A NEW GENUS OF PHORIDÆ FROM PERU[1]

BY CHARLES T. BRUES.

On a recent visit to the United States National Museum in Washington, Dr. J. M. Aldrich showed me a very extraordinary phorid fly which had been received in a collection of Diptera obtained by R. C. Shannon at Iquitos, Peru. The individual in question bears near the base of the wing a conspicuous, button-like, heavily chitinized swelling which projects strongly above both the upper and lower surfaces of the wing membrane between the base of the third and fifth wing veins. As the specimen evidently represents an undescribed form Dr. Aldrich very kindly loaned it to me for more detailed examination. On account of certain other structural characters it must, I think, be regarded as the type of a new genus, Phymatopterella, described on a later page.

As the swelling on the wing is a very unusual type of structure I have been tempted to compare it with certain other, possibly similar, wing structures, known to occur in other insects. In the family Phoridæ it appears to be unique so far as is known. Several species, notably of the genus Megaselia from various parts of the world have the costal vein moderately or more rarely excessively swollen or thickened, but such developments represent strictly hypertrophy of the vein in question.

In one genus, Pelidnophora Borgmeier, the wing is said to bear an oval dark spot between the fifth and sixth veins. As Borgmeier[2] does not mention this further, I am led to believe that this spot is simply a pigmented area or perhaps a structure like that described by Malloch in *Megaselia conglomerata* Malloch[3]. The latter species has a brown patch at the tip of the wing between the fourth and fifth veins,

[1]From the Entomological Laboratory of Harvard University.
[2]Vozes de Petropolis, Vol. 17, p. 741 (1923).
[3]Proc. U. S. Nat. Mus., Vol. 43, p. 445 (1912).

due to the approximation of the very minute hairs on the surface of the wing and is quite distinct from any thickening or darkening of the wing membrane.

In another family of Diptera, an African species of Stenobasipteron bears a bulla or swelling near the base of the second longitudinal vein in the first basal cell. This is mentioned by Dr. Joseph Bequaert[1], who called my attention to the reference and also kindly allowed me to examine a specimen of this rare species (*S. wiedemanni* Licht). The spot lies close to the radius just below the fork which gives rise to R_{2+3}. It is darker in color than the remainder of the wing surface due to a slight thickening and denser patch of hairs. Above it is convex, below concave and not so clearly defined as Lichtwardt has figured it in his extensive paper.[2]

The bulla is distinct in both sexes, but much more prominent in the male. Certain other species of Stenobasipteron show the same structure, but to a very slight degree.

In Hymenoptera certain species of Ichneumonidæ of the subfamily Ophioninæ, particularly Henicospilus and several related genera bear on the wing membrane in the discocubital cell one or several chitinized spots or "maculæ." These are apparently structureless depositions of yellow or brown material seemingly similar to the veins, except that they are not linear, appearing as small quadrate comma-shaped or irregular areas. Their presence is usually associated with abnormalities of the wing surface surrounding them, involving the disappearance of the hairs which normally occur on the wing surface and sometimes marked changes in the course of the nearby veins, although the loss of hairs and the thickening and bending of veins occurs in a number of related forms where chitinous maculæ are not developed. The chitinous thickenings may be either bare or clothed with hairs. Related Hymenoptera of the family Braconidæ belonging to Gyroneuron and allied genera exhibit somewhat similar abnormalities in the

[1]Psyche, Vol. 32, p. 17 (1925).

[2]Beiträge zur Kenntnis der Nemestriniden, Deuts. Entom. Zeitschr., 1909, pp. 113-127; 507-514; 643-651: 1910, pp. 371-388; 589-624.

venation of the fore wings which are, in this case, also associated with glabrous areas of the wing surface.

Another type of structure seen on the wings of insects belonging to several diverse groups are small, thickened spots usually deeply pigmented and frequently surrounded by darkened areas that show no apparent chitinization in excess of that on the general wing surface.

