

An Interim Reclassification of the genus *Tripterooides* with
Particular Reference to the Australasian Subgenera

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ABSTRACT. This is an appendix to a larger paper embodying a revision of some sections of the genus *Tripterooides* in the Oriental Region. It deals with associated changes at subgeneric level in the Australasian members of the genus, notably the resurrection of *Polylepidomyia* from synonymy as a valid subgenus and the transfer to it of all Australasian species currently included in *Rachionotomyia*. At the same time two species (*mabini*, *szechwanensis*) are removed from *Rachisoura*, rendering it purely Australasian, and two others are transferred to it from *Rachionotomyia* which then becomes purely Oriental. The two unornamented Australasian subgenera are thereby rendered more readily distinguishable from one another and from *Rachionotomyia*. Similar changes affecting the Oriental fauna are noted. Further changes may well be needed when the genus is fully revised.

The subgeneric classification of genus *Tripterooides* is currently somewhat chaotic. In an attempt to remedy this, I have undertaken a partial revision based mainly on the unornamented Southeast Asian species (Mattingly, in press). In this, 22 of the 23 species accepted as valid are cited either as new or in new combinations while a further species is both transferred to another subgenus and provisionally sunk in synonymy.

Three subgenera are currently recognized, *Tripterooides* Giles, *Rachionotomyia* Theobald and *Rachisoura* Theobald. To these, I have added a fourth, *Tricholeptomyia* Dyar and Shannon, which is taken to include all the unornamented Philippines species (Group A of Baisas and Ubaldo-Pagayon, 1953) except *roseboomi*. These species form a homogeneous group readily separable from the other subgenera in all stages. It is possibly the best characterized of the subgenera.

I have been unable to obtain material of *Tp. szechwanensis* which is currently placed in *Rachisoura*. The original description (Hsu, 1964) offers no distinction from *aranooides* (Theobald), the type species of subgenus *Rachionotomyia*, and the author cites as diagnostic from that species only some small differences falling well within the range of variation observed by me. The figures of the male terminalia, in particular the IXth tergite, are as in *aranooides*. The author's Fig. 3 is of the tenth sternite as is made clear in the text. It is a rough drawing and bears a remarkable resemblance to the characteristic larval maxilla of *Rachisoura*. It is this, presumably, which led to the inclusion of *szechwanensis* in that subgenus. I can find nothing else

either in the description or in the figures which would justify such an association. On the contrary, I am satisfied that it is a typical *Rachionotomyia* and have placed it with some confidence in the synonymy of *aranooides*.

Ip. mabinii, placed by the original authors in *Rachisoura* (Baisas and Ubaldo-Pagayon, 1953), has in common with that subgenus only the hypertrophied maxillary spines or "horns" in the larva and an associated shortening and displacement of the maxillary suture. Belkin (1962) noted that it required to be transferred to another subgenus and I am in full agreement with this. Both sexes of adult and the pupa conform to subgenus *Tripteroides* in all respects including the striking adult ornamentation. I have transferred it accordingly, subject to a full revision of that subgenus which is outside my present terms of reference. Baisas and Ubaldo-Pagayon noted some small peculiarities in the larva but these, even in conjunction with the maxillary "horns," do not seem to me sufficient to justify the establishment of a new monotypic subgenus at the present time.

Without these two species, subgenus *Rachisoura* becomes purely Australasian. In contrast, *Rachionotomyia*, as currently defined, includes both an Oriental and an Australasian element. Lee (1946) segregated the latter as a distinct subgenus under the name *Mimeteomyia* Theobald. This was subsequently replaced by *Polylepidomyia* Theobald when the two type species concerned were found to be synonymous (Stone, 1957). More recently Belkin (1962) has recombined the two elements, sinking *Polylepidomyia* as a synonym of *Rachionotomyia*. To justify this he notes only that the affinities of certain species belonging to Group A of Baisas and Ubaldo-Pagayon are definitely with *Polylepidomyia* rather than with *Tripteroides* s. str. This I accept with, however, the reservation that the species to which he refers belong to subgenus *Tricholeptomyia* and not to *Rachionotomyia* s. str. as I have redefined it. The problem of the relation of the latter to *Polylepidomyia* remains.

