
PUBESCENCE AND OTHER EXTERNAL PECULIARITIES OF OHIO PLANTS.

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In this study of the protective coverings and other peculiarities of the leaves and twigs of Ohio plants, the entire state herbarium has been examined and the plants classified under the following heads:

1. Pubescent—(a) glandular, (b) stellate, (c) tomentose;
2. Glabrous;
3. Glaucous;
4. Granular;
5. Scurfy;
6. Resin dotted, punctate, peltate scales.

In some cases it has been difficult to classify certain species on account of many of the forms merging almost imperceptibly from one to another. This is noticeable especially in pubescent and tomentose forms. In other cases the difficulty in classification has come from the change which takes place during development from the young to the mature condition.

In *Salix candida*, for instance, the leaves are loosely tomentose when young, but become glabrate above when mature. In *Quercus nana* the leaves are stellate pubescent above when young but become glabrous when mature, while in *Quercus minor* the young twigs are tomentulose but the mature ones glabrous. In all cases of this kind the forms have been listed under two or more heads.

The entire number of reported Ohio vascular plants is about 2200. Of these about 2125 are angiosperms, 10 gymnosperms, and 70 pteridophytes. 904 plants were found to be pubescent. This includes all degrees and varieties of pubescence from those with only a soft fine pubescence like the clover and *Oxalis* to those with heavy hairs like the nettles or thistles. For a dense velvety pubescence of both twigs and leaves *Althaea officinalis* might be examined; for hirsute pubescence of both twigs and leaves *Asclepias tuberosa* is a good example; for soft downy pubescence

Phlox pilosa; for appressed pubescent leaves *Hydrophyllum virginicum*; for ciliate leaves *Valeriana sylvatica*.

Only 37 of the 904 pubescent plants are stellate-pubescent, but these are very striking. The butternut, *Juglans cinerea*, has stellate pubescent leaves, and also four of the oaks; *Quercus nana*, *Quercus marylandica*, *Quercus minor* and *Quercus prinoides*. The most pronounced of this type, however, are the two crotons, *Croton capitatus* and *Croton monanthogynus*.

Of the glandular pubescent forms there are 58. Many plants have stems of this type without having the leaves to correspond. About half of the roses, as well as *Rhexia virginica* and *Scutellaria cordifolia* have glandular hairs on the stems. One of the most striking forms in the plant kingdom, the *Drosera* or sundew, belongs to this group.

There are 67 tomentose forms but all of them are not constant throughout their whole life. About one-half of those which are tomentose when young become either glabrous, glabrate or slightly pubescent when mature. Many of the oaks, among them *Quercus platanoides*, and *Quercus minor*, are densely tomentose on the under side of the leaves. The young twigs of *Quercus minor* are also tomentose. *Viburnum alnifolium* is interesting in being one of the few which is stellate-tomentose.

532 plants were found to be entirely glabrous, that is, having both sides of the leaves and the twigs entirely free from hairs throughout their whole life; but 1019 were found to have one or more glabrous parts. The spring beauty, *Claytonia virginica*, and wake-robin, *Trillium grandiflorum*, are common examples of the former; *Cercis canadensis* and *Aster laevis* of the latter.

Of the glaucous forms there are 59. The glaucous bloom of twigs and leaves is identical with that on some fruit, such as plums and grapes, but that on leaves is not usually so noticeable. It may be seen on the under side of the leaves of *Salix glaucophylla* and *Salix myrtilloides*, and on the stems of *Vitis bicolor* and *Helianthus grosseserratus*.

The granular and scurfy forms are comparatively few in number, only about 24 of the former, and 34 of the latter. The upper surfaces of the leaves of *Silene armeria* and of *Amaranthus blitoides* are granular. All of the chenopods are scurfy.

This leaves only those which are resin-dotted, punctate, or have peltate scales. There are 106 in the division, and it is perhaps the most interesting group of all. Beautiful peltate scales are found on *Hicoria minima* and on *Chamaedaphne calyculata*. Resin-dots are found on many, among them being *Ribes floridum*, *Gaylussacia resinosa* and *Glecoma hederacea*. The most strikingly punctate are the polygonums and the hypericums.