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THE WILD FLOWER PRESERVATION SOCIETY OF AMERICA.

The increased interest in nature study developed within recent years, and stimulated by numerous illustrated books of a popular nature, has unfortunately endangered the existence of many ornamental wild plants that would otherwise have escaped public notice. The problem presented is how these depredations may be checked without seriously restricting the freedom or enjoyment of the nature-lover.

Local societies having this aim in view have been established in several places, and various articles on the subject have appeared in magazines and newspapers; these are all useful factors in arousing a healthy public sentiment against indiscriminate and thoughtless flower-picking. But it is evident that the successful prosecution of a campaign of this kind requires a central body which shall direct and inspire the work; and it also requires some official medium of publication. The organization of a national society along these lines, effected on April 23, 1902, while it represents to a certain extent the growth of popular sentiment, is the direct result of the remarks by Dr. F. H. Knowlton in his essay, "Suggestions for the Preservation of Our Native Plants," which was awarded the first prize in the recent competition held by the New York Botanical Garden with the income of the Caroline and Olivia Phelps-Stokes fund. A few paragraphs from the essay itself will serve as a partial explanation of the aims and objects of the Society:

"It seems to me that all legitimate effort that can be made for the conservation of the native flora is naturally divisible into two fields: First, the broader, higher plane of enlightened public sentiment regarding the protection of plants in general and; second, the immediate steps that must be taken to save certain of the more showy or interesting forms now threatened with extermination, The first is something we may reasonably hope for, even if it comes slowly; the second is a practical question that must be solved quickly or it will be too late. * * * The public

must be educated up to the point when it will be possible for them to enjoy the flowers and plants of field and forest without destroying them. They must be led to see that it is only selfishness which prompts the indiscriminate plucking of every bright-colored flower or shapely fern that attracts their eye. A walk afield, enlivened by the presence of flowers and birds, leaves behind a memory that may be cherished for years. The ruthless breaking up of this rounded symmetry of nature, simply for the gratification of the moment, leaves a void impossible to fill."

* * * *

The proposed fields of labor of the Society may be summarized as follows:

EDUCATION.—The primary and secondary schools afford abundant opportunity for missionary work. Let every teacher aim to impress on the pupils under his charge the beauty and value of plant life. Let him give some instruction in the differences between native species, many of which are rare or easily destroyed, and the introduced weeds, most of which are so sturdy and abundant that they will survive wholesale plucking.

MORAL SUASION.—Public sentiment can be influenced to a large extent by articles in newspapers and magazines, if the subject-matter is well presented. The establishment of a press bureau by the Society is expected to facilitate this work.

PUBLIC PARKS.—Many cities have set apart for public use and enjoyment various tracts of land distinguished for the beauty of their scenery or vegetation. This is one of the most effective means of preserving plants from destruction, and local chapters will be formed to work on this line.

LEGISLATION.—In some few instances it may be advisable to invoke such legislation as protects the Hartford fern in Connecticut. This, however, is a last resort, aid should only be employed in emergencies where all other measures for protection have failed.

FORESTRY.

President Benjamin Ide Wheeler, of the University of California, announces

a course of summer lectures on forestry at Idyllwild, Strawberry Valley, San Jacinto mountains, Riverside county, California, from July 29 to August 10, 1903. This will be the first school of forestry west of the Allegheny mountains, and the lectures will be given by Dr. W. L. Jepson, Prof. Arnold V. Stubenrauch, and (probably) Mr. Gifford Pinchot. The fee for the course will be six dollars.

C. C.

Cactus Connoisseurs would be the polite expansion of the initials heading this article, but Cactus Cranks is possibly the more common form used by an indifferent world when Cactus Collectors are referred to.

It is proposed to collect brief sketches of those whose names have been connected in the past with these fascinating plants, which in the end might be incorporated into an Encyclopaedia of Biography.

BRIGGS, MRS. MAUD M.:

Mrs. Briggs will be remembered by cactus fanciers from her having used the expression, in advertising her cacti, that she lived 'where they grow.' She was a florist who lived at El Paso, Texas, with a penchant for using and confusing the botanical names—which left her correspondents in delightful suspense as to what they might receive. Chihuahua dogs were favorite pets with her. In 1899 she reported a new *Mammillaria* which was to be named in her honor—but none are known to exist in scientific collections, and soon after she ceased to "live where they grow."—Or.

BRANDEGEE, MRS. KATHARINE:

A prominent character in the annals of West American botany, whose interest in cacti began soon after she ceased her career under the name of Mrs. Mary K. Curran. Many species have been described by her pen as a result of her own and her husband's explorations, chiefly identified with Lower California (as pertains to cacti) up to the present writing (1903).—Or.

CURRAN, MRS. MARY K.:

See Katharine Brandegee.

MAIN, MRS. F. M.:

In passing through Nogales, Arizona,

in 1899, I met this energetic woman, who after acquiring a substantial property in brick buildings, houses and lots, took to cactus collecting—as she frankly explained—for the money. The most of her collections were made in the vicinity of Nogales—mostly on the Sonora side, her expeditions extending probably the whole length of the Sonora railroad. *Mammillaria Mainae* commemorates her work and was undoubtedly obtained in the mountains of Sonora near Nogales—at least I was so informed by one of her assistants. She was reported to have been killed in a saloon fight in 1902 (an affair that would have been characteristic of the border town in which she lived), but the facts were that she died in Los Angeles, California, from an operation for cancer.—Or.

NICKELS, MRS. ANNA B.:

As a pioneer woman florist in the southwest, and the first woman C. C., Mrs. Nickels has won wide recognition and deserves more than passing notice. After years of correspondence, I had the pleasure of meeting her in 1902, at her son's home in San Luis Potosi—a woman over seventy, still an eager enthusiast, planning trips into new regions that would be a credit to the modern woman. Several species named in her honor have been introduced to the horticultural world through her labors and explorations, and one could listen for hours, unwearied, to accounts of her early expeditions. Unfortunately she has been more diligent in the use of the pick than of the pen, and much that she might have added to the world's store of useful and curious lore remains to be recorded by others, who may follow in her footsteps.—Or.

VACCINATION ASA LAWFUL MEN-
ACE TO LIFE AND LONGEVITY.

Most poisons leave the drug store with a death head on the label to warn life-loving Americans of danger in their use. Vaccine virus, on the other hand, goes out under protection of the law to indiscriminate use. In case of accident there is no redress. In several States there is a law requiring school children to be vaccinated but in no State does the law lay any pen-

alty upon the use of impure virus. And, indeed, there is no penalty which can restore a child's life and health or sufficiently reward it or its parents for their loss.

Is vaccination, then, dangerous? In reply we can ask ourselves another question, viz: Can the inoculation of anything be wholly free from danger? Whatever enters the blood through the stomach must pass an array of sentinels which are set to detect and destroy all that is hostile to pure blood. One of the most potent of these is the gastric fluid which is a powerful antiseptic and destroys putrescence before it reaches the blood. But inoculation avoids this watch at the gate and transmits material directly to the blood. Is it reasonable to suppose that such a process can be free from risk? If the material inoculated is seen by its effects to be impure there is no remedy. The stomach pump will not reach it, antidotes will not correct it. It is already in the blood and quite beyond recall.

