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A revision of *Acrometopia* SCHINER and closely related genera

(Diptera: Chamaemyiidae)

With 67 text figures

Introduction

Acrometopia has always been considered one of the more distinctive and easily recognisable of genera in the family Chamaemyiidae. However, whilst engaged upon a revision of the genus, based primarily upon material from the New World, a most interesting problem was encountered. It was observed that segregates, provisionally designated as distinct species, showed great variability in those characters that had previously been used to delimit the genera of the family. This highly variable condition is unusual among Acalypterates, where the converse is more often observed i.e. minute differences in external morphology between species within a genus, and marked differences between genera. A study of the structures of the male post-abdomen confirmed the original opinion that all the material belonged to a monophyletic group, that was, although distinct, related to the genus *Acrometopia*.

Subsequent comparison of the Old World species of *Acrometopia* with those of the New World, suggested an excellent character for dividing the species from the two regions into discrete taxa. This character, the presence or absence of a reticulate wing pattern or a derivative of such, enables the picture-winged New World species to be instantly recognised; a new genus, *Toropamecia*, is erected for them.

Although the presence or absence of a wing pattern is not usually of particular importance, phylogenetically, among Acalypterates, I believe that in this instance it is indicative of a fundamental division between the two groups of species that mirrors their geographical isolation.

Morphology

Only two morphological systems are considered here, the head and the postabdominal structures of the male and female; additional basic morphological information is given in the introductions to the genera.

The most marked structural development in the genera considered, is the elongation of the head, termed the trigonometopine head condition. This condition is most developed in the Nearctic species, and related species from the north of the Neotropical Region, and the Palaearctic *Acrometopia carbonaria* (ZETTERSTEDT). The type-species of the genus *Acrometopia*, *Oxyrhina wahlbergi* ZETTERSTEDT, does not show as extreme a condition as any of the species mentioned above.

STUCKENBERG (1971: 515), postulated that the trigonometopine head is an adaptation for life in grass, or a comparable vegetation type having a profusion of erect slender stems. The purpose of the head elongation would appear to be one of camouflage, enabling the fly to assume a grass-like form, in which the outline of the fly narrows gradually from the thorax to the tip of the arista without a disruptive angle between the plane of the face

and the frons. Other families of Acalypterate flies have produced a similar effect, evolving an elongate, basally broad antenna, porrectly inserted, onto which a dark longitudinal head band is continued; such an arrangement is common in the family Sciomyzidae. In the more extreme trigonometopine species of *Toropamecia*, eg. *T. reticulata* (JOHNSON), the head shape is further accentuated by such a black band from the anterior edge of the eye to the antennal base (fig. 22).

From a study of the species of *Toropamecia* I would suggest that the majority of species could be derived from an ancestral form similar in structure and proportions of the head to that of a *Chamaemyia* species. It seems probable that an elongate head and the picture-wings developed throughout the genus, and subsequent reduction in wing pattern and loss of attenuation in head shape has occurred in some lines.

The genera of the tribe Chamaemyiini, as defined by McALPINE (1963: 250), are a closely related assemblage, in which the individual genera usually differ in one or two points of chaetotaxy from their closest relatives. As far as can be ascertained at present, from a study of the biology and the post-abdominal structures, these chaetotactic differences are sound and the genera valid. The new genus *Toropamecia*, now contains 17 described species which between them trace to four separate genera in McALPINE'S excellent key (1960: 52). The conclusions that may be drawn from such an observation are that either a highly variable genus occurs in the New World which shows a tendency to elongation of the head, or a number of genera are present in which all the known species have picture-wings; I am convinced that the former case is correct. VOCKEROTH (1969: 27), drew the following conclusions from a study of the Neotropical Syrphinae fauna which I feel have a bearing on the present case. "The characters of the individual species, although very diverse, are so poorly correlated with one another that no division of genera into well defined groups is possible". A similar phenomenon applies to the species of the genus *Toropamecia*, and the conclusion must be drawn that great plasticity of characters has developed in the South American fauna, in a family which elsewhere shows consistent morphological conservatism.

As a consequence of the variation within the genus, it is difficult to suggest the relationships of the species. It seems probable that the elongated head, termed the 'trigonometopine condition' by STUCKENBERG (1971: 515), has evolved on more than one occasion within the genus and except in its extreme condition, gives no indication of relationships. The wing pattern is similarly variable, and the number of dorsocentral bristles is a notoriously variable character in the related genus *Acrometopia*.

Distribution

The three genera with which this work is concerned, *Acrometopia*, *Parapamecia* gen. nov., and *Toropamecia* gen. nov., have between them a worldwide distribution, but each genus is confined as follows: *Acrometopia*, Old World only, including the Palaearctic Oriental and Australasian Regions; *Toropamecia*, New World only, southern Nearctic and wide-spread Neotropical; *Parapamecia*, Neotropical, West Indies only. Two undescribed species, possibly derivatives of an *Acrometopia*-like ancestor are known to me from Africa, but are not considered here as they are to be included in a revision of the African Chamaemyiidae.

This distribution, which is summarised in fig. 1, is reflected in the degree of variation to be found in the male post-abdominal structures. Variation is slight between species of *Toropamecia*, such that genitalic characters are, with a few exceptions, very difficult to use for specific determinations; *Parapamecia intacta* spec. nov., is genitalicly similar to a *Toropamecia* type. Plasticity in some external morphological characters, even intra-specifically, together with slight variation in some fundamental internal and external structures, suggests recent and rapid speciation of *Toropamecia* and *Parapamecia*. The preponderance of species in the North of the Neotropical Region, plus the fact that the two Nearctic species are confined to the southern states of the U.S.A., places the probable epicentre for the genus somewhere in the New World tropics.

Conversely, the *Acrometopia* species are widely separated geographically and structurally, with the exception of the species pair of *A. reicherti* (ENDERLEIN) and *A. setosifrons* spec. nov. from the Oriental and northern Australasian Regions. *A. wahlbergi* (ZETTER-

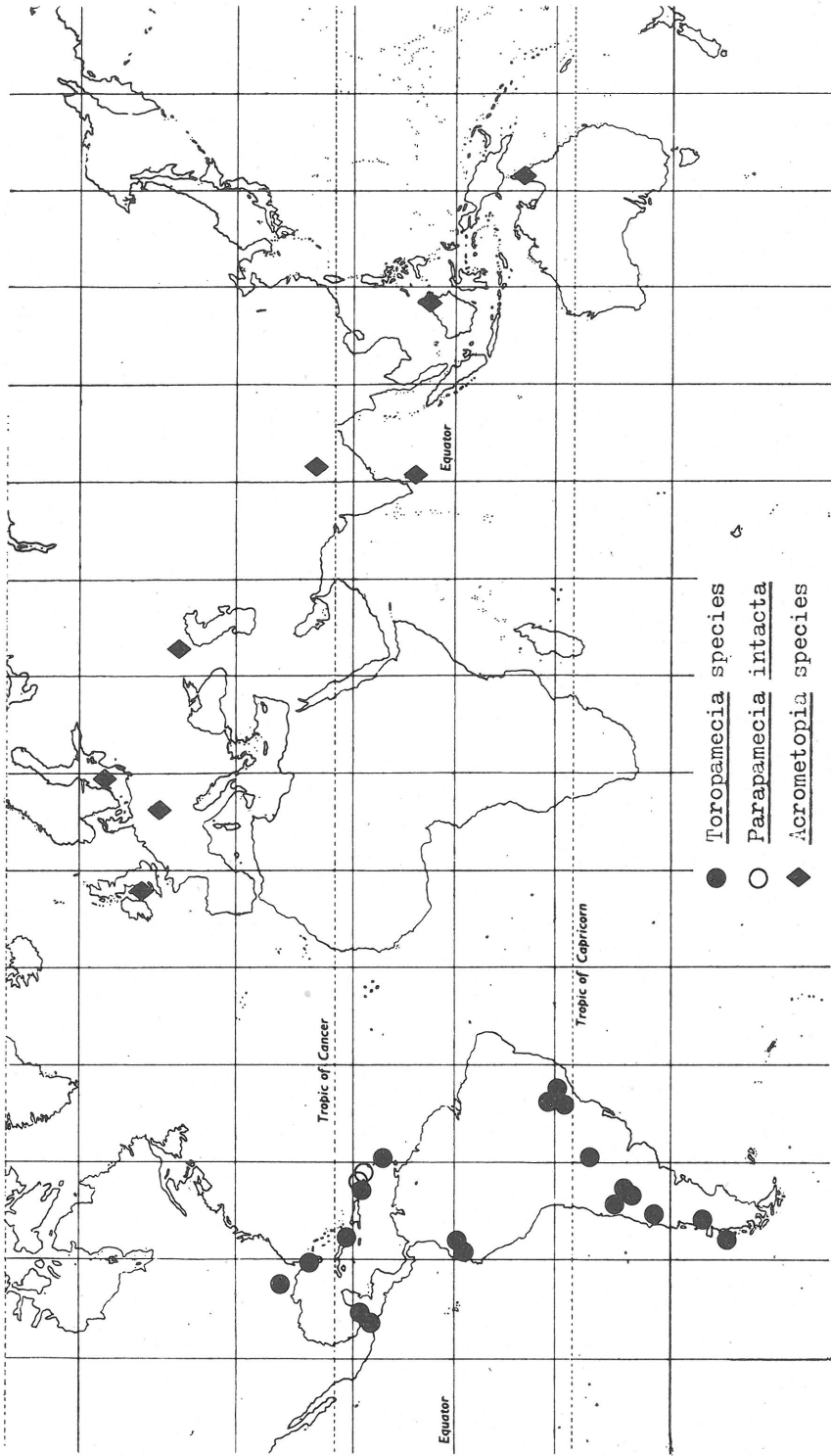


Fig. 1. Distribution map of *Toropamecia*, *Parapamecia* and *Acrometopia* species

STEDT) is confined to N.W. Europe and *A. carbonaria* (Loew), to eastern Europe. *A. wahlbergi* is the sister-species of the *reicherti* species pair, but the origins and relationships of *A. carbonaria* are obscure (see p. 230).

Biology

No detailed information has been recorded in the literature on the life-histories or habits of *Acrometopia*, *Toropamecia* or *Parapamecia*, but by extrapolation from other Chamaemyiids they should, as larvae, be predators of Homoptera, probably coccids or aphids. Some species have been swept from grasses, particularly *T. reticulata* (JOHNSON) in America (STEYSKA 1972: 302) and *A. reicherti* in Sri Lanka (p. 229). *Chamaemyia* species living amongst grasses are usually associated with coccid species feeding on the stem bases or roots (TANASIYCHUK 1970: 230).

Male abdominal structures

It has long been appreciated that the male abdominal structures, particularly the structures of the post-abdomen, have considerable potential in the elucidation of problems of phylogeny. HENNIG (1938, 1958), J. F. McALPINE (1963), and GRIFFITHS (1972), have all used the characters in the abdominal segmentation and in the genitalia to provide evidence of relationships both between the Chamaemyiidae and related families, and within the family. Due to the wide variation in external morphology between the species of the three genera considered in this paper, the evidence for their close relationship has been based on observations on the post abdomens of the majority of their included species.

The general plan of the structures to be found in two of the genera, *Toropamecia* and *Parapamecia*, is given below before considering the slight modifications to be found in *Acrometopia* (figs. 2–10). The terminology used is that of GRIFFITHS.

Abdominal segments 1–5 have no outstanding characters, although sternite 5 (*S5*) of some *Toropamecia* species bears tufts of setae that may be used to distinguish the species. It must be noted that the abdominal spiracles are very difficult to differentiate in the pleural membranes, even by the use of staining techniques or with phase-contrast lighting.

Tergite 6 (*T6*), is a shorter tergite than *T5*, usually less than 0.25 as long.

S6, is also short, often poorly sclerotised, and usually fused with *T7* on the left side.

T7 is longer, up to twice as long as *T6*.

S7 is very small and poorly sclerotised, often difficult to differentiate from the surrounding membrane.

T8 and *S8* have been lost.

The perianthium is rounded, lacking articulated telomeres and is articulated ventrally with lateral arms of the hypandrium which extend posteriorly beyond the ventral edge of the perianthium and terminate in strongly sclerotised bifoliate processes. Anterior arms of the hypandrium extend above the aedeagus and are fused to form a structure that may replace the function of the ejaculatory apodeme where the latter has been reduced or lost. The aedeagus is large and heavily sclerotised, with lateral expansions and articulates with the well developed aedeagal apodeme. The latter apodeme is attached at its ventral edge to the hypandrium.

Mention is only made below where the form of the sclerite differs from the general condition as outlined for *Toropamecia* and *Parapamecia*.

Acrometopia (figs. 2–10).

A. reicherti and *A. setosifrons* are so close in form that any reference to *setosifrons* may be regarded as a reference to both species.

T6, with a weakly sclerotised median suture in *A. wahlbergi*.

S6, possibly lost as a discrete sclerite in *setosifrons*, or represented as an apparent arm of *T7* extending ventrally.

T7, very narrow, heavily sclerotised band, extending most of the distance around the abdomen in *wahlbergi*, but a large sclerite encompassing the base of the perianthium in *setosifrons*.

S7, narrow and poorly defined, with in some specimens, a tenuous link with the right side of *T7* in *wahlbergi*, a much larger but poorly defined sclerite in *setosifrons*, perhaps representing a fusion of *S6* + *T7*.

The perianthium bears a single pair of postero-ventral sclerotised processes, probably functioning as non-articulating telomeres. To compensate for the lack of a terminal projection on the left anal cercus, the left perianthial process is longer than the right.

The right anal cercus of *setosifrons* bears a ventral sclerotised process that is lacking on the left cercus.

The hypandrium in *setosifrons* has short ventral arms which terminate in large flattened bifoliate processes, the extension of the posterior structure above the aedeagus is very weakly sclerotised.

The ejaculatory apodeme is very small in *wahlbergi*, but is lacking in *setosifrons*.

With one or two exceptions, the genitalia of *Toropamecia* and *Parapamecia* species are very similar and have not, therefore, formed the basis of species differentiation. The bifoliate processes on the hypandrial arms shows most variation between species, but as it is a very difficult character to use the form of these apical structures has been figured for only a few species. When viewed from a ventral aspect the two parts of the processes are not easy to distinguish and the abdomen must be revolved to bring the hypandrium

into such a position that the bifoliate processes may be seen in silhouette before being compared with the figures.

Female abdominal structures

The structure of the female abdomen is very similar for all the species of the three genera studied. The ovipositor is weakly sclerotised and in addition to the normal method of telescoping the terminal segments, in which the membranous area of each segment folds in, further telescoping is attained by the folding in of the anterior half of the greatly elongated segment seven, the anterior portion of which is very weakly sclerotised or lacks sclerotisation dorsally and ventrally.

T6 and *S6* are slightly shorter than *T5* and *S5*. *T6* divided in *Parapamecia*.
T7, very long, longer than *6*, *8* and *9* combined, membranous apically and dorsally along most of its length, but with weakly sclerotised lateral areas extending to the apex of the segment.
S7, sclerite extending for only half of segment, very weak and becomes nonsclerotised in the median line over the apical half.
T8 and *S8*, both strongly sclerotised, extending the full length of the segment, and almost fused laterally.
Segment 9 with large dorsal cerci, and in *Toropamecia* a well marked ventral pair.

