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In *Oxalis* the about equal number than the short-styled between the two sets as (long-styled). s in the stamens, actively with the ens of *Oxalis* in ail³. But while or two forms of s, however, these same may be said us. It was also iment, the great-

er from stamens erogone plants⁴: ility of a single examined in this- en grains of the those of the mid-styled flowers are of intermediate

species, the num- two of the forms ould reveal all in or more of the ultiplied non-sex- ted sexually, but only themselves⁵. ve one or two of ed.

plants of a sup-

flowers, etc., Chapter 5. os. 1-3. lowers, 182.

Akad., 1866, 373; Bot. Forms of Flowers, 268

posed trimorphic species (*O. violacea*), and observing only long- and short-styled plants, I made measurements of the flowers of many plants, but found only these two forms, although the plant is very abundant and a native species. I have since examined a great many more plants about Madison, Wisconsin, in the vicinity of St. Louis, Mo., and from central Illinois, without finding a single mid-styled flower; and my correspondents who have paid attention to the subject have had the same experience. Numerous herbarium specimens, representing nearly the entire range of the species, are also all long- or short-styled. From a careful consideration of these facts, I have been convinced that this species has become dimorphic from the suppression in some manner of the mid-styled form, for it cannot be doubted that it is descended from originally trimorphic parents, since the stamens are still in two remote sets, not as yet combined in a single set, though in flowers of both sorts they appear to be somewhat closer together than they should be in a trimorphic species. Mr. B. M. Vaughan, who studied *O. violacea* in my laboratory some years since, thought that he detected an abortion of the pollen of the mid-stamens in both long- and short-styled flowers, indicating a loss of function that might be held as indicative of their ultimate disappearance. How far this may be true I do not know. Mr. Darwin, to whom some of these facts were communicated shortly before his death, also thought that this might be a trimorphic species becoming or become dimorphic¹. I may add that our other species of the *violacea* group are found only under these two forms in herbaria, so far as I have examined them; but Hildebrand has cultivated the mid-styled form of *O. respertiliensis*².

Our yellow-flowered caulescent species of the *corniculata* group are more puzzling than those which have just been considered. In the typical smaller-flowered form of *O. corniculata* and its variety *stricta*, the styles are a little shorter than, or about equal to, the longer stamens, and the flowers are unquestionably homogone³. But in the common villous St. Louis plant, which is regarded as a form of var. *stricta*, the flowers are larger and the pistil appears to have increased in length correspondingly with the petals, as may be seen from the following measurements, from the base of the flower (Table I). These flowers might be taken for the long-styled form of a trimorphic species; but the pollen-grains from both sets of stamens are essentially of the same size, so that this theory is untenable⁴, and both *corniculata* and this variety are to be regarded as merely variable in the relative length of stamens and pistil⁵.

There are also numerous stipulate specimens which could be referred to *O. corniculata* in the broad sense in which that species is understood, if it were not that they are still larger-flowered and may be trimorphic. I append some measurements of the stamens

¹ As I stated in the American Naturalist, in 1882, Hildebrand (Monatsher. Berl. Akad., 1866, 357,—and recently in Bot. Zeitung, 1887, 22) reports one mid-styled specimen of *O. violacea*, without locality, in the herbarium of Alexander Braun; and a figure of a mid-styled flower of what is called *O. violacea* is given by Payer (Organogénie, Pl. 11, fig. 19,—copied in Luer'ssen's Handb. Syst. Bot., ii, 168). I also find several mid-styled specimens under this name, from about Buenos Ayres, in the Gray herbarium, but they are not our North American plant.

² Lebensverhältnisse der Oxalisarten, 36.

³ See Hildebrand: Monatsher. Berl. Akad., 1866, 368; Bot. Zeit., 1887, 37.

⁴ Hildebrand (Monatsher. Berl. Akad., 1866, 368-9) found one long-styled specimen of *stricta* collected by Treviso (but without indication of locality), and one from Missouri, while a specimen from Kentucky is said to be short-styled.

⁵ See Darwin's Different Forms of Flowers, 181.