

Marine Annelids From the Northern Marshall Islands

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By OLGA HARTMAN

Bikini and Nearby Atolls, Marshall Islands

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BIKINI AND NEARBY ATOLLS, MARSHALL ISLANDS

MARINE ANNELIDS FROM THE NORTHERN MARSHALL ISLANDS

By OLGA HARTMAN¹

ABSTRACT

This paper describes and charts at least 100 species of marine annelids from the northern Marshall Islands. *Sphaerodorum pacificum*, family Sphaerodoridae, *Eunice johnsoni*, Eunicidae, *Dodecaceria laddi*, Cirratulidae, *Leiochrides? biceps*, Capitellidae, *Leanea minuta*, Terebellidae and *Fabricia bikinii*, Sabellidae, are newly described. At least 72 species are recorded from Eniwetok Atoll, 41 from Bikini Atoll, 20 from Rongelap Atoll, and 5 from Rongerik Atoll. There are no obvious differences in the annelid faunas of windward and leeward islands, nor seaward and lagoon sides of the islands, though it is admitted that the numbers taken are too limited to make general conclusions.

Several species of annelids occurring in corals or coralline masses have a destructive effect on calcareous structures. Such are the following: *Pseudonereis gallapagensis* (Nereidae), *Lysidice collaris*, *Eunice afra*, *Palola siciliensis* (Eunicidae), *Aglaurides fulgida* (Lysaretidae), *Polydora* spp. (Spionidae), *Dodecaceria laddi* (Cirratulidae), and *Hypsicomus phaetaenia* (Sabellidae). The blue coral (*Heliopora*) and the white pillared corallines are especially riddled by *Palola*, *Lysidice*, and *Dodecaceria*; *Pseudonereis* was found especially abundant in *Heliopora* on Eniwetok Atoll.

INTRODUCTION

At least 100 species of the marine annelids recorded below were taken from the northern Marshall Islands, between 1946 and 1952 in connection with Operation Crossroads and later atomic tests. Four atolls were investigated. Eniwetok Atoll and Bikini Atoll are best represented with at least 72 and 41 species respectively; others are Rongelap Atoll with 20 and Rongerik Atoll with 5 species. Only 20 species, or about 37 percent, are common to Eniwetok and Bikini Atolls. This small number is doubtless the result of too few collections.

All species named below represent new records because no previous work has been done on the marine annelids of these atolls. The present study can be regarded only as preliminary, because collecting was for the most part casual with regard to the annelids. Exception must be taken to the considerable masses of intertidal coral and coralline clumps taken at Eniwetok Atoll by Harry S. Ladd, Martin Russell, and R. C. Townsend in 1952. Some of the intertidal areas of

Bikini Atoll were closely examined by Martin W. Johnson of the Scripps Institution of Oceanography, accounting for most of the records from Bikini Atoll.

Based on the collections made, there are no obvious differences (again only a tentative conclusion) between windward and leeward island faunas of the several atolls, except that the windward islands are far better represented both by numbers of species and by station numbers (see figs. 170-173). The same lack of difference can be seen by comparing the faunas from outer or seaward side with lagoon waters.

Since annelids are largely crevice-dwellers, or limited to the substratum, it may be expected that the factors most influential in their number and distribution are ecological and biological, such as kind of substratum, associations of other organisms, and amount of exposure to sun and drying rather than amount of current and wind drift or other general physical factors.

The annelid fauna of this area clearly has an affinity with fauna from other parts of the Indo-Pacific. However, it is notable that most of the new forms belong to genera (*Dodecaceria*, *Leanea*, *Fabricia*, *Sphaerodorum*, and *Eunice*) not limited to tropical seas. There are at least 12 more species, identified only to genus (*Amphitritides*, *Anaitides*, *Chaetopterus*, *Cirratulus*, *Glycera*, *Naineris*, *Polydora*, *Salmacina*, *Serpula*, *Spio*, *Typosyllis*, *Vermiliopsis*) and three or more to subfamily (Autolytinae, Exogoninae, and Spirorbinae) which may also represent unknown or unreported species. Eight others are given questionable specific names (*Ceratonereis costae*, *Harmothoë imbricata*, *Irma angustifrons*, *Laonice cirrata*, *Notopygos hispidus*, *Odontosyllis hyalina*, *Phyllodoce marquesensis*, and *Terebella ehrenbergi*) mainly because the collected materials are either imperfect or too meager to permit accurate identity. Five names are given as near known species: *Lepidonotus* cf. *L. argus*, *Drilonereis* cf. *D. major*, *Phyllochaetopterus* cf. *P. ramosus*, *Polydora* cf. *P. armata*, and *Polycirrus* cf. *P. medius*; these affinities are discussed in the systematic part of this paper.

¹ This report has been prepared in cooperation with the Allan Hancock Foundation of the University of Southern California, as their contribution no. 112.

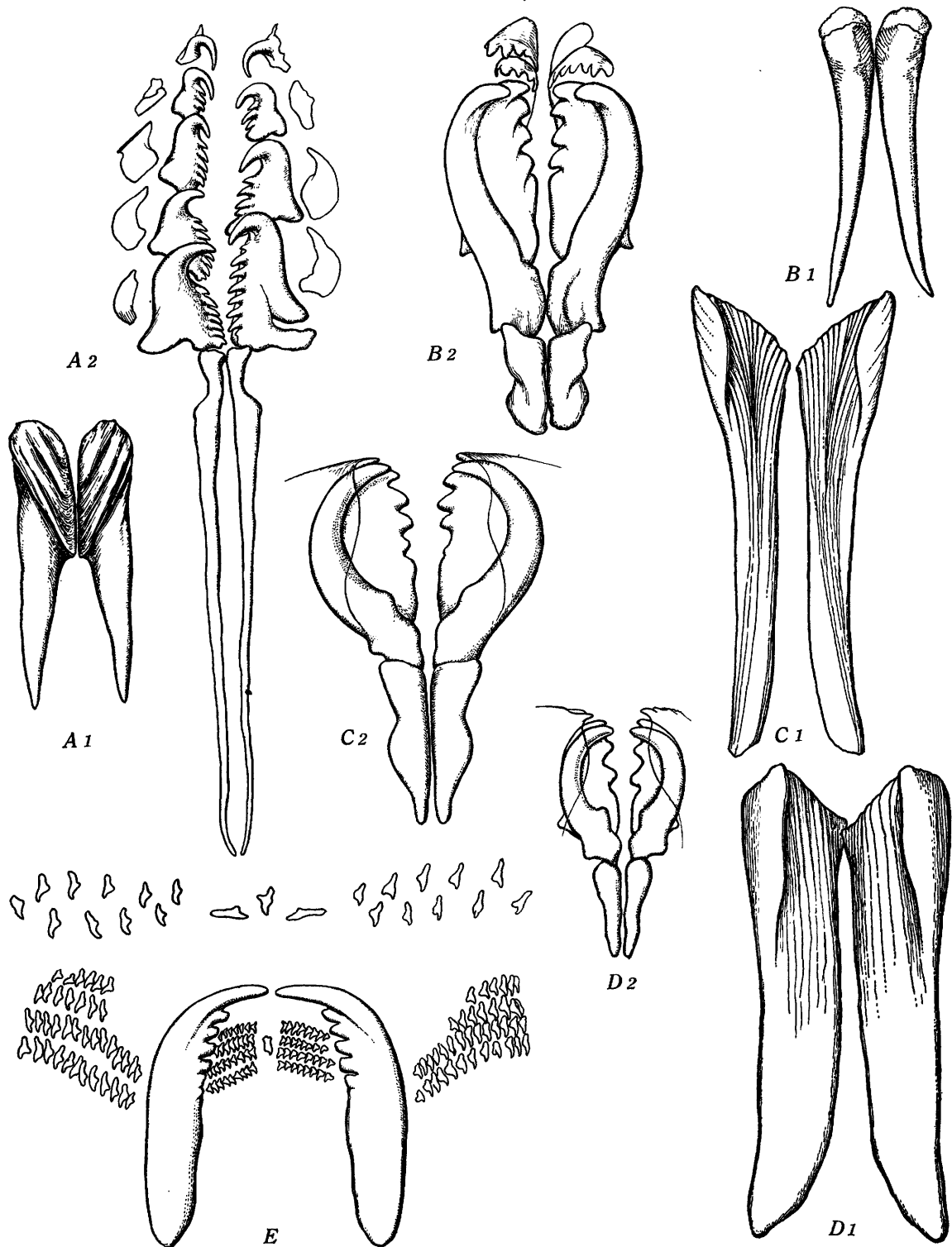


FIGURE 169.—Pharyngeal armatures of polychaetes which are destructive to coral and coralline growths, based on specimens from Eniwetok Atoll. The parts for each species come from a single individual and are considered to be representative. In the *Eunice* note the comparative increase in size of mandible (1) as against maxillae (2) as one proceeds from least (*Aglaurides fulgida*) to most destructive species (*Palola siciliensis*). In *Pseudonereis gallapagensis* the larger jaws probably function for grasping and the smaller paragnaths and pectinae for rasping.

A, *Aglaurides fulgida*, $\times 45$, (p. 621) from Lidilbut island, seaward, from reef-zone block. (1) mandible, (2) maxillae.

B, *Eunice afra*, $\times 27$ (p. 621) from Muti island, from a narrow seaward reef, from landward edge of *Lithothamnion* ridge next to surge channel. (1) mandible, (2) maxillae.

C, *Lysidice collaris*, $\times 60$, (p. 634) from Bogon island, seaward, in coral area. (1) mandible, (2) maxillae.

D, *Palola siciliensis*, $\times 45$, (p. 621) from Lidilbut island, seaward, near shore, in *Heliopora* (blue coral). (1) mandible, (2) maxillae.

E, *Pseudonereis gallapagensis*, $\times 39$, (p. 621) from between Lidilbut and Elugelab islands, lagoon side, in *Heliopora* (blue coral). Paired jaws and dorsal part of paragnathal armature, showing the transverse rows of pectinae on the maxillary, and the separate paragnaths on the oral.

The small size of most individuals, even though sexually mature, and the lack of knowledge of the annelid fauna of the atolls, makes positive identification difficult without additional collections. Some of these small individuals bear close resemblance to temperate or boreal seas species such as *Laonice cirrata?*, *Harmothoë imbricata?*, and possibly others. Their presence on the atolls may represent extreme limits of their ecological ranges.

The majority of species are found in various parts of the Indo-Pacific, also tropical Australia north to southern Japan. The following are examples of these species: *Eurythoë complanata*, *Anaitides madeirensis*, *Platynereis dumerilii*, *Ceratonereis mirabilis*, *Ceratonereis costae*, *Pseudonereis gallapagensis*, *Eunice antennata*, *E. afra*, *Nematonereis unicornis*, *Arabella iricolor*, *Aglaurides fulgida*, *Palola siciliensis*, *Glycera tessellata*, *Dasybranchus lumbricoides*, and others. About as many species have a more limited distribution in warmer, more restricted parts of the South Pacific. Examples of these are *Phyllodoce marquesensis*, *P. pruvoti*, *Genetyllis gracilis*, *Pterocirrus brevicornis*, *Phyllochaetopterus ramosus*, and others. The new species (*Sphaerodorum pacificum*, *Eunice johnsoni*, *Dodecaceria laddi*, *Leiochrides? biceps*, and *Fabricia bikinii*) as well as those indicated below by generic name only, may be endemic, although their presence or absence from other parts of the South Pacific cannot be predicted without more intensive investigations.

Most of the annelids may be regarded as having a destructive effect on the reef building processes of corals or coralline algae. This is obviously so for those which penetrate the rocky platforms; they include *Pseudonereis gallapagensis*, *Lysidice collaris*, *Palola siciliensis*, *Eunice afra*, *Dodecaceria laddi*, *Hypsicomus phaetaenia*, several *Polydora* spp., and others. Some of these lime-destroying species are provided with hard pharyngeal structures that can rasp away even the hardest coralline or coral rocks. The annelids found most frequently within coral include *Palola siciliensis* (fig. 169-D), *Lysidice collaris* (fig. 169-C), *Eunice afra* (fig. 169-B), *Aglaurides fulgida* (fig. 169-A) in the superfamily Eunicea, *Pseudonereis gallapagensis* (fig. 169-E) of the family Nereidae, *Dodecaceria laddi* (fig. 177-D-H) of the family Cirratulidae, and *Polydora* spp. of the family Spionidae. In the Eunicea the ventral mandibular plate, which may function as a rasp, is conspicuously large and strongest in *Palola* (which may also be the most destructive member of this superfamily) and comparatively smallest in *Aglaurides*. In each of these species the dorsal, maxillary pieces probably function for grasping, rather than for rasping. *Dodecaceria* and *Polydora* have no such pharyngeal armature but may perform the same function with the

aid of modified setae (fig. 177). *Hypsicomus*, a sabellid, shows none of these chitinized structures; its penetrating effect may be the result of chemical action.

Many other species are nestlers or crevice-dwellers, occupying natural shelters of the colonial calcareous organisms. By reason of their presence, the annelids cause destruction of their environs. Many derive their nutrients from the corallines or coral clumps, or from micro-organisms within the clumps. Such are the amphinomids of which *Eurythoë complanata* (a fire-worm) is one of the commonest present; others are the mucus-secreting phyllodocids, most of the Eunicea, the capitellids, terebellids, and others. Only a few, such as the serpulids, with massed tubes (*Salmacina* and *Eupomatus*) can be considered as contributing to reef-growth. Conspicuously absent or scarce are reef-building forms such as the sabellarians and maldanids (not represented), in fact, most Sedentaria except the terebellids.