These structures, which are known by the general term of nygmata, have been briefly described by Forbes (Entom. News, vol. 35, pp. 230-232, 1 pl. (1924)), who notes their presence in certain Megaloptera, Neuroptera, Trichoptera, Mecoptera and Hymenoptera. When examined in dried specimens that have been mounted in balsam, it appears probable that they represent glands and they may quite possibly be moulting fluid glands as has been suggested by Forbes (*l.c.*). In a Megalopteron (Chauliodes) they are in the form of minute tubercles, lying at the center of a small area where the wing hairs are extremely abundant and closely placed, causing a darkening of the wing surface (Fig. 4) each hair having the basal portion greatly swollen. In a hymenopteron (Arge) one prominent nygma in the second submarginal cell (Fig. 5) seems probably to be glandular in structure with strongly pigmented dendritic outgrowths apparently between the wing membranes, but in another more primitive saw-fly, Neurotoma, the nygmata are much smaller and appear to be of simpler structure.

Still other minute structures, evidently true sensillæ, occur on the stigma or on veins near the stigma. An extensive account of these in the Hymenoptera has recently been given by Hoffmeyer.[1]

The large swelling in Phymatoptera appears to be utterly unlike any of these structures except perhaps those mentioned in Henicospilus. Externally it gives no indication of glandular structure and certainly it has no visible opening. Above, it is slightly convex with the surface dull, below the surface is shining and deeply furrowed basally (*i.e.* toward the base of the wing) by six or eight furrows run-

[1]Ueber Sensillen in den Hymenopteren-Flügeln, Entom. Medel., vol. 18, pp. 58-74: (1932).

ning parallel to the axis of the wing. Beyond this greatly thickened oval structure is another slight thickening in the wing, indicated principally by its darker color as shown in the photograph; this is not perceptibly elevated above the wing surface on either side, and is distinctly separated from the strongly thickened area.

Phymatopterella, gen. nov. (Figs. 1 and 2)

Front bristled, as in Megaselia; four post-antennal bristles, one pair of upwardly and inwardly directed antial bristles; lower frontal row of only the two lateral bristles, upper row of four, and four ocellar bristles. Costal vein long, with short setulæ; first vein entering the costa at its middle, third vein simple, not forked; four light veins: membrane of wing below the tip of the first vein with a large, dark, oval, thickened button-like thickening between the third and fifth veins; mediastinal vein not developed; antennæ small, oval, with dorsal arista. Mesopleura bare. Middle and hind tibiæ each with a double row of strong bristles.

In general structure and habitus this genus is similar to Megaselia and Phalacrotophora, but the third vein is entirely without fork at apex. The chitinous thickening on the wing membrane is, so far as I know, absolutely unique in the family Phoridæ. In Schmitz's key to genera (Revision der Phoriden, p. 87) it will run in the neighborhood of Parametopina Borgmeier or Syneura Brues to which it is obviously not related. On this account it seems necessary to propose a new generic name.

Phymatopterella shannoni, sp. nov.

♀. Length 1.9 mm.; wing 2.2 mm. Front and thorax above pale brownish yellow, the disc of the mesonotum darker; abdomen piceous with the posterior edges of the tergites whitish, more broadly so on the fifth and sixth segments; the fourth and fifth tergites each with a pair of lateral yellowish spots; coxæ and legs brownish yellow, the four hind femora much darker; pleuræ and venter black. Wings tinged with yellow; heavy veins dark, the costa

