MARIAN H. PETTIBONE

Revision of the Aphroditoid Polychaetes of the Family Eulepthidae Chamberlin (=Eulepidinae Darboux; =Pareulepidae Hartman)

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ABSTRACT

Pettibone, Marian H. Revision of the Aphroditoid Polychaetes of the Family Eulepethidae Chamberlin (=Eulepidinae Darboux; =Pareulepidae Hartman). *Smithsonian Contributions to Zoology,* 41: 1-44. 1969.—The family Eulepethidae is reviewed and revised, based on a reexamination of most of the previous records in the literature. The family characteristics are summarized and its systematic position among the other families of the superfamily Aphroditoidea is discussed.

The family is represented by four genera: *Eulepethus* Chamberlin (=*Eulepis* Grube), with a single species; *Pareulepis* Darboux, including two species and one synonym; *Mexieulepis* Rioja, with a single species and one synonym; and *Grubeulepis,* new genus, including four previously described species and three new species. In addition, *Eulepis challengeriae* McIntosh is considered questionable.

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Marian H. Pettibone

Revision of the Aphroditoid Polychaetes of the Family Eulepethidae Chamberlin (=Eulepidinae Darboux; =Pareulepidae Hartman)

Among the scaled polychaetes of the superfamily Aphroditoidea, the family Eulepethidae consists of relatively few, widely distributed species. The earlier descriptions of the species by Grube (1875), McIntosh (1885), Treadwell (1901), Horst (1913, 1922), Fauvel (1918), and Berkeley and Berkeley (1939) were deficient and misleading in many respects. A few additions and corrections for some of the species were made subsequently by different authors. Recent descriptions of new species by Rioja (1961) and Jones (1962) are more complete, but comparisons with previously described species are limited by deficiencies in the literature. A reexamination of these species was necessary to fill in the gaps and clarify the terminology.

The genera and species of Eulepethidae have had a checkered history, as indicated by the following brief summary. The first species of this family was described by Grube (1875, 1878), as *Eulepis hamifera,* who placed it in the Aphroditeen: Sigalionina. McIntosh (1885) added two species of *Eulepis* and gave a misleading description of the arrangement of the elytra for one of them, *E. wyvillei,* and indicated that *Eulepis* required the institution of a new family, although he placed it in the Polynoidae. Darboux (1900) established the tribe Eulepidinae in the Aphroditiens for *Eulepis* Grube and the new genus *Pareulepis* for *P. wyvillei* (McIntosh). Later, two species of *Eulepis* were added by Treadwell (1901). Horst (1913, 1917, 1922) added two species and Fauvel (1918, 1919) described an additional species of *Eulepis.* Augener (1918) raised Darboux's tribe to family status—Eulepidae [sic]. Chamberlin (1919) replaced *Eulepis* Grube, preoccupied, with the new name *Eulepethus* and substituted Eulepethinae Chamberlin for Eulepidinae Darboux, including *Eulepethus* and *Pareulepis;* at the same time, Chamberlin transferred the subfamily to the Sigalionidae.

The Berkeleys (1939) described an additional species of *Eulepethus.* Hartman (1939) referred *Eulepethus* Chamberlin to *Pareulepis* Darboux and proposed a separate family Pareulepidae, based on the single genus *Pareulepis.* Fauvel (1940: 1) continued to use *Eulepis* and Eulepidinae, preferring not to follow the Law of Priority, with the argument that there was little chance of confusing an aphroditid with an insect or a reptile. More recently, Rioja (1961) added a new genus and species, *Mexieulepis elongatus,* and Jones (1962) added a new species of *Pareulepis.*

As indicated above, there has been no general agreement regarding the family or subfamily among the scaled polychaetes or Aphroditoidea to which the various species have been referred. Thus, they have been placed in the following:

Marian H. Pettibone, Curator, Division of Worms, Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.

Aphroditeen: Sigalionina, by Grube (1875, 1878);
Polynoidae, by McIntosh (1885), Treadwell (1901), and Augener (1906);
Aphroditiens or Aphroditidae: Eulepidinae, by Darboux (1900), Horst (1917, 1922), and Fauvel (1919);
Aphroditidae (sensu lato), by Horst (1913), Treadwell (1920), Fauvel (1939, 1940), Tebble (1955), and Rullier (1965);
Eulepidae [sic], by Augener (1918, 1927);
Sigalionidae: Eulepethinae, by Chamberlin (1919);
Aphroditidae: Polynoinae, by Pruvot (1930), and Day (1951, 1962, 1967);
Sigalionidae, by Treadwell (1939), and Berkeley and Berkeley (1939);
Pareulepidae, by Hartman (1939, 1942, 1944, 1959, 1961), Rioja (1961), Jones (1962), and Reish (1968).

In the present study, three genera are retained: *Eulepethus* Chamberlin (=*Eulepis* Grube), *Pareulepis* Darboux, and *Mexieulepis* Rioja. In addition, a new genus *Grubeulepis* is proposed. There is good basis for separating the species in a family distinct from the other Aphroditoidea. Eulepethidae Chamberlin is retained, since the nominal genus is *Eulepethus* Chamberlin, a replacement for *Eulepis* Grube, preoccupied. It also predates Pareulepidae Hartman, based on *Pareulepis* Darboux, the oldest available generic name in the family but with a different type-species.

Eleven species of eulepethids have been described previously. Type-material was available for eight of them. For two of the species for which no type-material was available, specimens from near the type-locality, and which seemed to agree with the original descriptions, were studied. Of the eleven species, two are considered herein to be synonyms of previously described species and one is considered questionable. To the remaining eight species, three new species are added, based on the reexamination of some specimens identified as *Eulepis* or *Pareulepis geayi* and *P. fimbriata*. Those two species do not appear to be as widely distributed as their records in the literature indicate.

In addition to the specimens of Eulepethidae deposited in the United States National Museum (USNM), material was obtained from the following Museums: Allan Hancock Foundation, Los Angeles (AHF), through O. Hartman; American Museum of Natural History, New York (AMNH), through E. Kirsteuer; British Museum (Natural History), London (BMNH), through J. D. George; Museum of Comparative Zoology, Harvard (MCZ), through H. W. Levi; Muséum National d'Historie Naturelle, Paris (MNHNP), through J. Renaud-Mornant; Rijksmuseum van Natuurlijke Historie, Leiden (RNHL), through J. van der Land; Zoölogische Museum Universiteit van Amsterdam (ZMA), through S. van der Spoel; Zoologisches Staats-museum, Hamburg (ZMH), through G. Hartmann-Schröder. Additional specimens were received from D. J. Reish, California State College, Long Beach, and from F. Rullier, Université Catholique, Angers, France. Information concerning types was received from G. Hartwich of the Zoologisches Museum, Berlin and from M. E. Caso Muñoz of the Instituto de Biologia Universidad Nacional Autómona de México.

I am indebted to the above-mentioned people for their cooperation and help and for allowing me to examine the eulepethid material upon which this study is based. The manuscript benefited from the suggestions of F. A. Chace, Jr., and M. L. Jones, both of the Smithsonian Institution. This study was aided in part by a grant from the National Science Foundation (GB-1269).

