



Contribution to the  
Polychaete Family  
Trochochaetidae Pettibone

MARIAN H. PETTIBONE

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## ABSTRACT

Pettibone, Marian H. Contribution to the Polychaete Family Trochochaetidae Pettibone. *Smithsonian Contributions to Zoology*, number 230, 21 pages, 10 figures, 1976.—The polychaete family Trochochaetidae Pettibone (=Disomidae Mesnil) is reviewed, and a key to the species of *Trochochaeta* Levinsen (= *Disoma* Oersted) is included. Based on new material and examination of types, the descriptions of three species are supplemented: *T. carica* (Birula), new combination; *T. watsoni* (Fauvel); and *T. diverapoda* (Hoagland). A new species from West Africa, *T. kirkegaardii*, is described.

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# Contribution to the Polychaete Family Trochochaetidae Pettibone

*Marian H. Pettibone*

## Introduction

The present study is based primarily on new material from eastern Canada: that from the Saint John River Estuary, New Brunswick, was obtained in 1972 and 1973 by M. L. H. Thomas and Patricia Steer of the University of New Brunswick, and that from the deeper parts of the Gulf of Maine was collected in 1967 on *Verrill* Cruise 67-53 by R. R. Hessler of the Woods Hole Oceanographic Institution. In addition, two trochochaetid species, collected in 1883 and 1885 in deep water off New England by the *Albatross*, were found among the unidentified material in the United States National Museum. This material, including some well preserved and complete specimens, allows me to supplement descriptions of previously described species that, for the most part, were based on incomplete fragments and to describe a new one based on specimens erroneously assigned to another species.

In addition to the material deposited in the National Museum of Natural History, Smithsonian Institution (using the acronym "USNM" for the old United States National Museum), specimens were received on loan from the following Museums: British Museum (Natural History), London (BMNH), through J. D. George; Universitetets Zoologiske Museum, Copenhagen (UZMC),

through J. B. Kirkegaard; and Zoological Institute Academy of Science, Leningrad (ZIASL), through P. V. Uschakov. The manuscript benefited from the suggestions of H. H. Hobbs, Jr. and M. L. Jones, both of the Smithsonian Institution.

The polychaete species, which are referable to the Trochochaetidae, are listed below, along with indications of the families to which they were assigned originally, type-localities, locations of the type specimens (if known), and their subsequent and present designations:

1. *Disoma multisetosum* Oersted, 1843, under "Ariciae Naidinae" (=Spionidae); Denmark; types (?); referred to *Trochochaeta multisetosa* by Pettibone (1963b:310).

2. *Trochochaeta sarsi* Levinsen, 1883, under Amphinomididae; Kattegat; holotype (UZMC, =posterior fragment, examined); referred to *Disoma multisetosum* by Michaelsen (1897:41), to *Trochochaeta multisetosa* by Pettibone (1963b:310).

3. *Thaumastoma singulare* Webster and Benedict, 1884, under "Incertae Sedis"; Massachusetts, in 37 m; holotype (USNM 29028, =anterior fragment, on 20 slides, examined); referred to *Disoma multisetosum* by Mesnil (1897:95), to indeterminate genus and species by Hartman (1947:161), to *Trochochaeta multisetosa* by Pettibone (1963b:310).

4. *Disoma carica* Birula, 1897; no family named but placed between species of Orbiniidae and Spionidae; Kara Sea, in 19 m; holotype (ZIASL 2/25892, =anterior fragment, examined); de-

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scription supplemented and referred herein to *Trochochaeta carica*.

5. *Nevaya whiteavesi* McIntosh, 1911, under Scalibregmidae; Gulf of St. Lawrence, dredged; holotype (BMNH 1921: 5: 1: 4567, =anterior fragment, in poor condition, examined); referred to *Disoma carica* by Fauvel (1916:3), to *Trochochaeta multisetosa* by Pettibone (1963b:309).

6. *Disoma watsoni* Fauvel, 1916, under Disomidae; off Nova Scotia, eastern Canada, in 1332 meters; holotype (anterior fragment) in Musée Océanographique de Monaco, according to Belloc (1953:6); referred to *Trochochaeta watsoni* by Achari (1969:100), description supplemented herein.

7. *Aonides diverapoda* Hoagland, 1920, under Spionidae; Philippine Islands, in 37 m; 2 syntypes (USNM 18961, poor condition, examined); referred to *Trochochaeta* by Pettibone (1963a:91), description supplemented herein.

8. *Disoma orissae* Fauvel, 1932, under Disomidae; east coast of India, in 8 m; holotype (anterior fragment) in Indian Museum, Calcutta?; referred to *Trochochaeta orissae* by Achari (1969:99).

9. *Disoma franciscanum* Hartman, 1947, under Disomidae; central California, in 2–29 m; 10 syntypes (USNM 20912, anterior, middle and posterior fragments, examined); referred to *Trochochaeta multisetosa* by Pettibone (1963b:310).

10. *Disoma orissae*.—Kirkegaard, 1959, under Disomidae; West Africa, in 44–175 m; specimens examined and referred to *Trochochaeta kirkegaard*, new species; holotype and 2 paratypes (UZMC).

As indicated in the above summary, the nine previously described species belonging to the Trochochaetidae were originally distributed among five genera and several families, including the Spionidae, Amphinomidae, Scalibregmidae, and Disomidae, and treated as incertae sedis on one occasion. Most of these species were described from anterior fragments, and one, *Trochochaeta sarsi* Levinsen, from a posterior fragment. Additional material available for this study enables me to supplement the descriptions of two of the species, *T. carica* (Birula) and *T. watsoni* (Fauvel), and to include notes on the abdominal region and posterior end of *T. carica*.

*Aonides diverapoda* Hoagland, 1920, from the Philippine Islands, was originally placed in the Spionidae. Previously, in connection with a study

of the species of *Aonides*, the syntypes of Hoagland's species were examined (USNM) and found to belong rather to the Trochochaetidae (Pettibone, 1963a:91); the species was referred to *Trochochaeta* but without additions or corrections to the original description. As far as the material permits, the description of the species has been amplified herein.

Unfortunately, no specimens of *T. orissae* (Fauvel) were available for study. The species is discussed briefly and included in the key to the species of the genus. Kirkegaard (1959:26) referred three specimens from West Africa to *Disoma orissae* Fauvel—originally described from the east coast of India, and commented on its strange distribution. Kirkegaard's specimens have been examined and are referred herein to a new species, *Trochochaeta kirkegaard*.

Four of the nine previously proposed names listed above are now considered to be synonyms of *Trochochaeta multisetosa* (Oersted). The types of *Thaumastoma singulare* Webster and Benedict (USNM 29028) and *Disoma franciscanum* Hartman (USNM 29912) were examined previously and commented on by me (1963b:310). The holotype of *Trochochaeta sarsi* Levinsen (UZMC) was recently examined and I am able to confirm the statement of Michaelsen (1897) that it was described only from a posterior end. *Nevaya whiteavesi* McIntosh was referred to *Disoma carica* Birula by Fauvel (1916:3), Uschakov (1955:284), and Hartman (1959:394), and to *Trochochaeta multisetosa* (Oersted) by Pettibone (1963b:310). In order to assess these differences of opinion, the holotype of *N. whiteavesi* was recently examined (BMNH 1921: 5: 1: 4567). Although in poor condition, it was found not to differ from *T. multisetosa*.

*Trochochaeta multisetosa* has been adequately described and figured previously and is not dealt with further herein, except to include it in the key to the species of *Trochochaeta*. For synonymies, descriptions, and references, see Pettibone (1963b: 310, figs. 82a–f, 83a–g); Uschakov (1955:284, figs. 101A–D, 102A–H, as *Disoma multisetosum*); Banse and Hobson (1968:30, fig. 6g); Hartman (1969: 201, figs. 1–7, as *Disoma franciscanum*); and Hartmann-Schröder (1971:292, figs. 97c–e, 98a–p). The species is widely distributed in west Greenland, Iceland, North Atlantic (North Sea, western Baltic, Gulf of St. Lawrence to New England), and North



Pacific (north Japan Sea, Japan, Washington to Central California).

### Family TROCHOCHAETIDAE Pettibone, 1963

DISOMIDAE Mesnil, 1897 [part].

DISOMIDIDAE Chamberlin, 1919 [part].

The family, as defined by Mesnil (1897) and Chamberlin (1919), included *Disoma* Oersted, or *Disomides* Chamberlin, and *Poecilochaetus* Claparède. The latter genus was placed in a separate family Poecilochaetidae, by Hannerz (1956). Both families show relationships to the Spionidae, in which some of the species were grouped earlier, and to the Chaetopteridae. Following Hannerz, the family includes the single genus, *Trochochaeta*.

#### *Trochochaeta* Levinsen, 1883

*Disoma* Oersted, 1843. [Type-species: *Disoma multisetosum* Oersted, 1843, by monotypy; preoccupied by Ehrenberg, 1831, in Protozoa (see Neave, 1939), = *Trochochaeta multisetosa* (Oersted, 1843).]

*Trochochaeta* Levinsen, 1883. [Type-species: *Trochochaeta sarsi* Levinsen, 1883, by monotypy, = *Trochochaeta multisetosa* (Oersted, 1843).]

*Thaumastoma* Webster and Benedict, 1884. [Type-species: *Thaumastoma singulare* Webster and Benedict, 1884, by monotypy, = *Trochochaeta multisetosa* (Oersted, 1843).]

*Nevaya* McIntosh, 1911. [Type-species: *Nevaya whiteavesi* McIntosh, 1911, by monotypy, = *Trochochaeta multisetosa* (Oersted, 1843).]

*Disomides* Chamberlin, 1919. [New name for *Disoma* Oersted, preoccupied.]

**DIAGNOSIS.**—Sedentary, tubicolous, spioniform polychaetes. Body long, slender, subcylindrical, with numerous segments, divided into more or less distinct regions: short anterior thoracic, and long abdominal, changing gradually with some transitional segments. Prostomium small, fusiform, with median crest and caruncle extending posteriorly on first segment or beyond, with or without small median antenna, with or without 2–4 small eyes. Pair of long spioniform palps (readily deciduous) with longitudinal groove, lateral to prostomium. Parapodia of anterior two segments closely apposed, directed anteriorly and somewhat enclosing prostomium, tentacular palps and ventral mouth; with or without notosetae on segment 2. Proboscis ever-sible as thin-walled lobulated sac. Parapodia of

thoracic region biramous, with simple capillary notosetae and neurosetae and well developed postsetal lobes, subtriangular to lamelliform, with margins entire or serrated; fan-shaped group of heavy acicular neurosetae on segment 3 and sometimes also on segment 2. Beginning on segment 5, some neurosetae stouter, of various types—straight, lanceolate, acicular, smooth, spiny or hairy, curved subdistally with hairy limbate borders and fine tips. Abdominal region more slender, thin-walled, with notopodia lacking more anteriorly; neuropodia with few capillary and acicular neurosetae and subconical to digitiform postsetal lobes, extending posteriorly as thin flanges. Posterior abdominal region with notopodia in form of low mounds and few dark acicular spines, sometimes forming stellate structures. Pygidium thick, collar-like, slightly lobulate or with circle of anal cirri, and with terminal anus. Tube long cylindrical, formed of fine mud particles cemented together by secreted fibers.

