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POLYCHAETOUS ANNELIDS OF THE INDIAN OCEAN INCLUDING AN ACCOUNT OF SPECIES COLLECTED BY MEMBERS OF THE INTERNATIONAL INDIAN OCEAN EXPEDITIONS, 1963-'64 AND A CATALOGUE AND BIBLIOGRAPHY OF THE SPECIES FROM INDIA*

OLGA HARTMAN†

Allan Hancock Foundation, University of Southern California, Los Angeles, California, U. S. A.

ABSTRACT

The benthic polychaetous annelids collected from the Indian Ocean by scientists participating in the International Indian Ocean Expedition, 1963-64, are named; 244 specific categories are indicated and 116 species are considered new to the fauna of the area. Sixteen species are newly described; they are:

Allmaniella nuchalis	*Lumbrineris inhacae*
Harmothoe branchiata	*Paraprionospio lamellibranchia*
Hermadion africanus	*Polydora peristomialis*
Scalisetosus glabrus	*Disoma cirrifera*
Tambalagamia orientalis	*Cossurella dimorpha*
Aglaophamus longicephalus	*Fauveliopsis arabica*
Goniada asiatica	*Leiochrides branchiatus*
Diopatra bengalensis	*Mediomastus caudatus*

Two species are newly named; they are: *Cossura dayi* and *Drilonereis monroi*. Two others are new combinations, they are: *Anaitides sancti-josephi*, previously *Phyllodoce*, and *Peisidice dorsipapillata*, previously *Pholoe*.

The following genera or groups are indicated as represented by unnamed species:

Pionosyllis	*Polydora*
Goniada	*Cossurella*
Ninoe	ampharetid
Aricidea	terebellid, abranchiate

Seven family names are newly added to the Fauna of India; they are:

PEISIDICIDAE, with genus *Peisidice*
SPINTHERIDAE, with genus *Spinther*
SPHAERODORIDAE, with genus *Clavadorum*
PARAONIDAE, with genera *Aricidea* and *Paraonis*
HETEROSPIONIDAE, with genus *Heterospio*
ACROCIRRIDAE, with genus *Acrocirrus*
COSSURIDAE, with genera *Cossura* and *Cossurella*.

Diversity and vertical zonation in benthic polychaetes are expressed in three kinds of samples: 1. those coming from the Arabian Sea in 24 unmeasured lots, from intertidal

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depths to 357 m; 2. eight measured samples coming from estuarine or near shore samples from coastal areas, processed through finer screens than used in other samples, and 3. species named from depths of 250 m or more, documented in the literature.

The catalogue of the Polychaetous Annelids from India lists 883 species. The polychaete fauna of the Indian Ocean may thus be considered to represent the largest of known tropical faunas of this kind.

The Bibliography is intended to be complete for India, as an Appendix to the references cited by Fauvel, 1953, in Fauna of India.

INTRODUCTION

THE northern Indian Ocean is here defined as extending from the Red Sea and Gulf of Oman in the west, through the Arabian Sea and Bay of Bengal, to the western side of the Malay Archipelago to the east. Its southern extension is through the chain of the Andaman Islands south to Sumatra. Excluded are most of the areas sampled by the SIBOGA expedition, 1899-1900, for which many unique polychaetes were named by Horst (1915-1924), Caullery (1915-1944) and others. Excluded are also species named in the voluminous works by Grube (1878) on the Semper collections in the Philippine Archipelago.

The fauna of the northern Indian Ocean is well documented through numerous works in many journals, by scientists from earliest times to the present. The first polychaetes named from India were two conspicuous amphinomids and some others, by Peter Simon Pallas. *Amphinome rostrata*, the conspicuous stinging worm from India, now known from circumtropical regions, has the distinction of being the first polychaete named from any part of the world for which the original illustrations still serve as a reliable guide for its identity. Pallas served as scientist aboard an early Russian voyage to India, when he made observations on living animals, and prepared morphological and anatomical dissections of remarkable accuracy. The species he studied included also *Chloeia flava*, *Eunice aphroditois*, the largest of the genus, *Spirobranchus giganteus* and *Pectinaria capensis*. Other early records in the Indian Ocean were made by Daudin, 1800, when two serpulids, *Pomatoceros indicus* and *Placostegus porosus* were named from India. Cuvier, 1817, named *Sabella grandis* from India ; this is generally referred to *Sabellastarte indica* Savigny, which is sometimes regarded as a synonym of the West Indian *Sabellastarte magnifica* (Shaw, 1800).

A long list of polychaete names is attributed to Savigny, 1818-20 ; some species originated in the Red Sea and now recorded also from Indian seas. Most interesting among them are *Iphione muricata*, *Hermonia hystrix*, *Euphrosine myrtosa*, *Hesione splendida*, *Eunice antennata*, *Oenone fulgida*, *Cistenides aegyptia*, *Loima medusa* *Sabellastarte indica* and *Protula intestinum*. A characteristic feature of these early named worms is the fact that they are large, conspicuous, brilliantly coloured in life, come from littoral depths and have their extended ranges into circumtropical areas.

An early voyage around the world was that of the Swedish Frigate EUGENIE, 1851-1853, when J.G.H. Kinberg collected polychaetes from India ; the earliest named, in 1855, are polynoids now known as *Hyperhalosydna striata*, *Aphrogenia alba* and *Lepidonotus indicus* ; many others were named by Kinberg in 1865-1910. The earliest records from Sri Lanka were made by Louis Schmarda, a German adventurer who travelled alone. He stayed several months in Sri Lanka in 1853 where he

collected intertidally and described about forty species from this area ; most remain indeterminable. Some of the recognizable ones are *Gastrolepidia clavigera, Scalisetosus longicirrus*, both commensal polynoids ; a brilliantly coloured phyllodocid, *Notophyllum splendens*, two limicolous worms, *Timarete anchylochaeta* and *Oncoscolex microchaetus*, a sabellid, *Hypsicomus phaeotaenia*, and a serpulid, *Pomatoceras caeruleus*. The Bibliography gives additional details of these works.

Most of the polychaetes in the richly diversified fauna in Indo-Pacific regions have been detailed in recent years. The most informative of these is Fauvel, 1932, in which 300 species are named. A more comprehensive work is Fauvel, 1953, when 450 species were named coming from the Persian Gulf, Arabian Sea, Bay of Bengal and east to the Malacca Strait and Singapore. Fauvel maintained the theory that polychaetes include many species with a world-wide distribution,—a theory not found unacceptable to most students of the group. The conclusion that a considerable number of species are common to the Indian Ocean and the Mediterranean Sea or at least its eastern sector, is more acceptable because they have had a long connection.

Best known areas in the Indian Ocean are intertidal and littoral Zones. Brackish and freshwater habitats have been documented by Southern, Alikunhi, Pflugfelder and more recent students. In this connection it is of interest that *Tylorrhynchus heterochetus* (Quatrefages, 1865) the rice-paddy worm of the orient, has not been recorded.

The uniqueness of the Indian Ocean fauna is exemplified by the large number of endemic genera and species. Among the genera are species in *Aphrogenia, Halogenia* and *Hermonia* in the APHRODITIDAE ; genera either wholly or largely Indian Ocean are *Bouchiria, Gastrolepidia, Iphione* and *Scalisetosus* in POLYNOIDAE *Pisionidens* in the PISIONIDAE, *Palmyra* and *Palmyropsis* in PALMYRIDAE ; *Sphaerodoce* in PHYLLODOCIDAE, *Alikunhia* in HESIONIDAE, *Dendronereis, Dendronereides, Tambalagamia* and *Tylonereis* in NEREIDAE, and *Euniphysa* in EUNICIDAE. The family EUNICIDAE is especially well represented with species in *Eunice* ; 27 are named in the CATALOGUE.

The 116 species named in the present report come mainly from subtidal depths which have remained little sampled.

The samples newly reported below were taken by scientists who participated in the ship-board sampling programmes of the International Indian Ocean Expeditions, 1963-'64. I am especially indebted to Dr. John Ryther who co-ordinated the several cruises concerned with benthic sampling. Dr. Howard L. Sanders, of the Woods Hole Oceanographic Institution, supervised the sampling programme in those stations preceded by the symbol RH ; he also directed the sorting of the samples to workable groups.

I am most indebted to the Administration of the Allan Hancock Foundation at the University of Southern California, for permission to use the laboratory and library facilities needed to complete the studies. Dr. Kristian Fauchald, polychaete authority at the Allan Hancock Foundation, read the manuscript.

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POLYCHAETOUS ANNELIDS FROM THE NORTHERN INDIAN OCEAN COLLECTED in 1963-1965 by Members of the INTERNATIONAL INDIAN OCEAN EXPEDITION.

The species are listed by families with station numbers from which they came and numbers of specimens taken. The data for stations is given in the LIST OF STATIONS. More complete distributional information may be consulted in the CATALOGUE OF THE POLYCHAETOUS ANNELIDS FROM INDIA (*see* Appendix : Part II of this Series) and BIBLIOGRAPHY (see Appendix : Part II of this Series).

The following 244 specific categories are listed in systematic order. Sixteen new species are detailed and two species are newly named ; others are new combinations. Species newly recorded are preceded by an asterisk.

APHRODITIDAE

Aphrodita australis Baird, 1865. Sta. 47 A (1).
Aphrodita talpa Quatrefages, 1865. Sta. 21 (1).
Hermonia hystrix (Savigny, 1820). Sta. 29 (3).
Laetmonice sp. Sta. 18 A (fgm).

POLYNOIDAE

**Alimaniella nuchalis*, new species. Sta. 269 C (1) ; 124 F (1). See below.
**Harmothoe branchiata*, new species. Sta 206 A (3). See below.
Harmothoe spp. Sta. (206 A (1) ; 269 C (5) ; 270 A (2).
harmothoids. Sta. 18 A (1) ; RH 26 (3) ; RH 33 (5).
**Hermadion africanus*, new species. Sta. 269 C (3). See below.
Hermenia acanthicolepis (Grube, 1876). Sta. 29 (3).
Hyperhalosydna striata Kinberg, 1855. Sta. 28 A (1).
Iphione muricata (Savigny, 1818). Sta. 29 (1).
Lepidasthenia sp. Sta. 251 B (fgm).
Lepidonotus carinulatus Grube, 1870. Sta. 47 B (1) ; ? 201 A (fgm).
Lepidonotus cristatus Grube, 1876. Sta. 18 A (1) ; 28 A (3).
**Scalisetosus glabrus*, new species. Sta. 18 A (1) ; 22 A (89) ; 22 B (3). See below.
**Scalisetosus levis* Marenzeller, 1902. Sta. 203 A (4) ; 269 C (1) ; 270 A (4).
polynoids. Sta. 28 A (12) ; 29 (fgm) ; 47 A (3, jv) ; 47 B (fgm) ; 206 A (fgm) ; 251 B (1); RH 14 (1) ; RH 26 (9).

POLYODONTIDAE

**Eupanthalis kinbergi* McIntosh, 1876. Sta. 254 B (2).
Eupanthalis nigromaculata (Grube, 1878). Sta. 21 (fgm).
Eupolyodontes sumatranus Pflugfelder, 1932. Sta. 262 A (1).
Polyodontes melanonotus Grube, 1876. Sta. 254 B (1) ; 255 A (2) ; 269 A (1).
polyodontid. Sta. 251 B (fgm).

PEISIDICIDAE

**Peisidice dorsipapillata* (Marenzeller, 1893). Sta. 269 C (38).

SIGALIONIDAE

Euthalenessa oculata (Peters, 1854). Sta. 18 A (1).
Leanira sp. Sta. RH 36 (2).
**Pholoe* sp. Sta. RH 30 (2) ; RH 36 (1).
Sthenolepis japonica (McIntosh, 1885). Sta. RH 41 (12).
Sthenolepis sp. Sta. RH 36 (1).

CHRYSOPETALIDAE

Chrysopetalum ehlersi Gravier, 1902. Sta. 18 A (6) ; 28 A (1) ; 29 (2); 47 B (fgm) ; 269 C (22).
chrysopetalid. Sta. RH 26 (1) ; RH 30 (1).

AMPHINOMIDAE

Chloeia ? fusca McIntosh, 1885. Sta. 29 (2).
Chloeia spp. Sta. 18 A (1) ; 269 C (3) ; RH 36 (2).
**Hipponoa gaudichaudii* Audouin and Milne Edwards, 1833. Sta. 28 D (1).
Linopherus spp. Sta 251 B (55) ; RH 36 (2) ; RH 51 (ca 25).
Notopygos spp. Sta. 206 A (10) ; 269 C (4) ; 270 A (2) ; RH 36 (3).
amphinomid: Sta. RH 26 (2, jv).

EUPHROSINIDAE

Euphrosine spp. Sta. 18 A (6) ; 28 A (3) ; 29 (2) ; 269 C (3) ; RH 26 (2).

PHYLLODOCIDAE

Anaitides sancti-josephi (Gravier, 1900), new combination. Sta. 269 C (4).
Anaitides spp. Sta. 28 A (1) ; 251 B (5) ; RH 30 (4) ; RH 36 (2).
?Eteone sp. Sta. RH 14 (2) ; RH 36 (1).
Eumida sp. Sta. 28 A (3) ; 206 A (1).
Genetyllis castanea (Marenzeller, 1879). Sta. RH 28 (2) ; RH 30 (9).
**?Mysta* sp. Sta. RH 26 (7).
Notophyllum splendens (Schmarda 1861). Sta. 18 A (1) ; 279 A (1).
Paranaitis sp. Sta. RH 30 (10).
Phyllodoce malmgreni Gravier, 1900. Sta. RH 51 (5).
**Sige macroceros* (Grube, 1860). Sta. 269 C (1).
phyllodocids. Sta. 47 B (1) ; RH 26 (12) ; RH 28 (12) ; RH 30 (4) ; RH 33 (18) ; RH 41 (1).

PARALACYDONIDAE

Paralacydonia paradoxa Fauvel, 1913. Sta. 210 B (1) ; 251 B (5) ; RH 26 (28) ; RH 28 (4); RH 30 (19) ; RH 36 (2).

HESIONIDAE

**Gyptis* cf *arenicolus* (La Greca, 1946). Sta. RH 28 (1) ; RH 33 (18) ; RH 36 (1).
Gyptis? capensis Day, 1963. Sta. RH 41 (18).
sp. Sta RH 14 (1) ; RH 51 (16).
Leocrates sp. Sta. 29 (2).
Ophiodromus angustifrons (Grube, 1878). Sta. 251 B (4).
Ophiodromus angustifrons sp. Sta. RH 14 (1).
hesionid Sta. RH 26 (12) ; RH 30 (3).

PILARGIDAE

Ancistargis brevicirris Rangarajan, 1964. Sta. 210 B (1) ; 251 B (1) ; RH 30 (8).
Ancistargis spp. Sta. RH 26 (9) ; ?RH 28 (8).
Loandalia sp. Sta RH 51 (1).
Pilargis, papillated Sta RH 41 (1).
Sigambra constricta (Southern, 1921). Sta. 206 A (1) ; 247 B (25) ; 251 B (26) ; RH 14 (27) ; RH 26 (1) ; RH 28 (3) ; RH 30 (175) ; RH 33 (40) ; RH 36 (5) ; RH 41 (21); RH 51 (6).
**Synelmis albini* (Langerhans, 1881). Sta. 29 (1).
pilargid Sta. RH 26 (10) ; RH 51 (3).

SYLLIDAE

Autolytus sp. Sta. 18 A (4).
**Eurysyllis tuberculata* Ehlers, 1864. Sta. 18 A (2)
Exogone spp. Sta. 28 A (3) ; 206 A (1) ; RH 26 (38) ; RH 30 (3) ; RH 36 (17).
Exogoninae. Sta. RH 14 (25).
Haplosyllis spongicola (Grube, 1855). Sta. 18 A (many) ; 28 A (2).
**Pionosyllis*, unknown species. Sta. RH 36 (2).
Sphaerosyllis sp. Sta. 28 A (1). RH 26 (38) ; RH 30 (3).
Syllis gracilis Grube, 1840. Sta. 18 A (1).
Syllis gracilis sp. Sta. RH 51 (2).

Trypanosyllis zebra (Grube, 1860). Sta. 47 A (2).
Trypanosyllis zebra spp. Sta. 18 A (4); 47 B (fgm).
Typosyllis spp. Sta. 18 A (many); 206 A (7); 248 A (5); 270 A (13); RH 36 (2).
syllids. Sta. D-16 (13); 28 A (many); 29 (5×); 47 A (5); 47 B (1); 254 B (1); 269 C (many); RH 26 (1); RH 30 (3); RH 36 (1).

NEREIDAE

**Ceratonereis hircinicola* (Eisig, 1870). Sta. 28 A (5).
Ceratonereis mirabilis Kinberg, 1866. Sta. D-16 (1); 18 A (1); 29 (3).
Leonnates decipiens Fauvel, 1929. Sta. 251 B (fgm).
**Neanthes* sp. Sta. RH 30 (9).
Nereis filicaudata Fauvel, 1951, see below.
Nereis jacksoni Kinberg, 1865. Sta. ? 18 A (1); 47 A (1); ? 247 B (1).
Nereis persica Fauvel, 1911, Sta. 213 A (2); 221 A (1); 270 A (1).
Nereis spp. Sta. 206 A (4); RH 26 (6).
Perinereis cultrifera (Grube, 1840). Sta. D-16 (ca 23).
Perinereis nigropunctata (Horst, 1889). Sta. D-16 (1).
Platynereis dumerilii (Audouin and Milne Edwards, 1833). Sta. 18 A (2); 28 D (1).
Platynereis insolita Gravier, 1902. Sta. D-16 (15).
Platynereis sp. Sta. 269 C (4, fgm).
Tambalagamia fauveli Pillai, 1961. Sta. 251 B (fgm).
**Tambalagamia orientalis*, new species. Sta. 208 A (fgm); RH 26 (26); RH 30 (294); RH 36 (5).
Tylonereis sp. Sta. RH 36 (1).
nereids. Sta. 18 A (6); 28 A (8+); 269 C (4 fgm); RH 14 (5); RH 28 (2 jv).

NEPHTYIDAE

Aglaophamus dibranchis (Grube, 1877). Sta. RH 26 (6); RH 36 (70).
**Aglaophamus longicephalus*, new species. Sta. 255 A (1).
Aglaophamus lyrochaetus (Fauvel, 1902). Sta. RH 36 (2); RH 41 (29).
Aglaophamus spp. Sta. 247 B (2); 251 B (8); RH 14 (2); RH 26 (182); RH 30 (12); RH 51 (33).
Nephthys oligobranchia Southern, 1921. Sta. RH 26 (80); RH 28 (241); RH 30 (51); RH 33 (19); RH 36 (105).
nephtyid Sta. RH 14 (18).

SPHAERODORIDAE

**Clavadorum bengalorum* Fauchald, 1970. Sta. RH 28 (1) sphaerodorid Sta. 29 (1); RH 26 (1).

GLYCERIDAE

Glycera convoluta Keferstein, 1862. Sta. 251 B (13).
Glycera prashadi Fauvel, 1932. Sta. RH 36 (2).
Glycera subaenea Grube, 1878. Sta. 247 B (fgm).
Glycera tesselata Grube, 1863. Sta. RH 36 (1).
Glycera spp. Sta. 28 A (1); 251 B (7); RH 26 (25); RH 30 (18); RH 33 (1); RH 36 (1).
glycerid. Sta. RH 26 (70).

GONIADIDAE

Glycinde cf *oligodon* Southern, 1921. Sta. RH 28 (1); RH 30 (10); RH 33 (23).
**Goniada asiatica*, new species. Sta. 251 B (1); 255 A (1).
Goniada sp. RH 36 (9); RH 41 (2).
goniadid. Sta. RH 51 (1).

ONUPHIDAE

**Diopatra bengalensis*, new species. Sta 201 A (4); 230 B (fgm); 251 B (2) 255 A (5).
Diopatra sp. RH 26 (54); RH 30 (15); RH 36 (27).
onuphid Sta. RH 14 (33+).

EUNICIDAE

Eunice antennata (Savigny, 1820). Sta. 29 (1).
Eunice ?aphroditois (Pallas, 1788). Sta. 29 (1).
Eunice Kinberg, 1865. Sta. 201 A (16); 213 A (6); 551 B (1); 213 A (1); 255 A (2); 270 A (1).
Eunice tubifex Crossland, 1904. Sta. 18 A (1); 22 (1); 47 B (fgm); 213 A (1); 269 C (11); 270 A (3).
Eunice spp. Sta. 18 A (16); 29 (2); 47 B (fgm); 203 A (fgm); 206 A (2); 247 B (7); 248 A (16); RH 25 (17); RH 28 (16); RH 30 (44).
eunicid Sta. RH 51 (1)
Lysidice collaris Grube, 1870. Sta. D-16 (4); 18 A (3); 28 A (3); 29 (2); 47 A (1); 206 A (4); 270 A (3).
Marphysa sanguinea (Montagu, 1815). Sta. D-16 (1).
Nematonereis unicornis (Grube, 1840). Sta. D-16 (1); 18 A (2); 28 A (2); 29 (1).
Palola siciliensis (Grube, 1820). Sta. D-16 (6); 28 A (2); 29 (1).
?Palola sp. Sta. R t 51 (1).

LUMBRINERIDAE

**Lumbrineris inhacae*, new species. Sta. RH 14 (8); RH 26 (322); RH 30 (ca 1000); RH 36 (14); RH 51 (19).
Lumbrineris latreilli Audouin and Milne Edwards, 1834. Sta. 270 A (4).
Lumbrineris spp. Sta. D-16 (4); 18 A (2); 28 A (5); 29 (1); 47 B (2); 201 A (2); 206 A (1); 210 B (1); 251 B (15); 269 C (1); RH 28 (2); RH 33 (2); RH 36 (23).
**Ninoe* sp., with yellow acicula. Sta. 210 B (1); RH 14 (8); RH 41 (87).
**Ninoe* sp., with black acicula Sta. 251 B (1); RH 26 (32); RH 36 (5).

