

SOME NEW INTERSTITIAL GASTROTRICHS FROM THE BEACH SANDS OF WALT AIR COAST

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ABSTRACT

The paper reports for the first time the occurrence of eleven new species of Gastrotrichs in the interstitial sands of Waltair beach. Ten of these belong to the order Macrodasyoidea and the other to the order Chaetonotoidea. The distribution of these forms in relation to the size of the sand grains and depth has been described. The feeding habits and the other interstitial fauna associated with the Gastrotrichs have also been reported.

STUDIES on the marine interstitial fauna in the beach sands of Waltair Coast during the years 1960-63 have revealed the occurrence of several interesting gastrotrichs. A brief report of the species encountered which are known to science has already been published (Ganapati, P. N. and Chandrasekhara Rao, G., 1967). The present paper describes eleven new species of which ten belong to the order Macrodasyoidea and the other to the order Chaetonotoidea. The description is based on the study of living animals. The holotypes have been deposited in the Zoology Museum, Andhra University, Waltair.

The animals were collected from the intertidal zone mostly in substrates with coarse sand grades. They seldom occurred in finer sands. The temperature in the habitat varied from 26° to 30° C. while the salinity ranged from 24‰ to 34‰. The amount of organic detritus, in the habitat in general, is low probably owing to the wave-washed nature of the beach.

Order : MACRODASYOIDEA

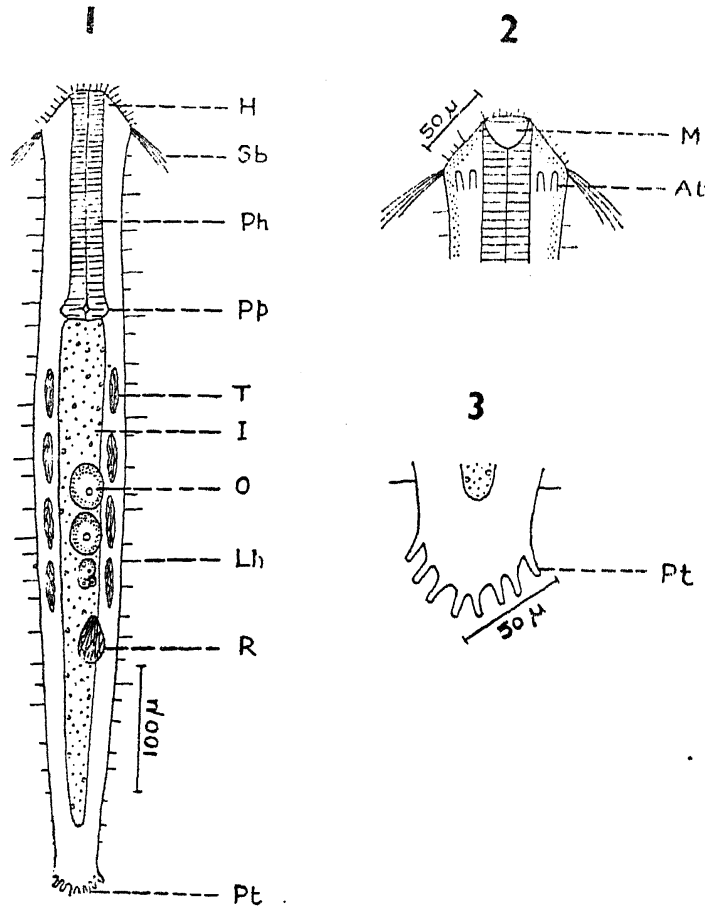
Family : LEPIDODASYDAE

Genus : *Paradasys* Remane, 1934

Paradasys littoralis n. sp. (Figs. 1-3)

Adult specimens of the species reach a maximum length of 650 μ and a width of 85 μ . The body is transparent, dorsoventrally flattened and gently tapering towards the posterior end. The head which is not clearly

demarcated from the rest of the body is truncate at the tip and has a maximum width of 80μ between the lateral corners. Numerous cephalic sensory cilia $10-12\mu$ long occur on the anterior border. The lateral corners of head bear a tuft of long sensory bristles of about 40μ in length.



Figs. 1-3. *Paradasys littoralis* n. sp. Fig. 1. Adult animal, dorsal view. Fig. 2. Anterior end, ventral view. Fig. 3. Posterior end, dorsal view.

The trunk bears several lateral sensory hairs $15-20\mu$ long. The epidermis is finely granular and dorsal glands are not well developed. The ventral surface is flat and the ciliation is more or less even with a pronounced growth on the lateral sides. The anterior adhesive organ consists of two groups of tubules, each with 2 tubules of $12-15\mu$ in length. The ventro-lateral adhesory tubules are absent. The posterior adhesive organ consists of 8-tubules $10-12\mu$ long, disposed along the posterior border of the body.

The mouth is terminal, 30μ wide and fringed with a corona of sensory hairs. The pharynx is about 100μ long measuring slightly less than $\frac{1}{3}$ of the total length of the gut. The pharyngeal pores are well developed

and occur close to the posterior end of the pharynx. The anus is subterminal. The reproductive system follows the usual pattern. Both ovary and receptaculum are dorsal. Three to five eggs were observed in adult specimens, one with a maximum diameter of 42μ . The testes are paired lateral organs extending along the intestine. Male pore could not be distinguished.

Remarks.—Four species of the genus *Paradasys* Remane are known so far. They are *P. subterraneus* Remane (1934), *P. hexadactylus* Karling (1954), *P. turbanelloides* Boaden (1960) and *P. cambriensis* Boaden (1963). Among these the present form closely approaches *P. subterraneus* in the shape of body but differs from it in the shape of head and the number and arrangement of posterior adhesory tubules.