However, the virus furnished in this enlightened 20th century is glycerinated, sterilized, and that means its disease germs, if there are any are destroyed. Whence, then, the danger? But are its disease germs destroyed? We know well enough that the kine pox germ is not destroyed or the virus will not "take", and it is not reasonable to suppose that a sterilized process which preserves one sort of disease germ in perfect activity is sure death to all others. And not only is such a supposition unreasonable but it has not the support of testimony. Joseph Collinson writes from London that all diseases produced by human lymph and the simple calf lymph are also produced by the glycerinated variety. And, too, I believe every one who has had experience of any extent in the matter has seen results from the glycerinated virus which could not have taken place if all disease germs had been destroyed.

Another argument used sometimes to prove the innocence of vaccination is that if it were such a dangerous remedy the people would be up in arms against it. And so they will be when once they are enlightened as to the real

nature of the process and the risk taken. Many years ago smallpox was a much-feared disease. Not only was its fatality great, but there was a disfigurement almost as much dreaded as death. This fear of small pox led the people to fly blindly to anything which would in the opinion of anyone offer them safety. Of late years, owing to better sanitary conditions and better knowledge of the treatment of the disease, it is, while not to be invited, not so greatly to be feared as many other diseases. Indeed, I believe that today we hear of more deaths and more and worse after-results from vaccination than from small pox. When once the people understand this they will fly as madly from the remedy as in former years they tried to fly from the disease.

How then is it if vaccination is so dangerous and the people unaware of their danger, that physicians do not enlighten them. Are not physicians honest in their seeming belief in the innocence of vaccination? They can hardly be under the circumstances. They are in somewhat the fix of a certain bishop who, the historian tells us, insisted on burning a few heretics every year because the lumber yard of his brother-in-law made a specialty of pitched faggots. The money which the physician takes from vaccination is easy money; in some States it is money which the law sends them. They certainly should be pardoned if in the face of so great temptation they are not honest even with themselves. The people who place them in so great temptation should rightly bear the blame.

What is to be done by those who are awake to the situation is a puzzling question. They do not see the right of submitting to vaccination, nor do they like to fight against the law—even an unjust law. Bacon, I think it was who said that the way to destroy the influence of bad books was to make more books and better ones. Something like that might be worked in the case of compulsory vaccination. Leave those laws just as they stand and add another restraining physicians from receiving a fee for vaccination under penalty of a \$500-fine. With such a law in force we could hope for the hon-

esty of the physicians, the consequent intelligence of the people and a happy escape from the terrors of vaccination.

OLIVE EDDY ORCUTT, M. D.

COMPULSORY ONION EATING.

Onion-eating people are said to be immune from smallpox attacks. It is suggested that the grange associations of each state shall petition the legislatures to pass laws making onion-eating compulsory. The advantages over vaccination are several:—we have never seen it asserted by a physician that onion-eaters were not immune; no deaths from onion eating have ever been reported; the increased consumption of onions will greatly benefit the agricultural classes and add to the longevity of the nations; and only the superfastidious people (the very rich, who are immune from the laws anyway), could object to compulsion in eating such a delicious vegetable. Those too poor to purchase the succulent should be provided with a regular supply at the expense of the state. Doctors, who visit sick people, should regularly file affidavits as to the quantity of onions eaten within a given period, that the public health may not be endangered.

C. R. ORCUTT.

Grasses of the Southwest.

AEGOPOGON GEMINIFLORUS H-B.

AGROPYRON DIVERGENS Nees.

Mont; Colo; N M; Cal; Wash.

AGROPYRON GLAUCUM R-S.

"Culms from running rootstocks, 1-3 ft. high, erect, rigid, smooth, with about 3 erect, rigid, narrow leaves, 4-6 in. long; spike distichous, 4-6 in. long, 4-6 lines wide, generally close or compact; spikelets 5-9-fl'd, smoothish or sometimes pubescent; outer glumes slightly unequal, narrowly lanceolate, acuminate or awn-pointed, the lower 4-5 lines, and the upper 5-6 lines long, the lower 1-3-nerved and the upper about five-nerved, the lateral nerves mostly all on one side of the midrib; fl'ng glumes 4-6 lines long, lanceolate, obtusish, or acute, or awn-pointed, usually sparsely pubescent, 5-nerved, the nerves indistinct below; palea about equalling its glume, rather acute, slightly bidentate, the keels hispid-ciliate, the back sparsely softly pubescent. The whole plant is usually glaucous. In rich soil the spikelets are sometimes double at the joints."—Vasey, bot gaz 10:259. Mont. to N. M.; Baja mts (Or 1162, 1164). Valuable for forage and hay. "Blue stem on blue grass."

"Apparently annual: culms about 2 ft

high, slender, smooth; lvs filiform, not rigid, the lower ones recurving, 3-4 in. long; sheaths smooth, loose and open, the lower longer than the internodes; ligule conspicuous, 2-3 lines long, triangular-acuminate, sometimes split; upper half of culm leafless: panicle 6-8 in. long, lax and open, branches mostly in twos, the lower ones 2-3 in. long, slender, smooth, fl bearing to or below the middle, the lower joints 1-2 in. distant: spikelets small, outer glumes nearly 2 lines long, equal, linear-lanceolate, acute, 3-nerved, smooth, purplish, one-third longer than both fls: fl'ng glumes $\frac{1}{2}$ -two-thirds line long, oblong, smooth, faintly nerved, apex broad and 4-toothed the awn from near the base 4 times as long as its glume, bent at the middle: palea as long as its glume, narrow, ciliate above: villous hairs at the base half as long as the fl: the rachilla also villous."—Vasey, bot gaz 10:224. S D mesas! Baja!

AGROPYRON PARISHII Scribner & Smith.

"Culms 2 to 3½ feet high, with flat leaves and erect or nodding spikes 6 to 12 inches long. Culms cylindrical, glabrous, striate, or smooth and shining below; nodes tumid, retrorsely pubescent; leaf sheaths striate, pubescent below, and sparingly ciliate along the margins, the basal ones shorter, the upper longer than the internodes; ligule membranous, very short; leaf blade constricted at the base, smooth on the back, scabrous above and on the margins, 2 to 3 lines wide, linear attenuate to the acute apex, the lower culm leaves 6 to 9 inches, and the uppermost 1 to 2 inches. Spike of 8 to 12 compressed oblanceolate spikelets. Spikelets 5- to 7-flowered, 8 to 10 lines long, shorter than the internodes of the rachis, which is scabrous on the margins; empty glumes two-thirds as long as the spikelets, nearly equal, linear, acute or acuminate, 5-nerved, scarious on the margins; flowering glume lanceolate, acute, $\frac{4}{5}$ to $5\frac{1}{2}$ lines long, flattened on the back below, prominently 5-nerved above, and scabrous toward the minutely 3-toothed awnless or short-awned apex. Awn, when present, straight, slender, 3 to 4 lines long. Internodes of the rachilla 1 line long, minutely pubescent. Palea as long as the glume, acute or obtuse. Represented in the National Herbarium by specimens collected by S. B. Parish in Waterman's Canon, San Bernardino Mountains, California, at an altitude of 3,000 feet, No. 2,054, June 28, 1888, and No. 2238, June 23, 1891. This species apparently connects Agropyron with Brachypodium. The habit is similar to that of A. Arizonicum. It is the only American species with pubescent culm nodes."—Scribner & Smith, b 4, p 28, D-A agr (6F 1897).

Variety LAEVE Scribner & Smith.

"With the habit of the species, but the culm nodes and leaf sheaths glabrous; awns as long or longer than the flowering glumes. Type in the Gray herbarium No. 414, Dr. Edward Palmer, collected at Fowley's Cucumaca Mountains, in the 1875."—Scribner & Smith, C 4, p 28, D-A agr (6 F 1897).

