is not worthy of separation from the more widely based subfamily Macrotiniinae.

AUSTROPASSALUS Möbjerg, 1917.


A. HULTOREN MÖBJERG, 1917.


These two descriptions are obviously and at once referable to the same distinctive species, a remarkable one in several respects, but less isolated than Möbjerg's paper would lead us to expect. Its relationships have been discussed in the paper of Hincks and Dobb referred to above.

REFERENCES.


EXPLANATION OF PLATE I.

Fig. 1.—Passalus (Phoroneuro) neglectus, sp. n. Tyr. Guatamala : Conquisita, Dorsal view \( \times 24 \).

Fig. 2.—Ditto, Lateral view, \( \times 24 \). Photo: Allen & Bott, Solihull.

V.—Notes on some species of Mallophaga from Crypturus parvirostris (Wagler), and Crypturus t. tataupa (Temminck). By L. B. GIMARDE and G. H. E. HOPKINS.

PAINE AND MAN (1913) recorded Goniodes verrucosus Tscheshenj, Goniodes complanatus Piaget, and Goniodes conicus Tscheshenj from Crypturus (now Crypturus) tataupa, stated to have been obtained by Dr. E. E. Mietzsch (Musaeus Goeldi) at Marajo, in November 1911. They also described Goniodes penicillipes from a single male supposedly obtained from Anthis luteusus Pucheran, at Marajo, during the same month, but as this species is a Rhopalocera it is unquestionably a tinamou louse and almost certainly of the same provenance as the other tinamou lice dealt with in Paine and Mann's paper. Part of Paine and Mann's material was available to Carricker (1936) who included (p. 181) their series of "conicus" under Hypocryptus (now Hypocrypturus) genitalis, described (p. 80) a teneral male and four "females" (actually nymphs) from Marajo as Nirmocotes orbicularis, and included two fully adult pairs from Paine and Mann's material under his redescriptions (p. 85) of Strongylotodes complanatus. He did not see specimens of Goniodes verrucosus (now Pentocernos verrucosus), of which Paine and Mann only had a pair, nor the single type of Goniodes (now Rhopalocera) penicillipes.

In the same paper, Carricker (p. 82) described as Nirmocotes glabrous a "female" (actually a nymph), found on Crypturus tataupa, from Viçosa, Brazil, redescribed (p. 114) as Rhopalocera penicillipes two males and a female found on Crypturus tataupa, from Sta. Ana, Bolivia, and described Punctocorys verrucosus parus (p. 155), from material collected on this same host.

Keller, in 1938 (p. 320, fig. 9) described a species of Strongylotodes, which he named pucisetosus, from material collected on "Crypturus tataupa", from the State of Sta. Catarina, Brazil.

In 1940, Carricker (p. 299) sank Nirmocotes to Strongylotodes, a procedure undoubtedly correct, since Nirmocotes proved to be based on teneral and nymphal stages, and sank also Nirmocotes orbicularis Carricker and Nirmocotes glabrous.
Carriker as synonyms of *Strongylocotes complanatus* (Piaget).

Clay, in 1943 (p. 384) sank the "female" of *Strongylocotes orbicularis* (Carriker) and *Strongylocotes pasciatus* Kéler to *Strongylocotes glabrous* (Carriker), and considered the male of *Strongylocotes orbicularis* to be an almost mature male of the same type as *Strongylocotes leptoplus*.

Summarizing the above, the following species should have *Crypturillus t. tatava* as a normal host: *Platynous verrucosus para*, *Hypocrypturillus genitales*, *Rhopalocera pennaticeps*, *Strongylocotes orbicularis* and *Strongylocotes glabrous* (syn. *pasciatus*). According to Carriker the last two names are synonyms of *Strongylocotes complanatus*.

However, Guimarães and Lane (1937, p. 13, figs. 4, 4b) published drawings and measurements of both sexes of a *Rhopalocera* from *Crypturillus parvirostris* (Wagner), which they claimed to agree with Paine and Mann's description and figure and whose measurements are much closer to those given by Paine and Mann than those of the form, from *Crypturillus t. tatava*, which Carriker described as *Rhopalocera pennaticeps*; the male genitalia of their specimens also differed considerably from Carriker's drawing. These differences suggested the possibility of a mistake in the identity of the tinamou from which Paine and Mann's material was collected.