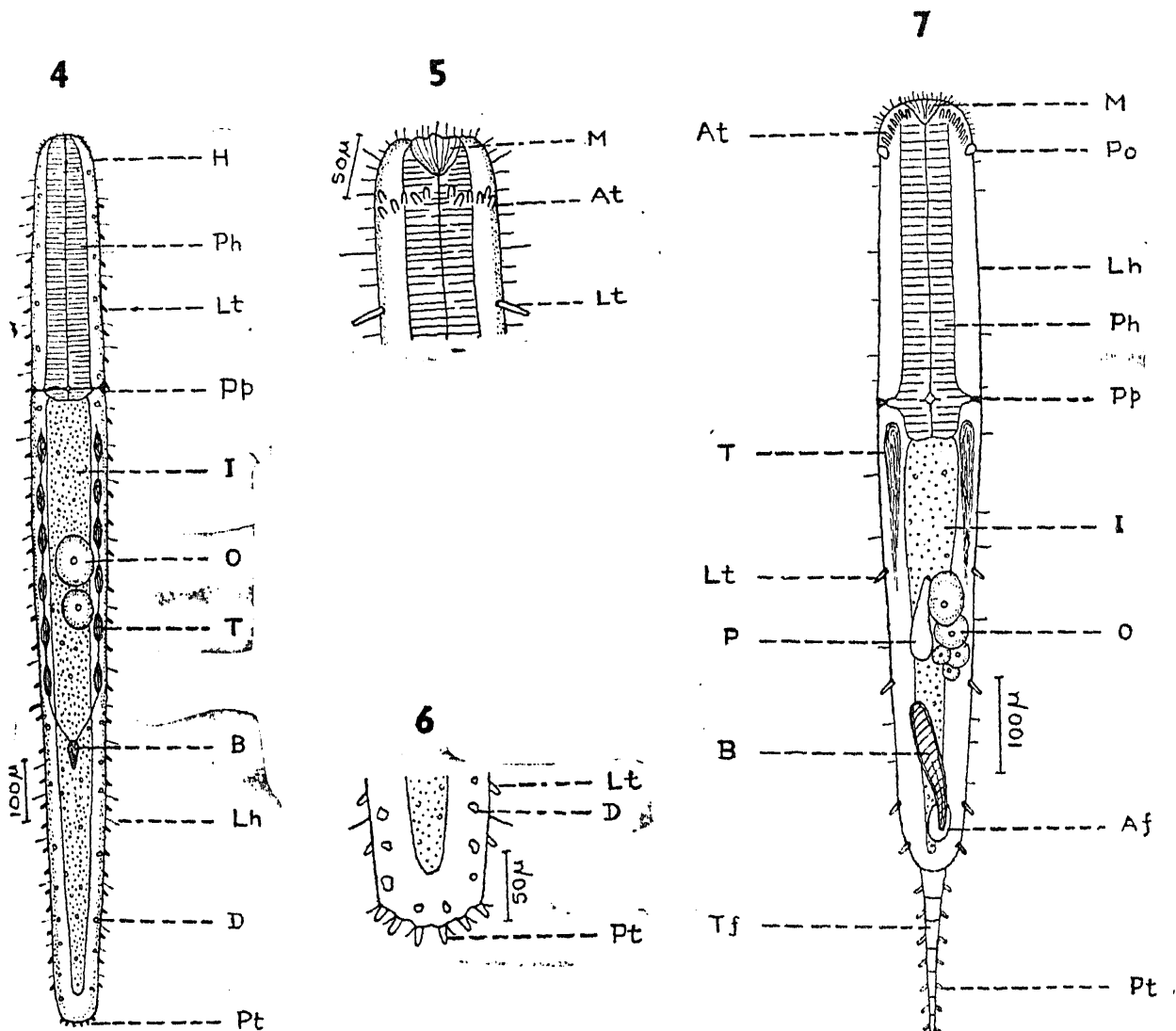
Ecology.—*Paradasys littoralis* was collected in small numbers at depths of 10–20 cm. below the surface between the low and mid-tide levels. The animals occurred in coarse and medium sands of $300\text{--}500\mu$ in their mean diameter. They move slowly and swim in the interstitial water with undulating movements of the body. They appear to feed on fine particles of detritus. Other gastrotrichs associated with the present form are, *Pseudostomella roscovita* Swedmark, and *Thaumastoderma heideri* Remane.

Genus : *Mesodasys* Remane, 1951

Mesodasys hexapodus n. sp. (Figs. 4–6)

Individuals of this species attain a maximum length of 1.5 mm. and a width of 120μ . The worms are white in colour. The body is dorso-ventrally compressed and slightly tapering towards the posterior end. The anterior end is bluntly rounded. The head which is not demarcated from the rest of the body bears short sensory hairs $10\text{--}12\mu$ long on its anterior and lateral margins. The anterior adhesive organ consists of 6 pairs of tubules $10\text{--}12\mu$ long arranged in a transverse row behind the mouth. There are 25–32 pairs of ventro-lateral adhesory tubules measuring about 20μ long. The posterior adhesive organ consists of 6 tubules on the posterior border of the body. Each tubule is 18μ long and bears a sensory hair of 16μ long at its base on the outer side.

The trunk bears numerous lateral sensory hairs $15\text{--}20\mu$ long. The epidermis is granular and numerous dorsal glands occur on the lateral sides of the body. The ventral surface is flat and the ciliation is entire. The mouth is terminal, 40μ wide and slightly inclined to the ventral surface. The pharynx is about 400μ long and occupies $\frac{1}{3}$ of the total



FIGS. 4-6. *Mesodasys hexapodus* n. sp. Fig. 4. Adult animal, dorsal view. Fig. 5. Anterior end, ventral view. Fig. 6. Posterior end, dorsal view.

FIG. 7. *Macrodasys waltaironsis* n. sp. Adult animal, ventral view.

gut length. The pharyngeal pores are well developed and open at the posterior end of the pharynx. The anus is subterminal.

The reproductive system consists of a dorso-median ovary, paired lateral testes and a dorsal bursa copulatrix situated at a distance from the tail end. Three eggs one having a maximum diameter of $82\ \mu$ were observed in an adult specimen.

Remarks.—Three species of the genus *Mesodasys* Remane are known so far. They are *M. laticaudatus* Remane (1951), *M. littoralis* Remane (1951) and *M. lobocercus* Boaden (1960). Among these the present form resembles *M. lobocercus* in the general structure of the reproductive system and the disposition of adhesory tubules but differs from it in the shape

of the tail lobe and the number of adhesory tubules. *M. hexapodus* is distinguished from the other species of *Mesodasys* by the presence of six characteristic posterior adhesory tubules.

Ecology.—A few specimens of *Mesodasys hexapodus* were collected in coarse sand at a depth of 20–30 cm. between the low and mid-tide levels of the beach. The species is active and moves rapidly with the help of its ventral ciliation. It feeds on diatoms and detritus and micrometazoans. Some of the common interstitial species occurring in the same habitat are the turbellarian, *Baltoplana magna* Karling, the nematodes *Anticoma arctica* Steiner, *Enoploides harpax* Wieser, the archiannelid *Polygordius madrasensis* Aiyar and Alikunhi and the polychaete *Eteonides elongata* Southern.

