

Indeed, Wood in his Class Book, placing the plant in the genus *Paronychia*, calls it *Canadensis*, perhaps compelled to this by the fact that *Paronychia* already held a species *dichotoma*, quite another affair. But if the two species be distinct, as I am inclined to believe, it may be a matter of doubt as to which form is entitled to take the Linnæan name. But as Nuttall first discriminated between the two, it would be just to retain his name *A. capillacea* for the one, and to give the name *dichotoma* to the other, thus avoiding the doubt.

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Philadelphia, Oct. 22.

§ 62. *Pontederia cordata*, L.—A season or two back a clump of Pickerel-weeds engaged the attention of Mr. Hall and myself by an appearance of di- or trimorphism in the flowers, and we gathered a number of heads for examination at more leisure than we then had. It was, however, only late this autumn, too late to get fresh specimens, that I renewed my examination, and in the dried flowers I did not well make out what it was that struck us in the fresh ones, and unfortunately Mr. Hall is not here to give me the benefit of his recollection. H. Müller (*Befrucht. der Blum.* p. 62.) gives Kuhn (*Bot. Z.*, 1867, S. 67) as his authority for stating that *Monochora*, L., has cleistogamic flowers; and states that his brother has found in South Brazil two species of *Pontederia* probably trimorphic. I hope to resume the subject next season, but in the meantime wish to call attention to the result of the examination of the dried spikes, as it revealed some points of interest.

The spike of *Pontederia* is compound, the spikelets being arranged in the $\frac{1}{3}$ system common to endogens. The main spike begins to flower at the base, but, as the flowers of the spikelet develop successively, mature and immature flowers may be found all along the spike, when in full bloom, giving it its somewhat ragged appearance. There are three (or perhaps sometimes four) flowers in each spikelet, but to what extent they all develop I am in doubt.

In all the flowers which had matured and coiled up, I found the style as long at least as the longer stamens, but in all the other flowers, whether fully opened or apparently about opening, the style was intermediate in length between the two sets of stamens. This lengthening of the style as the flower matures occurs in other plants (for example *Epiphegus*, *Menyanthes*,) and in some cases might be explained by its partaking of the general growth of the pistil, but in this case and that of the sterile flowers of *Epiphegus*, this solution is not so satisfactory.

Of the six stamens, three on long and three on short filaments, I uniformly found the anther cells empty or nearly so in the fully opened flowers, but in those apparently nearly ready to expand the anthers seemed just mature and shedding their pollen, all the six equally. In the unopened flowers all the stamens held their heads erect, but in the opened flowers the shorter three uniformly had their anthers turned down. These unopened flowers seemed generally, if not always, the second one of the set on the spikelet, but I have not examined this sufficiently.

The most remarkable point noticed was the difference in the size

of the pollen grains, those of the longer stamens being more than twice the diameter, or than eight times the mass, of the grains of the shorter stamens. Though minute these smaller grains seem as perfect as the larger, and in fact, if I am not greatly mistaken, in tearing the stigmas I more frequently found pollen tubes issuing from the smaller than from the larger. Still, as I was working with a simple dissecting microscope, I may be wrong about their being perfect. Both sets of anthers certainly drop their pollen about the same time and in the same manner, there being nothing of an appearance of immaturity in the lower. I do not know of another instance in which there is this difference of size in the pollen of the same flower, though, as Darwin has shown, in polymorphic plants there is a difference in the potency of the pollen; and where there are two kinds of flowers on the same plant, the pollen of those constructed for self fertilization is possessed of "preternatural instinct and activity."*

In one of the rolled up flowers there was the wing of an insect, seeming to show attraction for insects.

Pontederia ripens but one seed, and the question forces itself on the attention, To what purpose this vast multitude of pollen grains, and of two sorts? I did not succeed in finding pollen tubes in the style, and perhaps with my instrument should not have been able to distinguish them, though they were manifestly issuing from some grains taken from the stigmas. The floral organs including the style are beset with hairs or glands of a peculiar appearance, and the question presented itself to my friend Mr. Merriam (in the case of *Lobelia*) whether some of the excess of pollen grains may not be used in some way to nourish the pistil, exclusive of the extra number which it is now known are often required for direct fertilization through the stigma, or for attracting hungry insects.

My supply of the two other genera of this Order, native with us, *Heteranthera* and *Schollera* was too limited and imperfect to yield satisfactory results. *Heteranthera* gets its name from the striking difference in its anthers, and I thought I noticed a difference in the pollen, but wait for better specimens. W. H. L.

§ 63. *Coleanthus subtilis*, Siedel, or *Schmidtia utriculosa*, Sternb., is a rare little grass of very local occurrence and peculiar distribution. Steudel credits it only to Bohemia, but it has long been known in Norway. We have now received it at Cambridge from Mr. Joseph Howell, who collects it on Sauvier's Island in the Oregon River! In attestation whereof I send a specimen to the Torrey Club, through its distinguished agrostological President, and ask that it may go to the Torrey Herbarium. A. GRAY.

§ 64. Publications.—1. In *Nature*, Sept. 23, is a notice of a Report of the Neilgherry Lorantheaceous parasites, in which Dr. Bidie, the author, is quoted as asserting that the Lorantheaceæ (Mistletoes) "derive their nutriment not from the descending elaborated, but from the crude ascending sap of the host; hence their need for green foliage containing chlorophyll and possessing stomata." "With reference to the mode of attachment between the parasite

*Dr. Gray, as reported in proceedings of Conn. Valley Bot. Soc., Oct. 6th, 1875.