Trying to solve the problem, we find, not only that *Crypturillus t. tatava* is unrecorded from Marajó island (in the estuary of the Amazon), but that in Dr. Snethlage's catalogue of Amazon birds (Bull. Mus. Goeldi, 8, 1914), she does not mention *Crypturillus t. tatava* from Marajó.

On the other hand, she does record (p. 49) examples of *Crypturillus parvirostris* collected at Fazenda Teso S. José, in that island, a locality also visited (p. 12) by O. Bertran, preparator of the Museu Goeldi, in November 1911, the date mentioned by Paine and Mann. It therefore seems clear that the host of Paine and Mann's material was originally misdetermined and that *Crypturillus parvirostris* (not C. *t. tatava*) is the type host of *Strongylocotes orbicularis* (Carriker), and the probable true host of *Rhopalocera pennaticeps* (Paine and Mann).

Once the true identity of the host of Paine and Mann's material is settled, and having in hand specimens of the species dealt with by earlier authors, we have the necessary means to clear up several involved questions.

---

Some Species of *Mellellusa*.

We cannot agree with Carriker's assertion that *Strongylocotes glabrous* and *Strongylocotes orbicularis* are synonyms of *Strongylocotes complanatus*.

Piaget's type material of *S. complanatus* was from a *Tinamus obesus*, in the Rotterdam Zoo. It has been assumed that the bird must have been of the nominotypical form, *Crypturillus o. obesus* (Temminck), and this assumption gains very strong support from the fact that a pair of a series of 3 males and 5 females from this host-form (collected at Nova Tuntuma, State of Santa Catarina, Brazil) have been compared with Piaget's type by Miss Clay and found to agree in all respects. The form has been redescribed and figured by Kéler (1938, p. 315, fig. 8), whose material was from the same source as that compared with Piaget's type, which agrees perfectly with Kéler's description and figure. As noted above, Kéler described (p. 320), from material collected on *Crypturillus t. tatava*, his species *Strongylocotes pasciatus*, which, is, without doubt, the adult form of *Strongylocotes glabrous*, obviously based on a nymph collected on the same species of tinamou. Comparing examples of *Strongylocotes* from *Crypturillus o. obesus* with those from *Crypturillus t. tatava* and *Crypturillus parvirostris*, we find that they are different, the most obvious differences being that in both sexes the frons is more rounded in the material from *Crypturillus t. tatava* and *Crypturillus parvirostris*, and that the setae on the posterior edge of the genital plate of the females from both these hosts are few and very small, whereas in *Strongylocotes c. complanatus* (host: C. o. obesus) these setae are very long and form a great mass on the outer half of the margin of the plate. Besides this, both sexes of *S. c. complanatus* are much larger than the *Strongylocotes* from *C. t. tatava* and *C. parvirostris*, and the median structure of the male genitalia is of different form.

The *Strongylocotes* from *C. t. tatava* (glabrous) and that from *C. parvirostris* (orbicularis) are very closely related to *complanatus*, and could legitimately be regarded as subspecies of the latter, though we think it preferable to keep them separate, on account of the differences mentioned above. Mr. Carriker authorizes one of us to state that he is in full agreement with the views expressed, except that he regards the differences between these *Strongylocotes* as being rather subspecific than specific.
We also cannot agree with Carriker in his treatment of orbicularis and glabrous, since we consider them not synonyms, but subspecifically different, though they are very much alike and not easily separated. The differences are very slight and only noticeable on close attention.

In structure, the two subspecies are differentiated only by the form of the lobes of the 8th abdominal segment of the male (7th according to Carriker). In orbicularis (fig. 3) the lateral margins of these lobes meet at a more acute angle than in glabrous (fig. 1) and therefore, their external margins are relatively narrower. This differential character, although slight, is constant in the male specimens we examined. One abnormal male of glabrous (fig. 2) shows the right lobe narrower than the left one, but both lobes different in form from those of orbicularis. The text figures show these differences better than descriptions.

The biometric data of the specimens examined corroborated the differences discussed above.

The differences in length between the males of the two subspecies are statistically significant*, the male examples of glabrous being larger than orbicularis. The length, in millimetres, of the measured males of glabrous varied from 2.650 to 2.850 with a mean of 2.734:1048, while those of orbicularis varied from 2.380 to 2.680, with a mean of 2.474:0965. The application of t test (Student) shows that the difference between these means is highly significant, since P is less than -0.01.