In *Toropamecia* the spermathecae are four in number, as they are in all Chamaemyiids, but in two pairs with only two ducts. The upper spermatheca of each pair is apparently not in contact with the lower, in the *Toropamecia* species studied, although this may be the result of damage sustained in the preparation of the specimens for study.

Acrometopia genus group

As stated in the introduction, the genera of Chamaemyiids are an homogenous group differing in only one or two diagnostic characters from their closest relatives. The small group of genera reported on in this paper, *Acrometopia* SCHINER, *Toropamecia* gen. nov. and *Parapamecia* gen. nov. are an exception to the preceding statement and have only the following apomorphic characters of the male genitalia in common; well developed hypandrial processes bearing bifoliate processes at their apices, and ejaculatory apodeme reduced or absent and an extension of the hypandrium above the aedeagus. Due to the extreme variation to be found in external morphology, particularly in *Toropamecia*, no satisfactory combination of external characters can be used.

Key to the genera of the tribe Chamaemyiini

- 1 Wings with a maculated pattern, except *T. hyalipennis* spec. nov. see below; head usually elongated, New World species only **Toropamecia gen. nov.**
- Wings either immaculate or with cross-veins or costal edge darkened; head rarely elongated, New and Old World species 2
- 2 Presutural dorsocentral bristles (*dc*) absent 3
- Presutural *dc* present, occasionally in reduced form 6
- 3 Mesopleuron with one or more bristles posteriorly; prescutellar acrostichal bristles absent *Pseudodinia* COQUILLET
- Mesopleuron bare; prescutellar acrostichals present 4
- 4 Frontal orbit with only one bristle *Chaetoleucopis* MALLOCH
- Frontal orbit with two bristles, anterior may be reduced 5
- 5 Anterior fronto-orbital bristle inserted closer to the anterior edge of frons than to posterior bristle *Pseudoleucopis* MALLOCH
- Anterior fronto-orbital bristle inserted closer to the posterior bristle than to the anterior edge of frons **Parapamecia gen. nov.***
- 6 Mesonotum with 1 + 2 strong *dc* 7
- Mesonotum with more than 1 + 2 *dc* 8
- 7 Body wholly shining black, abdomen without spots *Melanochthiphila* FREY
- Body dull, usually grey dusted; abdomen often with paired spots *Chamaemyia* MEIGEN

* *Toropamecia hyalipennis* spec. nov., will run to this place in the key, see p. 236 for distinguishing characters.

- 8 Mesopleuron with at least one bristle *Parochthiphila* CZERNY
- Mesopleuron bare 9
- 9 Head acutely pointed, at least eye elongated, longer than high; frons above the base of antennae with a group of strong proclinate setulae; prescutellar acrostichal bristles present *Acrometopia* SCHINER
- Head usually rounded anteriorly, eye at least as high as long; setulae above base of antennae, when present, weak; prescutellar bristles weak or absent. (If head rather pointed anteriorly, eye higher than long and antennae yellow *Plunomia elegans*) 10
- 10 Frons with dark transverse band; lower fronto-orbital nearer to upper, than to lunule; abdomen with paired spots in both sexes *Euestelia* ENDERLEIN
- Frons without transverse band; lower orbital bristle arising nearer to the lunule than to the upper orbital bristle; abdomen, in the female, with paired transverse bands, in the male with paired spots *Plunomia* CURRAN

***Acrometopia* SCHINER**

Acrometopia SCHINER, 1862: 434. Type-species, *Oxyrhina wahlbergi* ZETTERSTEDT, 1846, by designation of COQUILLET 1910: 503.

Acrometopa. Incorrect subsequent spelling.

Acrometopida ENDERLEIN, 1929: 57. Type-species, *Acrometopida reicherti* ENDERLEIN, 1929, by original designation.

Acrometopia is here restricted to the Old World species, none of which have a patterned wing. The genus resembles *Chamaemyia* MEIGEN, in external characteristics, differing from it in the possession of more than three, 1 + 2, *dc*, and a head in which the long axis is horizontal, and usually considerably longer than the vertical. This latter character is variable both in *Acrometopia* and in *Chamaemyia*, but taken in conjunction with the number of *dc* there is usually no doubt about the correct placement of a species. As already stated in the discussion of the male abdominal structure, *Acrometopia* is far more closely related to the New World genera *Toropamecia* and *Parapamecia*.

Acrometopia contains four recognised species: *A. wahlbergi* (ZETTERSTEDT), the type-species of the genus, *A. reicherti* (ENDERLEIN), *A. setosifrons* spec. nov., and *A. carbonaria* (LOEW). *A. setosifrons* is aberrant only in the number of *dc*, 0 + 2, while in all other respects closely resembles *A. reicherti*. *A. carbonaria*, however, shows many peculiarities, which together throw some doubt on its correct placement in the genus, see p. 230.

Key to the described species of *Acrometopia*

- 1 Presutural *dc* absent (Nepalese species) *setosifrons* spec. nov.
- Presutural *dc* present 2
- 2 Whole body shining blackish-brown; tibiae, apically, and tarsi yellow, wings milky-white *carbonaria* LOEW
- Greyish dusting over most of body; wings hyaline 3
- 3 Tibiae uniformly greyish dusted (Palearctic species) *wahlbergi* ZETTERSTEDT
- Tibiae banded with brown (Oriental species) *reicherti* ENDERLEIN

***Acrometopia wahlbergi* ZETTERSTEDT**

Oxyrhina wahlbergi ZETTERSTEDT, 1846: 1954.

Acrometopia wahlbergi (ZETTERSTEDT), SCHINER, 1864: 291.

The type species of the genus *Acrometopia* is unfortunately not particularly indicative of the genus as it has become known. The attenuation of the head figs. 12—13 is far less extreme than that shown by *A. carbonaria* (LOEW) and the North American species that have previously been placed in *Acrometopia*.

A. wahlbergi may be easily recognised by its totally pale grey vestiture and yellow legs. As mentioned previously it is related although distantly to *A. reicherti* (ENDERLEIN) and *A. setosifrons* spec. nov., but amply distinct from both in leg markings and male genitalia. Its relationship with *A. carbonaria* (LOEW) is problematical and is discussed under that species (see p. 230).

Male, female

Head: pale grey dusted; antennae yellow, antennal segments I and II heavily grey dusted, segment III extensively darkened over the apical $\frac{2}{3}$; arista white apically brown at the base, long pubescent. Frons with few anterior setulae which are confined to the anterior quarter; frons broad, equal to length of head. Palpi yellow.

Thorax: pale-grey dusted, mesonotal setulae few but relatively strong; 1 + 3 *dc*, prescutellar acrostichals strongly differentiated. Legs yellow, heavily grey dusted on the coxae, trochanters and femora, and dorsally on the tibiae, apical 2–3 tarsal segments darkened on the fore leg, only 1–2 so darkened on the mid and hind legs. Wing veins pale yellow, except at the humeral node which is brown, wing (fig. 67) 3,3 mm in length, SD: 0,41; halteres pale yellow.

Abdomen: pale grey dusted, bristles on tergites relatively few in number but irrorate with very dark grey. Male genitalia as in figs. 8–10.

Material studied: I have seen material from only two countries, the U.K. and Germany.

Germany, Berlin, Grunewald, 2 ♂♂, 3 ♀♀. In BM(NH).

U.K. Wales, Anglesey, Cors Goch, 5. vii. 1976, J. M. ISMAY, 3 ♂♂, 1 ♀. In HDO.

Anglesey, Cors Goch, 5. vii. 1976, A. E. STUBBS, 5 ♂♂, 1 ♀. In BM(NH).

Caenarvon, Cors Geirch, 7. vii. 1976, J. W. ISMAY, 3 ♂♂. In BM(NH) & HDO.

Acrometopia reicherti (ENDERLEIN)

Acrometopida reicherti ENDERLEIN, 1929: 58.

Acrometopia annulitibia SMITH, 1966: 460.

Acrometopia reicherti ENDERLEIN, COGAN, 1977: 223.

The type species of the genus *Acrometopida* ENDERLEIN, a genus that I consider a synonym of *Acrometopia*. This species has a most unusual distribution, the syntypic series is from Sri Lanka (as Ceylon), while SMITH's species was based on material from Papua and N. Borneo. I have also seen material from N. Queensland Australia. *A. setosifrons*, a Nepalese species, is very closely related, and may represent an extreme clinal variant of *reicherti*. The presence of at least four pairs of *dc* and the banded tibiae will distinguish *A. reicherti* from related species.

Male, female

Head: grey dusted; antennae heavily grey dusted dorsally on segments I and II, and darkened extensively on segment III and on the ventral halves of I and II, only the inner face of segment III reddish-yellow on the basal half; arista white, heavily pubescent. Frons longer than broad, 1,2:1,0, frontal setulae short but scattered over the anterior frons posteriorly as far as the anterior fronto-orbital bristle; palpi pale yellow (fig. 17).

Thorax: grey dusted, 1 + 3 *dc* on the mesonotum, usually 1 or 2 weak bristles in the *dc* line; setulae numerous, scattered and relatively well developed; prescutellar bristles well differentiated from the acrostichals. Legs extensively grey dusted on the coxae, trochanters and femora; remainder of the legs reddish-yellow with light grey dusting on the dorsal face of the tibiae, the latter also banded with dark brown; the fore and mid tibiae with three indistinct narrow bands, the hind tibiae more distinctly marked with three bands; fore tarsi darker than the tibiae. Wings (fig. 67) with hyaline membrane; veins pale yellow darkened only below the humeral cross-vein, 2,7, SD 0.96 mm, in length; halteres pale yellow.

Abdomen: pale grey dusted, all tergal bristles irrorate with dark brown; in the male some irrorations on the anterior segments coalesce to form irregular patches. Male genitalia relatively complex, the cerci, and ventral area of the perianthrium extended into sclerotised projections; there is some variation between the specimens from the western and eastern populations with regard to the apical processes on the arms of the hypandrium (figs. 5 + 7). The anal cerci are asymmetrical, the right cercus lacks the sclerotised projection that is present on the left side, this asymmetry has been observed in all the males studied, and in the males of *A. setosifrons*.

Lectotype ♂: from the syntypic series of two specimens, I designate the male as lectotype. The specimen bears the following data: Ceylon, Nietner S; Type; *Acrometopida reicherti* ENDERL. ♂ type, Dr. ENDERLEIN det. 1929. The lectotype is in good condition except for an area of 'greasing' on the mesonotum around the pin. In DEI.

Paralectotype ♀: same data as for lectotype. Also in DEI.

Material studied: In addition to the Lectotype series, and part of the paratype series of *A. annulitibia*, the following; Ceylon, Centr. Prov., Horton Plains, alt. 7,000 ft, 12 mls. S.S.E. Nuwara-Ellya, 19. iii. 62, loc. 163. 'Swept on moist grassland', 1 ♂, 1 ♀ (in alcohol).

As above 'Swept on dry meadow', 3 ♂♂, 2 ♀♀; 'swept on meadow', 2 ♂♂, (in alcohol).

As above, 11 mls. S.S.E. Nuwara-Ellya, 19–20. iii. 62, loc. 162, 'swept on moist grassland', 1 ♂, 1 ♀; 'Swept on grass and sedge', (1 ♀, in alcohol).

Ceylon, Sabaragamuwa Prov., Nonpareil, 3,100 ft, 3 mls. N.E. Belihul-Oya, 1. iii. 62, loc. 108, 1 ♂, 'Swept on dry grassland'.

As above, Butkanda, 8 mls. S.E. Rakwana, 28. ii. 62, loc. 104, 'Manna grass', 1 ♂ (all above coll. BRINCK, ANDERSSON & CEDERHOLM on Lund University Ceylon Expedition. In LUC).

Papua, Waitape, Wharton Ra., 19 Oct. 1963, D. K. MCALPINE, 10 ♂♂, 11 ♀♀.

Australia, N. Queensland, Speewah Rd., 5 mls. S. Kuranda, 12. Jan. 1967, D. K. MCALPINE & G. HOLLOWAY, 2 ♂♂. In AMC.

Acrometopia setosifrons spec. nov.

Virtually identical in colouring to *A. reicherti*, with the exception of the two pairs of dark brown round patches on the 3rd.–5th. abdominal segments. Differs most remarkably in possessing only two pairs of *dc* bristles, both post-sutural. This latter character is found only in the genera *Pseudoleucopis* MALLOCH and *Chaetoleucopis* MALLOCH among the Old World Chamaemyiinae.

Male, female

Head: dark grey dusted, paler grey on the face, occipital region, facialia and below the eye. Antennae dark blackish-brown, strongly grey dusted on the dorsal face of segments II and III, but pale basally on the internal face of segment III; arista

cream coloured basally, white apically and broadly pubescent. Frons setulose anteriorly in a broad band; longer than broad, 1.1:1.0; frontal bristles noticeably closer to the inner vertical bristle than to the anterior edge of the frons (fig. 17); occipital bristle series short and weak. Buccae broad, anterior bristles well developed, in lateral view extending beyond the vertical line of the face. Palpi yellow.

Thorax: uniformly grey dusted, without pattern, although the dusting is slightly darker laterally on the mesonotum and pleura. Mesonotum with only two pairs of *dc* both post-sutural; setulae scattered, acrostichals irregularly arranged, the prescutellar pair well developed. Force coxae lightly grey dusted; femora strongly dusted except narrowly at the apex; tibiae pale yellow, banded with dark brown basally and apically and narrowly at $\frac{1}{3}$ of its length from base and apex; tarsi yellow, darkened on the apical three segments of the fore-leg and the apical segment on the mid and hind leg. Wings with membrane hyaline and veins pale brown, venation very similar to that of *A. reicherti*, (see fig. 67), 3 mm in length. Halteres white, with two dark brown patches on the capitulum.

Abdomen: grey dusted, setulae scattered, much longer on the posterior edges of the segments; setulae irrorate laterally on the segments, two pairs of brown patches on segments 3-5; male genitalia as fig. 6.

Holotype ♂: Nepal, 28.00' N, 85.00' E., 26 May, 1967. Mal. tr. 7, 9,900'. Can. Nepal Exped. In CNC.

Paratype ♂: data as for holotype, 1 June, 1967, Mal. tr. 6, 10,500'. BM(NH).

Acrometopia carbonaria (LOEW)

Coniceps carbonarius LOEW, 1878: 290.

Acrometopia carbonaria (LOEW), HENDEL, 1911: 184.

A very distinctive species, unique among Chamaemyiidae in bearing three pairs of well developed fronto-orbital bristles (fig. 14). This fact, in conjunction with the anomalous condition of the male post-abdomen, must throw doubt on its correct placement in *Acrometopia*, and even on its relationship to the other genera of Chamaemyiidae.

Its shining dark blackish-brown colouring and strongly trigonometopine head easily distinguish this species from all others in the genus.

Male

Head: shining blackish-brown except for silver dusting on the orbital strips above and below the eye, palpi, yellow. Three pairs of strong fronto-orbital bristles.

