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**A C T A   Z O O L O G I C A**  
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(Kyoto)

**O pewnych godnych uwagi skoczogonkach (*Collembola*)  
z Japonii**

**О некоторых замечательных *Collembola* из Японии**

**On some remarkable *Collembola* from Japan**  
[Pl. LXIII—LXVII and 2 figures in text]

It is my utmost pleasure that I am allowed to dedicate the present work to Prof. J. STACH for his 80-th birthday. His excellent works on the Polish forms of *Collembola* has been and shall be the standard and modelling book of my studies in Japan. Reports of six Japanese species hitherto incompletely known and here described, are to be regarded as the extension of his comprehensive and monumental studies on this interesting group of insects.

***Conotelsa pacyfica* sp. n.**

[Pl. LXIII, fig. 1 and Pl. LXIV, fig. 3—11]

Body length 1.8 mm. Coloration cinereous violet. Pigment irregularly distributed on all parts of the body. Antennae and legs especially deeply pigmented, while underside of body and furca pale. Antennae to head as 2.0:2.5. Antennal joints ratio as 1.8:2.2:1.5:1.8. Fourth antennal joint distally with three globular end-bulbs and three to four minutely granu-

lated papillae with short setae on them. Sensory setae on dorsal side curved and six in number. Organ of III antennal joint consists of two small, minutely granulated rods in a shallow groove accompanied by one slightly modified seta. Mouth-cone strongly protruding and separated from head-capsule by a distinct thickening of the integument. Mandible with numerous pointed teeth on one side. Maxilla with an untoothed shaft and a minutely serrated small lamella, just like a tail, as it is already known for the genus *Friesea* D. T. Postantennal organ absent. Ommae 8+8, upon a black eye-patch. Unguis subequal in all legs and without tooth. Its inner side slightly pigmented, but not granulated. Tenent hairs and unguiculus absent. Distal half of tibiotarsus more distinctly granulated than other parts. Sixth abdominal segment protruding posteriorly in a triangular form, owing to the well developed lobus supraanalis, upon which five setae are transformed into anal spines. None of them has basal papillae. A well developed furca reaches with its end to the foremargin of the II abdominal segment. Furcal ratio as 25:18:10. Manubrium broad. Dentes coarsely granulated on dorsal side, where three small setae are to be seen. Ventral side almost smooth and with a keel. Mucro arcuate in profile, ending in a rounded apex. Basal part of mucro has a small rounded elevation dorsally on its outer side. Tenaculum small, rounded and with two-toothed (often three-toothed) rami. Integument minutely granular all over the body. Body setae rather small. Subsegment of the tergites occurs characteristically on all segments from thoracic II to abdominal III, in contrast to *Friesea* D. T. and *Odontella* SCHÄFF. in which it is confined only to thoracic II.

Head: Median groove of clypeal region of *Friesea* D. T. and *Odontella* SCHÄFF. is not to be mentioned. Antennal base not well defined. A transverse furrow which divides the area frontalis and the area occipitalis is very conspicuous and its terminal portion is laterally divided into some short furrows and foveae. Area ocularis has only one seta ( $oc_1$ ).  $Oc_2$  and  $oc_3$  lie dorsally to the area along the elongated fovea near by. Area occipitalis has two rows ( $p$ - and  $e$ -) of setae. One pale rounded fovea is present between  $c_2$ - $c_3$ .



Thor. I: Setae in one row. A pale fovea between  $m_2-m_3$ . Thor. II, III: Setae in three rows. Pale fovea between  $m_2-m_3$  and  $p_1-p_2$ . A distinct oval fovea between  $p_2-p_3$ . Abdom. I—III: Setae in two rows. A pale spot between  $p_2-p_3$ . Abdom. IV: Setae in three rows. A fovea between  $p_2-p_3$  is very conspicuous. Abdom. V: Setae somewhat longer and in two rows,  $p_1 > p_2$ .  $P_3$  is the longest and somewhat broadened. Abd. VI: Setae in two rows.  $P_0$  present.  $P_0$ ,  $a_1$  and  $a_2$  are transformed into spines, while  $p_1$  is slightly thicker than the others.

Paratypes: 5 specimens from Beppu, Pref. Oita, at the foot of Takasakiyama (19 III 1955, R. YOSHII).

The species was collected from the surface of sea water. Whether the insect is able to dive, is not certain. From *C. acuminata* DENIS, 1925 (Mediterranean Sea), the present form may be easily separated by the well developed furca. *Conotelsa* DENIS is hitherto regarded as a subgenus of *Polyacanthella* SCHÄFF. But it seems to be really an independent genus, which is characterized not only by the posteriorly elongated abdominal segment VI, but also by the subsegmentation of the segments thoracic II-abdominal VI, although we do not know how this character is developed in *Polyacanthella brevicauda* SCHÄFFER, 1897 (Tierra del Fuego). The species has, with its well developed furca, some resemblance to *P. barnardi* WOMERSLEY, 1930 (African and Australian shores of the Indian Ocean). It is rather curious to notice that all halophilous *Collembola* of the genera *Oudemansia* SCHÖTT, *Pseudanurida* SCHÖTT, *Pseudachorutides* BECKER and *Conotelsa* DENIS have the VI abdominal segment posteriorly elongated.

***Oudemansia esakii* (KINOSHITA)**

[Pl. LXIII, fig. 2 and Pl. LXIV, fig. 12—20]

*Pseudachorutes esakii* KINOSHITA, 1932, UCHIDA, 1950.