As the males of glabrous seemed to show a stronger constriction at the level of the 8th segment (7th according to Carriker) we took the necessary measurements for comparing them with those of orbicularis. The width of the 5th and 6th segments was measured and the proportion borne by the width of the 6th segment to that of the 5th was computed. We found that in glabrous the width of the 8th segment varies between -794 and -808 of that of the 5th segment, with a mean of -802:004888, and in orbicularis between -833 and -856, with a mean of -847:0038. The difference between these means is, according to t test, highly significant, confirming our first impression.

* The material was measured in cresote, between slide and cover glass, after treatment with ten per cent. caustic potash. The measurements were made with a Zeiss microscope, with ocular 7x and objective 3x.
Table I. - Test of significance (Student) of the differences between means, length (in mm), and ratio of width of sixth to fifth abdominal segments of males of *Strophiocardes* orbicularis and *S. o. glabrous*.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Glaucous</th>
<th>Orbicularis</th>
<th>Orbicularis</th>
<th>Orbicularis</th>
<th>Orbicularis</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>2.744 ± 0.005</td>
<td>2.935 ± 0.006</td>
<td>2.935 ± 0.006</td>
<td>2.935 ± 0.006</td>
<td>2.935 ± 0.006</td>
</tr>
<tr>
<td>N</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>P</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Table II. - Test of significance (Student) of the differences between means, width (in mm), and ratio of width of sixth to fifth abdominal segments of males of the same subspecies.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Glaucous</th>
<th>Orbicularis</th>
<th>Orbicularis</th>
<th>Orbicularis</th>
<th>Orbicularis</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>2.693 ± 0.006</td>
<td>2.935 ± 0.006</td>
<td>2.935 ± 0.006</td>
<td>2.935 ± 0.006</td>
<td>2.935 ± 0.006</td>
</tr>
<tr>
<td>N</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>P</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
</tbody>
</table>

**Graph 1.**

Graphic estimation of the significance of the differences between mean lengths of males of *S. o. orbicularis* and *S. o. glabrous*.

**Graph 2.**

Graphic estimation of the significance of the differences between mean proportions of width of the 5th abdominal segments of males in relation to the 6th in *S. o. orbicularis* and *S. o. glabrous*.

The vertical lines are observed ranges; the theoretical ranges (M ± 3s) are represented by broken vertical lines; the small rectangles represent the range of the mean (M ± 3s), with crossline at M. If these rectangles do not overlap it can be assumed that the means differ significantly.

Between the females of the two subspecies, however, we do not find any difference, morphological or in measurement. As the differences between their lengths and those between the widths of their abdomens are not significant, they cannot be used to differentiate them. Although we are unable to distinguish the females, we still consider *orbicularis* and *glabrous* as different subspecies, based on the differences between the males. The results discussed are summarized in Tables I. and II. Graphs 1 and 2 include only data referring to males.
Pectenocoma verrucosa subparsa, subsp. n.
Genicola verrucosa Paine and Maise, 1913; see Kaimarainen, 1981.
*Ptychicus* verrucosa Paine and Maise, 1913, see Kaimarainen, 1981.
*Type host:* Crypturillus porrectoides (Wagler), from Fazenda Sta. Lina, Presidente Wenceslau, State of São Paulo, Brazil.

Specimens examined:—3 males and 3 females from Mogy das Cruzes, state of S. Paulo, Brazil; 20 males and 19 females from Faz. Recripo, Coxim, State of Mato Grosso, Brazil; 3 males, from Catarinense, State of S. Paulo, Brazil; 2 males and 1 female, from Faz. M. Peixoto, Jaragua, State of Goiás, Brazil; 1 male and 7 females, from Faz. Palmira, Assis, State of S. Paulo; and 10 males and 26 females, from Presidente Wenceslau, State of S. Paulo.

This form (figs. 4, 5) is very near Pectenocoma verrucosa persica Carrick, 1936 (fig. 6), from which it differs only by the presence of two rows of papillae on the pleures of the 2nd abdominal segment of the male. The females are practically alike.

The mean length in mm. of 10 male specimens is 1.299 ± 0.01449, and of 10 females, 1.490 ± 0.01534.

