

and more divided leaves. These two are medium-sized thistles, *C. araneosus* 5 to 7 dm. high, rather slender; *C. laterifolius* somewhat larger.

Where in an arrangement of the species of the genus do these two, with a glutinous spot on the involuclral bracts, belong? They do not seem to belong with any of the species which have been so characterized in the manuals; not, at least, with the *Undulati* group, for the leaves are glabrate above. Possibly they might be arranged with the *Altissimi*, but they lack the general appearance of that group; they have not the form of the leaf or the shape of the head. They seem, rather, to belong to the *Carlinoides* group, having a resemblance to *C. Americanus*. If they are hybrids one of the parent forms would seem to be *C. Americanus*, and the other some species with a glutinous spot on the involuclral bracts. In *C. araneosus* we would have to account for the arachnoid involucre, and in *C. laterifolius* for the broad leaf in the typical forms; in either case the parent form does not seem to be available. Besides there seem to be hybrid forms of *C. Americanus* and *C. laterifolius*, plants with broad leaves, a glutinous spot on the involuclral bracts, and fimbriate bracts. Considering their general characteristics it would seem that they belong with the *Carlinoides* group, near to *C. Americanus*.

With the *Carlinoides* group also belong *C. spathulatus* Osterhout, and *C. modestus* Osterhout. *C. aciculatus* Osterhout belongs with the *Undulati*, having a resemblance to the species of that group. It has narrow involuclral bracts, slender spreading spines, and leaves tomentose on both sides. It is about as near *C. undulatus* Nutt. as any of our Colorado species.

WINDSOR, COLORADO

SOME ABNORMAL POPLAR FLOWERS

BY GEORGE T. HASTINGS

In April, 1916, a peculiar tree of the aspen—*Populus grandidentata*—was found beside a new road on the talus slope of the Palisades about opposite 220th Street, New York. The tree at

the time was covered with slender green catkins of pistillate flowers. On several branches there were larger, gray catkins—apparently staminate—so different from the others as to be noticeable at a considerable distance. These catkins proved to

