THE INFLUENCE OF THE APIDÆ UPON THE GEOGRAPHICAL DISTRIBUTION OF CERTAIN FLORAL TYPES.

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(Continued from page 357.)

In the three types to be considered in this place, then, the conspicuous portion of the perianth is almost always campanulate or more generally widely patent and sometimes reflexed. The anthers are regularly elongate in form, linear or subulate, and basifixed on filaments of greater or lesser length. The pistil is usually simple, with filiform style and punctiform stigma, but to this there are rare exceptions. The Dilleniaceous type is distinguished by its numerous, generally free, stamens with long or short filaments, and sometimes several pistils free almost to the base. In the Solanum-Cassia type the stamens are few, generally five or ten, and the pistil is one, with filiform style and simple punctiform stigma. The Melastomataceous type is distinguished from the Solanum-Cassia type by the elongate filaments.

In the systematic groups to which these forms have been assigned by taxonomists, they are for the most part aberrant, having, for instance, a patent perianth, while the type of the family may be campanulate or tubular, and elongate, basifixed anthers, while the type form in the family may be a short, versatile anther. This deviation from the type of the group to which they systematically belong renders their structural peculiarities more conspicuous, and leads us to seek for an explanation of their form in some special internal or external factor.

The explanation of floral peculiarities is usually sought in the method of their pollination, since it has been very generally assumed that flowers are adaptations. The floral ecology of the forms under consideration is by no means thoroughly known, but data are sufficient to be highly suggestive.

Concerning the Dilleniaceous type, the smallest of the three, no general statement can be made. Some of the forms seem to be ornithophilous, some may be anemophilous, and still others appear to be adapted to bees.

There can be little doubt that the Solanum-Cassia type represents an adaptation to the larger pollen-collecting bees. The class is practically coextensive with Delpino's Borago type, but includes also zygomorphic forms, which he treats elsewhere. *Solanum* and *Cassia* have been conclusively shown to be dependent for pollination upon the larger Apidæ, as