**Measurements of types.**

<table>
<thead>
<tr>
<th></th>
<th>Male (holotype)</th>
<th>Female (allo-type)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Width</td>
</tr>
<tr>
<td>Total</td>
<td>1.299</td>
<td>-280</td>
</tr>
<tr>
<td>Head</td>
<td>1.260</td>
<td>-260</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.120</td>
<td>-410</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.760</td>
<td>-620</td>
</tr>
</tbody>
</table>

**Types:**—Holotype male and allo-type female no. 45744 and several male and female paratypes in the collection of insects of the Department of Zoology of S. Paulo, Brazil. Male and female paratypes to be deposited in the British Museum (Natural History), and United States National Museum.

**Discussion.**—The number and distribution of papillae in the abdominal tergites are among the most conspicuous characters used to separate the several subspecies of *Pectenocoma verrucosa*. Two of these forms, described by Carrick (1944, pp. 203–205), *talmi* and *bouardi*, are distinguished, according to this author, only by the presence of a row of two papillae on the 6th tergite (5th according to Carrick) of the female in *bouardi*, whereas the female of the other subspecies, *talmi*, shows no papillae on this tergite. The males are absolutely identical with regard to the distribution of papillae, as well as in all other characters.
Comparing examples of Pectenoma from Crypturellus parvirostris with those from Crypturellus t. tataupa (type-host of Pectenoma verrucosa parva, Car.); our attention was attracted by the fact that in specimens taken from C. parvirostris a second row of papillae on the pleurites of the 2nd abdominal segment was generally present, in contrast with specimens of Pectenoma verrucosa parva, in which these pleurites show, usually, only a single row. This difference is also corroborated by the drawings given by Pain and Mann (fig. 1, p. 15) which were based, as shown above, on material from C. parvirostris, and by Carriker (pl. xxix, fig. 2) based on material from Crypturellus t. tataupa.

Trying to check statistically the significance of the presence of this second row of papillae on the pleurites of the 2nd abdominal segment in Pectenoma from C. parvirostris, we conclude that it is highly significant. Of 114 examples (males and females) examined from C. parvirostris 105 or 92.10 per cent show two rows on the 2nd pleurite, and only 9 or 7.90 per cent a single row. Among the 16 examples from C. t. tataupa, 5 or 31.25 per cent show two rows, and 10 or 66.66 per cent only one. Applying the X2 test we find that the probability of these differences being due to chance is under .001 (X^2 = 36.45, 45 n = 1). In order to find out if these differences were significant in both sexes, we used the same test, with Yates' correction, for each sex separately. Of 58 males from C. parvirostris, 66 or 96.55 per cent show two rows and only 2 or 3.45 per cent a single row. Among 8 males of Pectenoma v. parva (from C. t. tataupa), only one or 12.5 per cent showed two rows and 7, or 87.5 per cent, one. The X2 test, applied to these examples, gave a value of 35.34, corresponding to a probability of less than .001 that this difference is due to random variation. For the females we found different results, since among 56 examples collected on C. parvirostris, 49 or 87.5 per cent present two rows and 7 or 12.5 per cent only one, while from a total of 7 females of Pectenoma v. parva, 4 examples, or 57.14 per cent present two rows and 3 or 42.86 per cent, one row. The X2 test, with Yates' correction, reveals that in the female the difference in the number of rows is not significant, since its value is 2.32. This corresponds to a probability above .1 of these differences being attributable to chance.

The data discussed above are summarized in Tables III, IV, and V.

**Table III.** Test of homogeneity (X^2) for number of rows of papillae on the 2nd abdominal pleurite of both males and females of Pectenoma verrucosa parva and Pectenoma verrucosa subparva.

<table>
<thead>
<tr>
<th></th>
<th>Two rows</th>
<th>One row</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subparva</td>
<td>105</td>
<td>9</td>
<td>114</td>
</tr>
<tr>
<td>Parva</td>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

X^2 = 36.45, n = 1, P < .001

**Table IV.** Test of homogeneity (X^2) for number of rows of papillae on the 2nd abdominal pleurite of males of Pectenoma verrucosa parva and Pectenoma verrucosa subparva.

