the facts on which geological papers are based, he is inclined to marvel at the acumen of the botanist who did the work, but when he knows the facts he feels that the man is a grandstander and nothing more. In this cluttered up condition of paleobotany where will a man land who tries to find the origin of species of plants in geological time? It is a wildgoose chase.

In my work on *Astragalus* I made a serious effort to get at the origin of the genus in geological time. I found nothing worth considering prior to the Quaternary, glacial period.

(a Review) CACTACEAE by FOSBERG (Bulletin Co, Cal. Acad. Sci. Vol. 39, Pt. 2)

In his article Ray Fosberg makes a number of new genera out of various Cactaceae published in Britton and Rose's Cactaceae. That publication was a fiasco which has made the authors justly odious. It is a pity that Fosberg does not know more about generic limitations. What the Cactaceae need is not expansion but drastic contraction, and nothing but that kind of treatment will ever go with western botanists. A person who tackles Cactaceae at once invites contrast with the magnificent work on the family by Engelmann, the greatest of American botanists, and he must be a very great person to appear anything but a pygmy in contrast. It is not a question of getting into print with one's own ideas. Anyone can do that. Are his ideas worth printing is the question.

The author's Latin is rather raw, and his familiarity with Greek is nil, but he does not hesitate to coin a lot of Greek names as though he knew what they mean and what they are. This shows the foolishness of insisting that all new descriptions be in Latin.

UMBELLIFERAE by MISS MILDRED MATHIAS

I confess in looking over this very elaborate and exhaustive work by Miss Mathias that I do not like it. I would like to go through it ~~crit~~ critically and show up all its shortcomings, but personal reasons prevent. I must content myself with saying that she seems to have no sense of generic proportion, but follows, in the main, the meanderings of Rose in his treatment of the Umbelliferae, and in keeping up on trivial grounds various genera that never had any standing. The author probably never had much field experience, but bases the work on herbarium material. A very small amount of field work would show her the absolute untenability of many genera if she has any generic sense of proportion. Her sense of specific limitation is also weak, since she keeps up as species many varieties that any field botanist would recognize at once.

Since there has been such widespread opposition to Rose's treatment of the Umbelliferae, one expects a philosophical discussion of the basis of every genus; but Miss Mathias seems too timid to attempt it. I am

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amazed at her identification of *Uymopterus lapidosus* with *C. longipes*. It is quite a different thing, more like *Cogawellia*. *C. longipes* is a peculiar species, growing flat on the ground in early spring with a rosette of leaves and sessile inflorescence. As it matures the foot elongates and the pedicle also so that the flowers or fruit are a foot above ground. The root is tuberous and fleshy, while that of *lapidosus* is quite different. So is the habit of the two. I notice a similar absence of critical judgment in *C. Fendleri* and *Newberryi*. I discussed them in one of my early papers, ^(Cont. 4) showing the complete intergradation.

I do not favor the habit of recent monographers in citing a great mass of specimens. Doubtless this is done to give the appearance of profundity of study, but to me it is simply cumbering one's work with a useless mass of junk. I do not mean that heriwork contains any junk, but its chief lack is judicial treatment. One must know ecology before being a monographer in botany.

From private conversation with the author I find that her position in recognition of species is that if the variation is a marked one it should be considered a species irrespective of field conditions. This ignores ecology and puts a premium on freaks. The great herbaria are rapidly filling up with freaks, sports, accidentally collected, that have no standing in nature. A species ought to mean a well established group of self-perpetuating forms. When a freak is shown to be a freak, the name should be suppressed. Cases in point are *Astragalus grallator* Watson, *Astragalus oocalycis* Jones, and *Astragalus hyalinus* Jones. There is much duplication of forms in the Umbelliferi because of the varying development of wings according to the time of fruiting of certain species. It should be easy to give a good description of a well established species, and this description should be based not on the characters shown by the type specimen so much as on the plant as it is known to grow.

Our nomenclature practices are at fault in many cases in the matter

of priority. It is the practice to recognize the first name applied to a species, and if variations of it are found later on, those go as varieties of the earlier species. But this practice is biologically wrong, for the reason that often the first name applied to a species was given not to the plant as it grows but to a variation, good enough as a variety, but not prevalent enough to warrant using the specific name for it. An example of this is *Astragalus lentiginosus*, a name applied to a very local form of a cosmopolitan species. So *Astragalus diphyus*, a far more representative form, must go as a variety of *lentiginosus*, a case where the tail wags the dog.

It was imperative that a monographer of *Cymopterus* should take up my animadversions on the work of Coulter and Rose and show that my criticisms were incorrect, (See *Cent.* 12:96 & 13:17) before accepting those spurious genera. But Miss Mathias does not even mention the fact that any criticism of those genera ever was made, though she had access to all my Contributions, and knew of all my criticisms. This is why I assume timidity on her part about going into the matter. Unless my position is disproved I see no escape from rejecting the genera. That is why I should welcome discussion of it.

1894 Britt. system introduced thro' AAAS.

Under false colors -

"List of plants", restricted area.

Real Botanical not consulted

Real object - 1. promote book,

2. take Bot. supremacy from Harvard.

Not based on sound principles

Made nomenclature unstable -

50,000 changes. vs 2000

Claimed rigid system without exceptions.

Britt. himself violated it

Its tenets -

Priority - a farce - not back of 1753

Not held unless in Latin

How about Sanskrit -

Observed Latin coined names.

"Once a synonym always a syn."

Sensible rule -

Begin 1753 for species -

Accept species names in genus if

Follow priority within genus.

Viciana Congress -

All genera in common use not be

displaced by prior genera not used.

Excepted 500 genera from priority

Syn. rule not accepted -

All descriptions in Latin (a mistake)

most result of Britt. Genera Splitting

Utilities purpose of scientific research

To clarify

To arrange in genetic order

To make complex simple

To clear way for det. causes of natural

weakened idea of genetic relationship

To arrange in system that mind can grasp

Systems -

Linnaeus - based on stamens & pistils.

Benham & Hooker & predecessors

"Natural system" brings related species &

higher groups clear - genetic relations.

Family, sub-family -

Genus its baby to whole - even before

getting family & genus.

But of elevating sub-family

Personal names to new specific names.

These genera splitting

Butter do away with personal names.

81. Matric not taxonomy; personal

75 - Institutional jealousy

renamed species -

Schemes for making new names

78. adopting priority of a name

out of genus.

Syn. rule.

Not really a sub genus

unless a species to it.

Would invalidate many

Linnaean genera.

50. Torrey, Gray, Malag. B & Hooker

& most modern bot. usually regard

natural genera & subgenera, creating

a few genera so far as

51 must stand by one date -

76. unfair

79 Object of science -

Solve problems of genetic relations

to find value of plants to humanly

understand adaptation to environment.

To simplify for average mind

value of things - Torrey & Malag.

78. covering of names excluded.

79. Species non-integration

Genus - group of species -

#13 Detailed analysis of previous
origin of Genera & Species.

Earliest names -

- Common - various lang.
- Latin - scholarly -
- Descriptive subdivisive -
- cf. binomial personal names.

Linnaeus -

Arbitrary choice of names.

Priority rights -

- Compromise - "1753 correct names.
- 2. Names discarded as before that date
could be used for other genera & species.
- 3. Only Latin names recognized.
- 4. Priority applied up to 1753 only.

Critic of Amer. botanists.

