

independently in the families Pompilidæ and Vespidæ, and hence could not be considered affinities.

A discussion was started by Dr. Gill as to the relative value, for purposes of classification or demonstrating relationship, of structures of distinct value and use to the species as opposed to structural characters of little value and use. He held that the morphological characters exhibited by the more useful organs were least important as exhibiting relationship, for the reason that such characters were most subject to variation, whereas structures of less use and importance were necessarily less subject to variation and hence more indicative of affinities. The little value of morphological characters was illustrated by a reference to the classification of the whale as one of the fishes by the ancient authors, and of much of the old classification which was based on similarity of function rather than on true homologies.

The first paper of the evening was by Dr. Dyar, and was entitled :

ON THE DISTINCTION OF SPECIES IN THE COCHLIDIAN GENUS SIBINE.

By HARRISON G. DYAR.

Some years ago Mr. H. Druce suggested to me that the North American and Mexican forms of Sibine might be of the same species, as they differed only in size. I replied that this might be so, but that the larvæ as figured by the old authors differed widely. This is a striking fact in the genus, the practical identity of the moths and the great dissimilarity of the larvæ. The two species with which I am the most familiar are the North American *Sibine stimulea* and the South American *S. trimacula*.* The larvæ differ widely as shown by published figures, as I have repeatedly verified. The moths are closely similar. I find that the shade of color is variable and the presence or absence of the small white dots on the wings is a matter of indifference in both. The specific differences narrow to two points only: (1) *S. stimulea* is generally smaller, the expanse of males being 24 to 29 mm., average 26.6 mm.; of females 31 to 38 mm., average 35.8 mm.; of *S. trimacula*, males 31 to 34 mm., average 32.5 mm.; of females 39 to 56 mm., average 46.5 mm. (2) The hind wings of *stimulea* are uniformly dark brown; while those of

* Hereinafter identified as *S. fusca*.

trimacula are lighter, almost flesh colored on the disk. However, it will be seen that the ranges in size almost overlap, while the color of the hind wings varies, and in the female the specific difference is very slight, sometimes barely appreciable, though I believe that it always does exist to some degree. Since the characters separating two well marked (as shown by the larvæ) species are so slight, it is necessary practically to place but little dependence on color and markings in this genus and rely on more subtle characters. For this purpose the male genitalia prove of value.

Unfortunately, a considerable number of species have been described and all without any reference to the genitalia. Not infrequently the descriptions have been made from a single female specimen. These it will not only be impossible to refer correctly from the lack of a male, even on examining the type, but the markings, as to what little they show, are always less definitive in the female.

Five species are represented in the collection of the National Museum. They separate on genitalic characters as follows:

Lower unpaired piece smooth.

This piece symmetrical and flat, strap-shaped, the edges little raised *fusca*.

This piece asymmetrical, tipped to the right concave..... *modesta*.

Lower unpaired piece with angles or spines.

This piece with an angle above on each side, that on the left the larger *stimulea*.

This piece with a thorn-like point on the tip below and on the left side..... *extensa*.

This piece with a single spine below at tip, projecting toward the left side *apicalis*.

The male genitalia in this genus consist of a supra-anal plate, flattened, somewhat concave below, the tip rounded but produced in a sharp spine that is bent down at right angles; below is a long, horn-like prominence, more or less grooved above, diverging from the plate at a slight angle. The side pieces are simple, tapering, rounded, bending inward at the ends, not strongly chitinized. Beneath is a well-chitinized strap-shaped or tubular piece, or penial support, smooth, or with prominences, and usually markedly asymmetrical, being turned with its lower aspect somewhat to the left.

The supra-anal plate differs slightly in the several species. I presume that specific characters could be tortured out of it; but they would not be practically valuable. The side pieces are so nearly membranous that their form is not well fixed and is at best a very simple one. The lower piece, however, presents

some readily appreciable differences which I have used in the table just given.

Remarks on the described species of Sibine.

S. vidua Sepp. The figure represents the fore wings crossed by a bent white line, the hind wings broadly pale brown on the disk. Of *fumosa* Walker says, "fore wings with an indistinct, irregular and very slender whitish discal stripe." I presume the two refer to the same species.

Phalæna Bombyx vidua Sepp, Surin. Vlind., I, pl. 6, 1828.

Nyssia fumosa Walker, Cat. Brit. Mus., Lep., v, 1134, 1855.