The effect of the annelids on atolls was noted by Martin Johnson, who collected many of the species. He states, personal communication:

My impression is that the annelids were common on the atolls visited. I believe they had their maximum abundance in the coral zone on the platform portion of the reef just shoreward from the growing Lithothamnion ridge and in the potholes in the reef flat covered by shallow water even during low tides. The surge channels in the Lithothamnion ridge were but little sampled. As one would expect, most of the collections were made from areas covered with a good deal of rubble and loosely attached material not readily moved by surge of waves. * * *. Regarding the boring of annelids, my impression was that the annelids constitute one of the important borers in the area.

Further, Gardiner (1903, p. 336) concluded:

Polychaeta are perhaps really the most important boring animals in coral rock, although the actual forms are inconspicuous and of small diameter. In coral reefs at least some specimens can be obtained from every rock below and between tide marks. All large coral masses are bored into and penetrated by their tubes, which bend and twist in every direction. The surface at the edge of the reef is made rotten for some inches by their borings, and the section of the broken base of a coral often appears as a regular sieve from their holes. The finer-textured corals are principally affected, but all corals and rocks are attacked * * *. From their prevalence in every rock, be it of coral, sand or nullipore, the total effect of the Polychaeta must be enormous, and they must certainly be regarded as the prime and most effective agents in the breaking down of coral rocks.

Crossland's general report (1928, p. 581-2, and 1927, p. 534) on atolls emphasizes the wealth of vigorous life in coral clumps.

The effects of polychaetes on the Great Barrier Reef of Australia, as reported by the British Museum, Great Barrier Reef Expedition, 1928-29, are stated only in general terms. Thus, Otter (1937, p. 332) reports that "no collections were made from Low Isles of rock-burrowing Polychaeta, which undoubtedly play as im-

portant a part on this reef as they have been found to do on many others." Thereafter he cites Gardiner and Crossland. (See above.)

Because of the considerable number of species (at least 100 indicated in the lists below), and since it must be concluded that these lists are at best only preliminary, one is inclined to question the generalization that the fauna of the Marshall Islands is small (Fosberg, 1951, p. 6; Morrison, 1951, p. 16). Clark (1952, p. 265) recorded 80 species of echinoderms (excluding the holothurians); only 40 percent of the total number were found in 2 successive years, also indicating that the echinoderms have been incompletely collected.

Collections are in the U. S. National Museum and the Allan Hancock Foundation of the University of Southern California. Type specimens for the new species are in the U. S. National Museum.

MARINE ANNILIDS FROM THE NORTHERN MARSHALL ISLANDS AND THEIR DISTRIBUTION

DISTRIBUTION

All the species of marine annelids found in the northern Marshall Islands are listed alphabetically in the following table, and their distribution in the northern Marshall Islands and elsewhere is indicated.

Distribution of marine annelids

[B indicates Bikini Atoll; E, Eniwetok Atoll; Rp, Rongelap Atoll; and Rk, Rongerik Atoll]

	Atolls	Windward Island	Leeward Island	Lagoon side	Outer side	Other distribution
<i>Aglaurides fulgida</i>	E, Rp.....	x	x		x	Circummundane in warm seas.
<i>Amphitritides</i> sp.....	Rk.....		x		x	
<i>Anatitides madetrensis</i>	E.....	x	x		x	Circummundane in warm seas.
sp.....	B, E.....	x			x	
<i>Ancistrosyllis rigida</i>	B, E.....	x	x		x	Both sides of tropical America; South Pacific.
<i>Arabella tricolor</i>	E.....	x	x	x	x	Circummundane in warm seas.
<i>mulans</i>	B.....	x			x	Indo-Pacific; both sides of tropical America.
<i>Armandia lanceolata</i>	B.....	x		x		Indo-Pacific; southern Japan to Australia.
Autolytinae.....	Rp, E.....	x	x	x	x	
<i>Bhawania cryptocephala</i>	E.....	x			x	Red Sea; Indian and Pacific Oceans.
<i>Branchiouraldane vincentii</i>	E.....	x			x	Atlantic and Pacific Oceans; disjunct.
<i>Ceratonereis costae</i>	B.....	x			x	Circummundane in warm seas.
<i>mirabilis</i>	B, Rp, E.....	x	x		x	Indo-Pacific; Australia; both sides of tropical America.
<i>pachychaeta</i>	B, Rp.....	x		x	x	Red Sea; Madagascar; South Pacific.
<i>Chaetopterus</i> sp.....	Rp.....	x		x		
<i>Chrysopetalum ehlersi</i>	E.....	x	x		x	Red Sea; Tahiti.
<i>Cirratulus</i> sp.....	E.....	x			x	
<i>Cirriiformia semicincta</i>	E.....	x	x	x	x	South Sea islands; Polynesia; French Indochina; Australia.
<i>Dasybranchus caducus</i>	E.....	x			x	Circummundane in warm seas.
<i>lumbricoides</i>	B, E.....	x			x	Indo-Pacific; both sides of tropical America.
<i>Dodecacerta laddi</i>	E.....	x	x	x	x	
<i>Dorvillea gardineri</i>	B, E.....	x	x		x	Maldive Islands; East Africa.
<i>stimilis</i>	E.....	x			x	Suez on coral.
<i>Driloneis</i> cf. <i>D. major</i>	B.....		x		x	Red Sea; India.
<i>Eulalia tenax</i>	B.....	x			x	Indo-Pacific; New Zealand north to Ryukyu Islands.
<i>Eunice afra</i>	B, E, Rp.....	x	x	x	x	Indian Ocean; South Pacific.
<i>antennata</i>	B, E, Rp, Rk.....	x	x		x	Cosmopolitan in warm and temperate seas.
<i>johnsoni</i>	B.....					
(<i>Nicidion</i>) <i>gracilis</i>	B.....		x			Indo-Pacific; Zanzibar; Australia.
<i>Euphrosine myrtosa</i>	E.....	x			x	Indo-Pacific.
<i>Eupolytmia trigonostoma</i>	B.....		x			Indo-Pacific; south Japan to New South Wales.
<i>Eupomatus albiceps</i>	E.....	x			x	Red Sea; Ceylon; on coral.
<i>Eurythoe complanata</i>	E, B, Rp.....	x	x	x	x	Both sides of tropical America; Indo-Pacific.
Exogoninae.....	E.....	x	x		x	
<i>Fabricia bikini</i>	B.....	x				Philippine Islands; Indo-Pacific.
<i>Gastrolepidia clavigera</i>	B, E, Rp.....	x	x		x	Marquesas Islands; Tahiti; Paumotu Islands; Faka- rava reefs.
<i>Genetyllis gracilis</i>	B.....	x			x	Circummundane in warm seas.
<i>Glycera tessellata</i>	B, E.....	x	x		x	
sp.....	E.....	x			x	
<i>Haplosyllis aberrans</i>	E.....	x			x	Indochina.
<i>spongicola</i>	E.....	x	x	x	x	Circummundane in sponge.
<i>Harmonia mbricata?</i>	E.....	x			x	Circummundane.
<i>Hesion</i> <i>genetic</i>	B, E, Rp.....	x	x		x	Ceylon; Samoa Islands; Philippine Islands; South Pacific.
<i>Hydroides multispinosa</i>	B.....	x			x	Indo-Pacific; south Australia; south Africa.
<i>Hyperhalosydna striata</i>	B.....					Indo-Pacific; Australia to Japan.
<i>Hypicampus phaeoetania</i>	E.....	x			x	Indo-Pacific; Japan; Australia; Atlantic.
<i>Irma angustifrons</i>	B.....					Indo-Pacific.
<i>Laonice cirrata?</i>	E.....	x		x	x	North temperate seas.
<i>Leaena minuta</i>	E.....	x			x	
<i>Leiochrides</i> <i>biceps</i>	Rp.....	x				
<i>Leocrates chinensis</i>	B, E.....	x			x	Southern China; South Pacific.
<i>Lepidonotus</i> cf. <i>L. argus</i>	Rk.....		x		x	Both sides of the South Pacific.
<i>Loimia medusa</i>	B, Rp.....	x		x		Circummundane in tropical reefs.
<i>Lumbrineris laterilli</i>	B.....	x	x		x	Circummundane in warm seas.
<i>sphaerocephala</i>	E.....	x			x	New Zealand; off northeastern Australia; South Pacific.

Distribution of marine annelids—Continued

	Atolls	Windward Island	Leeward Island	Lagoon side	Outer side	Other distribution
<i>Lysidice collaris</i>	B, E	x	x		x	Indo-Pacific; both sides of tropical America.
<i>Mesochaetopterus minutus</i>	E	x			x	Circummundane in warm seas.
<i>Naineris</i> sp.....	E	x			x	
<i>Neanthes dawydovi</i>	Rp, E	x			x	Indochina; Gulf of Siam.
<i>Nematoneis unicornis</i>	B, E	x	x		x	Indo-Pacific; both sides of tropical America.
<i>Nereis zonata persica</i>	B	x			x	Red Sea; Indo-Pacific; New Caledonia.
<i>Notopygos hispidus?</i>	Rk		x		x	Philippine Islands; tropical Australia; Indo-Pacific.
<i>Odontosyllis hyalina?</i>	E, Rp	x		x	x	Philippine Islands; Great Barrier Reef.
<i>Palmyra aurifera</i>	E	x			x	Indo-Pacific at Mauritius Island.
<i>Palola siciliensis</i>	B, E, Rp	x	x	x	x	Circummundane in warm seas.
<i>Paralepidonotus ampullifera</i>	E	x			x	Indo-Pacific.
<i>Paramarphysa orientalis</i>	E	x			x	South Sea islands; India.
<i>Parasphaerosyllis indica</i>	E	x			x	Arabia; Annam on reefs.
<i>Phyllochaetopterus pictus</i>	E	x			x	Circummundane in warm seas.
cf. <i>P. ramosus</i>	B		x		x	
<i>Phyllodoce marquensesis?</i>	E	x			x	Marquesas Islands; South Pacific.
pruvoti.....	B, E, Rp	x			x	Loyalty Islands; New Caledonia.
<i>Platynereis dumerilii</i>	B, E, Rp	x		x	x	Circummundane in warm seas.
<i>polyscalma</i>	Rp		x	x		Both sides of tropical Pacific.
<i>Polycirrus</i> cf. <i>P. medius</i>	B		x			
<i>Polydora</i> cf. <i>P. armata</i>	E	x			x	
spp.....	E	x			x	
<i>Polyophthalmus pictus</i>	B, E	x	x	x	x	Circummundane in warm seas.
<i>Pseudeurythoe oculifera</i>	E	x			x	Southwestern Australia; Marquesas Islands.
<i>Pseudonereis anomala</i>	B, E, Rp	x	x		x	Indo-Pacific; Madagascar.
<i>gallapagensis</i>	E	x		x	x	Both sides of tropical Pacific; Indian Ocean.
<i>Pterocirrus brevicornis</i>	B	x				New Zealand.
<i>Sabella notata</i>	E	x			x	Philippine Islands; Ceylon.
<i>Salmacina</i> sp.....	E	x	x	x	x	Circummundane; littoral.
<i>Serpula</i> sp.....	E	x	x		x	
<i>Sphaerodorum pacificum</i>	E	x			x	
<i>Sphaerosyllis</i> sp.....	E	x			x	
<i>Spio</i> sp.....	E	x			x	
<i>Spirobranchus giganteus</i>	E	x	x	x	x	Circummundane in coral reefs.
Spirorbids, dextral.....	E	x	x		x	
Spirorbids, sinistral.....	E	x	x		x	
<i>Syllis gracilis</i>	E	x			x	Circummundane.
<i>Terebella ehrenbergi?</i>	E	x	x	x	x	Red Sea to southern Japan.
<i>Thormora jukesii</i>	Rp		x		x	Indo-Pacific.
<i>Trypanosyllis zebra</i>	B, E, Rp, Pk	x	x	x	x	Circummundane.
<i>Typosyllis brachychaeta</i>	B	x			x	Circummundane.
<i>hyalina</i>	E	x			x	Circummundane.
<i>variegata</i>	E	x		x	x	Circummundane.
spp.....	E	x			x	
<i>Vermiliopsis</i> sp.....	E	x	x		x	