**GENERAL CHARACTERISTICS OF THE FAMILY AND GENUS.**—The trochochaetids are sedentary, tubicolous polychaetes, living in fine sandy and muddy bottoms, where they form long, cylindrical-to-somewhat-flattened tubes of their own making by combining fibrous secretions with fine muddy particles. They evidently add to their tubes more or less continuously (see Thulin, 1921). The tubes and worms break easily and complete specimens are rather rare in collections. They are bottom-deposit feeders, making use of their long, paired, food-collecting tentacular palps. Early development appears to be entirely pelagic and the larvae are predominantly planktotrophic (see Hannerz, 1956).

**Body Form:** The body is long, slender subcylindrical, with numerous segments (up to 200), somewhat flattened dorsoventrally more anteriorly, and divided into more or less distinct regions: short anterior thoracic and long abdominal segments, separated by some transitional segments (Oersted, 1844, pl. 2: fig. 1). The prostomium is comparatively small and wedged between the anterior two segments, which are so closely allied that they have been interpreted by some authors as consisting of a single one. The long, paired, spioniform tentacular palps and ventral mouth are also enclosed by the two anterior segments (Figure 1a–d). The two following segments are somewhat modified relative to the more posterior thoracic ones. The anterior ab-

dominal segments differ slightly from the posterior ones, and the pygidium bears a terminal anus.

**Prostomium and Anterior Four Segments:** The prostomium (Figures 1a-d, 4a,b, 8a) is elongate-oval or fusiform, truncate, rounded, or slightly bilobed anteriorly, with 2-4 small eyes or eyes lacking, with a more or less well developed median crest, which extends posteriorly as a narrow caruncle on the first segment or beyond; a median antenna may be small (Figures 4a, 8a), filiform, or absent (Figure 1a). The long, paired, spioniform tentacular palps (readily deciduous and may be in varying stages of regeneration) are situated laterally between the prostomium and the parapodia of the first segment; the palps are large, cylindrical, with a longitudinal ciliated groove along the inner sides leading to the mouth region (Figure 1c,d). The parapodia of the first tentacular or buccal segment are lateral to the prostomium; they are biramous, projecting anteriorly and dorsally, with bundles of long capillary notosetae and neurosetae, and subconical postsetal lobes (sometimes referred to as tentacular cirri; Figure 2a,b); the segment is enlarged ventrally enclosing the large triangular mouth (Figures 1b,d, 4b). The pharynx or proboscis is eversible as an unarmed, lobulated, densely ciliated soft sac (Figure 1b,d). The second segment is closely apposed to the first, the ventral part contributing to the lower lip of the mouth; the biramous parapodia are shifted ventrally, enclosing the mouth region (Figure 1d); the postsetal lobes are similar to those of the first segment; notosetae are usually absent (Figures 2c,d, 6c, 9c,d) but are present in *T. watsoni* (Figure 4e,f); the neuropodia have fan-shaped bundles of usually smooth capillary neurosetae (Figure 4g) but there are bipinnate capillaries in *T. birula* (Figure 2e) and sometimes additional heavy acicular spines (Figures 6c,d, 9c-e). The third segment has postsetal lobes that are short, broad, oval, or flattened, with borders entire or serrated, with capillary notosetae; neuropodia are provided with dark, stout, acicular spines and few capillary neurosetae in vertical series (Figures 2f-h, 4h,i, 6e-h, 9f-j). Thus, segment 3 and sometimes segment 2 have specialized heavy projecting acicular spines. The fourth segment has postsetal lobes that are similar to those of the following segments, with capillary notosetae and neurosetae (Figures 2i,j, 4j,k, 6i-k, 9k-m).

**Remaining Thoracic Region** (Figures 3a-h, 5a-h, 7a-i, 10a-i): The notopodia have fan-shaped bundles of capillary notosetae. The neuropodial setal lobes are subcylindrical, with capillary lim-

bate neurosetae, and stouter neurosetae toward the central part of the bundle, of various types: straight, lanceolate, acicular, or curved, with striated border and erect fine tips; they may be variously provided with more or less frayed sheaths, which appear spiny or hairy. The postsetal lobes (sometimes referred to as dorsal and ventral cirri) are oval or platelike, with borders entire or serrated. The notopodial lobes become gradually smaller posteriorly and the notosetae decrease in number and may be absent on a few transitional segments.

**Abdominal Region and Pygidium:** The body wall becomes markedly thinner, delicate and more fragile, thus accounting for the difficulty of obtaining complete specimens. In the anterior abdominal region, the notopodial lobes and notosetae disappear, sometimes represented by small papillae on a few segments (Figures 3g,h, 10g,i). The neuropodial lobes become smaller, with only a few heavy acicular and a few capillary neurosetae (Figures 1g, 5i-k, 10j,k). The digitiform to subconical postsetal lobes continue posteriorly on each segment as thin, slightly undulate flanges or membranes (Figures 1e, 7k, 10j). Although not observed on all species (since most specimens are incomplete posteriorly), notopodia reappear in the more posterior abdominal segments in the form of low mounds armed with a bundle of few, dark, pointed acicular spines (Figures 1e,f, 7k,l; Hartman, 1947: fig. 1c). When withdrawn, only the tips of the notopodial spines project but they are visible through the thin body wall. When extended, they may appear as stellate or wheel-like organs, the structure to which the generic name *Trochochaeta* refers; these were described and figured by Levinsen (1883, pl. 2: fig. 6) for a specimen, named *T. sarsi*, which later turned out to be the posterior end of *Disoma multisetosum* Oersted. The posterior end is cylindrical, with a collar-like pygidium, more or less lobulated (Hartman, 1947, fig. 1c) or encircled by a variable number of anal cirri (Figure 1h). Ventrally, on the body segments on either side of the median line, there may be a few short retractile papillae (sometimes referred to as branchiae; Figure 8d; Levinsen, 1883, pl. 2: fig. 7; Hartman, 1947, fig. 1d).

### *Trochochaeta carica* (Birula), new combination

FIGURES 1-3

*Disoma carica* Birula, 1897:87, 99, pl. 10: fig. 1a-d.—Fauvel, 1916:3; 1932a:2, figs. 1,2; 1932b:24, pl. 1: figs. 12-18.—

Key to the Species of *Trochochaeta*

1. Thoracic postsetal lobes (beginning on segment 3) serrated or fimbriated (Hartman, 1947: figs. 1a,b, 2c,d; Pettibone, 1963b: figs. 82a-c, 83b-d; Hartmann-Schröder, 1971: figs. 97c, 98b-d). Prostomium with nuchal crest projecting on segment 1, without median antenna (Hartman, 1947: fig. 1a; Pettibone, 1963b: fig. 82a; Hartmann-Schröder, 1971: fig. 97c). Segment 2 without notosetae (Pettibone, 1963b: fig. 83a). Stout acicular neurosetae on segments 2 and 3 (Hartman, 1947: fig. 2b,c; Pettibone, 1963b: fig. 82a,b; Hartmann-Schröder, 1971: fig. 98a,b,e-h). Central group of stout neurosetae (beginning on segment 5) straight, lanceolate, acicular, with or without hairy sheaths (Hartman, 1947: fig. 3a-d; Pettibone, 1963b: fig. 83f,g; Hartmann-Schröder, 1971: fig. 98 1,m) ..... *T. multisetosa* (Oersted)  
Thoracic postsetal lobes entire, not serrated or fimbriated (Figures 1a,b, 8a,b) ..... 2
2. Stout acicular neurosetae on segments 2 and 3 (Figures 6c-f,h, 9c-g,i). Without notosetae on segment 2 (Figures 6c, 9c,d). Central group of stout neurosetae (beginning on segment 5) curved, with striated border (more or less frayed) and erect fine tips (Figures 7d, 10b,d,h).  
..... 3  
Stout acicular neurosetae on segment 3 (Figures 2f-h, 4h,i), not on segment 2 (Figures 2c-e, 4e,g). Prostomium with nuchal crest projecting on segment 1 (Figures 1a, 4a) ..... 5
3. Prostomium with nuchal crest extending on segment 2, and with filiform antenna (Fauvel, 1932c, fig. 29b). Thoracic postsetal lobes large, rounded (Fauvel, 1932c, fig. 29a,b). Abdominal acicular neurosetae without arista (Fauvel, 1932c, fig. 29m) ..... *T. orissae* (Fauvel)  
Prostomium with nuchal crest extending on segment 3 (Figure 8a). Thoracic postsetal lobes large, subrectangular (Figures 7a,e,f, 10a,c,e). Abdominal acicular neurosetae with arista, attached subterminally (Figures 7m, 10k) ..... 4
4. Prostomium with filiform antenna (Hoagland, 1920, pl. 51, fig. 9). Thoracic notopodial and neuropodial postsetal lobes wide, nearly contiguous (Figure 7a,e,f) ..... *T. diverapoda* (Hoagland)  
Prostomium with small subtriangular antenna, continuous with nuchal crest (Figure 8a). Thoracic notopodial and neuropodial postsetal lobes separated by wide gap (Figure 10a,c,e) ..... *T. kirkegaardi*, new species
5. Prostomium without median antenna (Figure 1a,c). Segment 2 without notosetae (Figure 2c,d), with long, curved, bispinous neurosetae (Figure 2e). Neuropodial postsetal lobes of thoracic region (beginning on segment 5) low, subrectangular (Figure 3a,c-e); central group of stout neurosetae straight, lanceolate, acicular (Figure 3b) ..... *T. carica* (Birula)  
Prostomium with small conical median antenna (Figure 4a). Segment 2 with well developed bundle of notosetae (Figure 4e), with long, smooth neurosetae (Figure 4f). Neuropodial postsetal lobes of thoracic region (beginning on segment 5) thick, fleshy, subconical (Figure 5a,b,d-f); central group of stout neurosetae curved, with striated limbate borders (more or less frayed) and erect fine tips (Figure 5c,g) ..... *T. watsoni* (Fauvel)

Uschakov, 1955:284, fig. 100A-C.—Hartman, 1947:162; 1959:394.