ARABELLIDAE

Drilonereis ? falcata Moore, 1911. Sta. 230 B (1).
**Drilonereis monroi*, new name. Sta. 255 A (1).
Drilonereis ? sp. Sta. 247 B (2); 291 B (1).

LYSARETIDAE

Oenone fulgida (Savigny, 1818). Sta. 206 A (1).

DORVILLEIDAE

Dorvillea gardineri Crossland, 1924. Sta. 269 C (32).
Dorvillea spp. Sta. RH 26 (37); RH 30 (17); RH 36 (4); RH 51 (1).
**Protodorvillea* sp. Sta. RH 36 (3).
dorvilleids. Sta. 28 A (1); 29 (1); 206 A (1); 251 B (2); 270 A (2).

ORBINIIDAE

**Haploscoloplos* sp. Sta. RH 26 (32).
Phylo sp. Sta. RH 51 (3).
?Scoloplos sp. Sta. RH 28 (1); RH 30 (162); RH 36 (3).
orbiniid. Sta. RH 26 (2); RH 30 (1); RH 36 (2).

PARAONIDAE

**Aricidea*, with long antenna. Sta. RH 33 (79); RH 36 (5); RH 41 (14).
**Aricidea*, with red body. Sta. RH 36 (5).
**Aricidea* spp. Sta. 222 A (1); 247 B (6); 251 B (10); RH 26 (45); RH 30 (5); RH 33 (3); RH 36 (3); RH 51 (1).
**Paraonis gracilis* (Tauber, 1879). Sta. RH 36 (7); RH 41 (3).
**Paraonis* spp. Sta. 210 B (5); 247 B (7); 251 B (4); RH 14 (2); RH 26 (87); RH 30 (1).
*paraonids. Sta. RH 26 (3); RH 30 (72); RH 51 (11).

SPIONIDAE

Laonice brevicristata Pillai, 1961. Sta. RH 33 (174).
Laonice cirrata (Sars, 1851). Sta. RH 26 (24); RH 30 (535); RH 36 (1); RH 51 (10).
Laonice sp. Sta. 251 B (4).
?Nerine sp. Sta. RH 26 (20).
nerinid. Sta. RH 33 (2); RH 36 (2); RH 51 (2).
**Paraprionospio lamellibranchia*, new species. Sta. 210 B (2); 251 B (33); 256 A (fgm); RH 14 (31); RH 26 (30); RH 30 (ca 535); RH 33 (1); RH 36 (57); RH 41 (3); RH 51 (10).
Polydora armata Langerhans, 1880. Sta. D-16 (8).
**Polydora peristomialis*, new species. Sta. 251 B (2).
**Polydora* with cleft prostomium. Sta. RH 51 (2).
Polydora spp. Sta. RH 26 (205); RH 30 (24); RH 33 (2); RH 36 (1).
Prionospio cirrifera Wirén, 1883. Sta. RH 14 (1); RH 28 (1); RH 33 (97+); RH 36 (5); RH 41 (1); RH 51 (81).
**Prionospio ehlersi* Fauvel, 1928. Sta. 222 A (fgm); RH 36 (54).
**Prionospio malmgreni* Claparède, 1870. Sta. 251 B (1); RH 26 (30); RH 30 (398); RH 33 (10).
Prionospio spp. Sta. 28 A (1); 247 B (2); RH 36 (1); RH 51 (8).
Spiophanes spp. Sta. 251 B (1); RH 36 (4).
spionids. Sta. 210 B (fgm); RH 26 (9); RH 28 (18); RH 36 (1).

MAGELONIDAE

Magelona cornuta Wesenberg-Lund, 1949. Sta. 210 B (33); 230 B (palp); 247 B (32); 248 A (6).
**Magelona*, with smooth palpi Sta. RH 51 (10).
Magelona spp. Sta. RH 14 (30); RH 26 (47); RH 30 (5); RH 33 (39); RH 36 (4).

DISOMIDAE

**Disoma cirrifera*, new species. Sta. 251 B (1).
Disoma orissae Fauvel, 1932. Sta. RH 36 (3).

POECILOCHAETIDAE

Poecilochaetus serpens Allen, 1904. Sta. 210 B (1); 230 B (1); 269 C (1); RH 26 (1); RH 30 (2).

HETEROSPIONIDAE

**Heterospio longissima* Ehlers, 1875. Sta. 210 B (1); 230 B (1).

CHAETOPTERIDAE

Chaetopterus sp. Sta. RH 26 (1).
Phyllochaetopterus socialis Claparède, 1870. Sta. 254 B (7).
Phyllochaetopterus sp. Sta. RH 14 (13); RH 26 (24); RH 30 (6).
chaetopterid. Sta. RH 36 (1).

CIRRATULIDAE

**Chaetozone* sp. Sta 208 A (1); RH 26 (41); RH 51 (6).
Cirratulus ? cirratus (Müller, 1776). Sta. 206 A (1); 270 A (1).
Cirratulus sp. Sta. RH 26 (64); RH 30 (2).
Cirriformia tentaculata (Montague, 1808). Sta. RH 36 (1).
**Tharyx* spp. Sta 247 B (34); 251 B (7); RH 14 (13); RH 26 (24); RH 28 (2); RH 30 (35); RH 36 (6); RH 41 (1).
cirratulids. Sta. 222 A (1); 230 B (1); 248 A (1); 255 A (fgm); RH 33 (223); RH 51 (40).

ACROCIRRIDAE

**Acrocirrus uchidai* Okuda, 1934. Sta. 269 C (1).
**Acrocirrus* sp. Sta. 28 A (fgm).

COSSURIDAE

**Cossura dayi*, new name. Sta. 206 A (fgm); 251 B (2); RH 14 (29); RH 26 (64); RH 28 (160); RH 30 (13); RH 36 (1); RH 41 (195).
**Cossurella dimorpha*, new genus and species. Sta. 210 B (5); 222 A (1); 247 B (16); RH 51 (8).
**Cossurella*, another species. Sta. RH 36 (1).
cossurid. Sta 251 B (1).

FLABELLIGERIDAE

Brada taleh sapia Fauvel, 1932. Sta. RH 30 (85).
Brada, papillated. Sta RH 26 (31).
**Fauveliopsis arabica*, new species. Sta. 247 B (14); 248 A (3).
**Fauveliopsis* sp. Sta. RH 26 (2).
Pherusa bengalensis (Fauvel, 1932). Sta. 201 A (1).
Pherusa coronata (Ehlers, 1908). Sta. 247 B (2).
Pherusa curviseta (Caullery, 1944). Sta. 222 A (1).
Pherusa eruca indica (Fauvel, 1928). Sta. 247 B (3).
Pherusa flabellata (Sars, 1871). Sta 269 C (1).
Pherusa parmata (Grube, 1877). Sta. 206 A (1); 270 A (3).
Pherusa spp. Sta. 269 C (1); RH 26 (48); RH 36 (1); RH 51 (1).
flabelligerids. Sta. RH 28 (1); RH 30 (15).

OPHELIIDAE

Ammotrypane aulogaster Rathke, 1843. Sta. 222 A (1).
,, sp. Sta. RH (26) 6; RH 30 (61); RH 51 (3).
Polyophthalmus pictus (Dujardin, 1839); Sta. 29 (1).

STERNASPIDAE

Sternaspis scutata (Ranzani, 1807). Sta. 206 A (1).
Sternaspis, smooth. Sta. RH 26 (4).
Sternaspis, papillated. Sta. RH 26 (39); RH 36 (5).
Sternaspis spp. RH 14 (249); RH 30 (21); RH 33 (49); RH 41 (45); RH 51 (5).

CAPITELLIDAE

Dasybranchus sp. Sta. 206 A (2, fgm); 230 B (fgm).
Heteromastus ?filiformis (Claparède, 1864). RH 26 (1); RH 33 (23); RH 36 (7).
**Leiochrides branchiatus*, new species. Sta. RH 26 (1); RH 30 (132).
**Mediomastus caudatus*, new species. Sta. 251 B (5); RH 14 (33); RH 26 (889); RH 28 (1); RH 30 (521); RH 33 (30); RH 36 (ca 60); RH 41 (190).
Notomastus fauveli Day, 1955. Sta. RH 36 (1).
Notomastus spp. Sta. 247 B (15, fgm); RH 26 (5); RH 51 (28).
capitellids. Sta. 29 (fgm); RH 30 (many).

MALDANIDAE

?Asychis sp. Sta. RH 41 (1).
Maldanella sp. Sta. RH 41 (1).
?Petaloprocutus sp. Sta. 247 B (1).
Praxillela sp. Sta. ? 210 B (fgm); 247 B (fgm); 251 B (fgm).
Rhodine sp. Sta. 251 B (fgm).
maldanids. Sta. D-16 (2); 201 A ( ); 230 B ( ); RH 26 (89); RH 30 (161); RH 36 (1); RH 41 (1); RH 51 (6).

OWENIIDAE

Myriochele sp. Sta. 269 C (4).

SABELLARIIDAE

?Idanthrrsus sp. Sta. RH 26 (4).
Sabellaria sp. Sta. 47 B (fgm); RH 26 (10 jv).

PECTINARIIDAE

Amphictene sp. Sta. RH 30 (8).
Pectinaria sp. Sta. 201 A (3); RH 26 (48).

AMPHARETIDAE

?Ampharete sp. Sta. RH 26 (36).
Auchenoplax sp. Sta. RH 26 (530).
Lysippe sp. Sta. 270 A ( ); RH 36 (16).
Melinna sp. Sta. 28 A (1).
ampharetid, unknown. Sta. RH 26 (75).
ampharetids. Sta. 28 A (3); 201 A (1); 206 A (3); 208 A (1); 222 A (4); 247 B (12); RH 26 (349); RH 30 (334); RH 41 (7).

TEREBELLIDAE

Amaeana sp. Sta. RH 33 (fgm); RH 36 (fgm).
Lanice conchilecag (Pallas, 1766). Sta. 28 A (2).
? Lanice sp. Sta. 270 A (2).
Loimia medusa (Savigny, 1818). Sta. 201 A (1).
Pista spp. Sta. 206 A (2); ? 270 A (5); RH 30 (11); RH 36 (1).
Polycirrus sp. Sta. ?28 A (2); RH 26 (51); ?RH 36 (1).
Streblosoma cespitosa (Willey, 1905). Sta. 270 A (2).
Thelepus plagiostoma (Schmarda, 1861). Sta. 206 A (3).
terebellid, abranchiate. Sta. RH 26 (479)
terebellids Sta. D-16 (7); 269 C (1); RH 30 (30).

TRICHOBRANCHIDAE

Terebellides sp. Sta. RH 26 (26); RH 36 (1); RH 41 (2); RH 51 (6).
Trichobranchus glacialis Malmgren, 1866. Sta. 251 B (1).

SABELLIDAE

?Chone sp. Sta. RH 26 (8); RH 36 (2).
Megalomma sp. Sta. 18 A (1).
sabellids. Sta. D-16 (1); 206 A (fgm); 222 A (1); 247 B (2); 255 A (fgm); 269 C (1); RH 30 (25); RH 51 (1).

SERPULIDAE

Crucigera websteri tricornis Gravier, 1908. Sta. 18 A (1).
Ditrupa arietina monilifera Fauvel, 1932. Sta. RH 36 (21).
Hydroides heterocercus (Grube, 1868). Sta. 206 A (3).
?Omphalopomopsis fimbriata (delle Chiaje, 1828). Sta. 270 A (1).
Placostegus crystallinus Scacchi in Philippi, 1844. Sta. 28 A (1).
?Pomatostegus sp. Sta. 18 A (1).
Salmacina sp. Sta. D-16 (1); 28 A (2).
Serpula sp. Sta. 18 A (5); 28 A (2); 270 A (4).
Vermiliopsis sp. D-16 (1); 29 (fgm); 206 A (1); 269 C (4); 270 A (1).
serpulid Sta. RH 30 (3).

Systematic Account

Family *POLYNOIDAE*

Genus **Allmaniella** McIntosh, 1885

The body is long and has many segments. The prostomium is anteriorly continuous with the paired antennal bases, as in LEPIDONOTINAE. Neuropodia are laterally prolonged. Notosetae are thick, each has transverse rows of obscure spines. Neurosetae are slenderer than notosetae. *Allmaniella* is allied with *Eulagisca* McIntosh ; they differ in that the first has, the second lacks bifid setae ; the first lacks, the second has a facial tubercle. *Pseudopolynoe* Day 1962, differs from *Allmaniella* in that its notosetae are distally bifid ; neurosetae are slenderer and lateraly spinose and terminate in tapered tips.

Four species are currently known :

A. arafurensis Horst, 1915, Kei Island, East Indies, in 560 m ;
A. marquesensis Monro, 1928, Tai O Hae Pool, Marquesas ;
A. setubalensis McIntosh, 1885, off Spain, in 470 fms.
A. nuchalis, new species is added.

Allmaniella nuchalis, new species (Fig. 1a-d)

Materials : 124 F (1) ; 269 C (1, type).

Description : Length of an anterior fragment with 21 segments is 12 mm and width 5.6 mm. The everted proboscis measures an additional 6.8 mm long. The prostomium is wider than long, medially incised and has four large eyes in lateral position ; the anterior pair is at the widest part of the lobe, and the posterior pair nearer together, covered by a peristomial hood. The median antennal base is thick between the prostomial lobes ; the paired ones are smaller (Fig. 1-a). Palpi are long, thick, smooth and taper distally. The nuchal hood is large and conspicuous ; it covers the posterior part of the prostomium.

The first parapodia are small, setigerous and directed forward. All elytra have been lost. Notopodia are small and reduced and within the neurosetal bases (Fig. 1*b*). Anterior notosetae are few, number about four in a fascicle ; each is acicular or slightly curved distally, its tip acicular and cutting edge slightly serrated (Fig. 1c). The neuropodium is penetrated by a thick, yellow aciculum extending through the acicular lobe. Neurosetae number 50 or more in a long fascicle ; all are of one kind, resemble notosetae but the tip is minutely incised (Fig. 1d) as characteristic of the genus.

The type from the Gulf of Oman agrees with a specimen from Mauritius except that the second has neurosetae in which the superior-most are straight, blunt, acicular, with transverse rows of striations ; inferior-most setae are thicker and falcate, with a tapering tip and transverse striations along its exposed length. A detached elytrum is large, reniform, has central scar and entire margin ; its anterior surface is smooth and its posterior part behind the scar is lightly papillated ; highly magnified the papilla is seen as erect, distally expanded and with three sets of short spines,

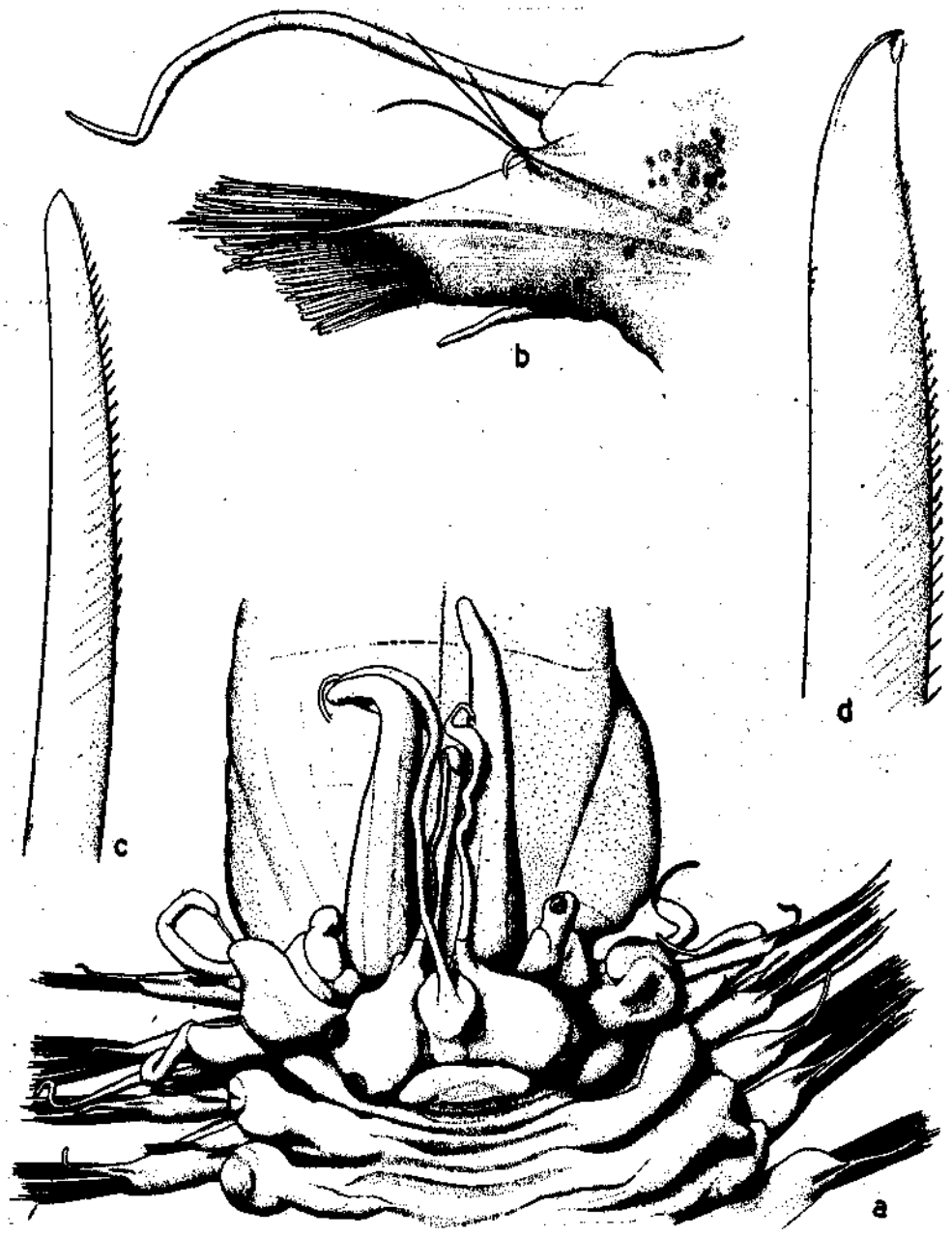


Fig. 1. *Allmaniella nuchalis*, n. sp.; a. anterior end in dorsal view, showing proboscis everted, x 63; b. parapodium 20 from right side, in anterior view, x 63; c. distal end of notoseta, in lateral view, x 590; and d. distal end of neuroseta, in lateral view, x 590.

resembling the elytrum of *Allmaniella ptycholepis* (Grube, 1878) from the Philippine Islands. Horst (1917, p. 78) has added to the original account.

Allmaniella nuchalis differs from other species of the genus in having a conspicuous nuchal hood ; neurosetae are distally minutely incised instead of entire.

Distribution : The type comes from the Gulf of Oman, in 121-124m ; another from Mauritius Islands came from 32.4-90m.

Genus **Harmothoe** Kinberg, 1855

Harmothoe branchiata, new species (Fig. 2a-d)

Materials : 206 A (3) ; 363 Z (3 type).

Description : The body is short, truncate and depressed ; the dorsum is crossed by transverse black lines and bars. It measures 12 mm long ; width at midlength or widest part is 2.1 mm and setigers number 39. Fifteen pairs of elytra are inserted on setigers 2, 4, 5, 7....21, 23, 26, 29 and 32 ; they are broadly overlapping and cover the dorsum. The prostomium is subquadrate, its sides convex (Fig. 2a) ;

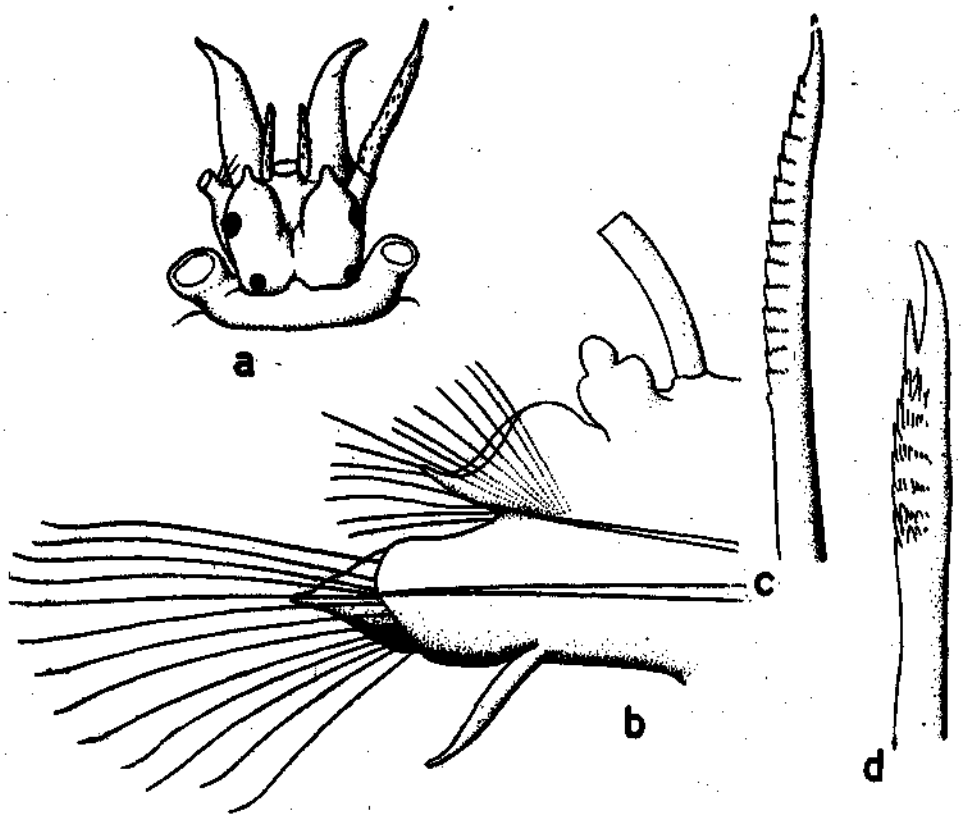


Fig. 2. *Harmothoe branchiata*, n. sp. Sta. 363 Z. a. prostomium in dorsal view, showing small erect lobe at anterior median margin of peristomium, x 60 ; b. median parapodium with dorsal cirrus incomplete, in posterior view, x 122 ; c. transversely serrated notoseta in lateral view, x 134 ; and d. transversely serrated, distally bifid neuroseta, x 134.

anterior peaks are slender and directed forward ; the midposterior margin has a rounded nuchal lobe directed forward. Four conspicuous black eyes are in front of midlength and the smaller posterior pair is at postectal margins of the lobe ; the median sulcus is slight. The median antenna has a large, thick base ; its style is missing. Paired antennae are much slenderer, directed distally about half as far as the paired palpi ; their styles are hirsute. The paired palpi are smooth or transversely rugose but not papillated. The first segment has three short, thick spines directed medially. The long ventral cirrus is directed obliquely forward to the ends of the palpi or beyond ; its tip is a tapering filament. The second setiger is the first with elytra and its parapodia are nearly normal.