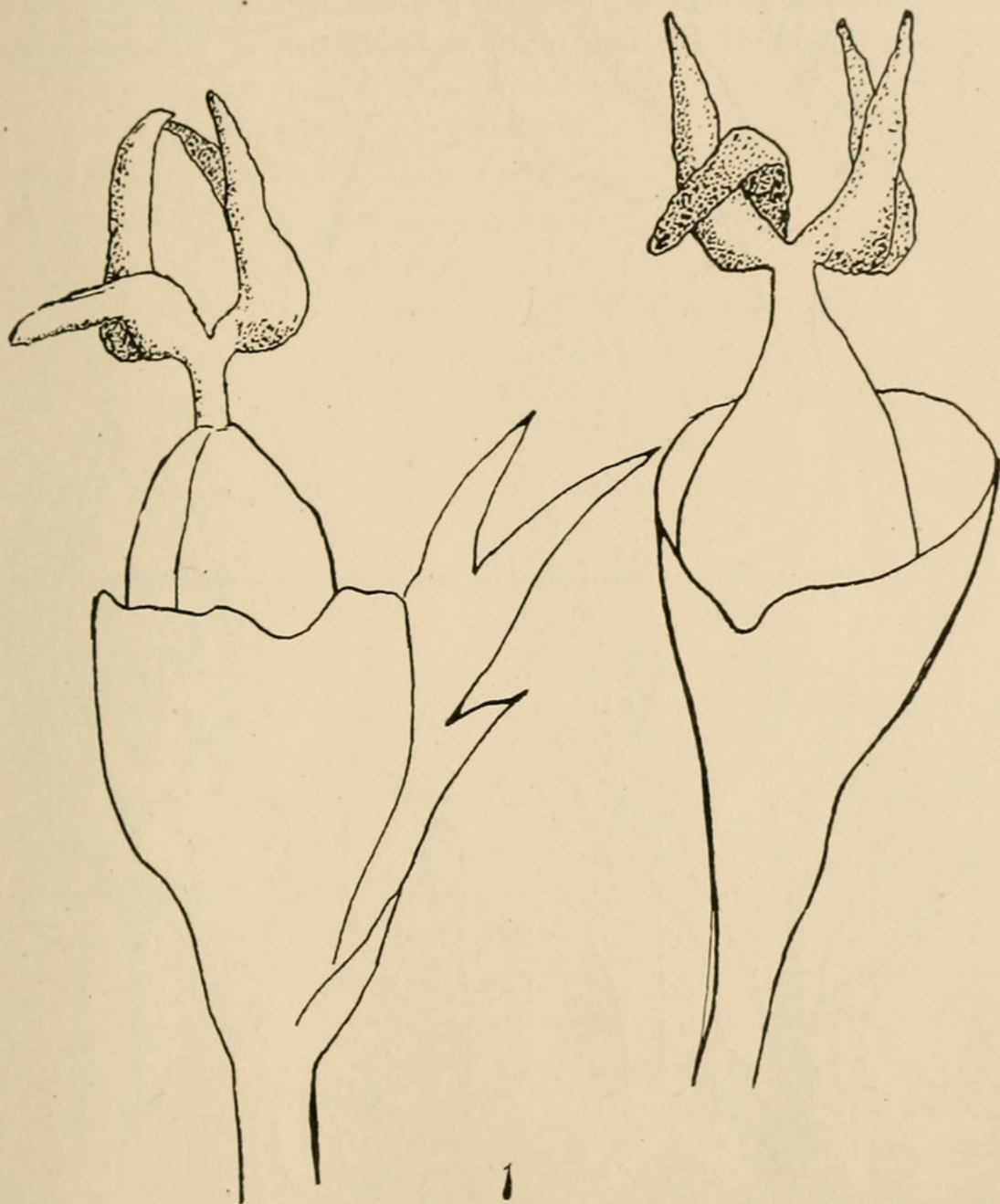
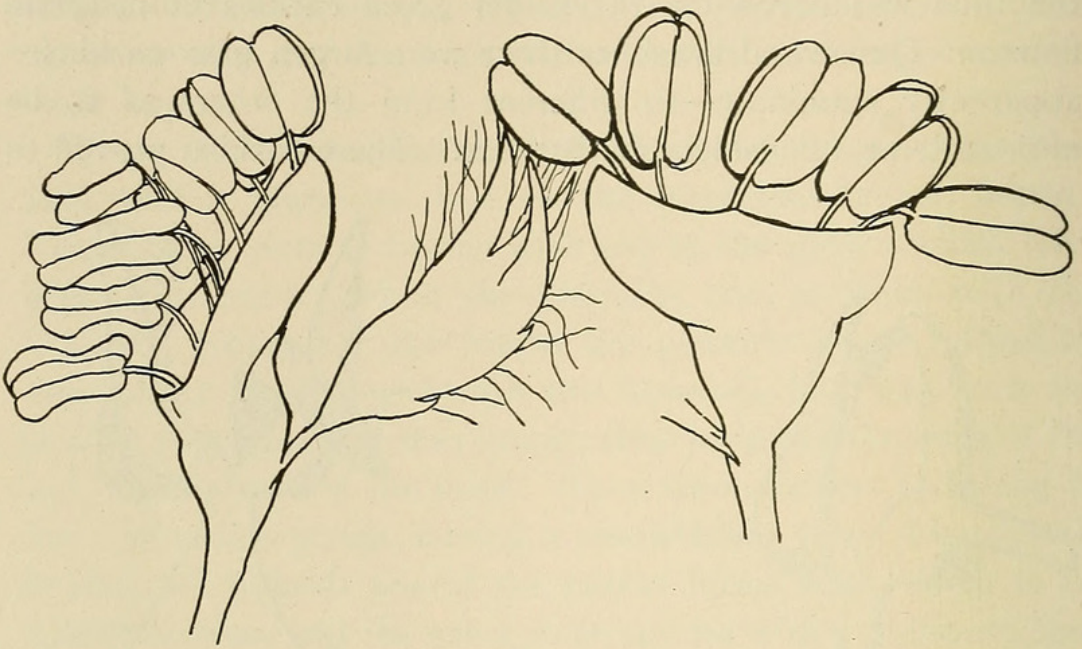