Family: MACRODASYIDAE

Genus : *Macrodasys* Remane, 1924

Macrodasys waltairensis n. sp. (Fig. 7)

The mature specimens of the species attain a length of 1 mm. including the tail and a maximum width of about $100\ \mu$. The body is dorso-ventrally flattened and transparent. The anterior end is bluntly rounded, while the posterior end tapers into a tail, which reaches a length of about $170\ \mu$. The anterior adhesive organ consists of 7 pairs of tubules of $10\ \mu$ length, disposed in an arc on the ventral surface of the head just behind the mouth. Four pairs of lateral tubules of $12\text{--}15\ \mu$ in length occur posterior to the end of pharynx. The posterior tubules are situated along the length of the tail and their number varies from 6 to 7 pairs each measuring about $10\text{--}12\ \mu$ in length.

The mouth is terminal fringed with a corona of sensory hairs. The pharynx occupies slightly less than half the total gut length. The pharyngeal pores are well developed and occur close to the posterior end of pharynx. The anus is subterminal. The ciliation forms a continuous field on the ventral surface of the body, showing a pronounced growth on the lateral sides. The head and lateral sides of trunk bear short sensory hairs $10\ \mu$ long. A pair of lateral pestle organs is present on the head. The epidermis is finely granular and a few dorsal glands occur on the lateral sides.

A pair of lateral testis are situated laterally on either side in the anterior region of the intestine, The penis is pear-shaped and measures

85 μ long. A maximum of five oocytes have been observed in an adult specimen. The muscular bursa copulatrix is 130 μ long and opens into an antrum feminum situated close to the anus.

Remarks.—In the structure of the genital apparatus with an antrum, the present form approaches *Macrodasys neapolitanus* (Papi, 1957) but differs from it in possessing well-developed pestle organs, pharyngeal pores and an elongate tail. *M. waltirensis* is further distinguished from *M. neapolitanus* in the number and arrangement of the adhesory tubules.

Ecology.—*Macrodasys waltirensis* occurs in coarse sand with shell gravel at a depth of 30 cm. near the low water level. The animal is agile and makes rapid progression in the interstices. It appears to be omnivorous in diet, and is usually found in association with the nematodes *Platycoma africana* (Gerlach) and *Theristus* sp., the archiannelid *Saccocirrus minor* Aiyar & Alikunhi and the polychaete *Hesionides arenarius* Fricdrich.

Family: TURBANELLIDAE

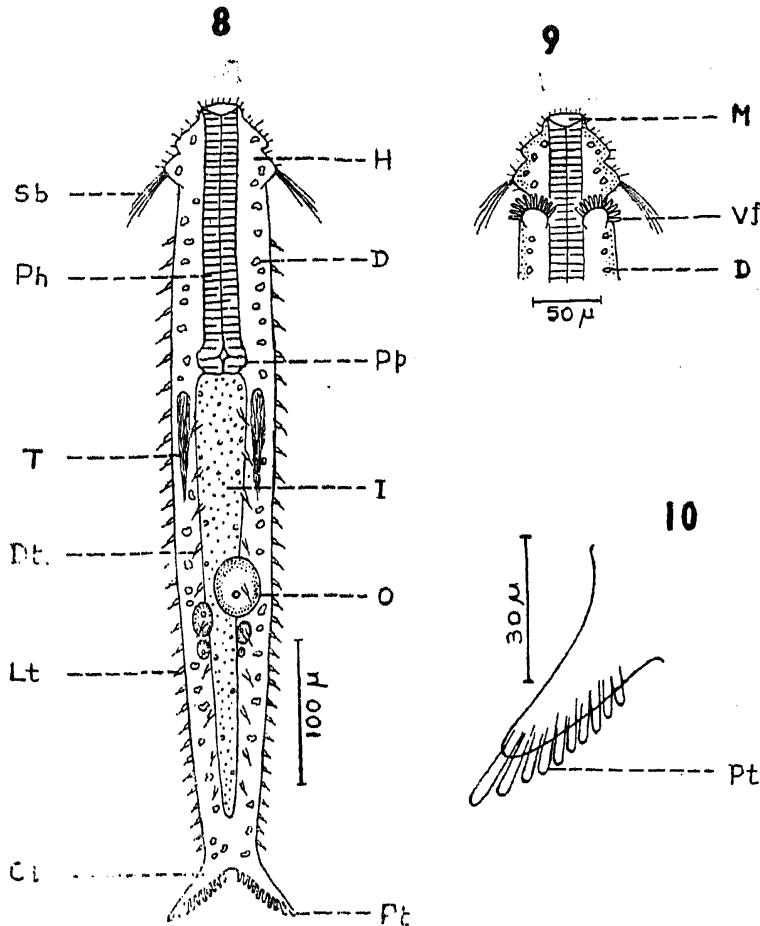
Genus : *Turbanella* Schultze, 1853

Turbanella bengalensis n. sp. (Figs. 8–10)

The mature specimens reach a length of 500–550 μ and a width of 60–65 μ . The body is transparent, dorsoventrally flattened and slightly tapering towards the posterior end. The head is triangular with two lateral lobes on either side which are distinctly demarcated from the rest of the body by a deep constriction. The head is about 50 μ long and 70 μ wide between the postero-lateral corners. The head bears numerous marginal cilia and a group of long sensory bristles on the postero-lateral corners which measure 50 μ in length.

The anterior adhesive organ consists of two typical ventral feet, each bearing 10–14 tubules, 10–12 μ long. There are 28–33 pairs of ventro-lateral adhesory tubules; each tube is 10 μ long with a short cilium implanted at its tip. In addition, 9–12 pairs of dorsal tubules occur behind the pharynx region. Each caudal lobe bears 10 adhesory tubules, 10–15 μ in length. A median anal cone is absent between the caudal lobes.

The ventral ciliation occurs in two longitudinal bands, typical of the genus. Numerous epidermal glands occur laterally on both the surfaces of the body. The mouth is terminal, 20 μ wide, encircled by a corona of short sensory hairs. The buccal cavity is small and cup-shaped. The



FIGS. 8-10. *Turbanella bengalensis* n. sp. Fig. 8. Adult animal, dorsal view. Fig. 9. Anterior region, ventral view. Fig. 10. Caudal lobe.

pharynx is $200\ \mu$ long forming $2/5$ of the total gut length. The pharyngeal pores open at the posterior end of the pharynx. The gonads follow the usual pattern. The testis and ovary are paired disposed lateral to the intestine. The eggs had a maximum diameter of $40\ \mu$.

Remarks.—Among the other species of the genus *Turbanella* Schultze lacking a median cone, between the two caudal lobes, and bearing lateral appendages of the head, *T. bengalensis* approaches *T. petiti* Remane (1952) in the general shape of body and disposition of adhesory tubules. But differences are found in the shape of head and buccal cavity and in the number and disposition of adhesory tubules. The present form also differs from all the other species of the genus in the possession of paired lateral head lobes.