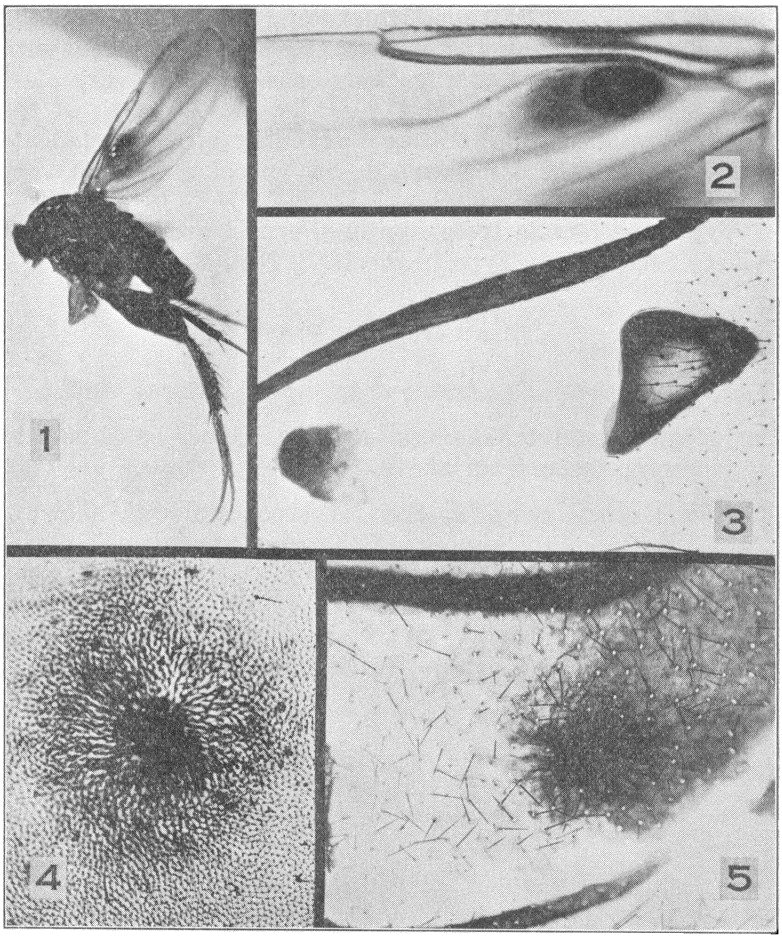
whitish at tip; thin veins yellowish; thickened spot on wing disk fuscous, with a small brown cloud beyond. Halteres black. Head short, with strongly vertical front; front one-fourth longer than wide, rather conspicuously hairy; four strong, nearly equal post-antennal bristles, the lower pair much below the upper ones and close together, upper pair separated by one-third the width of the front; antial bristles but little further from the eye-margin than the lateral bristles of the lower row which set above them; middle bristles of lower row (intermedials) absent; upper frontal row of four about equidistant, forming a nearly straight line; ocellar tubercle black; post-ocellar bristles strong. Cheek with three strong bristles and a series of four short ones extending forward along the oral margin. Antennæ small, rounded, with long, pubescent arista; palpi small with moderate bristles below. Mesonotum shining, but thickly pubescent; its lateral margins fringed with closely placed bristles that are much longer behind; one pair of strong dorsocentral macrochætæ and six bristly hairs between them along the posterior margin; scutellum short and broad with two long marginal bristles. Pleuræ entirely bare, but the middle coxa bears a closely placed series of rather long appressed bristles along its anterolateral edge. Abdomen above more or less shining; second tergite not lengthened and its sides without bristly hairs, sixth tergite lengthened, as long as the third, fourth and fifth together; following ones membranous, retracted in the type specimen, the whitish apical margins of the tergites are very narrow on the first to third but broader on the fourth to sixth segments. Middle femora slightly and hind ones strongly widened and flattened; middle tibiæ with a row of about 9 strong setulæ dorsally, just inside the seam and a second row outside the seam of about seven setulæ, not extending beyond the apical third of the tibiæ; hind tibiæ with two similar rows, the outer one not extending beyond the apical third of the tibia. Wing long and narrow, barely more than one-third as wide as long (4:11), with very short, closely placed cilia; costa three-fifths as long as the wing; first vein entering the costa somewhat nearer to the humeral cross-vein than to the tip, the costa slightly swollen

at the broad area of contact; third vein sharply approaching the costa then running nearly parallel with it; fourth vein curved at base, then running straight and ending slightly before the wing-tip; fifth, sixth and seventh veins nearly straight. Chitinous thickening of wing membrane broadly oval, convex and smooth above, convex below with several longitudinal corrugations basally; lying very close to the third and fifth veins near the basal fourth of the wing; beyond the button-like thickening is a subquadrate spot of about the same area of brown color, but not very evidently chitinized.

Type, one female from Iquitos, Peru; March-April, 1931 (R. C. Shannon). Type in the U. S. National Museum.

Explanation of Plate 5.

1. *Phymatopterella shannoni* sp. nov. Lateral view.
2. *Phymatopterella shannoni* sp. nov. Upper basal part of wing, seen from above.
3. *Enicospilus purgatus* Say. Discocubital cell, showing chitinous thickenings of the wing membrane.
4. *Chauliodes pectinicornis* Linn. Nygma, in cell R_5 of front wing.
5. *Arge cœrulea* Morton. Nygma in second submarginal cell.



Brues—Phoridae