The following genera and species are recognized in this study (synonyms in parentheses):

Genus *Eulepethus* Chamberlin, 1919
(=*Eulepis* Grube, 1875, preoccupied)
E. hamifer (Grube)
(=*Eulepis hamifera* Grube, 1875)
Genus *Pareulepis* Darboux, 1900
P. wyvillei (McIntosh)
(=*Eulepis wyvillei* McIntosh, 1885)
(=*Eulepis splendida* Treadwell, 1901)
P. malayana (Horst)
(=*Eulepis malayana* Horst, 1913)
Genus *Mexieulepis* Rioja, 1961
M. weberi (Horst), new combination
(=*Eulepis weberi* Horst, 1922)
(=*Mexieulepis elongatus* Rioja, 1961)
Grubeulepis, new genus
G. fimbriata (Treadwell), new combination
(=*Eulepis fimbriata* Treadwell, 1901)
G. geayi (Fauvel), new combination
(=*Eulepis geayi* Fauvel, 1918)
G. ecuadorensis, new species
(=*Pareulepis fimbriata*.—Hartman, 1939)
G. mexicana (Berkeley and Berkeley), new combination
(=*Eulepethus mexicanus* Berkeley and Berkeley, 1939)
G. sulcatisetis (Jones), new combination
(=*Pareulepis sulcatisetis* Jones, 1962)
G. tebblei, new species
(=*Pareulepis geayi*.—Tebble, 1955)
G. augeneri, new species
(=*Eulepis fimbriata*.—Augener, 1918)
(=*Eulepis geayi*.—Fauvel, 1940)
(=*Pareulepis fimbriata*.—Rullier, 1965)
Questionable eulepethid
Eulepis challengeriae McIntosh, 1885

Family EULEPETHIDAE Chamberlin, 1919

(=EULEPIDINAE Darboux, 1900; =Pareulepidae Hartman, 1939)

TYPE-GENUS.—*Eulepis* Grube, 1875, preoccupied; =*Eulepethus* Chamberlin, 1919.

Characteristics of the Family Eulepethidae

The body is depressed, subrectangular in shape; it may be relatively short, consisting of 32 to 40 segments, or more elongate, with up to 70 segments. The prostomium and tentacular segment (I) are distinct; both are withdrawn and wedged between the anterior segments (II-IV) and are partly hidden from view; the posterior middorsal part of the prostomium may be attached to segment II (Figures 1*a;* 6*a,b;* 11*e;* 15*b;* 24*a*). Segment III is not visible middorsally, its parapodia being wedged between the parapodia of segments II and IV. The prostomium (Figures 1*b;* 4*a,b;* 11*e;* 15*c,h*) is globular, with three short antennae lacking distinct ceratophores; the median antenna is globular to subulate, attached anterodorsally, the lateral antennae are conical, attached anteroventrally on the prostomium. A pair of elongate-conical palps are attached ventrally on the prostomium; eyes, when present, are very small, variable in number, hidden by segment II and easily overlooked, especially when the prostomium is pigmented or darkened through preservation. The tentacular segment (I) forms a pair of small lobes lateral to the prostomium; they are more slender basally and inflated distally, each provided with two acicula, a pair of rather short subulate dorsal and ventral tentacular cirri and two bundles of capillary setae (Figures 1*c,d;* 6*c,d;* 11*e,g;* 15*d,e*). Between the prostomium and tentacular lobes is a pair of club-shaped nuchal organs. Segments II and III contribute to the lateral and posterior lips of the ventral mouth (Figure 6*b*). The buccal ventral cirri of segment II are longer and thicker than those following (Figure 6*b,e*). When extended, the strong muscular pharynx is encircled with soft papillae (about 13 pairs) and two pairs of platelike jaws (somewhat similar to those in the Aphroditidae; Figure 11*e,f*).

Dorsally the segments may be provided with either elytra, dorsal cirri, branchiae, or posterior lamellae. The dorsal cirri occur on segments 3 and 6; they are short, subulate, without distinct cirrophores, and attached posteriorly on the notopodia (Figures 1*a,f;* 7*a,c;* 12*a;* 15*b,g*). The anterior 12 pairs of elytra are located on segments 2, 4, 5, 7, 9, 11, 13, 15, 17, 19, 21, 24 [not on segments 2, 3, 4, as reported by McIntosh (1885) for *Eulepis wyvillei* and followed by Darboux and Chamberlin for *Pareulepis*; the three anterior pairs of elytra appear at first glance to be attached on consecutive segments, since segment III is indistinct middorsally]. The elytra increase in length progressively, the twelfth pair being extremely elongate and subrectangular (Figures 3*a-c;* 4*g-i;* 11*a-c;* 17*d-f*). The elytral surfaces are usually smooth, lacking tubercles, but sometimes with scattered microtubercles; their external borders are usually notched or fimbriated (flattened, leaflike processes). The elytriphores are large, cylindrical, their bases converging middorsally.

Branchiae occur on segments 8, 10, 12, 14, 16, 18, 20, 22, 23, 25 (10 pairs), 26 (11 pairs), 27 (12 pairs), or 28 (13 pairs). The bases of the branchiae converge middorsally and are joined medially by a small crescent-shaped fold; more distally they are inflated and provided with a dorsal glandular crest and ventral ciliated bands which are continuous with ciliated bands on the dorsal surfaces of the parapodia; bulbous to subconical lobes or branchial cirri are attached distally (Figures 2*b,* 8*b,* 13*b,* 16*a*). The branchiae have sometimes erroneously been referred to as dorsal cirri; they correspond rather to modified dorsal tubercles on the nonelytra-bearing segments.

In the posterior regions of the more elongate species (*Eulepethus, Mexieulepis*), additional elytra occur on all segments from 27 or 28 on, differing from the more anterior elytra by their smaller size and by their attachment to the elytriphores along their anterior borders; the bases of these elytriphores also converge medially (Figures 3*d,* 11*d*). In the posterior regions of the shorter species (*Pareulepis, Grubeulepis*), beginning on segment 26-29, the elongate inflated dorsal tubercles are provided distally with flattened, oval to lanceolate lamellae; basally the dorsal tubercles converge medially but the medial crescent-shaped fold found in the more anterior branchiae is lacking; the ventral ciliated bands are also lacking (Figures 4*c;* 10*a,b;* 17*a*). The elytriphores with their elytra, the branchiae with their distal lobes or branchial cirri, and the modified dorsal tubercles with their posterior lamellae, appear to be homologous structures, for they have similar positions in relation to the body and are formed from dorsal coelomic outpocketings. The

pygidium bears a dorsal anus and is provided with a single, extremely long anal cirrus, which is minutely papillated along one side; the anal cirrus is usually on the right side; the left side bears a small bulbous rudiment (Figure 4*c*).