Body length 2.0 mm. Coloration somewhat variable from cobalt-black, blue-violet to grayish blue and usually indigo-blue. Antennae and legs deeply pigmented, while furca only slightly coloured. Dorsally, there may be seen pale spots along

each segmental margin. Beside these, there are some pale spots on the head and each tergite; these spots are distributed symmetrically as to position and are in close relation to the chaetotaxy of the body segments as shown in fig. 2. Antennae to head as 15:17. Antennal joints ratio as 2:2:1.5:2. Ant. IV distally with three terminal bulbs, which are rather small and often invisible at all. Some setae with sockets are present as well. Dorsally, there are 6—8 curved sensory setae. Organ of III antennal joint consisting of two small rods accompanied by one slightly modified seta. Sensory groove not to be seen. Mouth cone strongly developed and conically protruded. Mandible provided with many acute teeth on one side. They are either regularly situated and about 8 in number (specimens from Manazuru) or strongly irregular and about 20 (specimens from Seto). Maxilla simply styliform and pointed in all cases. Postantennal organ absent. Ommae 8+8, black eye-patch. Unguis with one prominent inner tooth at about the middle. Inner side of unguis smooth and a little pigmented. Tenent hair as well as unguiculus absent. The well developed furca attains to the middle of abdominal segment II. Dens: mucro as 3:1. Manubrium broad and with about 20 small setae. Dentes ventrally almost smooth and dorsally granulated, where 6 setae in the order 3, 2, 1 are to be seen. Mucro boat-like in appearance. Ventral side slightly arcuate and strongly keeled. Dorsally, both sides broadly lamellate, smooth, untoothed and the portion between them slightly granulated. Tenaculum rounded and with three to four toothed rami. Abdominal segment VI considerably elongated and acuminate on dorsal side. Besides the anal spine of typical form, there are some setae modified to thick hairs. Genital field, as in *Conotelsa pacifica* sp. n., sexually dimorphic. Chaetotaxy as follows:

Head: similar to that of *Conotelsa pacifica* sp. n. Clypeus separated posteriorly from the head capsule by a strong fold of the integument. Of the three foveae lying behind it, the median one is smaller than the lateral ones. Area occipitalis with only one row of setae. A pale spot between  $c_3$ — $c_4$ ; it is surrounded by granulae, but smooth at the middle. All segments from Thor. I to Abdom. IV have a well defined subsegment

each. That Thor. I is subsegmented as well, is very remarkable. Thor. I: with setae in one row as  $2+2$ . Thor. II, III with two rows of setae.  $P_3$  somewhat longer and placed always at the lateral side of an elongated fovea. Abdom. I—III with setae in two rows.  $P_4$  lies at the small extension of the second lateral fovea. Just lateral to  $p_4$  there is a pale spot as on the head at least on Abd. I. Abdom. IV with setae in two rows.  $P_1$  and  $p_3$  larger. Dorsally, there may be seen only  $a_1$ . Abdom. VI with setae in two rows. As the segment is posteriorly elongated,  $a_1$  is inserted much posteriorly. At the foremargin, a pair of elongated foveae. From these setae,  $a_1$  is conspicuously elongated and basally thickened. Somewhat thickened are also  $a_2$ ,  $a_3$ ,  $p_1$  and  $p_2$ . Setae on the lateral anal lobes are somewhat spinous.

Localities: Seto, Pref. Wakayama (35 specimens, 11 VIII 1931, M. TOKUNAGA); Manazuru, Pref. Shizuoka (28 specimens, 18 III 1954, S. UÉNO and G. IMADATÉ).

S. UÉNO has observed the insect living among pebbles of the sea-shore, which are coated with marine algae (*Ulva* sp.) in a shallow depth. It is, therefore, to be assumed that they can dive into the sea. From the other members of the genus, the Japanese species differs in its elongated abdominal segment VI, as well as by the peculiar setae on it. As the former character may be easily rendered indistinct by preservation, the species is more closely related to *O. schötti* DENIS, 1948, and *O. subcoerulea* DENIS, 1948 (Annam), that to *O. coerulea* SCHÖTT, 1893 (Indonesia), which has no inner tooth on the unguis.

### *Homaloproctus sauteri* BÖRNER

[Pl. LXV fig. 21—29, Pl. LXVI, fig. 30—33]

*Homaloproctus Sauteri* BÖRNER, 1909; UCHIDA, 1953; STACH, 1954.

Body length about 4 mm. Coloration uniformly blackish brown. Antennae, legs and furcula also well pigmented. Dorsally there may be seen a pattern of pale spots in some poorly pigmented specimens. Body flattened dorso-ventrally. Each tergite well developed and bent to the ventral side to some



extent; the posterior margin of the tergites telescopically folded within the body, so that the insect has the appearance of a crustacean, and hence the generic name is given. Antennae to head as 5:5. Antennal joints ratio as 6:10:10:16. Fourth antennal joint club shaped, with many fine setae. Apically, there appear a group of about 8 irregular elevations. Subapical pit wanting. Third antennal joint distally somewhat broad. Organ of III antennal joint consisting of about 10 papillae in three rows. Guard setae 4, of these the lateral one slightly modified and curving. Notwithstanding repeated and careful observation, there has been found only one sensory rod of candleflame shape among these papillae. Antennal joints I and II subcylindrical and with many rows of setae. Head capsule almost triangular, and this is why the insect resembles to some extent an immature cocroach larva. Basis antennalis with fine granulation, distinctly separated. Postantennal organ directly behind the basis antennalis. It is reduced or better to say, primitive in appearance. There are 18—22 granules arranged in two parallel rows, which are more thickly walled than the neighbouring skin granules, but not much different in their shape. Furthermore, they have no central pit and are located on a slight elevation of the skin. Eyes and area ocularis absent. Mouth prognathic. Mandible with four apical teeth and well developed molar part. Head of maxilla normally shaped as in *Onychiurus* GERVAIS. Legs well developed. Unguis dorsally strongly keeled and extending considerably to the lateral side as a thin lamella, which has one prominent lateral tooth at about  $1/3$  from the basis. One inner tooth is also present. Unguiculus distally setiform and with a basal lamella. Inner side of unguis and basal part of unguiculus conspicuously granulated all over the surface. Tenent hair absent. Some normal hairs on dorsal side of each tibiotarsus are distally clubbed. Ventral tube with many (more than  $10+10$ ) hairs. Tenaculum with three-toothed rami and hairless corpus. On posterior side of abdominal segment, ventrally near the median line, a pair of prominent hairs directed toward the tenaculum. Furcula well developed, and its apex reaching to the middle of the ventral tube. Manubrium dorsally with many hairs, its junction to the dens with a rounded lobe. Dens dor-