Thorax: shining blackish-brown, with a light dusting of grey on the mesonotum, *dc* numerous, 2 + 5 stronger bristles. Legs dark, some dusting on the dorsal face of the femora, 'knee', lower $\frac{1}{3}$ of tibiae and tarsi of fore leg, and apical $\frac{1}{4}$ of tibiae and tarsi of mid and hind legs yellow, apical tarsal segment darkened. Wings with membrane milky white, veins dark brown and membrane between them lightly infumated (fig. 56), wings long, 3.2 mm; Halteres whitish-yellow.

Abdomen: shining blackish-brown, with a very light grey dusting, particularly on the genital segments. The male genitalia (figs. 3, 4) were drawn while the lectotype ♂ specimen was in my possession some years ago. At that time I was under the impression that the specimen had been damaged either in life or in the preparation of the genitalia mount. The male genitalia require further study to ascertain the correct position of the species, a project being undertaken by Dr. TANASIYCHUK through whose kindness I was able to study the type series.

Material studied: Two specimens, a ♂ & ♀, of the syntypic series of 1 ♂ & 3 ♀♀, described by LOEW from Sarepta U.S.S.R., and collected, according to the original description, by CRISTOPH. The original series is in ZIL. The specimens bear the following data, Капента, Беркеп 3 plus a determination label by Dr. J. F. McALPINE. I designate the male specimen as lectotype, the three female specimens as paralectotypes.

Toropamecia gen. nov.

Type-species, *Acrometopia punctata* COQUILLET, 1902.

This new genus is erected for the North American species *A. punctata* COQUILLET, *A. reticulata* JOHNSON and *A. maculata* COQUILLET from the southern United States of America and the Caribbean, and for a number of Neotropical species. The genus shows considerable plasticity of form, especially in head shape and number of *dc*. The wing pattern conforms to a basic arrangement of vertical short bars in the costal cells grading posteriorly and basally to pale spots in the posterior cells. In some species the pattern is greatly reduced, and in *T. hyalipennis* it is absent.

Generic diagnosis

Head: arista short to moderately long pubescent; antennal segment three times as long as broad to as long as broad. Two pairs of fronto-orbitals are inserted mid-way between the anterior frons and the vertex, approximately as far from each other as the anterior *f.o.* is from the anterior edge of the frons. Eye rounded to horizontally elongate. Ocellars strong, equal to posterior *f.o.*, to weak; postverticals incurved, rarely cruciate.

Thorax: single humeral, presutural, anterior and posterior supr-alar bristles; two pairs of notopleural bristles and 0 + 2 to 2 + 4 *dc*; prescutellar acrostichal bristles weakly to strongly differentiated; no mesopleural bristle, a single strong sternopleural and two pairs of scutellar bristles, the apical pair incurved but not strongly cruciate; wing pattern reticulate, or a derivative of such a condition (c.f. *T. hyalipennis*).

Abdomen: pattern variable, from completely lacking, with minute irrorations at the bases of all the setulae, to large angular patches, but never strongly fasciated (c.f. *Parapamecia*); for post-abdominal structure see p. 226; hypandrial processes small and bifoliate (c.f. *Acrometopia*).

The major apomorphic character for differentiating *Toropamecia* is the maculated wing, for although wing markings do occur in other genera of Chamaemyiidae, they always consist of darkened areas along the costa or over cross-veins, never a maculated pattern. However, rather late in the development of this paper, a Brazilian species was received which had totally clear wings. Its general habitus places it within the accepted range of variation of *Toropamecia* and it is described here as *T. hyalipennis*. In the key

to genera *T. hyalipennis* will trace to the genus *Parapamecia*, but greater weight has been given to the arrangement of the head bristles and to the type of abdominal pattern, both of which characters place *hyalipennis* in *Toropamecia*.

Key to the species of *Toropamecia*

- 1 At least one strong presutural dorsocentral (*dc*) bristle 4
- No presutural *dc* present 2
- 2 Wing membrane totally hyaline; abdomen with large blackish-brown patches on segments 3—6 *hyalipennis* spec. nov. ✓
- Wing membrane with a pattern of brown patches or bars; abdominal markings always small 3
- 3 Mesonotum with median and lateral pairs of dark grey vittae; submarginal cell of wing with only four or five brown bars. *apaza* spec. nov. ✓
- Mesonotum with diffuse vittae on the anterior region only; submarginal cell with at least seven brown bars *caribbea* spec. nov. ✓
- 4 Wing elongate (fig. 51), costal cells with a brown longitudinal band; mesonotum with a lateral pair of golden brown vittae *longipennis* spec. nov. ✓
- Wing of more normal proportions, costal pattern always consisting of a number of separate patches, bars or spots 5
- 5 Head strongly attenuated (fig. 22) such that the face is at an acute angle to the plane of the frons; usually numerous additional but shorter bristles in the *dc* line 6
- Head less strongly attenuated, the angle between the face and the plane of the frons usually approaching 60°; rarely more than 2 + 3 bristles in the *dc* line 7
- 6 Fore tibiae yellow; wing pattern as in fig. 46 *reticulata* (JOHNSON)
- Fore tibiae darkened over the apical 2/3; wing as in fig. 53 *punctata* (COQUILLET)
- 7 Palpi dark; antennae black, grey dusted on the dorsal half, mesonotum uniformly grey dusted, wing pattern reduced *nigripalpis* spec. nov. ✓
- Palpi yellow 8
- 8 1 + 2 strong *dc* bristles 9
- 1 + 3 strong *dc* bristles 14
- 9 Antennae yellow or yellowish, sometimes partially darkened on segment III, or smoky overall (*T. smithi*). 10
- Antennae black, except at the base of the internal face of segment III, heavily grey dusted, dorsally, on segments I & II; abdomen irrorate, but lacking paired dark brown patches *macalpinei* spec. nov. ✓
- 10 All tibiae dark; mesonotum with buff-brown and grey dusting *smithi* spec. nov. ✓
- Tibiae yellow, at mostly lightly dusted with grey 11
- 11 Wing with a strongly reticulate pattern (fig. 61) 12
- Wing with a reduced pattern consisting of transverse bars or small patches 13
- 12 Mesonotum darkened posteriorly, particularly in the *dc* line by dark brown dusting, and bearing a short lateral band of pale golden-yellow from the humeral prominence to the posterior notopleural bristle *australis* MALLOCH
- Mesonotum uniformly grey dusted *hendeli* nom. nov. ✓
- 13 Wing pattern pale, except for the marginal cell patches and cross-vein markings (fig. 58); abdomen with four rows of brown patches *juyuyensis* spec. nov. ✓
- Apical bands of wing pattern in form of a 'V'; abdomen without patches *veenota* spec. nov. ✓
- 14 Large species, wing 4,4 mm in length, pattern heavy and reticulate (fig. 66); mesonotum with a pair of post-sutural dark brown vittae *grossa* spec. nov. ✓
- Smaller species, wing 2,6 mm, pattern punctate; mesonotum lacking vittae 15
- 15 Wing pattern reduced to a few pale patches in the marginal and submarginal cells and over the cross-veins (fig. 62); abdomen without irrorations or paired brown patches *reducta* spec. nov. ✓
- Wing pattern of costal dark brown transverse bands in the marginal cell, and numerous brown spots in the remaining cells (fig. 52); abdomen with both irrorations and dark brown patches on segments 4—6 *multipunctata* spec. nov. ✓

The species *T. maculata* (COQUILLET), is known to me only from the wing of the holotype, and the original description, and has not been included in the above key.

Toropamecia reticulata (JOHNSON), **comb. nov.**

Trigonometopus reticulata JOHNSON, 1913: 81.
Acrometopia reticulata (JOHNSON), STURTEVANT, 1923: 4.
Acrometopia reticulata (JOHNSON), STEYSKAL, 1972: 302.

This species was considered to be a synonym of *T. punctata* (COQUILLET), until STEYSKAL (1972: 302) separated them on the basis of the colour of the tibiae and foretarsi, which are yellow, and on differences in the wing pattern (fig. 46). His actions appear fully justified, and the species may be identified as follows:

Head: very strongly attenuated anteriorly (fig. 22), antennae dark, segment III elongate, paler on the inner face; frons longer than broad, 1.7:1.0; setulae well developed on the lateral apices of the frons only. A minimum of 1 + 3 *dc*, further short bristles in the line of the *dc*; mesonotal bristles and setulae irrorate in some specimens, see below; legs yellow, heavily grey dusted on the femora, lightly so on the dorsal face of the tibiae; fore femora with a single, and hind femora with a double, dark brown slightly oblique band, wing 2.0 mm in length, SD = 0.61.
 Abdomen: grey dusted, the degree of irroration varies considerably between the island populations, in heavily marked specimens the irrorations may coalesce to form irregular patches; two pairs of dark brown patches are usually present on the second to fifth segments, the lateral patches less defined, and both pairs are partially obliterated in specimens where the irrorations are well developed.

A long series of 83 specimens was received from the AMNH, collected in the Bahamas Islands. This series shows variations in intensity of colour, and in small differences of pattern on the head, mesonotum, wing and abdomen, depending on the island of origin. The clinal variation along the chain of islands is quite marked with regard to the wing pattern, although the pattern type is constant. The degree of irroration and the presence or absence of vittae on the mesonotum also differs over the complete range of the species. In recording the material studied, the island localities are arranged approximately in a series from north-west to south-east, and significant changes are noted. No other material has been seen. The species is also known from Florida, U.S.A. (STEYSKAL 1972: 302).

Material studied: All specimens listed below also bear the following 'Van Voast, AMNH, Bahama Isl. Exped., and the following collectors;

- | | |
|---------------------------------|-------------------------------|
| 1) E. B. HAYDEN & G. B. RABB | 4) L. GIOVANNOLI & G. B. RABB |
| 2) E. B. HAYDEN & L. GIOVANNOLI | 5) L. GIOVANNOLI |
| 3) E. B. HAYDEN | |

- 1) Abaco Cays; Allans Cay, May 9 1953, 1 ♂. Great Sale Cay, May 10 1953, 5 ♂♂, 4 ♀♀. Colls (1). Conservative colouration, only the posterior two *dc* irrorate, wing pattern pale, some irroration on abdomen.
- 2) Berry Islands, Little Harbour Cay, May 1 1953, 1 ♂, 5 ♀♀, 1 ex. Colls (1). As above but slight partial vitta on the posterior edge of humeral region.
- 3) Eleuthera Island; Governors Harbour, March 31, 1953, 2 ♂♂, 3 ♀♀, Hatchet Bay, nr. Alicetown, April 2 1953, 3 ♂♂, Colls (1). As above but with slight irroration of the pre-sutural *dc*.
- 4) New Providence Isl; Nassau, April 16 1953, 5 ♂♂, 5 ♀♀, Coll (3). 4m. s.w. Nassau April 8 1953, 1 ♂, Coll. (2)., 5 m. s.w. Nassau, April 6 1953, 1 ♂, Coll. (1). As above, but with humeral bar distinct, increased abdominal irroration.
- 5) Andros Island; Fresh Creek, April 23 1953, 1 ♀, Driggs Hills (nr. South Bight), April 27 1953, 2 ♂♂, Coll (2). As above, plus supra-alars and apical scutellars irrorate.
- 6) San Salvador Isl. nr. Cockburn Town, March 18 1953, 2 ♂♂, 1 ♀, Colls (4). Small specimens with most thoracic bristles irrorate.
- 7) Exuma Cays; Warderick Wells Cay, Jan. 10 1953, 3 ♂♂, 3 ♀♀, Coll. (5), Darby Island, Jan. 18 1953, 4 ♂♂, Coll. (2), Leaf Cay of Allans Cays, Jan. 7 1953, 1 ♂, 1 ♀, Coll. (3), Staniard Cay, Jan. 13 1953, 7 ♂♂, 1 ♀, Coll. (3), Bitter Guana Cay, Jan. 13 1953, 1 ♂, Coll. (5). Larger than above, less heavily marked.
- 8) Long Island, Deadmans Cay, March 11 1953, 1 ♂, Coll. (3). As above.
- 9) Mayaguana Island nr. Abraham Bay, March 3 1953, 2 ♂♂, Coll. (3). Partial vitta on dorsal edge of sternopleuron, full wing pattern.
- 10) Turks & Caicos Isl., Grand Turk Island, February 19 1953, 1 ♀, Coll. (2). Poor condition.
- 11) Great Inagua Isl., Mathew Town, Jan. 31 1953, 9 ♂♂, 7 ♀♀, Colls. (1) & (2). Nearly all bristles, including the fronto-orbitals, irrorate; in some specimens the thoracic and abdominal irrorations coalesce to form patches.

Toropamecia punctata (COQUILLET), **comb. nov.**

Acrometopia punctata COQUILLET, 1902: 185.
A. punctata COQUILLET, STEYSKAL, 1972: 302.

The female holotype of this, the type species of the genus *Toropamecia* is in the U.S.N.M.; I have seen only the damaged right wing of the holotype which was mounted on a slide and sent to me by Mr. G. C. STEYSKAL. STURTEVANT 1923, and STEYSKAL 1972, record only one further specimen, a male, from Alabama, USA.

STEYSKAL differentiates *T. punctata* from *T. reticulata* (JOHNSON) on wing pattern (figs. 46, 53) and the possession of dark tarsi and $\frac{2}{3}$ tibiae on the fore-leg. In *T. reticulata* the metatarsus and second segment are yellowish and the foretibia is wholly yellowish. In all other colour characters *T. punctata* resembles *T. reticulata*.

Toropamecia maculata* (COQUILLET), comb. nov.Acrometopia maculata* COQUILLET, 1902: 185.*A. maculosa* COQUILLET, MALLOCH, 1933: 382, in error.

Through the kindness of Mr. G. C. STEYSKAL, I have been able to study a microscope slide of the wing of the holotype female of this species from Baracoa, Cuba, deposited in the USNM.

MALLOCH compared his *A. australis* to this specimen and while they are undoubtedly closely allied, they may be differentiated as follows (after MALLOCH). *A. maculata* has antennal segment III broadly darkened apically, hind tibiae entirely fulvous-yellow, and small details of the wing pattern (figs. 60, 54).

I have seen no specimens of this species in the material I have studied; it is probably confined to the Island of Cuba.

Toropamecia australis* (MALLOCH), comb. nov.Acrometopia australis* MALLOCH, 1933: 382.

A distinctive species with a wing pattern similar to *A. maculata* COQUILLET with which MALLOCH compared it in his description.

The holotype female in the BM(NH), is badly damaged and it has not been possible to check the fine details of the original description. However, the wing pattern is sufficiently distinctive to enable this species to be recognised.

I have seen no further specimens, other than the holotype from Concepcion, Chile.

***Toropamecia veenota* spec. nov.**

A distinctive species by virtue of its wing pattern (fig. 55), *Chamaemyia*-like thoracic bristling, and trigonometopine head shape.

Male, female

Head: totally pale grey dusted, darkened only around the ocellar protuberance; antennae orange-yellow, darkened dorsally on segments I and II with pale grey dusting, segment III darkened on the outer face and apically on the inner face; arista pale yellowish-red basally, dirty white over most of its length. Frontal setulae few in number confined to the extreme apices of the anterior frons; latter tapering anteriorly; measured at its widest point, frons wider than long, 1,4 : 1. Palpi yellow.