This problem cannot be resolved purely by reference to *Rachionotomyia*. Correct limits must also be assigned to *Polylepidomyia*. Here also a partial redefinition is needed particularly vis-à-vis *Rachisoura*. Lee (1946) divided the latter into two groups, the *filipes* and *vanleeweni* groups, respectively. It is the second of these which approximates most closely to *Polylepidomyia*. Lee differentiated it from the latter by the presence of broad scales on wing veins R₁ to R₃ but was without access to specimens of *vanleeweni* itself which have quite narrow scales in that position, as confirmed from the type series, and intergrade completely.

My own studies of female terminalia have now revealed an alternative, quite unequivocal character diagnostic at subgeneric level for both groups of *Rachisoura*. The female terminalia have hitherto been described for only two species of *Tripteroides*. I have studied 72 species covering all the subgenera. The spermatheca is single in 21 out of 26 Oriental species of *Tripteroides* s. str. examined, trilobed in 12 out of 13 Australasian species of this subgenus and trilobed in all species of the other subgenera (occasionally bilobed in one species of *Rachionotomyia* s. str.). Apart from this the only character of

apparent value at subgeneric level is the ornamentation of the insula. The pattern is highly uniform in all subgenera other than *Rachisoura*. In these it takes the form of a peripheral fringe of relatively well developed setae and one or more (usually 2-5) smaller setulae in the posterolateral corners (Fig. 1e-h). One *Polylepidomyia* (*marksae* Dobrotworsky) lacks the posterolateral setulae and in a few cases they are more numerous than usual, up to 10. The aberrant *Ip. edwardsi* Barraud has the peripheral fringe unusually strongly developed but even when these species are included the pattern is unmistakable.

The situation in *Rachisoura* is very different. Here the setae forming the peripheral fringe are relatively small and the still smaller setulae form two longitudinal bands, one on either side of the mid line. The overall range of variation is shown in Fig. 1a-c. *Ip. cuttsi* Van den Assem has fewer of the small setulae than usual but even here the pattern is typical. On the other hand, in *Ip. subobscurus* Lee, currently placed in *Rachionotomyia*, the setulae are abundant and absolutely typical of *Rachisoura* (Fig. 1d). I have, accordingly, had no hesitation in transferring that species and the closely similar *Ip. obscurus* Brug (known only from the male) to the latter subgenus.

Fig. 1b is based on a paratype of *vanleeuweni* agreeing closely as to wing scales with the holotype. It will be seen that the ornamentation of the insula confirms its inclusion in *Rachisoura* despite the narrow wing scales (see above). It also further strengthens the case for transferring *obscurus* and *subobscurus* to that subgenus.

Deprived of these species *Polylepidomyia* becomes more clearly distinct both from *Rachisoura* and from *Rachionotomyia* s. str. As now defined, it differs from *Rachionotomyia* not only in various details of male terminalia but also in having very much longer male palps. On the basis of these differences and some partial differences in the female, I have felt justified in treating it as a separate subgenus. Though less distinct in adult ornamentation than *Tripteroides* s. str., it is much more so in the secondary sexual characters of the male. On balance the two subgenera appear to me to be equally well defined. Of the 5 subgenera now recognized only *Rachisoura* and *Tricholeptomyia* are separable in the early stages.

In deciding whether to include *obscurus* and *subobscurus* in *Rachisoura* or *Mimeteomyia* Lee was faced with the fact that their male palps are much shorter than in any other species included in the latter (0.3x the length of the proboscis as compared to 0.7x - 0.9x). In this respect they resemble most, though not all, *Rachisoura*. In arriving at the decision to include them in *Mimeteomyia* he chose to regard this character as of less importance than the breadth of the wing scales. He did not have before him any specimens of *vanleeuweni*. Had he seen these or had Edwards (1927) described the wing scales more adequately he might well have decided differently.