MATERIAL EXAMINED.—Kara Sea: East coast of Ob Bay, 26.6 km NE of Cape Droviya, 19 m, sandy mud, 11 August 1896, A. Birula, collector, holotype (ZIASL 2/25892).

New Brunswick: Kennebecasis River, Saint John River Estuary, about 12 m, mud, 18 June 1972, M. L. H. Thomas, collector, 2 specimens (USNM 51933). Forrester Cove, Kennebecasis River, 23 m, June to August 1973, P. Steer, collector, 10 specimens (USNM 51934; ZIASL).

Gulf of Maine: *Verrill* Cruise 67-53, 31 July/1 August 1967, R. Hessler, collector: Murray Basin, 42°25.5' to 42°29.5' N, 69°45.2' to 69°48.9' W, 239-276 m, sta. 1,2,5-78 specimens, including many small ones (USNM 51937-9). Wilkinson Basin, 42°32' to 42°33.8' N, 69°31.3' to 69°32.1' W, 278-280 m, sta. 6,7-85 specimens, including mostly small ones (USNM 51940/1). Platts Basin, 43°24' N, 69°31.4' W, 163 m, sta. 9-3

small specimens (USNM 51942). NW Wilkinson Basin, 43°10.7' N, 69°48.9' W, 172 m, sta. 11-6 small specimens (USNM 51943).

New England: 41°11' N, 66°12' W, 913 m, *Albatross* sta. 2078, 4 September 1883, 1 specimen (USNM 51935). 40°42' N, 66°33' W, 1558 m, *Albatross* sta. 2531, 14 July 1885, 1 specimen (USNM 51936).

DESCRIPTION.—Body long, slender, divided into short, flattened, wider thoracic region and long, more slender abdominal region, with few transitional segments. Length of incomplete holotype of 27 segments 10 mm, greatest width 2.5 mm, including setae. Length of complete specimen from New Brunswick (USNM 51934) 40 mm, greatest width in thoracic region 2 mm, including setae,

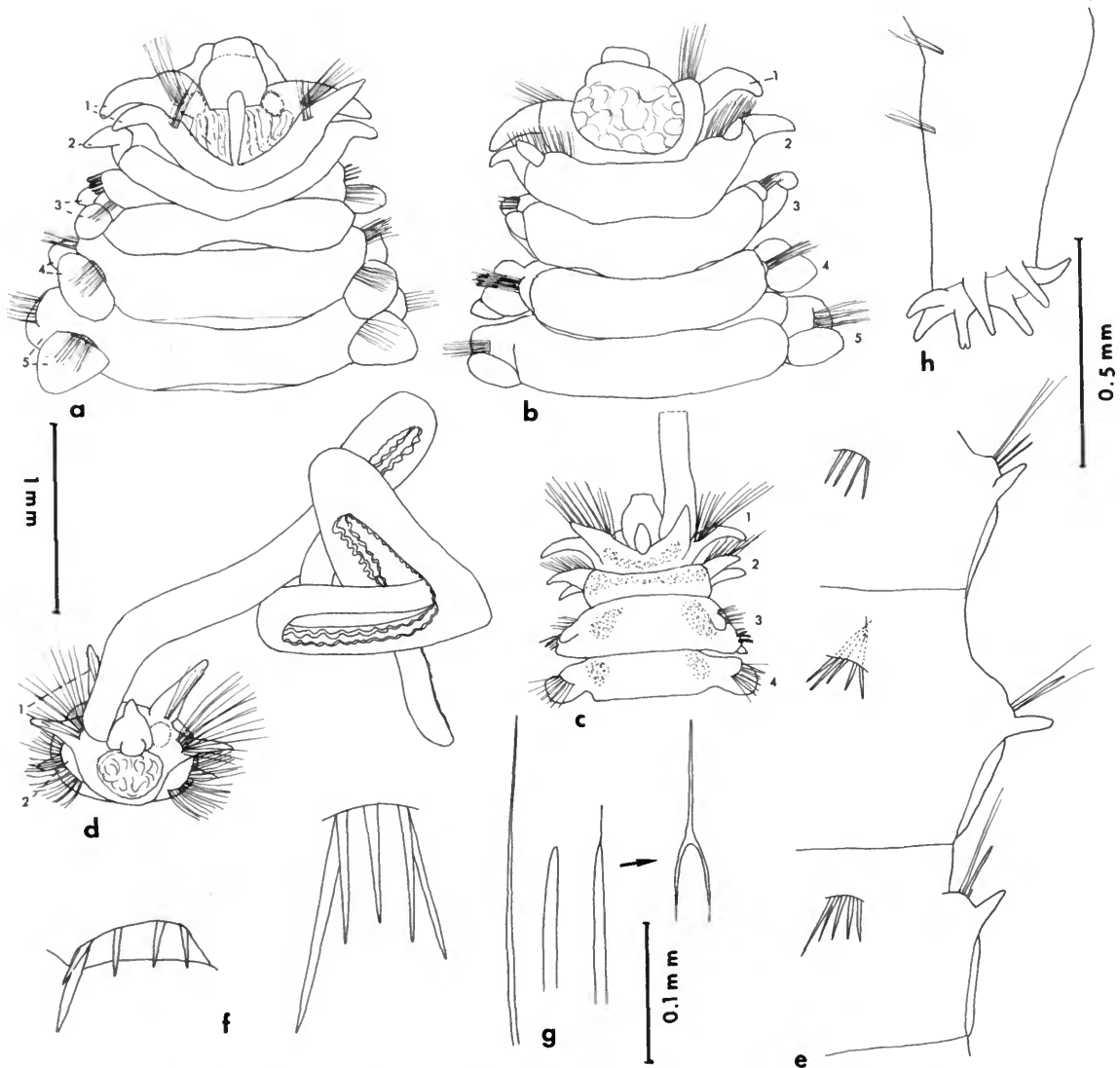


FIGURE 1.—*Trochochaeta carica* (a,b, USNM 51936; c-h, USNM 51934): a, anterior end, dorsal view, tentacular palps missing; b, same, ventral view, pharynx partially extended; c, anterior end, dorsal view; base of right tentacular palp shown, left one missing; d, frontal view of anterior end, showing prostomium, partially extended pharynx, right tentacular palp (left one missing), and parapodia of first two segments; e, three right parapodia from posterior abdominal region, dorsal view; f, two groups of notosetae from same; g, three neurosetae from same, with detail of tip; h, posterior end, lateral view.

segments 130. Length of incomplete specimen of 24 segments from off New England (USNM 51936) 8 mm and 3 mm wide, including setae.

Prostomium (Figure 1a-d) small, oval to fusi-form, narrowing anteriorly to more or less distinct

shield-shaped, truncate part, with nuchal crest on posterior half, projecting on first segment (referred to as median antenna by Fauvel); without eyes. Pair of tentacular palps wedged between prostomium and parapodia of first segment; palps long,



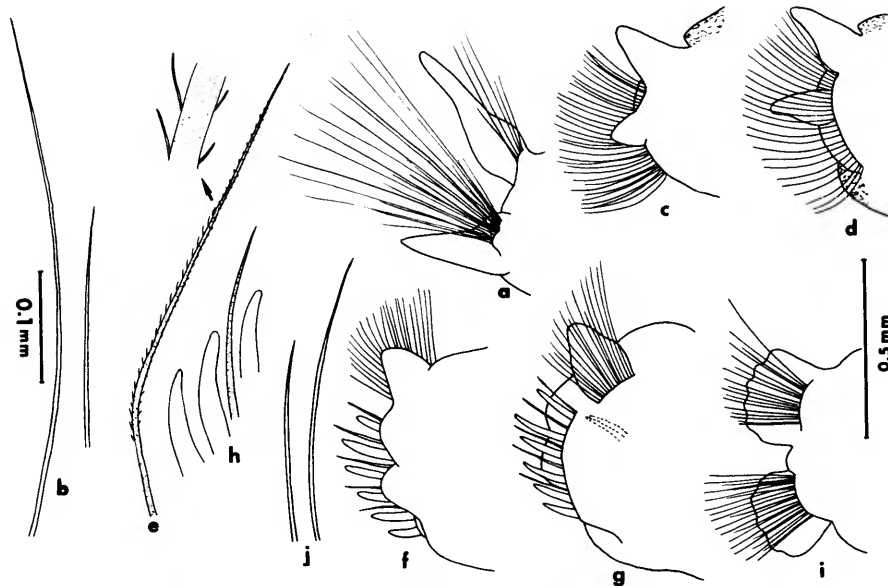


FIGURE 2.—*Trochochaeta carica* (USNM 51934): *a*, right first parapodium, anterior view; *b*, two neurosetae from same; *c*, left parapodium 2, posterior view; *d*, right parapodium 2, anterior view; *e*, neuroseta from same, with detail of small portion; *f*, left parapodium 3, posterior view; *g*, right parapodium 3, anterior view; two replacement neurosetae dotted; *h*, four neurosetae from same; *i*, right parapodium 4, anterior view; *j*, two neurosetae from same.

thick, cylindrical, with longitudinal ciliated groove along inner side; one or both palps usually missing on preserved specimens. Mouth on ventral side of first or peristomial segment. Pharynx eversible as ciliated lobulated sac (Figure 1*b,d*).

Anterior four segments of thoracic region with considerably modified biramous parapodia, differing from one another (Figures 1*a-d*, 2*a-f*).

First or peristomial segment (Figure 1*a-d*, 2*a,b*) with parapodia shifted dorsally, directed anteriorly and enclosing prostomium; notopodial and neuropodial lobes indistinct, with short and long, slender, smooth capillary setae; notosetae relatively few (about 8); neurosetae numerous, forming fan-shaped spreading bundles; notopodial and neuropodial postsetal lobes elongate, subulate, wider basally.

Second segment (Figures 1*a-d*, 2*c-e*) with parapodia shifted ventrally, lateral to mouth; notosetae lacking; neuropodial setal lobe low, wide, with fan-shaped bundle of numerous, slender, capillary neurosetae of 2 kinds—row of smooth shorter ones and row of longer, curved, bispinous ones with

dotted stems (Figure 2*e*); postsetal lobes subconical, notopodial somewhat larger than neuropodial.

