# AN ABERRANT MAXILLARY PALPUS AND OTHER ABNORMALITIES IN A FEMALE OF ACRONYCTA GRISEA WALKER

By Asher E. Treat[1]
The City College of New York

The normal maxillary palpus in the noctuid genus *Acronycta* is a minute, two-jointed vestige, discernible only by manipulation or dissection under strong magnification. In the female of *Acronycta grisea* shown in the accompanying figures, the organ is extraordinarily developed on the right side, though normal on the left. The right prothoracic coxa is conspicuously shortened, and its femur is represented by a short, bluntly rounded stump, devoid of tibia and tarsus.

The moth, somewhat worn and frayed, was taken at light in Tyringham, Massachusetts, on 31 August, 1956. Its aberrant features were not noticed until it was removed from the killing jar. At this time the palpus and legs were clothed with scales and were still pliable. The hypertrophied palpus articulates with a soft membrane just posterior to the right pilifer at the base of the proboscis. Its basal portion is a small, knob-like elevation from which extends a slender stalk bearing a club-shaped terminal enlargement set at an acute angle with the rest of the appendage. Although distinct joints are not clearly evident, the structure appears, except for its size, essentially similar to the normal palpus. When dry, the terminal portion was collapsed and spoon-like as suggested in Figure 3.

The occurrence of the two abnormalities on the same side of the body leads to speculation as to their possible ontogenetic relationship. Could the truncation of the one organ be causally related to the hypertrophy of the other? Do both reflect a common genetic aberration, or are they the consequences of some developmental accident or injury? It is noteworthy that the intervening labial and cervical regions, including the labial palpus, were entirely normal and symmetrical with those of the left side.

[1] Public Health Research Fellow of the National Institute of Allergy and Infectious Diseases.