sally with many hairs in three longitudinal rows. Their number is from the basis as 1—2, 1—2, 2, 3, 1=8—10. Ventrally, there is found also one prominent hair near the mucronal end as in the case of *Tetrodontophora* REUT. Dens: mucro as 13:8—9. Mucro: ung.<sub>3</sub> (vent.) as 1:1. Mucro rod-like and gradually tapering to the apex. Near to the base, ventrally a tunica-like thickening with two rounded lobes from which runs a ventral ridge distally toward the end of the mucro. Genital area well defined. It forms a rounded elevation with many minute hairs only on its anterior lobe in the female. Abdominal segment VI only slightly visible from above, where it is rounded and distinctly separated from abdominal segment V. On ventral side, abdominal segment VI strongly protruding. Area analis well defined with three subequal anal lobes. Integument dorsally very coarsely granulated from head to abdominal segment VI. Each segmental margin with a minutely granulated zone, which is, as stated, folded into the body. These coarsely granulated areae bend considerably toward the ventral side. All body hairs small, subequal and simple. They show a remarkable polychaetosis<sup>1</sup>, since even thoracic segment I is well beset with more than three irregular rows of hairs. Sensory setae also not specialized. Fovea not to be seen. Fovulae numerous and distributed as figured. Pseudocelli typically constructed. They are distributed dorsally as 3, 1—2/2, 3, 3/3, 3, 3, 3, 1—2, 0 and ventrally as 1/0, 1, 1, 1/1, 1, 1, 1, 1, 0. These which are lying on the minutely granulated zone of each segmental margin are only to be seen when the insect is extended between two needles; they seem to have been therefore overlooked hitherto.

Localities: Ozé (25 specimens, 10 X 1952, U. KITAZAWA), Iwawaki, Pref. Osaka (1 specimen, 21 X 1953, K. SAWADA), Fusimi Kyoto (25 specimens, 13 XII 1954, R. YOSII).

It can be seen from the above that the species is close to the European *Tetrodontophora bielensis* (WAGA), described by Prof. J. STACH (1954). It seems that the species would not

<sup>1</sup> Polychaetosis: by this word I mean a case in which the usual order of chaetotaxy is suddenly lost and numerous hairs of equal size are distributed all over the segment. Examples. *Hypogastrura pilosa* YOSII and *Anurida speobia* YOSII (cf. YOSII, 1956).

deserve the erection of a new genus, if the structure of postantennal organ were not so primitive and simple. The difference of the body form in abdominal segments V and VI is not of great significance.

***Lophognathella choreutes* BÖRNER**

[Textfig. 1, Pl. LXVI, fig. 34—42]

*Lophognathella choreutes* BÖRNER, 1908, 1909, KINOSHITA, 1932, UCHIDA, 1953, STACH, 1954.

Length 1.5 mm. Coloration blackish gray with yellow ground colour. Antennae and legs well pigmented. Ventral side pale. Furca colour-less. Antennae subequal to head in length. Antennal joints ratio as 12:15:15:28. Fourth antennal joint club-shaped, apically without end-bulb, but with distinct subapical pit and a pin-shaped sensilla. Some hairs on distal half of fourth antennal joint slightly modified to sensory hairs and curved inwardly to the end. Antennal joints III and IV separated. Organ of III antennal joint of *Onychiurus*-type; guarded by four setae there are three, seldom four rather slender papillae, two sensory rods and two laterally situated sensory clubs. The rods are elongated and the clubs do not differ much from these rods. Antennal joint I with one transverse row of setae. On the head, the dorsal capsule strongly protruding proximally toward the ventral side, so that the mouth has to be designated as hypognathous. Mandible with four-toothed apex and a well developed molar part. Maxilla strongly modified as stated by BÖRNER (1908) and UCHIDA (1953). Antennal base well defined, with minute granules. Postantennal organ laterally situated and consisting of about 10 compound elements, in two rows. Eyes and area ocularis absent. Compared with the normally shaped thorax, the abdominal part is extremely swollen laterally and dorso-ventrally, just like a fully saturated bed-bug. Posterior end of trunk almost rounded and abdominal segment VI occupying a wholly ventral position, so that it is scarcely visible from above. Distinction between abdominal segment V and VI is, contrary to the description of former authors, quite absent on the dorsal



side. In the legs, trochanter and femur have one strong seta each on their inner side. Tenent hair absent. Unguis dorsally keeled and with one inner tooth at about the middle. Unguiculus setaceous and with a rounded basal lamella. Ventral tube with many (about  $8+8$ ) hairs. Tenaculum with threedentate rami. Furca moderately developed. Manubrium only dorsally haired. Dens dorsally with 4 (2, 2) subequal hairs and ventrally with one hair near its apical end. Dens: mucro as 13:10. Mucro: ung.<sub>3</sub> as 15:13. Mucro rod-like, gradually tapering and with a considerable basal lobe at the proximal end. Mucronal tunica also present. A narrow lateral lamella is found on both sides of the mucro. The well defined pseudocelli are distributed dorsally as 3, 1/0, 1, 1/3, 3, 3, 4, 2—0, 0 and ventrally as 2/0, 0, 0/0, 2, 1, 2, 1, 0. Each coxa has, beside these, two pseudocelli of smaller size. Integument minutely granular all over the body. Setae rather short and simple.

Head: Basis antennalis has three pseudocelli in equal distances. One ps. oc. on the posterior margin of the head lies between  $p_3-p_4$ . Thoracic segment I: A pair of foveae very conspicuous. Thoracic segment II, proximally subdivided into form of a promesonotum. Four pairs of median setae (A, B, C, P) present.  $C_2$  and  $p_5$  a little larger. Ps. oc.<sub>1</sub> lies between  $p_5-p_6$ . Abdominal segments I—III: Hairs in three rows.  $B_2$ ,  $b_4$  and  $p_1$  larger. Ps. oc.<sub>1</sub> larger. Ps. oc.<sub>1</sub> lies

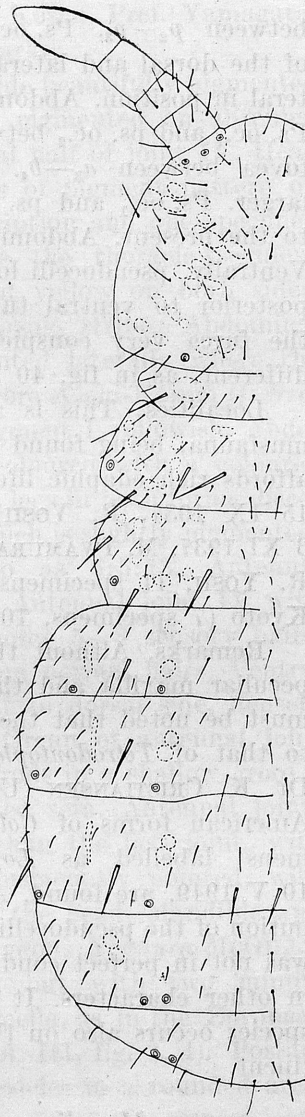


Fig. 1. *Lophognathella choreutes*  
BÖRNER. Chaetotaxy of the  
body.

