

A DIMORPHISM IN *TIARELLA CORDIFOLIA*.

C. H. DANFORTH.

TEN years ago while botanizing in Norway, Maine, the writer was surprised to find two sorts of anthers in *Tiarella cordifolia*. It was noticed at the time that in all the fresh flowers on some plants the anthers were bright yellow while in others they were all of a decided orange color. The two types were quite distinct in this one particular, but apparently identical in every other.

Since 1901 I have regularly observed both forms at Norway, but no further study of them was made until the present season when I examined the anthers and pollen microscopically. The color of the anthers was then found to be due largely or entirely to the contained pollen. The dry pollen grains are elliptical in outline. Those from the yellow anthers are of a clear yellowish green color, those from the orange anthers have a reddish brown tint. When placed in water or weak alcohol they become shorter and somewhat triangular. In a few moments, especially in the alcohol, small droplets of the coloring matter are forced through the wall and collect on the surface giving the grain a tuberculated appearance. The orange pigment is in relatively greater abundance and is more noticeable than the yellow. It is not dissolved by water or weak alcohol, in which the droplets tend to coalesce, but it does mix freely with ether, chloroform, xylol, and strong alcohol.

The anthers retain their color, at least for a time, in pressed plants but in old herbarium material they are badly faded, due it may be to the poisoning agents that have been used. Recently, however, I have received fresh specimens of both forms from Caribou, Maine, Bridgewater, New Hampshire, and Barre, Vermont, which indicates that the variation is of widespread occurrence. The relative abundance of the two forms has not been determined, but it is a personal impression that they are in the proportion of at least two plants with yellow anthers to one with orange.

No traces of mycelium or other evidences of pathological change could be detected in fresh mounts, and both kinds of pollen readily germinated under artificial conditions producing good tubes. Thus it seems very probable that we here have to do with normal plants



involving a marked and clear-cut variation in a single character. Intermediate shades have not yet been found, nor have both colors been seen on the same plant.

The occurrence of this supposed single-character variation indicates that *Tiarella* may be desirable for breeding experiments. The further fact that the two forms are distinguishable by their pollen (which follows a reduction division in the mother cells) suggests that they may be used in cytological and Mendelian studies.

The experience of Dr. Coville with *Epigaea*<sup>1</sup> suggests that with a little care in regard to a few factors many of the wild plants could easily be brought under cultivation and exceptionally good specimens obtained. Moreover there is a sheet of *Tiarella* in the Gray Herbarium bearing a note dated May 11, '86, addressed to Dr. Gray, and signed by M. A. C. Livermore, in which it is stated that the specimens are from a bed of *Tiarella* which originally came from Wilton, New Hampshire. This indicates that the plant had been successfully cultivated in the garden. So there is good reason to expect *Tiarella* to succeed in experimental cultures.

TUFTS COLLEGE, MASSACHUSETTS.

## A NEW VARIETY OF *RUBUS CANADENSIS*.

W. H. BLANCHARD.

*RUBUS CANADENSIS* L. VAR. **septemfoliolatus**, n. var. *Rubus nigrobaccus* fruticosus erectus glaber modice elatus, caule tereti aculeis multis brevibus armato, foliis atrovirentibus latis proximis, foliolo terminali saepe in foliola tria sejuncto, deinde foliis 7-foliolatis.

*Turiones novi.* Caules 9–12 dm. alti, glabri, subteretes, aculeis multis brevibus validis 2 mm. longis, circa 15 ad unciam, armati. Folia 5-foliolata, magna, glabra, atrovirentia; foliola lata breve acuminata, contigua et incubantia, pari inferiore sessili, pari laterali breve petiolulato, foliolo terminali in petiolulo 2.5 cm. longo, latissimo, cordato, saepe lobato vel partito, aut minus saepe in foliola tria diviso.

*Turiones veteres.* Inflorescentiae plus minusve cymosae aut interdum breve racemosae in ramulis crassis saepe frondosis 7–12 cm.

<sup>1</sup> Coville, Frederick V. The use of acid soil for raising seedlings of the Mayflower, *Epigaea repens*. Science, N. S., Vol. XXXIII, No. 853, pp. 711–712.



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