Institutional jealousy

Development of Univ. 80
To make botanists respectable
Our attitude on certain genera affected
1. by our ignorance of ecology.

1. *Euph. vir. species* -

1. *Coniferales* -

Engelmann experienced + keen
vs. Rydberg + small - ignorant
(1) wrong splitting of *Pinus* -

(2) *Juniperus* - Rydberg
split on characters found on same plant.

2. *Asparagus* - Rydberg -

equally absurd

2. Raising *Tragan* subdiv. to generic rank.

Cymatoclelea + *Coccyzoides*

folly of segregation -

Claytonia - Robinson, Rydberg

Clematis + *Ranunculus* -

Sedum + *Cotyledon*

Prutton + base absurdity

Saxifraga

3. Making species out of local diff.

Prunella, *Ribes*

Asparagus *lentiginosus*

just variety acc. to climate

Long analysis -

cf. Greene's 500 species of *Eriogonum*

Species should be varietal -

no glory

Distinguishing Genera & species.

(1)

My idea of species & genera from Revelation?

my information questioned

Matter of individual opinion

Comes only by observation & study.

Hylogradation?

Foolish remark that all species & genera intergrade.

Downport wrong.

my wide experience & conclusion -

1. generally not intergrade.

2. A few in flux.

Illus - "If you go -"

Restatement -

(1) the theory - - -

(2) however - manifest fact -

a. the fact that - - - minor diff.

b. That capable botanists - essential diff.

Recent eruption

in early history

All through bot. hist. - - -

It appears that diff. families vary - - -

Euphorbia -

Gray tree -

~~Perhaps~~ Jepson

Turnell -

Blake -

Perhaps the most remarkable, Cont. 10

Another valuable -

Stried in my work -

All this careful & conscientious research is bringing us nearer a proper conception of relationships.

The most disrupting & pernicious tendency is that of failing to note the family relationships of exceptional cases or freaks. The great herbaria -

As I have pointed out in my Contributions from

6; 1894 to 1934 it is the primary purpose of Systematic Botany to organize the vast material into an outline simple enough for the mind to grasp. Therefore it is essential that the genera be as few as possible, and preferably be reduced to varieties. ^{the same} Sys. Bot. has been evolved. - -

12:35 13:77 16:49 In early days - and there should be no effort - - -

Personal ambition to have one's name attached to a genus has no place in the work of true scientist.

Notes on *Erythra elegans* Franceschi

First noted & named by Franc. as a new species, when he offered small seedlings in his catalogue about 1902[?]. First described & published by Dr. Beccari from material sent him by Franc. in "Palme Americane" Trebbia Vol II in 1907 as a valid species.

The original type plant was in the garden of a Mr. Buddington on College St. Los Angeles near the Sisters Hospital. It was planted in the 80's as a small seedling from John Rocks Mersemer's at San Jose.

Beccari's description is in error as to the petioles which he calls smooth. He had only a leaf from one of Franceschi's young plants. The petioles

Salt Lake City, 1852.

Ferns of the West.

28 pp., glossary & Index. 50¢
61 ~~the~~ copies on hand

The Willow Family of the Great Plateau.

Salt Lake City, 1908. 34 pp. blank pages for notes. 50¢ - 18 copies

Life Zones (see Cont. 10); Key to Genera; Poplar, Aspen, Cottonwood & Key to Species

Montane Botany notes -

Montana University, Mar. 1910. 75 pp. 7 plates \$1.00 - 55 copies -

New Species; 11 pls.

Astragalus (Revision of North American Species)

Revision of North American Species. Salt Lake City 1923 - 326 pp. 78 plates. 132 ~~copies~~ ^{plates}
Former unbound sheets (500) have now been bound (sewed to open flat) in heavy paper with cloth back. \$5.25

Contributions to Western Botany Nos. 1-6, out of print.

Published in Zool. Vol. II-IV, 1891-1894. Total about 120 pages. If enough orders are received, these could be reprinted as one volume, ~~for~~ ^{at} \$1.50.

Cont. #1. 7 pp. New Plants from Arizona, Utah & Nevada - 1891. and California ~~Flora~~

Cont. #2. ^{16 pp. 1891} Utah plants: new species & notes. ^{16 pp.} 70% are n. sp.

Cont. #3. ^{22 pp. 1892} Astragalus notes; detailed field notes on Cercocarpus ledifolius & plants as indicators of certain minerals in soil disproved. names of Utah localities. 22 pp.

Cont. #4. 32 pp. 1893. Astragalus notes 16 pp. 71. Sp. *A. caninus*, *A. Wetherillii*, *A. cicadae*, *A. Breweri* Gray var. *latus*, + var. *sulcatus*, *A. fasciatus* Gray var. *angustus*; Notes on *Neillia* (now *Physocarpus*); *Cynophylus* & *Caloptera* (Coulter & Rose) criticized with plates; *Zauschneria*, *Dodecatheon*, *Eremocrenium*, nov. gen.; plate of *Cynophylus* & *Eremocrenium*.

Cont. #5. 28 pp. 1893. Revision of ~~the~~ *Aquilegia* no. of Mexico; Notes on *Townsendia* (6 pp.); New species: *Thelypodium elegans*, *Caulanthus crassicaulis* Nelson var. *glaber*, *A. paphragmenus*, *A. Purshii* Douglas var. *tenellus*, + var. *longilobus*, *A. prostratus*, *A. sinuatus*, *Potentilla* (Druce) *Kingii* var. *incerta*, *Fraxinea speciosa* Douglas var. *scabra*, *Emmenanthe foliosa*, *Phacelia pinnatifida*, *Gilia penstemonoides*, *Penstemon confusus*, *P. densatus* var. *pedicellatus*, *Eriogonum rubiflorum*, *E. bicolor*, *E. subuliforme* var. *andersonii*.

Cont. #6. 9 pp. 1894. The Navajo Basin; New Species: *Phlox albomarginata*; Systematic Botany (6 pp.); Closest botanists vs field botanists, accurate description, none nomenclature.

Anna, Anna purposefulrrryyrryy

#1 *Abutilon* ~~*Miconia*~~ *coppenensis*, *Abutilon* *sophoroides*, *Fraxina* *Utahensis*,
Cercocarpus *arizonicus*, *Cynopteris* *megastachya*, *Lophamia* *gilensis*,
Eragrostis *flexilis*, *Santhya* *elata*, *S. alba*, *Thelypodium* *neglectum*,
Diastylis *aristata*, *Sidalcea* *calycosa*,

8. N. Sp^{gr}! - *Astragalus salmonis*, *A. socalypis*, *A. lagunensis*, *Lupinus pinetorum*, *L. magnificus*, *L. esculentus*, *Peucedanum nevadense* var. *capulatum*, *P. Juniperinum*, *P. Argus*, *P. scopulorum*, *Cotyledon saxosum*, *Oenothera biflora*, *Amisckia carnosa*, *Cymopterus calceareus*, *C. filitatus*, *Abronia angulata*, *Psamptrophus microcephalus*, *Eriogonon porphyreticus*, *Baileya nervosa*, *Yucca ochroleuca*, *G. calcearia*, *Penstemon subdus*, *Pedicularis albomarginata*, *Orthocarpus columbianus*, *Eriogonum stokesii*, *Antirrhynum draconis*, *Leontodon Marteni*, *Arabis diffusa*, *Arabis glaucovalvula*; (Nov. Gen.) *Argonia*, *Argonia dysodioides*.