AGROPYRON REPENS Beauv.

Cruz; Rosa; Potrero, Chollas (Or 498).
AGROPYRON TENERUM Vasey.

"Culms in tufts or patches, without running rootstocks, apparently annual, about 3 ft high, erect, smooth: lvs narrow, 1 or 2 lines wide, 3-6 in. long; sheaths striate, smoothish; ligule short; spike slender, cylindrical, 4-6 in. long, 1 or 2 lines wide, with the spikelets one-third to ½ in. distant, sometimes wider and with the spikelets closer; axis scabrous: spikelets 3-5 fl'd; outer glumes 5-6 lines long, rigid, lanceolate, acute or awn-pointed, strongly 5-nerved; fl'ng glumes lanceolate, acute, 4-5 lines long, rounded on the back, smooth or smoothish and with the nerves indistinct below, above conspicuously 5-nerved and scabrous, terminated with a stiff, straight awn ½-2 lines long; palet nearly as long as its glume, entire or obtusely 2-toothed at the apex, the keels ciliate or hispid-ciliate."—Vasey, bot gaz 10:258. "Common throughout the Rocky Mountains, and in bottom lands it is often cut for hay, of which it makes an excellent quality." Baja mts (Or 1159, 1163).

Genus AGROSTIS Linnaeus.**AGROSTIS AEQUIVALVIS** Trin.

Parish, Erythra 3:59. Bear.

AGROSTIS ATTENUATA Vasey.

McClatchie, Erythra 2:78. Gabriel.
 Alaska to California.

AGROSTIS DENSIFLORA Vasey.

Santa Cruz, Cal. (Dr. C. L. Anderson).

AGROSTIS DIEGOENSIS Vasey.

"Culms erect, stout, 2-3 ft. or more high, smooth; leaves 4-7 inches long, 1-2 lines wide, erect, those of the culm with long sheaths (the upper ones 8 or 9 inches long); ligule about 2 lines long, acute; panicle 6-8 inches long, lanceolate, the joints rather distant (the lower 1½-2 inches; branches numerous, unequal, erect, the longer ones about 2 inches long, and floriferous above the middle, the shorter floriferous to the base, the flowers numerous; spikelets light green, 1½-2 lines long, outer glumes acute, scabrous on the keel; flowering glume one-third shorter, oblong, obtuse, the mid-nerve terminating about the middle, with or without a minute awn; palet none. San Diego, California, by C. R. Orcutt."—Vasey, Torr cl b 13:55 (Ap 1886). Chollas valley (Orcutt 1058), San Diego, Cal. (type).

Cruz; Chollas (Or 1058). Ha U 54, Jac.

AGROSTIS EXARATA Trin.

Agrostis albicans Buckl, Phila ac pr 1862, 91.

Polypogon alopecuroides Buckl, Phila ac pr 1862, 88.

Smith mt, S D Co (H. C. Orcutt); Alaska; N. M.; Colo; Chollas (Or 518, 1058—"probably forma asperfolia Vasey").

AGROSTIS GRANDIS Trin.

Smith mt, S D Co (H. C. Orcutt).

AGROSTIS MICROPHYLLA Steud.

McClatchie, Erythra 2:78. Gabriel.

Potrero; Wash. Mesas S D Co (Or 1176).

AGROSTIS MULTICULMIS Vasey.

Potrero (Or 959).

AGROSTIS PILOSA Beauv.**AGROSTIS SCABRA** Willd.

Smith mt, S D Co (H. C. Orcutt); Alaska; Siberia; Tucson; Arizona (Toumey).

AGROSTIS SCOULERI Trin.

Rosa; San Diego (?Orcutt).

AGROSTIS TENUIS Vasey.

"Perennial, loosely tufted. Culms 6-10 in. high, slender, somewhat geniculate below; leaves 1-2 in. long, narrow, about 2 on the culm; ligule short. Panicle pyramidal, open, 2-3 in. long and 1-1½ wide; rays in three or five below, above in twos or single, capillary, the longest 1 in. or more in length, fl'ng above the middle, spreading or erectish. Spikelets very small (less than a line long); glumes acute, purplish, the lower a little shorter and broader; fl'ng-glume thin, obtusish, 3-nerved above; a little shorter than the outer glumes, unawned; palet very minute or wanting." Vasey, Torr cl b 10:21. San Bernardino mts (Parish). Wash.

AGROSTIS VERTICILLATA Vill.

Cantilles! S D Co (Or 1168). Texas.

AGROSTIS VIRESCENS HBK.

San Diego (Or 1173). Mexico.

AGROSTIS VULGARIS With.

Parish, Erythra 3:59.—"Naturalized about San Bernardino, in meadows and by roadsides."

ALOPECURUS CALIFORNICUS Vasey.

Santa Cruz Isl; SD!

ALOPECURUS GENICULATUS L.

Mesas, S D! Baja (Or 1438).

Variety ARISTULATA Torrey.**ANDROPOGON MACROURUS** Mich.

McClatchie, Erythra 2:77. Gabriel mts.

Cantilles (Or 1144, 1163).

ANDROPOGON SACCHAROIDES Swtz.

Baja (Or 514); Colo; Kansas.

ANDROPOGON DISSITIFLORUS Michx**ANDROPOGON CIRRHATUS** Hackel.**ANDROPOGON HIRTIFLORUS** Kth.**ANDROPOGON WRIGHTII** Hackel.**Genus ARISTIDA Linnaeus.****ARISTIDA AMERICANA** L. f.

Colorado Desert (Or 2075).

ARISTIDA ARIZONICA Vasey.

"Culms 1-2 ft. high, tufted, rigidly erect, unbranched, leafy to the middle, smooth; leaves of the culm about 4, of nearly equal length, 4-8 inches long, canaliculate or becoming convolute, narrow and somewhat rigid, smooth; panicle 5-10 inches long, narrow; the branches in twos below appressed, somewhat distant (the lower internodes 2-3 inches long), unequal, the longer one overlapping the internode above, and naked below, the shorter one sessile, each with 2-8 short pedicelled spikelets; outer glumes nearly equal, 6-7 lines long, bidentate at the

apex, mucronate or awn pointed, hispid on the keel, 1-nerved or the lower 3-nerved; flowering glume to the division of the awn and including the short hairy callus, 7-8 lines long, slender, smooth below, scabrous and twisted above, the awns nearly equal, 10-12 lines long, widely divergent when mature. * * * Arizona."—Vasey, Torr cl b 13:27 (F 1886).

Toumey (Ariz aes b 2) refers to this especially, and other Aristidas in general, as being rather unimportant range grasses.

Vasey, Grasses of the Southwest, pt 1 t 22.

ARISTIDA BROMOIDES HBK.

Shollas (Or 1071); C D (Or 2245); Baja (Or 1436).

ARISTIDA CALIFORNICA Thurber.

C D (Schott); Ft. Mohave (Cooper).

Variety **FUGITIVA** Vasey.

CD!

Variety **MAJOR** Vasey.

Magdalena Island (Br).

ARISTIDA DISPERSA Trin.

ARISTIDA DIVARICATA H-B.

Baja mts (Or 1111); S Ber; Arizona.

ARISTIDA ORCUTTIANA Vasey.