Ecology.—*Turbanella bengalensis* was collected in small numbers in sands 15 cm. below surface near the mid-water level. The animals occur in substrates with grain size of $250\text{--}500\ \mu$ in mean diameter. The forms

are sluggish highly thigmotactic and can swim with undulatory movements of the body. It browses about the substrate feeding on fine particles of detritus, bacteria and smaller protozoans. Other gastrotrichs collected in its company are *Pseudostomella roscovita* Swedmark, *Thaumastoderma heideri* Remane and *Xenotrichula* sp.

Genus : *Paraturbanella* Remane, 1927

Paraturbanella boadeni n. sp. (Fig. 11)

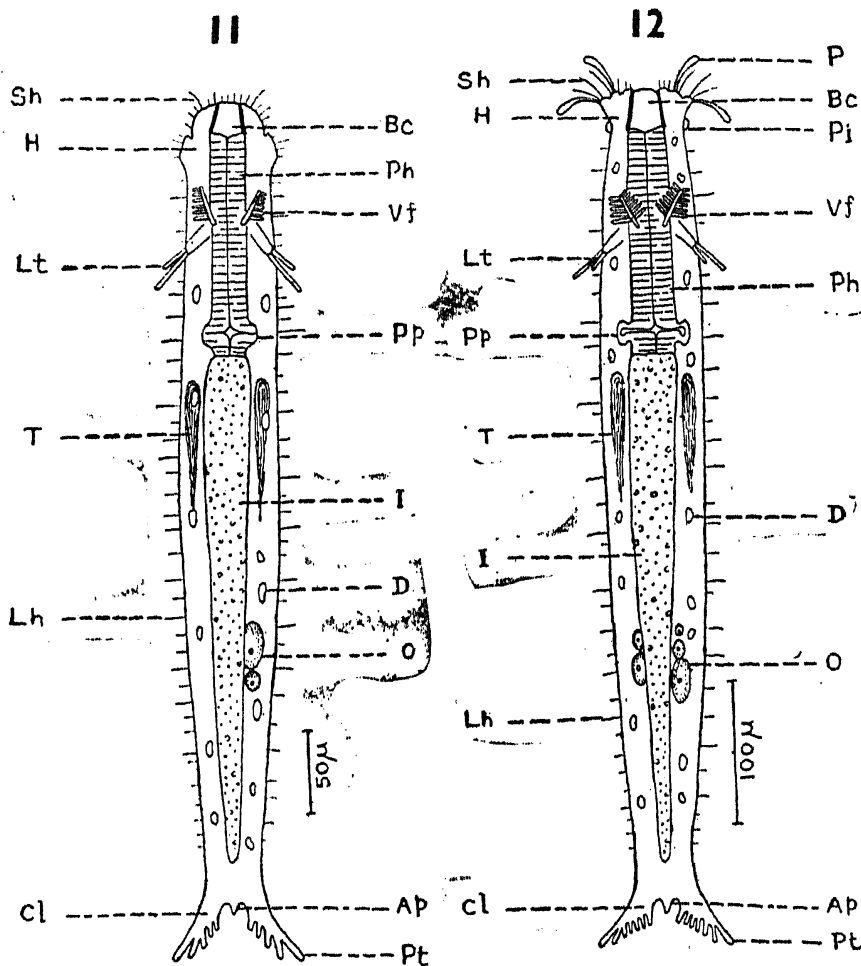
The adult specimens reach a length of 520–560 μ and a width of 70 μ . The body is transparent, ribbon-like, widest in the middle and slightly tapering towards the posterior end. The head which is not clearly demarcated from the rest of the body measures about 65 μ at its widest part and bears numerous marginal hairs 10–15 μ long. Two piston pits are present laterally on the head at the level of the base of the buccal cavity. The trunk bears numerous lateral sensory hairs 10–20 μ long. The epidermis is finely granular and contains several well-developed glands laterally. The ciliation on the ventral surface occurs in two longitudinal bands, the cilia being sparse towards the posterior end.

The anterior adhesive organ consists of two groups of tubules on the ventral surface behind the head supported by two slender cuticular rods of about 26 μ length. Each group consists of 6 tubules, 8–12 μ in length. The paired lateral adhesive organ consists of a long and a short tubule directed backwards and implanted on a mobile protuberance of the cuticle. The longer tubule measures 30 μ while the short one is 18 μ long. Each caudal lobe bears 5 adhesory tubules of 8–20 μ in length. Between the two anal lobes occurs a median conical anal papilla, 8 μ long.

The buccal cavity is spacious with thick cuticular walls and measures 24 \times 22 μ . The pharynx is about 160 μ long occupying about $\frac{1}{3}$ of the total gut length. The pharyngeal pores open close to the posterior ends of the pharynx. The anus is subterminal. The reproductive system is of the turbanellid type and consists of paired testis and ovary situated lateral to the intestine.

Remarks.—Among the known species of the genus *Paraturbanella* Remane with the lateral adhesory tubules reduced, the present form appears closely related to *P. dohrni* Remane (1927 a) in the shape of body and arrangement of adhesory tubules. However, the structure of the anterior adhesive organ is quite peculiar to the new species in which the

tubules are inserted on the outer side of a cuticular rod. All other described species of *Paraturbanella* have anterior tube feet of the *Turbanella* type in which the tubules are supported by a mobile protuberance of the cuticle.



FIGS. 11-12. Fig. 11. *Paraturbanella boadeni* n.sp. Adult animal, ventral view. Fig. 12. *P. palpibara* n.sp. Adult animal, ventral view.

Ecology.—*Paraturbanella boadeni* was occasionally collected in medium sands with a mean diameter of 200–400 μ at a depth of 10–40 cm. near the half-tide level. The species is active and appears omnivorous in diet. Other interstitial animals collected in the same biotope are the ciliate *Tracheloraphis phoenicopterus* (Kohn), the nematodes *Cynura papillata* Gerlach, *Metepsilonema* sp., and *Rhynchonema cinctum* Cobb, the archiannelid *Diurodrilus benazzii* Gerlach and the polychaete *Hesicnides gohari* Hartmann-Schroder.