7 pages Cont. # 1 Reprint Zoe Vol. II, Apr. 1891

2. New Plants from Arizona, Utah & Nevada - 6 pp.

Reprint Zoe Vol. IV. #4. Feb. 21, 1894

Systematic Botany - 6 pp.

(see Cont. # 6 where this belongs)

Inaccuracies of earlier "plant botanists"

Necessity of field observation & accurate description.

Nomenclature & the rights of collectors.

P. 575 Amer. Naturalist - Aug. 1883.

Edited by Prof. C. E. Bessey, Amer. J. 5 pp

~~Botany~~

1. New Plants from Calif. & Nevada etc. - 1 p.

Thelypodium neglectum, *Sisymbrium acuticarpum*, *Sidalcea calycosa*.

Cont. # 2.

16 pp.

New Species & Notes

Utah Plants - Zoe Vol. II. #3

Chionella Palmerana

A. argillosa

Begonia glauca

Reprint Zoe Vol. II. #3

Astragalus Coltoni

A. filiformis

Alnus venusta

Reprint Zoe Vol. II. #3

Astragalus Asclepiadoides

A. decipiens

Verbena scopulorum

Nepenthes albonervata

A. Sabulorum

Penstemon

Cymopterus

Veronica scopulorum

A. Haydenianus Gray var. major

A. Haydenianus

Cymopterus

Veronica scopulorum

A. " 22 pages -

A. " 22 pages -

Cymopterus

Veronica scopulorum

12 pp. *Astragalus nalis* -

Detailed field notes on *Cercocarpus ledifolius* Nutt. 3 pp.

Plants as indicating minerals in soil; - dispraved.

Names of Utah localities.

Cont # 3.

Zoe Vol. II, #4. Jan. 1893

32 pp.

Cont. # 4.

Zoe Vol. II, #1, Apr. 1893

reprint May 1893.

Astragalus - 16 pp. - n. sp.

Neillia - 7 pp.

(now *Physocarpus*)

Cymopterus (Coulter & Rose) & *Colaptes*, criticized (with plate) 4 pp.

Zauschneria, *Doderkatheria*, *Eremocrocinum* (with plate)

28 pp.

Cont. # 5.

Zoe Vol. II, #3. Reprint Nov. 14, 1893

Revision of Amer. species *Aquilegia* north of Mexico. 6 pp.

Notes on *Lawsonia* - 6 pp.

Notes & New Species

17 pp.

15?

names or numbers

9 page.

Caut. #6. For Vol. IV, #4. Reprint Feb. 21, 1894.

4. 2. 5.

The Navajo Basin.