Typical parapodia (Fig. 2b) have conspicuous notopodia with full fascicles of setae, and longer, larger neuropdia with long, fan-shaped fascicles of setae. Cirriferous segments have an accessory branchial lobe located below and behind the base of the dorsal cirrus. The latter is long, hirsute and terminates in a long filament. A long yellow aciculum extends through the slender acicular lobe. Notosetae number 40 to 50 in a fascicle ; each is thick, short, slightly falcate and distally entire ; the expanded part is crossed by transverse rows of serrations (Fig. 2c). Superiormost setae resemble the inferiormost ones except that the first are the shorter. Neuropodia are longest in their postsetal part, where they taper distally. Their setae number 15 to 20 in a spreading fascicle. Those in the middle of the series have a longer spinose region than those above or below ; each seta is distally bifid (Fig. 2d) and transversely spinose along its expanded part. Dorsal and ventral cirri are hirsute.

Elytra are broadly oval and dehiscent. Each has a smooth margin along its inner side and is densely fringed on its outer side ; the fringe continues on the surface to cover about half of minute microtubercles cover most of the elytral surface. A mottled black pigment is on the medial third.

Harmothoe branchiata is unique for having an inflated branchial process on cirriferous segments ; each is distally trilobed. The prostomium is posteriorly overlain by a small, semi-circular hood. Notosetae are thick, distally entire ; neurosetae are clearly bifid.

Distribution : The type originates from Tuléar, Madagascar, intertidal in sand flats ; others are from the Arabian Sea, in 71-79 m.

Genus **Hermadion** Kinberg, 1855

Hermadion africanus, new species (Fig. 3a-f)

Materials : 269 C (3) ; 399 B (3, type).

Description : A complete individual measures 14.2 mm long and 1.3 mm wide at greatest width in the anterior third of the body ; setigers number 43 to 46. The body is depressed and tapers to a slender tail ; its anterior two thirds is covered by the overlapping elytra ; the posterior end is uncovered and discloses the whorls of formidable yellow notospines directed dorsolaterally. The prostomium is harmothoid ; the paired peaks are wide apart and distally blunt. A shallow median sulcus extends throughout the prostomial length ; paired peaks are wide apart and distally blunt. The small paired papillated antennae are inserted ventrally. The

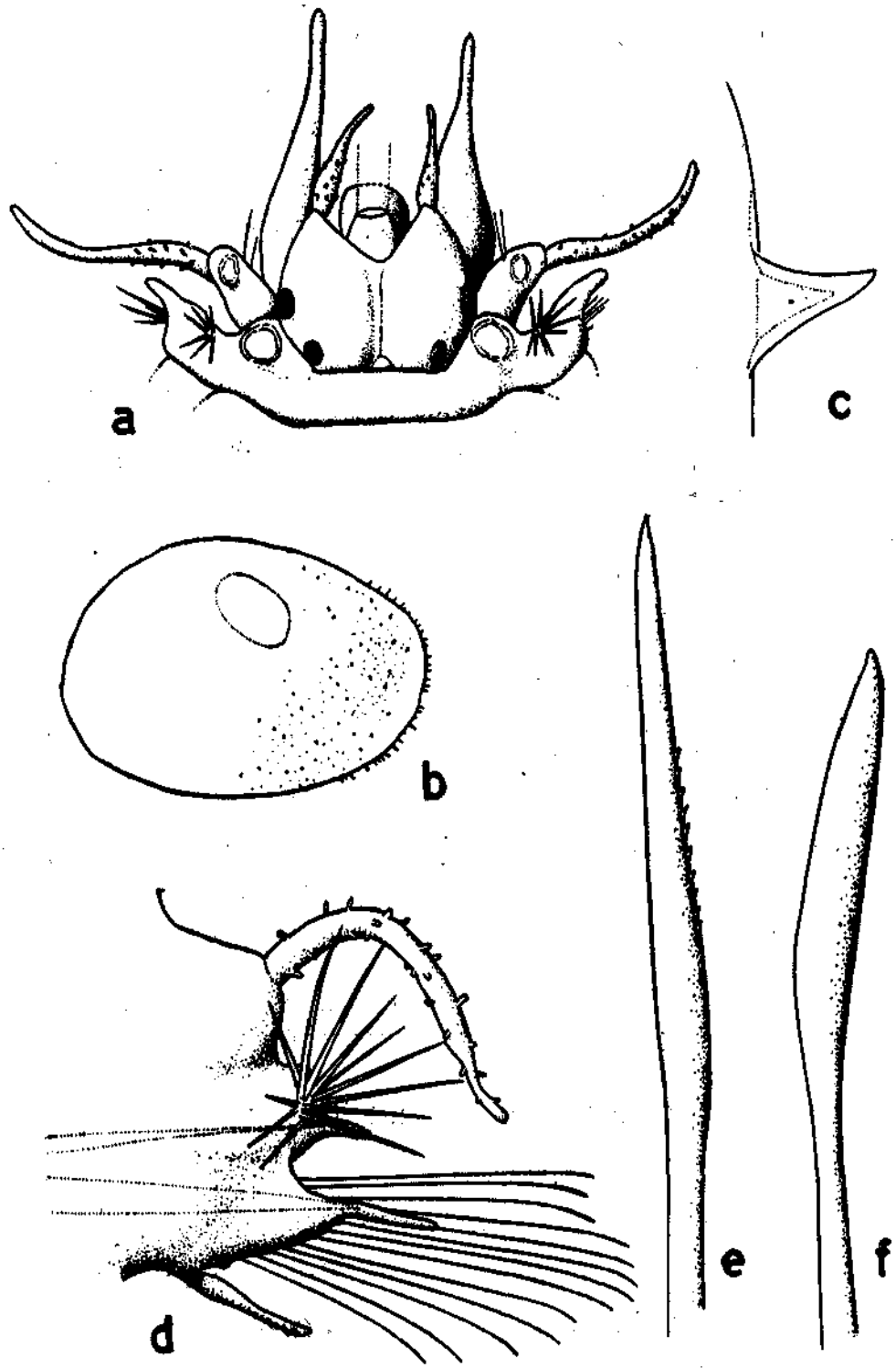


Fig. 3. *Hermadion africanus*, new species. Sta. 399 B. a. anterior end, in dorsal view, x 47 ; b. an anteromedian elytrum, in dorsal view, x 38; c. larger elytral spine from outer edge of elytrum, x 136 ; d. a median cirriferous parapodium, in anterior view, x 55 ; e. one of longer, laterally spinose notosetae from a median parapodium, x 136 a; and f. inferior-most neuroseta from same parapodium, in lateral view, x 136.

base of the median one is much smaller than that of the lateral pair. Four dark eyes are located with the anterior pair near midlength and dorsolateral ; the smaller posterior eyes are near the postectal margin of the lobe (Fig. 3a). The posterior prostomial margin is straight, it lacks a nuchal prominence. The median antenna has a thick, short base ; its style is missing. Paired antennal bases are much smaller than the median one ; their styles taper distally and are pilose. Each of the paired palpi is large, smooth, thickest at the base and tapers distally. A large, smooth facial tubercle is under the median antennal base.

The first parapodia are smallest and directed dorsally ; their dorsal cirri have fallen off but their bases support a pair of thick spines directed forward near the palpi. The first ventral cirrus is long, directed outward ; its style is pilose and resembles the similar long ventral cirrus of the second segment. Normal notosetae and neurosetae are first present from the second segment.

Elytra number 15 pairs ; each is flat, translucent, broadly oval, with smooth margin except for a sparse fringe at outer ectal margins (Fig. 3b) ; they are first present from setiger 2 and continued posteriorly to setiger 32. The upper surface has dispersed, tall, erect, translucent yellow spines (Fig. 3c) ; the longest and most conspicuous are on the exposed part of the elytrum. The elytral scar is excentric, near the anterior edge of the scale.

Parapodia are clearly biramous (Fig. 3d) Cirral styles, are hirsute ; notopodia are conspicuous because of their spreading fascicles of coarse spines directed dorsolaterally. Both notopodia and neuropodia terminate in long acicular lobes ; they extend distally beyond the setigerous lobe, each penetrated by a straight, projecting aciculum. Notosetae range from short to long number 20 to 30 in a fascicle ; most are smooth along their exposed part ; two or three have rudiments of serrated rows (Fig. 3e) along the cutting edge. Neurosetae are in fan-shaped series, emergent from the distal end of the neuropodium ; the longest are near the middle of the lobe and the shortest at the inferior end. Neurosetae are slenderest in superiormost, and thickest in inferiormost parts of the series ; (Fig. 3f) ; all are slightly falcate, expanded in their distal part and terminate in an entire tip.

Hermadion africanus differs from other species of the genus in having distally entire, instead of bifid, setae.

Distribution : Portuguese East Africa, in 859-960 m, associated with hexactinellid sponge spicules ; Gulf of Oman, Arabian Sea, in 121-124 m.

Genus **Scalisetosus** McIntosh, 1885

Key to Species

Neurosetae lack cusps on cutting edge.....*glabrus*

Neurosetae have one or more cusps along the cutting edge.....*levis*

Scalisetosus glabrus, new species (Fig. 4a - d)

Materials : 18 A (1, type) ; 22 A (89) ; 22 B (3).

Description : The body is depressed, pale or white without markings ; it tapers posteriorly. Length is 10 to 13 mm ; width 1.5 to 2 mm and setigers number 43. The prostomium is harmothoid and slightly wider than long ; it has blunt peaks and paired antennae inserted ventrally ; (Fig. 4a) ; a median sulcus is visible but not conspicuous. The median antenna is smooth, the style inserted on a thick, short base ; its long style tapers and extends distally beyond the paired palpi. Paired antennae are smooth and similar to the median one except that the bases and styles are shorter. Four eyes are small, on the posterior half of the prostomium ; they fade in alcohol. Palpi are thick, smooth, taper distally. The dorsum is nearly covered by firmly attached, smooth, delicate elytra ; they number 15 or 16 pairs ; the last pair is represented only by elytrophores from which the scales are lost ; they are inserted as typical of species of *Harmothoe*. Each elytrum is subcircular, with entire margin ; the upper surface is smooth and lacks tubercles.

The first parapodial segment is directed forward ; it is incomplete dorsally; its setigerous lobes are short and lack visible setae. The second segment has the first setae and is middorsally complete ; it bears the first pair of elytra and has ventral cirri resembling the paired prostomial antennae.

Normal parapodia are subbiramous, armed with translucent, yellow, spinelike setae. Each notopodium is a small lobe arising from the superior base of the neuropodium ; it has a long dorsal cirrus and a spreading fascicle of simple, thick, acicular spines, each distally incised (Fig. 4b), with widely spaced serrations at the cutting edge. Neuropodia are much larger ; each has a triangular presetal lobe longest at its superior edge, and a much shorter, rounded postsetal lobe. Setae are arranged in vertical series ; all are of one kind with the longest above, and others gradually shorter to the inferior end. The distal end of neurosetae is falcate (Figs. 4c and d) entire and the cutting edge has sparse serrations. Posterior segments are gradually shorter and narrower than those in front ; the posterior end tapers to a terminal pygidium.

Scalisetosus glabrus differs from other species of the genus in having nearly smooth instead of dentate notosetae ; their distal ends are incised instead of entire. Neurosetae are nearly smooth, lacking transverse serrations ; their tips are entire.

Distribution : Andaman Sea, Bay of Bengal, in 77 and 94 m ; removed from living tubes of *Eunice tubifex* Crossland.

Scalisetosus levis Marenzeller, 1902

Scalisetosus levis Marenzeller, 1902, p. 13.
Paradyte levis Pettibone, 1969, 82:16.

Materials : 203 A (4) ; 269 C (11) ; 270 A (4).

Diagnosis : Specimens were removed from tubes of *Eunice tubifex*, generally only one to a tube. The body tapers posteriorly and consists of about 50 setigers. First parapodia lack setae. The prostomium has two pairs of eyes on its posterior half ; a median antenna is larger than the paired antennae which have small bases in ventral insertion. A nuchal fold is absent.

Notosetae are of one kind, number few to twenty in a fascicle ; each is smooth, thick, acicular and tapers to a blunt tip. They are much thicker than neurosetae,

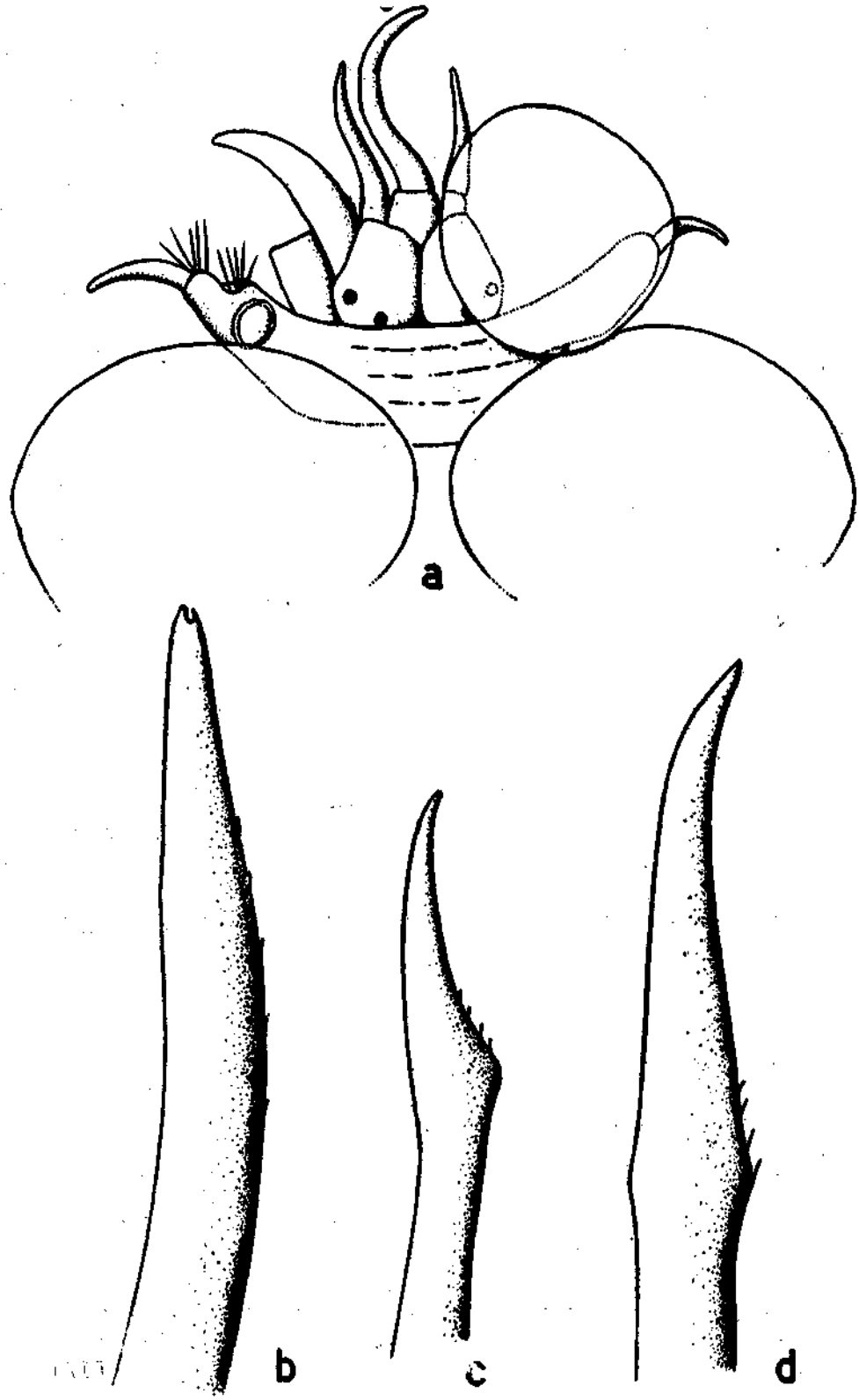


Fig. 4. *Scalisetosus glabrus*, n. sp. Sta. 18 A.; a. anterior end of body with prostomium and cephalic appendages, x 38; b. distal end of notoseta from setiger 6, x 800; c. distal end of inferior notoseta from setiger 6, x 800; and d. distal end of superior neuroseta from setiger 6, x 800.

which are also of one kind. Supra-acicular setae are longer and slenderer than those farther down; each has a single cusp at its thickest part and tapers distally to a slightly curved, entire or minutely bifid tip ; very fine serrations extend along the cutting edge. Each of the shorter subacicular setae has a single cusp at its thickest part and terminates in a falcate, entire or minutely bifid tip; minute serrations extend along the cutting edge. At least 15 pairs of elytra are present ; each is thin, delicate, subcircular in outline and the margin is entire.

Scalisetosus levis was originally named from Kagoshima, Nagasaki, and Hong Kong (Marenzeller, 1902, p. 575) associated with littoral alcyonarians. The specimens listed above agree with Marenzeller's account.

Distribution : Gulf of Oman, Arabian Sea, in 55 to 124 m ; originally named from southern Japan and Hong Kong.

Family *POLYODONTIDAE*

Key to Genera

1. Prostomial eyes stalked, with ommatophores.....2
   Prostomial eyes sessile, without stalks.....*Eupanthalis*
2. Superior setae pencillate, resembling a paint brush.....*Panthalis*
   Superior setae hirsute over a considerable free length.....3
3. Prostomial eyes large, bulbous, comprise most of the prostomium.....
   .....*Eupolyodontes*
   Prostomium eyes not bulbous, separable from the prostomium.....
   .....*Polyodontes*

Genus **Eupanthalis** McIntosh, 1876

Eupanthalis kinbergi McIntosh, 1876.

Eupanthalis kinbergi Day, 1967, p. 94.

Material : 254 B (2).

Diagnosis : A large specimen is 116 mm long and 5 mm wide ; it consists of more than 200 segments. The prostomium is subcircular and has four small, sessile eyes on its anterior half. The median antenna is long, inserted near the posterior end of the prostomium. Anterior antennae are similar though much shorter, linear and inserted at the frontal margin of the prostomium. Palpi are thick, large, taper distally ; the basal two thirds is smooth, the distal third very spinose ; the palpi extend distally beyond the ends of cirri and antennae ; each palp is about two times as long as a paired antenna.

The first parapodia are large, have broad setal lobes and a long ventral cirrus. Elytra are smooth ; each is firmly attached. Setae of median parapodia are short,

thick, acicular and distally spinous ; they number 10 to 15 in a fascicle. In addition there are much longer, slenderer setae of two kinds ; some are widely, others closely spinose along their cutting edges.

Distribution : North Arabian Sea, in 256 m ; originally named from Adventure Bank, North Atlantic Ocean ; more widely in the Mediterranean Sea.

Eupanthalis nigromaculata (Grube, 1878)

Eupanthalis nigromaculata Horst, 1917, p. 134, pl. 29.

Material : 21 (fgm).

Remarks : Elytra have a black spot over the elytral scar, suggested by the specific name. The prostomium is quadrate, has a pair of large anterior eyes directed upward, and a pair of much smaller ones near the posterior margin of the lobe. A pair of small frontal antennae remains attached ; a median antenna is absent. A small nuchal papilla is visible at the postmedian margin of the prostomium.

Distribution : South-west of Bangkok, Arabian Sea, in 72 m ; originally from the Philippine Islands, recorded also from the East Indies.

Genus **Eupolyodontes** Buchanan, 1894

Eupolyodontes sumatranus Pflugfelder, 1932

Eupolyodontes sumatranus Pflugfelder, 1932, p. 282, figs. 1-5.

Material : 262 A (1).

Distribution : Gulf of Oman, Arabian Sea, in 79 m, in green muddy sand ; originally from Sumatra, in mangrove swamp.

Family *PEISIDICIDAE*

Genus **Peisidice** Johnson, 1897

Peisidice dorsipapillata (Marenzeller, 1893), new combination

Pholoe dorsipapillata Marenzeller, 1893, 60 : 30.

Peisidice dorsipapillata Hartman, 1970, in press.

Material : 268 C (38).

