"Descriptions of New Species of Mollusks," by H. A. Pilsbry.

"The Molting of Birds with special reference to the Plumage of the Smaller Birds of Eastern North America," by Witmer Stone.

The deaths of George Edward Dobson and Don Antonio del Castillo, correspondents, were announced.

JANUARY 28.

The President, SAMUEL G. DIXON, M. D., in the Chair.

Thirteen persons present.

A paper entitled "Contributions to the Zoology of Tennessee, No. 3, Mammals," by Samuel N. Rhoads, was presented for publication.

A resolution having been adopted at the preceding meeting providing for an inquiry as to the best method of exterminating the Tussock Moth, *Orgyia leucostigma*, with which the city squares and trees are infested, the subject was referred to the Entomological Section, a committee of which reported as follows:—

We would recommend for the destruction and extermination of the Tussock Moth, *Orgyia leucostigma*, that as soon as possible all the egg masses be hand-picked from the trees and destroyed. To be effective, this must be done before the first day of April. The trunk of each tree should be encircled about five feet from the ground by a band of "Raupenleim" or Dendroline, four inches wide and a quarter of an inch thick; this band should be renewed once a month during the summer season. All eggs, cocoons and caterpillars segregated below the band should be gathered and burned; or they may be killed by steam or by the flame apparatus used by house painters.

The committee is confident that the above method, if properly carried out, will exterminate the species in a given locality in two or three seasons, and put them under control the first summer. The committee has never seen this method properly carried out. Failure in the past has been due to the integrity of the band not being maintained and to the fact that a few segregated insects and eggs were simply brushed to the ground where the eggs hatched and the caterpillars reascended the trees. The life-history of the species will show why the methods described must prove successful, and we append an account of the transformations of this defoliator of our shade trees:—

"These caterpillars are first noticed on the trees in May, quite small, feeding on the leaves, and somewhat indifferently on either

the upper or under side. When suddenly disturbed they drop from their perch, suspending themselves by a silken thread, which is attached to the leaf from which they started. They retain this habit until they are nearly full-grown, which occurs about the middle or toward the end of June. They then begin to wander, leaving the trees on which they have fed, often crawling to others, and sometimes travelling several hundred feet from the starting point before deciding to pupate. When they are ready for the change they spin their whitish cocoon in any convenient place; in the angles of wooden tree boxes, under the rails of fences, in the interstices of bark of the trees themselves, and in fact in any likely or unlikely place except a perfectly flat, smooth surface. The caterpillar has a very small supply of silk only, and to eke this out uses its own hair which it breaks off close to the body and forms the cocoon by a sort of felting process, the silk serving to give form and holding together the hair. In the cocoon the larvæ change to dirty yellowish or gray pupæ, the male much smaller than the female and showing rudiments of the future wings, while the female is nearly double the size and is grub or slug-like in form. Less than two weeks thereafter the final change takes place and the adults emerge—the sexes strikingly dissimilar in appearance. The male has two pairs of broad dusty gray wings, the anteriors crossed by narrow black lines, and with a more or less prominent white spot toward the lower outer angle. The feelers or antennæ are broadly feathered and prominent, while the fore-legs are plumed and tufted, stretched straight forward when the moth is at rest, so as to be the most conspicuous feature of the insect. The female, on the other hand, is entirely without wings, and somewhat slug-like, consisting principally of an abdomen, which is enormously distended with eggs. When she emerges from the pupa, she crawls upon the cocoon to which she clings, almost motionless for the balance of her life. Egg-laying begins soon after impregnation, the eggs being laid upon the old cocoon and covered with a frothy mass, which soon becomes hard and brittle and is snowy-white. As the eggs are laid, the female diminishes in size, eventually shrinking almost into nothingness and finally drops off dead. Neither male nor female takes food in this stage, their adult existence is devoted merely to reproduction. From the egg-masses above described, a second brood of larvæ hatches in July and the same life cycle is repeated, the adults of this brood appearing in September. The eggs laid at this time of life remain unhatched during the winter."[1]

It will be readily seen from this life history that the females being wingless the species can only be distributed by the crawling propensity of the caterpillar; this, together with the fact that the eggs are all laid in a mass, gives the key to the method of destroying them. Each egg-mass destroyed means the death of about three

[1] Rept. Ent. Dep., N. J. Agric. Col. Exp. Station, 1894.

hundred and fifty caterpillars. It takes a little experience to find the egg-masses in the winter, and very few would escape, to hatch out, if they were intelligently sought for. It must be remembered that they go through their metamorphoses almost in an automatic way and human endeavor to check them must proceed after the same plan, an old Latin phrase not being forgotten: 'Nihil sine labore.' Generally no attention is paid to pests of this kind until they become so bad as to attract the attention of the general public.

Respectfully submitted by

HENRY SKINNER,
WM. J. FOX, } *Committee of the Entomological Section.*

The following were elected members: Henry Trimble, Charles E. Hite, C. Howard Colket, George de Schweinitz, M. D., James C. Corry, D. Calvin Mensch, Edward Gideon, I. Norris de Haven, Ruth Clement, M. D., and Sarah Y. Stevenson.

The following were ordered to be printed:—