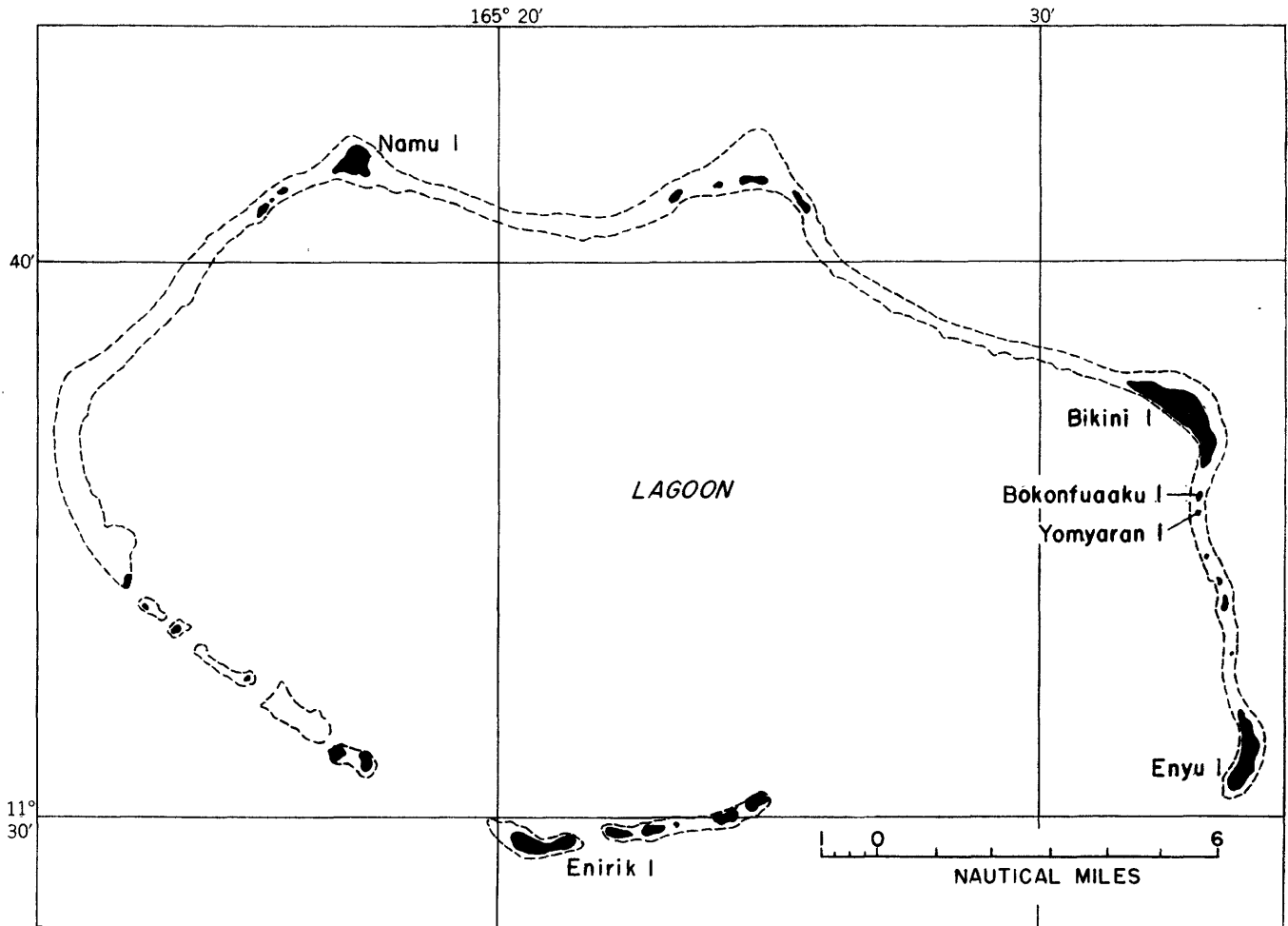


FIGURE 170.—Map of Bikini Atoll showing collecting localities.

**COLLECTING LOCATIONS AND MARINE ANNELIDS
FOUND AT EACH LOCALITY**

BIKINI ATOLL

The following species collected at Bikini Atoll are listed according to the location at which they were collected on the atoll. The collection localities can be fixed on figure 170.

NAMU ISLAND, SEA SIDE

Eurythoë complanata
Genetyllis gracilis
Hesionë genetta
Pseudonereis anomala
Glycera tessellata
Eunice afra
Eunice antennata
Lysidice collaris
Palola siciliensis
Drilonereis cf. *D. major*

NAMU ISLAND, LAGOON SIDE

Eurythoë complanata
Notopygos hispidus?
Eunice afra
Palola siciliensis
Armandia lanceolata
Polyophthalmus pictus

BIKINI ISLAND

Eurythoë complanata
Phyllodoce pruvoti
Hesionë genetta
Leocrates chinensis
Trypanosyllis zebra
Typosyllis sp.
Ceratonereis pachychaeta
Nereis zonata persica
Eunice antennata
Palola siciliensis
Nematonereis unicornis
Lumbrineris latreilli?
Arabella mutans
Loimia medusa

BOKONFUAAKU ISLAND

Gastrolepidia clavigera
Phyllodoce pruvoti

YOMYARAN ISLAND

Pterocirrus brevicornis
Phyllodoce pruvoti
Glycera tessellata
Eunice afra
Palola siciliensis
Armandia lanceolata

ENYU ISLAND

Trypanosyllis zebra
Platynereis dumerilii
Palola siciliensis

ENIRIK ISLAND

Eurythoë complanata
Ancistrosyllis rigida
Eunice afra
Eunice (Nigidion) gracilis
Dorvillea gardineri
Phyllochaetopterus cf. *P. ramosus*
Dasybranchus caducus

BIKINI LAGOON

This specimen came from a fouled boat cradle in lagoon, the exact location of which is not specified.

Platynereis dumerilii

BIKINI ATOLL

The exact locations of these species are not specified.

Eurythoë complanata
Hesione genetta
Irma? angustifrons
Ceratonereis mirabilis
Eunice afra
Lysidice collaris
Palola siciliensis
Dorvillea gardineri
Glycera tessellata
Dasybranchus caducus

OUTSIDE BIKINI ATOLL

The exact location from which these species were obtained is not indicated.

Eurythoë complanata
Eulalia tenax
Phyllodoce pruvoti
Hesione genetta
Leocrates chinensis
Ceratonereis pachychaeta
Lumbrineris latreilli?
Nematonereis unicornis
Arabella novecrinita
Phyllochaetopterus cf. *P. ramosus*

ENIWETOK ATOLL

The following species are listed according to the locality at which they were collected on the Atoll. These collection localities can be fixed on figure 171.

ELUGELAB ISLAND

The following species was collected on the reef at a point about 600 feet west of Elugelab island, where it was associated with holothurians.

Gastrolepidia clavigera

BETWEEN LIDILBUT AND ELUGELAB ISLANDS

The species listed here were collected from the lagoon side of the reef between Lidilbut and Elugelab islands where the water is 6 inches to a foot deep at low tide.

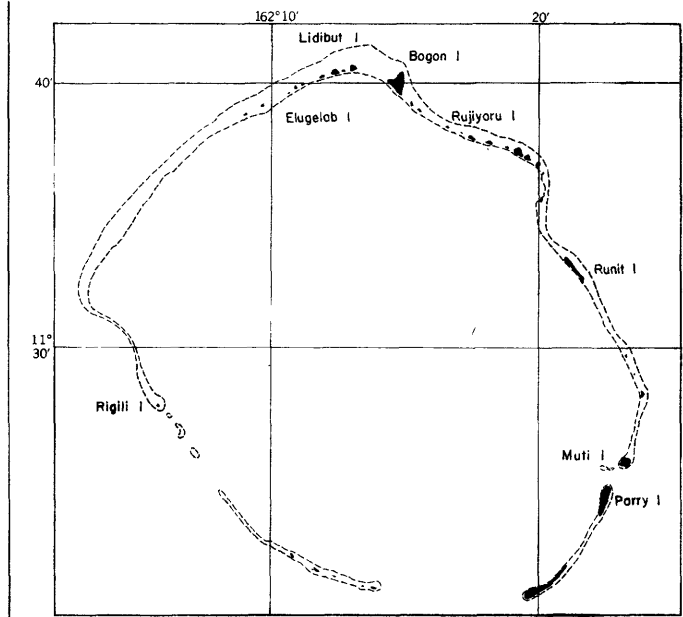


FIGURE 171.—Map of Eniwetok Atoll showing collecting localities.

This area was apparently a site of rich coral growth prior to building of a causeway that now connects the two islands and shuts off all cross-reef circulation. Growths of species of *Heliopora* are abundant but not in the form of microatolls, and a fair variety of other corals are present. Colonies of *Acropora* are so abundant that at low tide the area resembles the Great Barrier Reef, as seen in photographs. Most of the coral is now dead or dying, and the colonies of *Heliopora* are riddled by borings of *Pseudonereis gallapagensis* Kinberg.

Eurythoë complanata
Haplosyllis spongicola
Typosyllis variegata?
 Other syllids
Pseudonereis gallapagensis, in colonies of *Heliopora*
Eunice afra
Laonice cirrata?
Terebella ehrenbergi?
 Other terebellid
Salmacina-like tubes, in cavities of *Heliopora*

LIDILBUT ISLAND

The following species were collected from the reef on the seaward side, from living and dead corals under 1 foot of water at low tide. The reef flat is nearly covered by loose heads of coral.

Eurythoë complanata
Chrysopetalum ehlersi, in coralline algae and old coral head
Bhawania cryptocephala
Palmyra aurifera, in coral zone
Euphrosine myrtosa, in coralline algae
Sphaerodorium pacificum, in coralline algae
Anaitides madeirensis
Anaitides sp., in coralline algae
Leocrates chinensis, in *Heliopora*
Ancistrosyllis rigida

Haplosyllis aberrans, in *Heliopora*
Parasphaerosyllis indica, in *Heliopora* and coralline algae
Odontosyllis hyalina?, in white coralline algae
Typosyllis sp., in coralline algae
Trypanosyllis? sp., in coral zone
 Exogoninae, in old coral head
 Other syllids, in old coral head
Ceratonereis mirabilis in *Heliopora* and in old coral head
Pseudonereis gallapagensis, in old coral head
Neanthes dawydovi, in old coral head
Glycera tessellata
Glycera sp., in coralline algae
Eunice afra, in coralline algae and in old coral head
Paramarphysa orientalis, in *Heliopora*
Palola siciliensis, in coralline algae and in *Heliopora*
Nematonereis unicornis, in *Heliopora*
Lysidice collaris
Lumbrineris sphaerocephala, in corallines
Aglaurides fulgida, in old coral head
Dorvillea similis, in *Heliopora* and in old coral head
Dorvillea gardineri
Laonice cirrata?
Polydora cf. *P. armata*
Polydora sp.
Cirratulus sp., in old coral head
Dodecaceria laddi, in old coral head
Polyophthalmus pictus, in old coral head
Dasybranchus caducus
Dasybranchus lumbricoides
Eupomatus albiceps, with *Heliopora*
Spirobranchus giganteus, in old coral head
Serpula sp., in coralline algae
Vermiliopsis sp., in coralline algae
 Spirorbids, in old coral head

BOGON ISLAND

The species listed below were collected from the seaward reef within 300 feet of beach where the flat is covered by 1 to 2 feet of water at low tide. Corals are present, with *Acropora*, *Heliopora*, and *Porites* the commonest. Corals cover 5-10 percent of the reef, with sand areas in between.

Eurythoë complanata
Paralepidonotus ampullifer †
Harmothoë imbricata?
Chrysopetalum ehlersi
Bhawania cryptocephala
Haplosyllis spongicola
 Other syllids
Platynereis dumerilii
Lysidice collaris
Dorvillea similis
Naineris sp.
Polydora sp.
Polyophthalmus pictus
Sabella notata
Hypsicomus phaetaenia
Spirobranchus giganteus
Eupomatus albiceps
Serpula sp.
 Spirorbids

RUJIYORU ISLAND

Hesione genetta
Phyllodoce marquesensis?

RUNIT ISLAND

Anaitides madeirensis
Eunice afra

MUTI ISLAND

The following species were collected from dead coralline algae next to a surge channel at the landward edge of a *Lithothamnion* ridge bordering a narrow seaward reef. Entire ridge is dead and blackened and partly overgrown by soft algae.

Eurythoë complanata
Syllis gracilis
Typosyllis variegata
 Exogoninae
 Other syllids
Nereis sp.
Eunice afra
Paramarphysa orientalis
Lysidice collaris
Palola siciliensis
Arabella iricolor
Dorvillea similis
Polydora sp.
Cirriformia semicineta
Polyophthalmus pictus
Eupomatus albiceps
Serpula sp.
Vermiliopsis sp.
Salmacina-like tubes
 Dextral spirorbids

The following species were collected from living *Porites* and reef-flat rock, about one-third of way from seaward edge of the reef to shore.

Eurythoë complanata
 Syllids
Ceratonereis mirabilis
Eunice afra
Nematonereis unicornis
Arabella iricolor
Polydora sp.
Cirriformia semicineta
Dodecaceria laddi
Mesochaetopterus minutus
Polyophthalmus pictus
Branchiomaldane vincenti
Vermiliopsis sp.
 Serpulid

The following species were collected from beach rock and the rock of the reef flat, about 30 feet from shore.

Eurythoë complanata
Typosyllis sp.
Pseudonereis gallapagensis
Eunice antennata
Lysidice collaris
Arabella iricolor
Phyllochaetopterus pictus
 Phyllochaetopterid, in shell-covered tube
Cirriformia semicineta
Vermiliopsis sp.
 Sinistral spirorbids

PARRY ISLAND

The following species were collected from coral heads on seaward reef flat.

Syllids

Lysidice collaris
Polydora, more than one species
Dodecaceria laddi
Leaena minuta

The following species were associated with colonial tubes of *Mesochaetopterus*, tubes that partly cover surface of rocks on the seaward reef flat.

Pseudeurythoë oculifera
 Many syllids, of several species
Lysidice collaris, in borings of rounded block
Naineris sp.
Spio sp.
Mesochaetopterus minutus
Cirriformia semicineta
Laena minuta

ENIWETOK ISLAND

Eurythoë complanata
Phyllodoce pruvoti

RIGILI ISLAND

About 200 feet back from marginal zone fragmentary specimens of *Platynereis?* sp. were collected.

At landward edge of reef flat at the contact of the reef flat with beach rock belt, the following species were found in coralline algae.

