some future time. Adult Mycetophilid flies have been collected by me on several occasions in parts of caves in which my larvæ were found, but it will be necessary to "breed" the pupæ and adults from the larvæ before the stages can be associated with certainty.

"I have never seen your larva, but I have from a cave in Jamaica, W. I., a Dipterous larva of similar form and habits, except that it lies suspended free from the rock on a thread of ropy slime-like material. I send you specimens of this larva and also its pupa in alcohol, likewise the imago which I bred from the pupa. You will see that it is a Mycetophilid fly. No doubt you have noticed similar flies in fungi and particularly on coatings of fungi under damp logs in dark woods. The larvæ of these fungus-inhabiting flies are similarly elongate creatures and form thread-like tracks of slime across the surface of the fungus. I have frequently observed that they can be made to glide back and forth along this track precisely in the manner of your cave larva, and that they can not be induced to quit their hold upon the thread. The interesting point to which I would like to call your attention is this. The silken thread of your Mammoth Cave larva and the slime thread of my Jamaican larva as well as the slime track of the fungus Mycetophilids may all be similar products of the salivary organs and more or less allied to true silk. The Jamaican cave fly makes a thread of six or eight inches in length fastened at both ends to the rock on the underside of a ledge or stalactite, but otherwise hanging free, and on this both larva and pupa are found suspended as in a hammock. In the damp air of the caves the thread never dries and hardens like ordinary silk, but remains viscous and slime-like as in

FIG. 4.

the case of other Mycetophilids. Nevertheless it possesses greater strength than an ordinary filament of mucus and it occurs to me that it is nothing more or less than a form of silk which does not lose its moisture and become hard. I have read somewhere quite recently of a process for the manufacture of artificial silk from a collodion produced by the action of nitric acid upon palm fibre. This silk remains moist until passed through anhidrous ether, which removes the moisture and hardens it. I would like much to know whether the silk thread of your cave larva is not also somewhat viscous, and it would be interesting also to note the action of ether upon it.

"In the *American Entomologist*, Vol. III., p. 30, 1880, I published a brief account of cave life in Jamaica. The article refers to the fly as follows; 'A Mycetophilid fly is found upon the stalactites, where its vermiform larva may also be seen suspended by ropes of slime.' Referring to my original field notes I find the following: 'Drunilly, Parish of Trelauny, Jamaica, W. I., April 18th, 1877,—among notes of examination of a large cave, much frequented by bats and containing many tons of bat guano—under ledges of stalagmite, long Dipterous larvæ slung in glutinous threads. Pupæ also collected slung in same manner. Probable imagoes also found. (I subsequently observed a pupa disclosing the fly and took specimens of all the stages.)' "

Explanation of the Figures.

Fig. 1. A dorsal view of a Mycetophilid larva found under a log. a, an outline of the head as seen from above.

Fig. 2. A web of one of the cave species.

Fig. 3. A web-making cave larva. a, an enlarged side view of the head.

Fig. 4. The pupa of the larva represented in Fig. 3.

SCARS ON APPLE TREE TRUNKS.

BY FRANK BOLLES, CAMBRIDGE, MASS.

OLD apple trees in New England are almost invariably thickly dotted with round scars in their bark. Chains of small holes seem at some more or less distant date to have been bored in the trunks and larger limbs, but to have healed without injury to the tree. I have seen trees which bore thousands of these marks, arranged with some appearance of regularity in rings encircling the trunk and extending tier upon tier from a few inches above the ground to a point much higher than a man's head. In meetings of ornithologists I have heard many of those best informed about birds' habits say that they were unable to name the maker of these marks. Farmers generally charge the Downy Woodpecker with doing the work, and they often call him a Sapsucker in consequence. Many people suppose that the holes were bored a long time ago, and that they are not now made, hence the impossibility of observing the bird while making them.

For several years I have kept close watch upon my old orchard at Chocorua, N. H., hoping that I might catch the little Sap-sippers at work. While my experience with the Yellow-breasted Woodpeckers inclined me to suspect them of being the birds concerned, I did not feel at all sure that the Downy, who is so fond of stealing a drink of sap from the drills of the Yellow-breasted, might not have learned to do some boring on his own account. This autumn I noticed half a dozen freshly made holes in a very old apple tree. That proved clearly the continued existence of the unknown worker. During September both Downy Woodpeckers and the Sapsuckers were abundant and very busy in my apple trees. The Downy was fearless and honest in his manner. He was after insects and he showed no shame and little timidity. The Yellow-breasted Woodpeckers, on the other hand, were very shy, and flew from a tree almost as soon as I came within sight of it. This led me to watch them persistently, and at last, not long before I was called back to Cambridge, I had the satisfaction of seeing one at work, drilling and drinking. After making perfectly sure that he was cutting new holes and drinking, I examined the holes closely and satisfied myself that they were identical with the kind so long in dispute. To wary *Sphyropicus varius*, therefore, in his autumn migration, is to be assigned the fretting of our old apple trunks. That he does all of this work, I believe, but cannot, of course, affirm without more evidence.

A MISTAKE IN TEACHING BOTANY.

BY B. FINK, FAYETTE, IA.

UNDER the above caption I wish to enter a protest against the method of teaching botany still in vogue in certain colleges and high schools. If the error named below prevails in any large University, it needs correction there as well. It exists in our village schools, and will till the higher schools make a change for the better, and send out teachers correctly trained in the subject.

The mistake is the old plan of a spring term in botany confined to a study of phanerogams, followed by the analysis of from fifty to one hundred plants. This way of studying botany came into use when the microscope was scarcely known among the masses, and when the eco-