The parapodia are biramous, with the setae all simple, not compound (Figure 2*a,b*). The notopodia are short, cylindrical, with posterior rounded lobes; the embedded notoacicula have characteristic hooked tips. The notosetae are slender, capillary, smooth, and spinous; beginning on segment III, additional stout, geniculate notopodial hooks occur, whose distal tips may be fine or blunt, spatulate (Figure 2*c*). The neuropodia are thick, rounded, and paddle-shaped, and supported by stout neuroacicula which are provided distally, on their anterior sides, with characteristic hammer-shaped chitinous plates. The neurosetae are of several kinds: 1-2 upper pectinate setae (Figure 2*d*); bilimbate or unilimbate capillaries (Figure 2*e*); short nonlimbate capillaries and, in addition, there may be long slender capillaries and stout acicular neurosetae; the the upper neurosetae of the posterior region may be modified in various ways. The anterior ventral cirri are short and tapered (Figure 1*f,j*); those following are globular, with filamentous tips (Figure 2*b*).

Geographic Distribution of Eulepethidae

The family is known from relatively few species from widely scattered areas in the western Indian Ocean (Madagascar, Mozambique), Red Sea, western Pacific (Indochina, Philippine Islands, Malay Archipelago, New Caledonia), eastern Pacific (Southern California, Gulf of California to Ecuador), Gulf of Mexico, western Atlantic (Bermuda, Georgia, Florida, Panama, West Indies), eastern Atlantic (West Africa from Gold Coast, French Congo), and Adriatic. In depth they extend from low intertidal to 823 meters. The eulepethids are burrowing forms and are found in sand, silt, soft mud, with muck, shells, and coral. One species has been reported as commensal with a tube-dwelling polyodontid polychaete.

Relations of the Eulepethidae to Other Families of the Aphroditoidea

The Eulepethidae are unique among the Aphroditoidea in their type of branchiae and branchial cirri, found only on nonelytra-bearing segments; the parapodia have characteristic hooked notoacicula and hammer-shaped neuroacicular distal plates, and stout bent notosetae; the pygidium has a single long papillate anal cirrus; the prostomium and tentacular parapodia (I) are withdrawn within the anterior segments (II-IV) and segment III is fused middorsally with the adjacent segments.

Among the families of the Aphroditoidea, the Eulepethidae appears to show closest relationship to the Aphroditidae (sensu stricto). Both families have only simple setae, including capillary and stout notosetae; platelike jaws in the pharynx; globular prostomium; setigerous tentacular parapodia (segment I) distinct and not fused with the prostomium. They differ by having three antennae in the Eulepethidae, one in the Aphroditidae; dorsal cirri are present only on segments III and VI in the former but present on all nonelytra-bearing segments in the latter.

The Eulepethidae agrees with the Polynoidae in having only simple setae and three antennae. They differ in the shape of the prostomium: globular in the former, bilobed in the latter; the three antennae lack distinct ceratophores in the former, but are present in the latter; dorsal cirri are present only on segments III and VI in the former but occur on all nonelytra-bearing segments in the latter; branchiae are present in the former but absent in the latter.

The Eulepethidae agrees with the Sigalionidae in having branchiae but they are of different types: in the former they are modified dorsal tubercles on nonelytra-bearing segments; in the latter they are cirriform and found on the dorsal tubercles, as well as on the elytriphores; dorsal cirri are few in the former (on segments III and VI) and few or lacking in the latter (sometimes on segment III). They differ in that the neurosetae are all simple in the former but some neurosetae are compound in the latter; the prostomium and tentacular parapodia (I) are distinct in the former, but often fused in the latter.

Abbreviations Used in the Figures

I-IV, segments
aC, anal cirrus
br, branchia
brC, branchial cirrus
brF, branchial fold
buC, buccal cirrus

dC, dorsal cirrus
dTc, dorsal or upper tentacular cirrus
elph, elytriphore
lAn, lateral antenna
mAn, median antenna
nuO, nuchal organ
pa, palp
pLa, posterior lamella
vC, ventral cirrus
vTc, ventral or lower tentacular cirrus

Key to the Genera of Eulepethidae

1. Elytra 12 pairs, increasing in length progressively, followed by smaller foliaceous lamellae posteriorly 2
1'. Elytra more than 12 pairs, anterior 12 pairs increasing in length progressively, followed by smaller pairs of elytra continuing to posterior end 3
2. Elytra with lateral borders notched (Figure 4*g-i*) . . . . . ***Pareulepis*** Darboux
2'. Elytra with lateral borders fimbriated (flattened, leaflike processes, (Figure 17*d-f*). . . . . ***Grubeulepis***, new genus
3. Elytra with lateral borders notched . . . . . ***Eulepethus*** Chamberlin (=***Eulepis*** Grube, preoccupied)
3'. Elytra with lateral borders fimbriated (flattened leaflike processes) . . ***Mexieulepis*** Rioja

Genus *Eulepethus* Chamberlin, 1919

Eulepis Grube, 1875. [Type-species: *E. hamifera* Grube, 1875, by monotypy. Gender: feminine. Preoccupied by (Dalman manuscript) Billberg, 1820 (Lepidoptera).]
Eulepethus Chamberlin, 1919. [New name for *Eulepis* Grube, preoccupied. Gender: masculine.]

DIAGNOSIS.—Body elongate, segments about 60 (60-70). Elytra numerous pairs; first 12 pairs larger, with lateral notch, on segments 2, 4, 5, 7 . . . 21, 24; smaller elytra with margins entire, on all segments beginning with segment 28; elytriphores fused medially. Dorsal cirri on segments 3 and 6. Branchiae 12 pairs, on segments 8, 10 . . . 22, 23, 25, 26, 27.

Eulepethus hamifer (Grube)

FIGURES 1-3

Eulepis hamifera Grube, 1875, p. 71; 1878, p. 52, pl. 3: fig. 8. —Fauvel, 1939, p. 261.
Eulepethus hamifera.—Treadwell, 1920, p. 592.
Pareulepis hamifera.—Hartman, 1959, p. 123.

MATERIAL EXAMINED.—*Albatross* station D5235, east coast of Mindanao, Philippine Islands, 80 meters, soft mud bottom, 9, May 1908—1 specimen (USNM 17483).

DESCRIPTION.—Length 29 mm (37-40 mm—Grube, Fauvel), width 6 mm, including setae, segments about 60 (up to 70—Fauvel). Anterior 12 pairs elytra becoming more elongate progressively, each with lateral notch (first pair lacking on specimen examined; Figure 3*a-c*); elytriphores large, inflated, converging middorsally (Figure 1*a*). Smaller elytra on all posterior segments, beginning on segment 28; elytra with entire borders, attached by anterior borders to elytriphores, which are fused medially (Figure 3*d*). Branchiae elongate, inflated, ciliated on under side, with distal appendage or branchial cirrus narrowed to digitiform tip (Figure 2*b*). Dorsal cirri on segments III and VI subulate (Figure 1*a,f*).

Prostomium partially hidden by elytriphores of segment II (not attached); median antenna short, subconical, inserted on anterior fourth of prostomium; lateral antennae slightly longer, conical, inserted terminally; ventral palps elongate-tapered, extending slightly beyond parapodial lobes; 2 pairs small eyes, anterior pair formed of scattered pigment spots; nuchal organs oval, lateral to prostomium (Figure 1*b, c*). Tentacular parapodia (I) with short subulate tentacular cirri, ventral pair slightly longer than dorsal pair; 2 acicula with hooked tips; 2 bundles of long, spreading capillary setae (Figure 1*a, c, d*). Ventral buccal cirri on segment II much stouter than those following (Figure 1*e*).