Thorax: uniformly grey dusted; 1 + 2 *dc*, mesonotal setulae sparse, acrostichals arranged in two rows, prescutellar bristles distinct. Legs yellow, strongly grey dusted on the femora, except for a narrow apical portion; tibiae very lightly dusted; apical tarsal segments darkened. Halteres with capitulum white and base pale yellow. Wing as in fig. 55, 2,8 mm in length, SD = 0,49.

Abdomen: uniformly grey with regularly arranged setulae arising from irrorations; when viewed posteriorly, diffuse dark patches are visible on the last three abdominal segments; male genitalia as fig. 55.

Holotype ♂: Argentina, Jujuy, 15 km s. Jujuy, 20. x. 68, 1100 m, L. E. PENA. In CNC.

Paratypes: same data as holotype, 3 ♂♂, 5 ♀♀; Tucumen, S. Pedro de Colalao, 14. x. 68, L. E. PENA, 1 ♂, 2 ♀♀ to BM(NH), remainder to CNC.

One damaged female specimen which I believe to be this species, with the same data as holotype, has not been included in the paratype series.

***Toropamecia multipunctata* spec. nov.**

Closely allied to *T. jujuyensis*, but differing from it in possessing 1 + 3 *dc*, well developed setulae on the anterior portion of the orbital strip, and a multipunctate wing pattern.

Male, female

Head: grey dusted; antennae and palpi yellow; lunule and segments I and II of antennae silvery-grey dusted; arista pale brown apically, darker basally. Setulae on the anterior frons confined to the orbital strips, porrect and relatively well developed; frons longer than broad, 1 : 0,75; cheeks broad.

Thorax: grey dusted; mesonotum with a pair of vittae along the lines of the *dc* curving medially over the anterior quarter; some yellowish-grey dusting laterally; *dc*, 1 + 3; setulae sparse, only 2–3 pairs in the acrostichal row, plus the pair of prescutellar bristles. Legs yellow, grey dusted on the coxae & femora, the latter narrowly yellow at the apex and base; apical 2–3 tarsi darkened. Wing as in fig. 52, 2,6 mm in length; halteres creamy-yellow.

Abdomen: grey dusted, sparsely haired on the anterior three segments; two pairs of small patches, larger in the female, on each of the posterior three segments; hairs irrorate when viewed posteriorly.

Holotype ♂: Argentina, Jujuy, Cieneguillas, 3650 m, 23. x. 1968, L. PENA. In CNC.

Paratype ♀: same data as holotype, in CNC.

***Toropamecia jujuyensis* spec. nov.**

A species in which the wing pattern is greatly reduced, in some specimens to little more than the marginal pattern and darkened cross-veins.

Male, female

Head: broader than long, of an intermediate trigonometopine form. Antennae yellow, segment III a little darkened on the dorsal tip; arista brownish basally, paler apically. Frons grey, paler anteriorly and on the lunule. Palpi yellow.

Thorax: uniformly grey with slight yellowish-grey dusting on the mesonotal edges and on the mid-line; 1 + 2 *dc* in most specimens, the presutural bristle poorly developed in some specimens, and with 2–3 short bristles also included in the line of the *dc*; four rows of acrostichals, with a pair developed as prescutellar bristles. Pleura grey. Legs yellow, grey dusted fore and hind coxae, and on all femora except for a narrow area at the base and apex; slight darkening of the apical dorsal segments of the tarsi. Wings as in fig. 58, 2.5 mm in length, SD = 0.64; halteres white apically, yellow at base.

Abdomen: grey dusted, and with two pairs of dark brown oval patches on segments 2–6, sometimes 3–6, the lateral pair of spots are not visible on the dorsum in dried specimens; only the setulae on the posterior edge of segments 2–5 are irrorate; male genitalia as in fig. 36.

Holotype ♂: Argentina, Jujuy, Ing. Ledesna, nr. Gen. S. MARTIN, 10. x. 68, PENA. In CNC.

Paratype: same data as holotype, 14 ♂♂, 7 ♀♀, Jujuy, Agua Caliente, NE. Guemes, 1100 m, 18–19. x. 1968, PENA 1 ♂; Jujuy, Perico del Carmen, 21. x. 1968, PENA, 5 ♂♂, 2 ♀♀. Paratypes to CNC & BM(NH).

***Toropamecia hendeli* nom. nov.**

Acrometopia reticulata HENDEL, 1936: 88, not *reticulata* JOHNSON, 1913.

The syntypic series of this species from Brazil was found in the Vienna Museum collection, bearing HENDEL's determination labels. The name is a secondary homonym of *Toropamecia reticulata* (JOHNSON) and I am, therefore, renaming the species in honour of Dr. F. HENDEL. This is a *Chamaemyia*-like species, with a less attenuated head and only three *dc*, 1 + 2. The wing pattern is quite distinctive (fig. 61), strongly reticulate in all but the marginal cells, and easily distinguishable from its apparently closest relative, *T. smithi* spec. nov.

Male, female

Head: silvery-grey dusted; antennae yellow, grey dusted on the dorsal inner side of segment II; arista micropubescent. Frons broad, ratio to head length 1:0.6, almost bare, two small patches of short bristles on lateral apices of the anterior frons; palpi yellow.

Thorax: totally grey dusted; mesonotum with very few setulae, 1 + 3 *dc*; legs yellow, grey dusted on femora, coxae and trochanters, hind tibiae darkened over the basal 1/4; last tarsal segment of the fore and hind leg also darkened. Wings 3.5–4.5 mm, in length, pattern as in fig. 61; halteres yellow.

Abdomen: grey; with the strongly irrorate bases of bristles coalescing on the anterior half of segments 3–5 to produce irregular bands; cerci shining black at tip. I have seen only the syntypic series and I designate a lectotype as follows. Lectotype ♂: (Brazil) Serra do Itatiaya, Südseite, 2–2700 m, 22. x. 27, ZERNY. In NMW.

Paralectotypes: same data as holotype, 2 ♂♂, 4 ♀♀. In NMW.

***Toropamecia smithi* spec. nov.**

In head shape and number of dorsocentrals this species resembles *Toropamecia nigripalpis* but differs most markedly in wing pattern and in possessing much darker legs.

Male, female

Head: grey dusted, the concavity of the frons exhibiting a greenish sheen when viewed at an angle to the light. The series of anterior frontal setulae describe a complete arc from orbit to orbit. Frons wider than distance from vertex to ptilinal suture, 1:0.7. Buccal bristles long (fig. 26). Palpi yellow.

Thorax: completely grey dusted; the mesonotum overlaid with buffish-brown. One presutural and two postsutural *dc*, as well as three elongated mesonotal setulae in the *dc* line. Mesonotal setulae numerous and scattered, not differentiated into acrostichal bristles except for the posterior prescutellar pair. Legs dark grey dusted; the extreme apices of the femora, the basal three segments of the hind tarsi and basal four of the mid tarsi pale. Wings as in fig. 63, 3.1 mm, in length. SD = 0.45. Halteres white on club, darker basally.

Abdomen: brownish-grey with markings as in fig. 63, general small irrorations of all small bristles, particularly noticeable when viewed from the rear; markings larger and stronger in the male, and some specimens with pale brown dusting quite extensive. Male abdominal pattern as in fig. 33.

I dedicate this species to my colleague Mr. K. G. V. SMITH in recognition of his work on the British Chamaemyiidae fauna.

Holotype ♂: (Brasilien) Brazil, Nova Teutonia, 27° 11' B. 52° 23' W. L. FRITZ PLAUMANN, 11. 7. 1939. In BM(NH).

Paratypes: same data as holotype, FRITZ PLAUMANN, 27. 8. 1937, 1 ♂; 20. 11. 1937, 1 ♂; 20. 7. 1939, 1 ♀; 31. 7. 1939, 1 ♀; 16. 9. 1936, 1 ♀; 19. 4. 1938, 1 ♀; 11. 8. 1939, 1 ♀; 11. 7. 1939, 1 ♀; 11. 8. 1937, 1 ♀; all in BM(NH); Brazil, Nova Teutonia, 27° 11' S. 52° 23' W. 28. 3. 1960, 1 ♀. In CNC.

***Toropamecia grossa* spec. nov.**

A large and aberrant member of the genus. Most of its aberrant characters are however, mirrored to a less extreme degree in more typical species.

Male

Head: grey dusted, frons somewhat darker than the orbital strips, and considerably wider than the length from vertex to ptilinal suture (fig. 21). Antennal segments yellow, only dorsal edge of segment III darkened. Arista dark becoming paler towards the tip. Head bristles strong, and buccal and postbuccal bristle numerous and strong. The eyes are only marginally longer in the horizontal axis than in the vertical, and elliptical rather than conical, (fig. 20). Buccae broad. Frontal setulae numerous both in the usual anterior position and transverse band, and also between the orbital bristles. The latter strong, equidistant from each other, and from the inner-vertical bristle and the anterior edge of the frons. On the right side of the unique holotype specimen, the outer-vertical bristle is duplicated. Post-occipital series is strong. Head broader than long, 1.4:1.0.

Thorax: grey dusted but with overlying buff-grey pollen on the disc, lateral regions of the mesonotum and scutellum, and a pair of dark brown vittae connecting the bases of the three post sutural *dc*. One pair of pre-sutural bristles present. Mesonotal setulae numerous, one pair developed as pre-scutellars. Sternopleuron with two strong dorsal bristles, the anterior the weaker of the pair. Legs, tibiae, tarsi and extreme apices of the femora pale, remainder dark grey. Due to the robust nature of the species the two rows of bristles on the fore femora are apparently well developed, consisting of two series of six strong bristles. Wings as in fig. 66, 4.4 mm, in length; halteres white.

Abdomen: buff-grey and without irrorations around the bases of the setae. Two pairs of large dark brown patches on segments 3–5, on the second segment the markings are smaller, more diffuse and the lateral and medial marks coalesce. Genitalia as in fig. 35, the parameres with the trifoliate tip are very well developed and heavily sclerotised at their apices. Holotype ♂: Chile, Chiloe, Isla Chiloe, Dalcahue, 1.–8. 11. 1962, coll. PEÑA. In CNC.

An additional undescribed species, represented by a single specimen, from Rio Blanco, Malleco, Chile, may be related to this species. It is not in good condition, is smaller, wing length 3.6 mm, and less robust, with differences in wing pattern and lacking the anterior frontal setulae. It is not being described until further material is available.

Toropamecia nigripalpis spec. nov.

Another rather atypical species, apparently closely related to *T. caribbea* but possessing three *dc*, one of which is presutural. The wing pattern is reduced both in form and density of colour (fig. 48).

Male, female

Head: grey dusted darkened laterally at the base of the antennae. Antennal segments I and II pale, III black, all three dusted dorsally with grey. Arista basally black, grading to pale brown apically. 3–4 small setulae on the anterior edge of each fronto-orbital strip. The series across the frons is interrupted medially. Head shape as in *T. caribbea*, but buccal ridge prominent and bearing a series of curved bristles. Palpi black.

Thorax: brown with dense grey dusting, the ground colour showing through in areas of the pleura and on the humeri. Mesonotum with two grey-brown median vittae between the *dc*, the latter, three in number, are approached in size by the setulae between them in the *dc* line. A single pair of pre-scutellars. Legs, apices of femora, tibiae, the fore metatarsus and the basal four segments on the mid and hind legs, yellow; femora and remaining tarsal segments dark grey. Wings as in fig. 48, 1.9 mm in length; SD = 0.62, halteres white.

Abdomen: reddish-brown ground colour showing through the dense grey dusting on the lateral edges of the tergites and on segment two. Brown markings as in fig. 32, confined to pairs of spots on segments 3–5. Setae are not irrorate.

Holotype ♂: San Salvador, El Sal.[vador] 17. viii. 56, P. A. BERRY, no 677. In USNM.

Paratypes: same data as type 3 ♂♂ 1 ♀. 1 ♂ to BM(NH), remainder to USNM.

Other material seen: One specimen from Quiche Guatemala may belong to this species but differs in minor points of wing and thoracic pattern and has therefore not been included in the paratype series. Quiche, Guatemala xii. 10. 53. Ex Avocado. E. A. FLESCHNER. USNM. Two specimens from Mt. Tzontehuitz, Mexico, probably also belong to this species. The patterning both of the body and wings is darker and more extensive. These two female specimens, also, are not included in the paratype series. Mexico (ico) Chis. 9,600 ft, Zontehuitz. nr. S. Crist. 17. May 1969, W. R. M. MASON. In CNC. Mexico, Chiapas Mt. Tzontehuitz 9400' 12 ml NE San Cristobal, 27. v. 1969, B. V. PETERSON. In CNC.

Toropamecia caribbea spec. nov.

A species bearing only two *dc*'s, probably related to *T. nigripalpis*; differs in wing pattern, thoracic irroration and bristling from *T. reticulata* (JOHNSON) which could also be its sister-species.

Male, female

Head: grey dusted, darkened on the occipital region. Less triangular in shape the face being distinctly inclined to the vertical (fig. 23). Antennal segments I and II pale darkened by grey dusting, III broad, pale basally, only slightly longer than wide. Arista pale yellow, the base darkened just below the pubescent region. Small anterior frontal bristles in form of a shallow 'W'.

Thorax: grey dusted, very faint brown vittae along the line of the acrostichals, and abbreviated vittae from the humeral region to the presutural bristle. Only two *dc* bristles, both postsutural; acrostichals only differentiated as a pair of prescutellar bristles, *dc* and scutellar bristles irrorate. Anterior sternopleural very reduced. Legs, tarsi, tibiae and apices of femora pale, remainder dark grey. Wings as in fig. 50, 1.9 mm in length, SD = 0.41. Halteres white.

Abdomen: grey, only the posterior row of setae on each segment are obviously irrorate. All but first segment with four rows of dark brown irregularly shaped patches, two rows being lateral.

Holotype ♂: Puerto Rico, Ensonado Dic. 1960 A. AVILOS. USNM.

Paratypes: same data as holotype 1 ♂, 2 ♀♀.

B. W. I. Tobago, Friendship Estate, Nov. 7 1918, A 937, HAROLD MORRISON, 1 ♂.

Barbados, swept from grass nr. Marine Hotel, Sep. 14, 1918, H. MORRISON, A 585, 2 ♂♂. 1 ♂ 1 ♀ paratypes to BM(NH), remainder to USNM.

Two specimens from Kingston, Jamaica, are not included as paratypes due to minor differences in wing pattern, and two specimens from Barbados, Bridgetown, are not included because of their damaged condition.

Toropamecia apaxa spec. nov.

Most closely related to *Toropamecia caribbea*, from which it is differentiated by the possession of a pointed dorsal tip to the third antennal segment, and two pairs of vittae on the mesonotum.

Male

Head: blunt faced form (fig. 25), antennae predominantly pale, all segments darkened to some degree on the external face; the ventral surface of segment III almost hemispherical. Palpi reduced in size, pale yellow basally, darkened apically.