"Culms about 2 ft. high, stout below, above becoming slender, very leafy; leaves near the base with loose open sheaths and rather broad blades, the upper one-quarter shorter; flowering inches long or more; panicle long and open, 4-5 inches long; branches rather distant, mostly single, flexuous, the lower ones about 3 inches long, the upper one-quarter shorter; flowering glume with the awn bent near the middle, and twisted below. The panicle is small for the size of the plant, and comparatively few-flowered. It approaches *Aristida Schiediana*. Southern California, C. R. Orcutt; Arizona, M. E. Jones."—Vasey Torr cl b 13:27 (F 1886).

Hanson's ranch, 6,000 ft. elevation, northern Baja California (H. C. and C. R. Orcutt, 507-type); not "Southern California" (?).

ARISTIDA PURPUREA Nutt.

Baja (Or 1146); Arizona (Or 2515, 2532).

Variety **FENDLERIANA** Vasey, U S N hb cont 3:46.

Parish, *Erythea* 3:59.—"Rose mine, alt. 6,000 ft., eastern slope of the San Bernardino mts., Calif."

ARISTIDA SCABRA Kth.

Baja (Br); Mexico.

Genus AVENA Linnaeus.

AVENA BARBATA Brot.

McClatchie, *Erythea* 2:78. Pasadena; Catalina.

AVENA FATUA Linn.

Variety **GLABRESCENS** Coss.

Parish, *Erythea* 6:86. Nordhoff (Hubby), and San Bernardino, Cal.

Florets clothed with hairs only on the rachilla and at the base of the flowering glumes. In aspect not different from the type.

Genus BOUTELOUA Lagasca.

BOUTELOUA POLYSTACHYA Torr.

Chondrosium polystachyum Bth Bot Sulph 56.

CD (Or 1468; 2064, near Ft Yuma). Texas

BOUTELOUA RACEMOSA Lag.

Baja mts (Or 671). N. Y.

Genus BROMUS Linnaeus.

BROMUS CARINATUS H-A.

Var. **CALIFORNICUS** Shear.

Bromus californicus Nutt in Phila. ac. herb.

Todos Santos bay, Baja California (Miss F. E. Fish). Potrero valley and San Diego, California. (Orcutt 511a).

Var. **HOOKERIANUS** Shear.

Bromus hookerianus Thurb in Wilkes U. S. Exp. Exped 17: 493 (1874).

Ceratochloa grandiflora Hook Fl. Bor. Am. 2: 253 (1840).

Bromus virens Buckl Phila. ac. pr. 1862: 98.

Bromus nitens Nutt in Phila. ac. herb. California, Washington, Idaho.

BROMUS CILIATUS L.

BROMUS ERECTUS Huds.

BROMUS HORDEACEUS L.

Bromus mollis L, Sp pl ed 2, 1:112 (1762). *Serrafalcus mollis* Parl Fl Ital 1:395 (1848).

Erect or ascending annual or biennial with a rather dense, erect panicle; culms about 2-3 dm high, usually somewhat pubescent at the nodes; sheaths retrorsely soft pilose-pubescent; ligule 1.5-2 mm. long, lacinate; blades linear, pilose-pubescent to nearly smooth, about 5-15 cm long and 3-5 mm broad; panicle contracted, narrow pyramidal, 5-10 cm long, 2-4 broad; branches somewhat spreading in flower; spikelets 5-13 flowered, ovate-lanceolate, becoming obtuse, 12-15 mm long, 4-6 wide, with short pedicels; empty glumes broad, obtuse, coarsely pilose or scabrous-pubescent, the lower 3-5-nerved, 4-6 mm long, the upper 5-7-nerved, 7-8 mm long; flowering glume broad, obtuse, 7-nerved, coarsely pilose or scabrous-pubescent, rather deeply bidentate, margin and apex hyaline, 8-9 mm long; awn rather stout, rough, flattened toward the base, straight at first, frequently somewhat twisted when old, about 6-9 mm long; palea a little more than $\frac{3}{4}$ the length of its glume.

Southern Europe; introduced sparingly from Maine to Virginia, abundantly on the Pacific coast, from Washington, to Los Angeles, California.

BROMUS MAXIMUS Desf.

Type from northern Africa. Stanford University (C. Ritter 305), California.

Var. **GUSSONI** Parl.

Bromus gussoni Parl Rar. Pl. Sic. 2: 8 (1840).

Bromus sterilis Gus Fl. Sic. Prod.

Suppl. 1: 27 (1832).

Larger than the type, 4-7 dm. tall, larger and more lax panicle, 1-2 dm. long, with the upper part somewhat drooping.

Arizona, California, Washington. In-cutt 1059).

Introduced. San Diego, California (Or-BROMUS RUBENS L.

BROMUS ORCUTTIANUS Vasey.

"Culms 3-4 ft high, erect, leafy below, scabrous above: lvs 4-6 in. long, erect, rather rigid, smooth except on the margins; ligule short, obtuse, somewhat cartilaginous: panicle 4-6 lines long, erect, rather scabrous, the branches short (1-2 in. long), in twos or threes, rigidly spreading horizontally, sparsely fl'd: spikelets 2-5 fl'd, short-pedicelled: outer glumes smoothish, scabrous on the nerves; the upper one oblong-lanceolate, 5-6 lines long, 3-nerved, obtuse; the lower one $\frac{1}{4}$ shorter, 1-nerved, narrower and acute: fl'ng glumes scabrous-pubescent, 5-nerved, rounded on the back, acutish; awn 2-4 lines long: palea rather shorter than the glumes, sparsely ciliate on the keels."—Vasey, bot gaz 10:223. Smith mt, S D Co (H. C. Orcutt); Mt. Adams, Wash. (Suksdorf).

Var. GRANDIS Shear.

Variety ASIMILIS Davy.

BROMUS TRINII Desv.

Trisetum hirtum Trin Linnaea 10:300 (1835).

Trisetum barbatum Steud Syn Pl Gram 229 (1854).

Bromus barbatorides Beal Grass N A 2:614 (1896).

California; Colorado; Chili.

Var. PALLIDIFLORUS Desv.

Bromus barbatorides sulcatus Beal grass N A 2:615 (1896).

Trisetum barbatum major Vasey in herb; Beal Grass N. A. 2:615 (1896).

BROMUS UNIOLOIDES HBK.

Annual, or sometimes perennial, 3-4 ft. high, several stems from same base; panicle large and spreading, spikelets about 1 inch long, $\frac{1}{4}$ wide, composed of 7-10 florets overlapping each other; flowering glumes coarse in texture, strongly nerved, usually bearing a short arm about 3 mm. long. Rescue grass. Widely distributed in South and Central America, Mexico, Southern Texas, and naturalized or cultivated in the southern United States, Europe, and Australia. Known also by the names Iverson's, California prairie, Schrader's brome, and Arctic, grass, Australian oats, etc.

Shear, cir 26 agr D-A, f.

Genus CALAMAGROSTIS Adans.

CALAMAGROSTIS DENSUS Vasey.

"Culms in large patches, from strong rootstocks, 3-4 ft high, robust, leafy, 5-6 nodes; the lower sheaths loose and longer than the internodes, the middle ones shorter than the internodes, the upper including the base of the panicle; lvs often a foot long, rigid, plane or becoming somewhat involute at the long slender points, somewhat scabrous, as are the sheaths; ligule 1 line long, lacerate: panicle strict, lance-oblong, 4-6 in. long, rachis slightly scabrous, branches some-

what verticillate, appressed, 1 line long and densely fl'd: spikelets crowded, 2-2 $\frac{1}{2}$ lines long; outer glumes linear-lanceolate, nearly equal, acute, slightly scabrous, margins slightly scarious; third (or fl'ng) glume a little shorter, narrow, apex slightly toothed and mucronate, a few short hairs at the base; awn, twisted near the base, a little longer than its glume; palea a little shorter than the glume, thin; sterile tuft, slender, one-third to one-half as long as the glumes, with few hairs."—Vasey, bot gaz 16:147. Julian, S D Co (Or), CALAMAGROSTIS KAELERIOIDES Vasey.