Third segment (Figures 1*a,b*, 2*f-h*) with parapodia lateral; notopodial lobe low, with fan-shaped bundle of smooth capillary neurosetae, short anterior row and longer posterior row, with subconical postsetal lobe; neuropodial lobe wide, low, with fan-shaped bundle of 6 stout, curved, smooth acicular neurosetae, alternating with 5 short, slender, dotted capillary neurosetae (Figure 2*h*); replacement acicular neurosetae in process of formation visible in upper part of bundle (Figure 2*g*); postsetal neuropodial lobe low, bilobed, rounded.

Fourth segment (Figures 1*a,b*, 2*i,j*) with parapodia lateral, with similar notopodial and neuropodial lobes; setal lobes low, rounded, with smooth capillary setae, anterior row of short ones and posterior row of longer ones (Figure 2*j*); postsetal lobes subrectangular, with outer margins slightly undulate.

Following 9 (holotype) to 11 thoracic segments (segments 5 to 13 or 15) similar, with lateral biramous parapodia (Figures 1*a,b*, 3*a-f*). Notopodial

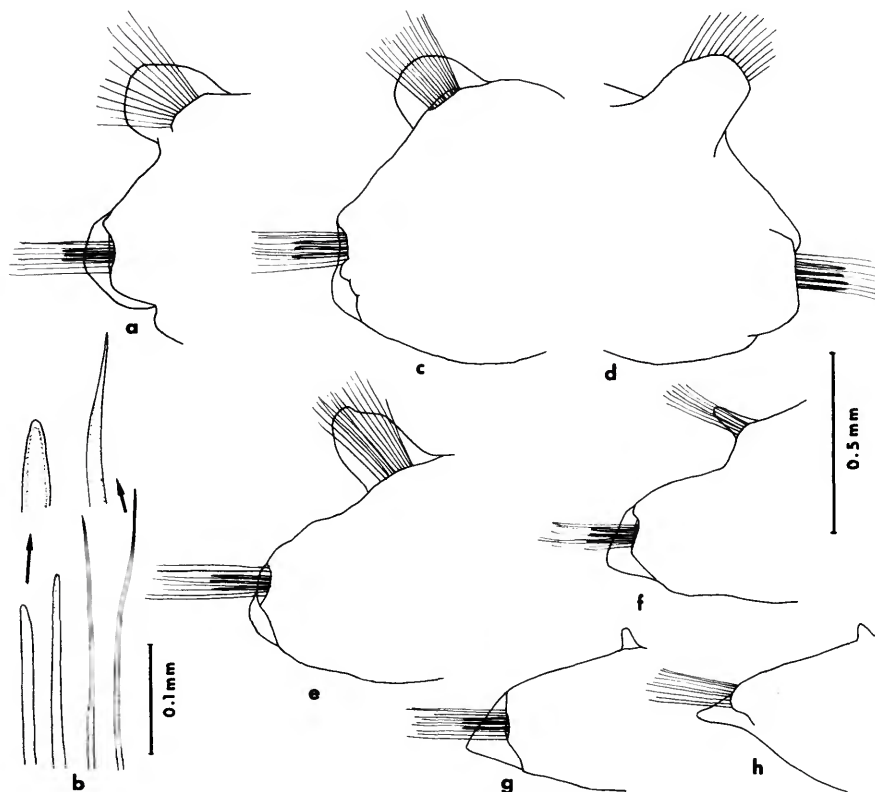


FIGURE 3.—*Trochochaeta carica* (USNM 51934): *a*, right parapodium 5, anterior view; *b*, four neurosetae from same, with detail of tips; *c*, right parapodium 7, anterior view; *d*, right parapodium 8, posterior view; *e*, right parapodium 12, anterior view; *f*, right parapodium 15, anterior view; *g*, transitional right parapodium 16, anterior view; *h*, transitional right parapodium 17, anterior view.

setal lobes low, rounded, with smooth, limbate capillary notosetae, anterior row of shorter ones and posterior row of longer ones. Notopodial post-setal lobes wide, subconical more anteriorly, to small, digitiform (on segment 15; Figure 3*f*). Neuropodial setal lobes short, subcylindrical, with compact bundles of neurosetae, of 2 kinds: shorter, stout, acicular, smooth or dotted, with blunt tips, found in central part of bundle; and longer, limbate capillaries, sometimes frayed and appearing hairy or spinous (Figure 3*b*). Neuropodial post-setal lobes short, subrectangular, extending only slightly beyond setal lobes.

Segments 14 and 15 (holotype) or 15 and 16 transitional, with notopodia absent, except for small papillae; neuropodia smaller than preceding

ones, with fewer neurosetae and subconical post-setal lobes (Figure 3*g,h*).

Abdominal region, beginning about segment 18, long, flattened, thin-walled. Notopodia and notosetae absent on anterior abdominal segments. Neuropodial lobes small, rounded, with few (2–3), slender, nonlimbate, capillary neurosetae and few (1–3), stouter acicular neurosetae, with or without terminal sheath projecting as fine thread (Figure 1*g*); some acicular neurosetae mostly buried, with only terminal sheaths projecting; postsetal neuropodial lobes digitiform, continuing posteriorly as delicate, flattened, longitudinal flanges (Figure 1*e*). Beginning about segment 26, notopodia with 2–5, stout pointed spines, arranged in arc, projecting from slightly raised mounds on dorsum and



directed posteriorly (Figure 1e,f); notopodial spines sometimes withdrawn, except for tips, but visible through transparent body wall. Small papillae (or branchiae), one pair per segment, present on each side of midventral line in posterior abdominal region. Posterior end cylindrical, with terminal anus encircled by filiform anal cirri (4–8; Figure 1h). Tubes cylindrical, rather thick-walled, soft, compact, muddy.

**BIOLOGY.**—According to the information given by M. L. H. Thomas and Patricia Steer, the specimens of *T. carica* in the Saint John River Estuary have their maximum density in 23 meters, with temperature of 9°C and salinity of approximately 18‰. They are the dominant form and number several thousand per square meter in some low salinity locations.

**REMARKS.**—*Trochochaeta carica* was described by Birula and Fauvel from anterior fragments only. The posterior abdominal region and pygidium are described herein for the first time. *Trochochaeta carica* agrees with *T. multisetosa* in having stout notopodial spines and ventral papillae or branchiae in the abdominal region; however, the notopodial spines are arranged in an arc in the former, rather than emerging, as in the latter, from a central place and appearing stellate. The ventral papillae appear to be fewer in number in *T. carica* than in *T. multisetosa*—a single pair per segment, instead of up to three or four pairs.

Fauvel (1916, 1932a,b) treated *Nevaya whiteavesi* McIntosh, 1911, from the Gulf of St. Lawrence, as a synonym of *Disoma carica*, and was followed by Uschakov (1955) and Hartman (1959). Based on the original description, however, McIntosh's species was referred to *Trochochaeta multisetosa* (Oersted) by Pettibone (1963b:310). A recent examination of the type (consisting of an anterior fragment in poor condition) of *Nevaya whiteavesi* (BMNH 1921: 5: 1: 4567) revealed that the thoracic postsetal lobes are serrated, as in *T. multisetosa*, and not entire, as in *T. carica*.

**DISTRIBUTION.**—Bering Sea, Kara Sea, New Brunswick to New England, in 12 to 1558 m.

### *Trochochaeta watsoni* (Fauvel)

FIGURES 4, 5

*Disoma watsoni* Fauvel, 1916:1, fig. 1a–i; 1932b:28, pl. 1: figs.

8–11.—Belloc, 1953:6.—Hartman, 1965:159, pl. 32: figs. c–f.—Hartman and Fauchald, 1971:107.

*Trochochaeta watsoni*.—Pettibone, 1963b:315, fig. 83h–k.

**MATERIAL EXAMINED.**—New England: 41°13'N, 66°W, 1657 m, blue mud, *Albatross* sta. 2076, 4 September 1883, 2 anterior fragments (USNM 28953). 40°16'N, 67°05'W, 2359 m, *Albatross* sta. 2084, 5 September 1883, 12 anterior fragments (USNM 51929).

**DESCRIPTION.**—Length of incomplete specimen of 25 segments (USNM 51929) 5 mm, width 2 mm, including setae. Prostomium (Figure 4a,b) elongate, fusiform, wide and rounded or slightly bilobed anteriorly, with longitudinal crest and small conical median antenna on posterior part (keeled, according to Fauvel), with nuchal crest extending posteriorly on first segment; without eyes. Tentacular palps missing but oval bases visible between prostomium and parapodia of first segment.

Biramous parapodia of anterior four segments of thoracic region considerably modified, differing from one another (Figure 4a–k). Parapodia of first segment shifted dorsally and directed anteriorly, partly enclosing prostomium; notopodial and neuropodial lobes with short and longer, slender, smooth, capillary setae forming spreading bundles, notosetae fewer and shorter than neurosetae; notopodial postsetal lobes elongate, lanceolate (Figure 4a–d). Parapodia of second segment shifted ventrally, lateral to mouth; notosetae slender, capillary, smooth, forming spreading bundles (Figure 4f); neurosetae stouter than notosetae, forming fan-shaped bundles, anterior row of stouter and posterior row of slightly more slender ones, both types slightly limbate, dotted and ending in curved fine tips (Figure 4g; stouter ones referred to as subacicular by Fauvel); notopodial and neuropodial postsetal lobes subconical, latter shorter than former (Figure 4a,b,e). Third segment with notopodia similar to those of second segment; neuropodial setal lobes low, wide, with fan-shaped bundles of neurosetae, anterior row of 4–6 stout acicular spines with blunt tips and posterior row of slender, curved neurosetae with fine tips (Figure 4i); postsetal lobes subglobular, shorter than notopodial (Figure 4a,b,h). Fourth segment with similar low, rounded notopodial and neuropodial lobes; notosetae slender, smooth capillary, forming spreading bundles; postsetal notopodial lobes thick, fleshy, and subconical; neurosetae shorter and slightly stouter than notosetae, slightly lim-