Thorax: grey dusted with two pairs of brown or grey vittae, the colour depending upon the angle of the surface to the light source. A median pair of vittae is situated between the *dc*, and another pair lie on a line between the humeral region and the postalar setae. Legs, apices of femora, tibiae and basal segments of the tarsi pale. Metatarsus on the foreleg, apical one or two segments on the mid and hind tarsi and all femora darkened. Wings as in fig. 65, similar to *T. caribbea*, but pattern and colour intensity reduced; 2.5 mm in length.

Abdomen: buff or yellowish-grey dusting; with dark brown markings as in fig. 31, laterally a series of smaller brown marks on all but segment II. No irrorations. Male genitalia as in fig. 38.

Holotype ♂: Chile, Tarapaca, Azapa, 8/10 xi. 1955. L. E. PEÑA. In CNC.

Paratypes: same data as holotype, 2 ♂♂, in CNC and BM(NH).

***Toropamecia hyalipennis* spec. nov.**

A problematical species which is included in *Toropamecia* despite the absence of patterned wings. The abdominal tergites are particularly distinctive bearing large angular patches on segments 3–6. Study of the male genitalia confirm its close relationship to the typical species in the genus, and the absence of pattern is most probably a secondary development. With the exception of the presutural *dc*, *T. nigripalpis* shows many similarities, the palpi are dark, the abdominal patches relatively large and the wing pattern is only weakly developed.

Male, female

Head: grey dusted; antennae black, grey dusted dorsally on all three segments, arista apically white haired, frons broader than long, 1:1.2, frontal setulae sparse, confined to the lateral extremes of the anterior frons. Palpi dark.

Thorax: uniformly grey dusted, without vittae; 0 + 2 *dc*, setulae numerous and in regular rows; prescutellar bristles well developed. Legs with fore trochanters and metatarsi, apical 1/4 of all tibiae and basal three tarsal segments of mid and hind legs yellow, remainder of legs dark with heavy grey dusting on the dorsal surfaces of the femora and tibiae. Wings 2.4 mm, in length, membrane hyaline, veins pale brown except for the outer cross-vein which is dark brown; halteres yellow.

Abdomen: grey dusted with slight greyish-brown dusting on the anterior segments between the dark brown patches, the latter large, angular and confined to segments 3–6; setulae short, but numerous, and arranged irregularly in rows.

Holotype ♂: Brazil, Nova Teutonia, 27 11' S. 52 23' W., 300–500 m, FRITZ PLAUMANN, xi. 1958. In CNC.

Paratypes: same data as holotype, except vii. 1958, 1 ♂, 1 ♀; ♀ to CNC, 1 ♂ to BM(NH).

***Toropamecia macalpinei* spec. nov.**

Easily distinguished from all but *Toropamecia reducta* spec. nov., by the absence of brown abdominal markings, except for small irrorations at the base and the numerous short hairs.

Male, female

Head: grey dusted, the frons uniformly so that the orbital strips are not distinct. The frons is just broader than its length from vertex to postlateral suture 1:1.18. Frontal setulae are reduced to two or three in number and the transverse series is interrupted medially. Antennae dark, grey dusted on the dorsal surface of all segments, with segment III pale basally on the internal face. Arista dark basally, becoming paler to the tip. Face inclined to the vertical, cheeks broad (fig. 29), and with a series of relatively strong bristles; a short ventral series of 3–4 bristles on the parafacial region. Palpi dark brown. Thorax: totally grey dusted, without irroration or vittae. Mesonotal setulae very sparse, one or two occur between the *dc* and a single pair are developed as acrosticals. One pair of presutural and two pairs of postsutural *dc* bristles present, in addition one small setula is strengthened anterior to the first post-sutural *dc*. Legs dark grey, except for pale tibiae, basal tarsal segments and apices of femora. Wings as in fig. 64, 2.4 mm; halteres white.

Abdomen: silvery-grey anteriorly to buff grey posteriorly. Size of setulae, all of which are irrorate, increases posteriorly as also do the size of the irrorations.

I have pleasure in dedicating this species to Dr. J. F. MCALPINE in recognition of his important contribution to the taxonomy of the family Chamaemyiidae.

Holotype ♂, Chile: Malleco, Liucara, 6/10. I. 1959, 1800 m, L. E. PEÑA. In CNC.

Paratypes: same data as holotype, 2 ♀♀, in BM(NH) and CNC.

***Toropamecia reducta* spec. nov.**

An intermediate species between the *Chamaemyia*-type and the extreme *Toropamecia* form. Three strong *dc* are supplemented by a number of smaller bristles in the *dc* line. The head is *Chamaemyia*-like, but the eye is longer in the horizontal axis than the vertical. The wing pattern is fairly well developed in the female, much reduced and polar in the male and, in both, confined to the apical part of the wing.

Male, female

Head: uniformly grey dusted, except for the antennae which are predominantly pale reddish-yellow and darkened on the third segment around point of arisal insertion. Head longer than deep (fig. 27), but frons virtually square, 1:1.06. Numerous setulae on the anterior edge of the frons, in an arc interrupted medially. PALPI pale reddish-yellow. Cheek bristles greatly reduced both in size and number.

Thorax: uniformly grey, with a hint of brown dusting along the lines, and lateral to the *dc*. 1 + 2 *dc*, plus 2–3 additional small bristles in the *dc* line. Notal setulae scattered, two posterior setulae in acrostichal line developed as prescutellars. Legs yellow, heavily grey dusted on the fore-coxae, all femora and lightly on the dorsal face of the tibiae; apical tarsal segment darkened. Female, wing as in fig. 62, 2.6 mm.

Abdomen: pale silvery-grey, sparsely haired; increasing posteriorly, all hairs with very small irrorations when viewed from the rear.

Holotype ♂: Chile, Malleco, 1050 m, 30. 1. 1959, L. PEÑA. In CNC.

Paratype ♀: Chile, Malleco, Curacantín, Río Blanco, 1100 m, ii. 1964, PEÑA. In CNC.

Toropamecia longipennis spec. nov. ✓

One of the more distinctive Neotropical species, with long narrow wings in which the pattern is mainly concentrated in the anterior half (fig. 51), and broad, brown, lateral mesonotal vittae; not apparently closely related to any known species and probably representing a specialised line.

Male

Head: of the conical form (fig. 16), grey dusted and with a brown median mark on the frons, anterior to the ocellar prominence, and brown dusting on the post-ocular region. Antennae dark, grey dusted dorsally and with a narrow pale basal region on the internal face of segment III. Arista dark basally, slightly paler apically. Frontal setulae long, and a transverse series of setulae present. Frons longer than wide 1:1.4. Anterior bristle closer to anterior edge of frons than to posterior frontal bristle.

Thorax: grey with a pair of broad, brown lateral vittae on the mesonotum. Mesonotal setulae almost completely confined to the area between *dc*. Posterior pair of acrostichal setulae developed as prescutellars. One presutural bristle and two post sutural *dc*, although at least one of the mesonotal setulae in the *dc* line is more strongly developed. Apices of femora, tibiae and the basal segments of the tarsi, pale; remainder of legs dark. Wings as in fig. 51, 2.5 mm in length. Halteres dark on club, pale basally.

Abdomen: silvery-grey dusted with small brown patches and some irrorations at the base of bristles along the posterior margins of segments, pattern rather random, see fig. 34. Male genitalia as in fig. 37.

Holotype ♂: Ecuador, El Angel, 2700 m, Carchi, 23–25. vi. 1965, PEÑA. In CNC.

Toropamecia spec. 1

I have seen a single specimen from Paraguay which certainly represents a new species, but as it lacks its abdomen it has not been described. It has a conical head form, 1 + 2 *dc*, and wing markings very reduced. With the exception of the very small prescutellars, notal setulae are lacking.

Material: Paraguay, Asuncion, vii. 1961, N. L. H. KRAUSS. ? sex. In USNM.

Toropamecia spec. 2

An undescribed species from Mexico, is represented in the material that I have studied by a single female specimen. It is related to *T. punctata* (COQUILLETT), but differs in wing pattern (fig. 59), and in possessing 1 + 3 *dc* and a brown darkened patch on the club of the haltere. This specimen, with the following data, is in the CNC.

Material: Mexico, Sn. Cristobal. Chis. 26. vii. 68, A. KELTON, 1 ♀.

Toropamecia spec. 3

A single damaged ♂ from Argentina represents a new species, with a distinctive abdominal pattern consisting of pairs of dark brown patches on the first five visible segments. The patches are long and on the first three segments almost form a continuous band. The wing pattern is only moderately developed and the only definite markings are in the marginal cell. *Dc*, 0 + 2 with a pair of lateral, brown, mesonotal vittae. The head is only marginally elongate, with a diffuse dark bar between the anterior fronto-orbitals, similar, but less well developed, to that found in *Euestelia* species.

Material: Argentina, Jujuy, Agua Caliente. N. E. Guemes, 1100 m, 18–19. x. 68, PEÑA. In CNC.

Toropamecia spec. 4

A similar species to *Toropamecia* spec. 3 and also represented by a single damaged ♂. Less strongly marked on abdomen and wing than the above species, but bearing 0 + 2 *dc* and similar head shape. The abdominal patches are small and in two pairs per segment. The wing pattern is reduced to three dark patches in the marginal cell, all the other marks are very pale.

Material: Ecuador, Azuay, Tarqui-S. Isabel rd., 2200–2800 m, 10–13. iii. 65, PEÑA. In CNC.

Spathipheromyia guttipennis THOMSON

Ochthiphila guttipennis THOMSON, 1868: 600.

Ochthiphila punctipennis THOMSON, MALLOCH, 1933: 254, incorrect citation.

Spathipheromyia guttipennis (THOMSON), MALLOCH, 1934: 380.

MALLOCH, in the series Diptera of Patagonia and South Chile, 1933: 380, referred to a species of Neotropical Chamaemyiidae, "*Ochthiphila punctipennis* THOMSON". The

species name was an incorrect citation of *Ochtiphila guttipennis* THOMSON. By the time that the Muscidae section of the series was published, in 1934, MALLOCH had assigned the species to *Spathipheromyia*, 1934: 380. My colleague, Mr. A. C. PONT, has studied the female holotype specimen and is able to confirm MALLOCH's placing of the species.

Parapamecia gen. nov.

Type-species, *Parapamecia intacta* spec. nov.

In head chaetotaxy and general facies this genus is similar to *Euestellia*, the Old World genus, but differs in possessing only two pairs of dorsocentrals. *Pseudoleucopis*, *Plunomia* and *Pseudodinia* all have characters in common with *Parapamecia* but the structure of the male post abdomen precludes a close phylogenetic relationship with any of them. Despite differing from *Toropamecia* by lacking an elongated head or any wing patterns the male post-abdomen is so similar to that of *Toropamecia* that the close relationship cannot be doubted.

Generic diagnosis

Head: arista short pubescent; anterior fronto-orbital weaker than the posterior *f.o.*, and inserted at the mid-point of the frons. Eyes large, cheeks less than $\frac{1}{2}$ th height of the eye; long axis of the latter parallel to the plane of the frons. Ocellars strong, extending anteriorly beyond the insertion of the anterior *f.o.*; postverticals cruciate.

Thorax: single humeral, presutural, anterior and posterior supra-alar bristles; two pairs of notopleural and dorsocentral bristles; the posterior acrostichals hardly differentiated as pre-scutellar bristles; no mesopleural bristles; a single strong sternopleural and two pairs of scutellar bristles, the apical pair parallel.

Abdomen: elongate, with a strongly fasciated pattern on visible segments 3–5 in both sexes; male genitalia as in fig. 43. With the exception of the post-abdominal characters, there is no noticeable sexual dimorphism.

Parapamecia intacta spec. nov.

(Head: antennae reddish-yellow, segment III a little darkened on the dorsal surface, acutely angled at the dorsal tip (fig. 45). Face and buccae silvery-grey dusted, frons yellowish-grey and darkened medially between the anterior *f.o.*'s and posteriorly on the frons along the edge of the orbital strips; frons longer than wide 1:1.4.

Thorax: grey dusted, with diffuse, dark brown vittae along the posterior line of *dc* and extending only to the anterior of the two *dc*. Yellowish-grey dusting between the *dc*, extending onto the scutellum; pale grey area from the humeral region along the lateral edge of the mesonotum to the base of the wing. Pleura uniformly pale grey; legs yellow, heavily grey dusted on the fore-coxae and on all the femora, but darkened and more lightly dusted $\frac{1}{4}$ – $\frac{1}{3}$ from the base on the dorsal surface of the tibiae. Wing, 1.9 mm in length, SD = 0.56, halteres pale yellow.

Abdomen: grey dusted, and with broad, dark brown patches, broadly interrupted medially on segments 3–5. Some specimens with segment II extensively darkened by brown dusting; Male genitalia as in fig. 43.

Holotype ♂: Virgin Islands, St John, April 1, 1961, Coll. J. MALDONADO C. In U.S.N.M.

Paratypes, ♂: same data as type (USNM).

Virgin Is., St Thomas, Magen Bay, June 3 1917 (96). HAROLD MORRISON, swept. 1 ♂ 2 ♀♀ (BM(NH)).

Puerto Rico, Isabella, Guajataca Forest, 22 July, 1955, collected at light, RAMOS & MALDONADO. 1 ♂ (USNM).

Maricao, July 2 1917 (289), HAROLD MORRISON. 4 ♂♂, 2 ♀♀, 2 ♀♀ to USNM, 1 ♂ BM(NH) and 1 ♂ to CNC.

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For the loan of specimens, including type material, and for information and help in many ways, I wish to offer my sincere thanks to the following: Dr. H. ANDERSSON, Department of Systematics, Zoological Institute, Lund, Sweden. (LUC). — Mr. J. W. ISMAY, Hope Department of Zoology (Entomology), University Museum, Oxford, U.K. (HDO). — Dr. R. LICHTENBERG, Naturhistorisches Museum Wien, Zoologische Abteilung (Insekten), Vienna, Austria. (NMW). — Dr. D. K. MCALPINE, Department of Entomology, The Australian Museum, Sydney South, Australia. (AMC). — Dr. J. F. MCALPINE, Research Branch, Biosystematics Research Institute, Ottawa, Ontario, Canada. (CNC). — Prof. Dr. habil. G. MORGE, Abteilung Taxonomie der Insekten (ehem. DEI), Institut für Pflanzenschutzforschung, Eberswalde-Finow, DDR. (DEI). — Mr. K. G. V. SMITH, Department of Entomology, British Museum (Natural History), London, U.K. (BM(NH)). — Mr. G. C. STEYSKAL, Systematic Entomology Laboratory, USDA, C/O U.S. National Museum, Washington, D.C. U.S.A. (USNM). — Mr. A. E. STUBBS, Nature Conservancy Council, 19, Belgrave Square, London, U.K. — Dr. V. TANASLYCHUK, The Zoological Institute of the Academy of Sciences, Leningrad, USSR. (ZIL). — Dr. P. WYGODZINSKY, The American Museum of Natural History, New York, U.S.A. (AMNH).

The abbreviations in parentheses are those used in the body of the text to indicate the location of types and other material.