Biramous parapodia supported by reddish amber-colored acicula and neuropodial hammer-shaped distal plates (Figure 2*a, b*). Notopodial acicula with hooked tips. Notopodial capillary setae smooth and finely spinous, forming long, spreading bundles on posterior part of notopodia; stout golden notopodial hooks, beginning on segment III, either smooth or finely spinous along curved edge, with tips finely tapered or flattened, spoon-shaped (Figures 1*g*, 2*c*).

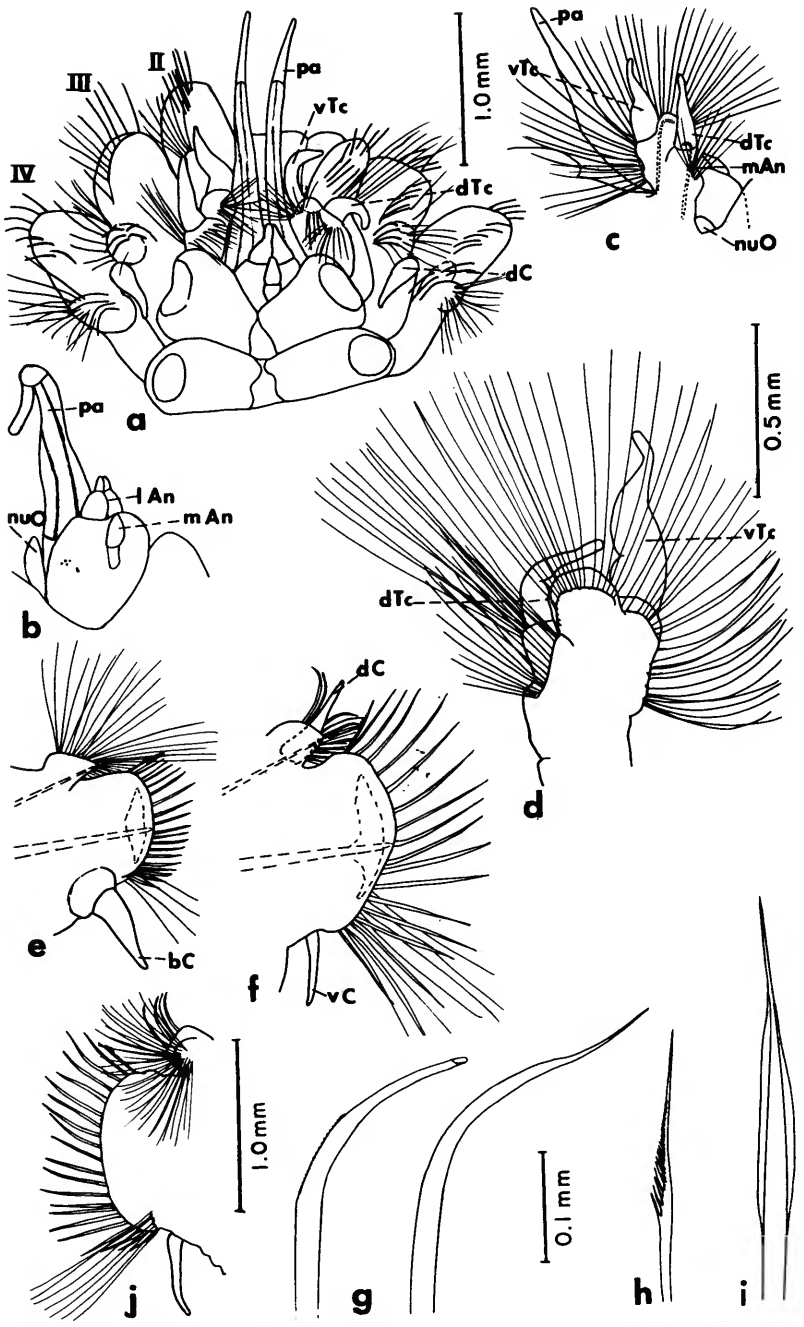

FIGURE 1.—*Eulepethus hamifer* (USNM 17483): *a*, Anterior end, dorsal view, elytra missing; *b*, prostomium, dorsal view, with dorsal side segment II pulled back; *c*, prostomium and segment I, lateral view from left side; *d*, segment I, medial view; *e*, parapodium from segment II, anterior view; *f*, parapodium from segment III, anterior view (base of dorsal cirrus dotted); *g*, notopodial hooks from same; *h*, upper pectinate neuroseta from same; *i*, bilimbate neuroseta from same; *j*, parapodium from segment IV, posterior view.