Paraturbanella palpibara n. sp. (Fig. 12)

This form attains a maximum length of 600 μ and a width of 65 μ . The body is transparent and ribbon-like. The head is demarcated from

the rest of the body by a deep constriction and measures about 62μ at its widest part. On its anterior border occur sensory hairs $15-30 \mu$ long and two pairs of club-shaped sensory palps $32-36 \mu$ long. Two piston pits are present laterally on the head at the level of the base of buccal cavity. The trunk bears numerous lateral sensory hairs $10-20 \mu$ long. The epidermis is granular and contains well-developed glands laterally. The ciliation is not clearly understood. The ventral surface appears to have a complete covering of cilia with a slight increase towards the lateral sides.

The anterior adhesive organ consists of two groups of tubules on the ventral surface behind the head. Each group consists of 12-14 slender tubules $10-16 \mu$ long inserted on either side of a mobile cuticular rod, 30μ in length. The lateral adhesive organ consists of two pairs of tubules mounted on a mobile protuberance of the cuticle and directed backwards. The longer tubule is 26μ while the short one is 14μ long. The posterior adhesive organ constitutes the two tail lobes, each bearing 7 tubules $10-15 \mu$ long. Between the two anal lobes is a median conical papilla 8μ in length.

The buccal cavity is spacious with cuticularised walls measuring $26 \times 22 \mu$. The pharynx occupies $\frac{1}{3}$ of the total gut length. The pharyngeal pores are conspicuous and open close to the posterior end of pharynx. Anus is subterminal. The reproductive system follows the usual turbanellid pattern.

The buccal cavity is spacious with cuticularised walls measuring $26 \mu \times 22 \mu$. The pharynx occupies $\frac{1}{3}$ of the total gut length. The pharyngeal pores are conspicuous and open close to the posterior end of pharynx. Anus is subterminal. The reproductive system follows the usual turbanellid pattern.

Remarks.—The shape of the body shows the *Paraturbanella palpibara* is most closely related to *P. teissieri* Swedmark (1954) but differs from it in the possession of two pairs of club-shaped sensory palps on the head and the disposition of adhesive tubules. The new species is distinguished from all other species of *Paraturbanella* Remane by the structure of the anterior adhesive organ in which the tubules are inserted on either side of a mobile cuticular rod.

Ecology.—*Paraturbanella palpibara* is a rare inhabitant of the coarse shell gravel deposits between the low and mid-water levels. The gastrotrich is agile and carnivorous in diet, feeding on smaller micrometazoans,

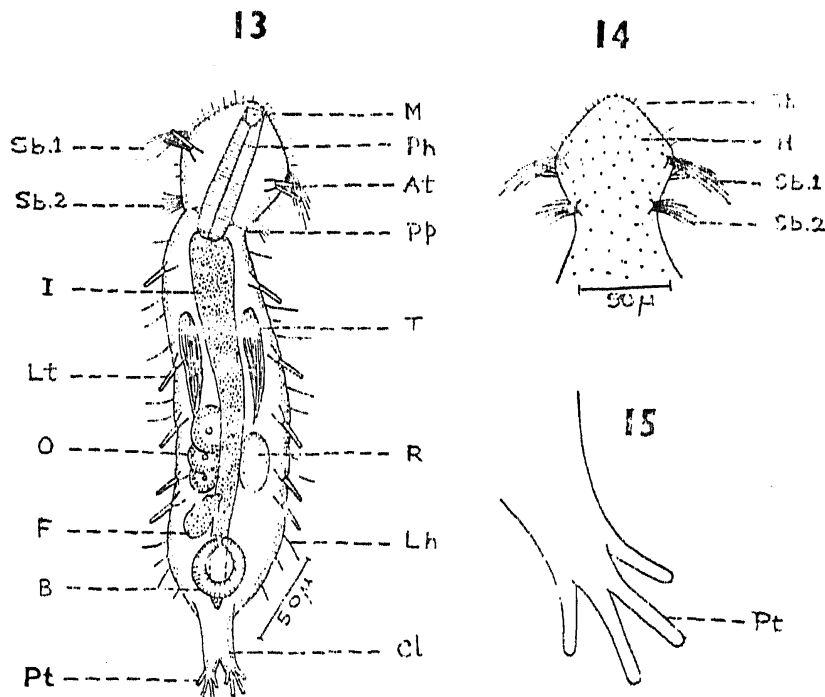
Other fauna associated with the species are the cnidarian *Halammohydra octopodides* Remane, the nematode *Platycoma africana* Gerlach, the polychaete *Goniadides aciculata* Hartmann-Schroder and the mollusc *Unela odhneri* Marcus.

Family: DACTYLOPODALIDAE

Genus: *Dactylopodalia* Remane, 1929

Dactylopodalia indica n. sp. (Figs. 13-15)

Individuals of this species reach a length of 330-350 μ and a width of 62-68 μ . The shape of the head resembles that of *D. typhle* Remane while the tail forks are like those of *D. cornuta* Swedmark. The head is simple without lateral appendages clearly demarcated from the rest of the body by a deep constriction. It measures 62 μ in length and 58 μ in width. The head bears numerous marginal sensory cilia 4-6 μ long. Four groups of long sensory bristles occur laterally on the head. The first pair is about 35 μ while the second is 20 μ long. The trunk bears several lateral sensory hairs 15-20 μ long. The ventral ciliation is known imperfectly.



FIGS. 13-15. *Dactylopodalia indica* n.sp. Fig. 13. Adult animal, ventral view. Fig. 14. Anterior region, dorsal view. Fig. 15. Caudal lobe, dorsal view.

The anterior adhesive organ consists of two pairs of tubules 14-16 μ long on the ventral surface of the head. There are five pairs of lateral

adhesory tubules 16μ in length. The anterior and lateral tubules are implanted on mobile protuberances of the cuticle. The posterior adhesive organ constitutes the two tail forks, each fork bearing two lateral and two terminal tubules 8 and 12μ long respectively.

The mouth is terminal 10μ wide. The pharynx is about 80μ long and occupies a fourth of the total gut length. The pharyngeal pores open at the level of the posterior end of the head. The species is hermaphrodite possessing both ovary and testes. A receptaculum seminalis occurs close to the posterior end of the left testis and a muscular bursa copulatrix in the posterior region of the abdomen.

Remarks.—Among the three species *D. baltica* Remane (1926), *D. typhle* Remane (1927 a) and *D. cornuta* Swedmark (1956) of the genus *Dactylopodalia* Remane, described so far, *D. indica* closely approaches *D. cornuta* in size, shape of body and the number and arrangement of the adhesory tubules. However, the new species is distinguished by the presence of only two pairs of anterior tubules and the absence of cephalic tentacles which is characteristic of the latter.