Lysidice collaris
Palola siciliensis

On lagoon side of Rigili, blocks on reef flat, close to beach rock belt, yielded the following species

Chrysopetalum ehlersi
Autolytus sp.
Haplosyllis spongicola
 Exogoninae
 Other syllids
Lysidice collaris
Nematonersis unicornis
Palola siciliensis
Arabella iricolor
Cirriformia semicineta
Dodecaceria laddi
Polyophthalmus pictus
Spirobranchus giganteus
Salmacina-like serpulids, in cavities in corals

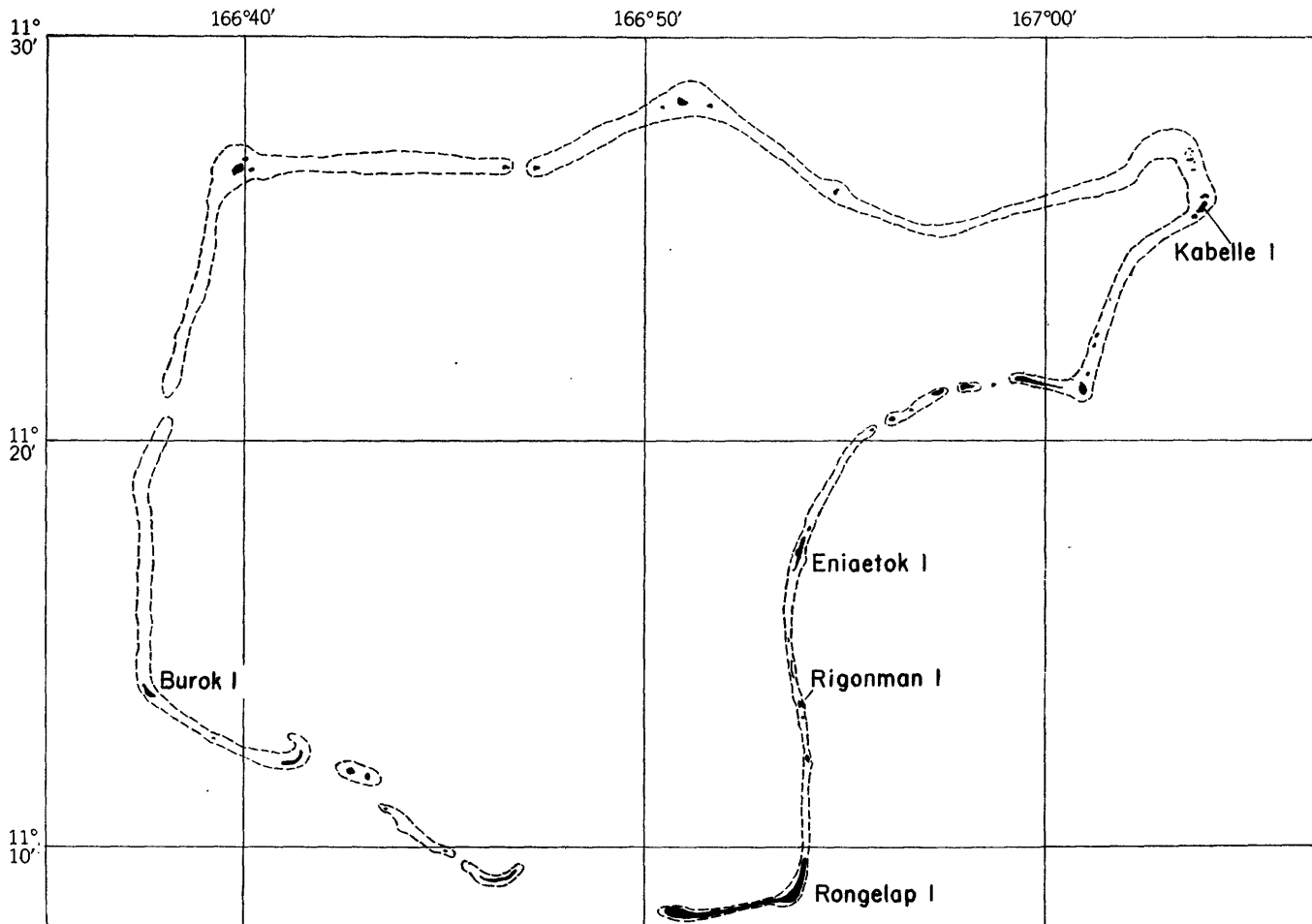


FIGURE 172.—Map of Rongelap Atoll showing collecting localities.

RONGELAP ATOLL

The following species are listed according to the locality at which they were collected on the atoll. The collection localities are shown on figure 172.

KABELLE ISLAND

Palola siciliensis

ENIAETOK ISLAND

Eurythoë complanata
Phyllodoce pruvoti
Eunice afra
Platynereis dumerilii

RIGONMAN ISLAND

Ceratonereis pachychaeta
Palola, fragment
Leiochrides? biceps

RONGELAP ISLAND

Odontosyllis hyalina
Autolytus sp.
Ceratonereis pachychaeta
Chaetopterus sp.
Loimia medusa

BUROK ISLAND, OUTER SIDE

Pseudonereis anomala
Eunice antennata
Palola siciliensis
Aglaurides fulgida

BUROK ISLAND, SOUTH SIDE, OUTER REEF FLAT IN ALGAE

Thormora jukesii

BUROK ISLAND, LAGOON INTERTIDAL

Hesione genetta

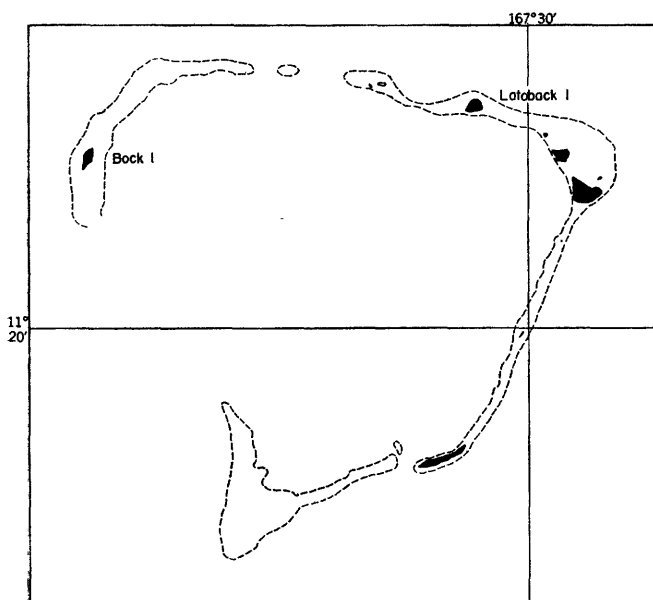


FIGURE 173.—Map of Rongerik Atoll showing collecting localities.

RONGERIK ATOLL

The following annelids were collected from the reefs near two of the islands of the Rongerik Atoll. The location of these islands is shown on figure 173.

LATOBACK ISLAND

Eunice antennata

BOCK ISLAND

Gastrolepidia clavigera
Notopygos hispidus?
Eunice antennata

BOCK ISLAND, OUTER REEF, IN ALGAE

Phyllodoce pruvoti

SYSTEMATIC LIST, WITH BIBLIOGRAPHIC CITATIONS

The following species of marine annelids, which were found in the northern Marshall Islands, are systematically arranged; and each species is followed by a bibliographic citation, unless discussed in Systematic Descriptions.

Family Polynoidae

- Gastrolepidia clavigera* Schmarda, 1861. Fauvel, 1932, v. 12, p. 25
Harmothoë imbricata? (Linnaeus), 1767. Fauvel, 1923, v. 5, p. 55.
Hyperhalosydna striata (Kinberg), 1855. Fauvel, 1932, v. 12, p. 26.
Lepidonotus cf. *L. argus* (Quatrefages), 1865.
Paralepidonotus ampullifera (Grube), 1878. Okuda, 1940, p. 6. (as *Harmothoë*).
Thormora jukesii (Baird), 1865. Fauvel, 1932, v. 12, p. 16.

Family Palmyridae

- Palmyra aurifera* Savigny, 1818.

Family Chrysopetalidae

- Bhawania cryptocephala* Gravier, 1901. Monro, 1939, p. 172.
Chrysopetalum ehlersi Gravier, 1901. Monro, 1939, p. 173.

Family Amphinomidae

- Eurythoë complanata* (Pallas), 1766. Okuda, 1940, p. 3.
Notopygos hispidus? Potts, 1909. Potts, 1909, p. 359.
Pseudeurythoë oculifera (Augener), 1913. Monro, 1939, p. 163.

Family Euprosinidae

- Euprosine myrtilosa* Savigny, 1818. Fauvel, 1932, v. 12, p. 59.

Family Phyllodocidae

- Anaitides madeirensis* Langerhans, 1879. Okuda, 1937, p. 269. sp.
Eulalia tenax Grube, 1878. Okuda, 1940, p. 8.
Genetyllis gracilis (Kinberg), 1866. Monro, 1939, p. 173.
Phyllodoce marcuensensis? Monro, 1939. Monro, 1939, p. 176. *pruvoti* Fauvel, 1930. Fauvel, 1930, p. 512.
Pterocirrus brevicornis Ehlers, 1905. Fauvel, 1917, p. 201.

Family Hesionidae

- Hesione genetta* Grube, 1866. Willey, 1905, p. 267.
Irma? angustifrons Grube, 1878. Grube, 1878, p. 108.
Leocrates chinensis Kinberg, 1866. Okuda, 1937, p. 270 (as *L. claparedei*).

Family Pilargiidae

Ancistrosyllis rigida Fauvel, 1919. Hartman, 1947b, p. 498.

Family Syllidae, subfamily Autolytinae

Family Syllidae, subfamily Exogoninae

Parasphaerosyllis indica Monro, 1937. Monro, 1937, p. 273.

Sphaerosyllis sp.

Family Syllidae, subfamily Syllinae

Haplosyllis aberrans Fauvel, 1939. Fauvel, 1939, p. 290.

spongicola (Grube), 1855. Fauvel, 1932, p. 76.

Odontosyllis hyalina? Grube, 1878. Monro, 1931, p. 12.

Syllis gracilis Grube, 1840. Fauvel, 1932, p. 76.

Trypanosyllis zebra (Grube), 1860. Okuda, 1937, p. 272.

Typosyllis brachychaeta (Schmarda) 1861. Ehlers 1905, p. 19.

hyalina (Grube), 1863. Fauvel, 1923, p. 263.

variegata (Grube), 1860. Fauvel, 1932, p. 76.

spp.

Family Nereidae

Ceratonereis costae? (Grube), 1840. Fauvel, 1923, p. 349.

mirabilis Kinberg, 1866. Fauvel, 1932, p. 98.

pachychaeta Fauvel, 1918. Fauvel, 1919, p. 403.

Neanthes dawydovi (Fauvel), 1937. Fauvel, 1937, p. 297.

Nereis zonata persica Fauvel, 1911. Fauvel, 1932, p. 96.

Platynereis dumerilii (Audouin and Edwards), 1833. Fauvel, 1923, p. 359.

polyscalma Chamberlin, 1919. Fauvel, 1932, p. 114.

Pseudonereis anomala Gravier, 1901. Gravier, 1901, p. 191.

gallapagensis Kinberg, 1866. Fauvel, 1932, p. 111.

Family Euniciidae

Eunice afra Peters, 1854. Okuda, 1937, p. 276.

aniennata (Savigny), 1818. Okuda, 1937, p. 282.

johnsoni Hartman, n. sp.

(*Nicidion*) *gracilis* Crossland, 1904. Crossland, 1904, p. 327.

Lysidice collaris Grube, 1870. Fauvel, 1932, p. 143.

Nematonereis unicornis Schmarda, 1861. Okuda, 1937, p. 290.

Palola siciliensis (Grube), 1840. Okuda, 1937, p. 280 (as

Eunice).

Paramarphysa orientalis Willey, 1905. Okuda, 1937, p. 287.

Family Lumbrineridae

Lumbrineris latreilli Audouin and Edwards, 1833. Fauvel, 1923, p. 431.

sphaerocephala (Schmarda), 1861. Fauvel, 1932, p. 152.

Family Arabellidae

Arabella iricolor (Montagu), 1804. Fauvel, 1932, p. 158.

mutans (Chamberlin), 1919. Crossland, 1924, p. 71 (as

A. novecrinita).

Drilonereis cf. *D. major* Crossland, 1924.

Family Lysaretidae

Aglaurides fulgida (Savigny), 1818. Okuda, 1937, p. 289.

Family Dorvilleidae

Dorvillea gardineri Crossland, 1924. Crossland, 1924, p. 93.

similis Crossland, 1924. Crossland, 1924, p. 100.

Family Glyceridae

Glycera tessellata Grube, 1863. Fauvel, 1923, p. 389.

sp.

Family Sphaerodoridae

Sphaerodorum pacificum Hartman, n. sp.

Family Orbiniidae

Naineris sp.

Family Spionidae

Laonice cirrata? (Sars), 1851. Fauvel, 1927, p. 38.

Polydora cf. *P. armata* Langerhans, 1880.

spp.

Spio sp.

Family Chaetopteridae

Chaetopterus sp.

Mesochaetopterus minutus Potts, 1914. Okuda, 1935, p. 98.

Phyllochaetopterus pictus Crossland, 1903. Crossland, 1903,

p. 174 and Fauvel, 1932, p. 177 (as *P. socialis*).

cf. *P. ramosus* Willey, 1905.

Family Cirratulidae

Cirratulus sp.

Cirriformia semicincta (Ehlers), 1905. Okuda, 1937, p. 297

(as *Audouinia*).

Dodecaceria laddi Hartman, n. sp.

Family Arenicolidae

Branchiomaldane vincenti Langerhans, 1881. Fauvel, 1927,

p. 166.

Family Opheliidae

Armandia lanceolata Willey, 1905. Willey, 1905, p. 288.

Polyophthalmus pictus (Dujardin), 1839. Michaelsen, 1892

(as *P. longisetis*).

Family Capitellidae

Dasybranchus caducus (Grube), 1846. Okuda, 1937, p. 300.

lumbricoides Grube, 1878. Hartman, 1947, p. 431.

Leiochrides? *biceps* Hartman, n. sp.

Family Terebellidae

Amphitritides sp.

Eupolymnia trigonostoma (Schmarda). Willey, 1905, p. 300

(as *Polymnia triplicata*).

Leaena minuta Hartman, n. sp.

Loimia medusa (Savigny), 1818. Willey, 1905, p. 302.

Polycirrus cf. *P. medius* Hesse, 1917.

Terebella ehrenbergi? Grube, 1870. Fauvel, 1932, p. 226.