"Culms erect, 2 ft high, rather rigid, smooth: lvs 2-6 in. long, narrow, somewhat scabrous, ligule conspicuous, lacinate, blade rigid, pointed, the upper very short: panicle spike-like, narrow, 3-4 in. long, the branches in short, approximate (or at the base rather distant) clusters: spikelets about 2 lines long, linear-lanceolate, rather smaller, but otherwise much as in Calamagrostis densus; the panicle having much the appearance of Koeleria cristata."—Vasey, bot gaz 16:147. Julian, S D Co (Or).

CENCHRUS PALMERI Vasey.

Calmalli (Orcutt 2573).

CHAELOCHLOA GLAUCA Scribn.

Setaria glauca Beauv Agrost 51 (1812).

Panicum glaucum L. sp. Pl 56 (1753).

Chamaeraphis glauca Kuntze Rev. Gen. Pl. 2: 767 (1891).

Ixophorus glaucus Nash Torr bot. cl. b. 22:423 (1895).

CHAELOCHLOA IMBERBIS Scribn.

Scribner, U S D-A agr b 4:39.

Parish, Erythea 7:89. Locally introduced at Los Angeles (Hasse; Davidson).

Setaria imberbis R-S Sys 2:89.

Setaria caudata Davidson, Pl L A Co 31, not R-S.

CENCHRUS TRIBULOIDES L.

New England; Baja; Arizona.

CHLORIS ELEGANS HBK.

Ft. Yuma, Cal. (Or 2082). Mexico.

Genus CINNA Linnaeus.

CYNODON DACTYLON Pers.

S D! Cosmopolitan.

Genus DACTYLIS Linnaeus.

DACTYLIS GLOMERATA L.

Europe, Asia; widely naturalized.

DANTHONIA CALIFORNICA Bol.

San Diego to Oregon.

DESCHAMPSIA CAESPITOSA Beauv.

DESCHAMPSIA CALYCINA Presl.

Bear; Panamint mts (Coville).

DESCHAMPSIA GRACILIS Vasey.

DIPLACHNE IMBRICATA Scribn.

Leptochloa imbricata Thurber.

S Ber (W. G. Wright); Texas; Baja. Ft. Yuma, Cal (Or 2080).

Genus DISTICHLIS Rafinesq.

DISTICHLIS MARITIMA Raf.

Uniola spicata L.

Distichlis spicata Greene, Cal ac b 1:415.

Chollas (Or 504); Baja mts (Or 1161).

EATONIA OBTUSATA A. Gray.

San Bernardino, Cal. (Parish).

Genus ELYMUS Linnaeus.

ELYMUS AMERICANUS Vasey.

Sauzal, Baja (Or 1427).

ELYMUS ORCUTTIANUS Vasey.

"Culms generally several from one root, 2 or 3 ft high, rather slender, lfy; nodes 4-5; leaves 8-10 in. long, erect but not rigid, narrow and more or less involute when dry, scabrous on the margins, upper leaf equalling or exceeding the culm; sheaths striate, smooth; ligule a short ciliate line or nearly obsolete; spike 4-6 in. long, erect, loosely fl'd, with 15-20 spikelets, 2 or frequently only 1 at each joint, mostly flat and 2-ranked: spikelets 5-7 fl'd; outer glumes linear-lanceolate, rigid, long-pointed, 4-6 lines long, 1 or distinctly 3 nerved, equalling or exceeding the lower fls; lower fl'ng glumes 4-5 lines long, rigid, lanceolate, acuminate, rounded and smooth on the back, finely punctate, 5-nerved on the inside, the points scabrous; the upper fl'ng glumes gradually shorter and less pointed, and more scabrous above; palet $\frac{1}{4}$ to one-third shorter than the glumes, 2-toothed at apex, 2-keeled, the keels ciliate."—Vasey, bot gaz 10:258. S D! El Rancho Viejo, Baja (Br).

ELYMUS PARISHII Davy & Merrill.

"Stems tufted, 7-9 dm high, scabrid; lvs canescently pubescent with spreading hair; ligule a mere ring; blades flat or becoming involute, 5 mm wide, the uppermost 3.5-7 cm long, the lowest 8-16 cm long; spike 10-16 cm long, 10 mm wide, with somewhat divergent spikelets: spikelets in pairs, the lowest 1-2 cm apart, 1-1.5 cm long excluding the awns, 3-5 fl'd; empty glumes 11-16 mm long, about 1 mm wide, awn-pointed; internodes of rachilla 2-3 mm long; fl'ng glumes scabrous, 10 mm long; awns 2-2.5 cm long, scabrous."—Davy & Merrill, Univ Cal pub bot 1:60. Siskiyou Co; Jac (Hall 2097).

ELYMUS SIBIRICUS L.

McClatchie, Erythea 2:78. Gabriel mts.

ELYMUS SITANION Scht.

Baja mts (Or 1171); Arizona (Or 2533).

ELYMUS TRITICOIDES Nuttall.

McClatchie, Erythea 2:78. Gabriel mts.; Catalina.

EPICAMPES RIGENS Benth.

CD (Parish); Texas. Ha U 53, Jac.

ERAGROSTIS CURTIPEDICELLATA Bk.

Ft. Yuma, Cal. (Or 2078).

ERAGROSTIS MAJOR Host.

Rosalia (Orcutt).

ERAGROSTIS NEOMEXICANA Vasey.

Prescott, Arizona (Toumey).

ERAGROSTIS OXYLEPIS Torr.

S D! Texas, Kansas.

ERAGROSTIS PILOSA Beauv, Agr 71.

Parish, Erythea 7:89.

Eragrostis orcuttiana Vasey, U S Na hb 1:269.

Eragrostis mexicana McClatchie, Fl Pasadena 628; Davidson, Pl L A Co 32 (not Link).

Australia; naturalized throughout southern Cal.

ERAGROSTIS POAEOIDES Beauv.

Variety MEGASTACHYA A. Gray.

Smith mt, S D Co (H. C. Orcutt).

ERIOCHLOA PUNCTATA Ham.

Ft. Yuma, Cal. (Or 2065).

Genus FESTUCA Linnaeus.**FESTUCA MICROSTACHYS** Nutt.

Mesas. S D (Or 1073); Baja (Or 1275).

Variety CILIATA A. Gray.

S D! San Esteban, Baja (Br).

FESTUCA MYURUS L.

S D (Or 521); Baja (Or 1433); Cruz; Rosa.

FESTUCA TENELLA Willd.

Pt. Loma, S D (Or 1063); Baja mts (Or

1142, "a tall form"). Arizona (Or 1530, 1535).

GASTRIDIDIUM AUSTRALE Beauv.

S D Co (Palmer); S F; Europe; Chili.

GLYCERIA REMOTA Fries.

San Bernardino mts (Parish 1661).

HILARIA MUTICA Benth.

Cal. (Coville); N. M.; Arizona. "Black grama grass."

HILARIA RIGIDA Vasey.

Pleuraphis rigida Thurber.

"Gietta"; C D; Cantilles (Or 1145); Arizona (Or 2512).

Genus HORDEUM Linnaeus.**HORDEUM ADSCENDENS** H B K.