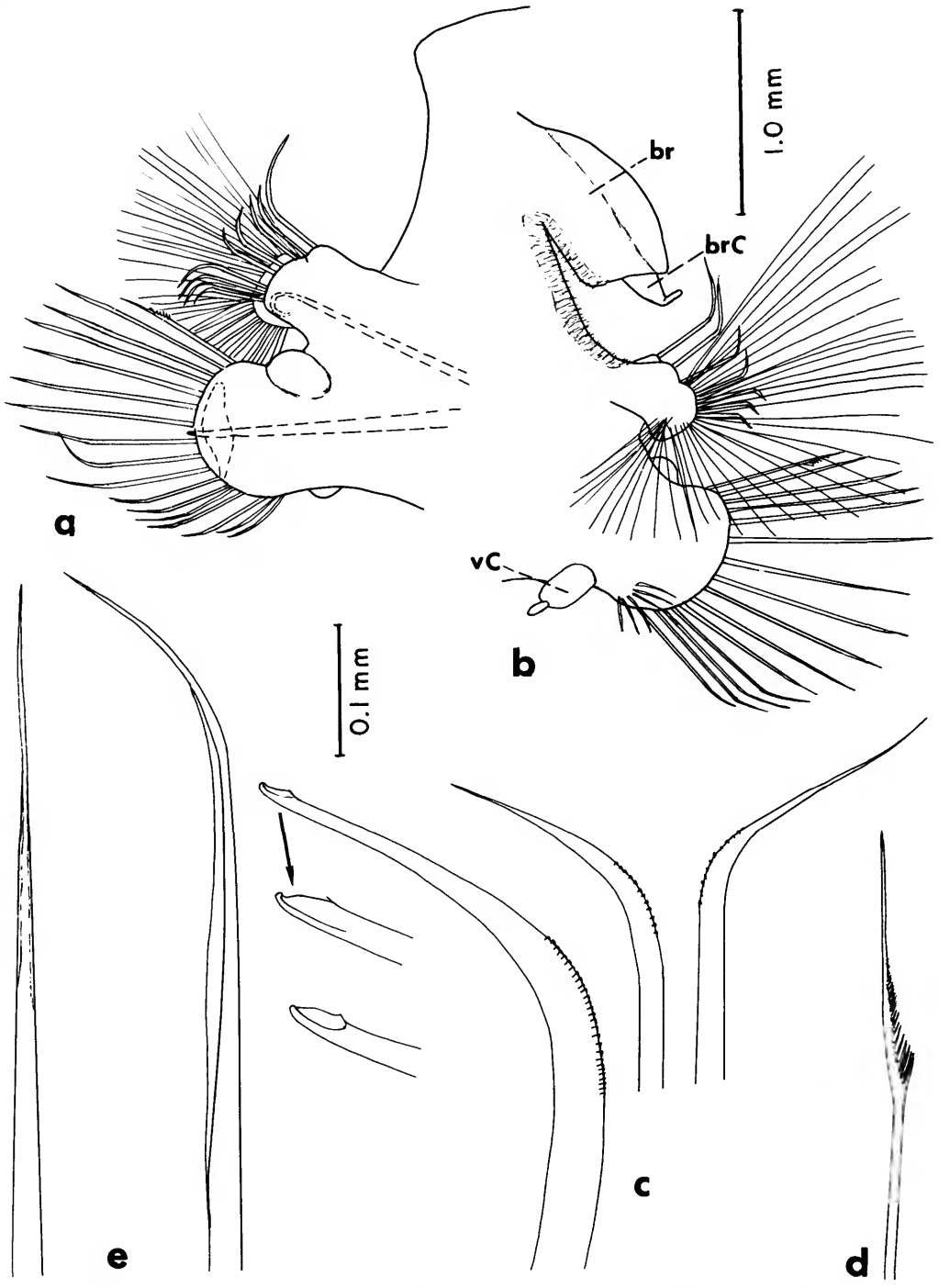

FIGURE 2.—*Eulepethus hamifer* (USNM 17483): *a*, Middle elytrigerous parapodium, anterior view; *b*, middle branchial parapodium, posterior view; *c*, stout notopodial hooks from same; *d*, upper pectinate neuroseta from same; *e*, limbate capillary neuroseta from same.

Neuropodial acicula with conspicuous hammer-shaped distal plates; thin-walled inflated areas on anterodorsal parts of neuropodial bases (Figure 2*a*). Neurosetae of several kinds: 1-2 upper pectinate setae (Figures 1*h*, 2*d*); bilimbate capillary setae of anterior parapodia with short fine tips (Figure 1*i*); unilimbate setae with longer fine tips (Figure 2*e*); lower posterior bundles of long capillary setae on anterior parapodia (Figure 1*j*); lower posterior groups short capillary setae (Figure 2*b*); neurosetae of posterior region similar (without some stouter upper neurosetae, as in some species of eulepethids). Ventral cirri of anterior few segments slender, tapered (Figure 1*f,j*); remainder globular, with short slender tips (Figure 2*b*). Pygidium with single long anal cirrus on right side, papillated along one side. Pharynx not extended.

DISTRIBUTION.—Philippine Islands, Indochina (Annam). In 80 meters.

REMARKS.—The type-specimen of *Eulepis hamifera* Grube from the Philippine Islands is no longer available, at least it is not present in the Zoological Museum Berlin (G. Hartwich, in litteris) nor in the Zoological Museum Hamburg (G. Hartmann-Schröder, in litteris). The *Albatross* specimen from the Philippine Islands, recorded by Treadwell (1920), seems to agree for the most part with the descriptions and figures of Grube (1875, 1878).

Genus *Pareulepis* Darboux, 1900

TYPE-SPECIES.—*Eulepis wyvillei* McIntosh, 1885, by original designation. Gender: feminine.

DIAGNOSIS.—Body short, segments about 37 (34-38). Elytra 12 pairs, on segments 2, 4, 5, 7 . . . 21, 24; elytra with lateral borders notched. Dorsal cirri on segments 3 and 6. Branchiae 12 pairs, on segments 8, 10 . . . 22, 23, 25, 26, 27. Posterior lamellae begin on segment 28.

REMARKS.—*Pareulepis* Darboux was supposedly separated from *Eulepis* Grube by the elytra inserting on segments 2, 3, 4, 6, 8 . . . 18, 20, 23 in the former and on segments 2, 4, 5, 7, 9 . . . 19, 21, 24 in the latter. This, however, was based on an erroneous observation by McIntosh (1885) when the parapodia of segment 3 were overlooked. There are other characters, however, by which *E. wyvillei*, the

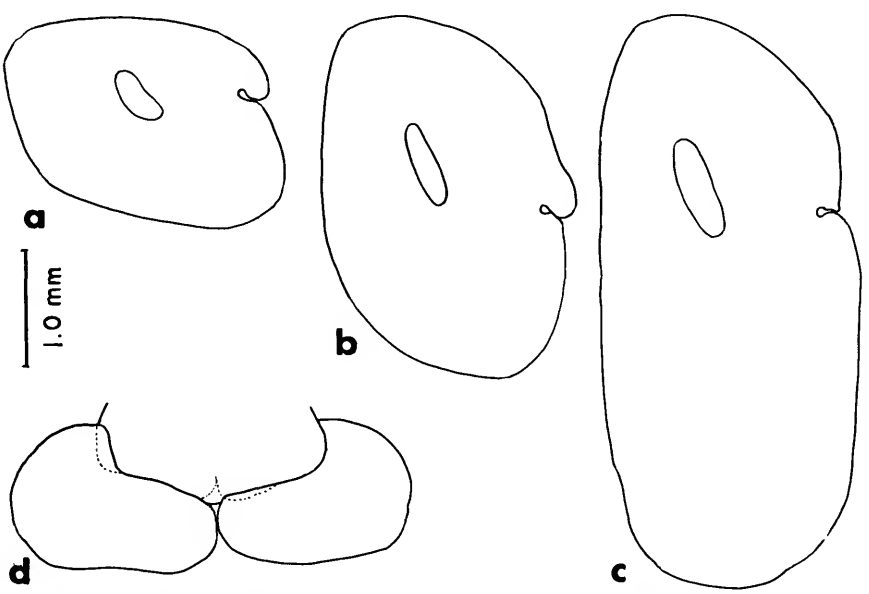

FIGURE 3.—*Eulepethus hamifer* (USNM 17483): *a*, Right elytron from anterior region; *b*, right elytron from middle region; *c*, right twelfth elytron; *d*, pair of elytra and elytriphores from posterior region.

type-species of *Pareulepis,* may be separated from *E. hamifera,* the type-species of *Eulepis.* The latter genus, being preoccupied, was replaced by *Eulepethus* Chamberlin.

Pareulepis wyvillei (McIntosh)

FIGURES 4, 5

Eulepis wyvillei McIntosh, 1885, p. 131, pl. 19: fig. 11, pl. 20: figs. 2, 3, pl. 24: figs. 2, 3, pl. 25: fig. 11, pl. 14A: figs. 4-6, pl. 32A: fig. 7.
Eulepis splendida Treadwell, 1901, p. 189, figs. 19-22.—Augener, 1906, p. 128.
Eulepethus splendidus.—Treadwell, 1939, p. 195, fig. 24.
Pareulepis wyvillei.—Hartman, 1942, p. 95; 1959, p. 123.

