

the sterile 6-10 in. long. Bracts leafy sheathed, longer than their spikelets, shorter than the stems. Sheaths $\frac{1}{2}$ - $1\frac{1}{4}$ inches long. Ligule opposite to the blade, obtuse. Scales pale rusty, membranous, with hyaline margins, oblong-obovate, obtuse, mucronate, equaling the perigynia. Perigynia ferruginous, membranous, smooth, triangular-oblong, acute at base, acuminate-beaked, $1\frac{3}{4}$ lin. long, $\frac{1}{2}$ - $\frac{3}{4}$ lin. broad, the beak bidentate, serrate toothed on the margins, nerved. Nut dark chestnut, triangular obovoid, tapering to the base, obtuse at the top, tipped by the equal style. Stigmas, 3.

Allied to *C. distans*, L. Stem and leaves of a tawny yellow color.

In a specimen of *Rhynchospora* (*Ceratoschoenus*) *macrostachya*, Torr., from Arkansas, the perianth consists of short, stout, awl-shaped bristles, thus destroying one of the characters supposed to distinguish it from *R. corniculata*, Gray.

Carex glauca, Scop., was found growing in sterile clayey soil near London, Ont., in June, 1881, by Dr. T. J. W. Burgess, and in a railway cutting near Windsor, Nova Scotia, by Prof. Macoun, in June, 1883.

Carex hirta, L., is occasionally met with near Boston and in ballast heaps at Philadelphia. Both species are probably immigrants from Europe.

Notes on *Phoradendron flavescens*, Nutt. I.

BY J. SCHNECK.

Although this parasite is common throughout the southern half of our Union, the dates of the different stages in the evolution of its bud to the mature fruit appear to be still imperfectly understood. The following observations are taken from notes made during the past eighteen months, and may help to develop the facts in the case.

Dec. 25, 1882—Fruit abundant and ripe. Mature pistillate flowers on the same plants, but these are always toward the distal extremity from the fruit. Staminate flowers, on separate plants, withered, but the stamens clearly visible, in the more perfect, on pressing back the sepals. *Buds in the axils of the leaves.*

Jan. 15, 1883—Staminate spikes withered and dropping off, but no change in the pistillate.

April 20, 1883—Could find no male spikes, but many plants that have no spikes at all. Pistillate flowers larger and more

prominent on the rachis than at previous observation. Old fruit all gone. *Buds in the axils of the leaves not changed.*

June 26, 1883—Ovaries still larger and more prominent. The *buds in the axils of the leaves* of Dec. 25, 1882, have developed into vigorous young stems, *bearing an abundance of young spikes.*

July 27, 1883—Fruit near the size of white mustard seed. *The new shoots still larger and their spikes further developed than at last observation.*

Sept. 15, 1883—Berries near two-thirds natural size, still green. Calyx on the summit of the ovaries. Staminate and pistillate *flowers, on this season's growth, about to open*; here and there one is open, exposing the full grown anthers. There is a very marked difference in the shape and size of the staminate and pistillate spikes. The former are from 1 to 1½ inches long; rachis bare at several points, so as to give the appearance as if two to four short spikes were joined together; this is still more forcibly impressed by the fact that between each cluster of flowers, in both the staminate and pistillate plants, is found an entire sheath or bract. The pistillate spikes are only three-fourths inch, or less, in length, and are also divided into two to four clusters; but the number of flowers in a cluster is less than in the staminate plants.

Oct. 23, 1883—Berries full grown and nearly ripe. *The flowers that have been since June developing are now in full anthesis.* The older ones are beginning to wither, but the majority are shedding pollen. The color, shape of the leaves and length of the spikes, serve to distinguish the staminate and pistillate plants at sight. In the former the color of the whole plant is a pale green, leaves oblong spatulate, spikes twice the length of those in the pistillate plants. In the latter the color is a deeper green, leaves ovate or obovate. So marked and constant are these differences in the color of the plant and shape of the leaves, that one can, without close inspection, select from a pile of plants either sex at will.

Dec. 6, 1883—Fruit ripe. *The male flowers withering and dropping off, while the pistillate have made little change since October.* From the above observations we may draw the following conclusions: The buds which are found in the axils of the leaves, in late fall and winter, develop into young shoots during the following spring and summer; these bear spikes of flowers which are in anthesis during October and November. The male spikes drop their flowers, and by March have themselves fallen. The

fructified pistillate flowers make very little growth from October to the following spring, at which time the fruit begins to develop, and by November is mature; being near twelve months from the first appearance of the bud until full anthesis, and twelve months more from anthesis to the perfect fruit.

Notes on *Eriochloa*.

BY GEORGE VASEY.

Kunth founded the genus *Eriochloa* on the specimens of Humboldt's American collection, and in Humboldt's Nov. gen. et sp. vol. 1, p. 94, states that the spikelets are one-flowered. But in his *Enumeratio Plantarum*, vol. 1, p. 71, published many years afterwards, describing the genus, he says the spikelets are two-flowered, the upper flower hermaphrodite with two palets; the lower flower neuter with one palet similar to the glumes, or *rarely male* with two palets. The term palets he applies to both envelopes of the flower, now called flowering glume and palet, and in the statement of the lower flower neuter with one palet, he considers one of the outer glumes as a palet, or as belonging to a flower of which the other parts are suppressed. The change in Kunth's description was probably made so as to include the *Panicum molle* of Michaux. An examination of our specimens, as distributed by Mr. Curtiss, show two-flowered spikelets, the usual perfect flower, and a male one with three stamens and a thin, membranaceous two-nerved palet. In Kunth's description this character is referred to in his expression "varius bipaleaceo, masculo."

Mr. Bentham in the *Flora Australiensis* describing *Eriochloa* says, spikelets one flowered. Benth. and Hook., in *Genera Plantarum* say the same. The question arises as to where did Mr. Bentham refer our *Eriochloa mollis*, the *Panicum molle* of Michx. He does not refer to it by name, and has either ignored it or has referred it to *Panicum*. But it does not fit in any of the sections of *Panicum*, and is in all respects a good *Eriochloa* with a second flower, and the character of the genus should be altered to admit it.

The *Eriochloa annulata* No. 3,600* of Curtiss's distribution agrees with the *E. mollis* in having two-flowered spikelets. When I first received it from Mr. Curtiss I was inclined to call it a



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