Same New Species. - Phlox + ¹¹⁾ ¹²⁾ ¹³⁾ ¹⁴⁾ ¹⁵⁾ ¹⁶⁾ ¹⁷⁾ ¹⁸⁾ ¹⁹⁾ ²⁰⁾ ²¹⁾ ²²⁾ ²³⁾ ²⁴⁾ ²⁵⁾ ²⁶⁾ ²⁷⁾ ²⁸⁾ ²⁹⁾ ³⁰⁾ ³¹⁾ ³²⁾ ³³⁾ ³⁴⁾ ³⁵⁾ ³⁶⁾ ³⁷⁾ ³⁸⁾ ³⁹⁾ ⁴⁰⁾ ⁴¹⁾ ⁴²⁾ ⁴³⁾ ⁴⁴⁾ ⁴⁵⁾ ⁴⁶⁾ ⁴⁷⁾ ⁴⁸⁾ ⁴⁹⁾ ⁵⁰⁾ ⁵¹⁾ ⁵²⁾ ⁵³⁾ ⁵⁴⁾ ⁵⁵⁾ ⁵⁶⁾ ⁵⁷⁾ ⁵⁸⁾ ⁵⁹⁾ ⁶⁰⁾ ⁶¹⁾ ⁶²⁾ ⁶³⁾ ⁶⁴⁾ ⁶⁵⁾ ⁶⁶⁾ ⁶⁷⁾ ⁶⁸⁾ ⁶⁹⁾ ⁷⁰⁾ ⁷¹⁾ ⁷²⁾ ⁷³⁾ ⁷⁴⁾ ⁷⁵⁾ ⁷⁶⁾ ⁷⁷⁾ ⁷⁸⁾ ⁷⁹⁾ ⁸⁰⁾ ⁸¹⁾ ⁸²⁾ ⁸³⁾ ⁸⁴⁾ ⁸⁵⁾ ⁸⁶⁾ ⁸⁷⁾ ⁸⁸⁾ ⁸⁹⁾ ⁹⁰⁾ ⁹¹⁾ ⁹²⁾ ⁹³⁾ ⁹⁴⁾ ⁹⁵⁾ ⁹⁶⁾ ⁹⁷⁾ ⁹⁸⁾ ⁹⁹⁾ ¹⁰⁰⁾ ¹⁰¹⁾ ¹⁰²⁾ ¹⁰³⁾ ¹⁰⁴⁾ ¹⁰⁵⁾ ¹⁰⁶⁾ ¹⁰⁷⁾ ¹⁰⁸⁾ ¹⁰⁹⁾ ¹¹⁰⁾ ¹¹¹⁾ ¹¹²⁾ ¹¹³⁾ ¹¹⁴⁾ ¹¹⁵⁾ ¹¹⁶⁾ ¹¹⁷⁾ ¹¹⁸⁾ ¹¹⁹⁾ ¹²⁰⁾ ¹²¹⁾ ¹²²⁾ ¹²³⁾ ¹²⁴⁾ ¹²⁵⁾ ¹²⁶⁾ ¹²⁷⁾ ¹²⁸⁾ ¹²⁹⁾ ¹³⁰⁾ ¹³¹⁾ ¹³²⁾ ¹³³⁾ ¹³⁴⁾ ¹³⁵⁾ ¹³⁶⁾ ¹³⁷⁾ ¹³⁸⁾ ¹³⁹⁾ ¹⁴⁰⁾ ¹⁴¹⁾ ¹⁴²⁾ ¹⁴³⁾ ¹⁴⁴⁾ ¹⁴⁵⁾ ¹⁴⁶⁾ ¹⁴⁷⁾ ¹⁴⁸⁾ ¹⁴⁹⁾ ¹⁵⁰⁾ ¹⁵¹⁾ ¹⁵²⁾ ¹⁵³⁾ ¹⁵⁴⁾ ¹⁵⁵⁾ ¹⁵⁶⁾ ¹⁵⁷⁾ ¹⁵⁸⁾ ¹⁵⁹⁾ ¹⁶⁰⁾ ¹⁶¹⁾ ¹⁶²⁾ ¹⁶³⁾ ¹⁶⁴⁾ ¹⁶⁵⁾ ¹⁶⁶⁾ ¹⁶⁷⁾ ¹⁶⁸⁾ ¹⁶⁹⁾ ¹⁷⁰⁾ ¹⁷¹⁾ ¹⁷²⁾ ¹⁷³⁾ ¹⁷⁴⁾ ¹⁷⁵⁾ ¹⁷⁶⁾ ¹⁷⁷⁾ ¹⁷⁸⁾ ¹⁷⁹⁾ ¹⁸⁰⁾ ¹⁸¹⁾ ¹⁸²⁾ ¹⁸³⁾ ¹⁸⁴⁾ ¹⁸⁵⁾ ¹⁸⁶⁾ ¹⁸⁷⁾ ¹⁸⁸⁾ ¹⁸⁹⁾ ¹⁹⁰⁾ ¹⁹¹⁾ ¹⁹²⁾ ¹⁹³⁾ ¹⁹⁴⁾ ¹⁹⁵⁾ ¹⁹⁶⁾ ¹⁹⁷⁾ ¹⁹⁸⁾ ¹⁹⁹⁾ ²⁰⁰⁾ ²⁰¹⁾ ²⁰²⁾ ²⁰³⁾ ²⁰⁴⁾ ²⁰⁵⁾ ²⁰⁶⁾ ²⁰⁷⁾ ²⁰⁸⁾ ²⁰⁹⁾ ²¹⁰⁾ ²¹¹⁾ ²¹²⁾ ²¹³⁾ ²¹⁴⁾ ²¹⁵⁾ ²¹⁶⁾ ²¹⁷⁾ ²¹⁸⁾ ²¹⁹⁾ ²²⁰⁾ ²²¹⁾ ²²²⁾ ²²³⁾ ²²⁴⁾ ²²⁵⁾ ²²⁶⁾ ²²⁷⁾ ²²⁸⁾ ²²⁹⁾ ²³⁰⁾ ²³¹⁾ ²³²⁾ ²³³⁾ ²³⁴⁾ ²³⁵⁾ ²³⁶⁾ ²³⁷⁾ ²³⁸⁾ ²³⁹⁾ ²⁴⁰⁾ ²⁴¹⁾ ²⁴²⁾ ²⁴³⁾ ²⁴⁴⁾ ²⁴⁵⁾ ²⁴⁶⁾ ²⁴⁷⁾ ²⁴⁸⁾ ²⁴⁹⁾ ²⁵⁰⁾ ²⁵¹⁾ ²⁵²⁾ ²⁵³⁾ ²⁵⁴⁾ ²⁵⁵⁾ ²⁵⁶⁾ ²⁵⁷⁾ ²⁵⁸⁾ ²⁵⁹⁾ ²⁶⁰⁾ ²⁶¹⁾ ²⁶²⁾ ²⁶³⁾ ²⁶⁴⁾ ²⁶⁵⁾ ²⁶⁶⁾ ²⁶⁷⁾ ²⁶⁸⁾ ²⁶⁹⁾ ²⁷⁰⁾ ²⁷¹⁾ ²⁷²⁾ ²⁷³⁾ ²⁷⁴⁾ ²⁷⁵⁾ ²⁷⁶⁾ ²⁷⁷⁾ ²⁷⁸⁾ ²⁷⁹⁾ ²⁸⁰⁾ ²⁸¹⁾ ²⁸²⁾ ²⁸³⁾ ²⁸⁴⁾ ²⁸⁵⁾ ²⁸⁶⁾ ²⁸⁷⁾ ²⁸⁸⁾ ²⁸⁹⁾ ²⁹⁰⁾ ²⁹¹⁾ ²⁹²⁾ ²⁹³⁾ ²⁹⁴⁾ ²⁹⁵⁾ ²⁹⁶⁾ ²⁹⁷⁾ ²⁹⁸⁾ ²⁹⁹⁾ ³⁰⁰⁾ ³⁰¹⁾ ³⁰²⁾ ³⁰³⁾ ³⁰⁴⁾ ³⁰⁵⁾ ³⁰⁶⁾ ³⁰⁷⁾ ³⁰⁸⁾ ³⁰⁹⁾ ³¹⁰⁾ ³¹¹⁾ ³¹²⁾ ³¹³⁾ ³¹⁴⁾ ³¹⁵⁾ ³¹⁶⁾ ³¹⁷⁾ ³¹⁸⁾ ³¹⁹⁾ ³²⁰⁾ ³²¹⁾ ³²²⁾ ³²³⁾ ³²⁴⁾ ³²⁵⁾ ³²⁶⁾ ³²⁷⁾ ³²⁸⁾ ³²⁹⁾ ³³⁰⁾ ³³¹⁾ ³³²⁾ ³³³⁾ ³³⁴⁾ ³³⁵⁾ ³³⁶⁾ ³³⁷⁾ ³³⁸⁾ ³³⁹⁾ ³⁴⁰⁾ ³⁴¹⁾ ³⁴²⁾ ³⁴³⁾ ³⁴⁴⁾ ³⁴⁵⁾ ³⁴⁶⁾ ³⁴⁷⁾ ³⁴⁸⁾ ³⁴⁹⁾ ³⁵⁰⁾ ³⁵¹⁾ ³⁵²⁾ ³⁵³⁾ ³⁵⁴⁾ ³⁵⁵⁾ ³⁵⁶⁾ ³⁵⁷⁾ ³⁵⁸⁾ ³⁵⁹⁾ ³⁶⁰⁾ ³⁶¹⁾ ³⁶²⁾ ³⁶³⁾ ³⁶⁴⁾ ³⁶⁵⁾ ³⁶⁶⁾ ³⁶⁷⁾ ³⁶⁸⁾ ³⁶⁹⁾ ³⁷⁰⁾ ³⁷¹⁾ ³⁷²⁾ ³⁷³⁾ ³⁷⁴⁾ ³⁷⁵⁾ ³⁷⁶⁾ ³⁷⁷⁾ ³⁷⁸⁾ ³⁷⁹⁾ ³⁸⁰⁾ ³⁸¹⁾ ³⁸²⁾ ³⁸³⁾ ³⁸⁴⁾ ³⁸⁵⁾ ³⁸⁶⁾ ³⁸⁷⁾ ³⁸⁸⁾ ³⁸⁹⁾ ³⁹⁰⁾ ³⁹¹⁾ ³⁹²⁾ ³⁹³⁾ ³⁹⁴⁾ ³⁹⁵⁾ ³⁹⁶⁾ ³⁹⁷⁾ ³⁹⁸⁾ ³⁹⁹⁾ ⁴⁰⁰⁾ ⁴⁰¹⁾ ⁴⁰²⁾ ⁴⁰³⁾ ⁴⁰⁴⁾ ⁴⁰⁵⁾ ⁴⁰⁶⁾ ⁴⁰⁷⁾ ⁴⁰⁸⁾ ⁴⁰⁹⁾ ⁴¹⁰⁾ ⁴¹¹⁾ ⁴¹²⁾ ⁴¹³⁾ ⁴¹⁴⁾ ⁴¹⁵⁾ ⁴¹⁶⁾ ⁴¹⁷⁾ ⁴¹⁸⁾ ⁴¹⁹⁾ ⁴²⁰⁾ ⁴²¹⁾ ⁴²²⁾ ⁴²³⁾ ⁴²⁴⁾ ⁴²⁵⁾ ⁴²⁶⁾ ⁴²⁷⁾ ⁴²⁸⁾ ⁴²⁹⁾ ⁴³⁰⁾ ⁴³¹⁾ ⁴³²⁾ ⁴³³⁾ ⁴³⁴⁾ ⁴³⁵⁾ ⁴³⁶⁾ ⁴³⁷⁾ ⁴³⁸⁾ ⁴³⁹⁾ ⁴⁴⁰⁾ ⁴⁴¹⁾ ⁴⁴²⁾ ⁴⁴³⁾ ⁴⁴⁴⁾ ⁴⁴⁵⁾ ⁴⁴⁶⁾ ⁴⁴⁷⁾ ⁴⁴⁸⁾ ⁴⁴⁹⁾ ⁴⁵⁰⁾ ⁴⁵¹⁾ ⁴⁵²⁾ ⁴⁵³⁾ ⁴⁵⁴⁾ ⁴⁵⁵⁾ ⁴⁵⁶⁾ ⁴⁵⁷⁾ ⁴⁵⁸⁾ ⁴⁵⁹⁾ ⁴⁶⁰⁾ ⁴⁶¹⁾ ⁴⁶²⁾ ⁴⁶³⁾ ⁴⁶⁴⁾ ⁴⁶⁵⁾ ⁴⁶⁶⁾ ⁴⁶⁷⁾ ⁴⁶⁸⁾ ⁴⁶⁹⁾ ⁴⁷⁰⁾ ⁴⁷¹⁾ ⁴⁷²⁾ ⁴⁷³⁾ ⁴⁷⁴⁾