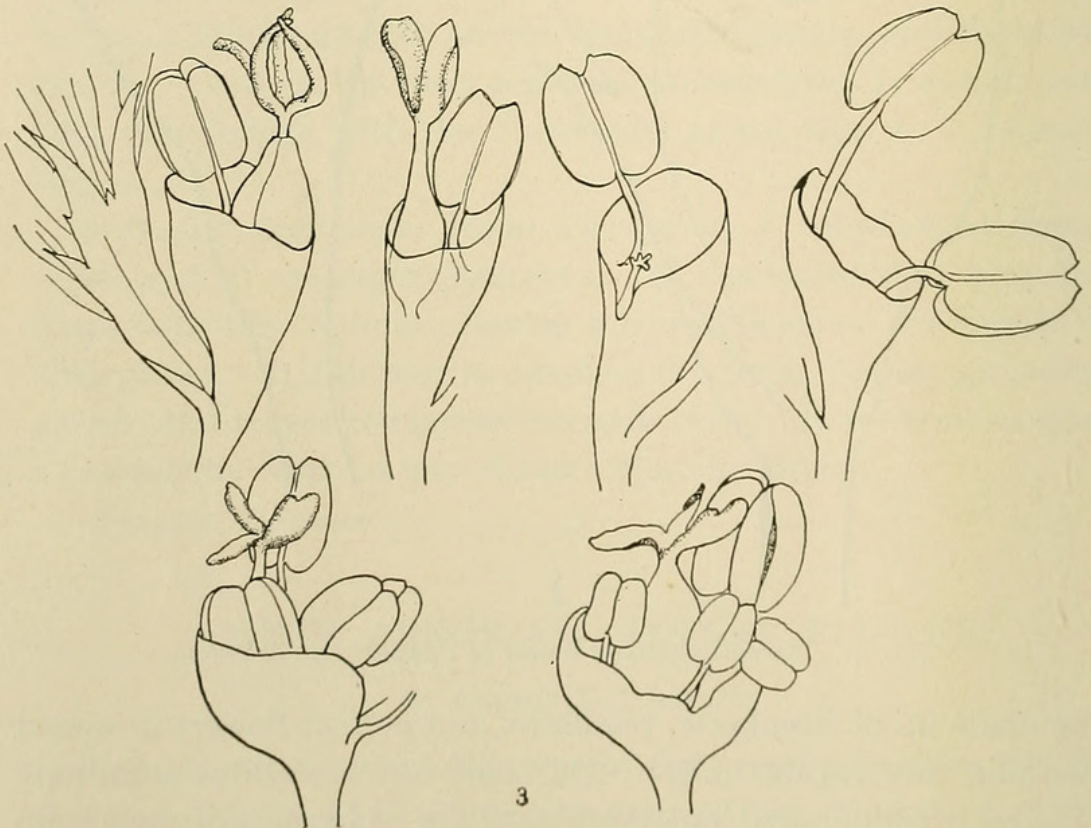
FIG. 1. Normal pistillate flower of *Populus grandidentata*.

be made up of staminate, pistillate, and perfect flowers arranged without any regular order. On some of the catkins staminate flowers predominated, on others pistillate—but most of them were made up almost entirely of perfect flowers. The tree was visited



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FIG. 2. Normal staminate flowers of *Populus grandidentata*.



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FIG. 3. Various abnormal flowers of *Populus grandidentata*.

again in the latter part of April, 1917, and the same characters observed. On most branches the flowers were ordinary pistillate ones, like those on other trees in the neighborhood. They had a receptacle in the form of an oblique cup closely surrounding the basal one half or two thirds of the ovary, the two stigmas were