"A rather slender, erect, leafy annual (?) 2 to 3 feet high, with terminal bearded spikes 3 to 4 inches long. Culms terete, smooth, shining; nodes smooth, or the southern part of San Diego county, Cal., lower ones minutely puberulent; sheaths shorter than the internodes, the lower smooth, striate; ligule membranous, ones densely pubescent, the upper rounded, entire, about 1 line long; leaf blades rather rigid, 3 to 6 inches long, 2 to 3 lines wide, striate, scabrous, gradually narrowed to the pungently tipped apex. Axis of the spike compressed, scabrous or subciliate on the margins, the joints about 1 line long. Empty glumes setaceous, rounded on the back, sulcate on the inner face below, scabrous, those of the central spikelet about 1 inch long, those of the lateral spikelets a little shorter; flowering glume of the central spikelet $\frac{4}{5}$ to 5 lines long, scabrous; palea about as long as the glume, scabrous on the keel above. Prolongation of the rachilla awn-like, and two-thirds as long as the palea. Lateral spikelets neutral, the pedicellate third glume about 3 to $3\frac{1}{2}$ lines long, scabrous, subulate-pointed.—H B K., Nov. Gen. 1, 180. Distinguished from H. nodosum by its taller habit of growth, attenuate and pungently pointed leaves, longer spikelets and longer-awned glumes, the empty ones being flattened or sulcate on the inner face and not terete throughout. Abundant along irrigation ditches near Glendale, Ariz. No. 2522 C. R. Orcutt, April 30, 1896."—Scribner & Smith, b 4, p 24, D-A agr (6 F 1897).

HORDEUM JUBATUM L.

San Diego, Cal. (Or 522).

HORDEUM MURINUM L.

Guadalupe; Cruz; Rosa.

HORDEUM NODOSUM L.

Bear valley (Parish).

HORDEUM PRATENSE Huds.

Smith mt, S D Co (H. C. Orcutt); El Rancho Viejo, Baja (Br).

HORDEUM PUSILLUM Nuttall.

McClatchie, Erythea 2:78. Catalina.

Mesas. S D (Or 1175); Baja (Or 1430); Arizona (Or 2514, a roadside weed near Congress; 2522, along irrigating canal).

IMPERATOR HOOKERI Rupr.

"Imperator brevifolia—Culms 3-4 ft. high, erect from a creeping rhizome, firm, smooth; radical leaves numerous, 4-10 inches long, plain, smooth, very acute, 4-5 lines wide, contracted and long ciliate at the base, ligule short, membranaceous; cauline leaves, 4 or 5, short, first about 4 inches, second 3 inches, third 2 inches, fourth 1 inch long, rather rigid, acute, with a few long hairs at the base; ligule short ciliate, sheaths smooth, the upper ones elongated 6-7 inches long): panicle erect, nearly cylindrical, 5-9 inches long, $\frac{1}{2}$ - $\frac{3}{4}$ inches wide; branches of the panicle appressed, sparsely short-hairy below, with spikelets in pairs, one sessile, and the other pedicellate, toward the apex the spikelets single; the pedicels slightly hispid, and emitting a few long silky hairs; the outer glumes about $1\frac{1}{4}$ lines long, the upper a little longer, lance-oblong, obtusish; the lower five-nerved; upper 3-nerved and ciliate at the apex; both villous on the back with long silky hairs, which are about 3 lines long; third glume smooth, very thin, hyaline, about as long as the first; fourth glume two-thirds as long, narrow; palea bifid, broad, hyaline, nerveless, $\frac{3}{4}$ line long; stamen one. Southern California, 1031 Parish; New Mexico, 2001 C. Wright; also from Arizona and Western Texas."—Vasey, Torr cl b 13:26 (F 1886).

Cantilles canyon, Lower California (Orcutt 1137); Grand canyon (Toumey); Resting Springs (Coville).

Genus KOELERIA Pers.

KOELERIA CRISTATA Pers.

S D (Or 495); Sauzal, Baja (Or 1426); Julian, Cal. (Or 1990); Arizona (Or 2534; 2474).

Genus LAMARCKIA Moench.

LAMARCKIA AUREA Moench.

S D Co (Palmer); C D; Baja; Texas. LEPTOCHLOA FASCICULARIS Gray. Ft. Yuma, Cal to New England.

Genus LOLIUM Linnaeus.

LOLIUM TEMULENTUM L.

Chollas (Or 1067); widely naturalized.

Genus MELICA Linnaeus.

MELICA FRUTESCENS Scribn.

San Diego; Baja; Mexico.

MELICA IMPERFECTA Trin.

Baja mts (Or 1170); Guadalupe; Cruz.

MELICA POAEOIDES Nuttall.

Baja (Or 513).

MONATHOCHLOE LITTORALIS E.

S D (Or 512); Magdalena Isl. (Br).

Genus MUHLENBERGIA Trin.

MUHLENBERGIA CALAMAGROSTIDEA Kth.

So Cal; Arizona; Comondu, Baja (Br).

MUHLENBERGIA CALIFORNICA Vasey.

San Bernardino (Parish).

MUHLENBERGIA DEBILIS Trin.

Calmali; Rosalia (Orcutt).

S D (Or 496); S Bar; Baja (Or 1435).

MUHLENBERGIA DUMOSA Scribn.

Southern California; Arizona; Mexico.

MUHLENBERGIA GRACILIS Trin.

Mont.; Colorado; Arizona; California.

MUHLENBERGIA MEXICANA Trin.

McClatchie, Erythea 2:78. Gabriel mts.

MUHLENBERGIA PARISHII Vasey.

San Bernardino, Cal. (Parish).

MUHLENBERGIA PUNGENS Thurb.

Ft. Yuma, Cal. Utah; Nebraska.

MUNROA SQUARROSA Nuttall.

Crypsis squarrosa Nuttall.

British America to Mexico.

Genus ORCUTTIA Vasey.

"Panicle somewhat spicate, with short, simple, alternate, sessile spikelets, somewhat distant below, and crowded toward the summit: spikelets many-fl'd, compressed: empty and fl'ng glumes much alike, with many prominent straight nerves, strongly toothed or lobed at the apex: palea equalling its glume, narrow, thin, green on the strongly angled keels: anthers 3, styles 2, fil and styles projecting beyond the apex."—Vasey, bot gaz 19: 145.

"Plant dwarf, 2-4 inches high, annual; growing in small clusters of 10-20 or more culms from one root; culms variable in length in the same cluster, generally producing some small flowering branches from the lower joints; leaves 2 or 3, the sheaths open and inflated, striate; ligule obsolete; blade rather rigid, about 1 inch long, acuminate; leaves and sheaths sparsely pubescent; panicle about 1 inch long, simple, usually of 4-6 alternate sessile spikelets, the lower 2 or 3 rather distant, the upper ones crowded; spikelets 5-10 flowered, empty glumes sparsely pubescent, broad, about 2 lines long, scarious-margined, mostly 3 lobed, the 2 outer lobes longer, the lobes each 3-nerved; flowering glumes a little exceeding 2 lines long, with 5 nearly equal, acute lobes, each lobe 3-nerved; palea as long as its glume, hyaline, narrow, strongly keeled, dentate at apex. Sometimes several spikelets are clustered together at the apex of the culm, with only 1 pair of empty glumes for all. A dwarf grass collected near Quintin, by C. R. Orcutt, an ardent young naturalist, for whom the genus is named."—Vasey, Torr cl b 13:219 t 60 (N 1886).

CRYZOPSIS MEMBRANACEA Vasey.