Systematic Botany (see under Cont. #1) 5 pp

Count #

Proc. Cal. Acad. Sci. Series 2, Vol. I
 Feb. 2, 1895

Oct. 3, 1895

1. New Species & Notes ^{how many} 80 pp. ^{95 min. jar} (How describe?)
~~Notes on Astragalus~~ — ^{on gen.} Count

2. Nomenclature & Botanical Systems - 50 pp. P. 82
² "The Railroading of Brittonian system thro' H.F.S. 14 yrs ago.

Inadequacy of its priority rules.
 Mistake of "Cusca synonym always a synonym."
 — The Latin rule of Vienna Congress.
 — Genera splitting.

Systems -

Object is simplification -
 Linnaeus' system based on stamens & pistils - idea of genus.
 Bentham & Hooker -
 "natural system"

Family, sub-family, genus, subgenus, species.
 Evils of elevating sub-families -

Reason for splitting genera - to attach personal names.
 Confusion of genera, species & varieties

3. Presidential Address - Wlsh Natl. Hist. Soc. Apr. 7, 1900.

"The Factors of Climatic & Geographical Distribution" 3 pp.

I. External in order of value

1. Relative humidity
2. Temperature

3. Wind movement, most effect on distribution of species.

4. Soil - small effect chemically - effect on growth of plants.

II. Internal

1. Plant structure
2. Organs
3. Vitality

4. Shape & size of plant

The effect upon Distribution of species affected by variations of humidity & temperature; seed carriers, such as wind, streams & animals; topographical barriers; and internal devices of plant structure to resist climatic changes.

4. Monograph of the No. Amer. Umbelliferae - (Carter & Rose)

Excellent except for genus splitting 5 pp.

7. Sp. #12

Arabis Cobrensis

7. Sp. ##### 95+

n. var. #####

65+

Thelypodium deserti n. gen.?

" *Diehlii*

" *longifolium* var.

Catalinae

Lesquerella Cicerchii

Sphaeralcea caespitosa

Sidalcea No-Mexicana var.

Diehlii

Divisions of *Cymopterus*, *Pseudodanum*, *Cogswellia*

#13

7. Sp. ##### 15

n. var. ##### 10

n. gen.

Lilia Phlox, *Bryntegia*,
Phlegobothrys, *Lupinus*, *Asrag*,
Philadelphus, *Cogswellia*, *Cymopterus*,
Leptolaena, *Townsendia*,
Perithonium,

#14

Notes on *Epercampus*

7. Sp. ##### 17

n. var. ##### 15

Cryptantha n. sp.

C. setigera, *brachymeris*

Calamagrostis n. var.

C. microantha var. *Sierrae*

Aristida

Sporobolus capillipes var. *delicatulus*, *S. confusus* var. *aberrans*
Stipa Parashii var. *depauperata*
Muhlenbergia Nuttallii + *Madrensis* + *Diehlii*
Agrostis filiculmis
Bouteloua aristidaefolia var. *Arizonae*

Poa

Meatchia

Agropyron

Sitanion (*Elymus*)

Lilacae

Calochortus Nelsoni, and var. *ambiguus*
" *speciosus*

Archidaceae

Schoenocaulon zigzag
Camassia leichtlinii var. *Nelsoni*
Druidophyllum Cleburnii
Asrag *Peupercii*

Arabis

... *A. Brucei* n. sp.

7 n. sp. 4 n. var.

A. salubris

A. Bridgieri, *A. scholosa* var. *frigida* + var. *colorata*
A. Diehlii, *A. pulchra* var. *Mendocina* + var. *pygmaea*
Cymopterus cornegalii var. *sesquipedalis*

Jan. 20, 1910

- New species & notes - *Rumex* 16 pp. Proof that *Lipotesium multifidum* is a new Entom. count be a distinct species.
 Mr. Rose on the Umbelliferae - 4 1/2 pp.
 Western Amer. Berries - by R. T. Butler - 2 pp. P. 22
 Nylaginaceae by Standley. P. 24
 Two species made from same plant.
 Forest Trees of the U.S. by A. L. Britton.
 Gray's Manual, 7th Edition, Robinson & Fernald. P. 26-33
 Mr. Heller + Nomenclature by Mr. Heller in M. by Heller + Nomenclature P. 40
 Flora of Washington - Prof. Piper. P. 43 -
 Flora of Colorado - Rydberg. P. 45
 The Origin & Distribution of the Flora of the Great Plateau. an address by M. E. J. before Utah Acad. of Sciences. P. 46-62
 Geology
 Life Zones & Zonal plants - charts 63-68.
 Larrea, Juniper & live oak, deciduous oak, spruce & fir.
 Plant Formations
 Lupinus - Heller in McKimbergia.
 Cuscuta - Rydberg. P. 69
 A Flora of California - W. H. Jepson P. 71-76
 mostly prairie - defined of most Eastwood.
 Genera & Species - P. 77 - origin of Bot. system -
 Rules of 1753 - Purpose of these scientists.
 Priority, synonym, Latin descriptions
 Need of simplicity in keys. - Gray's & Watson's best
 Genus splitting, institutional jealousy.
 Ecological varieties. (many illustrations) n.p. How many
 Grass notes
 Commission on the Grasses of
 Upper Flora of Washington
 notes on *Eriogonum*
Cryptantha 2 n. sp.
 Additions to Montana Botany Notes
 mosses, Hepaticae, Lichens, Fungi, Higher Plants.
 Southern Botany of Rydberg + *Stemodia* Bot. Aristida
 McKimbergia
 Poa
 Green & Lis Species
 The Columbia Basin - *Flashed Lake region*; the solution of their botanical
 + geological problems
 Systematic Arrangement for Coleopterists.
 P. 21 Cyperaceae - So. Cl. n.p.
 nelson *Liliaceae*
 2 n. sp. *Calamagrostis*
Orchidaceae + *St.*; *Lupinus*; *Antirrhinum* n.p.
 2 n. sp. *Dracopis*

N. 3 fr. *Yucca brevifolia*
7. 10. 11

P. 12. n. gen. *Pomastaphyllum* *Procilicium*
n. sp. *Euphorbia strimmaronis*
Dalea angulata
Amorpha ovalis
Coccoloba Callamai P. 16
Astragalus aberrans
Lilium Fairchildii

P. 75

53 pages Cont. #16.
no index.