Ecology.—*Dactylopodalia indica* is one of the most common species of the gastrotrichs on this coast. The species is encountered in medium sands of 200 – 400μ in mean diameter at a depth of 15 – 30 cm. near the half-tide level. The animal moves slowly and feeds on fine particles of detritus. Other interstitial species characteristic of the same biotope are the nematodes *Desmoscolex bengalensis* Timm and *Metepsilonema* sp., the kinorhynch *Cateria styx* Gerlach, the archiannelid *Nerillidium mediterraneum* Remane, the polychaete *Eusyllis homocirrata* Hartmann-Schroder and the copepods *Sewellina reductus* Krishnaswamy and *Arenopontia subterranea* Kunz.

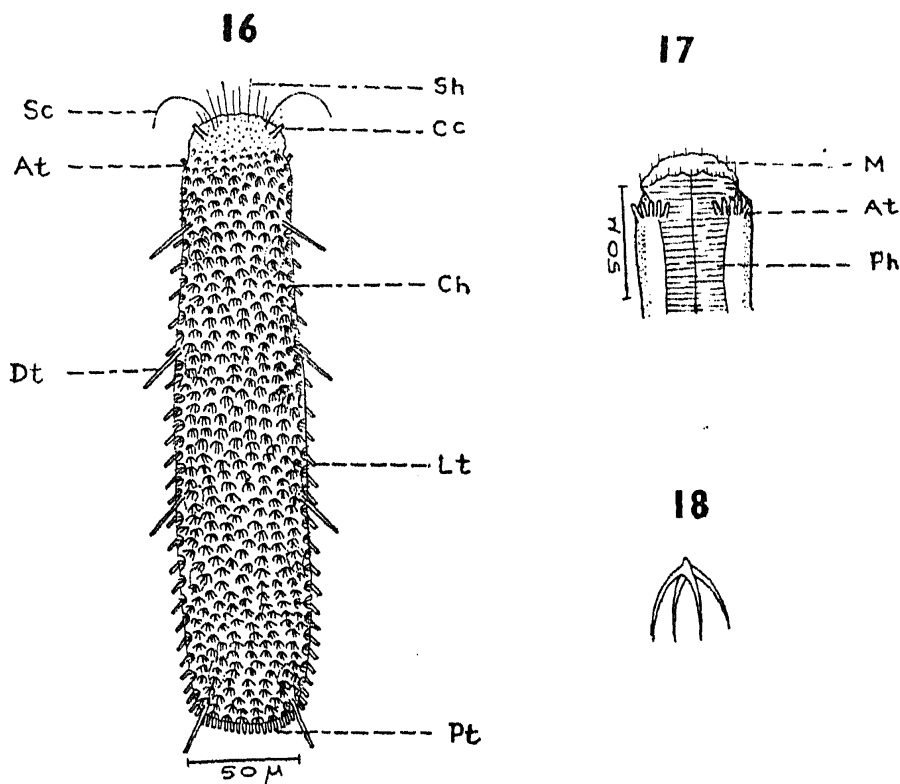
Family: THAUMASTODERMATIDAE

Genus: *Tetranchyoderma* Remane, 1926

Tetranchyoderma indica n. sp. (Figs. 16–18)

The specimens attain a length of 280μ and a width of 60μ . The body has a dorsal covering of 10 – 11 longitudinal rows of 4-pronged dermal scales of about 5μ in their size. The head bears a pair of lateral sensory cilia 46μ long and a pair of short dorsal cirri 8μ long behind the cilia. About 5 – 7 pairs of well-developed epidermal glands occur laterally on

the dorsal surface of the body. The ventral surface has a complete and uniform covering of cilia. The trunk bears 4 pairs of dorso-lateral cirri of 26–30 μ long.



Figs. 16–18. *Tetranchyroderma indica* n. sp. Fig. 16. Adult animal, dorsal view. Fig. 17. Anterior region, ventral view. Fig. 18. Cuticular hook.

The anterior adhesive organ consists of 10 tubules of 8 μ length disposed in two groups of 5 + 5 on the ventral surface behind the mouth. There are 22–28 pairs of ventrolateral adhesory tubules of 10–12 μ long, the majority of them being disposed towards the posterior end of the body. About 16 adhesory tubules occur along the posterior margin of the body in continuity with the lateral tubules. Pedicles are absent.

The mouth is terminal, 40 μ wide and encircled by a corona of sensory hairs. The pharynx is 110 μ long and occupies slightly more than $\frac{1}{3}$ of the total gut length. Very little of the reproductive system is known. A single tubular testis occurs on the right side. The ovary is located on the dorsal side with 2–3 oocytes measuring 32 μ in maximum diameter.

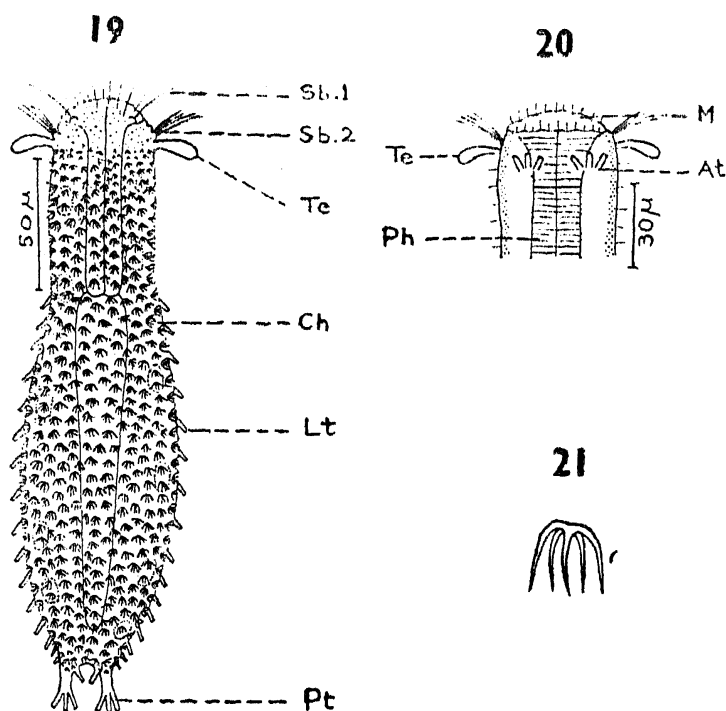
Remarks.—Among the known species of the genus *Tetranchyroderma* Remane, the new species closely approaches *T. apus* Remane (1927 a) in its rounded posterior end without pedicles but differs from it in the 4-pronged

nature of dermal scales and the presence of 4-pairs of dorso-lateral cirri. The position of the dorsal cephalic cirrus is posterior to the long sensory cilium in *T. indica* while it is the reverse in *T. apus*.

