THE TYPE OF *PHLEBOTOMUS MASCITTII* GRASSI (DIPTERA, PSYCHODIDAE).

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During the summer of 1948 Dr. Giuseppe Saccà, of the Istituto Superiore di Sanità, Rome, called my attention to the taxonomic vicissitudes undergone by *Phlebotomus mascittii* since it was described by Grassi in 1908. He showed me the pertinent literature which he had assembled, as well as specimens of *P. larroussei*, Lngn. & Nitzu., which both he (1940, 1948) and Parrot (1944) have maintained to be probably identical with *P. mascittii*.

Grassi described *P. mascittii* from several specimens, males and females, reared from larvae collected in a " cantina " (cellar) in the Via Panisperna, Rome. One male was sent to Newstead who in 1914 redescribed and figured it as *P. mascittii* together with a comparative series of drawings of the third antennal segment, wing and style of both *P. mascittii* and *P. perniciosus*, Newst. Newstead stated that these two species " are so closely allied as to be separable only with difficulty." While Grassi stated that the style bore five spines, Newstead's specimen had a sixth spine, finer than the others, on each style. Newstead pointed out that the wing venation is " strikingly different " in the two species and his figure shows clearly the venation which Grassi stated was constant in all his specimens. The length " dello scapo della forchetta sezionale," *i.e., beta* of current usage, is approximately equal to the distance from the distal end of *beta* across cell R_1 to the end of vein R_1 (a distance greater than *delta* ; see Saccà (1940, 1948)). Newstead's small-scale drawing of the genitalia shows the tips of the aedeagus (penis sheath, intromittent organ) as rounded, quite unlike the forked tips of *P. perniciosus*. Newstead himself, in his original description of the latter species (1911) only three years before, had mentioned this character in the text and clearly figured it. It is strange that this point was not brought out by Newstead when he was obviously devoting considerable effort to the problem of distinguishing the two species. At any rate, he left them as two distinct species.

Adler and Theodor (1931a), in connection with their work on kala azar in Italy, found it essential to determine the systematic position of *P. mascittii* and *P. perniciosus*, and to that end undertook collections in the type locality of the former. Guided by Signor E. Mascitti, Grassi's former assistant, they visited the same house from the cellar of which the larvae of *P. mascittii* had been originally collected and caught 12 adults, all *P. perniciosus*. They stated that in their very large collections of sandflies in Italy there were many specimens, the males all five-spined, which corresponded to both Grassi's description of *P. mascittii* and Newstead's of *P. perniciosus*. They considered the sixth spine of Newstead's specimen as probably an abnormality which is known to occur rarely in other species. The matter of wing venation was not specifically discussed. They pointed out that the possibility that *P. perniciosus* was a synonym of *P. mascittii* could only be settled by a re-examination of the cotype.

Dr. Saccà and the writer made an evening visit in August 1948 to the Via Panisperna on the odd chance of picking up a specimen of this rare sandfly. Dr. Saccà had caught one of his specimens near this street (in the act of biting during the day) but no outdoor evening collecting had been attempted. This street, about 600 metres long, lies a short

[1] This work was done under a contract between the United States Army Medical Research and Development Board, Office of the Surgeon General, and Gorgas Memorial Laboratory.

distance north of the Colosseum. For the most part it is solidly lined with apartment buildings several stories high. Signor Mascitti was no longer living and no one knew the exact location of the type house. However, we prowled about the grounds and outer walls of a large institution at the intersection with the Via Milano and caught two specimens of *P. perniciosus*. Through the friendly offices of caretakers several nearby apartment buildings were searched, both the upper floors and the very deep and extensive cellars, without finding any sandflies. Some of the residents' reports indicated that *Phlebotomus* was at times present and even annoying. We learned of no local application of DDT.

A fresh set of complications arose with the description of *P. larroussei* Lngn. & Nitzu. 1931 (syn. *P. vesuvianus* Adl. & Theo. (1931a), *P. perniciosus* var. *nitzulescui* Simić (1932) and its variety *canaaniticus* Adl. & Theo. (1931b). Saccà (1940), strongly suspecting the identity of *P. mascittii* and *P. larroussei*, called attention to the similarity of the wing venation and to the fact that the aedeagus in Newstead's drawing of *P. mascittii* corresponded to that of *P. larroussei*. Parrot (1944) believed that these two species were probably identical. Theodor (1948) still held possible the synonymy of *P. perniciosus* with *P. mascittii*, pending a re-examination of type material. On the basis of the wing venation of a number of specimens taken in Rome, and of Newstead's description, Saccà (1948) concluded that there could be no further doubt about the status of *P. larroussei* as a synonym of *P. mascittii*.