Feb. 17, 1930

Botanizing in Arizona - Sept. & Oct. 1929 74 P. 1.
List of 1929 Plants - P. 10. *Termin* 4 copies

New Species & Notes - P. 32.

to Yucca

Asparagus & Rydberg P. 35

Captain ^{Edw.} Bishop & Major Powell's Colorado trip. P. 37.

List of Herbaria where Types are located P. 38.
The Fairchild lily - P. 40 (Chenium)

Corrections to Cont. #15 P. 42
Overlapping species of Mex. & U.S.

Botanists whom I have known. 43-49

C. G. Pringle P. 43. *run in A.*

Asa Gray P. 44

Elihu Hall P. 45

Harry N. Patterson P. 46

S. B. Parich's passing P. 46

A. L. Siler P. 46
P. 47

J. E. Johnson "

John Reading

Sereno Watson P. 47

Cusick, Joseph Howell, Lemmon, Dr. C. R. Anderson,
Mrs. Austin, Mrs. Ames, Dr. Albert Kellogg,
Dr. Harkness, Dr. Behr.

Scribner, C. C. Parry, Arcutt, Cleveland.

The "Push" as Peonizers. P. 47

31 pages. Cont. #17 Sept. 3, 1930

Botanical Reminiscences - P. 1 72 copies

Dr. Geo. Engelmann

C. C. Parry P. 3

Arcutt, Cleveland, P. 6.

"The Push"

Moulton & Standley's Astragalus

Botanizing in Texas, 1930 P. 8.

"Sheeping out" the range & growth of poisonous weeds. P. 9

A Driving around the Circle - Apr. 1930
Arizona, Utah, Nevada, Oregon, Nevada & Lane.

Cont. #17 (cont)

Localities in Lower Calif. P. 13.

Localities on Texas trip.

" in Survey around Circle.

Ecological notes Jones. P. 17

Notes on ~~New Species~~ P. 18.

The Palms -

Allium Corgi, Nothoscordum Texanum, Caribanthus
Yucca elc - Innumera, Stanleya annua, Lupinus
Platanophylus, Chenopodium capillare,
Mertensia scroza, Phacelia Alvordensis,
Bahia depressa, Stephanomeria minima.

Plate.

1. Marcus E. Jones at 60.
2. Miss Green, Mrs. Jos. Clemens & Marcus E. Jones
on summit of Mt. Douglas Peak, Montana.
3. Judge Ben Johnson ^{alt} ap. P. 6 who?
J. E. Johnson #16:47
C. F. Becker. see P. 7.
4. Dr. Geo. Vasey 18:
5. Dr. Wm. A. Sitchell
Miss Alice Eastwood - see P. 8. Calif. West. Se.
6. *Erythra Lorentensis*, n. sp. ap. P. 7. see P. 29, 103
7. Mr. & Mrs. J. S. Brandegee. ap. P. 12. see P. 12
8. Dr. Geo. Engelmann. see Cont. 17, P. 1.
9. Borrego Ranch - ap. P. 88
10. Primavera Ranch, Sierra Giganta
11. S. B. Parish - see Cont. 16, P. 46.
12. Pelota Ranch, Lagunas - ap. P. 89. see P. 93
13. *Cereus Pringlei*, var. *Calvus*. ap. 96, see P. 110.
14. Oasis in Lagunas. ap. P. 97.
15. Irwin, L. C. ap. P. 100 see P. 99.
16. *Cereus Gummosus*. ap. P. 101.
17. Landing in Surf, Loreto. ~~ap.~~ P. 102
18. Loreto, Lower Calif. see P. 102
19. Sycamore Creek, Texas. ap. P. 106
20. *Erythra Armata*. ap. 107 see P. 28
21. Garzajar Ranch. ap. 108 see P.

22. *Cayuca haussk.* Sierra Gigante. See P. 105, 109

23. *Canotia Holacantha*

La Barranca -

See P. 115

24. *Fouquieria Burragei*, Pichilingua Island, R. C.
See P.

25. John Torrey. sp. P. 116 See P. 132

26. Hereno Watson sp. P. 117 16147

27. Asa Gray Cont. 16, P. 44

28. *Yucca Brevifolia*, var. *Wolfei*. sp. P. 125

Send Howard - full glass, brass
rings, glass maps

Scientific Discussions that
should be printed.
See Dr. Stanford.

Very important - only one essential

cf. R 55 for style

3784

Nissoliodes cylindrica N. Gen. Nnd N. Sp. No. 27223. Guadalajara Mex.

Nov. 27 1931. a moist field, creeping and rooting, with the habit of ~~Desm.~~
Desmodium. ~~Stems~~ filiform, 2-4 ft. long, with long internodes. Stipules
green, rigid, nerved, acerose, 2-4 mm. long. Leaves small, 1-2 inches long,
of three leaflets which are elliptical, 1-1.5 cm. long, thin, venose, rounded
at both ends, entire and without stipules, puberulent, on the rachis about
as long as the leaflet, the terminal leaflet about 2-3 mm. long from the
pair, darker above and veiny. Flowers in slender axillary racemes six inches
long, and in fruit separated by about 1 cm. and subtended by triangular
bracts 1-2 mm. long. Pedicels reflexed in fruit and 6 mm. long. Calyx about
1 mm. long, triangular in longitudinal section and with triangular lobes as
as long as tube. Flowers apparently very small. Fruit filiform, 1-2 inches
long, of six joints almost cylindrical but a little constricted at the
joints, very slightly flattened laterally, longitudinally striate and very

shortly, ~~crisp-hairy~~; each joint about ~~1.5~~ cm. long by 1 mm. thick, with
rather prominent but ^{not} winged sutures, all alike; no wing on the terminal
one but it is acuminate, shortly stipitate. Flowers absent.

Opuntia.

In a trip to Mountain Pass Calif. March 3-4 I found no cactus to speak of till 38 miles east of Barstow where some *echinocarpa* and *fasciculata* came in in a small area. From there to ~~Yucca~~ 11 miles from Baker *echinocarp* and *fasciculata* came in strong in a wash and continued east to and through Mountain Pass. At that place and at Yucca Grove there was very much *cylindropuntia* all over the area where the Yuccas grew. the elevation was 3500 to 5500 ft. alt. I did not see any flat *Opuntias* till I went out from the pass at the edge of the mountain Clark Mt. and there some *basilaris* came in and on rocky limestone slopes was very much *O. rhodantha*, spreading over the ground in patches each plant sending out prostrate branches having 6-10 joints each and tending to be red but no flowers nor fruit.

Above Wheaton spring about 2 miles was a very little *O. chlorotica* on granite rocks and rocky slopes. When out this plant shows green flesh which probably gave it the name *chlorotica*, it is erect and stout and joints usually circular and very spinose. no flowers nor fruit. The elevation is about 3000 ft. alt. The plants are usually 3-4 ft. high. I also got *Mamillaria deserti* at the Pass.

Yucca brevifolia.

Mr Wolfe of Santa Ana ranch called my attention to a small form of this plant at Mountain Pass and Yucca Grove 18 miles from there. There are many thousands of plants in these groves having the same characteristics namely small oblong-ovate heads about 6 inches wide and a foot long, sessile at the ends of the branches, the ^{white} flowers have linear-lanceolate petals about 2 inches long and 2 mm thick and the usual 6 stamens with globose anthers, they have the same carrion odor as in the type, and the leaves are 4-6 inches long and very sharp-edged and with a short black spine at the ends, the stems are more slender than in the type of *brevifolia* and have many more slender branches and with trunks rarely 3 feet diameter though erect

I propose the name variety *Wolfei* for this plant.