Family Sabellidae

Fabricia bikini Hartman, n. sp.

Hypsicomus phaetaenia (Schmarda), 1861. Okuda, 1937,

p. 305.

Sabella notata Grube, 1878. Willey, 1905, p. 310 (as *Eurato*).

Family Serpulidae

Eupomatus albiceps Grube, 1870. Willey, 1905, p. 312.

Hydroides multispinosa Marenzeller, 1884. Haswell, 1884,

p. 660 (as *Eupomatus elegans*).

Salmacina sp.

Serpula sp.

Spirobranchus giganteus (Pallas), 1766. Fauvel, 1932, p. 244.

Spirorbids, dextral.

Spirorbids, sinistral.

Vermiliopsis sp.

SYSTEMATIC DESCRIPTIONS

Order POLYCHAETA

Family POLYNOIDAE

Genus GASTROLEPIDIA Schmarda

Gastrolepidia clavigera Schmarda, 1861

Figure 174-B-E

This curious, distinctly South Pacific polynoid comes from Bikini, Rongelap, and Eniwetok Atolls, where it is associated with the holothurian *Stichopus horrens* Selenka, or *Holothuria gyrfifer* Selenka at Eniwetok Atoll. Its unique features include the highly modified ventrum in which fleshly, scutelike processes are segmentally arranged from the first postoral segment; these resemble ventrally attached elytra (fig. 174-B). Notopodia and neuropodia have well-developed setae of characteristic form. Notosetae (fig. 174-C, D) are long, straight, number 12 to 15 in a fascicle, and are supported by yellow acicula that occur singly; they are capped distally by a delicate hood, and their lateral sides have platelike processes in orderly arrangement. Neuropodial setae are of two kinds, including a supra-acicular bundle of 8 to 10 slenderer, straight, spinous setae and 13 or more subacicular, distally falcate, thicker setae (fig. 174-E) supported by a single yellow aciculum.

Potts (1910, p. 341) found the species associated with two kinds of holothurians (*Holothuria maculata* and a white species of *Actinopyga*) and a crab.

Genus LEPIDONOTUS Leach

Lepidonotus sp. cf. *L. argus* (Quatrefages)

A single specimen comes from an outer reef of Bock island, Rongerik Atoll. It measures about 20 millimeters long and nearly 8 millimeters wide, with parapodia. Elytra are closely imbricated and cover the dorsum except for a short anterior middorsal stripe. Elytra are large, oval, and have entire margin; each has a large dark spot near its middle; the outer margins are strewn with semicircular microtubercles. On the prostomium the anterior eyes are at the sides near the middle of the lobe. Posterior eyes are largely concealed by a pair of forwardly projecting, triangular nuchal lobes that arise from the front margin of the first segment. The few notosetae are in a bundle, short, blunt at the tip, and weakly spinous along the sides. Neuropodia are much larger than notopodia and have full series of falcate yellow hooks that are distally entire. On the elytra the microtubercles are not ornamented as they are in *L. argus* (Fauvel, 1917, pl. 4, fig. 9), hence, the approximate identity.

Family PALMYRIDAE

Genus PALMYRA Savigny

Palmyra aurifera Savigny

Figure 174-A

Four specimens come from crevices of coralline algae at Eniwetok Atoll. The length is about 34 millimeters and width about 9 millimeters with setae. There are 30 segments; this is presumed to be the full complement since at least some of these individuals are ovigerous (this is also the number of segments originally described). The details of the prostomium and accessory parts are difficult to find unless one dissects into the region between the first few segments. These, together with the first segment are withdrawn so that only the distal ends of the long palpi and tip of facial tubercle are seen. On complete exposure (fig. 174-A) the prostomium is seen as a subrectangular lobe; its anterior margin has a thick median antenna consisting of a papillated base and two slenderer articles in tandem. The 4 eyes are on a pair of elevated lobes, with the 2 eyes of a side nearly coalescent. The large conical facial tubercle extends forward like a snout. The first segment is appressed at the sides of the prostomium; its dorsal and ventral cirri resemble the distal end of the prostomial antenna, hence, its occasional confusion as part of the prostomium. The paleae of the first segment are fewer and much smaller than those farther back. The second segment resembles those behind. These parts are shown in figure 174-A.

Palmyra aurifera was originally described from Mauritius (as Isle de France). Grube (1878, p. 14) described a form with 37 segments from the Philippine Islands, and Augener (1913, p. 80) had a similar one from the Gilbert Islands (as Kings-Mills Islands). It may be doubted that they are the same.

Family PHYLLODOCIDAE

Genus PHYLLODOCE Ranzani

Phyllococe pruvoti Fauvel

Figure 175-D, G-I

Specimens come from Yomyaran and Bokonfuaaku islands, Bikini Atoll; Eniaetok island, Rongelap Atoll; and south end of Eniwetok island, Eniwetok Atoll. All are very long and slender, measuring 50 to 70 centimeters long. When preserved the color is dark, gray blue to nearly black, and dorsal cirri are surrounded by a paler border. Intersegmental bands are also dark or somewhat paler. The prostomium is broadly hexagonal and has a minute papilla at its postmedian incision. The proboscis is long, cylindrical, and covered for most of its length with small, dispersed

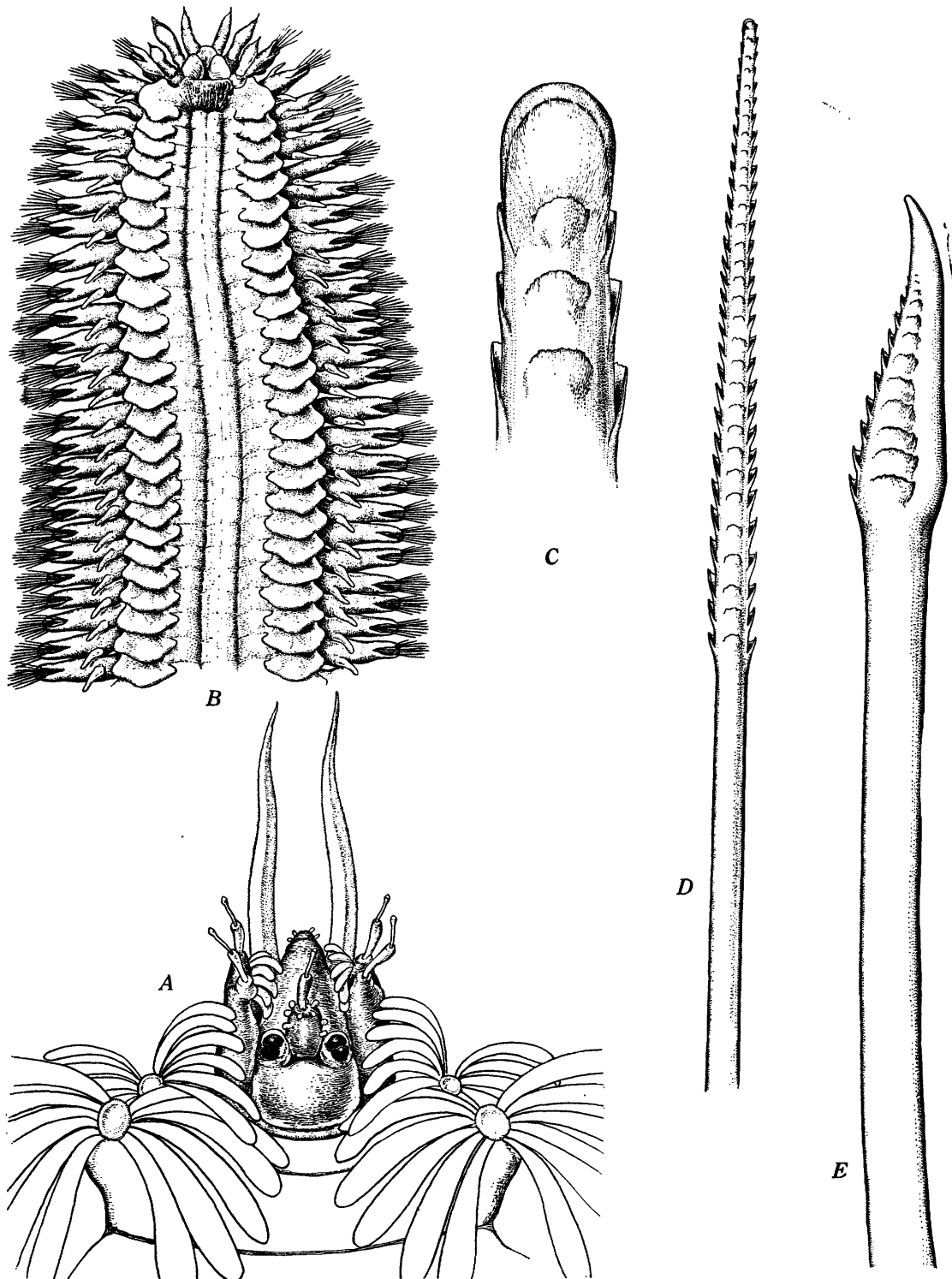


FIGURE 174.—*Palmyra aurifera* Savigny (p. 630) and *Gastrolepidia clavigera* Schmarda (p. 630), both from Eniwetok Atoll.

A, *Palmyra aurifera* Savigny anterior end, in dorsal view with prostomium and first segment pulled forward to show details and associations of parts, $\times 26$.

B, *Gastrolepidia clavigera* Schmarda, anterior end in ventral view, showing relations of prostomium and segmental ventral scutes within parapodial bases, $\times 8.5$.

C, *Gastrolepidia clavigera*, distal end of a notopodial seta, showing hyaline cap and lateral scalelike processes, $\times 2, 130$.

D, *Gastrolepidia clavigera*, a notopodial seta from median parapodium, showing entire ornamented region, $\times 284$.

E, *Gastrolepidia clavigera*, a neuropodial seta from median parapodium, in lateral view, $\times 419$.

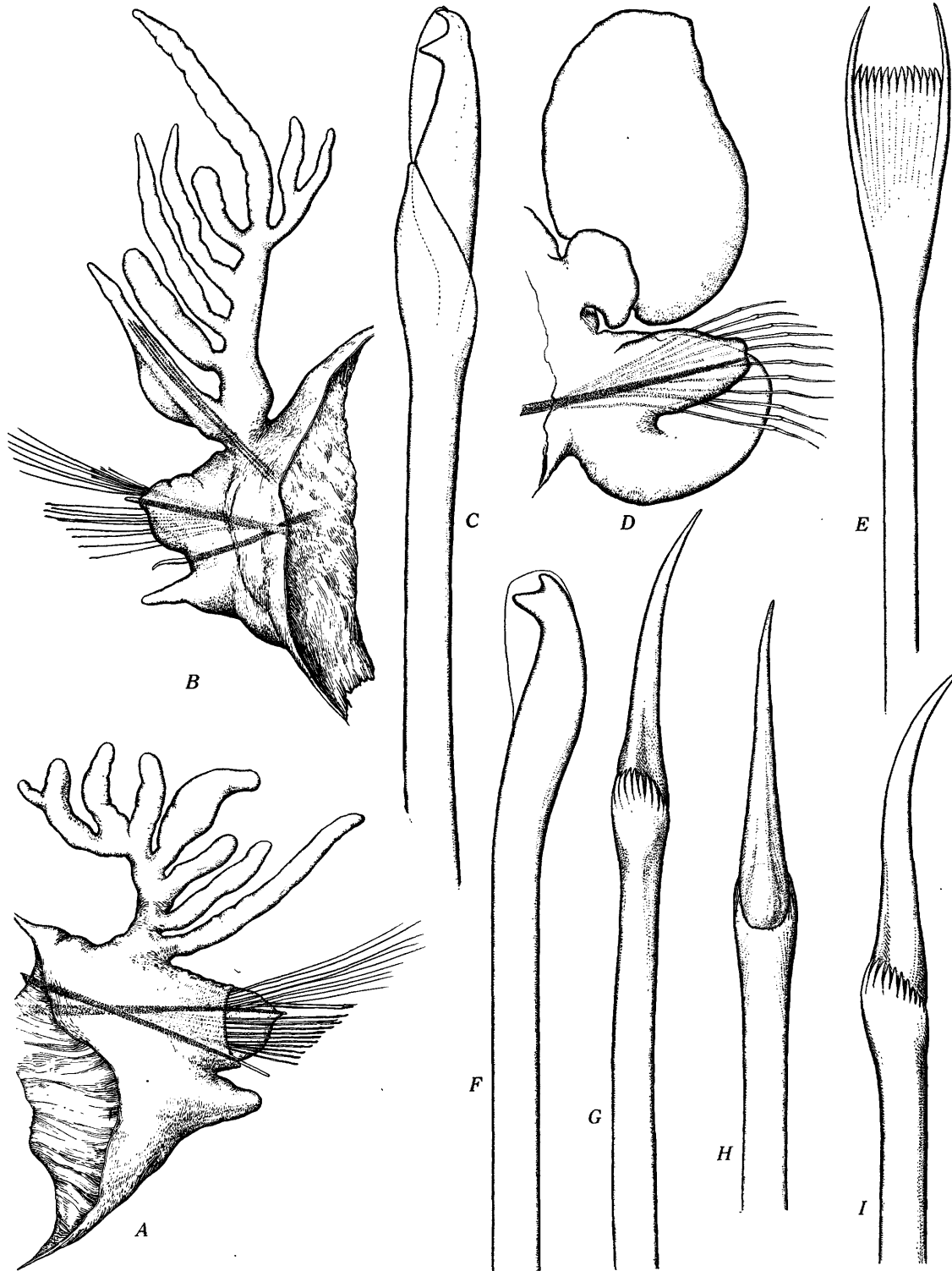


FIGURE 175.—*Eunice johnsoni* Hartman, n. sp. (p. 633), from Bikini Atoll; and *Phyllodoce pruvoti* Fauvel (p. 630), from Eniwetok Atoll.