Remarks : The prostomium has a single median antenna in frontal insertion. The first parapodia are well-developed with conspicuous fascicles of setae directed forward at the sides of the prostomium. Setae are short appendaged falcigers.

The family name is used in the sense of PEISIDICINAE Darboux, 1899.

Distribution : Gulf of Oman, in 121-124 m ; originally named from the Mediterranean Sea in 381 m.

Family *SIGALIONIDAE*

Genus **Pholoe** Johnston, 1839

Pholoe sp.

Materials : RH 30 (2) ; RH 36 (1).

Remarks : The specimens are small, immature ; they may be referrable to one of the several species named from western Europe (Fauvel, 1923, 5 : 119).

Distribution : Bay of Bengal, in 15 and 37 m.

Family *AMPHINOMIDAE*

Genus **Hipponoa** Audouin and Milne Edwards, 1833

Hipponoa gaudichaudii Audouin and Milne Edwards, 1833

Hipponoe gaudichaudii Fauvel, 1923, 5 : 132.

Material : 28 D (1).

Distribution : Off Andaman Islands, in 326-357 m ; previously recorded from cosmopolitan areas, in association with pelagic barnacles.

Family *PHYLLODOCIDAE*

Genus **Mysta** Malmgren, 1965

Mysta sp.

Material : RH 26 (7).

Remarks : The small specimens may be immature ; they are characterized by the presence of two pairs of tentacular cirri, resembling *Eteone* Savigny ; The everted proboscis has rows of papillae distally, in contrast to the smooth proboscis of *Eteone*.

Distribution : Off Porto Novo, near the mouth of the Vellar estuary, in 1.5 m.

Genus **Sige** Malmgren, 1865

Sige macroceros (Grube, 1860)

Eteone (*Pterocirrus*) *macroceros* Fauvel, 1923, 5 : 167. Banse, 1959, 30 : 423.

Material : 269 C (1).

Distribution : Gulf of Oman, in 121-124 m ; originally named from the Mediterranean Sea.

Family *HESIONIDAE*

Genus **Guptis** Marion and Bobretzky, 1875

Gyptis of arenicolus (La Greca, 1946)

Oxydromus arenicolus La Greca, 1946, p. 273.

Materials : RH 28 (1) ; RH 33 (18) ; RH 36 (1).

Diagnosis : The prostomium is sub-rectangular, wider than long, has a pair of longer and a short median antenna ; a pair of biarticled palpi is inserted at the frontal margin. The cylindrical proboscis is smooth and terminates distally in a circlet of widely spaced papillae. Parapodia are clearly biramous ; notosetae are simple and neurosetae are composite falcigers. *Oxydromus* Grube is referred to *Gyptis* Marion and Bobretzky (Hartman, 1965, p. 23).

Distribution : Bay of Bengal, in 1.5 to 37 m ; originally named from Naples.

Family *PILARGIDAE*

Genus **Synelmis** Chamberlin, 1919

Synelmis albini (Langerhans, 1881).

Ancistrosyllis albini Langerhans, 1881, p. 107.
Synelmis albini Pettibone, 1966, 118 : 191.

Material : 29 (1).

Remarks : The body is slender, wiry, resembles a nematode.

Distribution : Andaman Island, Bay of Bengal, in 65-40 m ; originally named from Canary Islands.

Family *SYLLIDAE*

Genus **Eurysyllis** Ehlers, 1864

Eurysyllis tuberculata Ehlers, 1864

Eurysyllis tuberculata Fauvel, 1923, 5:271.

Material : 18 A (2).

Distribution : Bay of Bengal, in 77 m, washed from algae ; originally named from the Mediterranean Sea ; more widely reported from world-wide areas.

Genus **Pionosyllis** Malmgren, 1867

Pionosyllis sp.

Material : RH 36 (15).

Diagnosis : This may represent an undescribed species. The body is pale, translucent, widest in the proventricular region and it tapers posteriorly ; it lacks

colour pattern. Length is 4 mm; width 0.3-0.4 mm, and setigers number more than 40. The dorsum of most segments is crossed by a band of cilia. The protomium is wider than long, as four small red eyes with the anterior pair crescentic and wider apart than the small posterior ones. Palpi are broadly tringular, widest at the base and completely separated. The partly everted pharynx is distally is terminated by a circlet of ten widely spaced papillae ; a horny yellow, distally pointed tooth is inserted mid-dorsally, behind the terminal papillae. The withdrawn proboscis extends through six or seven segments, and the glandular gizzard through as many segments farther back. The four pairs of tentacular cirri are long, filiform; the second dorsal pair is much the longest, extending back to setiger 10; all resemble the widely spaced dorsal cirri farther back. Some alternating dorsal cirri are shorter but also smooth. Ventral cirri resemble the dorsal cirri but are less than half as long.

Parapodia have composite setae in which the appendage is long and spinigerous in superiormost setae and much shorter, falcigerous in inferiormost position ; all setae are distally entire. The cutting edge is coarsely dentate with teeth in a single row with the largest at the base. Some specimens have large oval ova, exceeding in size the width of the parapodia, attached at the base of ventral cirri of median and several postmedian segments ; development is thus direct.

Distribution : Bay of Bengal, in 37 m.

Family *NEREIDAE*

Genus **Ceratonereis** Kinberg, 1866

Ceratonereis hircinicola (Eisig, 1870)

Ceratonereis ehlersiana Fauvel, 1919, 58: 401.
Nereis (*Ceratonereis*) *hircinicola* Fauvel, 1923, 5:350.

Material : 28 A (5).

Distribution : Andaman Sea, in 94 m; originally from the Mediterranean Sea, associated with sponge ; known more widely from the Red Sea and Madagascar.

Genus **Neanthes** Kinberg, 1866

Neanthes sp.

Material : RH 30 (9).

Remarks : Posterior parapodia have a notopodial lobe resembling a slender dorsal cirrus ; the dorsal cirrus articulates with the lobe at the superior base of the notopodial lobe.

Distribution : Off Madras, in 15 m.

Genus Nereis Linnaeus, 1758

Nereis filicaudata Fauvel, 1951 (Fig. 5 a, b)

Nereis filicaudata Fauvel, 1951, p. 519, fig. 2.

Material : Bimini, Bahama Islands.

Diagnosis : A male epitoke measures 12 mm long and consists of three regions (Fig. 5a); an anterior one has 13, a middle one with modified parapodia has 28, and a posterior one with normal parapodia has 23 setigers, with a total of 64 segments. A modified fifth epitokous parapodium has foliose lobes as shown in Fig. 5b ; they are abruptly present on setigers 14 to 41 ; more posterior parapodia have normal lobes and setae. The specimen agrees fully with the account by Fauvel (1951, p. 519) for a specimen from Somaliland. Its presence in the western tropical Atlantic Ocean is of particular interest because of its possible long life in oceanic plankton. There are no other records of this species and its atokous stage remains unknown. In this respect it is like *Platynereis abnormis* Horst, also known only through its male epitoke ; it too has three distinct body regions.

The present material was earlier reported as Heteronereis (Andrew and Andrew 1953, p. 519).

Distribution : Somaliland and Bahama Islands, in plankton.

Nereis persica Fauvel, 1911 (Fig. 5c-e)

Nereis zonata persica Fauvel, 1911, p. 385; Fauvel, 1953, p. 95 ; Day, 1967, p. 314.

Material : 213 A (2) ; 221 A (1) ; 270 A (1).

Diagnosis : A complete specimen consists of 65 segments and measures 10mm long. The prostomium has two pairs of black eyes in rectangular arrangement on the posterior half of the lobe ; each has a small pale lens. The everted proboscis has paragnaths on all areas except V and I ; the oral ring has crescentic patches of small cones on areas II, III and IV. Area VI has a cluster of paragnaths ; combined areas VII and VIII have two or three irregular rows ; the largest cones are in one row on the oral end.

Notopodial lobes of posterior parapodia are enlarged ; the dorsal lobe has a rectangular base with its lower part prolonged to resemble a slender dorsal cirrus. The middle lobe resembles the neuropodial lobe (Fig. 5c). Each of the posterior notopodia has one or two homogomph falcigers in which the appendage is long with two or three small knobs along the cutting edge, the knobs diminishing basally (Fig. 5e) ; the tip is blunt. Posterior neuropodia have superior homogomph spinigers and a single shorter, thick heterogomph falciger. The subacicular fascicle has hetero gomph spinigers and one or two composite falcigers like the one above ; the appenage is longer than wide and the cutting edge has serrations (Fig. 5d).

Distribution : Arabian Sea, in 55-72 m ; originally named from the Persian Gulf.

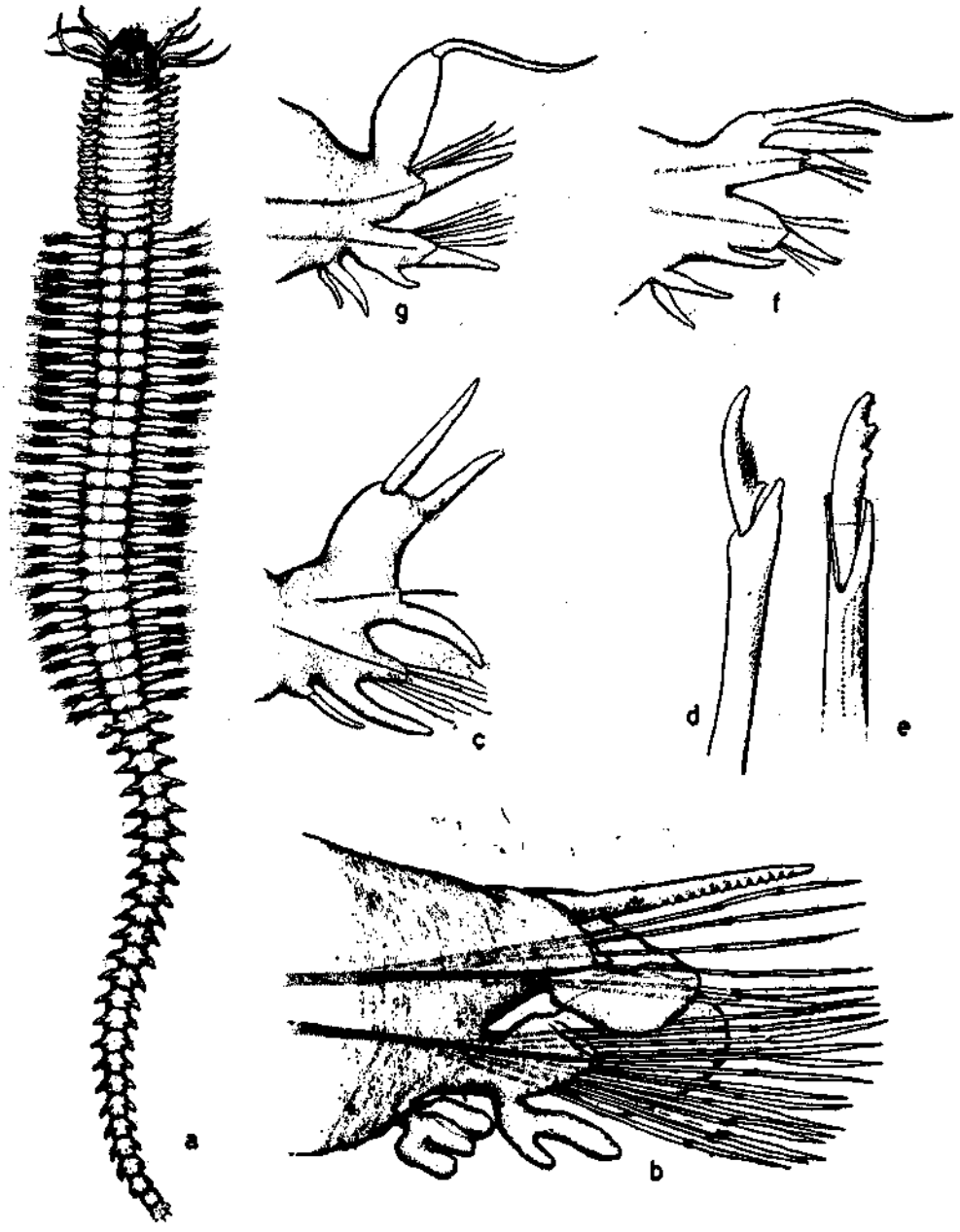


Fig. 5. *Nereis filicaudata* Fauvel, 1951. (Bimini); a. entire epitokous individual, in dorsal view, x 1.7; b. Fifth epitokous parapodium, x17. *Nereis persica* Fauvel, 1911. Sta. 213 A. c. parapodium 52, in anterior view; d. inferior neuroseta from same parapodium, x 644; e. homogomph notoseta from same parapodium, x 644; *Tambalagamia fauveli* Pillai, 1961. Sta. 251 B; f. parapodium 13, in anterior view, x 23; *Tambalagamia orientalis*, n. sp. Sta. 208 A; g. parapodium, 12, in anterior view, x 56.

Nereis spp.

Material: 206 A (4), RH 26 (6).

Remarks: Small specimens with four eyes are atokous; they may be representatives of a species previously named.

Distribution: Arabian Sea, in 21-24 m.

Genus **Tambalagamia** Pillai, 1961

Tambalagamia was erected for *T. fauveli* Pillai, 1961, taken from a brackish lake in Sri Lanka. It is characterized by having an eversible proboscis armed only with soft papillae on the oral ring, and a pair of distal jaws. The prostomium is incised mid-frontally. Ventral cirri are double on most parapodia. Acicula are black, occur singly in a fascicle; they are accompanied by composite spinigers in which the articulation is homogomph. Falcigers are totally lacking.

Tambalagamia is allied with *Tylonereis* Fauvel, which also has a prostomium medially incised and only soft papillae on the proboscis; setae are exclusively composite spinigers The two differ in that *Tambalagamia* has double, the second has single ventral cirri; the first has long notopodial lobes modified as branchiae, whereas the second has normal short lobes.

Tambalagamia fauveli Pillai, 1961 (Fig. 5f)

Tambalagamia fauveli Pillai, 1961, p. 3.

Material: 251 B (1).

Diagnosis: An anterior end with 16 segments measures 3.2 mm long and 2.2 mm wide. The body is pale except for four black eyes and acicula. The prostomium is subquadrate; the eyes are in trapezoidal arrangment on the posterior half of the lobe. Frontal antennae are slightly longer than the prostomium and extend distally and the palpophores. Palpi are long, with thick bases; their styles are almost as long as the bases. Each of the four tentacular cirri is long, with cylindrical base and slender style extending far beyond other cephalic appendages.

Parapodia of the first 16 segments have long lobes. Their ventral cirri are double from the first setiger and continued so through 16 segments. Dorsal cirri appear double through 13 segments because they are attached to the long, slender dorsal lobe at its base; the attachment moves progressively distally to mid-length of body (Fig. 5f) in posterior segments. Abruptly at setiger 14 the insertion is at the distal end of the dorsal lobe. The notoacicular lobe is long and pointed; it resembles the dorsal cirrus except that the first is the thicker. Acicular lobes are bluntly triangular. Neuropodia have a broadly rounded presetal lobe which is surpassed by the triangular acicular lobe and the much longer postsetal lobe. The inferior parapodial lobe is long and tapering. These long lobes give a ragged appearance to the body where they occur.

Neanthes longilingus (Monro, 1937, p. 277) from the Arabian Sea also has long parapodial lobes. It has homogomph spinigers but no falcigers in notopodia and thus

belongs to *Neanthes* Kinberg. The proboscis is armed with chitinized paragnaths, differing from *Tambalagamia* which has only soft papillae.

Distribution : Arabian Sea, in 35 m, originally named from Sri Lanka in a brackish lake ; more widely reported from Nha Trang, Viet Nam (Gallarodo, 1968, p. 63, as *Ceratocephale*).

Tambalagamia orientalis, New species (Fig. 5g)

Material : 208 A (1, type) ; RH 26 (123) ; RH 30 (294) ; RH 36 (5).

Description : A small anterior fragment of 16 setigerous segments measures 3.5 mm long by 1.5 mm wide ; a posterior end is lacking. The everted proboscis has yellow jaws with oblique cutting teeth. The maxillary ring is smooth; the oral ring has a row of soft papillae with three in a transverse row on combined areas V and VI ; areas VII and VIII have seven in a transverse row. The prostomium is subrectangular, wider than long, with a deeply incised midfrontal margin. The four eyes are in trapezoidal arrangement with the larger, anterior pair the wider apart ; all have lenses in which the anterior ones are reniform. Frontal antennae are slender, tapering ; each is nearly as long as the slender palpostyle. The prostomium resembles that of *T. fauveli* (above).

The four pairs of tentacular cirri are subequal and taper distally ; they resemble the dorsal cirri but are somewhat longer. The longest or second dorsal pair extends back to about setiger 3 ; all appendages are smooth and tapering. The first two pairs of parapodia are uniacicular with the first pair much the smaller. The second pair has a notopodium but lacks setae and acicula. Parapodia are normal and biramous from the third setiger.

Biramous parapodia are similar throughout except that dorsal cirri from setiger 7 are abruptly larger than those in front and the dorsal lobe is broadly foliose (Fig.5g). The dorsal cirrus is inserted terminally in all parapodia, contrasting therein from that in *T.fauveli* (above) where the insertion changes from base to midlength and finally in terminal position at setiger 14.

Acicula are black, slender, taper to acute tips ; they occur singly in a ramus. Setae are entirely slender, composite, homogomph spinigers.

Tambalagamia orientalis differs from *T. fauveli* (*see* above) in that the dorsal cirrus is distally attached to the notopodial lobe in anterior and posterior parapodia ; in the second it is in basal attachment. The first comes from a marine habitat, the second from a brackish lake.

Numerous smaller specimens, perhaps juveniles, come from the Bay of Bengal in stations of the RH series ; they agree with the type specimen in all details except their smaller sizes.

Distribution : South-west of Bombay, Arabian Sea, in 110-113 m ; Bay of Bengal, in shelf depths.

Family *NEPHTYIDAE*

Genus **Aglaophamus** Kinberg, 1866

Aglaophamus longicephalus, new species (Fig. 6a-c)

Material : 255 A (1, type).

Description : A nearly complete specimen with pharynx fully everted consists of 42 segments and is 7 mm long by 1.2 to 1.5 mm wide. The prostomium is unusually long, sub-rectangular and extends back through the second setigerous segment it has two pairs of frontal antennae with the two of a side inserted close together at outer ectal margins of the lobe. A pair of black eyespots is visible near the posterior end of the lobe (Fig. 6a).

The proboscis is wider than long, thick and trunklike ; it has 22 distal rows of bifid papillae ; a long, slender middorsal one is attached beyond the subdistal rows. The paired ones are in 14 irregular longitudinal rows, with up to six in the outermost rows and about four in inner ones ; all are on the distal half of the proboscis. The proximal surface is smooth.

The first segment is unusual in that its notopodia and neuropodia are reduced and appressed at the sides of the anterior half of the prostomium ; the notopodium it over the neuropodium and setal fascicles are reduced. The second segment is also incomplete mid-dorsally; its lateral parapodia are more nearly normal in size and seals components, resembling parapodia farther back.

Interramal cirri are first present and large from the third setiger ; they are continued posteriorly through a long region. They exceed in size their respective notopodial cirri (Fig. 6b) and come to inscribe a coil at setiger 20, or where best developed (Fig.6c). The accompanying notopodial cirrus is small throughout ; it terminates distally in a slender filament. The acicular lobe is conical, penetrated by a yellow, distally recurved aciculum. Preacicular lobes are short, inconspicuous ; postacicular lobes are somewhat foliose and short, broadly rounded, nowhere conspicuous. The ventral cirrus is short, diminishes posteriorly to a smaller lobe attached proximal to the emergence of the inferiormost setae.

Preacicular setae are transversely barred, shorter than the postacicular setae. Furcate or lyre-setae occur in the postacicular series, with the two tines about equally long. Postacicular setae are long, flowing, smooth, without serrations or spines.

Aglaophamus longicephalus is characterized by its prolonged prostomium, the presence of black eyes at its posterior end ; the proboscis has a conspicuous middorsal papilla together with 14 longitudinal rows of much smaller papillae. Inter ramal cirri are present from the third setiger and involute. Parapodial postsetal lobes are inconspicuous throughout.

Distribution : Arabian Sea, in 92-95 m.