Stipa membranacea Pursh.

Eriocoma cuspidata Nuttall, Gen 1:40.

British Columbia to Baja and Texas.

Genus PANICUM Linnaeus.

PANICUM CAPILLARE L.

Smith mt, S D Co (H. C. Orcutt); Baja.

PANICUM COLONUM L.

Ft. Yuma, Cal. (Or 2067); Baja (Or 1309). Texas.

- PANICUM CRUS-GALLI L.
Ft. Yuma, Cal. (Or 2385); Baja.
PANICUM DICHOTOMUM L.
San Diego Co (Or 540).
PANICUM SANGUINALE L.
Visalia, Cal.; Arizona.
PANICUM URVILLEANUM Kth.
Colorado Desert; Arizona; Chili.
PAPOPHORUM WRIGHTII S. Wats.
Calmali (Orcutt).

Genus PASPALUM Linnaeus.

- PASPALUM DISTICHUM L.
Jamaica to Cal.; San Diego Co (Or 508).
PASPALUM PUBLIFLORUM Rupt.
Southern California to Texas.

Genus PHALARIS Linnaeus.

- PHALARIS ARUNDINACEA L.
Oregon; Arctic Am; Atlantic; Mexico.
PHALARIS CANARIENSIS L.
Cruz; S D; Baja! A widely naturalized
weed.
S D Co; Cruz; Baja (Or 525); Arizona.
PHALARIS INTERMEDIA Bosc.
Variety ANGUSTA Chapman.
San Diego (Or 523); Florida.
PHALARIS LEMMONI Vasey.
Arizona; California.

Genus PHELEUM Linnaeus.

- PHELEUM ALPINUM L.
Alpine regions of Europe, Asia, and N A
PHLEUM PRATENSE L.
Europe; widely naturalized.

Genus PHRAGMITES Trin.

- PHRAGMITES COMMUNIS Trin.
S D Co (Or 576); San Gregorio, Baja(Br)
PHRAGMITES VULGARIS B.
Europe; Mohave (Coville).

Genus POA Linnaeus.

- POA ANNUA L.
Santa Cruz Island (Br).
POA BIGELOVII Vasey and Scribner.
S D mts! Baja; Texas; Colo.; Utah.
POA UNILATERALIS Scribner.
Vasey, grasses Pac Slope 2 t 85.
S F; San Bernardino (Parish).
Parish, Erythra 3:59.—Bear.
POA FENDLERIANA Vasey.
S Ber; S F; Colo.; N. M.; Mexico.
POA HOWELLII Vasey and Scribner.
Cruz; Oregon.
Variety CHANDLERI Davy.
"Chandler's Meadow Grass. Stems 3.5-
5.5 cm high; lvs smooth; sheaths some-
what inflated; ligule scarious, w, trun-
cate, dentate, 2-4 mm long; blades flat,
acute, 3-3.5 cm long, 5 mm wide; panicle
but little exserted (at least in young
plants), 7-13 cm long; branches sparsely
scabrid, remote, the lowest in whorls of
3-5, the whorls 2.5-3.5 cm apart; lowest
branches very unequal, 1.5-7 cm long,
spikelet-bearing only on the upper half;
spikelets 4.5-5 mm long, 2-fl'd; empty
glumes minutely puberulent and serrate,
broad, the lower 2 mm long, acute, 1-
nerved, upper about 3 mm long; fl'ng
glumes scabrid, 3 mm long, acute, spar-
ingly webbed at base with a long thin
web; stamens 3, anthers 1.5 mm long."—
Davy, Univ Cal pub bot 1:60. Siskiyou Co;
Jac (Chandler 1703).
POA TENUIFOLIA Nuttall.

Chollas (Or 1071). Baja (Or 1148, var.
rubra).

Genus POLYPOGAN Desf.

- POLYPOGAN LITTORALIS Smith.
McClatchie, Erythra 2:77. Pasadena.
POLYPOGAN MONSPELIENSIS Desf.
Chollas (Or 506); Arizona; N. M.; Mo-
have; Cruz; Rosa; Guadalupe. Widely
naturalized.
SPARTINA GLABRA Muhl.

A glabrous, erect, and often stout
salt-marsh grass 6-24 dm high with
long, flat, or involute leaves, few or
many erect, usually appressed spikes
and glabrous spikelets. Culms simple,
sometimes 2 cm in diameter below;
sheaths glabrous, the lower ones
crowded and imbricate, distichous; li-
gule a ciliate ring about 2 mm long;
leaf-blades 5-7 dm long, 1-1.5 cm wide,
usually flat but sometimes involute,
tapering to a long involute tip, gla-
brous throughout. Panicles 2-4 dm
long. Spikelets densely imbricate, 10-14
mm long; empty glumes glabrous, or
both sparingly scabrous on the keel,
the first 6-8 mm long, the second 10-14
mm in length; flowering glume 8-10
mm long. Palea somewhat exceeding
the glume and thinner in texture.
Salt marshes along the coast from
Virginia to Florida and Texas. San
Diego, Cal. (Orcutt).

SPARTINA FOLIOSA Trin.

A glabrous perennial with numerous,
rather short flat leaves, densely flow-
ered spikes and usually very strongly
aculeolate-ciliate keeled empty glumes.
Culms simple, about 1 cm in diameter
below. Sheaths crowded and overlap-
ping, especially above; ligule a ciliate
ring about 2 mm long; leaf-blades 2-6
dm long, about 1 cm wide, glabrous
throughout, plane or sometimes invo-
lute in drying, tapering into a slender
involute tip. Panicle 10-15 cm long, al-
most cylindrical, the spikes densely
flowered, 2-5 cm long, appressed, pri-
mary, and secondary ones glabrous.
Spikelets imbricate, 12-14 mm long,
glabrous throughout or the empty
glumes usually very strongly aculeo-
late-ciliate on the keels, the first nar-
row, 7-8 mm long, the second, 12-14 mm
in length; flowering glume nearly as
long as the second empty glume,
slightly shorter than palea, glabrous
throughout or sometimes ciliate on the
margins below. Salt marshes along
the coast, San Francisco, Cal., San

Diego, Cal. (Palmer).

SORGHUM HALAPENSE Pers.

SPOROBOLUS AIROIDES Thurb.

Widely distributed through So Cal.; Baja; Arizona.

SPOROBOLUS ALTISSIMUS Vasey.

San Diego (Dr. Edward Palmer).

SPOROBOLUS ASPERIFOLIUS Thurb.

Oregon to Chili; Nebraska.

SPOROBOLUS CRYPTANDRUS A. Gray.

C D (Or 1491); Oregon; Texas; New England.

SPOROBOLUS DEPAUPERATUS Torr.

San Bernardino mts (W. G. Wright).

SPOROBOLUS RAMULOSUS Kth.

Texas to California; Mexico.

SPOROBOLUS WRIGHTII Munro.

Texas to Cal.: "Saccaton or Zacate."

Genus STIPA Linnaeus.

STIPA CALIFORNICA Merrill & Davy.