MATERIAL EXAMINED.—*Challenger* station 33, off Bermuda, 32° 21′ N, 64° 35′ W, 796 meters, coral mud, 4 April 1873—holotype *Eulepis wyvillei* (BMNH 1885: 12: 1: 105a).

Mayaguez Harbor, Puerto Rico: *Fish Hawk* station 6062, 46-55 meters, sand, mud, shells, 20 January 1899—holotype *E. splendida* (USNM 15916); *Fish Hawk* station 6065, 7-11 meters, 20 January 1899—paratype *E. splendida* (USNM 15917).

Grenada, Caribbean Sea, *Blake* station 247, 311 meters—1 specimen (MCZ 2235).

DESCRIPTION.—Length 18-37 mm, width 4-5 mm, including setae, segments 35-38. Elytra 12 pairs, becoming more elongate posteriorly, with lateral notch (Figure 4*g-i*); first pair elytra (missing on types of *E. wyvillei* and *E. splendida;* present on MCZ 2235) with margin entire except for a notch on inner anterior border; without papillae. Branchiae elongate, inflated, ciliated on underside; distal branchial cirrus oval, tapering distally (Figure 5*b*). Dorsal cirri, on segments 3 and 6, subulate (Figure 4*e*). Posterior lamellae, beginning on segment 28, subcordiform to lanceolate (Figure 4*c*).

Posterior half of prostomium covered by segment II, attached along midline; median antenna short, conical, inserted anterodorsally on prostomium; lateral antennae slightly longer, inserted more ventrally; ventral palps elongate-tapered, extending beyond tentacular cirri; eyes not visible; nuchal organs oval, lateral to prostomium (Figure 4*b*). Tentacular parapodia (I) with short subulate tentacular cirri, subequal in length or with ventral pair slightly longer than dorsal pair; 2 acicula; 2 tufts capillary setae (Figure 4*a, b*). Ventral buccal cirri segment II thicker than following ventral cirri (Figure 4*d*).

Biramous parapodia supported by dark reddish amber-colored acicula and neuropodial hammer-shaped distal plate (Figures 4*d-f;* 5*a*). Notopodial acicula with hooked tips. Notopodial capillary setae smooth and spinous, forming long, spreading bundles on posterior parts of notopodia; stout reddish amber-colored notopodial hooks, beginning on segment III, smooth, with tips finely tapered or flattened spoon-shaped (Figure 5*c*). Neuropodial acicula with conspicuous hammer-shaped plates; thin-walled inflated areas on dorso-anterior parts of neuropodial bases (Figures 5*a*). Neurosetae of several kinds: 1-2 upper pectinate setae (Figure 5*d*); limbate capillaries with tips elongate, curled (Figure 5*e*); lower non-limbate capillaries (Figures 5*f*); neurosetae of posterior region similar to anterior region (without some stouter upper neurosetae, as in some species of eulepethids). Ventral cirri of anterior few segments slender, tapered (Figure 4*e, f*); rest globular, with short slender tips (Figure 5*a, b*). Pygidium with single long anal cirrus on right side; cirrus finely papillate along one side (Figure 4*c*). Pharynx not extended.

DISTRIBUTION.—North Atlantic off Bermuda, Caribbean region. In 7 to 796 meters.

REMARKS.—The single holotype of *Eulepis wyvillei,* deposited in the British Museum, is now in two pieces; most of the setae are broken off; all the elytra are missing except for part of the ninth right elytron; the worm consists of 35 segments, the last one being small. The original description by McIntosh was erroneous and misleading in several respects. There are 12 pairs of elytriphores on segments 2, 4, 5 . . . 21, 24 (not on segments 2, 3, 4, 6, 8, etc., since the parapodia of segment 3 were overlooked); McIntosh indicated 15 pairs of elytra, which included some of the larger posterior lamellae. The one remaining elytron has a simple lateral notch (not a double notch, as shown on plate 25: figure 11 by McIntosh). The dorsal cirri on segment 6 were referred to as branchiae by McIntosh.

Augener (1906: 129) indicated that *Eulepis splendida* possibly agreed with *E. wyvillei.* Hartman (1942: 95) synonomized the two species.

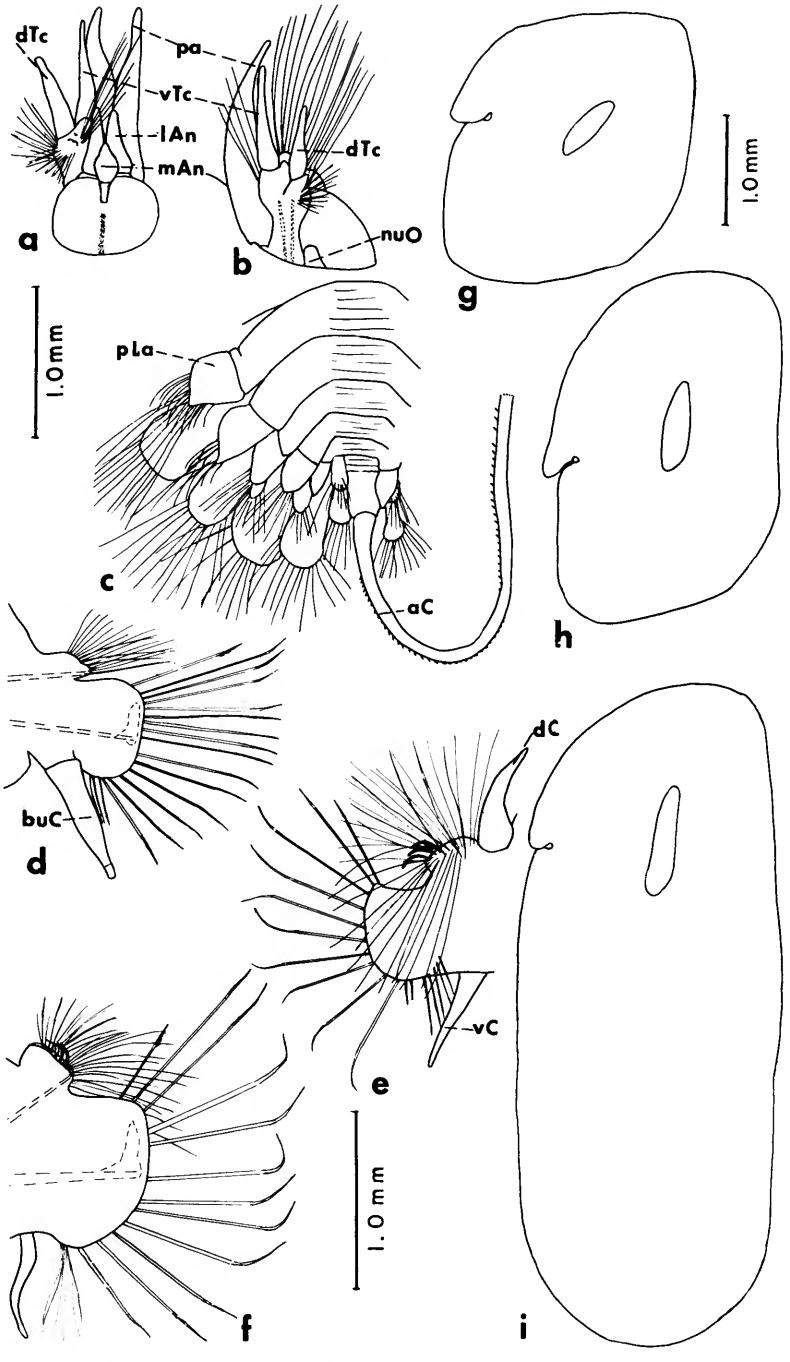

FIGURE 4.—*Pareulepis wyvillei* (holotype *Eulepis splendida*, USNM 15916): *a*, Prostomium and left tentacular parapodium (I), dorsal view (right I had been removed; dorsum of segment II had been cut back); dotted area indicates place of attachment to underside of segment II; *b*, same, lateral view of left side; *c*, posterior end, dorsal view, right side not completely drawn; anal cirrus broken; *d*, parapodium from segment II, anterior view; *e*, parapodium from segment III, posterior view; *f*, parapodium from segment IV, anterior view; *g*, left anterior elytron; *h*, left middle elytron; *i*, left twelfth elytron.