At the same time, he may have been influenced to some extent by the great variation in male palp length, cutting right across his species groups, which

is found in *Rachisoura*. In that subgenus the palps vary in length in the *vanleeuweni* group from about 0.2x to 0.8x the length of the proboscis and in the *filipes* group from about 0.1x to 0.9x. In defining these groups Lee again attached more importance to the wing scales than to the palp length with this time, perhaps, some support from the ornamentation of the phallosome, a character which has not previously been studied in the Australasian species.

At subgeneric level this character is chiefly of value in *Tricholeptomysia* in which it is unique. At species level it is of little or no value in *Rachionotomyia* or *Tricholeptomysia* but of considerable value in *Tripteroides* s. str. (Baisas and Ubaldo-Pagayon, 1953; Delfinado and Hodges, 1968), and seemingly also of potential value in *Polylepidomyia* and *Rachisoura* to judge from those species which I have studied.

Figs. 2a and 2b are of two members of the *vanleeuweni* group, *bisquamatus* Lee with male palps 0.75x as long as the proboscis and *brevirhynchus* Brug with a ratio of only 0.2x. The resemblance between them will be seen to be quite close and might be felt to support Lee's decision to group them together despite the disparity in palp length. On the other hand *Tp. adentata* Van den Assem (Fig. 2c) with palps of intermediate length, about 0.5x - 0.6x as long as the proboscis, has the phallosome markedly different. Figs. 2d - 2f are of species belonging to the *filipes* group. The first two, *filipes* (Walker) and *mathesoni* Belkin, have short male palps while *flabelliger* Bonne-Wepster (Fig. 2f) has them exceptionally long. The first two are somewhat more alike but the overall resemblance is close. Surprisingly, *subobscurus* (Fig. 2g) appears to resemble the *filipes* rather than the *vanleeuweni* group, but I do not think much can be made of this until more species have been studied. The few species of *Polylepidomyia* which I have examined show a range of variation seemingly annectant between *Rachionotomyia* and *Rachisoura*.

The phallosomes of the Australasian *Tripteroides* s. str. have yet to be studied. Those of 19 Oriental species and subspecies have been well figured in the papers by Baisas and Ubaldo-Pagayon and Delfinado and Hodges noted above. In this connection there is, however, an error for which I must admit responsibility. In 1947, I sent Baisas, at his request, a drawing of the phallosome of *powelli* ssp. *indicus* (Barraud) showing the lateral plate as bilobed (see Baisas and Ubaldo-Pagayon, 1953:162). Having re-examined the preparation in the light of further experience, I now realize that, in fact, the sternal lobe is single as in all other cases. The error was, unfortunately, perpetuated by Thurman (1959), following Baisas and Ubaldo-Pagayon, when raising *indicus* to species level.

In conclusion, it must be emphasized that the revision embodied in the present paper and in Mattingly (in press) is a provisional one and may well need to be carried further when the nominotypical subgenus and the Australasian subgenera have been fully studied. *Tricholeptomysia* is perhaps the best candidate for elevation to genus. *Rachisoura* also has claims with *mabinii* brought back as a monotypic subgenus. This would involve some difficulties as to the significance of the striking adult ornamentation of *Tripteroides* s. str. but no more, perhaps, than its remarkable resemblance to the African culicine genus

Eretmapodites. From a practical point of view it would render impossible the separation of *Tripteroides* from *Rachisoura* on adult characters unless, perhaps, the female terminalia when those of *mabini* are known. Any further step in this direction should, I think, be made contingent on the latter and also preferably on a full revision of *Tripteroides* s. str. As an ultimate objective I would hope to see the establishment of good generic characters for *Tripteroides* and the New World *Trichoprosopon* which are currently inseparable (see Lee, 1946; Zavortink, 1979).

Keys to all five subgenera will be found in Mattingly (in press). The following is a summary of changes called for in the current World Catalog (Knight and Stone, 1977).