between  $p_2-p_3$ . Ps. oc.<sub>2</sub> lies posteriorly near the junction of the dorsal and lateral parts of the tergite. Ps. oc.<sub>3</sub> more lateral in position. Abdominal segment IV: Hairs in three rows. Ps. oc.<sub>1</sub> and ps. oc.<sub>2</sub> between  $p_2-p_3$  posteriorly. A well defined fovea between  $a_3-b_4$ . Abdominal segment V: Hairs slightly larger. Ps. oc.<sub>1</sub> and ps. oc.<sub>2</sub> located between  $b_2-b_3$ .  $P_0$  seems to the present. Abdominal segment VI: Anal spines wanting. Ventrally, pseudocelli located as in Fig. 40. One pair directly posterior to ventral tube and another pair on the basis of the furca very conspicuous. Genital area in the two sexes different, as in fig. 40 and 41.

Localities: This is a rather common species in our humusfauna, being found in almost all places where wood-litter affords rich edaphic life. Mt. Hira, Pref. Shiga (3 specimens, 15 IX 1937, R. YOSII), Ashiu, Pref. Kyoto (7 specimens, 3 XI 1937, M. IWAMURA), Kyoto (12 specimens, 27 XII 1952, R. YOSII, 11 specimens, 26 III 1953, R. YOSII), Uji near Kyoto (7 specimens, 10 XII 1954, R. YOSII).

Remarks. Although the genus is well characterized by the peculiar maxilla and the organ of the III antennal joint, it must be noted that the structure of its furca is nearly equal to that of *Tetrodontophora* REUT. and *Homaloproctus* BÖRN. Dr. K. CRISTIANSEN (U. S. A.) has kindly given me some American forms of *Collembola*, among which some 7 specimens labelled as *Lophognathella* sp., Corvallis, Oregon, 10 V 1949, are found. Although I could not inspect the distribution of the pseudocelli and the body hairs, since the material was not in perfect condition, I could not find any differences in other characters. It is therefore to be assumed that this species occurs also on the Pacific coast of the American continent.

***Morulina gilvipunctata* (H. UCHIDA)**

[Textfig. 2, Pl. LXVII, fig. 43—45]

*Neamura gilvipunctata* UCHIDA, 1938.

*Morulina gilvipunctata* UCHIDA, 1951

From this interesting species, I have one specimen collected at Osorezan, Pref. Aomori, 7 VII 1951, and sent to me by Prof. H. UCHIDA. The specimen agrees well in all de-

tails with those I have taken as Asahi-Kosen, Pref. Yamagata, 25 VIII 1954, excepting the body marks.

Body length 1.8—2.5 mm. Dorsal side beautifully pigmented cobalt blue or blue black. Antennae pigmented on antennal joint I, joint II and distal or proximal half of joint IV. Head deeply coloured. There are two types of pigment pattern on the trunk. Those of the original description and one specimen from Osoresen (*f. principalis*) have the thoracic segment I and abdominal segment V coloured yellow on both sides, with a deeply coloured median dorsal stripe. Abdominal segments I—III are partly depigmented laterally where the sublateral tubercle is located. Those from Asahi-Kosem (*f. irrorata* f. n.) have the entire thoracic segment I yellowish. Abdominal segments I and V almost discoloured with a coloured median dorsal stripe. Ventral side and legs in both forms discoloured excepting the marginal area, which is slightly pigmented. Ant./Head 1.0. Antennal joints ratio as 5:5:13. Antennal joints III and IV completely fused. Antennal joint IV with a distally trilobed apical bulb and some 5—8 sensory hairs, which are not distinctly different from normal hairs. Ventral side of antennal joint IV, in contrast to dorsal side, densely beset with numerous minute hairs. Organ of antennal joint III consists of a pair of rather thick rods in a shallow groove, accompanied laterally by one modified seta. Antennal joints I and II more coarsely granulated than the last joint, with a row of long hairs. Mouth-cone conspicuously pointed, with its tip surpassing the fore-margin of the head. Mandible apically with three teeth, just as in the genus *Neanura* MCGILLV. (s. str.). Maxilla almost needle-like, but with two minute apical teeth and a thin accessory lamella, as in the European *M. verrucosa* BÖRNER (STACH, 1951, pl. III, fig. 3, 4). Postantennal organ consists of numerous vesicles in a rounded area, which is subequal to one eye. Eyes with 5+5 ommata, well pigmented. Legs with a conspicuous unguis, which is dorsally keeled and ventrally granulated and striated. Inner tooth wanting. Unguiculus and tenent hair absent. Rest of furca not to be seen. Genital field sexually dimorphic. Two lateral lobes of anus densely haired and more developed than the supraanal lobe, which is practically concealed between them.



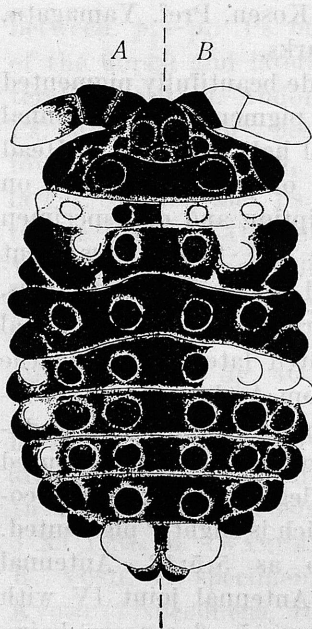


Fig. 2. *Morulina gilvipunctata*  
(UCHIDA) A — f. *principalis*  
B — f. *irrorata* f. n.