Summary

The species of the genus *Acrometopia* SCHINER are revised; all the New World species previously placed in the genus are transferred to the genus *Toropamecia* gen. nov., with the following new combinations: *Toropamecia australis* (MALLOCH), *T. maculata* (COQUILLETT), *T. punctata* (COQUILLETT), and *T. reticulata* (JOHNSON). In addition, twelve new species are described. *Toropamecia hendeli* is proposed as a replacement name for *Toropamecia reticulata* (HENDEL). The genus *Parapamecia* is erected for a single species *Parapamecia intacta* spec. nov., and a new species, *Acrometopia setosifrons*, from Nepal, is described. Keys are provided to the genera of the tribe Chamaemyiini, and to the species of *Acrometopia* and *Toropamecia*.

Zusammenfassung

Es wird eine Revision der Arten der Gattung *Acrometopia* SCHINER vorgenommen; alle Arten der Neuen Welt, die bisher dieser Gattung zugeordnet wurden, werden jetzt zur Gattung *Toropamecia* gen. nov. gehörend betrachtet mit den folgenden neuen Kombinationen: *Toropamecia australis* (MALLOCH), *T. maculata* (COQUILLETT), *T. punctata* (COQUILLETT) und *T. reticulata* (JOHNSON). Außerdem werden zwölf neue Arten beschrieben. Es wird vorgeschlagen, den Namen *Toropamecia*

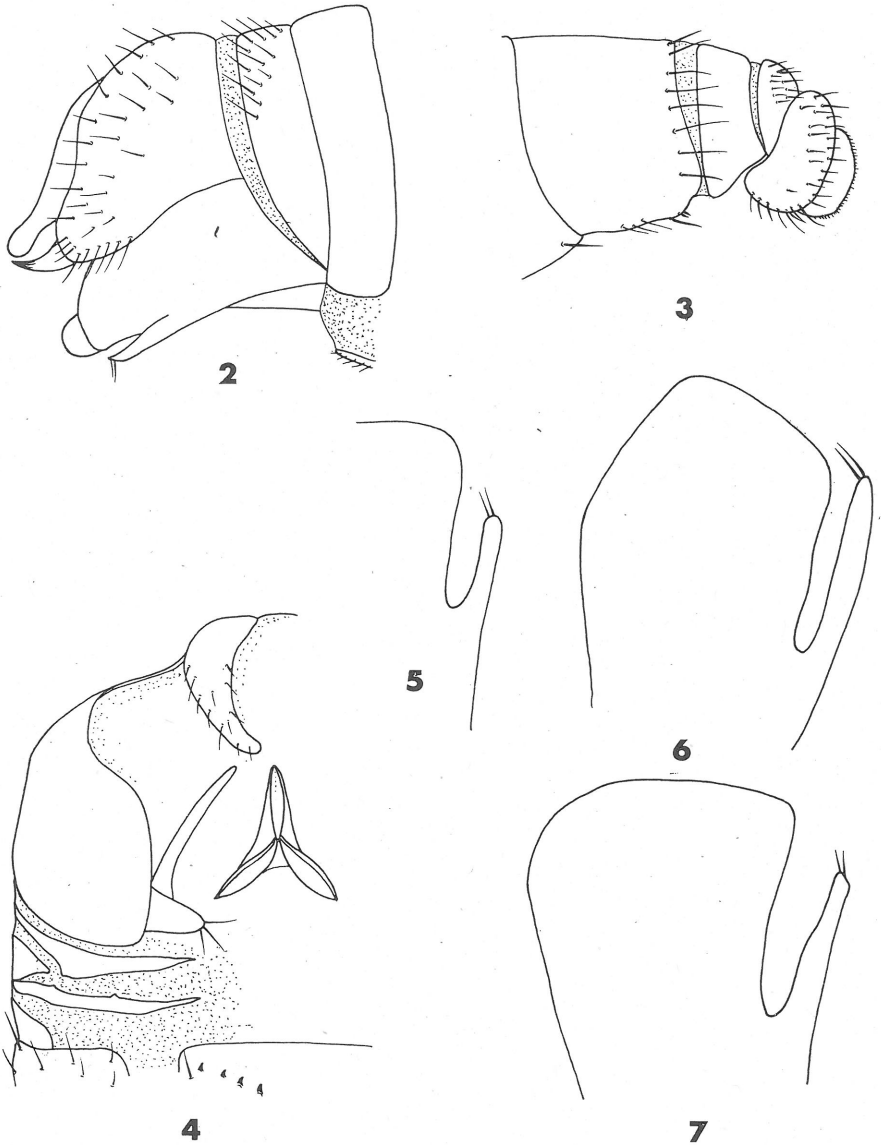
reticulata (HENDEL) durch *Toropamecia hendeli* zu ersetzen. Die Gattung *Parapamecia* wird für die einzelne Art *Parapamecia intacta* spec. nov. aufgestellt, und eine neue Art, *Acrometopia setosifrons* aus Nepal, wird beschrieben. Bestimmungstabellen werden für die Gattungen der Chamaemyiini und für die Arten von *Acrometopia* und *Toropamecia* gegeben.

Резюме

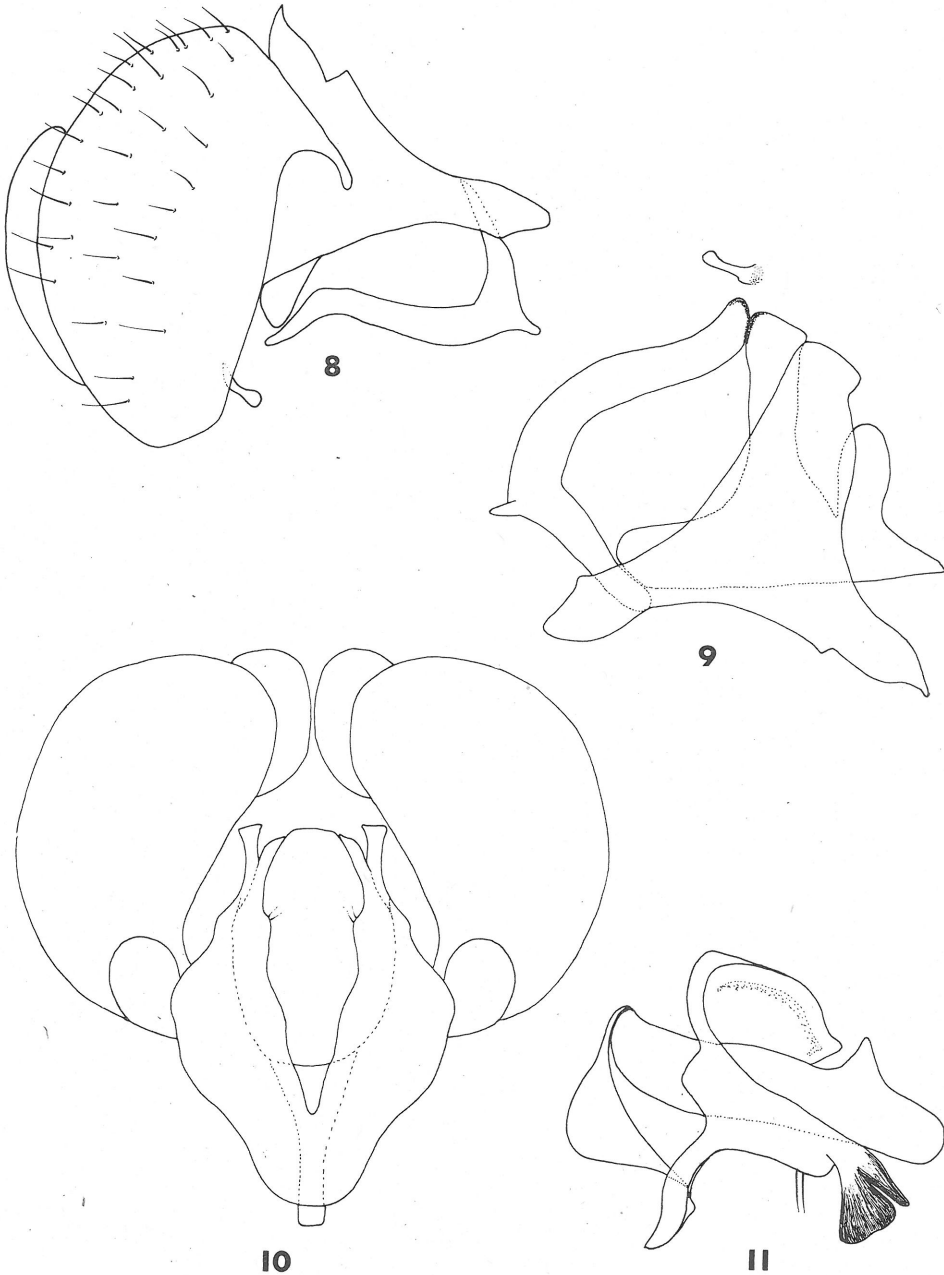
Была произведена ревизия видов рода *Acrometopia* SCHINER. Все виды Нового света, которые до сих пор входили в состав этого рода, были отнесены к *Toropamecia* gen. nov. следующим образом: *Toropamecia australis* (MALLOCH), *T. maculata* (COQUILLET), *T. punctata* (COQUILLET) и *T. reticulata* (JOHNSON). Дополнительно описаны 12 новых видов. *Toropamecia hendeli* устанавливается вместо *Toropamecia reticulata* (HENDEL). Род *Parapamecia* определяется только для одного вида, *Parapamecia intacta* spec. nov. Описывается новый вид, *Acrometopia setosifrons*, из Непала. Определительные таблицы даются для родов Чамемиюи и видов *Acrometopia* и *Toropamecia*.

References

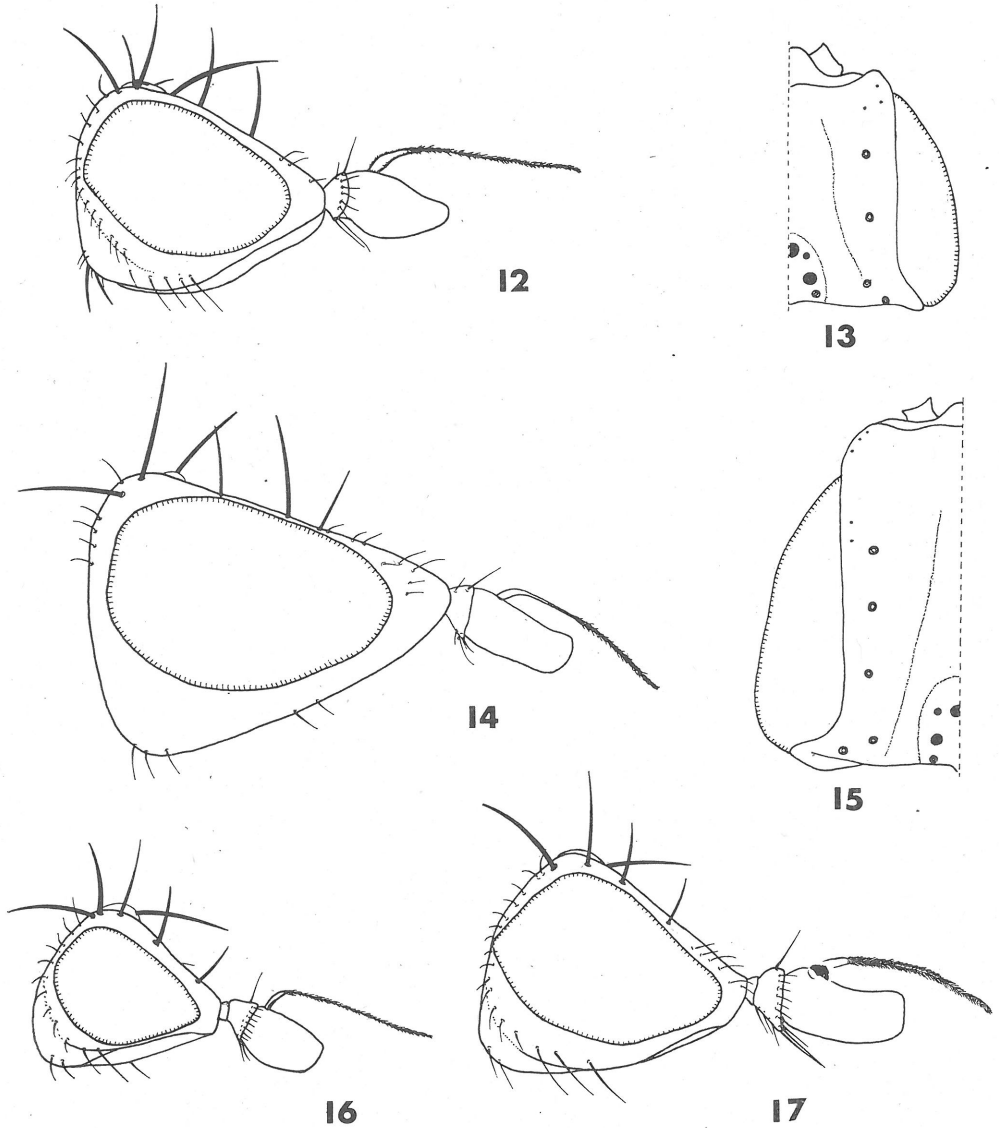
- COGAN, B. H. Cyclorrhapha, Schizophora; Chamaemyiidae. In: DELFINADO, M. D. & HARDY, D. E. (Eds): A catalog of the Diptera of the Oriental Region. 3. x & 854 pp.; Honolulu, 1977.
- COQUILLET, D. W. New Acalypterate Diptera from North America. Journ. N.Y. ent. Soc. 10, 177—191; 1902.
- The type-species of the North American genera of Diptera. Proc. U.S. Nat. Mus. 37, 499—647; 1910.
- ENDERLEIN, G. *Acrometopia reicherti* nov. spec. eine neue Oechthiphilide aus Ceylon. Ztschr. wiss. Insektenbiol. 24, 57—58; 1929.
- GRIFFITHS, G. C. D. The phylogenetic classification of Diptera Cyclorrhapha, with special reference to the structure of the male postabdomen. Series Ent. 8, 1—340; 1972.
- HENDEL, F. Die Arten der Dipteren — Subfamilie Richardiinae. Dtsch. ent. Ztschr. 1911, 181—212; 1911.
- Ergebnisse einer zoologischen Sammelreise nach Brasilien, insbesondere in das Amazonasgebiet, ausgeführt von Dr. H. ZERNY. X. Teil. Diptera: Muscidae acalyptratae (excl. Chloropidae). Annln. naturh. Nat. Mus. Wien. 47, 61—106; 1936.
- HENNIG, W. Beiträge zur Kenntnis des Kopulationsapparates der Systematik der Acalyptraten. Chamaemyiidae und Odiniidae (Diptera). Arb. morph. taxon. Ent. Berl. 5, 201—213; 1938.
- Die Familien der Diptera Schizophora und ihre phylogenetischen Verwandtschaftsbeziehungen. Beitr. Ent. 8, 505—688; 1958.
- JOHNSON, C. W. Insects of Florida. 1. Diptera. Bull. Am. Mus. nat. Hist. 32, 37—90; 1913.
- LOEW, H. Beschreibungen europäischer Dipteren. 3, viii & 320 pp; Halle, 1873.
- MCALPINE, J. F. A new species of *Leucopis* (*Leucopella*) from Chile and a key to the World genera and subgenera of Chamaemyiidae (Diptera). Can. Ent. 92, 51—58; 1960.
- Relationships of *Cremifania* CZERNY (Diptera: Chamaemyiidae) and descriptions of a new species. Can. Ent. 95, 239—253; 1963.
- MALLOCH, J. R. Acalyptrata, Chamaemyiidae. Diptera of Patagonia and South Chile. Part VI. British Mus. (Nat. Hist.) London, 379—386; 1933.
- Muscidae. Diptera of Patagonia and South Chile. Part VII. British Mus. (Nat. Hist.) London, 171—346; 1934.
- SCHINER, J. R. Die Fliegen (Diptera). Fauna Austriaca. 2, xxxii & 658 pp; Wien, 1864.
- SMITH, K. G. V. Some Conopidae and Chamaemyiidae (Diptera) from the Philippines and Bismarch Archipelago. Ent. Meddr. 34, 457—462; 1966.
- STEYSKAL, G. C. The genus *Acrometopia* SCHINER in North America (Diptera: Chamaemyiidae). Proc. ent. Soc. Wash. 74, 302; 1972.
- STUCKENBERG, B. R. A review of the Old World genera of Lauxaniidae (Diptera). Ann. Natal Mus. 20, 499—610; 1971.
- STURTEVANT, A. H. New species and note on synonymy and distribution of Muscidae Acalypteratae (Diptera). Am. Mus. Novit. 76, 1—12; 1923.
- TANASIVCHUK, V. N. Palaearctic species of the genus *Chamaemyia* PANZ. (Diptera: Chamaemyiidae) from the collection of the Zoological Institute of the Academy of Sciences, USSR. Ent. Obozr. 49, 227—243; 1970. [In Russian].
- THOMSON, C. G. 6. Diptera. Species nova descripsit. In: K. svenska Vetenskaps-Akademien Kongliga svenska fregatten *Eugenies resa omkring jorden*. (2) Zoologie 1. Insektes. 12, 614 pp.; Stockholm, 1869.
- VOCKEROOTH, J. R. A revision of the genera of the Syrphini (Diptera: Syrphidae). Mem. ent. Soc. Can. 62, 1—176; 1969.
- ZETTERSTEDT, J. W. Famil. 28. Oechthiphilinae. Diptera Scandinaviae 5, S. 1944—1957; Lund, 1846.



