

A PARALLEL EVOLUTION IN A CERTAIN LARVAL CHARACTER BETWEEN THE SYNTOMIDÆ AND THE PERICOPIDÆ.

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It has been fully pointed out that the larvæ of the Syntomidæ have but a single wart on the meso- and metathorax above the stigmatal wart. This wart is formed from primitive tubercles ia, ib and iia, iib not forming a wart and being often discernible in the mature larva as a single hair. This character persists in all the Syntomid larvæ examined so far, though the hair clothing may vary from abundant tufts to single hairs, and the shape and size of the warts may vary equally. This single wart occurs in no other family (except as I will point out), at least in the same way. Occasionally one of the two normal upper thoracic warts is lost by becoming small and finally obsolete, but this is a different thing from the single wart formed by coalescence. In the Pericopidæ, however, this structure has been paralleled. The Pericopidæ are not very closely related to the Syntomidæ. The moths stand somewhat below the Arctiidæ and the larvæ seem to have likewise evolved separately, with an independent wart formation, probably from near the Dioptidæ. I have already described the beginning of coalescence of the upper thoracic warts in the larva of *Composia fidelissima*; the following descriptions will show the completion of this process and also review the larvæ of the North American genera.

Genus *Daritis* Walk.

*Daritis howardi* Hy. Edw. Mr. Cockerell has twice sent me (base of Organ Mts., New Mexico) larvæ which I am inclined to refer to this species, although they reached me in too weak a condition to allow of their being bred. They appeared as follows: Large, apparently strong and active, with large head and well developed normal legs. Irregularly banded, black and ochreous, the hairs sparse, arising from large warts with tufts of short dense hair from some, the others polished, blue-black or ochreous. In detail: Head large, not bilobed, flat before, the sides sloping; clypeus slightly depressed, its sides contracted, the paraclypeal pieces reaching not over half way to the vertex; antennæ moderate; ocelli distinct except the fifth (from above), which is very small; all jet black, polished, the epistoma and basal joint of antennæ and palpi white; width nearly 6 mm. Thoracic feet large, shining black; body uniform, joint 12 scarcely perceptibly enlarged; feet large, with densely hairy plates and well developed claspers of the Macro type. Warts large; on prothorax the

cervical shield is degenerate, bisected, each half with two warts on the anterior edge and a tuft of hairs at the upper inner corner; prestigmatal wart nearly fused to the shield; subventral wart large. On meso- and metathorax, three large warts on each side (ia+ib+iaa, iv+v and vi), the rudimentary hairs (iib and iiii) obsolete. On the metathorax the upper wart shows a small boss on its upper side, indicating its compound nature. On the abdomen wart i large, but smaller than ii; iv smaller than iii but pushed up above the spiracle almost in line with and approximate to iii; v and vi large, crowded together obliquely. All the warts are so large as to be somewhat crowded. Warts polished, except ii of joints 5 to 12, which is covered with a dense tuft of short barbed hairs in addition to the rather sparse long black hairs that all the warts bear. Ground color dull ochreous, a broken dorsal black stripe and irregular subdorsal and subventral spottings, the warts of the pale segments ochreous, the short hairs of wart ii brown. Joints 5, 6, 9, 11, and 13 are heavily transversely banded, somewhat irregularly, with black, their warts polished blue-black, the short hairs of wart ii black. Warts of joint 2, the upper and lower warts of joint 3, and the anal flap also black. Long hairs but sparsely barbed, structure of the Arctian type.

*Daritis sacrificia* Hübn. I possess a badly shrunken cast skin of this species sent me by Mr. G. Ruscheweyh (Buenos Aires, Argentina). The head closely resembles that described above, except that the episotma is dark; it is polished black; width about 4 mm. The warts are large, part polished blue-black, part pale yellow. The single (?) large subdorsal wart of meso- and metathorax seems to have been black and given rise to a single very long, smooth, white hair, besides the usual rather sparse, black, barbed ones. Thoracic feet and anal flap black. Hairs black and white mixed. I cannot make out further details with certainty.

#### Genus *Composia* Hübn.

*Composia fidelissima* H. S. The details of this species have been given elsewhere. (See Journ. N. Y. Ent. Soc., iv, 68-72.) The upper thoracic warts are joined on the mesothorax, but still separate on the metathorax.

#### Genus *Gnophæla* Walk.

*Gnophæla latipennis* Boisd. Some well-preserved larvæ of this species are in the collection of the National Museum (prepared by Kæbele, Siskiyou Co., California). The larva is a handsome animal; its general appearance has been noted by Lord Walsingham (Stretch, Papilio ii, 82), but it is finer than the larva of *Callimorpha dominula*, with which he compares it. Head

rounded and full, distinctly wider than high, not bilobed; clypeus slightly contracted at the sides, proportionately higher than in the preceding genera, the paraclypeal pieces reaching about three-fourths of the distance to the vertex; dark red, polished, labrum, ocelli and antennæ black; width about 4 mm. Body cylindrical, joint 12 very slightly enlarged. Thoracic feet large, the abdominal ones moderate with well-developed hairy shields. Warts fairly large, especially ii and iii, i and iv small, but not minute. On prothorax two small warts on each half of the degenerated cervical shield and a group of hairs posteriorly; prestigmatal and subventral warts large. On meso- and metathorax, three large warts on each side, the upper elongate, and on the metathorax, marked with a slight suture, showing its compound nature. On abdomen wart i somewhat smaller than iii, iv exactly behind the spiracle except on joint 12, where it is below it; v and vi large; anal plate somewhat corrugated, blue-black. Hair rather sparse, black and white mixed, a long single hair from the subdorsal wart on metathorax appears to have been present, though the hairs are somewhat broken in the specimens. Ground color black, all the warts shining blue-black. A very wide, deep yellow, dorsal stripe, strongly constricted between warts i and narrowly linear between the halves of the cervical shield; a series of lateral yellow bars, forming a broken line, broadly interrupted at the centers of the segments; a very broad stigmatal band, broken at wart iv, forming a series of intersegmentary lunate marks, irregularly lobed on the under side. Venter broadly pale yellow; all the feet black outwardly. Hairs all of one kind, sparsely barbed.

Food plant, *Cynoglossum occidentale*.

The larvæ of *G. vermiculata* as described by Bruce and Cockerell, seem to be the same as this in all characters. I think that it will prove that *latipennis* and *vermiculata*, as well as *morrisoni* Druce, are only varying geographical forms of one species.

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Specimens of the larvæ of *Daritis howardi*, *Composia fidelissima*, and *Gnophæla latipennis* were exhibited by Dr. Dyar.

—The last paper of the evening was by Mr. Marlatt, and was entitled "The penial structures of *Anasa tristis* DeG." Mr. Marlatt described with the aid of drawings the peculiar anatomical details of the organ and appendages of the insect named, and pointed out the value of the characters found in the genitalia of this and other Hemiptera as a means of classification. In discussion, Prof. Uhler said that he had corresponded extensively with Dr. David Sharp on the subject of the genitalia of the Heteroptera; Cham-