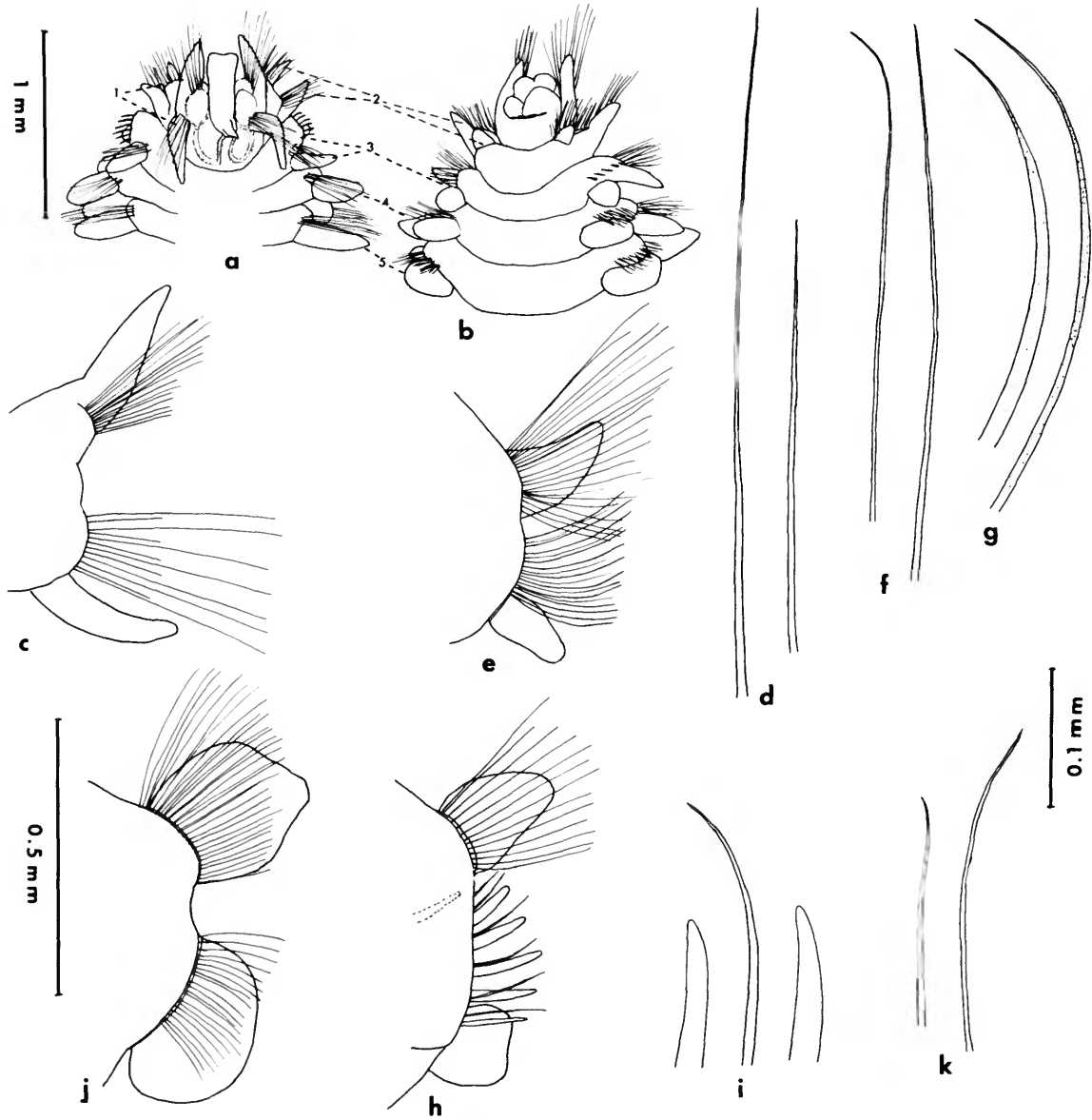


FIGURE 4.—*Trochochaeta watsoni* (USNM 51929): *a*, dorsal view of anterior end, tentacular palps missing; *b*, same, ventral view, pharynx partially extended; *c*, left first parapodium, anterior view; *d*, two neurosetae from same; *e*, left parapodium 2, anterior view; *f*, two notosetae from same; *g*, two neurosetae from same; *h*, left parapodium 3, anterior view; replacement neuroseta dotted; *i*, three neurosetae from same; *j*, left parapodium 4, anterior view; *k*, two neurosetae from same.

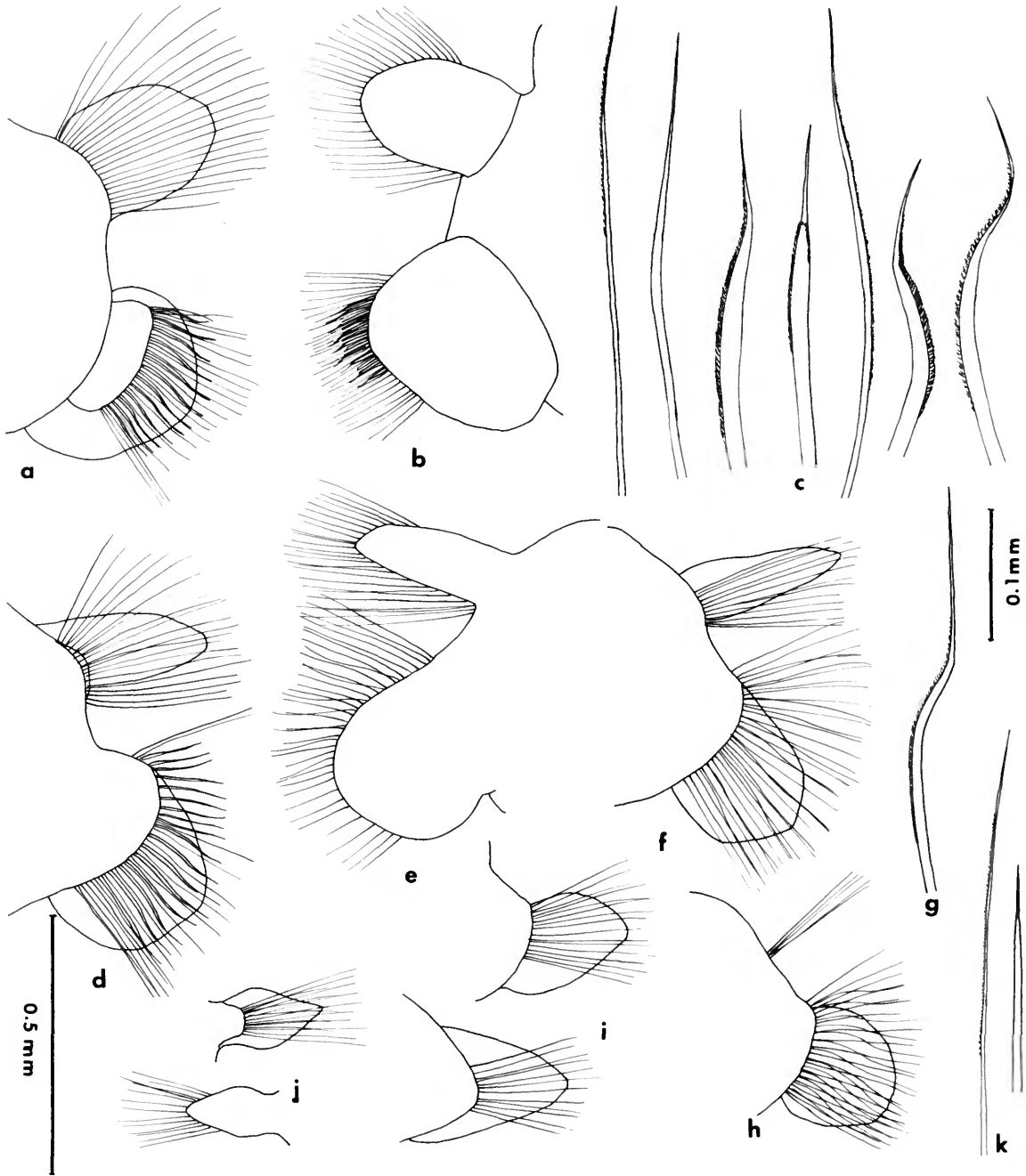


FIGURE 5.—*Trochochaeta watsoni* (USNM 51929): a, left parapodium 5, anterior view; b, left parapodium 6, posterior view; c, seven neurosetae from same; d, left parapodium 8, anterior view; e, left parapodium 9, posterior view; f, left parapodium 10, anterior view; g, neuroseta from same; h, left parapodium 11, anterior view; i, two left parapodia from anterior abdominal region (segments 12-15), anterior view; j, two left parapodia from anterior abdominal region (segments 24, 25), anterior and posterior views; k, two neurosetae from same.

bate, tapering rather abruptly to capillary tips (Figure 4*k*); postsetal neuropodial lobes thick, fleshy, and subrectangular (Figure 4*a,b,j*).

Following 7 thoracic segments (segments 5–11) similar, with lateral biramous parapodia (Figures 4*a,b*, 5*a–h*). Notopodial setal lobes low, rounded, with slender, slightly limbate, delicately frayed, capillary notosetae; postsetal lobes thick, fleshy, subconical, becoming more slender on segments 8–10 and lacking on segment 11, associated with smaller bundles of notosetae (Figure 5*h*). Neuropodial setal lobes low, rounded, with neurosetae of 2 kinds: central group of stout, curved, broadly limbate, more or less frayed, with erect fine tips; upper, posterior and lower ones longer, slender, slightly limbate, delicately frayed, capillary (Figure 5*c*); postsetal lobes thick, fleshy, and subconical to oval.

Abdominal region (Figure 5*i–k*) beginning on segment 12, with notopodia lacking; neurosetae of 2 kinds: slightly stouter, tapering rather abruptly to capillary tips, and more slender, slightly limbate, frayed, capillary (Figure 5*k*); postsetal lobes subconical, continuing posteriorly as delicate, slightly undulate flanges. Posterior abdominal region missing.

REMARKS.—The specimens from the southwest coast of India, identified by Achari (1969) as *T. watsoni*, appear to differ from the North Atlantic specimens: on segment 2, notosetae were lacking and stout acicular neurosetae were present; the prostomium lacked a median antenna and 4 small eyes were present. They appear to resemble more closely *T. orissae* (Fauvel), described from the east coast of India.

DISTRIBUTION.—North Atlantic, off Nova Scotia to off New England, in 530 to 3753 m.

### *Trochochaeta diverapoda* (Hoagland)

FIGURES 6, 7

*Aonides diverapoda* Hoagland, 1920:620, pl. 51: figs. 9–12.  
*Trochochaeta diverapoda*.—Pettibone, 1963a:91.

MATERIAL EXAMINED.—Philippine Islands: Taratara Island, off western Samar, 37 m, green mud, *Albatross* sta. D5209, 14 April 1908, 2 syntypes (USNM 18961).

As indicated by Pettibone (1963a:91) when the types of *Aonides diverapoda* (USNM 18961) were

examined, the two syntypes were found to be in poor condition but nevertheless clearly referable to the genus *Trochochaeta*. A note in the vial reads: "These annelids were not in this dried condition when the description was made," indicating that they were allowed to dry sometime before being deposited in the collections of the USNM. The prostomium and abdominal region are in particularly poor condition; fortunately, the former was figured by Hoagland. The parapodia of the thoracic region are in fair condition and are figured and described below. Hoagland confused the second segment with the first.