<table>
<thead>
<tr>
<th></th>
<th>Two rows</th>
<th>One row</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subparva</td>
<td>56</td>
<td>2</td>
<td>58</td>
</tr>
<tr>
<td>Parva</td>
<td>1</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

X^2 = 35.34, n = 1, P < .001

**Table V.** Test of homogeneity (X^2) for number of rows of papillae on the 2nd abdominal pleurite of females of Pectenoma verrucosa parva and Pectenoma verrucosa subparva.

<table>
<thead>
<tr>
<th></th>
<th>Two rows</th>
<th>One row</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subparva</td>
<td>49</td>
<td>7</td>
<td>56</td>
</tr>
<tr>
<td>Parva</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
</tbody>
</table>

X^2 = 2.32, n = 1, P > .1

The number of papillae in the second row on the 2nd pleurite in Pectenoma from C. parvirostris varies from one to five; three or four is, however, the normal number. In the specimens of Pectenoma v. parva that show a 2nd row, this is formed by one to three papillae. Some speci-
ments also show a different number of papillae on each side, or show a 2nd row on only one side. For our calculation these last specimens, when taken from *C. parvirostris*, were considered as having only one row, and when taken from *C. t. tataupa* as having two rows, i.e., the base was placed against our belief that the two forms are separable.

Unfortunately the small number of female specimens of *Pectenoma verrucosa* paras available does not allow an appreciation of the variability of the number of papillae that form the 2nd row.

We do not find in either sex any other character that can help us in the separation of these forms. Even the small differences that are noted in the male genitaria of the two forms, and that can be seen in figs. 4, 5 and 6, could be covered by individual variation.

The differences indicated are, indeed, very small, but because of their relative constancy we think it best to give subspecific status to the forms here studied. The impossibility of crossing between them, on account of the barrier set up by the specific difference between their hosts, means that they are not likely to be mere variations within one subspecies.

*Hypocrypturellus genitalis mendax*, subsp. n.

Genitalic region Paine and Mann, 1913, see Tschaggeny, 1882.


Type host: *Crypturellus parvirostris* (Wagler), from Pá, Sta. Lina, Presidente Wenceslau, Brazil.

Specimens examined: 1 male from Santana, Rio Tapajos, State of Para, Brazil; 4 males, 5 females and 2 nymphs from Ilha Seca, State of S. Paulo, Brazil; 2 males, 1 female and 1 nymph from Salobra, State of Mato Grosso, Brazil; 4 males, 5 females and 3 nymphs from Fazenda Rebeco, Coxim, State of Mato Grosso, Brazil; 15 males, 21 females and 14 nymphs from Assis, State of S. Paulo, Brazil and 20 males, 29 females and 10 nymphs from Presidente Wenceslau, State of S. Paulo, Brazil.

This subspecies differs from *genitalic genitalis* only by the shape of the male genital armature (Figs. 7, 8). The organ is, as a whole, smaller than that of *g. genitalis* (figs. 9, 10); the endomerus are shorter and the median structure which in *g. genitalis* is a large elongated sac with the tip...
turned to one side and furnished with a small opening, is, in *genitalis mendax*, subsp. n., subcylindrical, much shorter than in *g. genitalis*, and with the distal extremity directed posteriorly.

We do not find any differences that allow separation of the females of these subspecies.

The mean length in mm. of 10 male specimens is $1.517 \pm 0.1636$, and of 10 females, $1.732 \pm 0.02573$.

### Measurements of types in mm.

<table>
<thead>
<tr>
<th>Male (holotype)</th>
<th>Female (allotype)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length</strong></td>
<td><strong>Width</strong></td>
</tr>
<tr>
<td>Total</td>
<td>1-520</td>
</tr>
<tr>
<td>Head</td>
<td>400</td>
</tr>
<tr>
<td>Prothorax</td>
<td>-110</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>-150</td>
</tr>
<tr>
<td>Abdomen</td>
<td>-970</td>
</tr>
</tbody>
</table>

**Types**: Holotype male and allotype female no. 45.745, and several male and female paratypes, in the insect collection of the Department of Zoology of São Paulo. Paratypes, male and female, to be deposited in the British Museum (Natural History), and in the United States National Museum.

**Note.**—According to Carriker, the parameres of *g. genitalis* "are very short, straight and pointed and diverging from the base of basal plate". We think that what Carriker considers parameres are only two strongly sclerotized formations (located on the distal extremity of the basal plate) to which the muscles that retract the copulatory apparatus are attached. These formations, although strong and sclerotized, are quite flexible, and are sometimes curved backwards, as shown clearly in several of our specimens. In the copulation apparatus of *Hypocrypturus genitalis mendax*, subsp. n., an identical formation can be seen, although less conspicuous than in *g. genitalis*.