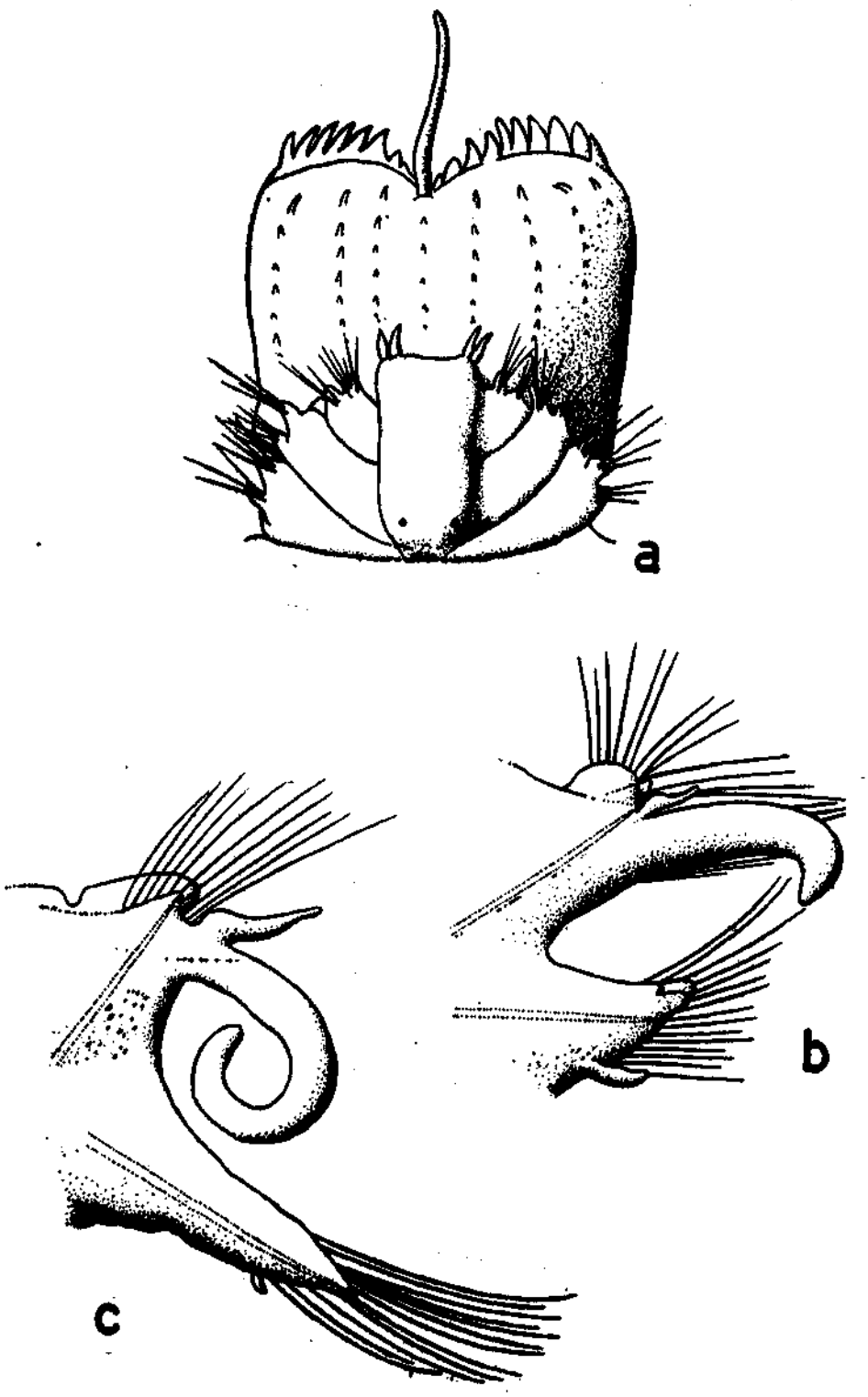


Fig. 6. *Aglaophamus longicephalus*, n. sp. Sta. 225 A. a. anterior end with pharynx everted in dorsal view, x 50 ; b. twelfth right parapodium, in posterior view, x 70 ; and c. twentieth parapodium, in anterior view, x 70.

Family *GONIADIDAE*

Genus **Goniada** Audouin and Milne Edwards, 1833

Goniada asiatica, new species (Fig. 7a,b)

Material : 251 B (1); 255 A (1, type).

Description : Length of a mature individual with 58 setigers, posteriorly incomplete, is 11 mm; width is 1 to 1.2 mm in the widest or biramous region. The body consists of 22 anterior uniramous, and more than 36 posterior biramou setigers. The prostomium tapers forward to a truncate end with four biarticulate antennae in which the basal article is the longer. The prostonium is weakly annulate, with six or seven hardly visible rings ; the basal ring is longest. Eyes are not visible. The everted proboscis is short, thick and translucent ; it is as long as the first eight setigers. It has seven chevrons on each side near midlength ; the largest pieces are at the middle and oral, and the smallest at the maxillary end. The surface papillae are small, widely dispersed and approximately in longitudinal rows ; each is a low cone with terminal pore. The distal end terminates in a circlet of thick papillae. Each of the macrognaths has three to five teeth ; the dorsal arce or microgaths has two, and the ventral arc has four larger, X-shaped pieces.

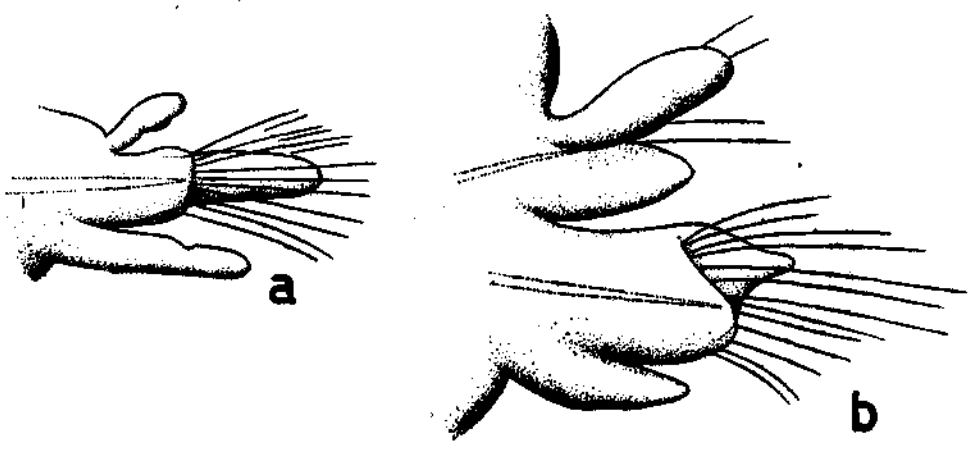


Fig. 7. *Goniada asiatica*, n. sp. Sta. 255 A. a. anterior, eighth uniramous parapodium, in anterior view, x 102 ; and b. anteromedian biramous parapodium, in anterior view, x 102.

The first 22 parapodia are uniramous ; each has a long, lateral neuropodium with a short dorsal cirrus, a much longer ventral cirrus, a short, turncate presetal lobe and a much longer post setal lobe (Fig. 7a) directed forward or somewhat erect. Notosetae are entirely slender, composite spinigers. Parapodia are abruptly biramous from setiger 23 ; the notopodium is represented by a long, flat presetal lobe in superior, and a shorter setal lobe below (Fig. 7b). A yellow aciculum is accompanied by four to six limbate, distally pointed setae with cutting edge lightly serrated. Neuropodia are larger, have a conspicuous postsetal lobe longest in its superior part and distally attenuated. The presetal lobe is shorter, inferior, and the fan-shaped fascicle of 25 or more setae emerges between pre-and post-setal lobes. Setae are composite spinigers, with the appendage marginally serrated. The ventral cirrus is

thick, long and distally blunt. The biramous parapodia are distended with large spherical ova.

Goniada asiatica differs from other species of the genus in the postsetal lobe of biramous parapodia ; notosetae are limbate, distally pointed and marginally serrated ; micrognaths are reduced in number.

Distribution : Arabian Gulf, in 35 to 95 m.

Family *ONUPHIDAE*

Genus **Diopatra** Audouin and Milne Edwards, 1833

Diopatra bengalensis, new species (Fig. 8a-f)

Materials : 201 A (4); 230 B (fgm); 251 B (2); 255 A (5, type).

Description : Length of an incomplete specimen of about 100 segments is 70mm; width attains 6.8 mm in the branchial or widest part. Preserved specimens lack colour spots or patterns. The prostomium has short, subulate frontal antennae. A pair of large, circular eyes is located between median and inner lateral ceratophores, at the posterior margin of the prostomium. All occipital tentacles have long bases ; each of the longest or inner lateral pair has 16 short and a longer distal ring ; the median one is shorter. Tentacular styles have longitudinal rows of broken black lines. Peristomial cirri are long, slender, taper distally and extend back to the first branchial, or fourth setigerous segment.

Anterior parapodia are largest and ventrolateral ; each of the second has a greatly prolonged dorsal cirrus, a similar but shorter, postsetal lobe and a ventral cirrus as long as, but slenderer than the postsetal lobe (Fig.8a). The postsetal lobe is incised at its midlength. Embedded acicula are yellow and accompanied by a superiormost, smooth, curved seta (Fig. 8b) and about five falcigers ; these are distally bifid and lack articulation ; the distal hood is prolonged (Fig. 8c).

Ventral cirri are cirriform on four setigers, then short and thick on one segment and padlike thereafter; they diminish in size posteriorly. Branchiae are first present from setiger 4 ; each is long and spiraled with the filaments in loose arrangement (Fig. 8d). Branchiae are spiraled on 35 to 40 segments, then diminish so that the filaments are in pectinate arrangement on about ten segments, after which they are absent.

Subacicular hooks are first present from setiger 16 or 17 ; they number two in a parapodium ; each is yellow, distally bifid with the accessory tooth nearly at right angles to the main fang; the hood is distally truncate and short. Subacicular hooks continue posteriorly to the end, with the two in a fascicle widely spaced and located below other setae.

Pectinate setae are first present from setiger 8, at first only two or three in a fascicle ; each seta widens distally and terminates in a web (Fig. 8e) with ten teeth at its margin. The setae increase in number and size posteriorly; in mid-branchial segments they number about 30 in a fascicle and the terminal teeth number 20 to 35 (Fig.8f). The accompanying limbate setae are hispid in their free length.

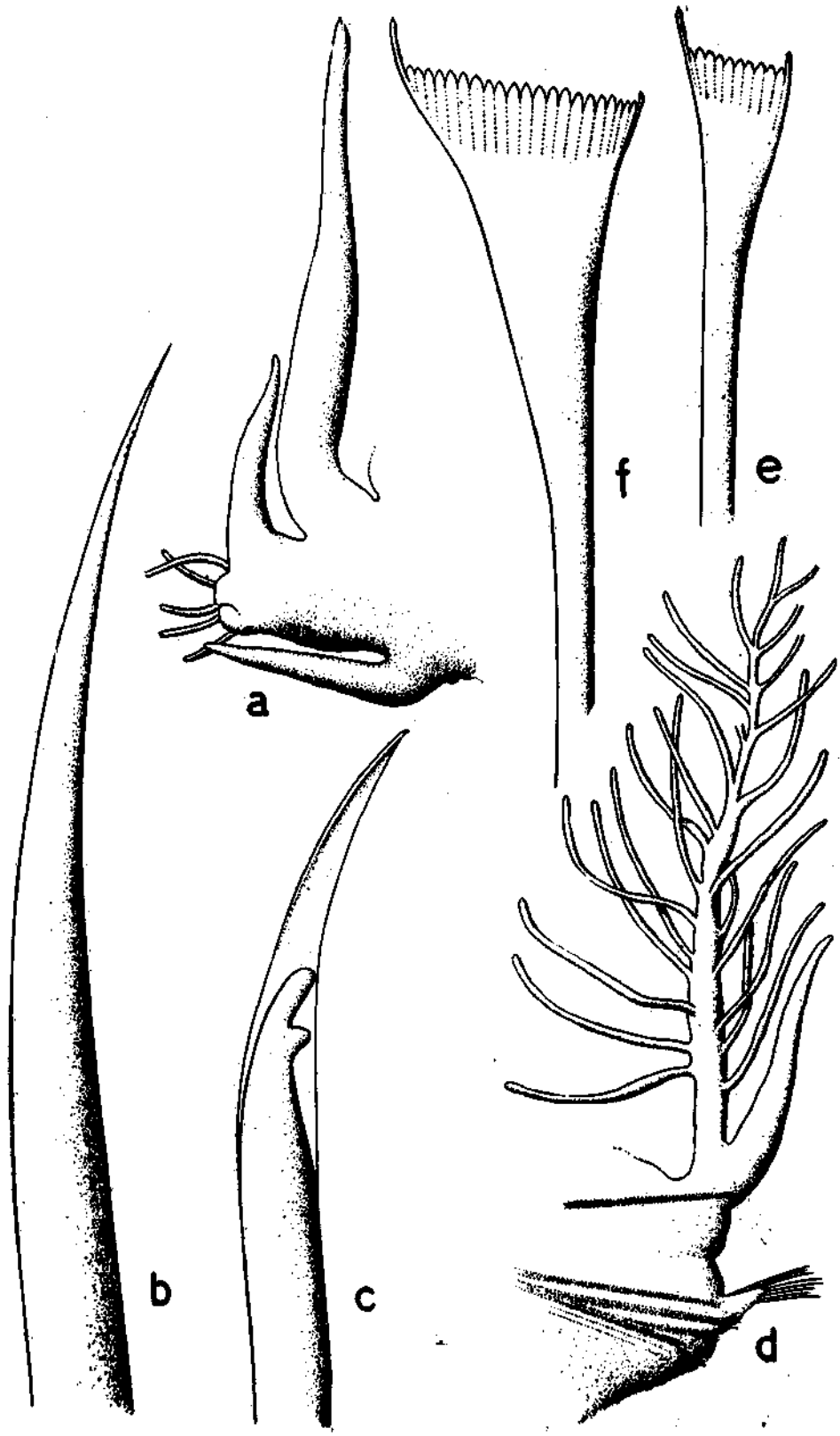


Fig. 8. *Dipatra bengalensis*, n.sp. Sta. 255 A. a. second parapodium, in anterior view, x 30 ; b. simple pointed seta from second setiger, x 1120 ; c. hooded hook from second setiger, x 1120 ; d. branchial parapodium with erect branchia, x 22 ; e. pectinate seta from setiger 8, or first appearance, x 1120 ; and f. pectinate seta from a midbranchial setiger, x 1120.

The proboscidial apparatus consists of paired ventral mandibles and dorsal maxillae. Maxilla I is thick, black, falcate on each side ; II has 8 teeth on right and 7 teeth on left side ; unpaired III has 9 teeth on the right side and IV has 8 teeth right and 6 teeth left.

Diopatra bengalensis differs from *D. variabilis* Southern (1921, p. 611) from Chilka Lake, in the following respects : prostomial eyes are large in the first and small spots in the second ; subacicular hooks are first present from setiger 16 or 17 in the first, and from setiger 28 in the second ; anterior falcigers lack an articulation in the first and are pseudoarticulate in the second ; peristomial cirri are long in the first and short in the second ; the second setiger has a long, tapering postsetal lobe in the first and a short, triangular lobe in the second. The median occipital tentacle is shorter than inner lateral pair in the first and longer in the second. Branchiae are pectinate 35 to 40 segments in the first and through about 77 segments in the second. *D. bengalensis* is marine and *D. variabilis* occurs in brackish water.

Distribution : Arabian Sea, in 92-95 mm.

Family *LUMBRINERIDAE*

Lumbrineris inhacae Hartman, 1970

Lumbrineris inhacae Hartman, 1970, in preparation.

Materials : RH 14 (8) ; RH 26 (322); RH 30 (about 1000); RH 36 (14); RH 51 (19).

Diagnosis : This species is more completely described based on larger individuals coming from Inhaca Island, Mozambique. Most of the specimens here named are uniformly grass-green, small in size and presumbaly juveniles. The species is characterized by having a short, conical prostomium, composite hooks first present from the second setiger ; they continue posteriorly through 15 segments and are accompanied by limbate setae. Simple hooded uncini number three in a parapodium and replace the limbate setae at setiger 16. Far posterior parapodia are bilobed, with pre-and postsetal lobes long and digitate. Acicula and setae are translucent yellow. Uncini are distally dentate ; a large basal fang is capped by four or five more distal teeth in linear series ; they diminish in size gradually.

The maxillary formula is 1-4-1-1 in which only maxilla II is multidentate. Maxillary carriers are triangular.

Distribution : Mozambique channel and northern Indian Ocean, in littoral and shelf depths.

Genus **Ninoe** Kinberg, 1865

Ninoe, with yellow acicula

Materials : 210 B (1); RH 14 (8); RH 41 (87).

Diagnosis : The body is stiff, white and vermiform ; it measures 5 to 8 mm long. The prostomium is conical, nearly twice as long as wide at the base ; eyes are absent. A nuchal pouch is present at the post-median margin of the prostomium. Acicula

and setae are yellow. Branchiae are present from the second setiger with one filament ; they increase in size and have five to seven lobes in setigers 9 to 15 ; they are in digitate arrangement.

Posterior parapodia have short setal lobes. Simple hooded uncini are present from setiger 20 ; posterior parapodia have two or three uncini accompanied by limbate setae.

The maxillary formula is 1-5-1-1. Carriers are greatly prolonged with the basal end separated for about a fifth of its length ; the proximal fourth is set off from the basal part by paired lateral constriction. Forceps are thick at the base and distally curved ; their tips are blunt.

Distribution : Arabian Sea, in 22 to 37 m.

Ninoe, with black acicula

Materials : 251 B (1) ; RH 26 (32); RH 36 (5).

Diagnosis : All specimens are fragments or juveniles ; they are characterized by the presence of black acicula and having broadly foliose dorsal cirri.

Distribution : Arabian Sea in 35 m. Bay of Bengal in 20-37 m.

Family *ARABELLIDAE*

Genus **Drilonereis** Calparéde, 1870

Drilonereis monroi Day, 1960

Drilonereis monroi Day, 1960, p. 365 ; Day, 1967, p. 448.

Materials : 255 A (1).

Diagnosis : The prostomium and peristomium are fused ; eyes are not visible. Mandibles are lacking. Acicula are yellow. Posterior parapodia have slightly prolonged postsetal lobes.

Distribution : North Indian Ocean, in 92-95 m; originally off Lamberts Bay, South Africa in 108 m; known more widely from Tristan da Cunha, South Atlantic Ocean.

Family *SPIONIDAE*

Genus **Paraprionospio** Caullery, 1914

Paraprionospio lamellibranchia, new species

(Fig. 9a-d)

Materials : 210 B (2); 251 B (33); 256 A (fgm); 363 Q (1, type); RH 14 (31); RH 26 (30); RH 33 (1); RH 36 (57); RH 41 (3); RH 51 (10).

Description : The largest individual, from Sta. 363 Q, is in two pieces ; it measures 85 mm long for 63 anterior, and 56 mm long for more posterior segments; greatest width is 2 mm. Total number of segments is about 120. Others are much smaller but believed identical because of the unique vascular system in the branchiae. A specimen from Sta. 251 B measures 24 mm long for about 60 segments.

The body is long, depressed linear, widest in front and tapers posteriorly to a narrowed pygidium terminating in a cirriform, median pygidial process. The prostomium is rounded in front, extends back as a smooth ridge between the palpal bases to the first setiger. Two pairs of small eyespots in trapezoidal arrangement are hardly visible ; the anterior are wide apart and lateral, located between the palpal bases ; the posterior are nearer together. The first segement is conspicuously enlarged as a pair of thin, erect folds enclosing the sides of the prostomium.

Each of the first five pairs of notopodia has a large, triangular postsetal lobe increasing in size through setigers 2 and 3 and then diminishing through several segments when they are rounded lobes. The postsetal lobe is not continued across the dorsum as a transverse membrane.

The fully everted proboscis is thick, fleshy, longer than wide and terminates in horny processes at its superior distal ends.

Three pairs of pinnately divided branchiae are present on the first three setigers ; the first pair (Fig. 9a) is much the longest and the second shortest ; all are bipinnate with the pinnae attached to a thick, fleshy longitudinal axis that is smooth on its anteromedial side and elsewhere concealed by the numerous, overlapping leaf like lobes which number from 20 to 50 pairs, depending on the branchial length. Each pair of lobes when removed from the branchia is seen as a foliose lobe marginally ciliated and penetrated by three vascular loops, each extending the full length of the lobe (Fig. 9b). Smaller, presumably younger individuals with shorter branchiae have the same number of branchial loops. The specific name refers to the lamellar character of the branchiae.

Parapodia are best developed in anterior segments, where postsetal lobes are erect. Setae are longest and in fullest fascicles in the first ten segments. Hooded uncini are first present in neuropodium 9, together with slender, long, alternating capillary setae. A ventralmost seta is longest, thick and punctate along its subdistal part. Uncini number 10 to 16 in a transverse series, in postmedian parapodia. Farther back notopodia have two to six long handled uncini in inferior position, accompanied by slender pointed setae (Fig. 9c).

Interramal pouches are absent from smaller, presumably immature specimens. They are present on larger individuals as shallow memberanes first present between setiger 10-11, and continued through setiger 19-20; their best development is at setiger 16-18.

Hooded uncini are present in both rami but best developed in neuropodia. Each uncinus (Fig. 9d) has a large fang at right angles to the shaft, surmounted by small teeth ; in lateral view they appear as two equally small teeth but in frontal view they are seen as four teeth in two rows.