Grassi's specimens are not known to be in existence. Newstead's male would therefore represent the sole remaining specimen of the type material. In passing through London a visit was made on 27th October, 1948, to the British Museum (Natural History) for the express purpose of trying to find this specimen in Newstead's *Phlebotomus* collection, which it was known had been deposited there. Through the kindness of Mr. Paul Freeman, of the Department of Entomology, the entire collection, which filled a number of slide boxes, was placed at my disposal. The slide, which was one of the very few not indexed, was finally found (in the last box, among the Neotropical sandflies).

The slide bore Newstead's label, the seven lines of which read as follows: "*Phlebotomus* ♂/*mascitti* [sic] Grassi/Cotype ♂from Grassi/RNs. Paratype/ Remounted restained/RN Figd Bull. Ent./Research". The last "RN" was Newstead's monogram with which he signed many of his drawings. On the opposite end of the slide were two labels, which were apparently Grassi's. One read: "Panisperna/28-7-08/ *Ph. Mascitti* [sic]"; the other: "*Ph./Mascittii*". On the coverglass was a small circular label, "Paratype ♂". With Mr. Freeman's permission a label was prepared and fixed to the back of the slide, stating that "Panisperna" referred to the street in Rome where Grassi had collected the larvae from which his specimens had been reared.

The specimen was compared directly with Newstead's drawings, which were substantially accurate. The tips of the aedeagus were smoothly rounded and bore no teeth or other projections of the sort which occur in some members of the *major* group. A camera lucida drawing (fig. 3) of the aedeagus was made. There was no possibility of confusion with the forked tips of the aedeagus of *P. perniciosus*. The abdomen had been detached from the rest of the body. The genitalia lay in the same position as drawn by Newstead (1914) (his fig. 3) from Grassi's original preparation before an accident which necessitated his remounting the whole specimen. In this process both of the small sixth spines had broken off, but their points of attachment were still clear. One of the large spines was also apparently lost and the position of two others disturbed.

Most of the available time had been consumed in finding the specimen and it was impossible to make further drawings or detailed notes, except for the puzzling circumstance that the genital pump was apparently lacking the cuplike expansion

at the anterior end, usually a conspicuous, well sclerotized structure in all species previously examined. There had been no mechanical damage to that part of the abdomen.

A letter was immediately dispatched to Dr. Saccà informing him of the results of the examination of this slide, for him to use as he saw fit.

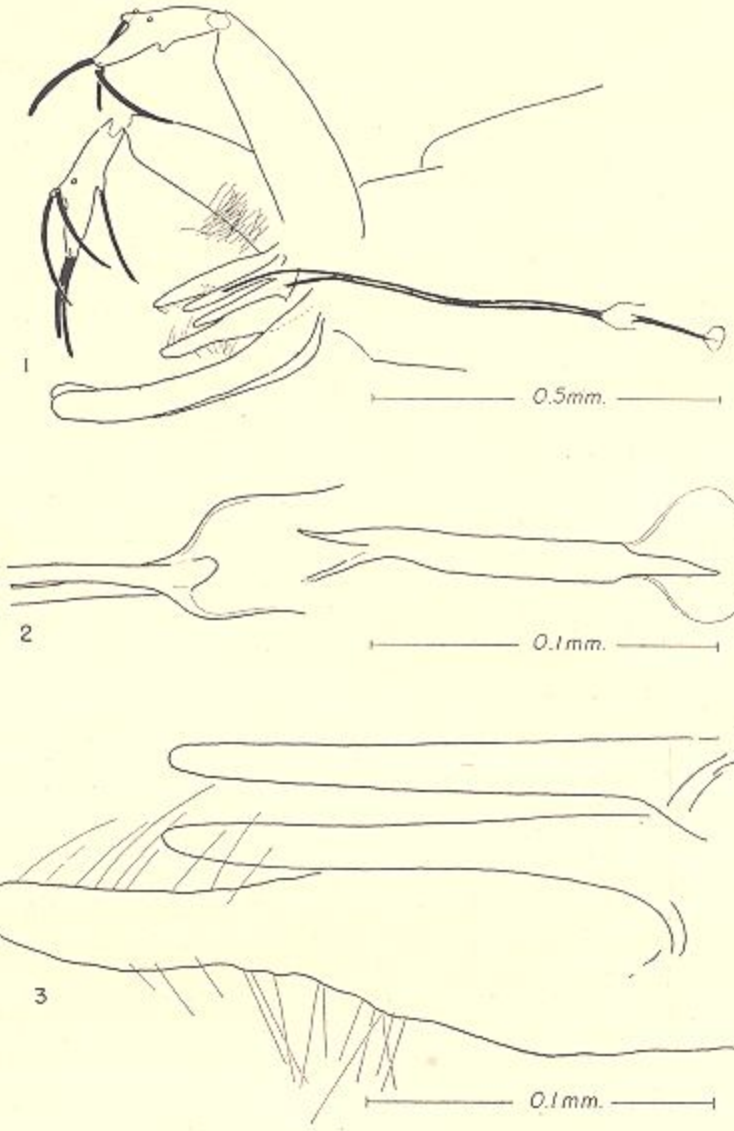
The following day, whilst examining some sandfly literature at the London School of Hygiene and Tropical Medicine, Parrot's paper (1937b) with the drawings of the genital pumps of Old World species was encountered by chance. One of them had no cup or " pavillon ". On noting that this was *P. vesuvianus* Adl. & Theo. (=*P. larroussei*) there was immediately obvious the intriguing possibility that this character, interesting in itself, might serve as an additional link between *P. mascittii* and *P. larroussei*. Parrot noted in two papers (1937a, b) that his specimen (from Crete) was " dépourvue de pavillon," without further comment, although he pointed out in the latter paper in a general account of the anatomy of the genital pump that the " pavillon " serves as a muscle attachment.