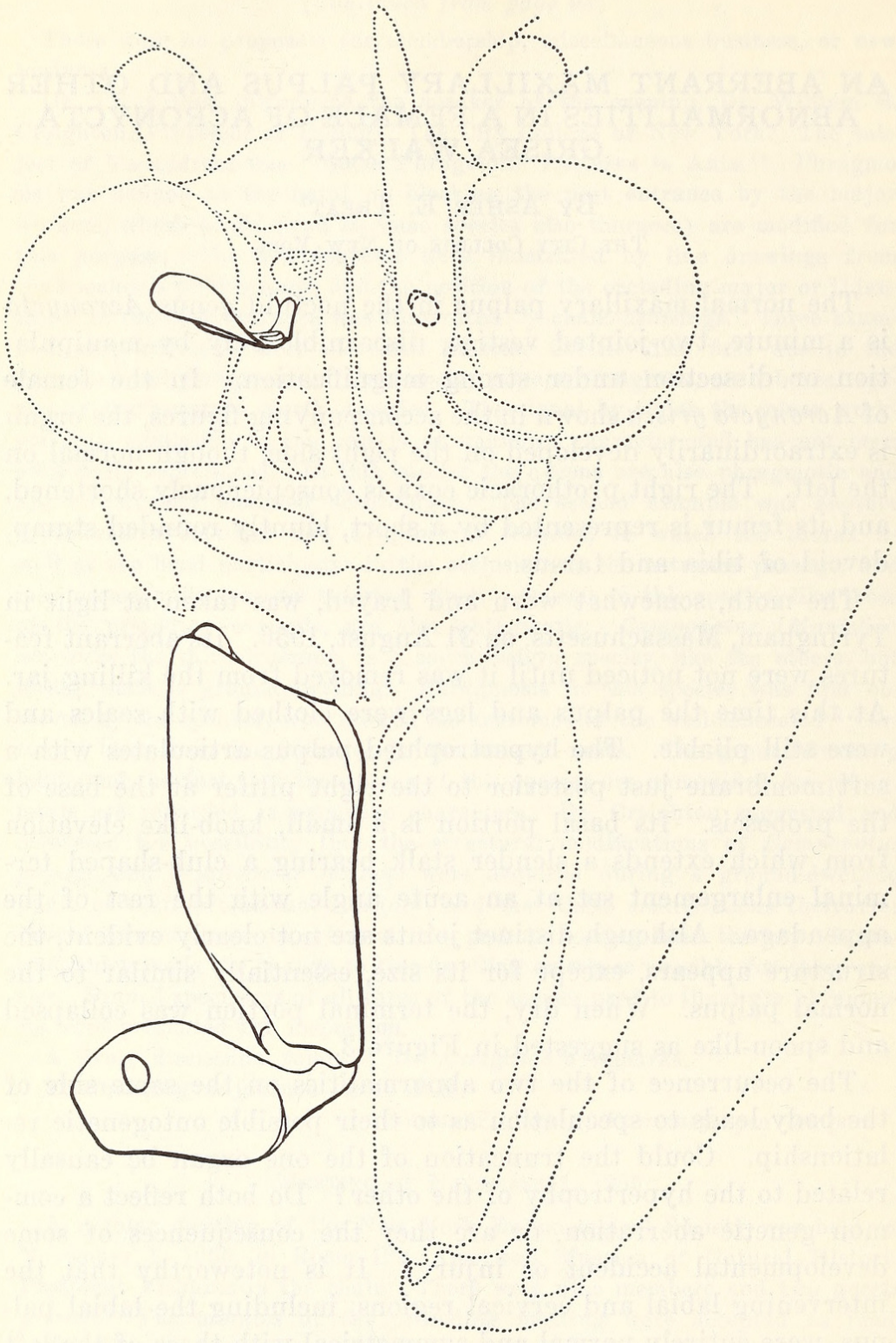

Fig. 1. *Acronycta grisea* Wlk. ♀ with aberrant mxp and leg.

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Figure 2

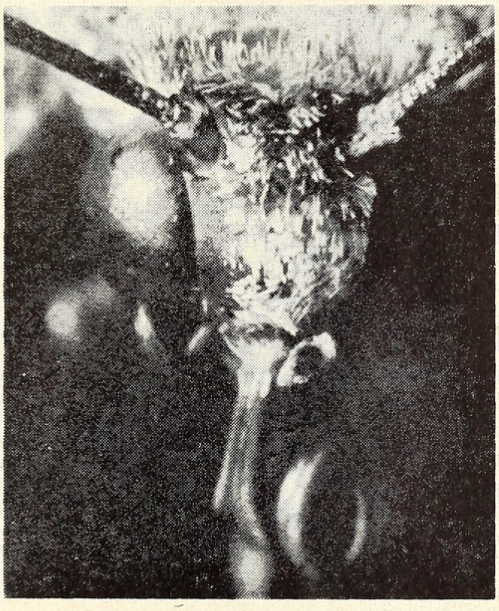

Figure 3

Figure 1 indicates the aberrant structures (in solid lines) as they appeared in a ventral view of the dry and denuded specimen. The right labial palpus is shown as though cut off at its base. The broken ring enclosed within the outline of the left labial palpus represents the position and size of the normal maxillary palpus, concealed from below the larger appendage. Figure 2 shows the parts in question in a view similar to that of the drawing. The coxo-trochanteral joint is obscured by the blurred image of the pin on which the specimen was mounted. Figure 3 shows the enlarged right maxillary palpus from in front, with the right labial palpus displaced and not visible. Photographs by William N. Tavolga. Specimen in the collection of the author.

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President, Dr. Vishniac, and the "Spider" portion is about Dr. Alexander Petrunkevitch, who is an honorary member of the Society.

Mr. Teale called the attention of the Society to the fact that Honorary member SuZan Swain is bringing out a new book.

Mr. Huberman and Dr. Vishniac shared dual honors in introducing the scientific speaker of the evening, Dr. R. von Rümker. Dr. von Rümker spoke on "Research and Development in Organic Insecticides." Her remarks were concerned chiefly with systemic insecticides.

Dr. von Rümker traced the development of pesticides. It has proceeded chiefly by the trial and error method. The analogs and homologs of DDT were developed by an empirical approach.

There is an approach other than empirical. This can be illustrated by the development of the organic phosphates. Here we have the synthesis of optimal chemicals with minimal side effects, in short, tailor-made chemicals. This is because in the organic phosphates we understand their basic biological action.

Three things must be considered in the development of any pesticide: 1. the pest, 2, the plant, and 3. the toxicant.

The organic phosphates inhibit cholinesterase, that is, they prevent the normal physiological destruction of acetylcholine. The organic phosphates are attracted to this enzyme. This attraction is stable and blocks further chemical action. Intoxication by organic phosphate is really acetylcholine intoxication.

The organic phosphate must be stable at the point of application. It must be able to readily reach the nervous system.

Metcalf and Marsh have demonstrated that different amounts of the chemical have different species toxicities. For example, the methyl homologs are effective against the boll weevil, while the ethyl homologs are effective against other species. It is therefore possible that a degree of specificity against various insect pests might be made.

(*Continued on page 136*)