A, *Eunice johnsoni*, 34th parapodium in anterior view, $\times 51$.

B, *Eunice johnsoni*, 34th parapodium in posterior view, $\times 51$.

C, *Eunice johnsoni*, hooded hook from 34th parapodium, $\times 924$.

D, *Phyllodoce pruvoti*, parapodium from a median segment in anterior view, $\times 36$.

E, *Eunice johnsoni*, comb-seta from a posterior parapodium, $\times 1,056$.

F, *Eunice johnsoni*, subcicular hook in lateral view, $\times 528$.

G, *Phyllodoce pruvoti*, composite seta from a median parapodium, seen from cutting edge, $\times 1,100$.

H, *Phyllodoce pruvoti*, composite seta seen from edge opposite cutting edge; $\times 1,100$.

I, *Phyllodoce pruvoti*, composite seta in three-quarter view, $\times 1,100$.

papillae. On the parapodia the ventral cirri are distally rounded (fig. 175-D) not pointed; dorsal cirri are broad and somewhat imbricated; those in front are a little smaller than those in back but otherwise similar. The setae have a shaft that is dentate at its longer free margin (fig. 175-G, I) and smooth at its shorter one (fig. 175-H); in three-quarter view the articulation is seen as a transverse slit. The setal appendage is short and distally pointed. The specimens were associated with coralline masses.

Family HESIONIDAE

Genus IRMA Grube

Irma? angustifrons Grube

A single specimen comes from Bikini Atoll. Many of the parapodial cirri have dropped their appendages. The buccal region has bases of 8 instead of 6 (Grube, 1878, p. 108) pairs of tentacular cirri. The prostomium has a pair of longer frontal antennae and a median one that is somewhat shorter and inserted between the bases of paired ones. The body is long and consists of many segments, if one may regard the two pieces in the collection as parts of a single individual.

Family SYLLIDAE

Subfamily AUTOLYTINAE

Fragments of small syllids belonging to this subfamily originate from Rigili island, Eniwetok Atoll, lagoon side, from blocks on the reef flat; specimens were also collected at Rongelap Atoll.

Subfamily EXOGONINAE

In addition to *Parasphaerosyllis indica* Monro, from Eniwetok Atoll, and *Sphaerosyllis* sp. (below), there are several lots originating from the seaward sides of Lidilbut, Muti, and Parry islands, in old coral heads and in Lithothamnia colonies. Another is from Rongelap island, Rongelap Atoll. Individuals measure about 1 to 2.5 millimeters long. One adult female, from Parry island, has ova attached on the ventrolateral side; it measures 1.3 millimeters long and consists of about 24 segments. Several from Japtan island, also minute, appear to belong to *Brania*. The prostomial antennae and dorsal cirri are clavate; buccal segment has two pairs of tentacular cirri. Ova are externally attached to the dorsolateral side. The palpi are fused medially, except for a short, free, slender tip.

Sphaerosyllis sp.

Two come from Muti island, Eniwetok Atoll, seaward side, in Lithothamnia colonies. The surface epithelium is diffusely papillated, as characteristic of the genus. There is a single pair of tentacular cirri. Palpi

are completely fused at their median margins, leaving only an obscure distal incision. The prostomium has 2 pairs of eyes, with the 2 of a side somewhat coalescent. The pharyngeal barrelet, seen through the body wall, is short and extends through a single segment.

Subfamily SYLLINAE

Typosyllis spp.

Many individuals originate from various parts of Eniwetok Atoll, sorted from old coral heads, colonies of coralline masses, and other detritus. They cannot be identified with the species named in the charts above, and some may represent undescribed forms. Some individuals are perhaps members of other genera in the subfamily Syllinae.

Family EUNICIDAE

Genus EUNICE Cuvier

Eunice johnsoni, n. sp.

Figure 175-A-C, E, F

A single individual comes from Bikini Atoll. It consists of an anterior region of 34 segments that measures 21 millimeters long and a posterior, a possibly continuous piece several times as long. There is no pigmented pattern on the dorsum; the body is uniformly yellow orange. The prostomium is clearly bifid at its anterior margin. The five antennae are nearly smooth and distally slightly thickened or clavate. The median antenna is longest and reaches back to about the fourth setiger; the outermost are shortest, measuring about half as long as the median one. Paired eyes are located at the posterior base of the outermost antennae; they are dark and circular with a disklike white lens.

The peristomial ring is as long as the next three segments together; it is smooth except for the insertion of the paired cirri at its posterior fourth. The cirri are about two-thirds as long as the peristomium. Branchiae are first present from the twenty-fourth setiger, at first they are tiny, then increase rapidly in size so that by segment 34 there are 6 or 7 clubbed filaments in irregular dichotomous (fig. 175-A, B) arrangement. The maximum development is at the middle of the body where the filaments attain a number of 8 to 10. Branchiae are present through a long region; they gradually diminish and disappear at about the 20th segment. A conspicuous feature is the irregular dichotomy and the variable number of filaments on successive segments.

The first parapodia are smaller than those farther back; they have a small fascicle of pointed setae above and hooded hooks below. The second is larger, and there is gradual increase in size going back. The first 30 segments have pointed setae and composite hooded

hooks in addition to yellow acicula. At segment 31 a single subacicular hook is present in the inferiormost position, and thereafter comb-setae are present in the uppermost part of the fascicle.

Dorsal cirri of the first 34 segments are long, cylindrical, and extend out beyond the setal tips. In about the middle segments they are shorter and surpassed by some branchial filaments (fig. 175-A). Ventral cirri of the first three segments are short, cylindrical, and only gradually come to have a padlike base, which is developed after the 10th segment. Anal cirri consist of a pair of ventral cylindrical processes that are as long as the last few segments; their distal ends are slightly clavate. Hooded hooks are distally bidentate with the main and accessory fangs as shown in figure 175-C. Subacicular hooks are bidentate and hooded (fig. 175-F). Comb-setae occur in posterior segments; they have the proportions shown in figure 175-E.

The pharyngeal apparatus, seen by dissection, consists of a pair of large, medially fused mandibles and paired maxillary plates. The basal pieces together are longer than wide. Maxilla I is long, distally curved; II has 4 teeth on the right, and 4 on the left side; III has 7 teeth right and 7 left; IV has none right and 4 teeth left.

Holotype, USNM 24717.

E. johnsoni approaches *E. investigatoris* Fauvel (1932, p. 137, fig. 19), from the Persian Gulf, in having branchiae that are irregularly branched. In the latter, however, branchiae are first present from the sixth, instead of twenty-fourth segment; ventral cirri are digitate on 5 or 6 segments; whereas, in *E. johnsoni* the padlike form is developed gradually, commencing after segment 10. *E. johnsoni* shows resemblance to *E. afra* Peters, but the latter has black to brown, not yellow acicula; branchiae are not furcated, and the epithelium is characterized by fine punctate spots.

It is a pleasure to name this species for its collector, Dr. Martin W. Johnson.

Lysidice collaris Grube

Figure 176-B

One individual from Bikini Atoll has an abnormal prostomium and the median antenna is curiously furcated (fig. 176-B).

Family ARABELLIDAE

Genus **DRILONEREIS** Claparède

Drilonereis sp. cf. *D. major* Crossland

One comes from outer reef, Namu island, Bikini Atoll. It is over 70 millimeters long and very slender. The first 10 to 12 parapodia are minute; thereafter, they gradually enlarge. At first they are low papillae from which the setae emerge. Farther back the post-

setal lobe comes to be triangular, but it never extends beyond the setal tips. Yellow acicular spines are emergent at about the twelfth parapodium; they come to project obliquely downward between segments 18 to 24 and are most conspicuous in the anterior third to middle region of the body. Tips of acicula are clear yellow, not dark as in *D. major* Crossland. The prostomium is depressed, semicircular, with a dark smudge-like spot near the postmedian position. There are embedded spots, possibly eyes, visible in the first body ring. On the jaws the forceps lack teeth at the base; maxillae II have 4 teeth on a side; III have the same number of teeth as II, but each piece is much smaller; IV has 3 teeth on a side with the distalmost tooth much the largest. Mandibles are lacking.

This species differs from *D. major* Crossland in the color of parapodial acicula, in having embedded eyespots in the first segment, and in having the maxillary plates of the second and third pairs different. *D. planiceps* (Grube) from the Philippine Islands, differs in the same respects.

Family GLYCERIDAE

Genus **GLYCERA** Savigny

Glycera sp.

One comes from Lidilbut island, Eniwetok Atoll, seaward side, from reef edge, associated with Lithothamnia. Parapodia have single, long postsetal lobes, resembling those of *G. capitata* Oersted not *G. tessellata* Grube. The aileron of the jaw apparatus has two widely divergent distal pieces, as in *G. tessellata* Grube. There are no branchiae.

Family SPHAERODORIDAE

Genus **SPHAERODORUM** Oersted

Sphaerodorum pacificum, n. sp.

Figure 176-A; Figure 177-I, J

Two individuals come from Lidilbut island, Eniwetok Atoll, seaward side, reef edge, in Lithothamnia colonies. The smaller one measures 3 millimeters long and about 0.2 millimeter wide; it consists of about 50 segments. The other somewhat larger individual has about 56 segments; its surface epithelium is somewhat obscured by coralline debris. In both, the surface is dorsally papillated, with four longitudinal rows of papillae (fig. 176-A); the ventrum is flat and smooth. The pharyngeal barrelet is visible through the body wall as a short, oval, muscularized organ about one-sixth of the way along the alimentary tract. The segmental papillae are in orderly arrangement along the body length; they number four in a row in all segments but the first, where the outer pair is lacking. Each papilla consists of a broad circular basal part and a minute distal extension (fig. 177-I).

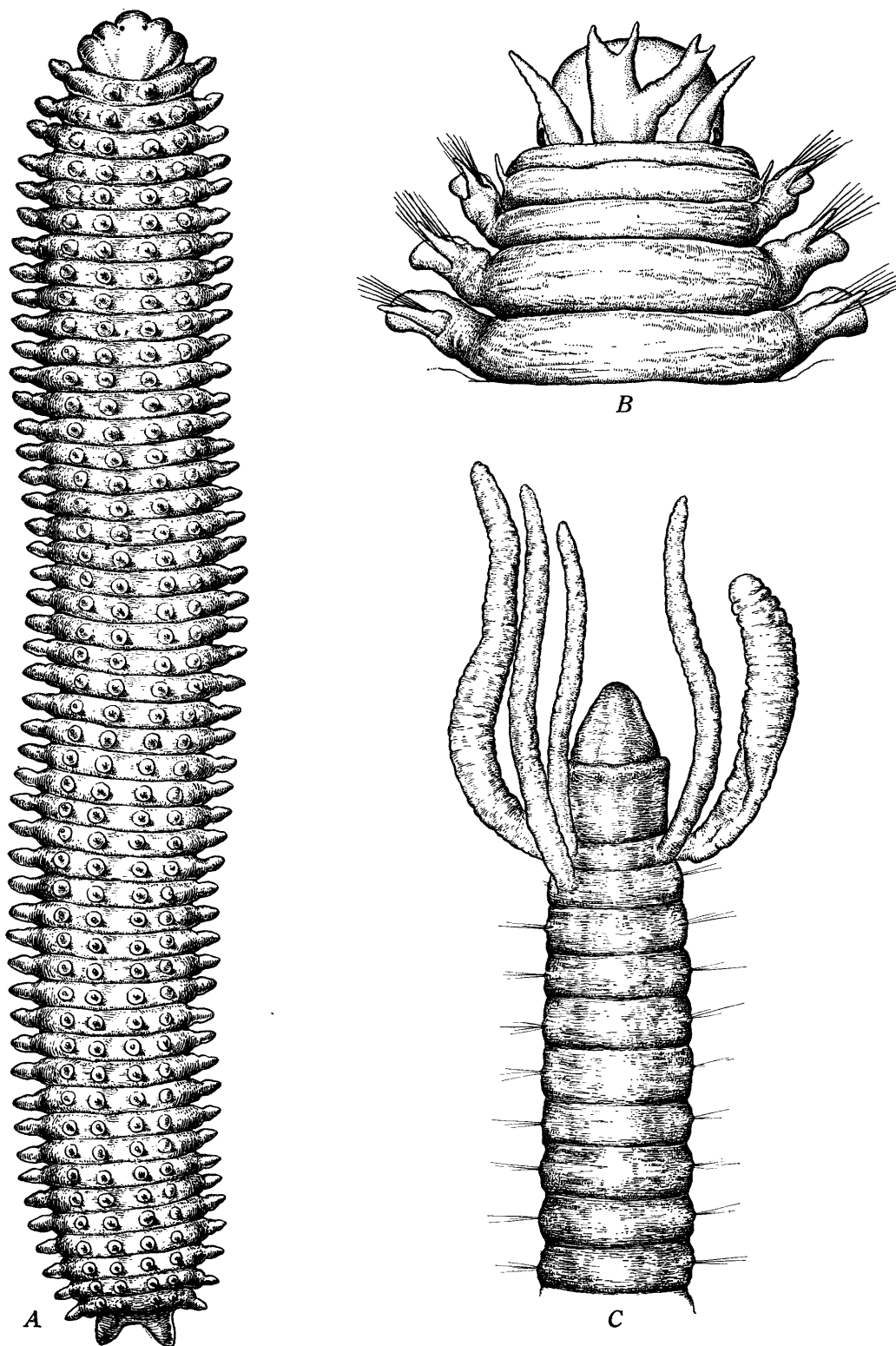


FIGURE 176.—A, *Sphaerodorum pacificum* Hartman, n. sp., (p. 634), from Eniwetok Atoll. Entire animal in dorsal view, $\times 106$.
 B, *Lysidice collaris* Grube (p. 634), from Bikini Atoll. Anterior end of abnormal individual, showing divided median antenna, $\times 37$.
 C, *Dodecaceris laddi* Hartman, n. sp. (p. 638), from Eniwetok Atoll. Anterior end, including first 9 setigerous segments, in dorsal view, $\times 75$.