Paraprionospio lamellibranchia is allied with *P. pinnata* (Ehlers) in having three pairs of branchiae present on the first three setigers. The first has each lamella

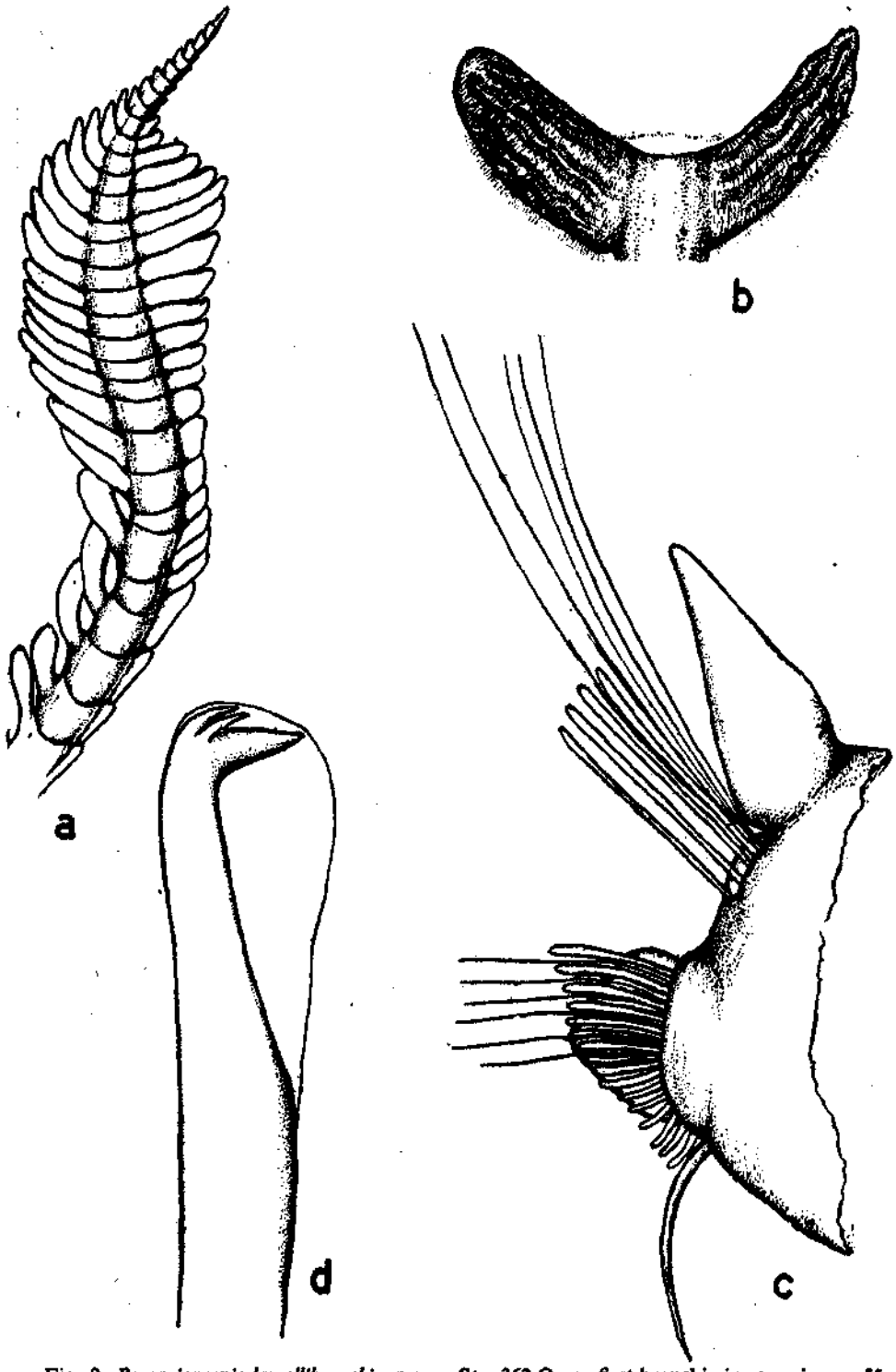


Fig. 9. *Paraprionospio lamellibranchia*, n.sp. Sta. 363 Q. a. first branchia in rear view, x 55 ; b. single lamellar plate from mid-region of first branchia, showing three vascular loops within each plaque, x 115 ; c. a far posterior parapodium, in anterior view, x 85 ; and d. a hooded uncinus from a far posterior parapodium, in lateral view, x 1540.

penetrated by three vascular loops whereas the second by a single loop. A similar arrangement has been detailed by Caullery (1944, p. 15) for *Prionospio pinnata* var. *inaquibranchiata* Caullery, from Malay ; this has a long, cirriform process accompanying the second pair of pinnately divided branchiae. The uncini have a large fang surmounted by four teeth in a row. This recalls the condition in *Prionospio pinnata* sensu Wesenberg-Lund (1949, p. 324, fig. 34) from the Gulf of Iran, which has three pairs of pinnately divided branchiae, with the third or largest pair accompanied by one or two slender filaments, emerging from the outer base of the branchiae.

Prionospio pinnata has been reported by Prasad (1969, p. 441) as food of a pelagic clupeid fish, each fish with up to 250-400 worms which were sexually mature and measured up to 39 mm long. It was suggested that the polychaete might have been spawning at the surface and thus taken by surface-eating fishes. From the information available, it cannot be determined which of the *Prionospio*-like species might be involved in this phenomenon.

Distribution : Paraprionospio lamellibranchia is reported from the Mozambique channel in 423 m (type locality) at Sta. 363 Q, and in the northern Indian Ocean at stations in the Arabian Sea and Bay of Bengal in shallow depths to 64 m.

Genus **Polydora** Bose, 1802

Polydora peristomialis, new species

(Fig. 10a-e)

Material : 251 B (2, type).

Description : Preserved specimens are white with black eyes, black segmental spots at the posterior bases of notopodia and two irregular longitudinal rows of similar black spots on the dorsum. The larger specimen consists of 14 setigers and is 5.8 mm long ; a more posterior fragment consists of 15 setigers and is 4.8 mm long. Greatest width is 2.6 mm. The anterior end is fully extended disclosing a fleshy proboscis. The palpi are lost but show their scars of attachment at the sides of the prostomium at the level of the posterior eyes. The prostomium is much longer than wide and terminates in a pair of lateral horns ; the frontal margin is straight. The four black eyes are in trapezoidal arrangement with the anterior pair the larger and wider apart. A nuchal ridge extends back through the third setiger ; a median antenna is absent.

The peristomium is unique for having its lateral parts prolonged into cirriform processes at the anteroectal edge (Fig. 10a). The second segment is the first with setae ; its parapodia are biramous ; the notopodium is prolonged ; its enlarged postsetal lobe is located behind the slender fascicle of long capillary setae ; the larger neuropodium has a small triangular, distally tapering postsetal lobe and long capillary setae more conspicuous than those in notopodia.

The second setiger is larger than the first ; a small notosetal lobe and a much larger, longer neurosetal lobe accompany long setal fascicles in both rami.

The modified fifth setiger is nearly twice as long as the preceding segment. It is thick, fleshy, armed with setae in biramous series. Notosetae form a crescentic

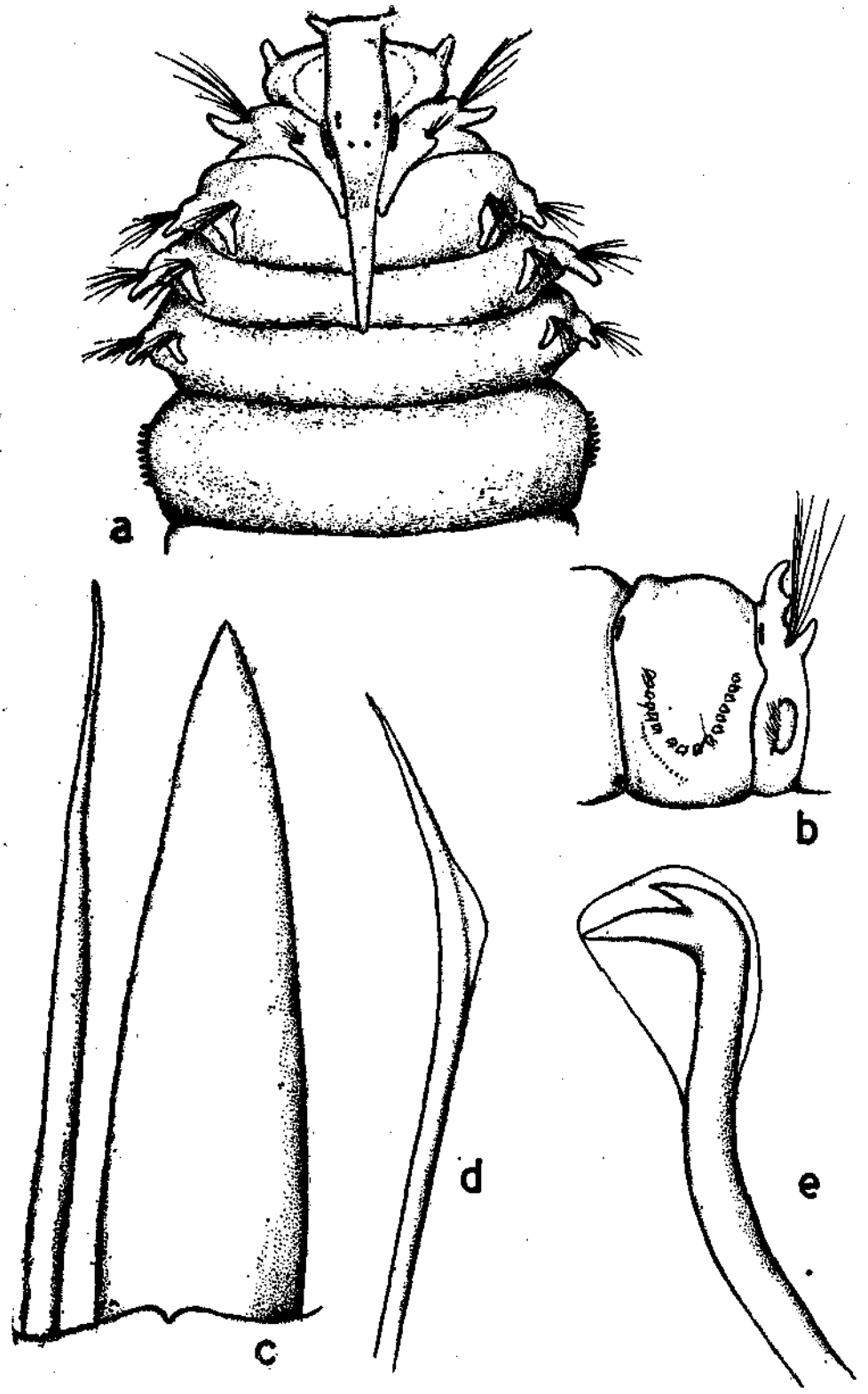


Fig. 10. *Polydora peristomialis*, n. sp. Sta. 251 B ; a. anterior end through setiger 5, palpi fallen away, in dorsal view, x 23 ; b. fifth setiger from right side, showing notopodial fascicle of large spines and neuropodial series of fine setae, x 23 ; c. distal end of acicular spine from setiger 5, with accessory capillary seta, x 299 ; d. one of 20 bilimbate, distally pointed setae from fifth neuropodium, x 299 ; and e. one of 19 distally bifid, hooded uncini from setiger 12, x 299.

series (Fig. 10b) in a crescent open dorsally of 16 thick, acicular spines, increasing in size at the lowest position ; each spine is accompanied by a slender, longer capillary seta (Fig. 10c). The neuropodial fascicle has a series of much smaller, shorter bilimbate setae arranged in a transverse row across the segment (Fig. 10d). Neuropodial uncini are distally bifid, the main fang at right angles to the shaft, the hood truncate (Fig. 10e). Branchiae are first present from setiger 7; at their greatest development they are long, slender, and continued through at least 26 segments.

Polydora peristomialis is unique for having a laterally prolonged peristomium in which the distal ends are modified as slender short cirri. The first setigerous segment has enlarged notopodial postsetal lobes. The prostomium has a straight frontal margin with a pair of lateral horns. A nuchal ridge continues posteriorly through the third setiger. The notopodium of the fifth setiger has thick spines of one kind, each acicular, accompanied by a slender capillary seta ; the neuropodium has many minute bilimbate setae.

Distribution : Arabian Sea, in 35 m.

Genus **Prionospio** Malmgren, 1867

Prionospio cirrifera Wirén, 1883

Prionospio cirrifera Fauvel, 1927, p. 62.

Materials.: RH 14 (1); RH 28 (2); RH 33 (97+); RH 36 (5); RH 41 (1); RH 51 (8).

Remarks : Branchiae number six to eight pairs ; all are long, cirriform, extend distally beyond the tips of setae. They increase in length from first to the middle of the series and then diminish.

Distribution : Northern Indian Ocean, in shallow depths ; originally named from the Bering Sea ; recorded from cosmopolitan areas.

Prionospio ? ehlersi Fauvel, 1928

Prionospio ehlersi Fauvel, 1928, p. 10 ; Gallardo, 1967, p. 98.

Material : 222 A (fgm); RH 36 (54); RH 51 (6).

Diagnosis : Length of 34 setigers is 12 mm ; width is 1.6 to 2.0 mm. The prostomium is broadly rounded in front, abruptly narrowed between the palpal bases, then continued posteriorly as a narrow caruncle without antenna to the first branchial segment. Two pairs of small black eyespots are located in front of, and between the palpal bases. The first setiger is biramous, with slender setae in both rami. The second setiger is the first with branchiae ; its postsetal lobe is long, and its branchiae are plumose, surpassing the others in length and width. The next two branchial pairs are short, flat, marginally fimbriated, and the fourth pair is long, cirriform, distally tapering. The branchiae therefore are more easily characterized as of three, rather than two kinds.

Interramal pouched membranes are present and conspicuous from setiger 2-3 continued posteriorly at least to setiger 30. Parapodia are best developed in the branchial and postbranchial segments. Setae of the first 20 setigers are long, slender, capillary. Hooded uncini are first present from setiger 21, accompanied with capillary setae.

These specimens differ from those named as *P. ehlersi* by Fauvel (1928) from Morocco in that branchiae are long instead of short ; interramal pouches are first present from setiger 2-3 instead of setiger 4-5 ; branchiae appear to be of three, instead of two kinds. In this respect it is noteworthy that *Prionospio bocki* Soderström, 1920, from Japan also has interramal pouches developed from setiger 2-3, and hooded uncini are first present from postbranchial segments, this in setiger 16-17 instead of setiger 21. The specimens from the northern Indian Ocean may ultimately be regarded as a distinct species.

Distribution : Arabian Sea, in shallow depths ; Nosy Be, Madagascar.

Prionospio malmgreni Claparéde, 1870

Prionospio malmgreni Fauvel, 1923, p. 61 ; Day, 1967, p. 492.

Materials : 251 B (1) ; RH 26 (9) RH 33 (5) ; RH 36 (54).

Remarks : Setigers 2 and 5 have plumose branchiae, and setigers 3 and 4 have smaller, shorter, flat, marginally fimbriated branchiae. The prostomium has two pairs of eyes with the posterior pair much the larger. Interramal pouches are absent.

Distribution : Northern Indian Ocean, in 35 m ; originally from the Mediterranean Sea and widely recorded from cosmopolitan areas.

Family *DISOMIDAE*

Genus **Disoma** Oersted, 1844

Disoma cirrifera, new species

(Fig. 11a,b)

Material : 251 B (1, fragments, type).

Description : No colour remains except for the small black eyespots. Length of an incomplete anterior end is 3 mm ; width is 0.5 mm in the anterior or widest part at setigers 4-10. Segments include 17 setigers ; a posterior end is missing. The body is widest in front and abruptly slender behind setiger 10. The prostomium is trapezoidal, has four eyes, with the anterior pair the wider apart. The first setiger has inconspicuous slender setae directed forward in biramous fascicles ; their dorsal and ventral cirri are cirriform. Setiger 2 is depressed below the level of other parapodia. Each of setigers 2 and 3 has slender setae and thick, yellow acicular spines, together with dorsal and ventral cirriform cirri. The third setiger has the lar-

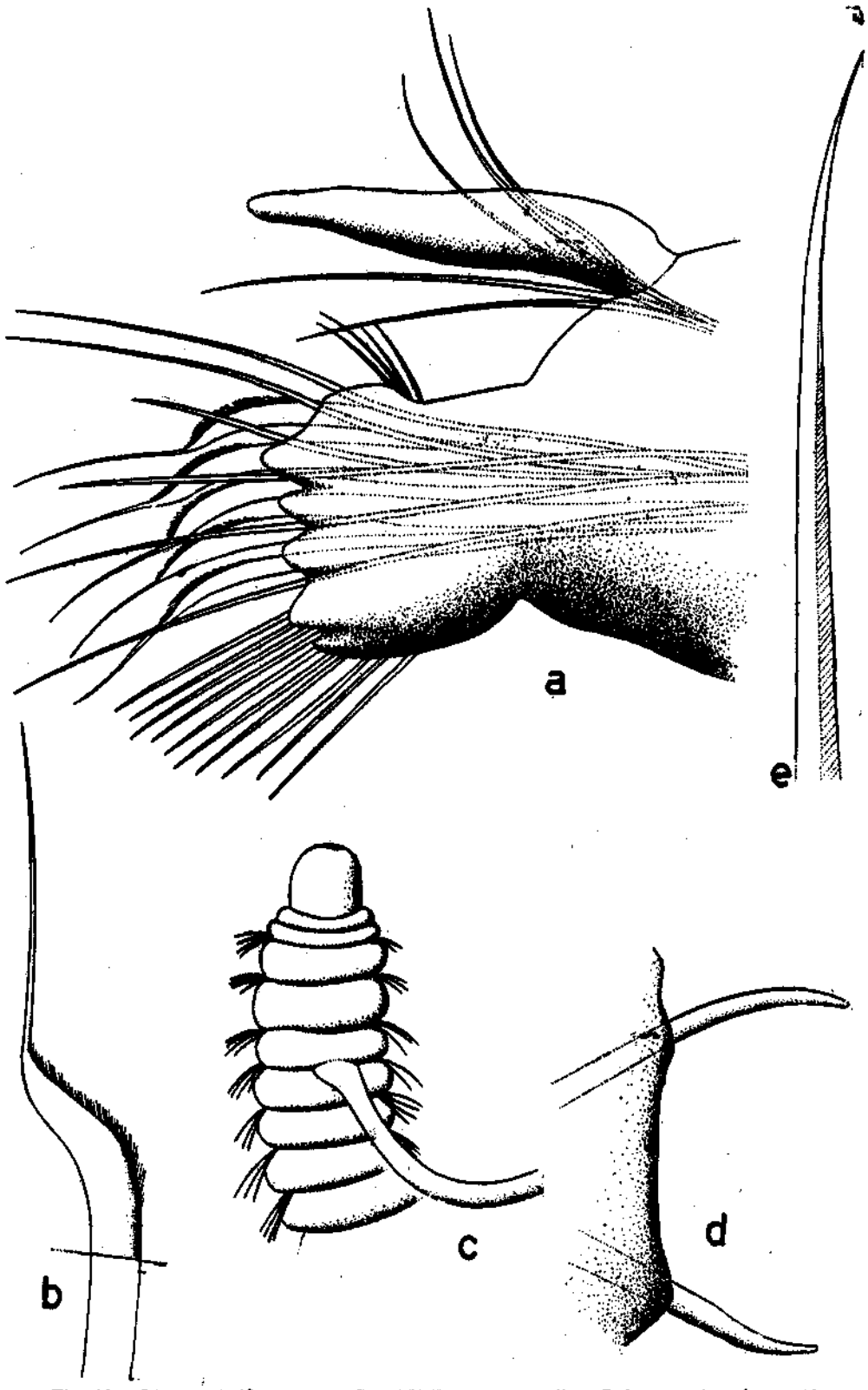


Fig. 11. *Disoma cirrifera*, n. sp. Sta. 251 B; a. parapodium 7, in posterior view, x 1800; and b. an sub-uluncinus from parapodium 7, in lateral, view, x 1120; *Cossurella dimorpha*, new genus, n. sp. Sta. 364 A; c. anterior end, in dorsal view, x 48; d. parapodium 32, with acicular spine in notopodia and neuropodia, x 800, and e. seta of parapodium.

gest spines ; they number four in a vertical series on each side ; each spine is distally falcate and directed posteriorly. Setigers 7 (Fig. 11a) to 11 also have thick, yellow spines but each with slender tips, hence subuluncini (Fig. 11b) ; they occur in inferior series with slender setae in superior position. All setae are simple, yellow or translucent.

Posterior to the third setiger, parapodia have cirriform dorsal and ventral cirri. *Disoma cirrifera* differs from other species of the genus in having cirriform, instead of orbicular dorsal cirri from the fourth setiger, hence the specific name. *Disoma orissae* Fauvel (1932, p. 174) also from India, has thick yellow acicular spines in setiger 3 ; the prostomium is posteriorly prolonged as a crest to setiger 2 and supports a median antenna ; dorsal and ventral cirri are subcircular from setiger 4.

Distribution : *Disoma cirrifera* is named only from the Arabian Sea, in 35 m.

Disoma orissae Fauvel, 1932

Disoma orissae Fauvel, 1932, p. 174.

Material : RH 36 (3).

Distribution : Off Kakinada Bay, Bay of Bengal, in 36 m.

Family *HETEROSPINIDAE*

Genus **Heterospio** Ehlers, 1875

Heterospio longissima, Ehlers, 1875

Heterospio longissima Hartman, 1965, p. 162.

Materials : 210 B (1) ; 230 B (1).

Diagnosis : Long, very slender fragments lacking posterior ends measure 3.4 mm long for nine anterior setigers without the palpi, and 23 mm long for two prolonged posterior segments. The anterior region is depressed, barrel-shaped, has short, crowded segments. Each of its nine segments has long, flowing capillary setae in spreading fascicles. Long, slender tentacular cirri are present on setigers 2 to 9. More posterior segments are greatly elongated, have cinctures of short capillary setae nearly encircling the body. The body terminates in an inflated region consisting of three short segments, each with thick, acicular spines in biramous series.

Distribution : Arabian Sea, in 34-88 m; originally named from the North Atlantic Ocean, and more widely recorded from the north-western Atlantic Ocean, in 520 to 4950 m.

Family *ACROCIRRIDAE*

Genus **Acrocirrus** Grube, 1872

Acrocirrus ? uchidai Okuda, 1934

Acrocirrus uchidai Okuda, 1934, p. 197.

Material : 269 C (1).

Remarks : The questionable identity concerns the character of the composite falciger which is distally simply falcate with pointed hood, and shown as bifid in the

account by Okuda ; it is possible that the separation between hood and aciculum was not noted, or that the present material may represent an unnamed species.

Distribution : Gulf of Oman, in 121-124 m; originally named from Hokkaido, northern Japan.

Acrocirrus sp.

Material : 28 A (fgm.)