DESCRIPTION.—Width up to 3 mm, according to Hoagland. Prostomium (Hoagland, 1920, pl. 51: fig. 9) oval, truncate anteriorly, with filiform medial antenna and nuchal ridge extending posteriorly as sinuous filament to anterior border of segment 4; without eyes. Tentacular palps long and slender.

Biramous parapodia of anterior four segments of thoracic region considerably modified, differing from one another (Figure 6*a–k*). Parapodia of first segment shifted dorsally and directed anteriorly, partly enclosing prostomium; notopodial and neuropodial lobes with shorter and longer, slender, smooth and hairy, capillary setae; notosetae fewer and shorter than neurosetae; notopodial and neuropodial postsetal lobes elongate, lanceolate (Figure 6*a,b*). Parapodia of segment 2 shifted ventrally, lateral to mouth (overlooked as distinct segment by Hoagland); notosetae lacking; neuropodial setal lobes low, wide, with fan-shaped bundles of neurosetae, anterior row of 13 stout, acicular, with blunt tips and posterior one of 10 slightly more slender, tapering distally to fine tips; notopodial and neuropodial postsetal lobes subconical (Figure 6*c,d*). Parapodia of segment 3 (segment 2, according to Hoagland) with shorter and longer, slender, smooth and hairy, capillary notosetae, with elongate, subulate postsetal notopodial lobes; neuropodial setal lobes wide, rounded, with fan-shaped bundles of neurosetae, anterior row of 9 stout, dark reddish, acicular spines and posterior one of 7 more slender neurosetae, stouter basally, curved dorsally, limbate and hairy, tapering distally to fine tips; neuropodial postsetal lobes wide, low, rounded (Figure 6*e–h*). Parapodia of segment 4 (segment 3, according to Hoagland) with similar low, wide, rounded notopodial and neuropodial

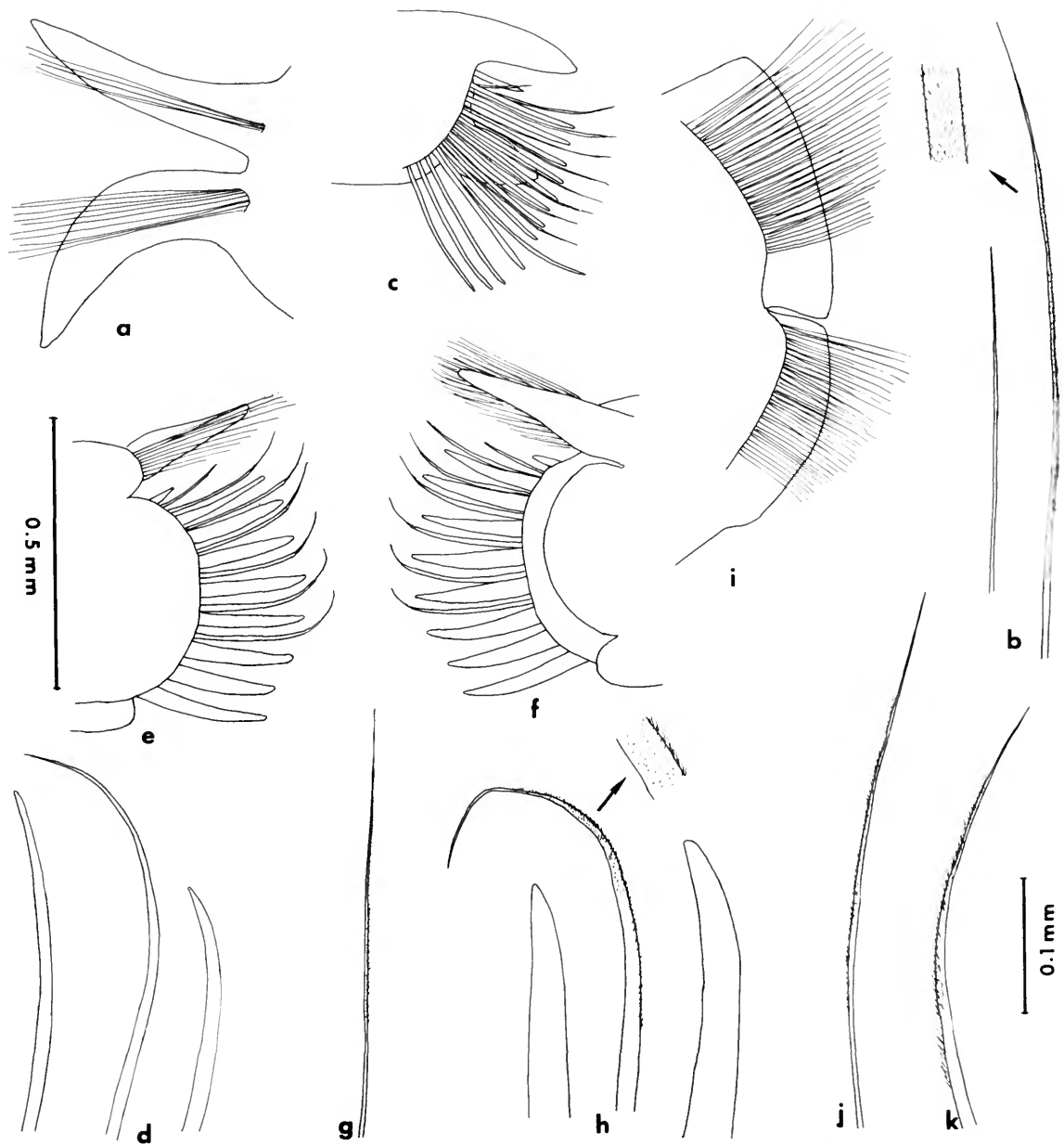


FIGURE 6.—*Trochochaeta diverapoda* (syntype of *Aonides diverapoda*, USNM 18961): a, right first parapodium, anterior view; b, two neurosetae from same, with detail of small portion; c, left parapodium 2, anterior view; d, three neurosetae from same; e, left parapodium 3, anterior view; f, same, posterior view; g, notoseta from same; h, three neurosetae from same, with detail of small portion; i, left parapodium 4, anterior view; j, notoseta from same; k, neuroseta from same.



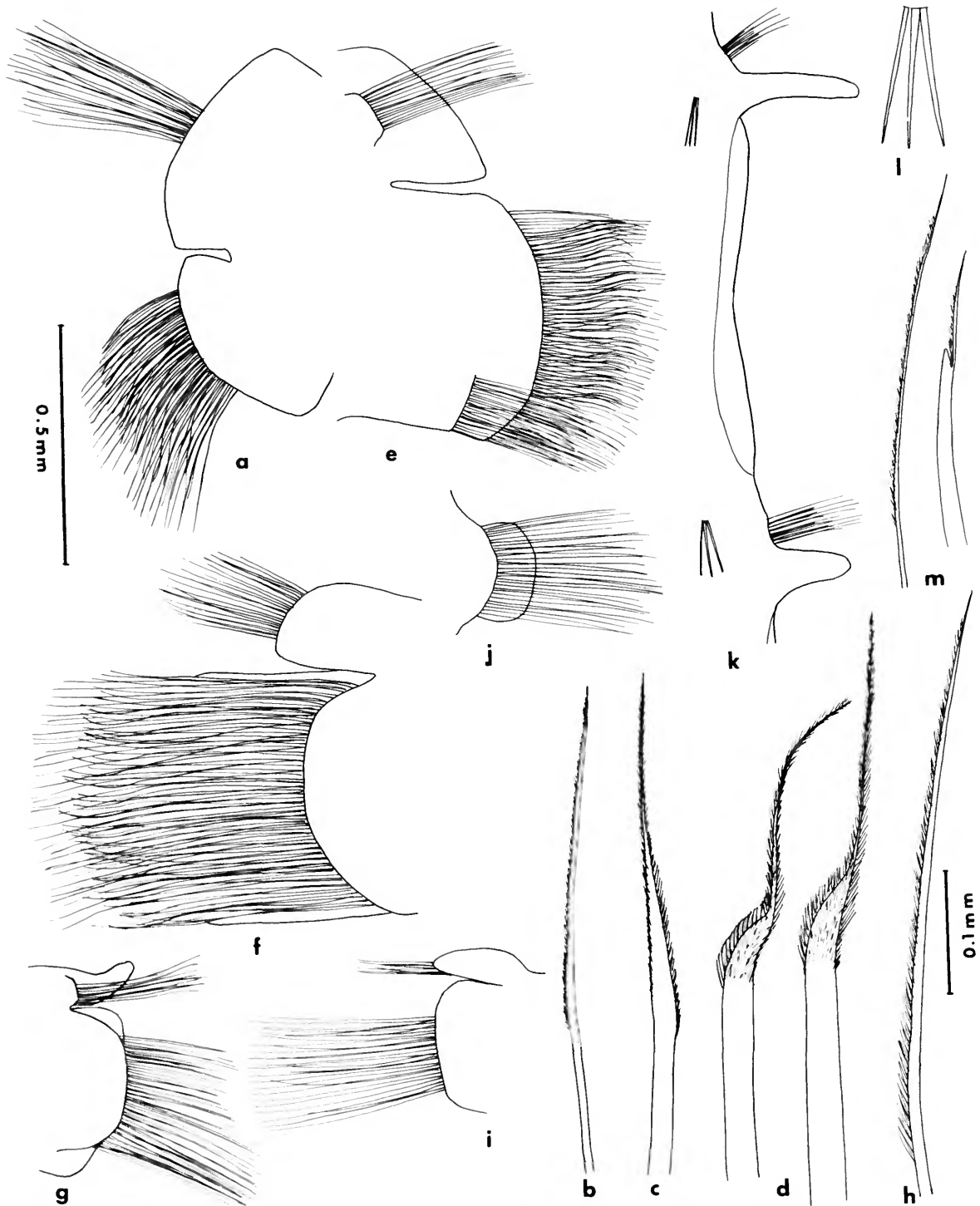


FIGURE 7.—*Trochochaeta diverapoda* (syntype of *Aonides diverapoda*, USNM 18961): a, left parapodium 5, posterior view; b, notoseta from same; c, longer neuroseta from outer row of same; d, two shorter neurosetae from inner row of same; e, left parapodium 6, anterior view; f, left parapodium 7, posterior view; g, left parapodium 9, anterior view; h, neuroseta from same; i, left parapodium 10, posterior view; j, left anterior abdominal parapodium (segment 11), anterior view; k, two right parapodia from posterior abdominal region, dorsal view; l, notosetae from same; m, two neurosetae from same.



setal lobes, with wide bundles of numerous, slender, hairy, capillary notosetae and neurosetae, latter shorter and stouter than former, with longer hairs; postsetal lobes wide, subrectangular (Figure 6*i-k*).