Abdominal segment V is dorsally with only one pair of segmental tubercles. Abdominal segment VI sometimes concealed beneath segment V or visible from the dorsal side according to the state of contraction, since the body of the insect may be half rolled when captured. Integument regularly granulated and each granula independently pigmented as in the case of *Odontella* SCHÄFF. Foveae and base of body hairs pale. Hairs not coloured, simple and distinctly lamellate towards the end. Tubercles and hairs located in the following manner. Head: Clypeal tubercle with 1+1, I+I. Antennal tubercles small, rounded and each with III+2 hairs. Frontal tubercle with I+I. Ocular tub. with I+1. From the occipital row, dorsal tub. is rounded und with III, subdorsal tub. with II, sublateral and lateral tub. fused. One prominent fovea on median side of dorsal tubercle. Thoracic segment I: Dorsal tub. absent and represented by one small hair. Subdorsal tub. with I. Sublateral with I+4. Lateral with II+4. Thoracic segments II, III: Dorsal tub. with III. Subdorsal tub. with III+s.-s.+1. Sublateral tub. with III+s. s. Lateral tub. with IV+4-5. Abdominal segment I: Dorsal tub. with III. Subdorsal tub. with II+s. s.+2. Sublateral tub. with II+1. Lateral tub. with III+2. Foveae 2+2 dorsally and one postero-lateral to dorsal tubercle. Abdominal segment II: Dorsal tub. with II+I. Other as on abdominal segment I. Abdominal segment III: Dorsal tub. with II+1. Other as on abdominal segment I. Abdominal segment IV: Dorsal tub. with II+1. Subdorsal posteriorly replaced and with IV+s. s. Sublateral tub. III+1. Abdominal segment V: One pair of tubercles with VI+s. s.+3-4. Abdominal segment VI: One pair with IV+5-6.

Remarks: In his standard monograph of the *Bilobidae*, Prof. J. STACH (1951) has shown us the difference in the mouth parts between the European *M. verrucosa* BÖRNER and *M. gigantea* (TULLBERG) of the Bering Strait which was first described from northern Siberia. Afterwards, M. HAMMER (1953) added two new species from arctic Canada, which show remarkable differences in the mouth parts. The present Japanese form, whose mouth parts are hitherto undescribed, is striking because it shows us how these mouth parts are differentiated among species of this prominent genus. The mandibles have 8 teeth in *M. verrucosa* BÖRNER, more than 8 in *Womersleya* DENIS and in *M. mackenziana* HAMMER, they are six-toothed in *M. thulensis* HAMMER and three-toothed in *M. gilvipunctata* (UCH.). Head of maxilla shows great difference between *M. gigantea* (TBG.) with three-toothed shaft and two lamellae and the other species the maxilla of which is styliiform and is provided apically with two small teeth.

***Morulina gigantea* (TULLBERG) f. *alata* YOSII**

[Pl. LXVII, fig. 46, 47]

*Morulina gigantea alata* YOSII, 1954

Additions to my diagnosis of 1954: Segmental tubercles distributed as 12/6, 8, 8/8, 8, 8, 8, 2, 2 (6, 8, 8/8, 8, 8, 8, 2 according to FOLSOM, 1902 and 6, 8, 8/8, 8, 8, 8, 4, 2 according to YOSII, 1954, where a subdorsal tubercle of abdominal segment IV is misinterpreted as that of abdominal segment V). They are distributed as in fig. 46. What is characteristic in this species in the chaetotaxy, are the antennal and frontal tubercles of the head. Antennal tubercle rounded and beset with about 10 well developed setae, while the frontal tubercle smaller and with only three setae as has been exactly figured by STACH, 1951, Pl. III, fig. 5. The ocular tubercle has 6 setae. Segmental tubercles of trunk and of the occipital row have regularly about 10 or more heavy setae together with slender setaceous s. s. which are to be seen on the subdorsal and sublateral tubercles of thoracic segments II, III and only on the subdorsal of abdominal segments I—V. Sublateral tubercles



of abdominal segment IV posteriorly dislocated. Abdominal segment V with only 1+1 segmental tubercles on which one sens. seta is to be observed. Abdominal segment VI with its 1+1 tubercles considerably turned over to the ventral side and never visible from above. Mandible normally five-toothed, but there occur aberrant forms having 4 or 6 teeth.

Remarks: I have had the opportunity to inspect 5 specimens labelled as *Morulina callowayia* WRAY, Linville, North Carolina, 13 VII 1949, which were sent by dr. WRAY to Dr. IMA-DATÉ. I come to the conclusion that they coincide with *M. gigantea* (THG.) in all details excepting only the body setae, which are somewhat roughly denticulated and slightly lamellated. The lamella is not reaching to the apex of the seta, but ending a little before the apex (Fig. 47). This American form must, therefore, be regarded as *Morulina gigantea* (TBG.) *f. callowayia* WRAY (comb. nov.).

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## STRESZCZENIE

Autor opisuje nowy gatunek *Conotelsa pacifica* sp. n. oraz daje szczegółowe uzupełnienia opisów i uwagi porównawcze dotyczące gatunków *Oudemansia esakii* (KINOSHITA), *Homaloproctus sauteri* BÖRNER, *Lophognathella choreutes* BÖRNER, *Morulina gilvipunctata* (UCHIDA) i *Morulina gigantea* (TULLBERG) f. *alata* YOSH.

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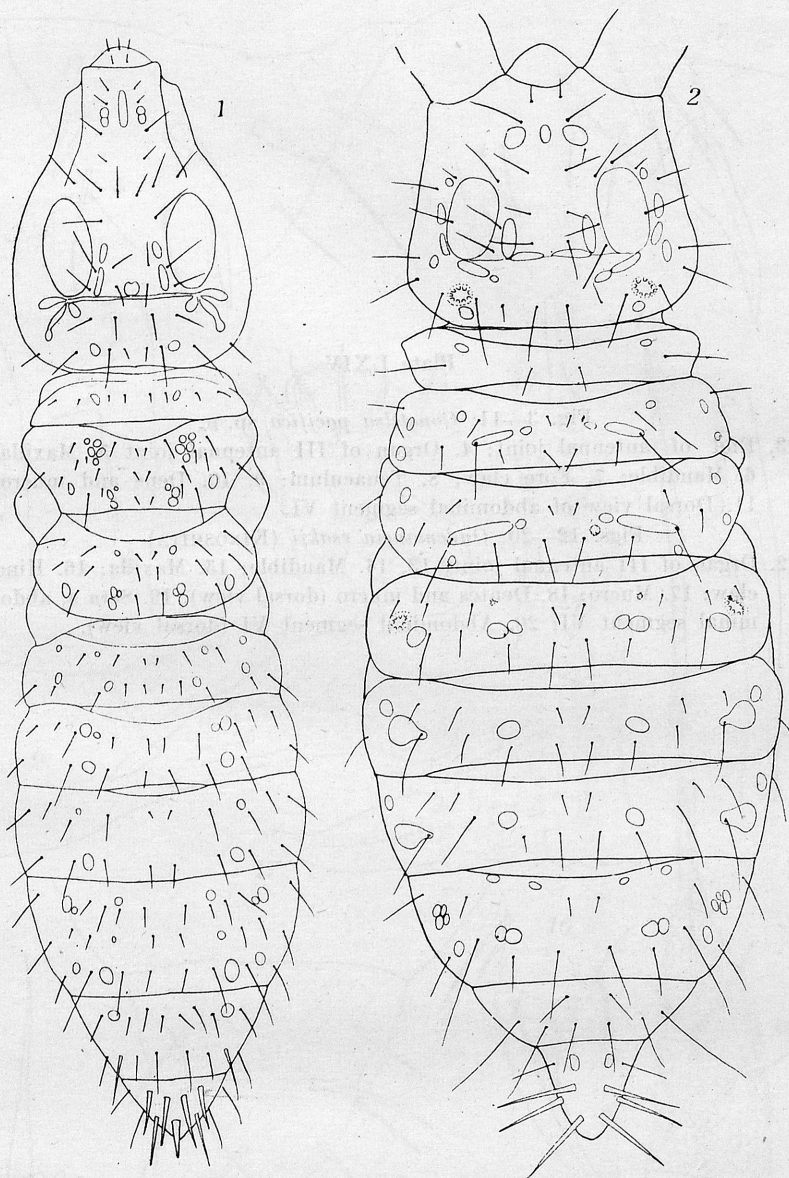
## PEZIOME