Diagnosis : A specimen from the Bay of Bengal, in 66 m, agrees with a fragment taken off Inhaca Island, Mozambique channel, in 54 m, both from rocky sediments. The prostomium is broadly rounded, wider than long, and has a pair of large dark eyes near its posterior end ; a pair of minute black spots is more lateral. A long tentacle is retained on a first segment, preceding the first setiger ; others have fallen away. Greatly prolonged notosetae are present from setiger 5 to at least setiger 17 ; each seta is minutely and closely cross-barred. Neuropodia have composite falcigers with curved appendage ; uppermost falcigers are long, with straight and inferior ones shorter, with curved appendage ; the distal hood is pointed.

Distribution : Bay of Bengal, in 66 m ; in rocky sediments.

Family *COSSURIDAE*

Key to Genera

Parapodia with similar setae throughout ; each fascicle with many limbate, distally pointed setae.....*Cossura*

Anterior parapodia with limbate, distally pointed setae in thick fascicles ; posterior parapodia with single thick spines.....*Cossurella.*

Genus **Cossura** Webster and Benedict, 1887

Cossura dayi, new name

Cossura coasta Day, 1967, p. 581. Not Kitamori, 1960, p. 1082.

Materials : 206 A (fgm); 251 B (2); RH 14 (29); RH 26 (64); RH 28 (160); RH 30 (13); RH 36 (1); RH 41 (195).

Diagnosis : Length is 5 to 7 mm; the body is uniformly slender. The prostomium is conical and prolonged forward. The everted proboscis has a long tongue-like lobe to which are attached about 12 long lobes ventrally.The first two segments are smooth rings. All other segments have biramous parapodia with limbate, distally pointed setae. A tail end is missing. A long median tentacle is inserted on setiger 3, in line with the lateral setal fascicles ; it is smooth along its length.

Setae are of two kinds in each ramus ; anterior ones in a series number 5 or 6, are thicker, darker, shorter than an equal number of more posterior ones. Notosetae are slightly longer than neurosetae. Larger setae tend to be marginally fimbriated, possibly a result of wear.

Cossura dayi differs from *C. coasta* Kitamori (1960) from Seto Inland Sea, Japan, in that the setae emerge from segmental furrows in the first, and from the misegmental length in the second. The second has a bifurcated tail, this remains unknown for *C. dayi*.

Distribution : Northern Indian Ocean and Mozambique channel, in 16 to 1006 m ; originally named from Cape Province, South Africa.

Genus **Cossurella**, new genus

Genotype : Cossurella dimorpha, new species

Cossurella agrees with *Cossura* Webster and Benedict in having a long, linear body ; segments are uniformly uniannular ; a simple prostomium without specialized organs is followed by two simple rings ; all others have biramous parapodia with simple, distally pointed setae. *Cossurella* differs from *Cossura* in having an anterior region with limbate setae and a posterior one with thick spines in sparse numbers. Representatives of two species, come from the northern Indian Ocean ; they are diagnosed below.

Cossurella dimorpha, new species

(Fig. 11c-e)

Materials : 210 B (5); 222 A (1); 247 B (16); RH 51 (8).

Description : The body is small, slender, pale to yellow or rust-coloured ; its setae are in lateral tufts. It is characterized by the presence of a very long median tentacle. Length of 50 anterior segments is 7 to 9.5 mm and width to 0.8 mm. The body consists of a smooth prostomium, two short apodous segments and at least 48 setigers ; a tail end is lacking. The first 29 setigers differ abruptly from those farther back in having flowing fascicles of setae ; posterior segments have sparse numbers of thick falcate spines.

The prostomium is depressed, broadly rounded in front ; it lacks eyes and visible nuchal organs (Fig. 11c). The mouth is a transverse slit between the first and second smooth segments. Each of the first two rings is smooth and shorter than the next one or first setiger ; the latter has uniramous parapodia, each fascicle of setae with six long, slender limbate ones in an anterior row and a comparable number of longer seate posteriorly. Parapodia from the second setiger are biramous, armed with setae similar to those of the first setiger. All setae are limbate, smooth along the cutting edge or marginally fimbriated (Fig. 11e) perhaps the result of wear.

The prolonged median tentacle is inserted in line with the setae of the third setiger; it is smooth, cylindrical or slightly annular, due to contraction ; it extends back beyond the length of specimens, none of which is complete.

The first 29 setigers have setae in flowing fascicles. Abruptly thereafter parapodia are less developed ; each notopodium and neuropodium is armed with a single, slightly curved, thick, yellow acicular spine ; the hooked ends are directed medially so that they face each other (Fig. 11d).

The type of the species originates off Tuléar, Madagascar, in 54.9 m (Sta. 364 A); others come from the northern Indian Ocean in the Arabian Sea, in 34 to 110 m, and off Nosy Bé, Madagascar.

Distribution : Mozambique channel, in shallow depths to 54.9 m ; northern Indian Ocean, in 34 to 110 m.

Cossurella sp., unknown

Material : RH 36 (1, fgm).

Diagnosis : Length of 30 anterior segmants is 4 mm ; width 0.5 mm. The prostomium is depressed, trapezoidal, narrowest in front and longer than wide ; it lacks eyes. The first 22 setigers have biramous fascicles of limbate setae, with many setae in a fascicle. Thereafter, these setae are replaced by single, thick, straight spines, one in each ramus. The median tentacle is attached in a segmental groove between setiger 2 and 3 ; it exceeds in length that of the body. The specimen differs from *C. dimorpha* (see above) in having 22, instead of 29 anterior setigers. The median tentacle is inserted between setigers 2 and 3, instead of 3 and 4.

Distribution : Kakinada, about 10 m s.e. of the harbour, in 37 m, in brown mud.

Family *FLABELLIGERIDAE*

Genus **Fauvelliopsis** McIntosh, 1922

Fauvelliopsis arabica, new species

(Fig. 12 a, b)

Materials : 247 B (14) ; 248 A (3, type).

Description : The body is long, linear, smooth with dull epithelium ; it tapers gradually to the posterior end. Length is about 20 mm and width 0.4 to 0.7 mm. Setigers number fewer than 50 or to 86. The anterior end is rounded, nearly bounded by the setal fascicles of the first segment except for a narrow furrow where the dorsal prostomium is located ; a cephalic cage is lacking (Fig. 12a). As characteristic of the genotype, *F. challengeriae* McIntosh, there is no indication of eversible cephalic structures.

Segments of the anterior third of the body are wider than long ; they gradually come to be narrower and longer so that in posterior segments they are two to three times as long as wide. Anterior parapodia are located in front of the mid-length of a segment; the setal ridges gradually change so that those near the end are in front of the segmental furrow.

The first five segments are short ; each has spinose acicula in transverse series ; they number four or five in a row in notopodia and two or three in neuropodia. Each seta is thick, acicular and alternates with a much slenderer, hairlike capillary seta. Notosetae are similar to neurosetae ; they number one to five in a row in

anterior neuropodia ; each is thick, acicular and accompanied by an equal number of longer, hairlike capillary setae (Fig. 12b).

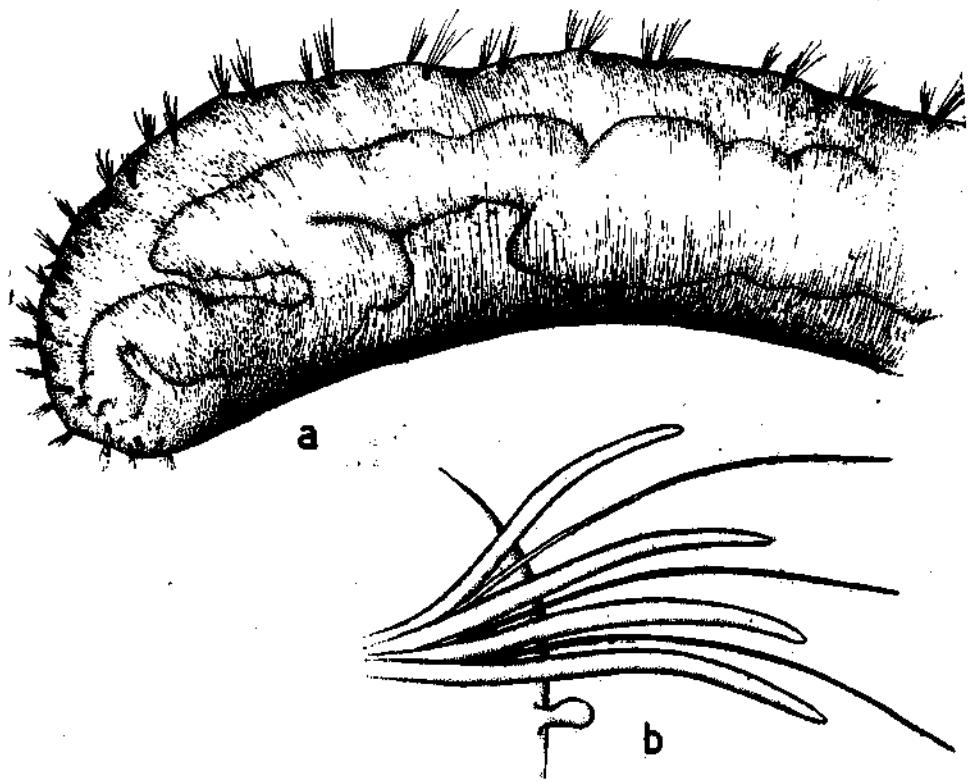


Fig. 12. *Fauveliopsis arabica*, n. sp. Sta 248 A. a. anterior end, showing oral aperture turned up and seen in full ventral view, with the alimentary tract seen through the body wall, in left lateral view, x 65 ; and b. notopodial fascicle from an anterior parapodium, showing series of thick, falcate spines and slender capillary setae, and the interramal papilla below the inferior-most falciger x, 310.

The small mound like parapodia are widely separated by an interramal space ; a globular papilla is located nearer the inferior base of notopodia.

Posterior parapodia are characterized by a diminution in number of setae in both rami. The anal pore is a vertical slit visible between the last pair of parapodia ; it has no visible papillae surrounding it.

F. arabica differs from *F. challengeriae* in its unique cephalic region ; this is anteriorly bounded by the setal fascicles of the first two segments and the prostomium is barely visible.

Distribution : The type specimen is from the Arabian Sea in 110 m; others come from the Mozambique channel in similar and greater depths.

Family *CAPITELLIDAE*

Genus **Leiochrides** Augener, 1914

Leiochrides branchiatus, new species

Materials : RH 30 (132, type) ; RH 26 (1).

Description : A large individual measures 12.5 mm long and less than a mm wide ; it consists of 90 to 100 segments. The body tapers posteriorly and is widest in the anterior abdominal region. Transition from thorax to abdomen is gradual, marked by the first appearance of uncini in notopodia. The epithelium is smooth and segmental grooves are barely visible, located behind the setal ridges. Parapodial rami are widely separated throughout ; notosetae emerge at dorsoectal and neurosetae at ventroectal parts of the segment.

The prostomium is a small rounded lobe less than a fourth as wide as the overhanging peristomium ; it lacks visible eyes. The partly everted proboscis is papillated. The second segment is the first with setae, in notopodia only. The next ten segments have pointed setae in both rami, and the last thoracic segment has capillary setae in notopodia and long handled uncini in neuropodia. The thoracic formula may be expressed thus :

$$\text{peristomium} + \frac{12s}{1 + 10\,s + 1\,u}, \text{ where } s = \text{setae and } u = \text{uncini.}$$

Branchiae are present in far posterior segments ; they increase in size posteriorly ; each is a dendritically branched tuft of two to five short lobes emerging from the posterior face of the notopodial ridge ; branchiae are directed dorsolaterally.

The body tapers posteriorly and terminates in a simple segment with four short cirri, a pair at dorsoectal and a similar pair at ventroectal margins ; each is a little longer than the ring to which it is attached ; the pygidial pore is located between the dorsal cirri.

Leiochrides branchiatus differs from other species of the genus in having branchiae limited to far posterior segments, emerging from the posterior face of notopodia. The thoracic setal formula is unique in that the first and last setigers lack setae and the last has long handled uncini. The thoracic epithelium is smooth.

Distribution : Off Madras, in 15 m ; off Porto Novom, in 20 m ; in soft brown mud.

Genus **Mediomastus** Hartman, 1944

Mediomastus caudatus, new species

(Fig. 13,a,b)

Materials : 251 B (5) RH 14 (33, type) ; RH 26 (ca 889) ; RH 28 (1) ; RH 30 (521) ; RH 33 (23) ; RH 36 (60) ; RH 41 (190).

Description : More than a thousand individuals are represented in the samples named above. Some contain mixed lots of three different small capitellids, representatives of *Mediomastus*, *Leiochrides* and *Heteromastus*. The first is recognizable

for its consistently smaller size, lack of branchiae and the presence of a long posterior cauda. The body is slender, thread like, pale and tapers posterior ; it measures less than 20 mm long and 0.5 to 0.7 mm at its greatest width, in the anterior end. Setigers number 50 or fewer.

The prostomium is minute, rounded, without visible eyes ; it is largely covered by a smooth, crested peristomium over hanging the prostomium. The first segment is a smooth ring. The partly everted proboscis is coarsely papillated. Each of the first four setigers (Fig. 13a) is wider than long, appears inflated, and has capillary setae in biramous fascicles. The next six segments are narrower and gradually longer ; each has single rows of hooded uncini in notopodia and neuropdia, near to or in front of mid-length of the segment. Transition from thorax to abdomen is visible for the more delicate epithelium of abdominal segments and the slightly greater width of the abdomen.

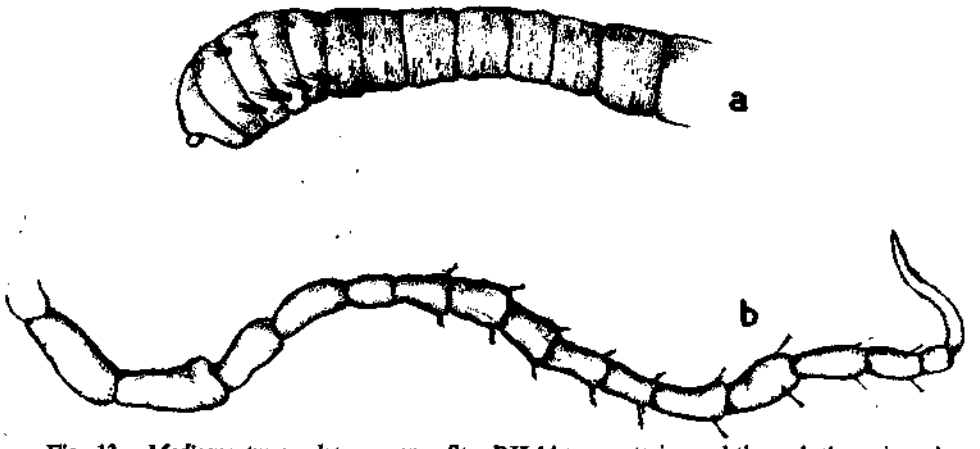


Fig. 13. *Mediomastus caudatus*, n. sp. Sta. RH 14 ; a. anterior end through thoracic region, in left anteral view, x 48 ; and b. posterior end of body showing caudal process and outwardly projecting hooded hooks in posterior segments, x 64.

Parapodia are inconspicuous throughout ; each is a low papilla from which setae and uncini emerge ; branchiae are absent. The last 20 or 30 segments increase in length, resembling cylinders that are much longer than wide (Fig. 13b) ; the uncinial ridges are near the posterior end of the segment. Uncini are in sparse rows and those of the last 14 to 20 segments have only one or two, projecting from the body dorsolaterally so as to resemble spines ; they are distally uncinate, like those in other parapodia.

The posterior end terminates in a long, mid-ventrally attached cauda appearing pseudoannulate, due to wrinkles of contraction ; the anal pore is dorsal to its attachment.

Mediomastus caudatus differs from other species of the genus in having conspicuously projecting uncilial spines in posterior segments ; the posteriormost segments are greatly prolonged.

Parheteromastus Monro, 1933, named for *P. tenuis* Monro, 1933, from Burma, may be compared with *Mediomastus*. This was charactirized for having 12 thoracic

segments with the first, or peristomium a smooth ring. The next four segments have pointed setae in biramous fascicles, and the following seven have hooded uncini. Parapodia are weakly developed and branchiae absent. The posterior end terminates in a median short cirrus, shown middorsal by Monro. If one interprets the last thoracic, as the first abdominal setiger, and the pygidial process long instead of short, inserted midventrally instead of middorsally, the comparison with *Mediomastus* is more nearly possible. *Parheteromastus* is known only through its original account.

Distribution : *Mediomastus caudatus* is common in the Bay of Bengal and Arabian Sea, in estuaries and shallow depths, in mud bottoms.

Vertical Zonation

Three groups of species are named : (1) Those coming from the Arabian sea nishore to moderate depths, (2) those coming from quantitative samples taken near Madras, Bombay and Nosy Be, and (3) those reported from depths of 250 m or more.

Samples D-16 to 270 A come from the Arabian Sea and were taken with trawls and other non-quantitative gear. They are from intertidal depths to 357 m. When these species are ranged by increasing depth, vertical zonation is clearly indicated. The following Table (Table 1) lists the species in alphabetical order for each of 24 categories, and shows the more extended distribution of each species through the different depth classes. Few species extend through most depth classes ; they include *Lysidice collaris. Nematonereis unicornis, Eunice tubifex, Eunice indica* (all of the family EUNICIDAE) and *Chrysopetalum ehlersi.* Most of the other species are limited to one or few depths.

The 24 stations are numbered on the chart as follows :

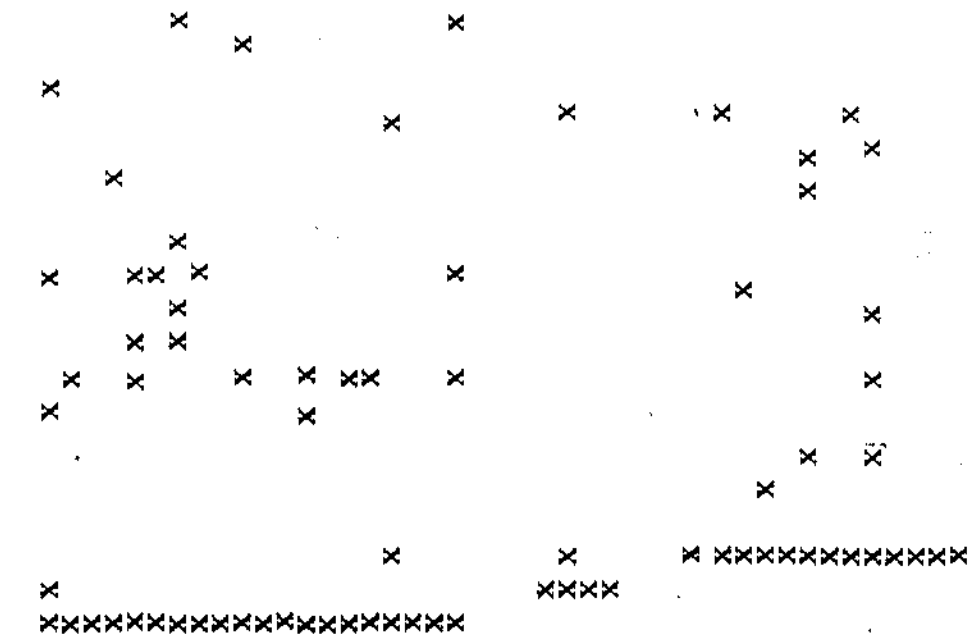
1. Sta. D-16, shore.
2. 47 A, in 13-15 m.
3. 47 B, in 22-30 m.
4. 206 A, in 21-26 m.
5. 222 A, in 26-27 m.
6. 251 B, in 35 m.
7. 210 A, in 34-37 m.
8. 210 B, in 34-37 m.
9. 201 A, in 46-55 m.
10. 269 A, in 49-63 m.
11. 29 and 270 A, in 40-55 m.
12. 221 A, in 57 m.
13. 28 A, in 66 m.
14. 21, in 72 m.
15. 18 A, in 77 m.
16. 262 A, in 79 m.
17. 230 B, in 88 m.
18. 255 A, in 92-95 m.
19. 247 B, in 110 m.
20. 208 A, in 110-113 m.
21. 269 C, in 121-124 m.
22. 248 A, in 247 m.
23. 254 B, in 256 m.
24. 28 D, in 326-357 m.

The benthic samples numbered RH 14 to RH 51 display an even greater degree of diversity from one sample to the next and by increasing depth. They take on a new dimension since they were taken quantitatively, using a meiobenthic sled designed by Mr. R. Higgins. The samples were processed through a screen with mesh aperture of 0.4 mm ; then carefully sorted out in the laboratory. Sampling and sorting were under the direction of Dr. Howard H. Sanders of the Woods Hole Oceanographic Institution.