*Rhopaloceras pennisiceps* (Paine and Mann).


As stated above, the doubt about the true identity of the host of Paine and Mann’s material was originated by the differences pointed out in 1937 by Guimarães and Lane between the *Rhopaloceras* studied by them, from *Crypturus parvirostris*, and the one studied by Carriker, from *Crypturus mataupa*.

However, the examination of specimens of *Rhopaloceras* collected on these two birds shows that the differences pointed out are, actually, much less conspicuous than supposed by Guimarães and Lane, and that the specimens studied do not show a single character that allows their separation, even in a subspecific sense. By comparison of the total lengths of the few known males of *Rhopaloceras pennisiceps* it can be verified that specimens from *C. parvirostris* show a tendency to a greater length than those from *C. mataupa*, but one of the latter, collected in Villa
On Some Species of Mallophaga.

Rica, Paraguay, has a length of 2-429 mm., which fits better into the series from *parvirostris* than into the one from *tataupa*. The specimens from *C. tataupa* measure 2-103 mm. (Bolivia—Carriker, 2-110 mm. (Sta. Catarina, Brazil—Keller), 2-200 mm. (Sta. Catarina, Brazil) and 2-420 mm. (Villa Rica, Paraguay); those from *C. parvirostris* measure 2-340 mm. (Maria, Brazil—Paine and Mann), 2-380 (S. Paulo, Brazil—Ginmaraes and Lane), and 2-420 mm., 2-450 mm., 2-460 mm., 2-470 mm., 2-600 mm., and 2-630 mm. (S. Paulo, Brazil).

The genitalia are essentially identical, with only a slight difference in one of the specimens examined: the male from Sta. Catarina (fig. 13) shows the central tubular structure that we take to be the penis widest apically, being at least as wide as the parameres. This peculiar form of the penis in the examples from *C. tataupa* is confirmed by Keller's drawing and by the examination of another specimen from Bolivia, as Carriker has informed us in a letter. The Villa Rica specimen shows, however, the penis (fig. 12) with a form identical with the specimens from *parvirostris* (fig. 11). Although we think it extremely likely that the tinamou from Villa Rica was misidentified, and that the forms of *Rhopalocerus* occurring on *C. tataupa* and *C. parvirostris* are separable, yet we have no alternative to treating them as a single taxonomic unit until the obtaining of further material confirms or disproves the differences we believe to exist.

It is curious that the supposed differences which originally aroused our suspicions and initiated the investigations described in this paper have not been confirmed by study of the material.

REFERENCES.


THE ANNALS AND MAGAZINE OF NATURAL HISTORY

[TWELFTH SERIES]


VI—Contributions towards a knowledge of the Isotomiidae (Collembola)—VII—XV. By Richard S. Bagnall, D.Sc.

Since the publication of Parts I—VI of this series I have received, through the great generosity of Dr. Ian Stach of Cracow, a copy of his book on the Isotomiidae, published by the Polish Academy of Sciences and Letters (1947, 1-488, plates 1-53). Whilst it deals primarily with the Polish species of the family, valuable tables, comments, and bibliographies of each section and genus are added, and the work must be regarded not only as of the greatest importance to students but also as a lasting monument to its learned author, to whom I now have particular pleasure in dedicating the genera *Tanduchia* and *Stachomia* and the species *Hydrosistoma stachi*.

It will be some time before I can make an exhaustive study of Stach's work, but there are certain innovations calling for comment. Like myself, Stach has created the family Proisotomiinae, but he has brought into that section the genus *Folsomia* from the Anurophorinae and has removed *Isotomina* (= *Hemisistoma m. thermophila*) to the allies of the Isotomiinae. This latter change is, I think, both warranted and helpful, but the question of *Folsomia* is more difficult one, and if one removes the Proisotomiinae from the group (as I have done in Part XIII herein) it is difficult to justify the step. One has only to compare the heavy manubrial hooks of *Isotomodes* (a true Anurophorini) with those of the *Liitria* section of *Liitria* &c. Mag. Nat. Hist. Ser. 12, Vol. ii. 6