Автор описывает новый вид *Conotelsa pacifica* sp. n. и дает подробные дополнения описаний и сравнительные заметки касающиеся видов *Oudemansia esakii* (KINOSHITA), *Homaloproctus sauteri* BÖRNER, *Lophognathella choreutes* BÖRNER, *Morulina gilvipunctata* (UCHIDA) и *Morulina gigantea* (TULLBERG) f. *alata* YOSH.

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## Plate LXIII

Fig. 1. Chaetotaxy of *Conotelsa pacifica* sp. n.Fig. 2. Chaetotaxy of *Oudemansia esakii* (KINOSHITA)



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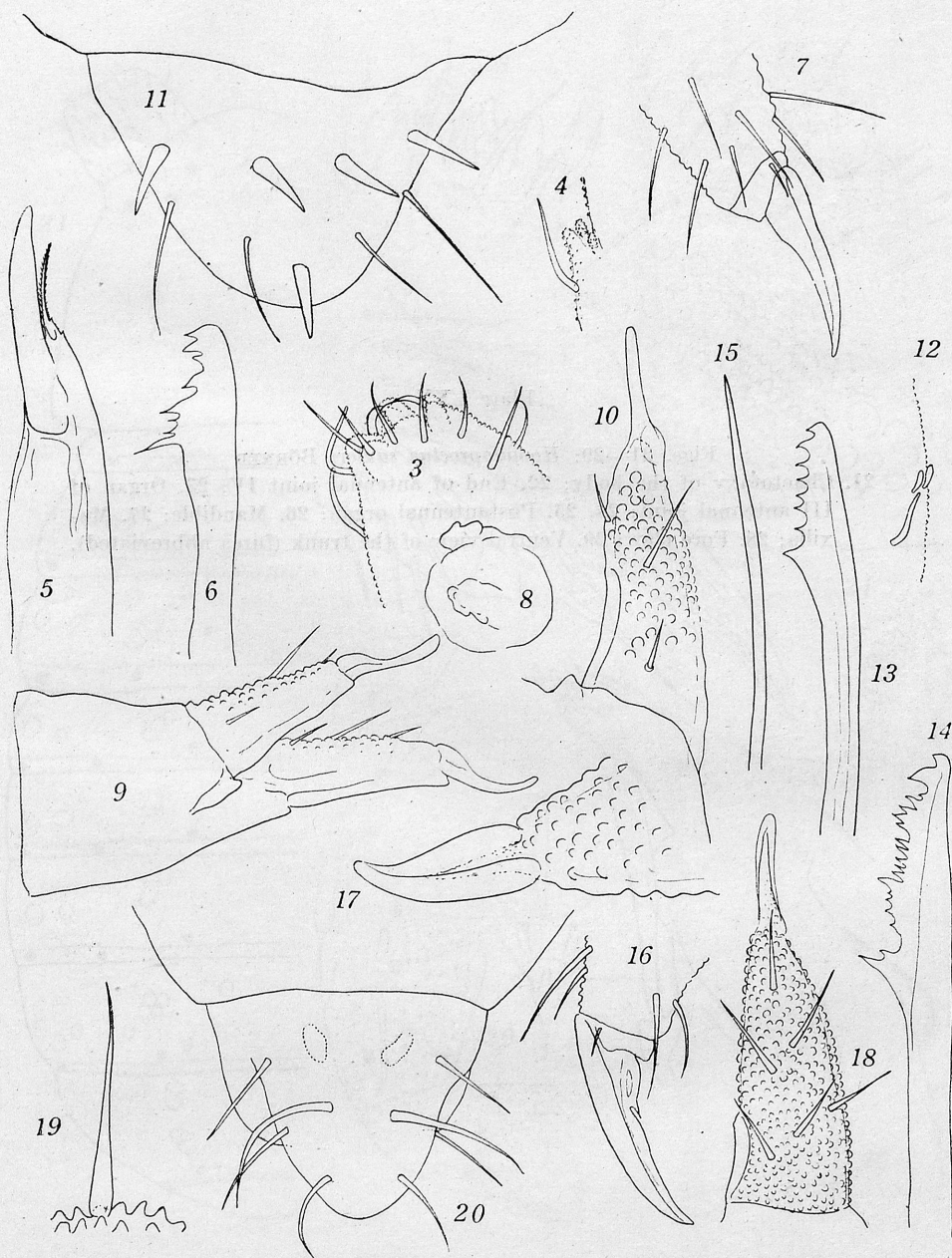
## Plate LXIV

Fig. 3—11: *Conotelsa pacifica* sp. n.

3. End of antennal joint; 4. Organ of III antennal joint 5. Maxilla;  
6. Mandible; 7. Fore claw; 8. Tenaculum; 9, 10. Dens and mucro;  
11. Dorsal view of abdominal segment VI.

Figs. 12—20: *Oudemansia esakii* (KINOSHITA)

12. Organ of III antennal joint; 13, 14. Mandible; 15. Maxilla; 16. Hind  
claw; 17. Mucro; 18. Dentes and mucro (dorsal view); 19. Seta  $a_1$  abdo-  
minal segment VI; 20. Abdominal segment VI (dorsal view).



