terandry and movements of filaments and styles are here decided. On the opening of the bud the almost equal anthers converge and place themselves in line across the throat of the flower. The stamens curve forward so as to come into more ready contact with the body of the visiting bee (Fig. 1), while the style is curved backward and lies under the upper lip of the corolla. When the stamens become effete the pairs on either side diverge (Fig. 2) and bend back, stationing themselves under the upper lip while the style moves forwards, takes the place of the effete stamens and opens its bilobed stigma (Fig. 3). Such is the proterandry of this flower which, as most of its allies, requires the visits of bees for its fertilization.

The flower is of a pale rose color, which is deeper on the upper lip. The upper and lower lips are spotted with purple, while the

Fig. 1.

Fig. 2.

Fig. 3.

Physostegia virginiana. FIG. 1.—Male state. Fig. 2.—Stamens curved back. FIG. 3.—Female state; *a*, anthers; *st*, stigmas.

interior of the inflated corolla is striped with the same color, the lines leading downwards and backwards towards the stamens, the filaments serving as guides to the honey, which lies in a tube formed by the contraction of the corolla along the line of the outer set of filaments. In this way two tubes are formed, an upper and larger one, which is convenient for the bees, and a lower contracted one which appears more accessible at first sight, but contracts below, so as to doom to disappointment the mistaken insect. The lines of purple lead to the true entrance. In this species, as in the Brunella, the honey gland seems to be a body of greenish-yellow color, occupying the place of a fifth nutlet supposing that the flower contained that many.— *Aug. F. Foerste, Granville, Ohio.*

BEGINNING BOTANY.—In teaching botany during the past twelve or fifteen years, I have generally set students at work for several weeks, in the beginning, with specimens only. These are given each member, and he is required to investigate and report at the meeting of the class. Some of these reports are made in writing. More or less of this work is done throughout the course. It has proved very satisfactory to pupil and teacher.

In March, before the opening of vegetation, the last class of freshmen began with the study of young branches of numerous kinds of deciduous and evergreen trees and shrubs. I send you the notes of W. F. Hoyt, one member of the class. I do not know that they are any better than many others which were presented:

"A comparison of the leaves, buds and young branches of the Scotch pine with those of the Austrian pine.

"To a casual observer there is little difference between these two pines, but on close inspection it will be noticed that the Austrian bears a medium-sized cone, while the Scotch has a very small one, grown sparingly. [It was not intended to study cones at this time.]

"Again, the leaves of the Austrian pine are from five to five and a-half inches long. They are thick and stiff, while those of the Scotch pine are from two to three and a-half inches long, and are quite slender and limber. In both the leaves have the same shape; in both the leaves are in pairs, and when placed together make a long round body. The covering of the lower part of the leaves extends much farther up on the Austrian, and is of a much darker color than on the Scotch pine. The leaves of the Scotch pine are lighter in color; the tree and branches more slender.

"The outer bark of the Austrian is thicker and darker, and the primary leaf scales shows very plainly. The leaf scales do not show plainly in the Scotch pine. Both have three layers of bark, the outer being tough and thin, the next dark-green and spongy, the inner white; in the Austrian quite tender; in the Scotch tougher and more compact.

"As a general rule the Scotch pine sends out five branches in a whorl, while the Austrian pines show no such regularity in this respect. On cutting the limb the Scotch pine discharges more pitch than is discharged by the Austrian pine. The wood of the Scotch pine is a little lighter in color, the rings more plainly marked and the pith a little larger."

In a comparison of the twigs of butternut with those of the pepperidge, A. E. Hager observed, among other things, that the pith of pepperidge contained numerous hard transparent partitions. Our text-books all tell us of the cavities in the pith of butternut.

Work done later in the course was better done.—*W. J. Beal. Lansing, Mich.*

The Study of Parasitic Fungi.—One of the hopeful signs of the times, so far as botany is concerned, is the increasing interest taken in the study of the lower plants in this country. The Fungi and the minute forms of Algæ have been too long neglected excepting by a few lonely specialists here and there who quietly worked away, while almost entirely ignored by the mass of botanists and collectors. Now, however, the eyes of collectors,