"A rather stout erect caespitose glabrous perennial, 7-10 dm high, with plane or involute lvs and elongated contracted panicles about 3 dm in length; culms and nodes glabrous; sheaths shorter than the internodes, glabrous except on the somewhat ciliate margins above; ligule a minute lacerate ring 0.5 mm long, with a prominent fringe of hairs on the apparently auriculate margins, 1.5 mm long; blades firm, plane or becoming involute in drying, 2-4 mm wide, 1-1.5 dm long, glabrous beneath, striate and scabrous above; panicles pale, interrupted, the common axis glabrous, branches solitary or in twos or threes at each node, appressed, fl-bearing throughout, the lower ones sometimes 1 dm long; empty glumes glabrous, hyaline, 3-nerved, about 11 mm long, sub-equal, with a very slender acuminate apex; fl'ng glumes about 5 mm long, excluding the very acute pilose calus which is 1 mm long, lanceolate, sparingly hairy throughout with appressed stiff w hairs which increase in length toward the apex of the glume: awn slender, 2.5-3 cm long, geniculate, twisted and sparingly pilose below the geniculation with appressed or ascending hairs, scabrous above."—Merrill & Davy, Univ Cal pub bot 1:61. Jac (Hall 2556).

STIPA CORONATA Thurb.

Chollas (Or 1068); Ubi, Baja (Br); Arizona.

STIPA EMINENS Cav.

Chollas (Or 1065); Cruz; Arizona.

Variety *ANDERSONI* Vasey.

Stipa Hassel Vasey. U S Na hb cont 1:267 (1893). Santa Monica, Cal.

Wilcox, bot gaz 34:66.

STIPA OCCIDENTALIS Thurber.

San Bernardino to Wash.; Nevada.

Variety *MONTANA* Merrill & Davy.

"A slender densely tufted form, 2-5 dm high with strict few-fl'd panicles and prominent twice-geniculate awns, 3-3.5 cm long which are ciliate throughout with spreading or ascending w hairs about 1 mm long."—Merrill & Davy, Univ Cal pub bot 1:62. Jac (Hall 2325).

STIPA PARISHII Vasey.

S Ber (Parish); Cantilles (Or 1151); Arizona.

STIPA SETIGERA Presl.

STIPA SPECIOSA T-R.

Cruz; Rosa; Chollas (Or 503).

Eaja mts (Or 1190); Cal.; Utah; Arizona.

STIPA SCRIBNERI Vasey.

New Mexico; Arizona.

STIPA VIRIDULA Trin.

Cruz; Inyo mts (Coville); north.

TRIODIA PULCHELLA Torrey.

Tricuspis pulchella Torrey.

-Calmali (Orcutt).

TRISETUM CALIFORNICUM Vasey.

TRISETUM ELONGATUM Kth.

Texas; Baja (Or 1431, 1437).

TRISETUM SPICATUM Rich.

Genus TRITICUM Linnaeus.

UNIOLA PALMERI Vasey.

Along the Colorado river in Sonora, where the Indians gather the grain for food (Palmer).

FERNS.

SPECIES CREDITED TO SOUTHERN CALIFORNIA.

Genus ADIANTUM Linnaeus.

ADIANTUM CAPILLIS-VENERIS Linn.

Venus-hair or black maidenhair fern. United States, Mexico.

ADIANTUM JORDANI Muell.

Adiantum emarginatum Eaton not Bory California; Nevada; N. M.; Oregon.

ADIANTUM PEDATUM Linn.

Alaska to southern Cal. Maidenhair.

Genus ASPLENIUM Linnaeus.

ASPLENIUM FILIX-FOEMINA Bernh.

ASPLENIUM VESPERTINUM Maxon.

Maxon, Torr cl b 27:197 (1900).

Southern and Baja Cal. Formerly referred to *A. trichomanes-incisum*. Feather fern.

Genus CHEILANTHES Swartz.

CHEILANTHES CALIFORNICA Mett.

Hypolepis californica Hook sp Fil 2:71 (1858).

Lace fern. Southern and Baja Cal.

CHEILANTHES CLEVELANDI Eaton.

Southern and Baja California.

CHEILANTHES COOPERAE Eaton.

Central and southern California.

CHEILANTHES FIBRILLOSA Davnpt.

San Jacinto mts, California (Parish).

CHEILANTHES MYRIOPHYLLA Desv.

Texas; Arizona; southern and Baja Cal.

CHEILANTHES PARISHII Davenport.

Riverside Co., Cal. (Parish).

CHEILANTHES VISCIDA Davenport.

Colorado Desert near Whitewater.

CYSTOPTERIS FRAGILIS Bernh.

Genus *DRYOPTERIS* Adams.

DRYOPTERIS RIGIDA-ARGUTA Und.

California to Alaska.

Genus *GYMNOPTERIS* Bernh.

GYMNOPTERIS TRIANGULARIS Und.

Gymnogramme triangularis Kaulf.

Arizona; British Columbia to Mexico.

Genus NOTHOLAENA R. Brown.

NOTHOLAENA CALIFORNICA Eaton.

NOTHOLAENA CRETACEA Liebm.

Southern California; Arizona; Mexico.

NOTHOLAENA NEWBERRYI Eaton.

Cotton fern, Southern and Baja Cal.

NOTHOLAENA PARRYI Eaton.

Arizona, Utah, Cal., Baja Cal.

NOTHOLAENA TENERA Gillies.

Southern California; Arizona; Utah.

Genus PELLAEA Link.

PELLAEA ANDROMEDAEFOLIA Fee.

Arizona; southern and Baja California.

PELLAEA ORNITHOPUS Hook.

California; Baja Cal. Tea or wire fern.

PELLAEA WRIGHTIANA Hook.

Genus POLYPODIUM Linnaeus.

POLYPODIUM CALIFORNICUM Kaulf.

California; extremely variable.

Genus POLYSTICHUM Roth.

POLYSTICHUM MUNITUM Presl.

Aspidium munitum Kaulf.

California to Alaska.

Genus PTERIDIUM Scop.

PTERIDIUM AQUILINUM Kuhn.

Pteris aquilina L, sp Pl 105 (1753).

United States.

Genus WOODWARDIA Smith.

WOODWARDIA SPINULOSA Mart. & Gal.

Woodwardia radicans americana

Hook, sp Fil 3:67 (1860).

Washington to Baja Cal.; Arizona.

Genus WOODSIA R. Brown.

WOODSIA OREGANA Eaton.

WOODSIA MEXICANA Fee.

Texas to Arizona; Baja Cal (Or).

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NOTES AND NEWS.

There is a general sentiment among the natives of Honolulu against vaccination, as it is stated that vaccination spreads leprosy. A bill repealing the existing vaccination law was recently passed.

EDITORIAL.

We publish this month an outline of the work proposed by the wild flower preservation society, which we consider worthy of the encouragement of our readers. In California we stand in need of the preservation of certain beautiful trees, and the action taken some years ago for the protection of the Torrey pine of San Diego county was taken none too soon. The Parry lily, of the mountain region of Southern California, is in most urgent need of protection from the spirit of commercialism, which has already rendered this beautiful flower a rare one. The annual dues of the society are one dollar a year, which entitles members to "The Plant World" monthly, and the secretary, Charles Louis Pollard, 1854 Fifth street, Washington, D. C., will be pleased to enroll the names of all who are in cordial sympathy with the objects of the organization.

DELIGHT.

Sometimes in reading a story or essay we are reminded of other days or scenes and this gives greater delight than any information found in the essay or the most highly wrought invention of the story writer. The longer we live the more is this so. Our early lives, our friends and their remarks aid their doings reproduced take us away from the present, and the life of former times is renewed. We laugh or we weep, not because of the amusing story or the pathetic page, but because of revived reminiscences. Elaborate details are not necessary, but a touch, like a daisy by the wayside or the song of a bird or the fragrance of a pine tree or a picture of an old-fashioned flower even, may awake pleasant or painful memories.

—Mrs. E. E. Orcutt.

The West American Scientist.

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