Following 6 thoracic segments (segments 5–10) similar, with lateral biramous parapodia (Figure 7*a-i*). Notopodial setal lobes short, cylindrical, with cylindrical bundles of numerous, slender, limbate and hairy, capillary notosetae (Figure 7*b*; small bundles on segments 9 and 10); notopodial postsetal lobes wide, subrectangular on segment 5 (Figure 7*a*), narrower, subrectangular on segment 6 (Figure 7*e*), narrower and subconical on following thoracic segments (Figure 7*f,g,i*). Neuropodial setal lobes low, wide, with fan-shaped bundles of stout neurosetae, several rows thick. Neurosetae stout, wider basally, with hairy distal tips, those of inner rows slightly stouter, and more strongly curved (Figure 7*d*) than those of outer rows (Figure 7*c*); heavy curved type lacking on segments 9 and 10 (Figure 7*h*). Neuropodial postsetal lobes low, subrectangular.

Segments 11 and 12 transitional (Figure 7*j*), with notopodia lacking; neurosetae slender, limbate, hairy. Anterior abdominal segments lacking notopodia; more posteriorly, segments provided with few (3 or more?), dark, pointed, acicular notosetae (Figure 7*k,l*). Neuropodia with about 5 stout, acicular neurosetae with whiplike hairy appendages (Figure 7*m*) and about 8 slender, limbate, hairy, capillary ones. Neuropodial postsetal lobes digitiform to subconical, with delicate flanges extending posteriorly (Figure 7*k*).

DISTRIBUTION.—Philippine Islands, in 37 m.

#### *Trochochaeta orissae* (Fauvel)

*Disoma orissae* Fauvel, 1932c:174, fig. 29*a-m*; 1953:327, fig. 172*a-m*.—Hartman, 1947:162; 1959:174.—Dampdaram, 1973: 36, 41, 43, 45, 47, 49, 51, 53, 55.

*Trochochaeta orissae*.—Achari, 1969:99.

?*Trochochaeta watsoni*.—Achari, 1969:100, fig. 1*A-L* [not Fauvel, 1916].

REMARKS.—No specimens of this species were available for study. *Disoma orissae* was described by Fauvel (1932c) from a single anterior fragment from off Puri, Orissa, on the east coast of India, in 8 meters. The description is lacking in some significant details and needs to be supplemented by examination of additional material from the Indian Ocean, as well as the holotype, if available.

Dampdaram (1973) reported *D. orissae* as abundant on the Kerala coast on southwest India, in 4 to 21 meters, but without description.

Achari (1969) described two specimens from north of Ernakulam, along the southwest coast of India, in 27 to 44 meters, and referred them to the North Atlantic *Trochochaeta watsoni* (Fauvel). Except for the absence of a median antenna on the prostomium, the description and figures appear to agree more closely with *T. orissae*, than with *T. watsoni*.

The specimens from West Africa, recorded by Kirkegaard (1959:26) as *Disoma orissae*, were examined and are referred herein to a new species, *Trochochaeta kirkegaardii*.

DISTRIBUTION.—East and southwest coasts of India, in 4 to 55 m.

#### *Trochochaeta kirkegaardii*, new species

FIGURES 8-10

*Disoma orissae*.—Kirkegaard, 1959:26 [not Fauvel, 1932].

MATERIAL EXAMINED.—West Africa, *Atlantide* Expedition (as *Disoma orissae* by Kirkegaard, 1959): off Liberia, 06°03'N, 10°25'W, 44 m, sta. 55, 8 January 1946, paratype (UZMC); off Gold Coast, 05°37'N, 0°35'E, 150–175 m, sta. 84, 30 January 1946, holotype (UZMC); off Nigeria, 04°01'N, 07°56'E, 66 m, sta. 116, 23 February 1946, paratype (UZMC).

DESCRIPTION.—Body long, slender, divided into short, flattened, wider thoracic region and long, cylindrical, more slender abdominal region (Figures 8*a-d*). Length of incomplete holotype of 60 segments (anterior and two middle fragments) 24 mm, greatest width in thoracic region 2 mm, including setae. Length of incomplete paratype (sta. 55, off Liberia) of 43 segments 15 mm, width 1 mm. Length of incomplete paratype (sta. 116, off Nigeria) of 25 segments 12 mm, width 3 mm.

Prostomium (Figure 8*a*) small, fusiform, narrowing and truncate anteriorly, with nuchal crest beginning anteriorly as small subtriangular median antenna and continuing posteriorly on segment 3; without eyes. Pair of tentacular palps wedged between prostomium and parapodia of first segment; palps ribbon-like, long (about 16 mm in length on holotype, free in vial; missing on paratypes).

Anterior four segments of thoracic region with modified biramous parapodia, differing from one another (Figures 8*a,b*, 9*a-m*).

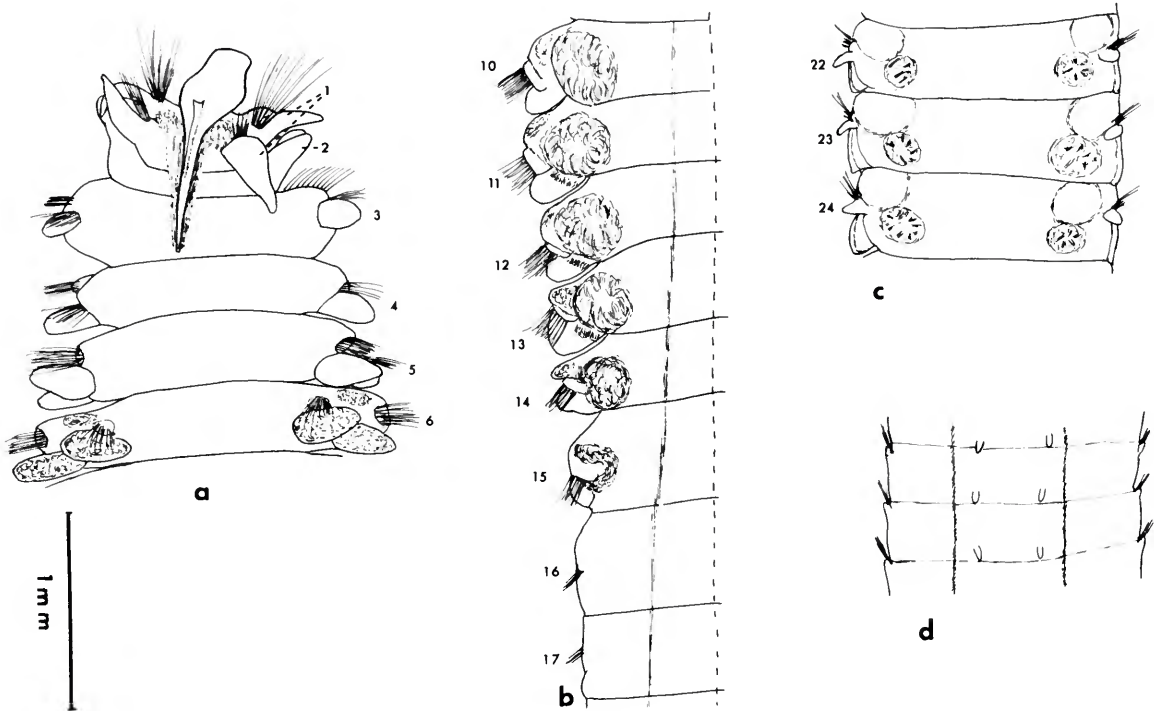


FIGURE 8.—*Trochochaeta kirkegaardi*, new species (holotype, UZMC): *a*, dorsal view of anterior end, tentacular palps not shown, shaded parts on segment 6 indicating reddish glandular areas; *b*, ventral view of right side of segments 10–17, shaded parts indicating reddish-brown glandular areas; *c*, dorsal view of segments 22–24 (anterior abdominal), shaded parts indicating brownish glandular areas; *d*, ventral view of three segments in abdominal region, showing ventral papillae.

First or peristomial segment (Figures 8*a*, 9*a,b*) with parapodia shifted dorsally, directed anteriorly and enclosing prostomium; notopodial and neuropodial lobes indistinct, with short and longer, slender, smooth capillary setae (Figure 9*b*); notosetae relatively few (about 10); neurosetae numerous, forming fan-shaped spreading bundles; notopodial and neuropodial postsetal lobes elongate, subulate, wider basally.

Second segment (Figures 8*a*, 9*c–e*) with parapodia shifted ventrally, lateral to mouth; notosetae lacking but with subconical notopodial lobe; neuropodial setal lobe low, wide, with fan-shaped group of acicular neurosetae (about 8), alternating with equal number of more slender capillary neurosetae, both types curving dorsally (Figure 9*e*); postsetal neuropodial lobe oval, much smaller than notopodial.

Third segment (Figures 8*a*, 9*f–j*) with parapodia lateral; notopodial lobe low, with fan-shaped bundle of smooth capillary notosetae (Figure 9*h*), shorter anterior row and longer posterior row, and with suboval postsetal lobe; neuropodial lobe wide, low, with fan-shaped bundle of stout, reddish amber-colored acicular neurosetae (about 5), alternating with equal number of slender, curved capillary neurosetae, both types curving dorsally (Figure 9*i*); postsetal neuropodial lobe suboval, similar to notopodial. Right third parapodium of holotype (Figure 9*j*) differing from that on left side (Figure 9*f,g*), with more numerous neurosetae (9 acicular, light amber-colored, and 9 capillary, resembling those of segment 2) and smaller bundle of notosetae. Parapodia of third segment on two paratypes symmetrical and not asymmetrical, as on holotype.