S. nesea Stoll.

The figure represents a female in which a strong effort has been made to show the peculiar gloss of the wings, a general character. The subapical dots are shown as united into a short transverse line. I have no specimens showing this character. In Can. ent., xxix, 77, I identified the larva figured by Stoll (Suppl. pl. 21, fig. 3) with *nesea*, but, as I overlooked that Cramer figures three species of Sibine, it is not certain to what moth this larva should be rightly attributed.

Bombyx nesea Stoll, Pap. exot., pl. CCCV, fig. C.

S. apicalis n. sp.

I describe this as new with some hesitation. Most of my specimens came from Mr. Schaus, and as he seldom lets a new form

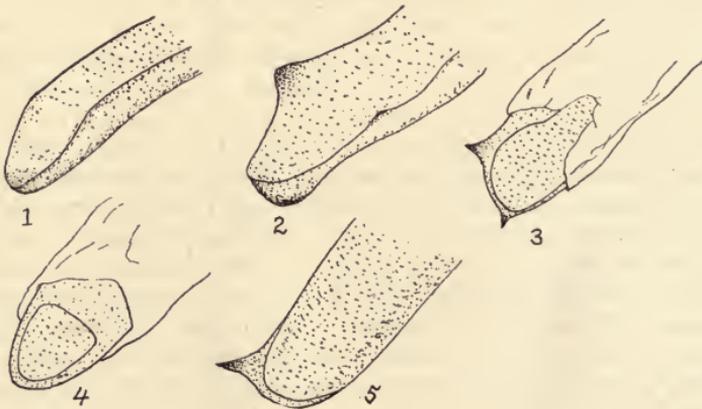


FIG. 19.—♂ Genitalia of Sibine: 1, *S. fusca*; 2, *S. stimulea*; 3, *S. extensa*; 4, *S. modesta*; 5, *S. apicalis*. (Original)

escape his experienced eye, it is practically certain that he named it something. However, it does not correspond to any described

species, least of all to any of Mr. Schaus' new species, of all of which I have seen cotypes. The name is a manuscript one of the late Henry Edwards.

Dark brown, the fore wings as usual, but the dots yellow, generally very large and often an additional linear yellow streak in the center of the cell in the male. Hind wings uniform chocolate brown. The species is rather small, dark, the red shades not developed, but the yellow unusually prominent. Expanse, male 28 to 32 mm., female 40 to 45 mm. Twenty-six males, three females from Mr. Schaus, presumably collected by him in Jalapa, Mexico. One male from Franck collection labelled "Mex.," not unlikely from the same catch. U. S. Nat. Mus., type No. 4432. Genitalia shown in fig. 5.

S. stimulea Clem.

Our common moth from the often described "saddle-back" caterpillar. Genitalia shown in fig. 2.

Empretia stimulea Clem., Proc. acad. nat. Sci., Phil. xii, 158, 1860.

Limacodes ephippiatus Harr., Corresp. 301, 1869.

S. fusca Stoll.

Again a single female is figured. This is rather uniform and a light brown with the three subapical dots present, large; expanse 54 mm. I have elsewhere, following Möschler, identified this with *trimacula* and *bonærensis*, and I see no reason to change. The figure might apply to one of several species, but as it can not be told which was intended, I would hereby recognize Möschler's restriction of it to the present form. Möschler gives also as a synonym? *quercinia* Mén., but I know no description bearing the name. In *rufescens*, described from "country unknown," Walker defines a form which I can not distinguish from those *fusca* that lack the yellow dots. Genitalia fig. 1.

Bombyx fusca Stoll., Pap. exot. pl. CCCVII, fig. G, 1781.

Phalæna trimacula Sepp, Surin. Vlind. pl. 45, 1848.

Nyssia rufescens Walk., Cat. Brit. Mus., Lep. v, 1138, 1855.

Streblota bonærensis Berg., An. soc. cient. Argent. v, 180, 1878.

Sibine fusca Möschler, Verh. zool.-bot. Ges. Wien, xxvii, 671, 1883.

Sibine fusca Dyar, Can. ent., xxix, 77, 1897.

S. extensa Schaus.

Mr. Schaus describes male and female, and the latter is figured in the Biologia. From these alone I should not know what was intended, but I have specimens from Mr. Schaus, not labelled, but presumably collected by himself in Jalapa, Mexico. They agree exactly with description and figure, and the male genitalia

show a distinct species. One of my males has pale hind wings, absolutely indistinguishable from *fusca*. Genitalia fig. 3.

Sibine extensa Schaus, Journ. N. Y. ent. soc., iv, 55, 1896.