Pages 316-318. Remove *Polylepidomyia* and *Tricholeptomyia* from synonymy as subgenera. Transfer all species except *aranoides*, *nepenthicola*, *obscurus* and *subobscurus* to *Polylepidomyia*. Transfer *nepenthicola* to *Tricholeptomyia*. Transfer *obscurus* and *subobscurus* to *Rachisoura*.

Page 320. Transfer *mabini* to subgenus *Tripteroides* (p. 323). Transfer *szechwanensis* to synonymy of *aranoides* (p. 316). Under *vanleeuweni* for Van den Assem, 1959:45 read Van den Assem, 1959:43.

Pages 321-325. Transfer *affinis*, *dofleini*, *edwardsi*, *nepenthis* and *rozeboomi* to *Rachionotomyia* (p. 316). Transfer *apoensis*, *barraudi*, *belkini*, *christophersi*, *delpilari*, *microcala*, *roxasi* and *werneri* to *Tricholeptomyia* (see above).

For some changes at species level, confined to *Rachionotomyia*, see Mattingly (in press).

REFERENCES

- Baisas, F. E. and A. Ubaldo-Pagayon. 1953. Notes on Philippine Mosquitoes, XVI. Genus *Tripteroides*. Monogr. Inst. Sci. Tech., Manila. 2:1-198.
- Belkin, J. N. 1962. The Mosquitoes of the South Pacific (Diptera: Culicidae). Univ. Calif. Press, Berkeley and Los Angeles.
- Delfinado, M. D. and E. R. Hodges. 1968. Three new species of the genus *Tripteroides*, subgenus *Tripteroides* Giles (Diptera: Culicidae). Proc. Ent. Soc. Wash., 70:361-375.
- Edwards, F. W. 1927. New mosquitoes of the genus *Rachionotomyia* from New Guinea. Nova Guinea 15:352-356.
- Hsu, K-C. 1964. Description of a new mosquito *Tripteroides* (*Tripteroides*) *szechwanensis* sp. nov. Acta Ent. Sinica 13:278-282.

- Knight, K. L. and A. Stone. 1977. A Catalog of the Mosquitoes of the World (Diptera: Culicidae). 2nd Ed. Thomas Say Foundation, Ent. Soc. Am., Vol. 6.
- Lee, D. J. 1946. Notes on Australian mosquitoes (Diptera: Culicidae). Part VI. The genus *Tripterooides* in the Australasian Region. Proc. Linn. Soc. N.S.W. 70:219-275.
- Mattingly, P. F. (in press). The subgenera *Rachionotomyia*, *Tricholeptomyia* and *Tripterooides* (Mabini Group) of Genus *Tripterooides* in the Oriental Region (Diptera: Culicidae). Contrib. Am. Ent. Inst.
- Stone, A. 1957. Notes on types of mosquitoes in the Hungarian National Museum (Diptera: Culicidae). Ann. Ent. Soc. Am. 50:171-174.
- Zavortink, T. J. 1979. Mosquito Studies (Diptera: Culicidae) XXXV. The new sabethine genus *Johnbelkinia* and a preliminary reclassification of the composite genus *Trichoprosopon*. Contrib. Am. Ent. Inst. 17(1):1-61.