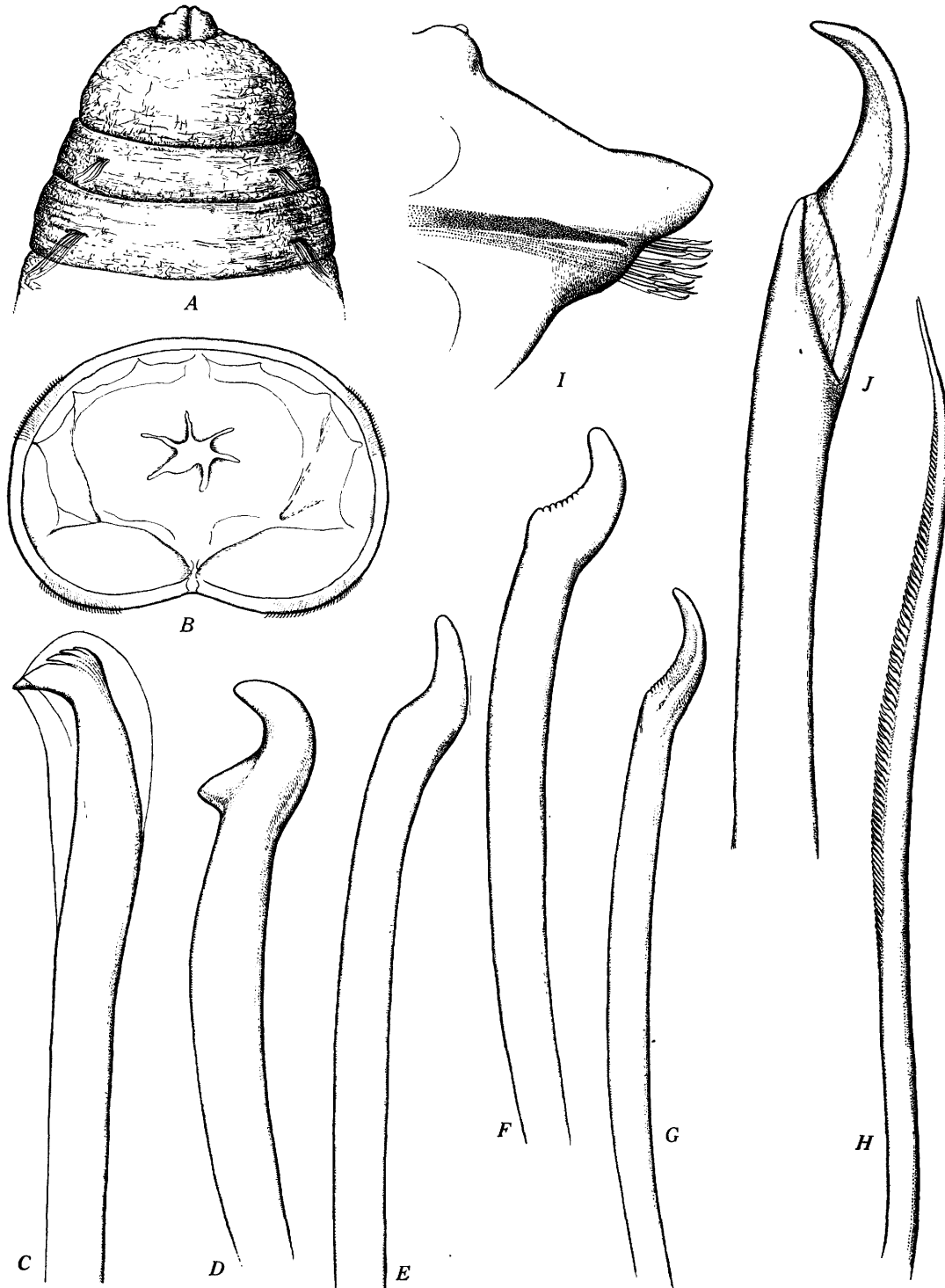


FIGURE 177.—*Leiochrides? biceps* Hartman, n. sp. (p. 638), from Rongelap Atoll; *Dodecaceria laddi* Hartman, n. sp. (p. 638), from Eniwetok Atoll; and *Sphaerodorum pacificum* Hartman, n. sp. (p. 634), from Eniwetok Atoll.
 A, *Leiochrides? biceps*, anterior end including first 2 setigerous segments, in dorsal view, $\times 9.5$.
 B, *Leiochrides? biceps*, cross section of a median abdominal segment, showing position of uncinial ridges, $\times 12$.
 C, *Leiochrides? biceps*, hooded hook from a median abdominal uncinus, $\times 1,080$.
 D, *Dodecaceria laddi*, neuropodial hook from a far posterior segment, $\times 1,404$.
 E, *Dodecaceria laddi*, notopodial hook from a far posterior segment, $\times 1,404$.
 F, *Dodecaceria laddi*, notopodial hook from an anterior (12th) segment, $\times 1,404$.
 G, *Dodecaceria laddi*, notopodial hook from 12th segment, $\times 1,404$.
 H, *Dodecaceria laddi*, pointed seta from an anterior segment, $\times 1,404$.
 I, *Sphaerodorum pacificum*, median parapodium in anterior view, $\times 742$.
 J, *Sphaerodorum pacificum*, a composite hook from a median parapodium, $\times 8,940$.

The anterior end is broadly rounded, with a minute ocular lobe visible between similar paired lobes; these lack parapodial parts. The two eyes are small dark spots near the frontal margin. The oral aperture is on the ventral side near the margin of the first parapodial segment.

Parapodial setal fascicles are seen only from below, owing to the development of lateral, shieldlike processes that are developments of the outer body wall. Setae are of a single kind, consisting of composite falcigerous hooks in bundles of 8 to 15 and supported by a single aciculum (fig. 177-I). Each hook consists of a smooth shaft, articulating with a sharply curved appendage that is smooth at its cutting edge (fig. 177-J).

Holotype, USNM 24718.

This species is clearly distinguishable from other members of the small genus *Sphaerodorum* Oersted by the character of the prostomium, the long body, the number of longitudinal rows of papillae, and the sharply curved parapodial hooks.

Family ORBINIIDAE
Genus NAINERIS Blainville
Naineris sp.

One comes from Bogon island, seaward side, another from Parry island, seaward side, in coral head, both from Eniwetok Atoll. Though small, measuring only about 3.9 millimeters long, one may be an adult male individual, with the gonadial region showing through the body wall from segments 19 to 27. Branchiae are present from the eighth setiger to the end of the body, or near it. The prostomium is rounded at its anterior margin.

Family SPIONIDAE
Genus LAONICE Malmgren
Laonice cirrata? (Sars)

One comes from Lidilbut island, seaward, reef edge, in Lithothamnia colonies; another is from between Lidilbut and Elugelab islands, lagoon side, Eniwetok Atoll. The prostomial crest and median antenna are conspicuous, as is typical of the species. Though hardly 6 millimeters long, the genital pouches are developed along the sides of the body. The identity is questioned because *L. cirrata* (Sars) is a colder water form.

Genus POLYDORA Bosc
Polydora spp.

Small individuals come from coralline and coral debris in intertidal zones from various parts of Eniwetok Atoll. Some originating from Lidilbut island, seaward side, reef edge, are deeply embedded in coral rock and thus boring; they resemble *P. armata* Langerhans in having a comparable armature of light-yellow, acicular

spinous bundles in posterior segments. They differ from typical *P. armata* by having branchiae on a larger number of segments. The prostomium appears to lack eyespots.

Some other individuals, also representatives of the genus *Polydora*, lack posterior spines, and branchiae are present on many segments.

Genus SPIO Fabricius

Spio sp.

Three individuals come from Parry island, Eniwetok Atoll, seaward, from within old coral heads. Branchiae are present from the first setiger to the ends of the pieces. Though small, measuring only about 3.9 millimeters long, there are large ova in the body cavity. Segments number more than 30 (a short posterior end may be lacking). Notopodia have only pointed setae. Neuro-podia have pointed setae and hooded hooks. The hooks are first present singly in neuropodia of the eighth setiger; they come to number 3 in the ninth segment and increase to 4 farther back, where they are accompanied by pointed setae located in the superior part of the fascicle.

Family CHAETOPTERIDAE
Genus CHAETOPTERUS Cuvier

Chaetopterus sp.

A single individual comes from Rongelap island, Rongelap Atoll, in lagoon on an anchor, June 1, 1946, collected by Martin Johnson. There is no tube. Length is about 25 millimeters and width is nearly 10 millimeters across at the tenth, or aliform segment. In front of this, the body measures about 6 millimeters with and 3 millimeters without parapodia. The anterior end is broad, slightly depressed with the peristomial margin extending around the ventrum and sides as a conspicuous, collarlike ring. The first three segments have distally pointed setae. Their parapodia are somewhat shorter than those farther back and directed upward at the distal ends. The fourth segment has a transverse series of dark-brown heavy hooks, numbering about eight in a transverse series, and a more superior series of distally pointed setae. The middorsum, behind the prostomium, has a median nuchal papilla.

C. appendiculatus Grube, described by Willey (1905, p. 291) from Ceylon has a similar, very large aliform notopodium; it also had 10 anterior segments. The specimen from Rongelap may belong to this species.

Genus PHYLLOCHAETOPTERUS Grube
Phyllochaetopterus cf. *P. ramosus* Willey

One comes from Bikini, another from Enirik island, Bikini Atoll. The first is nearly entire, encased in a

long, slender, cylindrical tube that is about 80 millimeters long and 2 millimeters wide. The tube is chitinized within and externally covered with a layer of uniform, small white granules. The animal is about 1.2 millimeters wide in front. Its anterior end has a pair of very long palpi that are transversely barred with dark pigment. Two much shorter tentacular processes are farther back; they overlap one another at the posterior margin of the prostomium.

The prostomium is rounded in front; it has a pair of longitudinally elongated eyespots at the postlateral margins. The first three segments are sharply set off from the rest of the body by the modified fourth one. The latter has a single pair of heavy spines and small superior, and smaller inferior, fascicles of pointed setae that resemble those of the first three segments. The next 10 segments have pointed setae only. After this the character of parapodia changes so that there are long dorsal lobes.

The individual from Bikini island has 14 anterior segments, as described above; the one from Enirik island has only 4, not 10, segments with pointed setae but resembles it in other respects.

Family CIRRATULIDAE

Genus CIRRATULUS Lamarck

Cirratulus sp.

Three small immature individuals come from Lidilbut island, Eniwetok Atoll, seaward, from old coral heads. They are translucent and measure about 5 millimeters long. The prostomium is depressed and broadly spatulate and has a pair of conspicuous dark eyespots at its outer lateral margins. The buccal region is smooth and long. The first setigerous segment has 3 or 4 pairs of long tentacular cirri on a side, widely separated from each other middorsally. The cirri are limited to anterior segments. Median and posterior parapodia have transverse series of pale-yellow spines alternating with longer pointed setae.

Genus DODECACERIA Oersted

Dodecaceria laddi, n. sp.

Figure 176-C, 177-D-H

Numerous individuals come from white corallines and dead coral clumps, deeply embedded in calcareous masses. Extrication is difficult because of the small size of the worm and the tortuous narrow galleries that are constructed. The worms are easily seen because they are dark-green to black and against a paler matrix. Length of the body is 5 to 10 millimeters; width is about 0.5 millimeter or less. Number of segments is 60 to 70. Preserved the color is dark fuscous-green to gray or brown; the anterior tentacles and palpi are paler.

The prostomium is a depressed conical lobe, separated from the buccal region by a transverse groove (fig. 176-C); eyes have not been seen. The oral aperture is visible on the ventral side as a triangular depression between the prostomium and buccal region. The first segment behind the buccal ring has a pair of thick, longitudinally grooved palpi that are inserted ventrolaterally and a pair of slenderer, shorter tentacles inserted immediately above, at the sides of the body.

The next segment is the first setigerous; it has, in addition to the biramous setal fascicles, a pair of filamentous tentacles, or one of the pair is lacking (fig. 176-C). There are no other tentacles; this species is thus characterized for the presence of a very limited number of tentacles.

The first 7 segments have only slender, pointed setae with up to 3 or 4 in a fascicle. From the eighth setiger there are simple yellow hooks in notopodia and neuropodia, usually accompanied by a few pointed setae; these continue to the end of the body. In the eighth setiger there are 2 notohooks and 2 neurohooks accompanied by one or more setae in each parapodium. Farther back there are 3 to 4 notohooks or also several setae, and 3 to 5 neurohooks with fewer setae. The pointed setae are delicately serrated along one side (fig. 177-H). The hooks of anterior notopodia (fig. 177-G) resemble those of the corresponding neuropodia (fig. 177-F) except that they are a little slenderer and usually smooth. Farther back the neurohooks come to be increasingly stronger and acquire a strong lateral boss; the notohooks diminish in size and lack the lateral process. In far posterior segments, the proportions of neurohooks (fig. 177-D) and notohooks (fig. 177-E) are visibly different.

Holotype, USNM 24719; paratype, USNM 24720.

D. laddi differs from other species of the genus in the presence of few lateral tentacles and in the arrangements of the parapodial hooks. It belongs to the group that bores into living or dead calcareous masses.

Family CAPITELLIDAE

Genus LEIOCHRIDES Augener

Leiochrides? biceps n. sp.