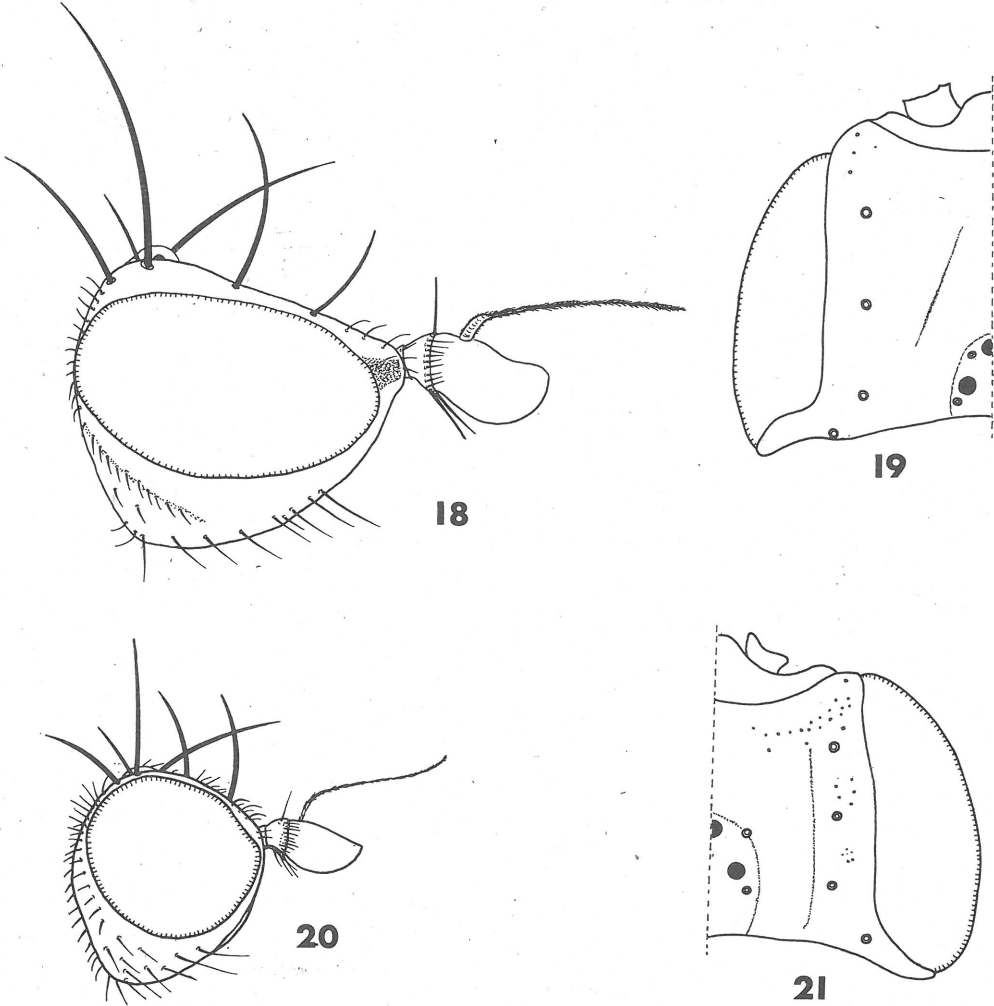
Figs. 2-7. 2, lateral view of terminal segments of abdomen of male *Acrometopia reicherti* ENDERLEIN; 3, terminal segments of male *Acrometopia carbonaria* LOEW; 4, ventral view post-abdomen of male *Acrometopia carbonaria*; 5, bifoliate process of *Acrometopia reicherti* from Sri Lanka; 6, bifoliate process of *Acrometopia setosifrons* spec. nov.; 7, bifoliate process of *Acrometopia reicherti* from Papua



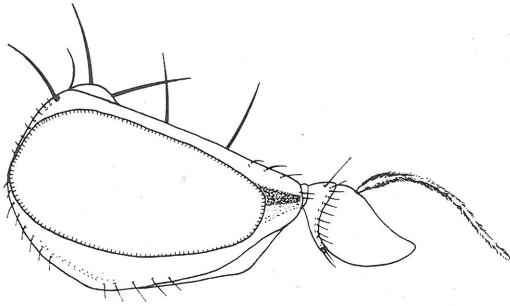
Figs. 8–11. 8, lateral view of post-abdomen of *Acrometopia wahlbergi* ZETTERSTEDT; 9, internal genitalic structures of male *Acrometopia wahlbergi*; 10, ventral view of post-abdomen of *Acrometopia wahlbergi*; 11, lateral view of internal genitalia of *Toropamecia jujuyensis* spec. nov.



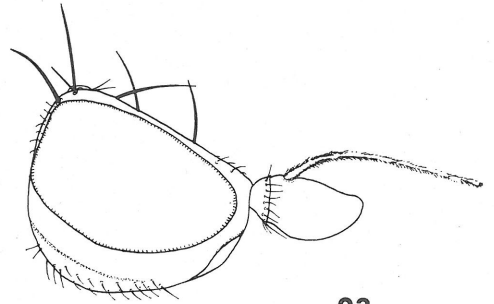
Figs. 12-17. 12, lateral view of head of *Acrometopia wahlbergi*; 13, dorsal view of right side of *Acrometopia wahlbergi*; 14, lateral view of *Acrometopia carbonaria*; 15, dorsal view of left side of head of *Acrometopia carbonaria*; 16, lateral view of *Toropamecia longipennis* spec. nov.; 17, lateral view of *Acrometopia reicherti*



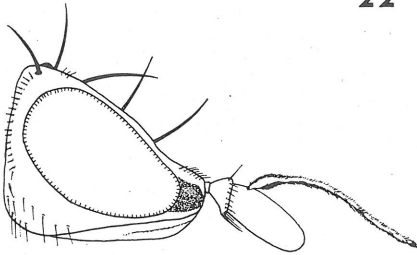
Figs. 18—21. 18, lateral view of head of *Toropamecia hendeli* nom. nov.; 19, dorsal view of left side of *Toropamecia hendeli*; 20, lateral view of *Toropamecia grossa*; 21, dorsal view of right side of *Toropamecia grossa*



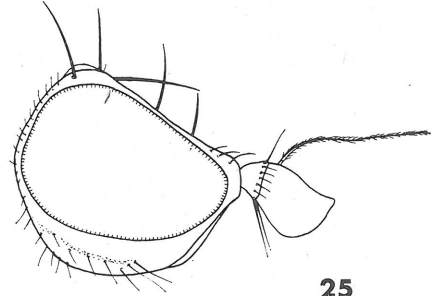
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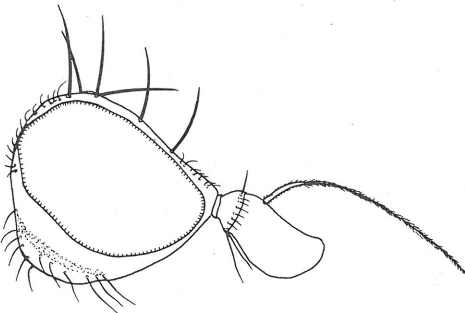
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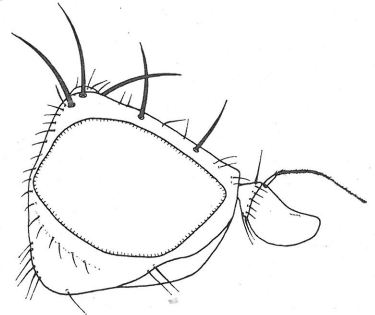
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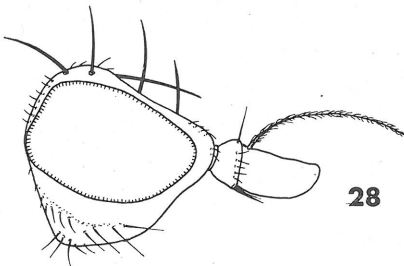
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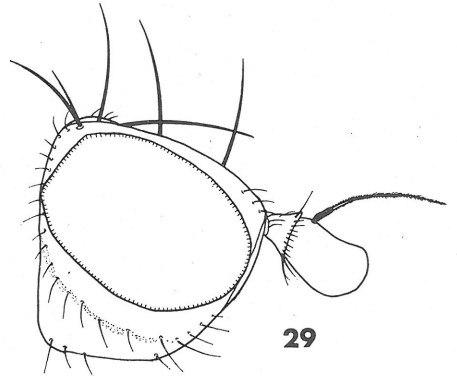
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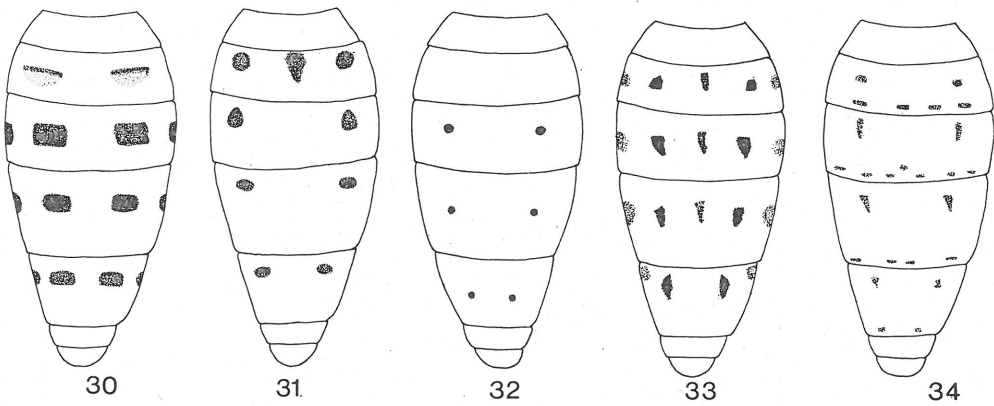


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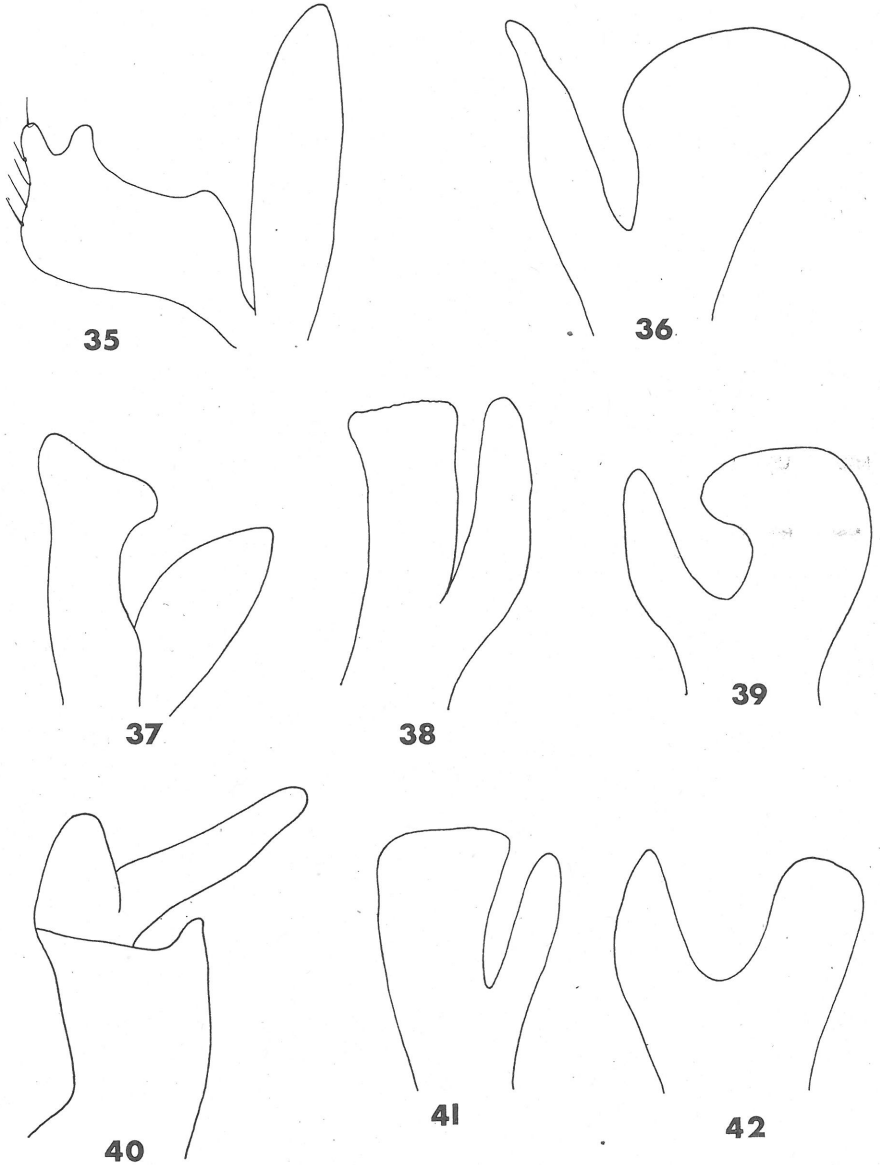