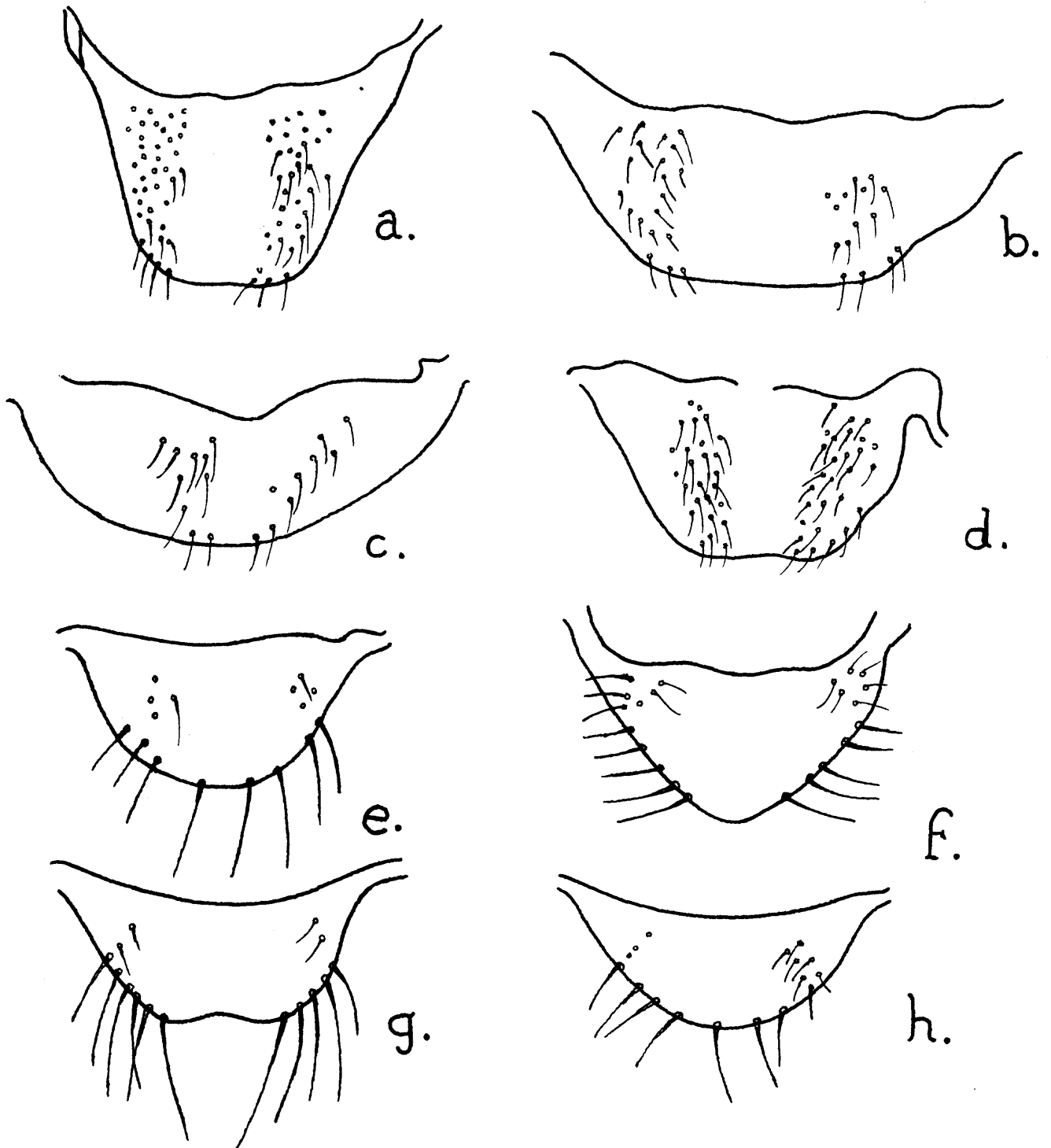


Fig. 1. Insula of *Tripteroides* spp. a. *Tp. (Rachisoura) flabelliger*, b. *Tp. (Rachisoura) vanleeuweni*, c. *Tp. (Rachisoura) cuttsi*, d. *Tp. (Rachisoura) subobscurus*, e. *Tp. (Polylepidomyia) melanesiensis*, f. *Tp. (Rachionotomyia) aranoides*, g. *Tp. (Tricholeptomysia) delpilari*, h. *Tp. (Tripteroides) similis*.