Streptanthus ~~Wrightii~~ *carinatus* Wright. *S. arizonicus* Watson. It is evident that these two species cannot be kept distinct, and it is hardly likely that *S. platycarpus* is distinct. The amount of saccation of the base of sepals is very variable. The petal blade is oblanceolate and conspicuously purple-veined and the whole with a rather wide and hyaline margin to the base of the claws. The more robust specimens have the lower leaves conspicuously lyrate lobed, but smaller plants have all the leaves entire. Entire leaved forms fit with ^{Arizonicus} *S. carinatus*, from ~~Satin's~~ ^{Satin's} Arizona, no 28070. Forms that fit *carinatus* well are from Kent Tex. No. 28069, and Campbell's ranch Azucar Mts. Ariz. No. 28071 but among them are forms that fit as well with *Arizonicus*. The blades are quite variable in width. In case of the merging of the three species ~~platycarpus~~ *platycarpus* takes the name. For other synonyms see Greene's *Mogollonicus* ~~the~~. mentioned in my Contributions No. 15 page 25.

It is evident that certain species of *Streptanthus* must be merged in *Caulanthus* in order to clarify the two genera.

Scilla ^{Part 1, 1861}
allium crispum (Jepson) ^{11. Cal. 220 1922.} as *p. peninsulare* var.

There is much doubt about the identity of this species. Greene no doubt included it in his *A. dichlamydeum* for he describes the inner petals as serrate ~~a mistake readily made by casually looking at them.~~ Jepson is specific in his description, but refers it to *peninsulare* which he mistakes for *serratum* and who refers *A. amplexans* as a form of *serratum*, utterly ignoring Watson's characterization of *serratum* as resembling *acuminatum*. On looking at the flowers in bloom one finds that the inner petals are hyaline margined and with the margins beautifully crimped so as to appear as white dots to the naked eye. The leaves are one to a stalk and linear and the flowers are bright pink with the segments acuminate as in *serratum*. The bulbs are small as in *dichlamydeum* and propagate by division, and grow singly under live oaks from Bradley in the Salinas valley northward to Mt Hamilton. The Salinas valley plants grow in spongy soil on north slopes where it is wet in the spring, and the bulbs are deep-seated, and hard to dig up, and about $\frac{1}{2}$ inch diameter or less. The tendency in *Allium* to have serrate edges to petals comes out in Watson's description of *A. Californicum* but I have never seen any tendency in that direction nor are there any intergrades with this species. I hunted in vain for intergrades, though *serratum* grows near Taft Calif. which I collected some years ago.

A *dichlamydeum* as represented in herbaria has the crimson segments either oval or ~~xxx~~ oblong and acute and not acuminate and without serratum. This applies to specimens identified by Greene himself as his species. I think that Greene misspelled the name of his species. It should be *dichlamydeum*. It also is misspelled by Jepson. There is no use in perpetuating such blunders, under the assumption that they are truly Greek. It is the writer's opinion that Dr Greene's familiarity with Greek was mostly bluff. it was ^a bad in his early days to assume familiarity with Greek in the creation of Greek generic names which familiarity is still assumed by zoologists, but abandoned by botanists except in emergencies.

7852

Argemone ~~Purpurea~~ Rose. This is another of Rose's foolish species. Anyone collecting along the Uvalde-Eagle Pass road passes through acres of the usual white flowered species, and then gradually comes upon pink-flowered ones which as you go west pass into forms with almost black flowers being velvety purple-black, then a few rods away come in the lighter-colored ones, and white ones, a complete transition. There is nothing in the habit or growth ~~and~~ or appearance except this remarkable change in color. One is inclined at once to regard it as a good species because we do not know such color in Argemone, but it is only a form and nothing else. I gathered much seed of it to grow in the garden at home. This surprised me more than to find many white Eschscholtzias among the orange ones along the road at Cochise, ^{Arizona}. Recently there has arisen a great craze in New Mexico and Texas for perpetuating the California Poppy by planting the hillsides with it. So in a year or two the plant will be found much farther east than now. Its eastern limit is near Deming New Mexico, now.

Crossosoma Bigelovii Watson. In Watson's description of the species he winds up with the statement that the embryo characters do not conform to its reference to the *Paeoniaceae* or *Dilleniaceae*. This simply ephasiz~~es~~ the stress they used to lay on physiology in the past. No one who ever studied *Paeonia* and *Crossosma* in connection in the fresh could help seeing they are members of the same family and not belonging to the *Ranunculaceae*, and entirely out of place there. One is continually confronted with the query why Harvard so often blundered in things that everybody out go know. And one is equally amazed at the wonderful guesses Gray made when he had so little material on which to found his guesses. Harvard has always been short of material. In my judgment they are altogether too fussy about the quality of material they buy. It is well enough for old maids like Pringle to go down into Mexico and collect magnificent stuff, but such people never can be anything but dabblers in a flora. A person who makes it a rule never to collect any but the very best of material belongs in the asylum for the feeble minded. Often the entire flora is riddled by insects, and crack material is not obtainable. Such people miss many new species. Pringle spent ~~some~~⁵ years at Guadalajara and yet I went there and in less than a month got over a dozen new species. I would like to see the man who can go anywhere in Utah where I botanized and find half that many new species in a year.

This genus was published by name by Torrey and Gray in Emory's Rep. p. 143
^{at Dicks} where they stated that a figure of it would be given later in that report
 but it never was done, but in the Mexican Boundary Report p. 87 a full
 description was given referring to Emory's Rep as the place of first publi-
 cation, but there it was published as "Dicoria without description, and stat-
 ting that it was discovered in the drifting sands west of the Colorado" in Ar-
 izona. not since found. They state there that the bracts are accrescent and
 they draw them as plane, and give an entirely erroneous impression of the
 facts, the stamens are wrongly drawn the anthers being drawn as linear-
 sagittate and free, when in fact they are adhering at tip in flower, and bul-
 ge in the middle so as to make the appearance of an oval mass, and after
 anthesis they sometimes separate, and flare. The stamen tube is given correctly
 in the engraving as 5^a toothed within the main corolla which is linear-cune-
 ate in outline, and smooth and obconic and stipitate base. The outer invol-
 ucral bracts are not given correctly for they are explanate at maturity and
 oblong-linear and rather truncate at tip and 4-6 in number and very small.

Then come the floating bracts which are not manifest in flower except as ^{fruit flowers} very small and plane ones subtending the heads, two of which are opposed
 and form an oblate sphere in appearance since their edges touch. Normally
 there are three of these floating bracts, the outer one being appressed to
 the sides of the two others but containing or subtending a single free akene
 which tends to protrude ^{between} into the two other bracts. This akenee is oblong
 or corolla and 4-6 mm. long in fruit, and truncate at tip and without pappus, but
 has a broad and lacinate wing all around except at the tip. Within the heads
 and also within the floating bracts there are 6-12 sterile flowers attached
 to the slightly raised receptacle as stated above, each floating bract has
 a single fertile flower within. When the plant first comes into bloom
 the outer floating bract has a single ripe akene within it very early, but
 as the others develop the additional akenes appear as the bracts grow.