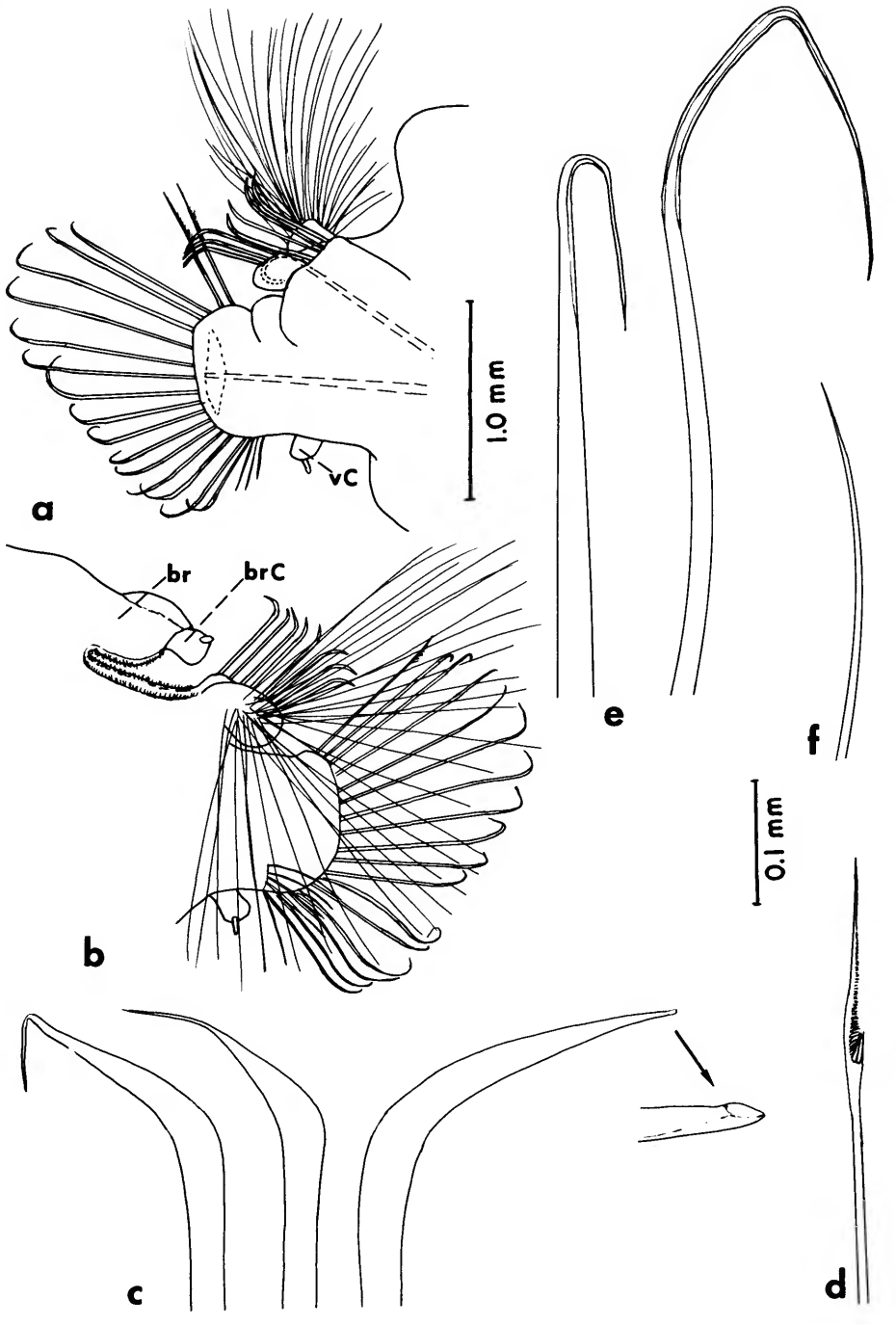

FIGURE 5.—*Pareulepis wyvillei* (holotype *Eulepis splendida*, USNM 15916): *a*, Middle elytrigerous parapodium, anterior view; *b*, middle branchial parapodium, posterior view; c, notopodial hooks; *d*, upper pectinate neuroseta; *e*, limbate capillary neurosetae; *f*, lower nonlimbate neuroseta.

Pareulepis malayana (Horst)

FIGURES 6-10

Eulepis malayana Horst, 1913, p. 164, fig. 2; 1917, p. 128, pl. 15: figs. 5-7.
Pareulepis malayana.—Hartman, 1959, p. 123.

MATERIAL EXAMINED.—*Siboga* station 47, Bay of Bima, 55 meters, mud with patches of fine coral sand, 8/12 April 1899—1 specimen (USNM 39166; mixed with *Leanira vulturis* Horst). *Siboga* station 204, Buton Strait, 4° 20′ S, 122° 58′ E, 75-94 meters, sand with dead shells, 20 September 1899—syntype (RNHL 1052). *Siboga* station 260, west of Great Kei Island, 5° 36.5′ S, 132° 55.2′ E, 90 meters, sand, coral and shells, 16/18 December 1899—syntype (ZMA 219).

DESCRIPTION.—Length 15-21 mm, width, including setae, 4-6 mm, segments 34-37. Elytra 12 pairs, becoming more elongate posteriorly, with lateral notch; first pair elytra (absent on syntypes; present on USNM 39166) with anterior margin papillate (Figures 8*e, f;* 9*c, d*). Branchiae elongate, inflated, ciliated on underside, with distal branchial cirrus tapered to digitiform tip (Figures 8*b,* 9*a*). Dorsal cirri subulate, posterior on notopodia of segments 3 and 6 (Figure 7*a, c*). Posterior lamellae, beginning on segment 28, conical to lanceolate (Figure 10*a, b*).

Prostomium covered on posterior half by segment II, attached along midline; median antenna short, conical, inserted anterodorsally on prostomium; lateral antennae slightly longer, inserted more ventrally; ventral palps elongate-tapered, extending beyond tentacular cirri; 2 pairs small eyes on posterior part prostomium; nuchal organs oval, lateral to prostomium (Figure 6*a-c*). Tentacular parapodia (I) each with 2 short subulate tentacular cirri, subequal in length, 2 acicula, and 2 tufts capillary setae (Figure 6*a-d*). Ventral buccal cirri on segment II longer and stouter than those following (Figure 6*b, e*).