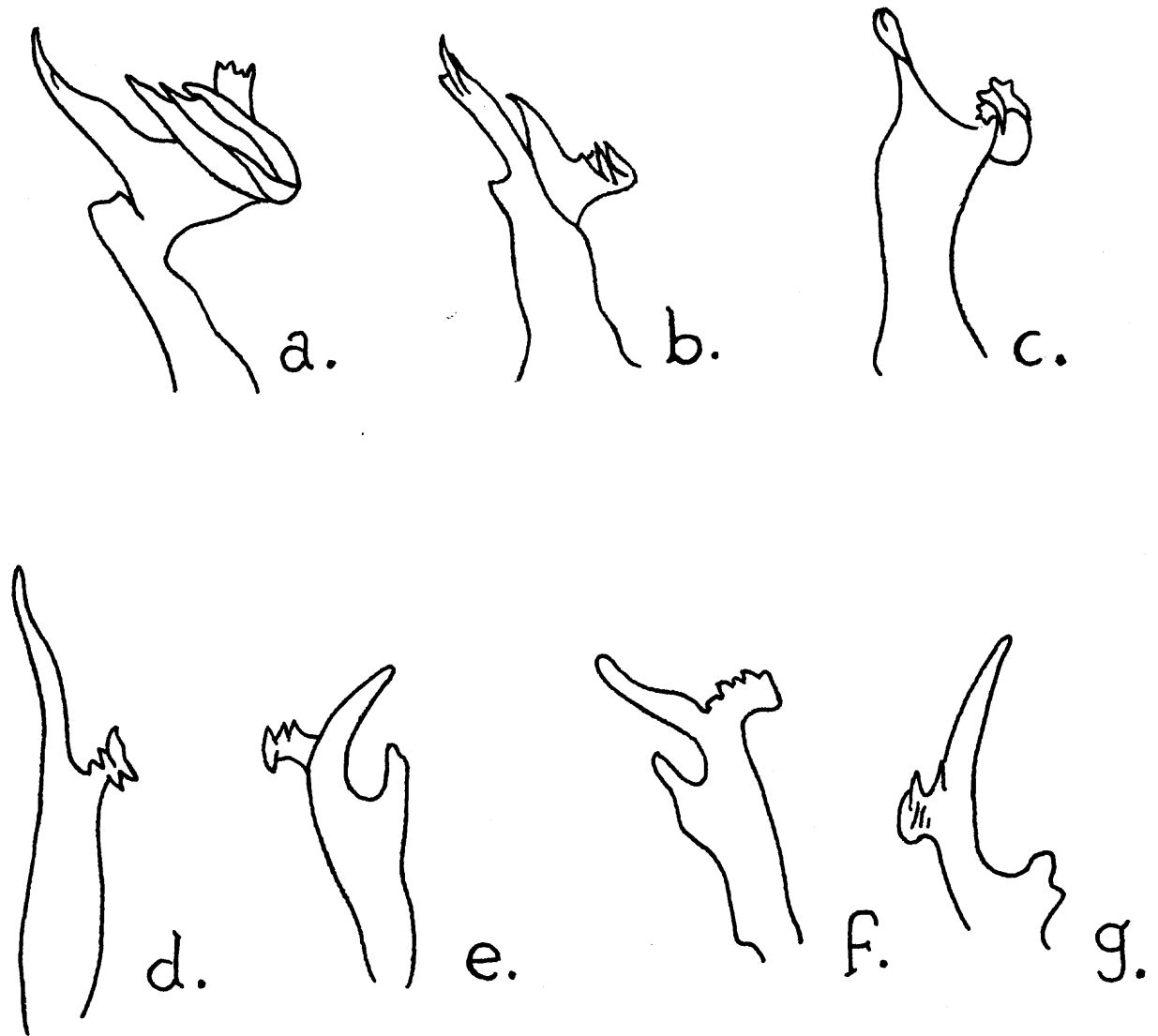


Fig. 2. Phallosome in lateral view. Subgenus *Rachisoura*.

- a. *Tp. bisquamatus*, b. *Tp. brevirhynchus*, c. *Tp. adentatus*, d. *Tp. filipes*, e. *Tp. mathesoni*, f. *Tp. flabelliger*, g. *Tp. subobscurus*.