Figure 177-A-C

A single individual, posteriorly incomplete, comes from Rignonman island, Rongelap Atoll, shore, June 17, 1946, collected by Martin Johnson. It is closely coiled, measures about 40 millimeters long and 9 millimeters across. It consists of the prostomium, thorax, and about 74 abdominal segments which are closely crowded and much contracted. The prostomium is somewhat withdrawn into the first body ring. By pushing back the first segment it is seen as a deeply incised lobe (fig. 177-A); there are no visible eyes.

The entire thoracic epithelium is finely areolated, a characteristic not shared by the other few species of the genus *Leiochrides* (see Hartman, 1947 a, p. 429). The first segment is a smooth, apodous ring. The 12 segments which follow have fascicles of pointed setae in notopodia and neuropodia. Transition from thorax to abdomen is apparent chiefly for the change from setae in the thorax to hooks in the abdomen. The areolation of the epithelium also ceases behind the thorax.

Abdominal segments are biannulate, with uncinial ridges at about the middle of the segment. Notopodial ridges are long and located at the dorsoectal position, the two of a pair widely separated middorsally; the corresponding neuropodial ridges are nearly ventral in position (fig. 177-B) and best seen in ventral view; the two of a pair are widely separated by a midventral space. These proportions diminish with decreasing body width. No branchiae were found; the anal end likewise cannot be described since it is lacking, hence the questionable generic status.

Abdominal notopodia and neuropodia are provided with long-handled, distally hooded hooks (fig. 177-C). Each has a main fang nearly at right angles to the shaft and surmounted by three smaller teeth.

Holotype, USNM 24721.

This species differs from other species of *Leiochrides*, as also most capitellids, in having a prostomium that is deeply bifid, although in its setigerous formula it belongs to this group. In this respect it follows the pattern of *Scyphoproctus* Gravier, but the latter has a unique posterior end. Its generic status might be more definitely assigned when the anal end is made known.

Family TEREBELLIDAE

Genus AMPHITRITIDES Augener

Amphitritides sp.

One comes from outer reef flats, Bock island, Rongerik Atoll, June 1946, collected by M. W. Johnson. The tentacles are checkered, each filament crossed by alternating light and dark bands. There are two pairs of branchiae, each one greatly ramified, with long branches; the first pair exceed the second in size. The body consists of 17 thoracic and a greater number of abdominal segments. There are no eyespots at the base of the tentacles. Anterior segments lack lateral lappets. Thoracic notosetae are distally pectinate. The first thoracic setae are present from the first postbranchial segment and uncini begin on the following segment.

This differs from *A. bruneo-comata* (Ehlers) from West Indian, Panamanian, and Galapagos localities (Monro, 1933, p. 10) in that the thorax has only

17, not about 27, segments, and the branchial filaments are proportionately long, not short.

Genus LEAENA Malmgren

Leaena minuta, n. sp.

Figure 178-E, H

Seven individuals come from Parry island, Eniwetok Atoll, seaward, from coral head on a flat. They are very small, measure only 7 millimeters or less long and less than a millimeter across but are ovigerous, presumably adults. They are colorless or somewhat yellow and have reddish ova that show through the abdominal epithelium. Lateral lappets and eyespots are lacking.

The anterior end has about 10 long, smooth tentacles and 2 much shorter ones on each side; the lateralmost are the shortest. There are 14 segments provided with long, limbate setae, and uncini are present from the second setiger. Uncini occur in single rows on 6 segments (setigers 2 to 7) and in alternating double rows on the next 10 segments (setigers 8 to 17); thereafter, they are again in single rows. The single rows of anterior segments have about 18 in a row; double rows have about 21, alternating with one another so that the beaked end is always distal; posterior single rows have about 6 in a row.

The distally pointed setae have a broadly limbate region which is smooth along its free edges (fig. 178-G, H); all resemble one another except that some are proportionately longer than others; they number 12 or 14 in a fascicle, with the longer setae alternating with shorter ones. Uncini are short and thick, with a conspicuous fang best seen in lateral view (fig. 178-E) and surmounted by several transverse series of teeth (fig. 178-F).

The tube is mucoid and externally covered by a layer of foraminiferal sand; individuals are difficult to remove because of mucus and detritus.

Holotype, USNM 24722.

Leaena minuta differs from other species of this small genus in that lateral lappets are lacking; setae are present on 14 segments, and hooks are in double rows on setigerous segments 8 to 17.

Genus POLYCIRRUS Grube

Polycirrus sp. cf. *P. medius* Hessler

One comes from Enirik island, Bikini Atoll, collected by M. W. Johnson. Most of the tentacular cirri have fallen off, but the tentacular membrane is still intact as a broad base with the scars of many filaments. Thoracic notopodia number 12 pairs; they are long, laterally directed, and provided with bundles of long setae. There are more than 50 abdominal segments with

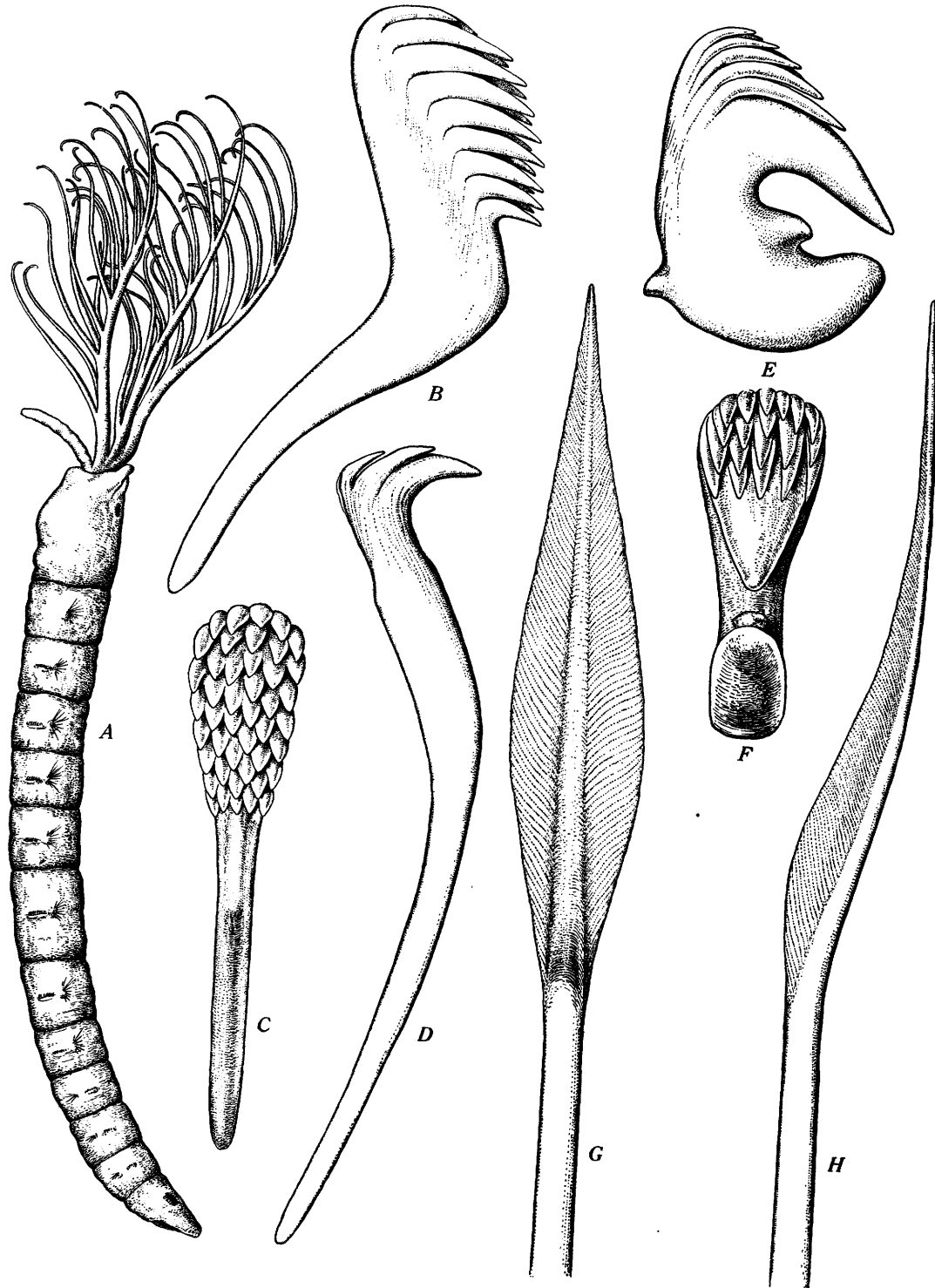


FIGURE 178.—*Fabricia bikinii* Hartman, n. sp. (p. 641), from Bikini island, and *Leaena minuta* Hartman, n. sp. (p. 639), from Eniwetok Atoll.

- A, *Fabricia bikinii*, entire animal seen from the left side, $\times 441$.
 B, *Fabricia bikinii*, abdominal hook in lateral view, $\times 4,050$.
 C, *Fabricia bikinii*, abdominal hook seen from the front, $\times 4,050$.
 D, *Fabricia bikinii*, thoracic long-handled hook in lateral view, $\times 2,812$.
 E, *Leaena minuta*, thoracic hook seen from the side, $\times 3,627$.
 F, *Leaena minuta*, thoracic hook seen from the front, $\times 3,627$.
 G, *Leaena minuta*, shorter thoracic notoseta, seen from the broadest side, $\times 2,810$.
 H, *Leaena minuta*, thoracic notoseta, seen from the narrowest side, $\times 2,810$.

series of typical hooks, and the ventrum has a long median groove. Ventral gland shields are inconspicuous; the first and second shields are separated from each other by a complete transverse segmental groove; each of these is narrow. Thereafter, the area of ventral glands is restricted to a narrow midventral band that extends back through the thoracic region for about a third its length.

Abdominal hooks are in single, crescentic series at the ends of the prolonged abdominal tori; they number as many as 12 in a series. Each hook has a single major fang surmounted by a pair of much smaller teeth, side by side, so that in lateral view it appears to have only 2 instead of 3 teeth.

This differs from *P. medius* Hesse (1917, p. 225) from Japan in that the first and second gland shields are not fused together.

Family SABELLIDAE
Genus FABRICIA Blainville

Fabricia bikini, n. sp.

Figure 178-A-D

Many come from Bikini island, Bikini Atoll, reef flat, in white coralline sands, Sept. 25, 1950, collected by K. O. Emery. The loosely constructed tubes of fine detritus are easily removed. Individuals are tiny, though mature, pale or white (preserved), except for the paired dark eyespots. Total length is 4-5 millimeters with a crown that measures about 1 millimeter long. The body consists of 8 thoracic and 3 abdominal setigerous segments. The tentacular crown is composed of three pairs of symmetrical radioles; in addition there are shorter, entire, paired filamentous processes, or palpi, at the ventral end of the crown (fig. 178-A). Each radiole has 6 to 8 pairs of slender filaments that arise along the basal half of the radiole; these filaments extend distally not quite as far as the radioles to which they are attached.

The thoracic collar is limited to a pair of small, dorsal lappets separated by a narrow middorsal groove. The lateral and ventral parts of the peristomium are abruptly oblique and show a narrow marginal ridge but no distinct collar; this ridge is continuous across the midventrum.

The first setigerous segment has 5 slender notosetae on a side; there are no neurosetae. The second has 5 slender and a broader spatulate notoseta; its neuropodium has 7 long handled hooks (fig. 178-D). The third segment has 5 slender and 2 broader notosetae and 8 neuropodial hooks; the fourth and fifth segments resemble the third. In the sixth segment the superior notosetae are somewhat spatulate and accompanied by two shorter, through similar ones below; there are 9

hooks in neuropodia. The seventh and eighth segments resemble the sixth. Abdominal notopodia have about 30 hooks in single series; their corresponding neuropodia have about 3 slender setae. Individual hooks are as shown in figure 178-B, C. One pair of eyes is located in the peristomial and another in the pygidial ring (fig. 178-A).

Holotype, USNM 24725.

The genus *Fabricia* has recently been reviewed (Hartman, 1951, p. 382-8). *F. bikini* is unique in its small size, its oblique peristomial margin, and the details of abdominal hooks.

Family SERPULIDAE
Subfamily Serpulinae
Genus SERPULA Linnaeus
Serpula sp.

Individuals of this genus come from Eniwetok Atoll at Lidilbut, Bogon, and Muti islands, seaward side, associated with Lithothamnium and old coral heads. The tubes are white, cylindrical, and externally smooth or somewhat roughened by a superficial growth. On the animal the operculum is long stemmed, terminating distally in a cup with 16 marginal crenulations. The grooves of the crenulations extend nearly to the inner center of the calyx. The calyx and opercular stalk are separated by a bulbous region that abruptly extends to a short slender stalk supporting the cup.

The tubes are usually on coralline algae, associated with another serpulid, *Eupomatus albiceps* Grube. The tubes of the two are easily distinguished, because the latter has a longitudinally ridged tube; there are two stronger ridges separated from each other by several lesser ridges.

Genus VERMILIOPSIS St. Joseph
Vermiliopsis sp.

Several individuals come from Eniwetok Atoll at the seaward sides of Muti and Lidilbut islands. The calcareous tubes are fully attached to the substratum; there are three longitudinal striae, not clearly raised, along their lengths. The operculum is on a simple cylindrical stalk and ends as a subglobular sphere that has a horny yellow cap at its end, or the cap is flattened, or greatly extended as a long, transversely divided cone.

Subfamily SPIROBINA

Numerous small white coils, both sinistral and dextral, are irregularly and usually sparsely dispersed on coralline and other calcareous clumps in localities at Eniwetok Atoll. They are more numerous in protected niches of corallines, or associated with a purple, coiled vermetid, or on the thick shells of living gastropod shells.

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