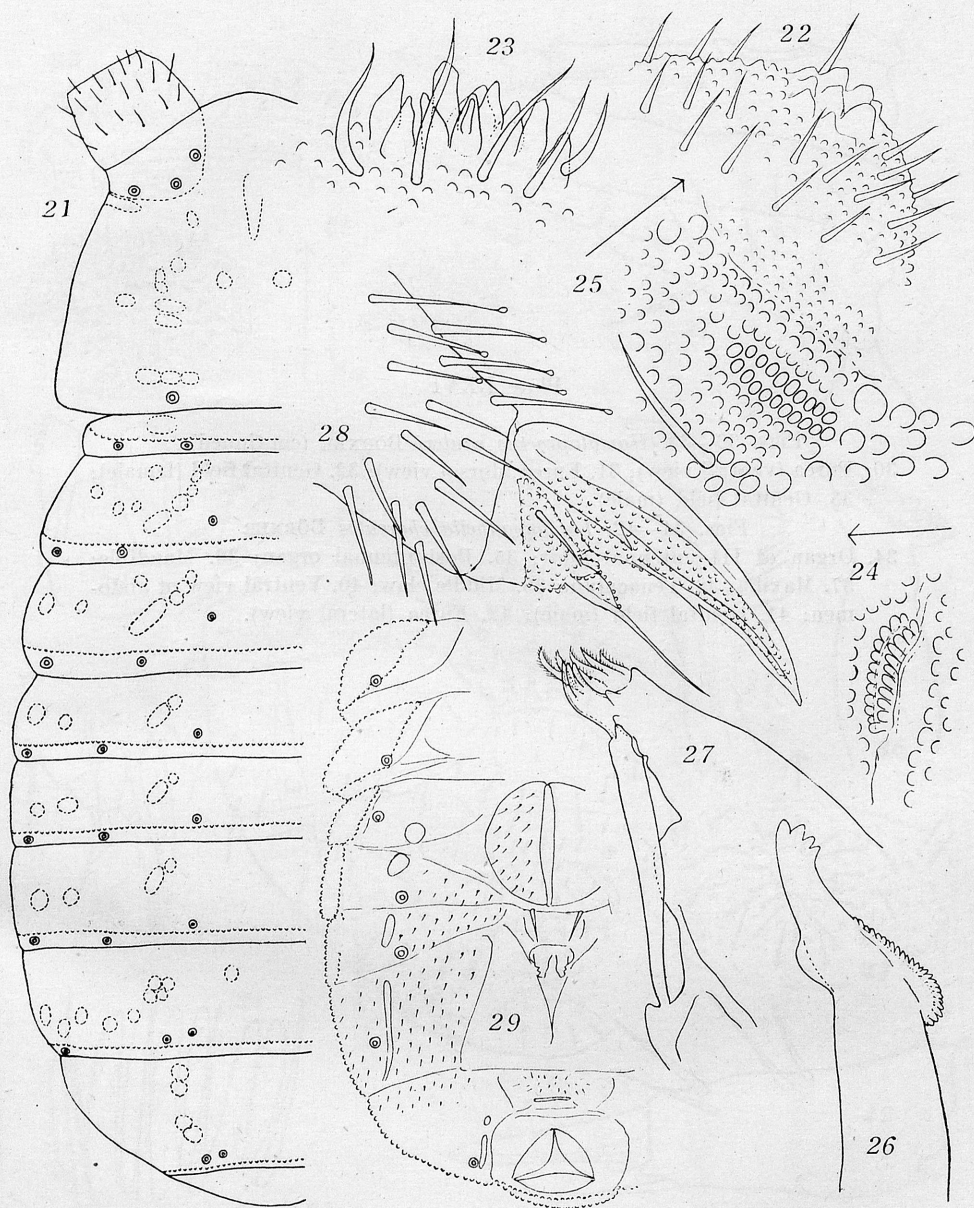
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## Plate LXV

Figs. 21—29: *Homaloproctus sauteri* BÖRNER

21. Chaetotaxy of the body; 22. End of antennal joint IV; 23. Organ of III antennal joint; 24, 25. Postantennal organ; 26. Mandible; 27. Maxilla; 28. Fore claw; 29. Ventral view of the trunk (furca abbreviated).





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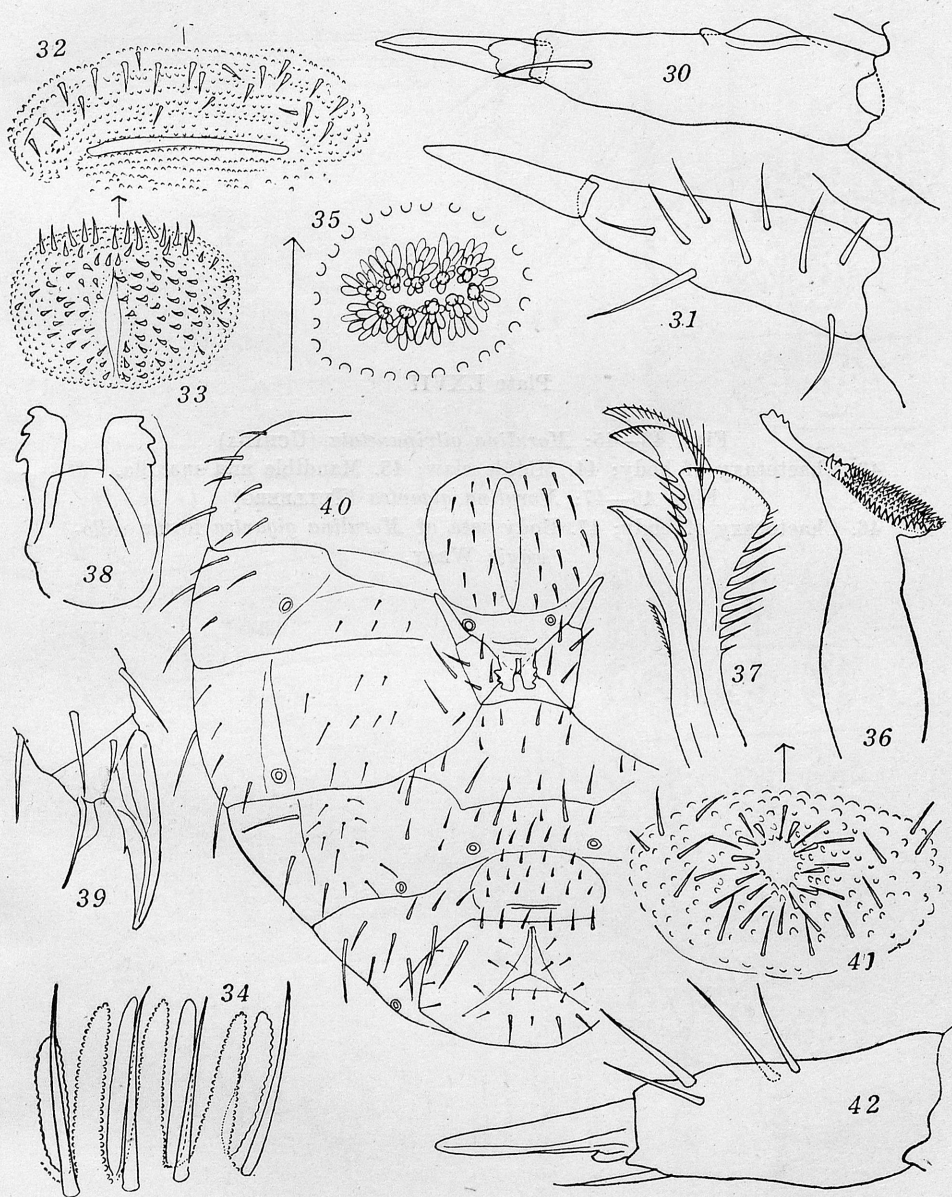
## Plate LXVI

