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## Abnormal Flowers of *Populus grandidentata* Michx.

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## ABNORMAL FLOWERS OF *POPULUS GRANDIDENTATA* MICHX.

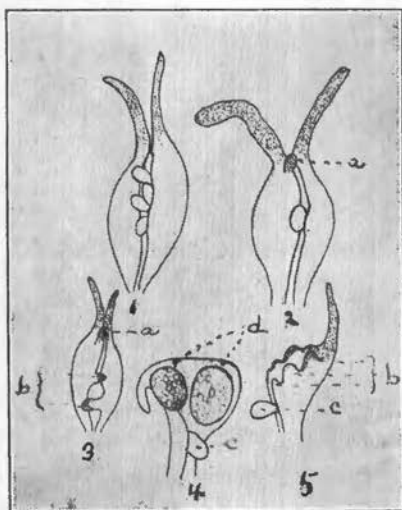
LUCY M. CAVANAGH

In the spring of 1924, a group of ten or twelve large-toothed aspens, *Populus grandidentata* Michx. showing several pistils to a flower, was found near Iowa City. The buds were just opening but the form of the flower cluster led to their being mistaken for staminate catkins, and it was not till they were examined in the laboratory that the nature of the flowers was discovered.

Several weeks later these trees were again visited, but fertilization had not taken place and dry catkins covered the ground.

In 1926, a more careful study of the flowers from these trees was made, and during this spring (1930), further observations were added. The results are here briefly summarized.

The individual flowers had from nine to sixteen pistils two or three of which were about one half the size of those in normal flowers, the others being much reduced; usually one to three stamens; and from two to five smaller structures that combined characters of both stamens and pistils.



one of ovules.

The pistils (figs. 1, 2) in all but two cases consisted of single carpels which were in no case entirely closed, and were usually open to the base with ovules protruding. The stigmas were red as in normal flowers, and usually two in number, though a third smaller lobe (a, figs. 2 and 3), also red, occasionally appeared at the top of the ovary. The red color was also sometimes shown on lateral lobes (fig. 3, b) that in position and form reminded

The anthers were usually normal in size, but often had one cell much reduced.

The remaining structures are illustrated in figures 4 and 5. They appeared to be open, lobed carpels of various forms, usually with a stigmatic lobe (fig. 5, a) at one end and several lateral lobes (fig. 5, b). Some of these lateral lobes were entirely green, some green with red borders, and in a few were colorless and appeared like ovules (fig. 5, c). In a number of cases these ovule-like bodies were attached to the margins of the open carpels.

Figure 4 represents an odd structure that might be regarded as a dilated filament with two anther cells (d), and a lobe (c) which had the appearance of an ovule.

This year (1930) the trees which bore the flowers just described had been cut down and the others were trimmed so high and flowers could be obtained only from the upper parts of the trees. These flowers were similar to those just described, but with a greater percentage of stamens.

Perfect flowers have been reported for the Family *Salicaceae* in the Genus *Salix* by Shimek<sup>1</sup> and Chamberlain,<sup>2</sup> and in the Genus *Populus* by Hastings,<sup>3</sup> and Erlanson and Hermann.<sup>4</sup>

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<sup>1</sup> Shimek, B. *Perfect Flowers of Salix amygdaloides*. Proc. Ia. Acad. Sci., vol. III, pp. 89-90; 1895.

<sup>2</sup> Chamberlain, Charles J. *Contributions to the Life History of Salix*. Bot. Gaz., vol. 23, pp. 147-170; 1897.

<sup>3</sup> Hastings, G. F. *Some Abnormal Populus Flowers*. Torreyia, vol. XVIII, pp. 16-20; 1918.

<sup>4</sup> Erlanson, Eileen Whitehead and Frederick J. Hermann. *The Morphology and Cytology of Perfect Flowers in Populus tremuloides Michx.*