The name *Dicoria* is a poor one, it would have been better named *Dyschoria*

false Bug. Koris is used in the later Greek as a corruption for Choris, but the use of di. is unfortunate. The original name of Emory's Rep Diceris was a much better one than the one used.. Miss Eastwood was the first of the natural blunderers in making species out of this genus. ^{she} It was then copied by Kennedy and Blake, none of whom ever seems to have consulted the original description of the genus where they state that the bracts are accrescent. Ha. Had this been done several synonyms would have been avoided. The type of D. Brandegei is in flower from an early specimen and the bracts are not developed to speak of, but to make a species on this character is foolish as was done in the creation of D. Wetherilli, paniculata and Clarkae. The only specific character worth while seems to be in the shape of the leaves, which readily distinguishes canescens from Brandegei.

In my botanizing in Utah I hunted for 40 years for this genus and never found it as I thought

Dicoria. T. & G.

This genus was first published in Emory's rep. as *Giscomis* ^{by name} ~~and~~ and then a generic character and figure was published in the Mexican Boundary survey report and the name changed to *Dicoria*. The figure is not a correct one and the character of the bracts is not well given. There is no mention of the bracts being boat shaped and inclosing the akenes nor of the enlargin of the bracts with age... a casual inspection of the fruit would lead one to accept the 2-bug theory of the name's origin. since in full fruit there are ^{called} two or three opposed bracts inclosing the so-called bugs the akenes. frequently there are three bracts opposed., and the faulty description of *D. Brandegei* would lead one to think that it was a variant, but the type of *Brandegei* is a flowering plant hardly in flower and with the bracts rudimentary. A critical study of the genus as it grows shows.

Torrey and Gray describe the plant as 4 to 6 inches high, when in fact the plant is 3 to 4 ft. high and paniculate.

Supplementing what I have written about *Dicoria*. I will say that on Oct. 1st I took a trip to an extinct ^{Pitcairnia} volcano near Ludlow and found near Dodge station some 10 miles from Barstow large numbers of *Dicoria* in full bloom along the way and not one of them had a suspicion of an enlarged bract on the flowers though in full flower, and with some ripe fruit in each flower. On Oct. 22nd I took another trip to the same locality and found the plants in full fruit and all of them full of ripe fruit and with the enlarged bracts concave and boat-shaped, and most of them half an inch long, and covered by stalked glands exuding a gummy substance that was quite bitter to the taste. Most of the heads had two bracts opposed making a seeming laterally compressed head ovate head, each bract so concave as to enfold an akenes the stigmas of the akenes were two ^{or} ~~and~~ split to the base and deciduous. Once in a while there was a long stalked stigma forking at the tip between the two mature akenes as if a third akenes was about to develop. All the flowers had sterile staminate ones ^{among} ~~the middle~~ ^{among} them. The akenes were decidedly concave and with in curved edges and with the center of the outside full of stalked glands, though the rest of the akenes was smooth and shining. All akenes were truncate at tip.

A few days after going to Barstow I also took a trip to Whitewater to study the genus there, but I found the plants not yet in bloom nor any sign of enlarged bracts.

Miss Eastwood was the first to make the natural but monumental blunder of basing species of *Dicoria* on the size of the bracts when she created *D. forms of Brandegei* *Wetherilli* and *paniculata*. Then came Kearney with his *D. Clarkae* a form of *canescens*. Then Blake comes along in Tidestrom's flora of Utah and Nevada and copies both blunderers.

Oct 28th I took a trip again toward Whitewater and a few miles beyond I found all the plants in bloom and none with an enlarged bract on any of them. I found the plants all in bloom and none with an enlarged bract on any of them and most of them with one mature fertile seed in each head and that with no sign of having had any corolla but having a single forked stigma. The plants of this region seem to be a month later than those at Barstow. Though the elevation is the same. I notice also that the filament tube of the ~~anthers~~ ^{stamens}

the similar leaves of *carex* are not so tapering and elongated, and the normal leaves are also long-petioled with blade inclined to be rounded or ovate and crenate-toothed. The sac is quite variable and the wing of the achenes is cut into many notched teeth and is truncate above., the sterile flowers vary from 10 to 12 and have a campanulate or obconic and lobed corolla with 5 triangular lobes flaring and the staminal tube broken out into an oval form from the cells being connate at tip and with the sides separated, perisperm none and stigma caducous. The plants are 2-4 ft. high and divaricately branched branched and with very many filiform divisions. The staminal cells at length break away from each other and flare like a corolla and the deflated cells are concave and nearly linear.

It may be assumed by some that I have a secret hostility to Harvard because of my criticisms of Gray's lapses. I have stated over and over that I have always had the highest regard for the work of Gray and that I sympathize with him in his desire to complete his monumental flora of North America, but I never had any use for bossism in American botany either at Harvard nor anywhere else and I have always fought it. I look on the work of Gray in the same light as I would that of any other worker and I have no faith in the assumptions of superior knowledge that Gray was wont to exhibit. I now know that he was no Greek scholar and was continually making blunders in the gender of Greek nouns and in the manufacture of new Greek names. It is a well known fact that the Romans were very sloppy about the use of borrowed Greek names, and often incorporated them bodily into their own language just as some of our budding botanists blunder in the making of new names., among them may be noted Rose who knew little Latin and no Greek, Greene who could read Greek with difficulty and who professed to be a good Greek scholar but who could not properly describe his own new species, Watson who was a fair Latin scholar but knew little Greek, Britton who poses as a scholar but who creates such genera as *Utahia* without blushing, Rydberg who knew both Latin and Greek but who had no proper generic nor specific conceptions, and who made a botch of *Quercus* in his *Quercus* of *U. A.*

I have no doubt that had I not been a young and inexperienced man I would have broken with Gray early and defied him as Greene did, but I had a great

ends in an imitation corolla with 5 small lobes where the antheradnex off.
At first the anthers make a nearly globose ball coming out of the corolla
which ball is yellow before anthesis, letting out the pollen, and that the
anther then flares like the regulator on the oldtime steam engines and becomes
bowed out because the wells are not coherent. I notice also that the type
of *Dicoria Brandegei* is a young and immature one with the heads hardly in
bloom and therefore without the enlarged bracts which Kennedy gives to *D.*
Clarkae. It is a fact that the akenes in the genus develop consecutively and
this is why we find only one mature akene in *Brandegei*. Normally there are three.

On Nov. 7 I went again to Gabazon to examine *Dicoria*, and found the same
plants with two floating bracts developed into hemispherical boat shaped
ones about 1/4 inch long, but on going lower to near Palm Springs at about
sea level they plants were barely in bloom, much as in the case of the first
ones seen at Gabazon, a condition not expected.

On Dec. 29 I went again to Palm Springs & found all
the plants fully developed in fruit. They are normally 2-4 ft. high
with small bracts. I found 4-6 ft. with small bracts.
All annuals.

On Jan. 3rd. I went again to Palm Springs and east to Kane Spring and found
the plant along the way here and there and fully developed and in fruit
forming bushes 3-4 ft. high and widely panicled so that if they should get
loose at the root they would become tumble weeds like *Amarantus albus*, but the
bracts had begun to fall and leave the stems bare..

Had Gray known the habit of the plant to have opposed bracts forming a single
apparent ball he would have inclined to call the genus *didymocoris*. because
of the twin flowers being opposed.