TABLE 1. *Vertical distribution illustrated in 24 samples from the Arabian Sea, shore to 357 m.*

The species are listed by increasing depth.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. D-16. intertidal																								
Ceratonereis mirabilis	X											X			X									
cirratulid	X																X					X		
Lumbrineris spp.	X	X	X	X		X		X	X			X	X		X									
Lysidice collaris	X		X	X							X	X	X		X									
maldanids	X								X								X							
Marphysa sanguinea	X																							
Nematonereis unicornis	X											X	X		X									
Palola siciliensis	X											X	X											
Perinereis cultrifera	X																							
Perinereis nigropunctata	X																							
Platynereis insolita	X																							
Polydora armata	X																							
sabellids	X			X	X													X	X		X			
Salmacina sp.	X												X											
syllids	X											X	X								X		X	
terebellids	X										X										X			
Vermiliopsis	X			X							X	X									X			
2. Sta. 47 A, in 13-15 m.																								
Aphrodita australis		X																						
Nereis jacksoni		X													X				X					
polynoid		X	X	X		X						X	X											
Trypanosyllis zebra		X																						
3. Sta. 47 B, in 22-30 m.																								
Eunice tubifex			X								X		X		X		X				X			X
Chrysopetalum ehlersi			X									X			X						X			X
Genetyllis castanea			X																					
Lepidonotus carinulatus			X						X															
phyllodocids			X																					
Sabellaria sp.			X																					
Trypanosyllis sp.			X												X									



4. Sta. 206 A, in 21-26 m.
ampharetids
Cirratulus ?cirratus
Cossura dayi
Dasybranchus sp.
dorvilleid
Eumida sp.
Eunice spp.
Exogone spp.
Harmothoe branchiata
Harmothoe, other spp.
Hydroides heterocerus
Nereis spp.
Notopygos spp.
Oenone fulgida
Pherusa parmata
Pista sp.
Sigambra constricta
Sternaspis scutata
Thelepus plagiostoma
Typosyllis spp.

5. Sta. 222 A, in 26-27 m.
Ammotrypane aulogaster
Aricidea spp.
Cossurella dimorpha
Pherusa curviseta
Prionospio ehlersi

6. Sta. 251 B, in 35 m.
Aglaophamus sp.
Anaitides sp.
Ancistargis brevicirris
cossurid
Diopatra bengalensis
Disoma cirrifera
Drilonereis sp.
Eunice indica
Glycera convoluta
Glycera, another sp.
Laonice sp.
Leonnates decipiens

TABLE I—*(cont.d)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Lepidasthenia sp.						X																		
Linopherus sp.						X																		
Mediomastus caudatus						X																		
Ninoe, with black acicula						X																		
Ophiodromus angustifrons						X																		
Paralacydonia paradoxa						X		X																
Paraonis spp.						X		X											X					
Paraprionospio lamellibranchia						X	X					X												
Polydora peristomialis						X																		
polyodontid						X																		
Praxillela sp.						X		X											X					
Prionospio malmgreni						X																		
Rhodine sp.						X																		
Spiophanes sp.						X																		
Tambalagamia fauveli						X																		
Tharyx spp.						X													X					
Trichobranchus glacialis						X																		
7. Sta. 210 A, in 34-37 m.																								
Poecilochaetus serpens							X								X					X				
8. Sta. 210 B, in 34-37 m.																								
Heterospio longissima								X							X									
Magelona cornuta								X							X				X			X		
Ninoe, with yellow acicula								X																
spionid								X																
9. Sta. 201, in 45-55 m.																								
Loimia medusa									X															
Pectinaria sp.									X															
Pherusa bengalensis									X															
10. Sta. 269 A, in 49-63 m.																								
Polyodontes meanonotus										X								X				X	

11. Sta. 270 A, in 55 m.

?Lanice sp.	X					
Lumbrineris latreilli	X					
Notophyllum splendens	X			X		
Nereis persica	X	X	X			
Omphalopomopsis fimbriata	X					
Scalisetosus levis	X		X			X
Serpula sp.	X			X	X	
Streblosoma cespitosa	X					

12. Sta. 29, in 40-55 m.

Chloeia ?fusoe		X				
Eunice antennata		X				
Eunice ?aphroditois		X				
Euphrosine spp.		X		X	X	X
Hermenia acanthicolepis		X				
Hermonia ?hystrix		X				
Iphione muricata		X				
Leocrates sp.		X				
Polyophthalmus pictus		X				
sphaerodorid		X				
Synelmis albini		X				

13. Sta. 28 A, in 66 m

Acrocirrus sp.			X			
Aphrodita talpa			X			
Ceratonereis hircinicola			X			
?Eumida sp.			X			
Eupanthalis nigromaculata			X			
Hyperhalosydna striata			X			
Lanice conchylega			X			
Melinna sp.			X			
Placostegus crystallinus			X			
?Polycirrus sp.			X			
Prionospio sp.			X			
Sphaerosyllis sp.			X			

14. Sta. 21, in 72 m

Aphrodita talpa				X		
Eupanthalis nigromaculata				X		

TABLE 1—*(cont.)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
15. Sta. 18 A, in 77 m.																								
Autolytus sp.															X									
Chloeia spp.															X									
Crucigera websteri tricornis															X									
Eurysyllis tuberculata															X									
Euthanelessa oculata															X									
Haplosyllis spongicola															X									
harmothoid															X									
Laetmonice sp.															X									
Lepidonotus cristatus															X									
Megalomma sp.															X									
nereids															X									
Platynereis dumerilii															X									
?Pomatostegus sp.															X									
Scalisetosus glabrus															X									
Syllis gracilis															X									
16. Sta. 262 A, in 79 m.																								
Eupolyodontes sumatranus																X								
Goniada asiatica																X								
17. Sta. 230 B, in 88.																								
Drilonereis ?falcata																		X						
Magelona cornuta																		X						
18. Sta. 255 A, in 92-95 m.																								
Aglaophamus longicephalus																			X					
Drilonereis monroi																			X					
19. Sta. 247 B, in 110 m.																								
Fauveliopsis arabica																				X				
Glycera subaenea																				X				
Notomastus sp.																				X				
?Petaloproctus sp.																				X				
Pherusa coronata																				X				
Pherusa eruca indica																				X				

20. Sta. 208 A, in 110-113 m.					
Chaetozone sp.	X				
Tambalagamia orientalis	X				
21. Sta. 269 C, in 121-124 m.					
Acrocirrus uchidai		X			
Allmaniella muchalis		X			
Anaitides sancti-josephi		X			
Dorvillea gardineri		X			
Hermadion africanus		X			
Myriochele sp.		X			
Peisidice dorsipapillata		X			
Pherusa flabellata		X			
Pherusa sp.		X			
Platynereis sp.		X			
Sige macroceros		X			
22. Sta. 248 A, in 247 m.					
capitellid			X		
23. Sat. 254 B, in 256 m.					
Eupanthalis kinbergi				X	
Phyllochaetopterus socialis				X	
24. Sta. 28 D, in 325-357 m.					
Hipponoa gaudichaudi					X

The following Table (Table 2) names and enumerates individual species of polychaetes from eight such samples ; they are arranged by increasing depth, except for RH 51, from a shallow bottom off Nosy Bé, Madagascar.

The species are ranged in systematic order to show the preponderance of certain groups of organisms.

Most of the specimens are chiefly small to minute, measuring a few mm in length and believed to be immature stages or even spatfalls of postlarval stages. The cies show greatest differences between the major areas samples—the Bay of Bengal spewith samples RH to 36 ; the Arabian Sea with samples RH 14 and 41, and Nosy Bé, Madagascar with sample RH 51. Estuarine animals differ from those from outers helf depths, and all from those taken in slope depths.

TABLE 2. *Enumeration of individual species of polychaetes from eight benthic samples.*

	1	2	3	4	5	6	7	8
RH 28. 0.5 MI FROM MOUTH OF VELLAR ESTUARY, PORTO NOVO. WITH 21 SPECIES, 485 SPECIMENS								
harmothoid	3	5						
phyllodocids, mixed	12	18	4	12		1		
Genetyllis castanea	2		9					
Paralacydonia paradoxa	4		19	28	2			
Gyptis of arenicious	1	18			1			
Ancistargis ?brevicirris	8		8	9				
Sigambra constricta	3	40	175	1	5	21	27	6
nereid	2						5	
Nephtys oligobranchia	241	19	51	80	105			
Clavadorum bengalorum	1							
Glycinde of oligodon	1	23	10					
Eunice sp.	16		44	17				
Lumbrineris sp.	2	2						
Scoloplos sp.	1		162		3			
Prionospio cirrifera	2	97			5	1	1	8
spionids	18			9	1			
Tharyx sp.	2		35	29	6	1	13	
Cossura dayi	160		13	64	1	195	29	
flabelligerid	1		15					
Mediomastus caudatus	1	30	521	889	460	190	33+	
?Idanthyrsus sp.	4							

TABLE 2—*cont.*

	1	2	3	4	5	6	7	8
RH 33. GODAVARI ESTUARY, KAKINADA, WITH 20 SPP., 561 SPECIMENS								
Glycera sp.		1	18	25	1			
Aricidea, with long antenna		79			5	14		
Paraprionospio lamellibranchia		1	535	26	57	3	31	10
Prionospio malmgreni		10	398	30				
nerinid		2			2			2
Laonice brevicristata		174						
Polydora sp.		2	24	205	1			
Magelona sp.		39		47			30	
Sternaspis spp.		49	21		5	45	249	5
Heteromastus ?filiformis		23			7			
Amaeana sp.		1			1			
RH 30. 1.5 MI SE OF MADRAS HARBOUR, IN 15 m, WITH 56 SPP., 4701 SPECIMENS								
Pholoe sp.			2		1			
chrysopetalid			1	1				
?Anaitides sp.			4		2			
Paranaitis sp.			10					
hesionid			3	12				
Exogone sp.			3	38			?25	
Sphaerosyllis sp.			3	28				
syllids			3	1	6			
Neanthes sp.			9					
Tambalagamia orientalis			294	123	5			
Aglaophamus, oculate			4	10				33
Aglaophamus, anoculate			4	152				
Aglaophamus spp.			4	10				
Diopatra sp.			15	54	27			
Lumbrineris ?inhacae			1000	322	14		8	19
Dorvillea sp.			17	37	4			1
orbiniid			1	20	2			
Aricidea spp.			5	45	3			1
Paraonis spp.			1	87			2	
paraonids, mixed			72	3				11
Laonice cirrata			535	24	1			10
Magelona sp., other kind			5		4			
Poecilochaetus sp.			2	1	2			
Phyllochaetopterus sp.			6	24			?13	
Cirratulus sp.			2	64				
cirratulids, mixed			223					40
Brada talehsapia			85					
Ammotrypane sp.			61	6				3
Leiochrides branchiatus			132	1				
Notomastus sp.			1+	5				28
capitellids, others			many					

TABLE 2—*cont.*

	1	2	3	4	5	6	7	8
maldanids, mixed			161	89	1	1		6
Amphictene sp.			8					
ampharetids, mixed			334	349		7		
Pista sp.			11		1			
terebellid			30					
sabellids			25					1
serpulid			3					

RH 26. OFF PORTO NOVO, IN 20 M, WITH 66 + SPECIES, 5131 SPECIMENS

polynoids, mixed				9			1	
amphinomid				2				
euphrosinid				2				
?*Mysta* sp.				7				
Nereis sp.				6				
Aglaophamus dibranchus				6	70			
sphaerodorid				1				
glycerids, mixed				70				
Ninoe, with black acicula				32	5			
Haploscoloptos sp.				23				
?*Nerine* sp.				20				
Spiophanes sp.				48	4			
Chaetopterus sp.				1				
Chaetozone sp.				41				6
Brada, papillated				31				
Fauveliopsis sp.				2				
?*Pherusa* sp.				48	1			1
Sternaspis, smooth				4				
Sternaspis, papillated				29	5			28
Sabellaria sp.				10				
Pectinaria sp.				48				
?*Ampharete* sp.				36				
ampharetid, unknown				75				
Auchenoplax sp.				530				
?*Polycirrus* sp.				51	1			
abranchiate terebellid				479				
Terebellides sp.				26	1	2		
Chone sp.				82				6

RH 36. OFF KAKINADA, IN 37 M, WITH 69 SPECIES, 644 SPECIMENS

Leanira sp.					2			
Sthenolepis sp.					5			
Chloeia sp.					25			
Linopherus sp.					2			ca 25
Notopygos sp.					3			

TABLE 2—*cont*

	1	2	3	4	5	6	7	8
?Eteone sp.					1		2	
Exogone cf hebes					17			
Pionosyllis sp.					15			
Typosyllis sp.					2			
Tylonereis sp.					1			
Aglaophamus lyrochaetus					2	29		
Glycera prashadi					2			
Glycera teselata					1			
Goniada asiatica					9	2		
Lumbrineris, without comp. hooks					23			
Protodorvillea sp.					3			
Aricidea, with short antenna					3			
Aricidea sp. with red body					5			
Paraonis ?gracilis					7	3		
Prionospio ehlersi					54			
Prionospio, another kind					1			
Disoma orissae					3			
?Cirriformia tentaculata					1			
Cossurella sp.					1			
chaetopterid					1			
Notomastus fauveli					1			
Lysippe sp.					16			
Ditrupa arietina monilifera					21			
RH 41. OFF BOMBAY, IN 22 M, WITH 21 SPP., 631 SPECIMENS								
Sthenolepis japonica						12		
Gyptis ?capensis						18		
Pilargis, papillated						1		
Goniada sp.						2		
Ninoe, with yellow acicula						87	8	
?Asychis sp.						1		
?Maldanella sp.						1		
RH 14. COCHIN HARBOUR, IN 23 M, WITH 19 SPECIES, 982 SPECIMENS								
Gyptis sp.							1	16
Ophiodromus sp.							1	
onuphid							33+	

Another sample, RH 51, comes from Nosy Bé, Madagascar, in 35 m, and differs in most respects from the samples in the northern Indian Ocean.

RH 51 WITH 35 SPECIES, 272 SPECIMENS								
Phyllodoce malmgreni								5
Loandalia sp.								1
Pilargid, with short antennae								3

TABLE 2—*cont.*

	1	2	3	4	5	6	7	8
Syllis sp.								2
goniadid								1
eunicid								1
?*Paloia* sp.								1
Phylo sp.								3
paraonid with large black eyes								11
Polydora, with cleft prostomium								2
Prionospio, with short cirriform branchiae								2
Prionospio, with 3 kinds of branchiae								6
Magelona, with smooth palpi								10
Cossurella dimorpha								8

Another aspect of vertical zonation concerns those species previously named from the Indian Ocean, in depths of 250 m or more. Twenty-two are named from areas in the Indian Ocean or vicinity ; arranged by families they are :

Polynoidae

Admetella longipedata, first named off south-west Africa, in 1375 m, and reported from the Andaman Sea in 279-569 fms.
Admetella sp., Arabian Sea, in 1046 m.
Eunoe pallida, Indian Ocean, in 616 m.
Harmothoe cornuta, off Zanzibar, in 786 m.
Herdmanella gracilis, in 1500-2000 m.
Paralepidonotus indicus, in 280 fms.

Amphinomidae

Paramphinome indica, Arabian Sea in 530 fms.

Lacydonidae

Paralacydonia weberi, off Burma in 250 fms.

Goniadidae

Goniada eximia, North Arabian Sea, abyssal.
Goniadopsis incerta, off Burma in 530 fms.

Onuphidae

Onuphis furcatoseta, in the Red Sea, 186-375 m.
Onuphis investigatoris, Arabian Sea in 35-700 fms.
Rhamphobrachium chuni, off India in 480-719 fms.
Rhamphobrachium diversosetosum, Maldives in 183-274 m.

Lumbrineridae

Lumbrineris pseudobifilaris, off Burma in 250 fms.

Flabelligeridae

Brada mamillata, first from Kerguelen Island, also Arabian Sea in 555 fms.
Ilyphagus hirsutus, South Arabian Sea in 3385 m.
Pherusa hamocarens, North Arabian Sea in 759-1024 m.

Maldanidae

Heteromastus aequalis, off East Africa, in 1362 m.
Maldane sarsi tropica, Arabian coast in 1189-1354 m.
Nicomache interstricta, Indian Ocean in 660 m.
Petalogroctus cirratus, South Arabian coast, in 1046 m.

Another seven species coming from great depths, but with identity that may be questioned are :

Aphroditidae

Aphrodita australis, Laccadives, in 670 fms. originally named from Port Jackson, Australia, in shallow depth.

Sigalionidae

Sthenolepis vulturis, Gulf of Aden in 274 m, originally from Makassar Strait.

Goniadidae

Glycinde oligodon, Bay of Bengal in 840 fms, first named from Chilka Lake.
Goniada annulata, South of Ceylon in 660 fms, first named from off Alaska in deep waters.

Onuphidae

Hyalinoecia tubicola, Bay of Bengal, in 1005 fms, first named from shallow water off Denmark.

Orbiniidae

Scoloplos (Leodamas) latus, off Burma in 250 fms, first named from Pacific side off Panama.

Scalibregmidae

Scalibregma inflatum, Gulf of Oman in 609 fms, first named off Norway.

List of Stations

D-16. Mar. 9, 1963. North side of Okah Point, Gujarat State, along shore, some washed from algae.
18 A. Mar. 21, 1963. 07° 34′ N, 98° 00′ E, Bay of Bengal, in 77 m ; washed from algae.
21. Mar. 24, 1963. Southwest of Bangkok. 09° 54′ N, 97° 42′ E, in 70 m.
22 A & B Mar. 24, 1963. Andaman Sea, Bay of Bengal, 10° 39′ N, 97° 06′ E in 275 and 290 m.
28 A. Mar. 24, 1963. Andaman Sea, 11° 52′ N, 92° 49′ E, in 66 m.
28 D. Mar. 27, 1963. Andaman Sea, 11° 37′ N. 92° 56′ E, in 326-357 m.
29 Mar. 28, 1963. Andaman Island, Bay of Bengal. 11° 23′ N, 93° 31′ E, dredged in 55-40 m.
47 A. Apr. 5, 1963. Bay of Bengal, 20° 16′ N, 92° 32′ E, in 13-15 m.
47 B. Apr 5, 1963. 19° 50′ N, 92° 55′ E, in 30-22 m.
124 F. June 24, 1963. East off Mauritius. 21° 21′ S, 65° 55′ E, dredged in 32-90 m.
201 A. Nov. 13, 1963. Arabian Sea, 17° 54′ N, 72° 23′ to 27′ E, in 46-55 m.
203 A. Nov. 13, 1963. Arabian Sea 18° 07′ to 08′ N, in 68-69 m.
206 A. Nov. 15, 1963. Arabian Sea, 20° 20′ to 23′ N, 70° to 69° 55′ E, in 21-26 m.
208 A. Nov. 16, 1963. Southwest off Bombay, Arabian Sea. 20° 35′ to 33′ N ; 69° 18′ to 20′ E, in 110-113 m. Trawled in very fine gray-green mud.
210 A. Nov. 16, 1963. Arabian Sea. 21° 07′ to 09′ N, 69° 48′ E, in 34-37 m. Trawl in fine green clayey mud.
210 B. Nov. 16, 1963. Arabian Sea. 21° 07′ to 09′ N ; 69° 48′ E, in 34-37 m.
213 A. Nov. 17, 1963. Arabian Sea. 21° 11′ to 08′ N; 69° 16′ to 13′ N, in 70-72 m.
221 A. Nov. 18, 1963. Arabian Sea. 22° 32′ to 31′ N; 68° 07′ to 05′ E, in 57 m. Trawled in sandy green clayey mud.

222 A. Nov. 18, 1963. Off Karachi , Pakistan. 22° 43′ to 45′ N ; 68° 22′ to 24′ E, in 26-27 m.

230 B. Nov. 20, 1963. Arabian Sea. 23° 3q′ N; 66° 55′ E, in 88 m.

247 B. Nov. 28, 1963. Arabian Sea. 25° 06′ N ; 60° 45′ E, in 110 m.

248 A. Data as for 247 B.

251 B. Nov. 29, 1963. Arabian Sea. 25° 17′ N; 59° 05′ E, in 35 m.

254 B. Nov. 30, 1963. Arabian Sea. 25° 35′ N; 57° 09′ E, in 256 m.

255 A. Nov. 30, 1963. Arabian Sea. 25° 45′ to 50′ N; 57° 07′ E, in 92-95 m.

256 A. Nov. 30, 1963. Arabian Sea. 26° 10′ to 13′ N; 57° 02′ E, in 64-55 m, in green mud.

262 A. Dec. 1, 1963. Gulf of Oman. 25° 37′ to 39° N; 56° 34′ E, in 79 m, in green muddy sand.

269 A. Dec. 3, 1963. Gulf of Oman. 23° 43′ to 46′ N; 58° 23′ E, in 49-63 m.

269 C. Dec. 3, 1963. Gulf of Oman. 23′ 35° N; 58° 49′ E, in 121-124 m.

270 A. Dec. 4, 1963. North Arabian Sea. 22° 05′ to 08′ N; 59° 47′ to 48′ E, in 55 m.

Stations RH[1] 14 to RH 51, collected Mar.-Apr., 1964, in the northern Indian Oceah, by Dr. Howard Sanders.

RH 14. Mar. 5, 1964. 3 mi N of Cochin Harbour, Kerala State, Arabian Sea, in 23 m, silty clay.

RH 26. Mar. 14, 1964. Off Porto Novo, Madras State; 11° 228′ N; 79° 43′ E, in 20 m

RH 28. Mar. 14, 1964. Porto Novo, half mile from mouth of the Vellar estuary of the Cooleron River, in 1.5 m. Salinities normal at this time.

RH 30. Mar. 18, 1964. Madras, 1.5 mi south-east of harbour, directly east of the University building, in 15 m, in gray mud with little sand.

RH 33. Mar. 22, 1964. Mouth of Godavari estuary, Kakinada Bay, Andhra State, one mile SSE of mouth of canal, in brown mud with about 55% clay.

RH 36. Mar. 23, 1964. Off Kakinada, Bay of Bengal, about 10 mi SE from mouth of harbour, in 37 m, in brown mud.

RH 41. Mar. 31, 1964. Off Bombay, India, in 22 m, in gray-brown mud without sand.

RH 51. Apr. 23, 1964. Nosy Bé, Madagascar, in Ampasindara Bay. 13° 37′ S, 48° 18′ E, in 34 m, in gray mud.

(To be continued)

[1] RH refers to Mr. R. Higgins, the designer of the meiobenthic sled used to recover the samples; so designated.