Ecology.—*Tetranychoderma indica* occurs in moderate numbers in medium sands 20–40 cm. below surface near the half-tide level. The animal is sluggish and highly thigmotactic. The species is encountered in the company of the gastrotrichs *Thaumastoderma heideri* Remane, *Pseudostomella roscovita* Swedmark and *Xenotrichula* sp.

Tetranychoderma swedmarki n. sp. (Figs. 19–21)

The adult specimens of this species measured approximately $220\ \mu$ in length and $50\ \mu$ in width. The anterior one-third of the body has straight lateral margins while the rest of the body is elliptical. The entire body, except for the anterior region on the head, has a dorsal covering of 10–11 longitudinal rows of 5-pronged scales measuring $3\text{--}5\ \mu$ in size. Two groups of paired dorso-lateral sensory bristles borne on apophyses of cuticle occur on the head. The first group consists of a single bristle $22\ \mu$ long while the second has four bristles ranging in length from 12 to $18\ \mu$. The head bears laterally a pair of club-shaped tentacles $20\ \mu$ long.



FIGS. 19–21. *Tetranychoderma swedmarki* n. sp. Fig. 19. Adult animal, dorsal view. Fig. 20. Anterior region, ventral view. Fig. 21. Cuticular hook.

Three pairs of anterior adhesory tubules of 8μ in length occur in two groups of $3 + 3$ on the ventral surface behind the mouth. There are 14–16 pairs of ventro-lateral adhesory tubules 10μ in length starting at the level of the posterior end of pharynx. Two pedicles of the usual shape occur on the posterior border, each bearing three apical tubules 10μ in length and one inner tubule, 8μ in length at its base. No adhesory tubules occur on the posterior border between the pedicles.

The mouth is subterminal on the ventral surface of the head, extensible, 36μ wide and encircled by a fringe of sensory hairs. The pharynx is 70μ long and it forms about one-third the length of the gut. The anus is subterminal. The reproductive system is known only imperfectly. A single right testis and a dorsal ovary were observed in adult specimens.

Remarks.—Among the species assigned to the genus *Tetranchyroderma* Remane, the present form closely resembles *T. papii* Gerlach (1953) in the presence of a pair of cephalic tentacles, two pedicles, pentacres and disposition of adhesory tubules. However, *T. swedmarki* is distinguished from *T. papii* by the elliptical shape of body, club-shaped cephalic tentacles and variation in the number of anterior and lateral adhesory tubules.

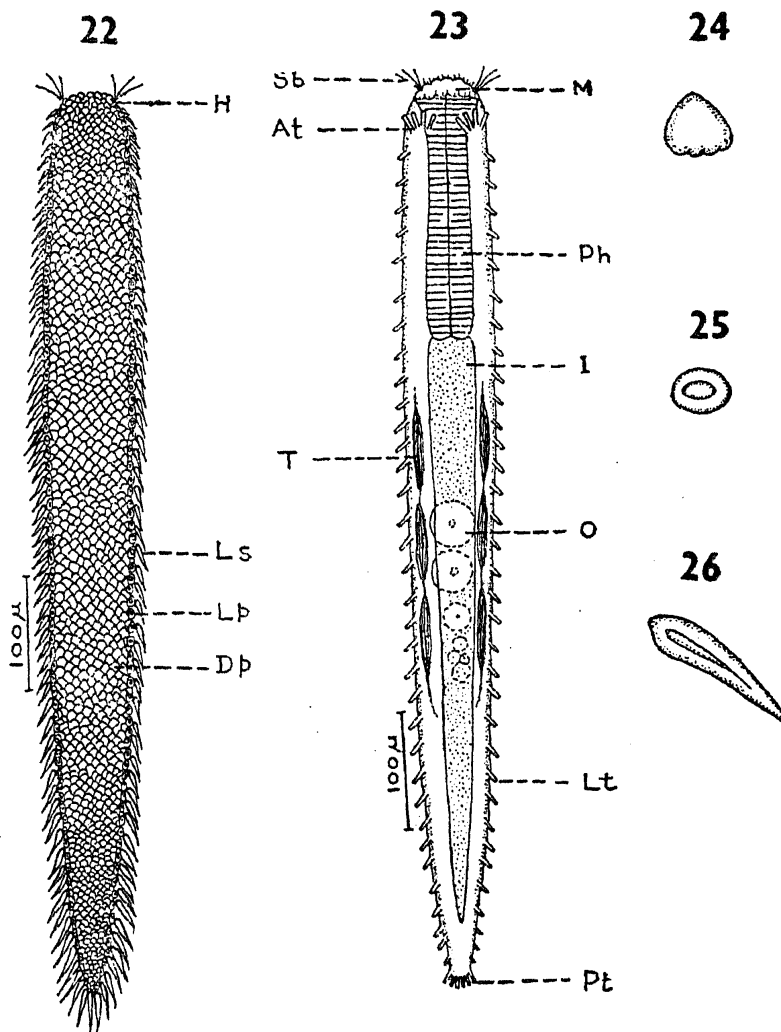
Ecology.—*Tetranchyroderma swedmarki* is encountered in small numbers 20 cm. below surface between the low and mid-tide levels. The species showed a preference for substrates with the particle size of $250\text{--}400\mu$ in mean diameter. The animal moves slowly and is sensitive to disturbances in the environment. Other interstitial species occurring in the same biotope are the turbellarian *Otoplana* sp., the tardigrade *Stygarctus bradypus* Schulz and the halacarid *Halacarus anomalus* Trouessart.

Genus : *Diplodasys* Remane, 1927

Diplodasys remanei n. sp. (Figs. 22–26)

The specimens reach a length of 800μ and a width of 80μ . The body is vermiform, dorso-ventrally flattened and completely covered with flat dorsal scales and lateral spines characteristic of the genus. The dorsal scales are disposed in about 8 longitudinal rows; each plate is triangular in outline and measures $5\text{--}8\mu$ in size. The lateral spines are numerous and nearly correspond to the number of transverse rows of dorsal scales; their length varies between $22\text{--}46\mu$ and the size increases towards the posterior end of the body. Between the dorsal plates and lateral spines there occurs a row of lateral plates on either side. Each lateral plate is oval, $8 \times 6\mu$ in size and bears two concentric lines.

The head is bluntly rounded on the anterior end and bears 3 pairs of sensory bristles $25\text{--}30\mu$ long. The ventral surface of the body is flat and the ciliation is entire. The anterior adhesive organ consists of 4 pairs of tubules of 16μ in length and arranged in two groups on the ventral surface behind the mouth. There are about 34 pairs of ventro-lateral adhesory tubules $10\text{--}16\mu$ long. Six adhesory tubules of 12μ length occur on the posterior border of the tail.