Figs. 30—33. *Homaloproctus sauteri* BÖRNER (continued)

30. Furca (ventral view); 31. Furca (dorsal view); 32. Genital field (female);  
33. Genital field (male).

Figs. 34—42: *Lophognathella choreutes* BÖRNER

34. Organ of III antennal joint; 35. Postantennal organ; 36. Mandible;  
37. Maxilla; 38. Tenaculum; 39. Middle claw; 40. Ventral view of abdomen;  
41. Genital field (male); 42. Furca (lateral view).



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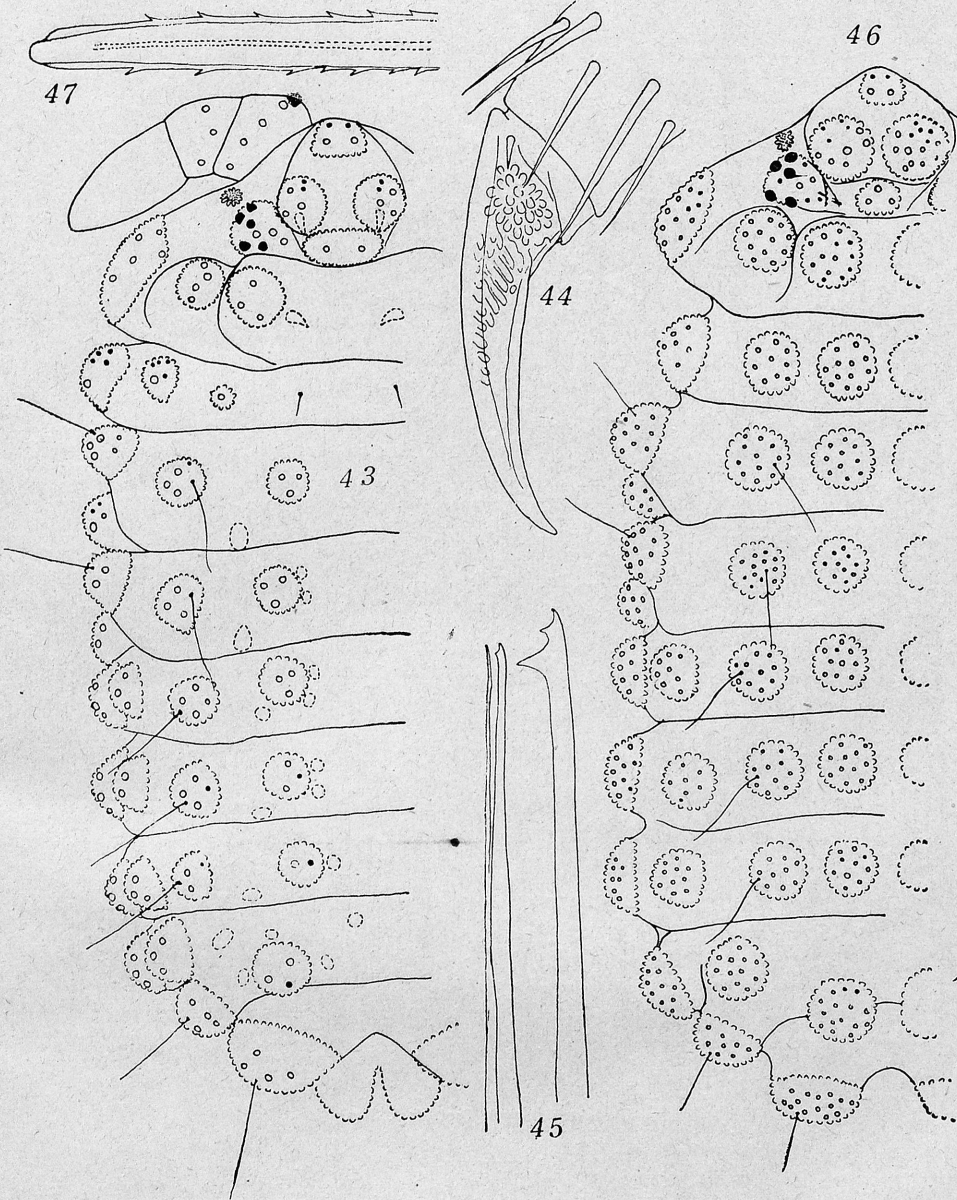
## Plate LXVII

Figs. 43—45: *Morulina gilvipunctata* (UCHIDA)

43. Chaetotaxy of body; 44. Middle claw; 45. Mandible and maxilla.

Figs. 46—47: *Morulina gigantea* (TULLBERG)

46. Chaetotaxy of body; 47. Body seta of *Morulina gigantea* forma *callo-  
wayia* WRAY.



Auctor del.  
*Ryozo Yosii*

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