Eupalia extensa Druce, Biol. Cent. Am., ii, 440, 443, 1898.

S. megasomoides Walk.

Walker describes a male from Bogota expanding 45 mm. Druce remarks that the type is in his collection and seems doubtfully distinct from *trimacula* Sepp. However, I imagined that it will prove an earlier name for *S. extensa* Schaus. *Trimacula*, as then known to Druce, included all the Mexican forms, among them *extensa*. I have not yet seen *trimacula* from Mexico. The sexual organs of the type of *megasomoides* should be examined.

Eupalia megasomoides Walk., Cat. Brit. Mus., xxxv, 1928, 1866.

S. plora Schaus.

Mr. Schaus describes a form close to what I identify as *modesta* below, but apparently smaller. There is nothing in his description either, to exclude *extensa* Schaus or *megasomoides* Walk. I had his typical male specimen before me, but did not examine the genitalia. Perhaps Mr. Schaus, owning the specimen himself, will feel at liberty to do so.

Sibine plora Schaus, Journ. N. Y. ent. soc., iv, 55, 1896.

S. modesta Cram.

Kirby includes this species under *Elysium*, an Arctian genus. But this is one of his less fortunate guesses. The figure obviously represents a *Sibine*. It is a female, dark brown with a general purplish cast, the red apical stain well marked and no white dots. Expanse about 54 mm. I identify with this five specimens received from E. Wittkugel, San Pedro Sulá, Honduras. The spots are greatly reduced, nearly absent, and the whole insect has a purplish cast, reminiscent of Cramer's figure. Mr. Schaus loaned me a male which he had identified as *modesta* and which may not be the same species which I here so identify. But as he has not published anything definite on the subject to my knowledge, I feel free to restrict Cramer's indefinite term as seems to me most probably correct. *Affinis* Möschl., described from one female, is doubtless synonymous. I have a female specimen from Paramba, Ecuador, which agrees entirely with Möschler's description and I see no reason to separate it from *modesta*. Genitalia shown in fig. 4.

Bombyx modesta Cram., Pap. exot., pl. CXV, fig. C, 1779.

Sibine affinis Möschl., Verh. zool.-bot. ges. Wien, xxxii, 353, 1883.

Note—Of the other species described as or referred to *Sibine*, *argentata* Walk. and *argentea* Druce belong to *Miresa*; *auro-*

macula Schaus I have made the type of *Episibine*; *dicolon* Sepp, *plugma* Sepp, *norba* Druce, and *copac* Schaus belong to *Euclea*; *sulla* Schaus becomes the type of *Protalima*; *determinata* Walk., *rufa* Butl., and *varia* Walk. are clearly not *Sibine*; the latter probably is *Euclea*, and others will have to be examined.

In discussion Mr. Ashmead suggested the possibility of splitting the genus into two genera by reason of the marked difference exhibited by the larvæ, suggesting that careful study of the genitalia would demonstrate corresponding generic differences in the adult insects. He illustrated this by reference to Hymenoptera, and stated that the chief objection to the use of genitalia as a means of separation was the extraordinary difficulty of making the studies and the vast amount of time necessary for such work.

Dr. Dyar then presented a second paper, entitled :

A DIVISION OF THE GENUS SPHINGICAMPA WALSH WITH
REMARKS ON THE LARVÆ.

By HARRISON G. DYAR.

Our species of *Sphingicampa* are obviously separable into two groups or genera, in one of which the antennæ of the female are pectinated, in the other simple. The first group contains *bicolor* Harr., which is the type of *Sphingicampa*, the second the remaining species. The types of the other genera of the *Citheroniidæ* have been specified by Kirby. *Adelocephala* H. S. has type *cadmus* and *Orthorene* Boisd. the same. Boisduval states that both sexes have the antennæ pectinated and therefore these names cannot be applied to the second group. There remains only the genus *Sissphinx* Hübn. (not *Sissisphinx*, as written by Kirby), type *molina*. This has the antennæ of the female simple and, though the male frequently has the outline of the wings waved and the larva is unusually modified, we may refer our species to this genus, rather than create a new one on slight characters.

Genus *Adelocephala* H.-S.

(=*Sphingicampa* Walsh, =*Orthorene* Boisd.)

A. cadmus H.-S. According to Boisduval (Ann. ent. soc. Belg., xv, 82, 1872), the female has the antennæ pectinated. The larva has the subdorsal spines equal on all the segments. Boisduval says: "Le premier anneau garni de pointes acérées de longueur médiocre, les deux anneaux suivants munis de longues