FIGS. 22-26. *Diplodasya remanei* n. sp. Fig. 22. Adult animal, dorsal view. Fig. 23. Adult animal, ventral view. Fig. 24. Dorsal plate. Fig. 25. Lateral plate. Fig. 26. Lateral spine.

The mouth is terminal, cup-shaped, 50μ wide and encircled by a ring of short sensory cilia. The pharynx is 210μ long and occupies slightly less than $\frac{1}{3}$ of the total gut length. The species is a hermaphrodite possessing a dorso-median ovary and paired lateral testes. Five oocytes one with a maximum diameter of 40μ were observed in an adult specimen

Remarks.—The three species assigned to the genus *Diplodasys* Remane are *D. platydasyoides* Remane (1927 a), *D. minor* Remane (1936) and *D. platydasyoides* Remane (1927 a), *D. minor* Remane (1936) and *D. ankei* Wilke (1954). The new species *D. remanei* differs markedly from all the three species in size and shape of the body, structure of dermal scales and disposition of adhesory tubules.

Ecology.—A few specimens of *Diplodasys remanei* were collected in coarse and medium sands 20–40 cm. below surface between the low and mid-tide levels. The animal is sluggish and makes leech-like movements. The species was collected along with the nematodes *Oncholaimus brachycercus* De Man, *Enoploides* sp., the polychaetes *Pisione gopalai* Alikunhi and *Petitia amphophthalma* Siewing and the isopod *Microcerberus predatoris* Gnanamuthu, occurring in the same biotope.

Order : CHAETONOTOIDEA

Family: XENOTRICHULIDAE

Genus: *Xenotrichula* Remane, 1927

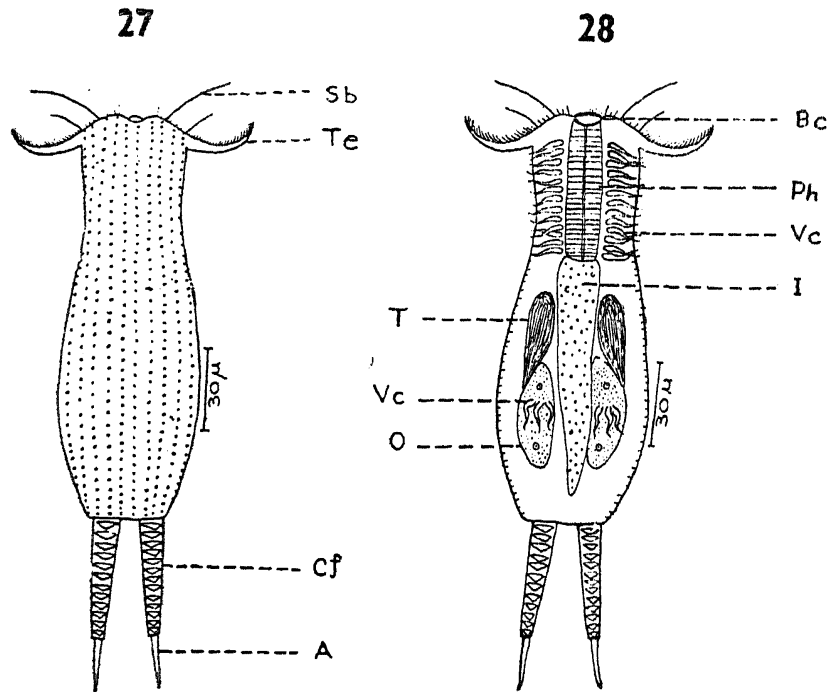
Xenotrichula tentaculatus n. sp. (Figs. 27–28)

Individuals of this species attain a length of 140–160 μ excluding the tail forks and a width of 50–60 μ . The body has a typical chaetonotoid appearance and a complete dorsal covering of minute scales arranged in 11–12 longitudinal rows, with a distance of 4 μ between two adjoining rows. The head bears two pairs of sensory bristles measuring 32 and 16 μ long respectively and a pair of ciliated and anteriorly curved tentacles of 30 μ in length. The tail fork is slender, 44 μ long and its adhesory tubule is 20 μ long. There are 16 pairs of ventral cirri 12–15 μ long and arranged in two groups of 13 + 3 on either side of the digestive tract.

The mouth is circular, 10 μ wide and encircled by a corona of sensory cilia. The pharynx is 50 μ long with an anterior buccal capsule. The anus is subterminal. Reproductive system follows the usual pattern. Both the testes and ovaries are symmetrical. The testes are club-shaped and situated anteriorly in front of the ovaries. The eggs measured 45–50 μ in their maximum size.

Remarks.—Among the known species of the genus *Xenotrichula* Remane, the present form approaches *X. velox* Remane (1927 b) and *X. cornuta* Wilke (1954) in body shape and the structure of head and tail

forks. However, *X. tentaculatus* is distinguished from both the above species by the long and curved cephalic tentacles, structure of dermal scales and the number and disposition of ventral cirri.



Figs. 27-28. *Xenotrichula tentaculatus* n. sp. Fig. 27. Adult animal, dorsal view. Fig. 28. Adult animal, ventral view.

Ecology.—*Xenotrichula tentaculatus* is frequently encountered in coarse and medium sands at all depths of the intertidal zone near the half-tide level. The species is agile, sensitive to disturbances and makes rapid progression over the surfaces of the sand grains. Other gastrotrichs associated with the species are *Pseudostomella roscovita* Swedmark, *Chaetonotus* sp., and *Xenotrichula velox* Remeane.

EXPLANATION OF FIGURES IN TEXT

A., adhesory tubule; Af., antrum feminum; Ap., anal papilla; At., anterior tubule; B., bursa copulatrix; Bc., buccal cavity or capsule; CC., cephalic cirrus; Cf., caudal furca; Ch., cuticular hook; Cl., caudal lobe; D., dermal gland; Dp., dorsal plate; Dt., dorsal tubule; H., head; I., intestine; Lh., lateral hair; Lp., lateral plate; Lt., lateral tubule; M., mouth; O., oocyte; P., penis; Ph., pharynx; Pi., piston; Po., pestle organ; Pp., pharyngeal pore; Pt., posterior tubule; R., receptaculum seminalis; Sb., sensory bristle; Sc., sensory cilium; Sh., sensory hair; T., testis; Te., tentacle; Tf., tail flap; Vc., ventral cirrus; Vf., ventral foot.

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