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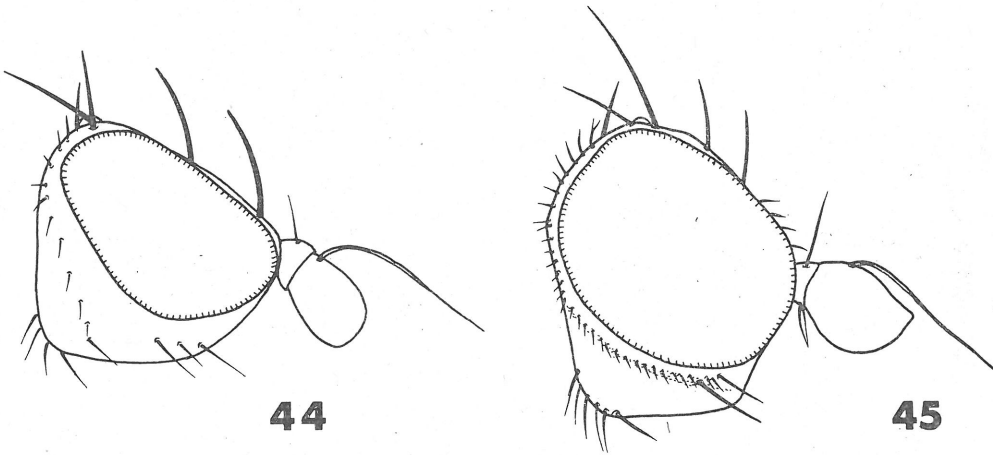
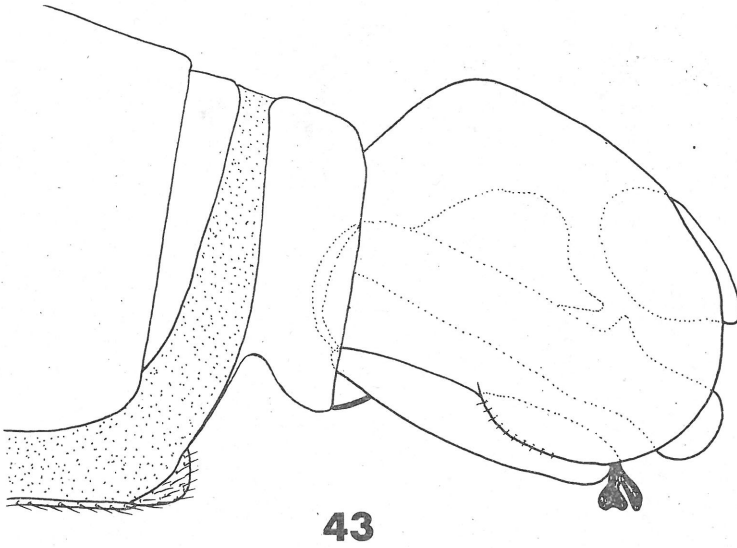
Figs. 22—29. lateral views of heads of 22, *Toropamecia reticulata* (JOHNSON); 23, *Toropamecia caribbea* spec. nov.; 24, *Toropamecia punctata* (COQUILLET); 25, *Toropamecia apaxa* spec. nov.; 26, *Toropamecia smithi* spec. nov.; 27, *Toropamecia reducta* spec. nov.; 28, *Toropamecia nigripalpis* spec. nov.; 29, *Toropamecia macalpinei* spec. nov.



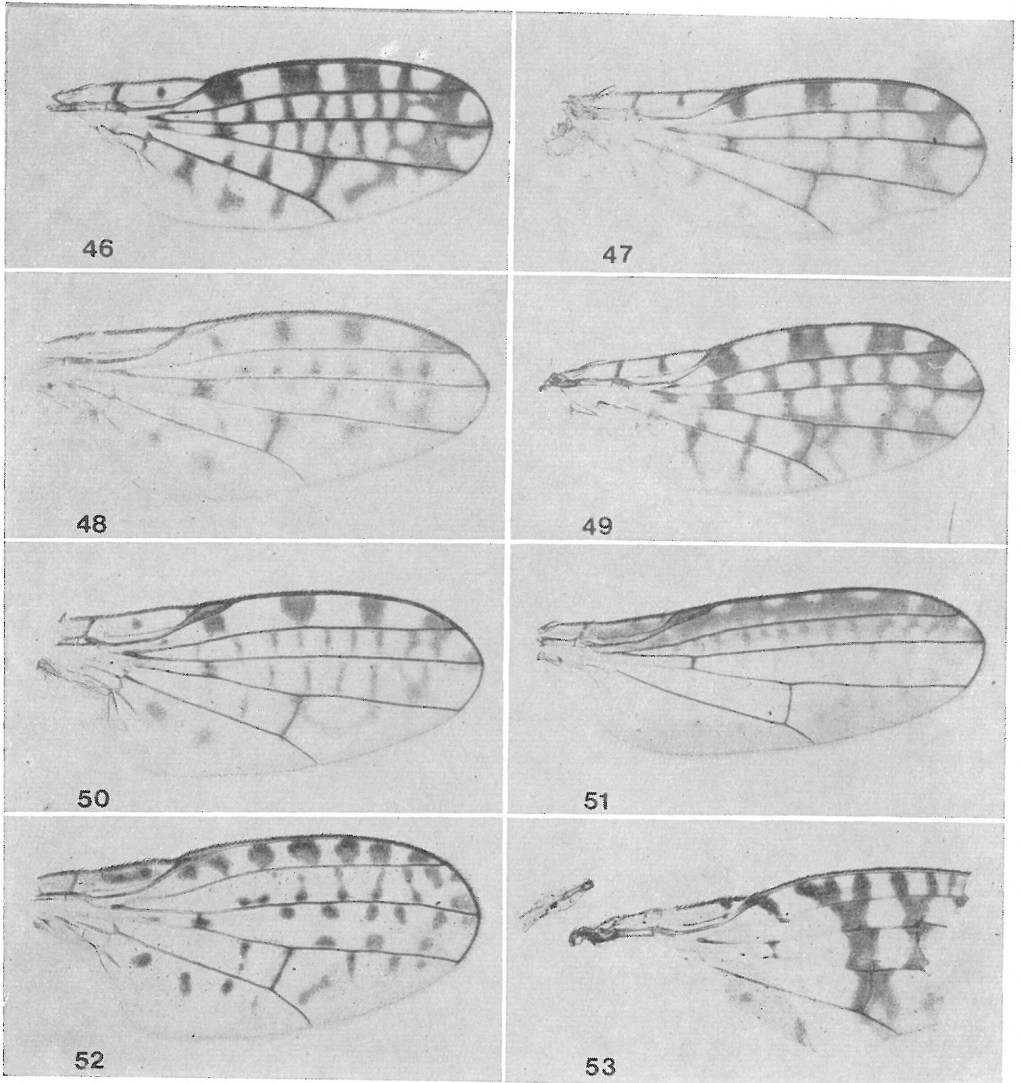
Figs. 30—34. diagrammatic representation of abdominal patterns of 30, *Toropamecia grossa*; 31, *Toropamecia apaxa*; 32, *Toropamecia nigripalpis*; 33, *Toropamecia smithi*; 34, *Toropamecia longipennis*



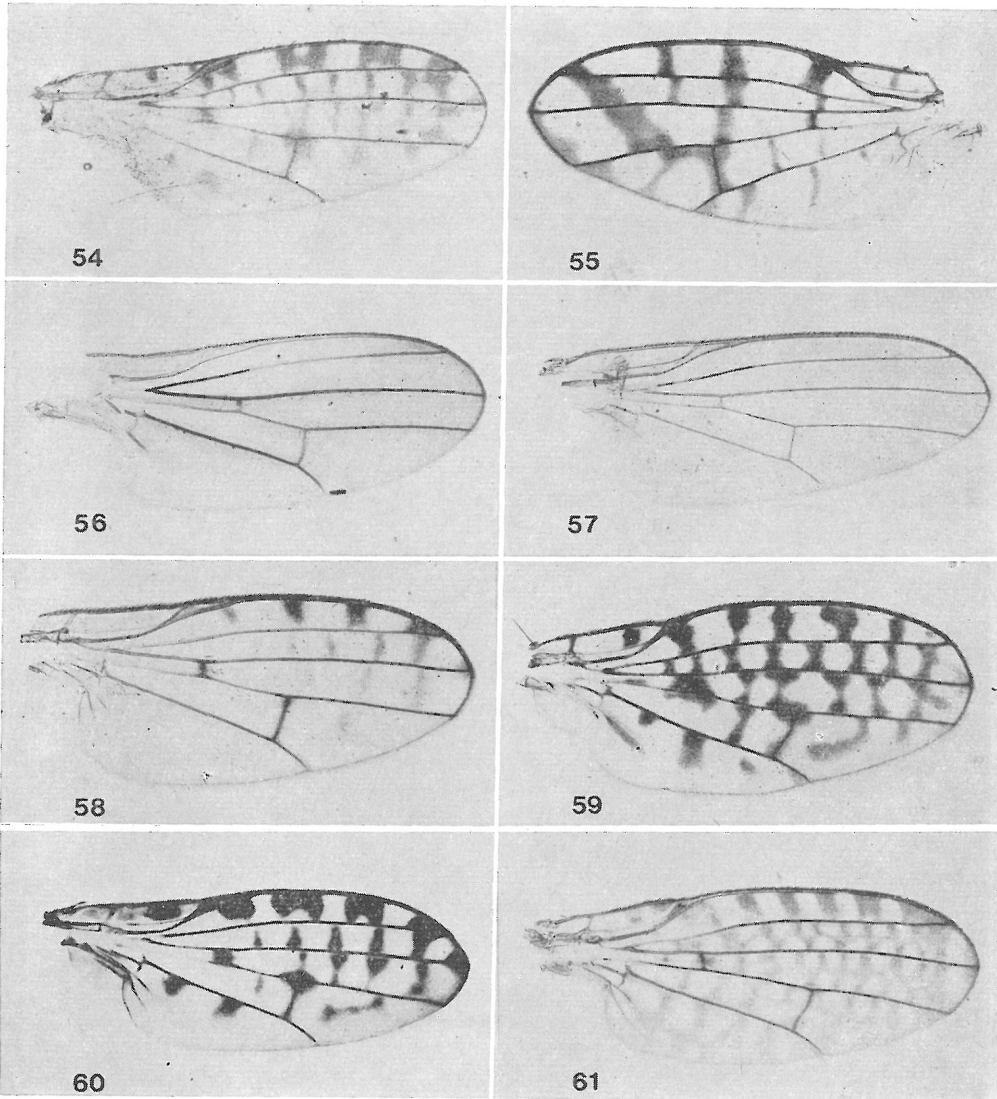
Figs. 35–42. bifoliate processes of 35, *Toropamecia grossa*; 36, *Toropamecia jujuyensis*; 37, *Toropamecia longipennis*; 38, *Toropamecia apaza*; 39, *Toropamecia carribbea*; 40, *Toropamecia veenota* spec. nov.; 41, *Toropamecia pallida* spec. nov.; 42, *Toropamecia reticulata*



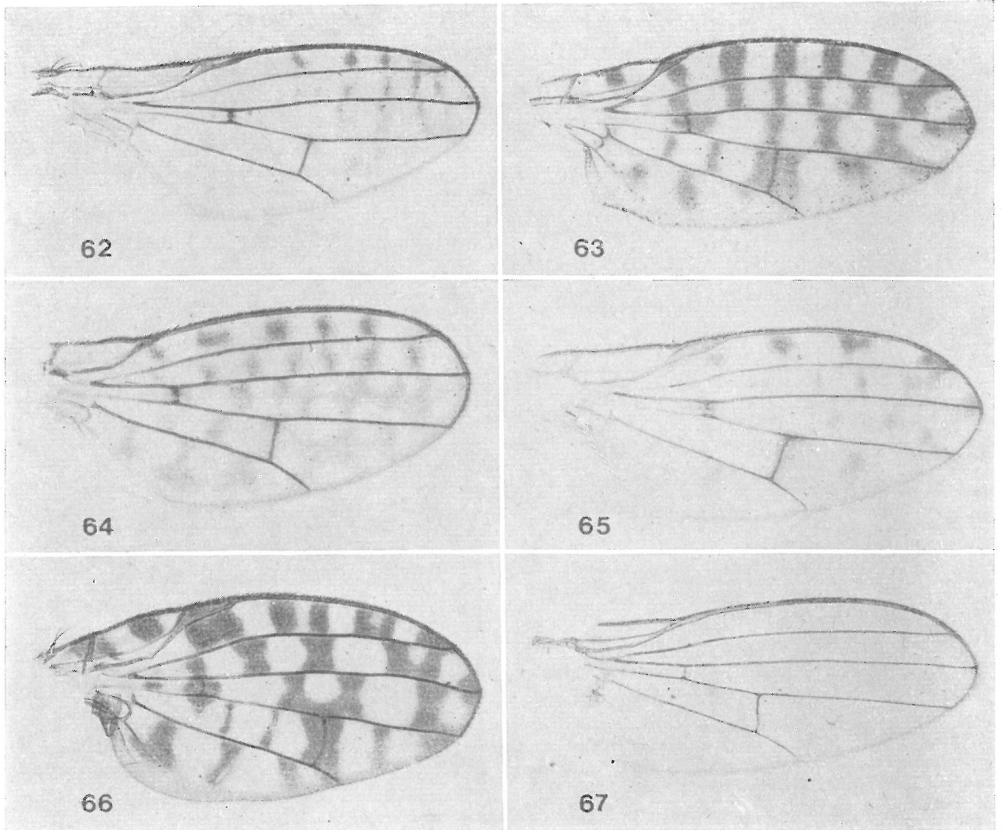
Figs. 43—45. 43, terminal segments of *Parapamecia intacta* spec. nov.; 44, lateral view of head of *Plunomia flavicornis* CURRAN; 45, lateral view of *Parapamecia intacta*



Figs. 46—53. wings of 46, *Toropamecia reticulata*; 47, *Toropamecia reticulata*; 48, *Toropamecia nigripalpis*; 49, *Toropamecia reticulata*; 50, *Toropamecia caribbea*; 51, *Toropamecia longipennis*; 52, *Toropamecia multipunctata* spec. nov.; 53, *Toropamecia punctata*



Figs. 54—61. wings of 54, *Toropamecia maculata* (COQUILLET); 55, *Toropamecia veencta*; 56, *Acrometopia carbonaria*; 57, *Acrometopia wahlbergi*; 58, *Toropamecia jujuzensis*; 59, *Toropamecia spec. 2*; 60, *Toropamecia australis* (MALLOCH); 61, *Toropamecia hendeli*



Figs. 62-67. wings of 62, *Toropamecia reducta*; 63, *Toropamecia smilhi*; 64, *Toropamecia macalpinei*; 65, *Toropamecia apaxa*; 66, *Toropamecia grossa*; 67, *Acrometopia reicherti*