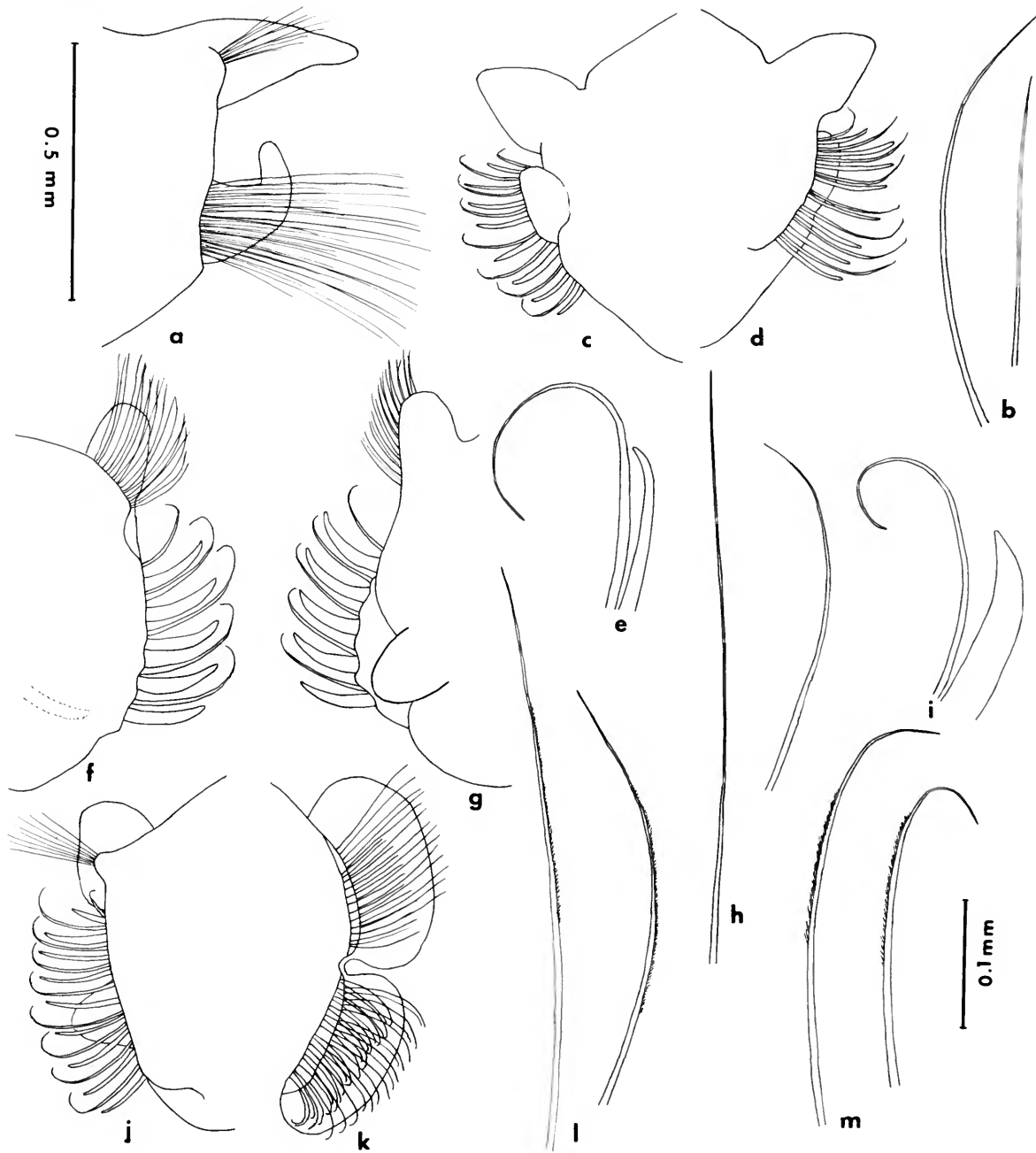


FIGURE 9.—*Trochochaeta kirkegaardii*, new species (holotype, UZMC): *a*, left first parapodium, anterior view; *b*, two neurosetae from same; *c*, left parapodium 2, posterior view; *d*, same, anterior view; *e*, two neurosetae from same; *f*, left parapodium 3, anterior view; replacement neuroseta dotted; *g*, same, posterior view; *h*, two notosetae from same; *i*, two neurosetae from same; *j*, right parapodium 3, anterior view; *k*, left parapodium 4, anterior view; *l*, two notosetae from same; *m*, two neurosetae from same.

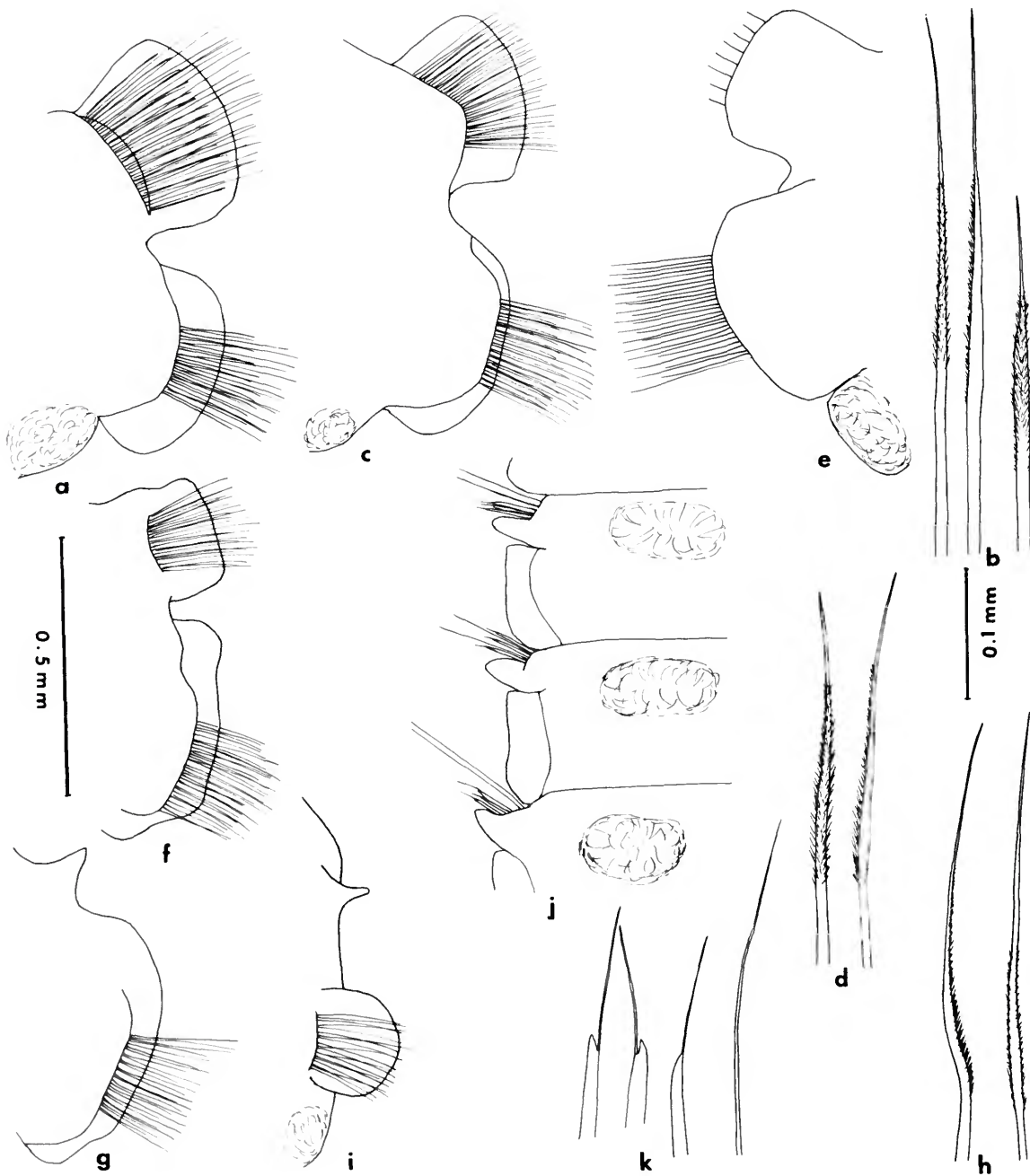


FIGURE 10.—*Trochochaeta kirkegaardii*, new species (holotype, UZMC): *a*, left parapodium 5, anterior view; *b*, three neurosetae from same; *c*, left parapodium 6, anterior view; *d*, two neurosetae from same; *e*, left parapodium 8, posterior view; *f*, left parapodium 10, anterior view; *g*, left parapodium 11, anterior view; *h*, two neurosetae from same; *i*, left parapodium 15, anterior view; *j*, dorsal view of left side of three abdominal segments; *k*, four neurosetae from same.

Fourth segment (Figure 8a, 9k-m) with parapodia lateral, with similar notopodial and neuropodial lobes; setal lobes low, wide, with capillary setae, anterior row of shorter ones and posterior row of longer ones; setae limbate and somewhat frayed (Figure 9l,m); postsetal lobes wide, subrectangular.

Following 11 thoracic segments (segments 5 to 15) with prominent lateral parapodia, with reddish-brown glandular areas ventral to neuropodia (Figures 8a,b, 10a-i). Parapodia of segments 5 to 10 similar, with lateral biramous parapodia (Figures 8a, 10a-f). Notopodial setal lobes low, wide, with limbate, frayed capillary notosetae—anterior row of shorter ones and posterior row of longer ones. Notopodial postsetal lobes wide, subrectangular. Neuropodial setal lobes short, wide, subcylindrical, with compact bundles of neurosetae of two slightly different types—shorter, slightly stouter, reddish amber-colored, frayed or spinous, tapered rather abruptly to short slender tips and longer, frayed, tapered gradually to capillary tips (Figure 10b,d). Neuropodial postsetal lobes wide, subrectangular, subequal to notopodial (segment 5, Figure 10a) or larger than notopodial (segments 6-10, Figure 10c,e,f). Parapodia of segments 11 to 15 with notopodia represented only by small subconical lobes, lacking notosetae (Figure 10g,i);

neurosetae similar to those of preceding thoracic segments but becoming fewer in number, especially stouter, shorter type (Figure 10h); neuropodial postsetal lobes smaller than those of preceding segments (Figures 8b, 10g,i).

Abdominal region beginning on segment 16 (Figure 8b), long, narrower than thoracic region, thin-walled, with paired round to oval structures visible dorsally (Figure 8c) and paired delicate papillae ventrally (Figure 8d). Parapodia inconspicuous, lacking notopodial lobes and notosetae (Figure 10j). Neuropodial lobes small, rounded, with few (2-3), slender, non-limbate capillary neurosetae and few (3-4), stouter, acicular neurosetae with subterminally attached aristae (Figure 10k). Postsetal neuropodial lobes digitiform, continuing posteriorly as delicate, flat, longitudinal flanges (Figure 10j). Posterior abdominal region and pygidium unknown.

REMARKS.—*Trochochaeta kirkegaardi* agrees with *T. orissae* (Fauvel) and *T. diverapoda* (Hoagland) in having the postsetal thoracic lobes entire instead of serrated or fimbriated, in possessing stout acicular neurosetae on segments 2 and 3, and in lacking notosetae on segment 2. The three species may be separated as indicated in the key.

DISTRIBUTION.—West Africa, in 44 to 175 m.



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