A second visit was made to the British Museum. Careful adjustment of the light showed that the cuplike structure was present and of " normal " form, but thin-walled and colorless. Camera lucida drawings were made of the pump (fig. 2) and also of the entire genitalia (fig. 1). It may be remarked that in Newstead's fig. 3 the genital pump is shaped like a slender arrow-head and bears no particular resemblance to the specimen as at present mounted or to any " ordinary " genital pump. Pressed for time, it was impossible to make any drawings or detailed study of the head, nor unfortunately were any notes made. It is my recollection that the head was not mounted so as to show the cibarium or pharynx.

Adler & others (1938) stated that their single male specimen of *P. larroussei* from Crete had the " pavillon " as in other sandflies. In discussing the relation to this species of its variety *canaaniticus*, they made no mention of the pump. Parrot and Martin (1944) considered the varietal status of *P. larroussei* var. *canaaniticus* doubtful, since they could not separate their specimens of both sexes collected in Beyrut, from *P. larroussei*. They figured and described the " pavillon " as thick-walled, but made no mention of this structure in their comparison with *P. larroussei*. From Simić's figures (1932), the genital pump of *P. perniciosus* var. *nitzulescui* is of the usual type. The question thus arises as to whether faintness or " absence " of the " pavillon " is peculiar to the two specimens in which it has been observed or is, indeed, a character of specific or varietal value.

Leaving aside the question of the genital pump, and making due allowance for variations in the artists' drawing technique, there are no gross points of difference between the genitalia of Newstead's specimen and the various descriptions and figures of the male of *P. larroussei*. In all cases the tips of the aedeagus are smoothly rounded, with no teeth or other projections. In Newstead's specimen this organ is slightly more slender than in the others. Certain differences in proportions of the different parts of the male genitalia, as between their specimens and Parrot's, were discussed by Adler & others (1938). The proportions for Newstead's and Simić's specimens fall within that range of variation. Parrot's (1937b) ratio f/P (filaments/pump) is practically identical (about 3·7) for his, Newstead's and Simić's specimens, and not available for the others.

After returning to Panama the observations in regard to the genital pump of *P. mascittii* were sent to Dr. Saccà, together with tracings of the drawings and with the expressed intention of leaving any published comment to him, in view of his primary interest in the matter. However, the letter from London had reached him just in time for a postscript to his published note (1948). He requested that I publish these data, which would serve as additional support for his views.



Phlebotomus mascittii ♂, drawn from Newstead's cotype, herein designated the lectotype, in the British Museum.

Fig. 1.—Genitalia. Corresponds closely with Newstead's (1914) figure 3. The small circles on the style mark the points of attachment of the probably aberrant sixth spines broken off when Newstead remounted the specimen. On the upper style one of the five large spines was apparently already missing; in remounting another was lost and two others bent sharply out of position.

Fig. 2.—Genital pump. The cuplike expansion at the anterior end is colorless and difficult to see, compared with other sandflies.

Fig. 3.—Aedeagus (penis sheath, intromittent organ) and paramere. The hairs of the latter are shown only in part, with no indication of their relative thickness or points of attachment.

Summary.

Examination of Newstead's specimen has confirmed the substantial accuracy of his description and drawings, with the exception of the genital pump. The form of the aedeagus alone leaves no possibility of confusion with *P. perniciosus*, of which there has been available an adequate series of Italian specimens for comparison. The view of Adler and associates that the sixth spines are aberrant is thoroughly reasonable. *P. mascittii* is therefore an easily recognizable species, as to the male, from existing descriptions and drawings, and represented by the sole known cotype in the British Museum, which is hereby designated the lectotype.

The question of the distinguishing characters of the female is bound up with the whole matter of the identity of *P. mascittii* and *P. larroussei*. The evidence already published, involving both males and females, certainly constitutes a strong case for the identity of these two species. There may be cited : (*a*) the character of the wing venation which seems to be constant in both sexes ; (*b*) the general agreement as to the male genitalia ; (*c*) the fact that one of Saccà's specimens was caught within a few hundred metres of the type locality and the others in the same city. In the absence of any contrary evidence there is no reason to doubt the soundness of the view shared by Saccà and Parrot that these two species are identical.

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