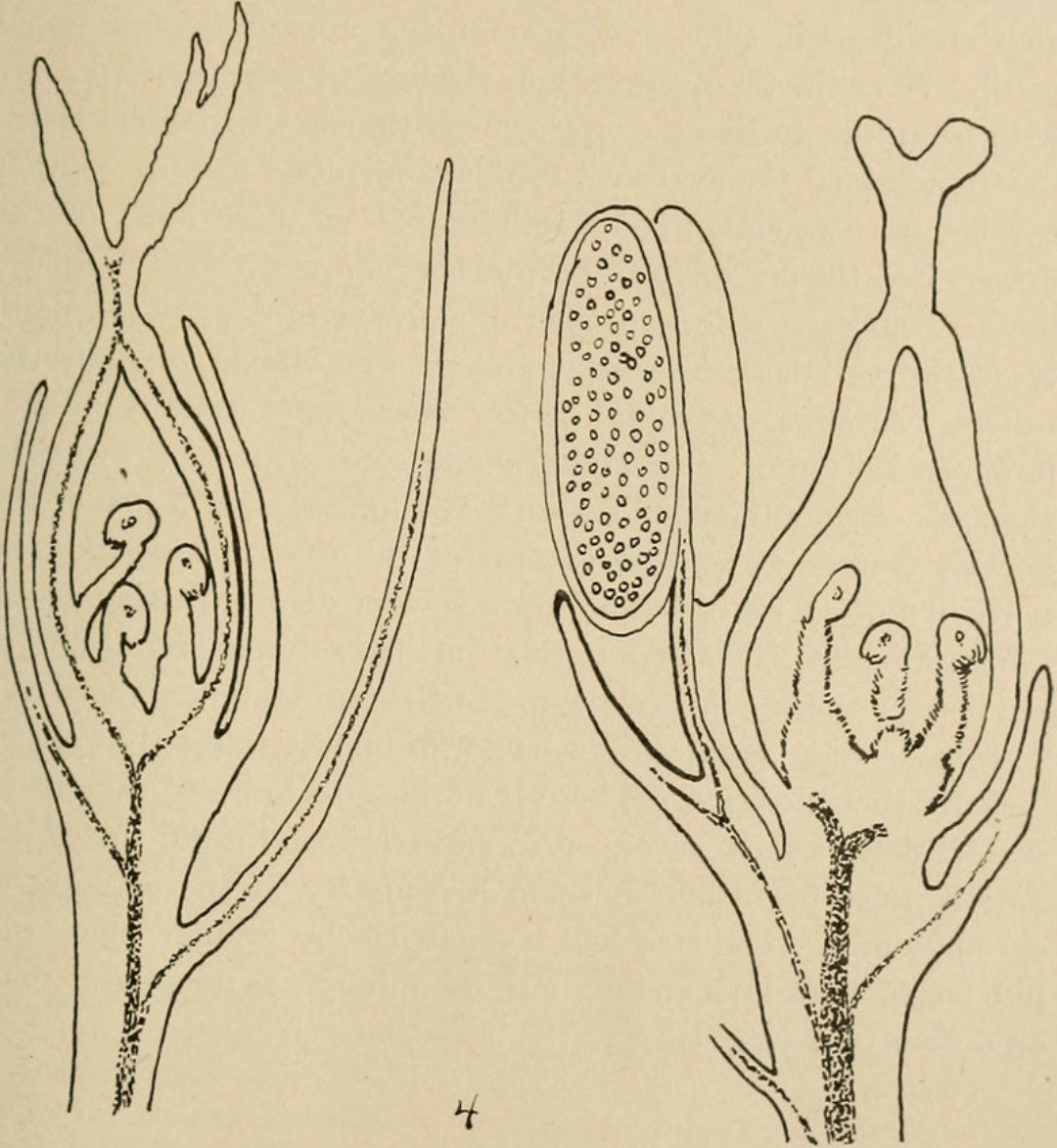


FIG. 4. Longitudinal sections of a normal pistillate and of a perfect flower of *Populus grandidentata*.

so deeply cleft as to give the appearance of four stigmas. On nearby staminate trees the flowers were normal—a shallow, oblique cup or disk with ten or twelve stamens, except near the tip of the catkins where the number of stamens was reduced to three or four. On the tree in question the abnormal catkins were

on several branches on the south and west sides of the tree—the sides of best development—though even on these branches some twigs bore normal catkins. The abnormal catkins consisted chiefly of flowers with the deep cup-shaped receptacles of pistillate flowers with one pistil and one or two stamens, both pistil and stamens being functional. A few had perfect stamens but an aborted pistil, some a very small but apparently functional pistil. Near the tip of the catkins the flowers were very irregular with from four to six stamens, some with, some without a pistil. Scattered along the axis were ordinary pistillate flowers. Other catkins were predominately staminate. In these most of the flowers had the cup-shaped receptacles characteristic of pistillate flowers, but each with a number of stamens (4–6), and no pistil. Near the tip there was even greater irregularity than in the others. Around a terminal perfect flower were some staminate flowers with ten or more stamens and some stamens growing in the axils of smooth-edged scales. The figures show a few of the normal flowers, as well as several of the abnormal ones. The normal flowers were drawn from flowers of neighboring trees. Longitudinal sections of a normal pistillate flower and of one of the perfect ones are also shown. In the normal flower there was no trace of rudimentary stamens nor of bundle traces that might indicate their position. There is nothing to indicate that these perfect flowers show reversion to ancestral conditions, the explanation must be rather in some irregularity in the division of chromosomes. The tree had been struck by rolling stones and patches of bark knocked off, but the injury was no greater than on dozens of normal trees in the immediate vicinity.

YONKERS

NEWS ITEMS

At the annual meeting of the club held at the American Museum of Natural History on January 8, all the officers were re-elected for 1918. President Richards announces the same committees for 1918 as before with the addition of Mr. George T. Hastings to the Field Committee.



Hastings, George T . 1918. "SOME ABNORMAL POPLAR FLOWERS." *Torreyana* 18(1), 16–20.

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