Biramous parapodia supported by reddish amber-colored acicula and neuropodial hammer-shaped distal plates (Figures 7*a-c;* 8*a,b*). Notopodial acicula with hooked tips. Notopodial capillary setae smooth and spinous, forming long spreading bundles on posterior parts of notopodia; stout reddish amber-colored notopodial hooks, beginning on segment III, smooth, with tips finely tapered or flattened spoon-shaped (Figures 7*d,* 8*c,* 10*c*). Neuropodial acicula with conspicuous hammer-shaped plates; thin-walled inflated areas on dorso-anterior parts of neuropodial bases (Figure 8*b*). Neurosetae of several kinds: 1-2 upper pectinate setae (Figure 6*f*); limbate capillaries with tips elongate, curved (Figures 6*g,* 7*e,* 8*d,* 9*b*); smooth capillary setae on lower and posterior parts of neuropodia; in posterior neuropodia, upper neurosetae slightly stouter and darker than lower neurosetae, with tips curved downward and faintly spinous along curved edge (Figure 10*a,b,d,e*). Ventral cirri of anterior few segments slender, tapered (Figure 7*a-c*); rest globular, with short slender tips (Figure 8*a*). Pygidium with single long anal cirrus on right side; cirrus finely papillate along one side. Pharynx not extended.

DISTRIBUTION.—Malay Archipelago. In 55 to 94 meters.

REMARKS.—*P. malayana,* from the Malay Archipelago, is close to *P. wyvillei,* from the Caribbean. They differ in the following characters:

	P. wyvillei (McIntosh)	*P. malayana* (Horst)
First elytra:	With anterior notch	Entire, with fringe of papillae
Eyes:	None	Two pair small eyes on posterior part prostomium
Neurosetae of posterior parapodia:	Upper and lower neurosetae similar	Upper neurosetae slightly stouter and darker than lower neurosetae, with tips bent downward and finely spinous along curved edge

Genus *Mexieulepis* Rioja, 1961

TYPE-SPECIES.—*M. elongatus* Rioja, 1961, by original designation, referred herein to *M. weberi* (Horst, 1922). Gender: feminine.

DIAGNOSIS.—Body elongate, segments about 50 (37-62). Elytra numerous pairs; first 12 pairs larger, on segments 2, 4, 5, 7 . . . 21, 24; smaller elytra on all segments beginning on segment 27 or 28, with elytriphores fused medially; elytra with lateral margins fimbriated. Dorsal cirri on segments 3 and 6. Branchiae 11-12 pairs, on segments 8, 10 . . . 22, 23, 25, 26 (and sometimes 27).

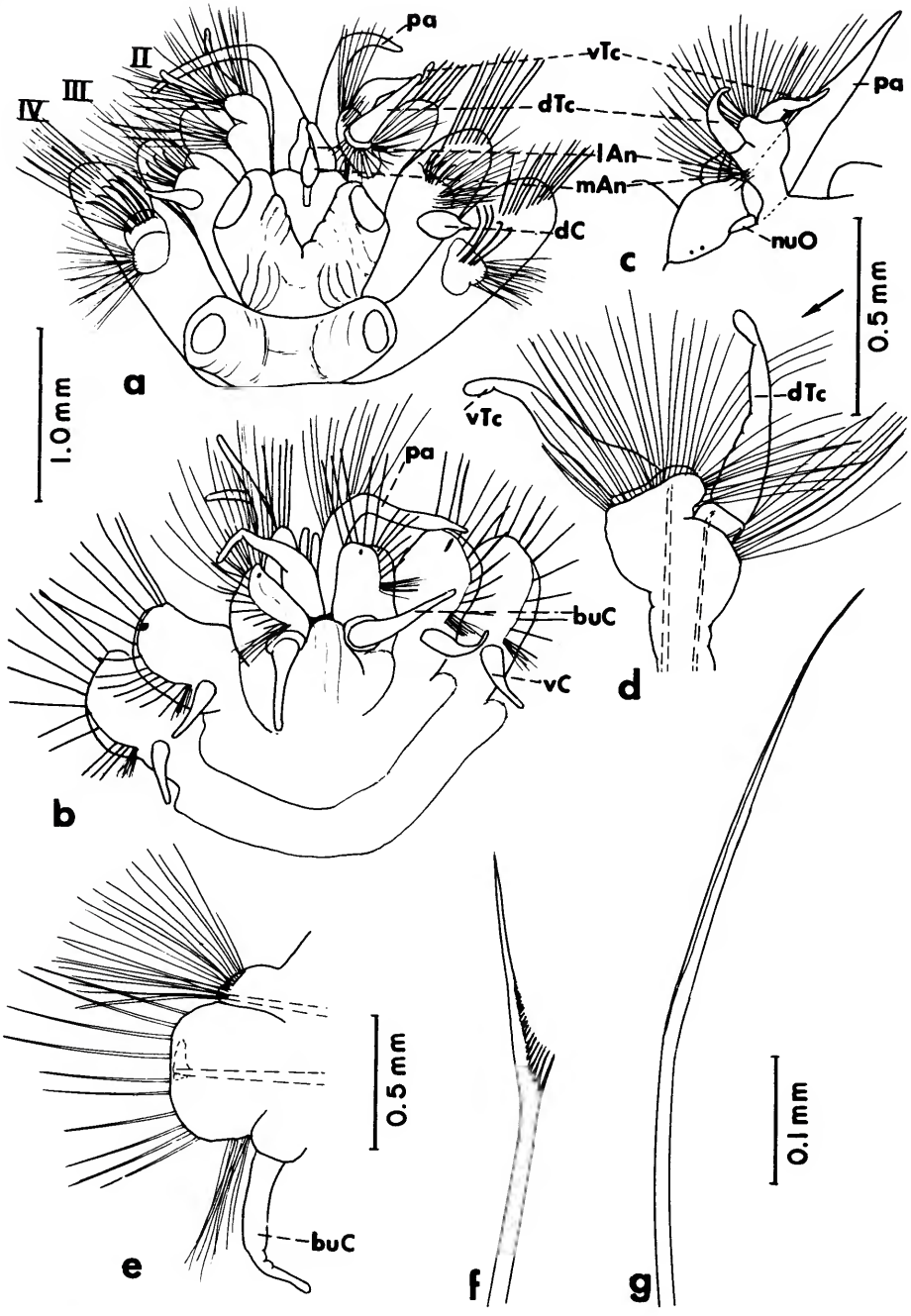

FIGURE 6.—*Pareulepis malayana* (USNM 39166): *a*, Anterior end, dorsal view, elytra removed; *b*, anterior end, ventral view; *c*, prostomium and tentacular parapodium (I), lateral view; *d*, tentacular parapodium (I), medial view; *e*, parapodium from segment II, anterior view; *f*, upper pectinate neuroseta from same; *g*, limbate capillary neuroseta from same.

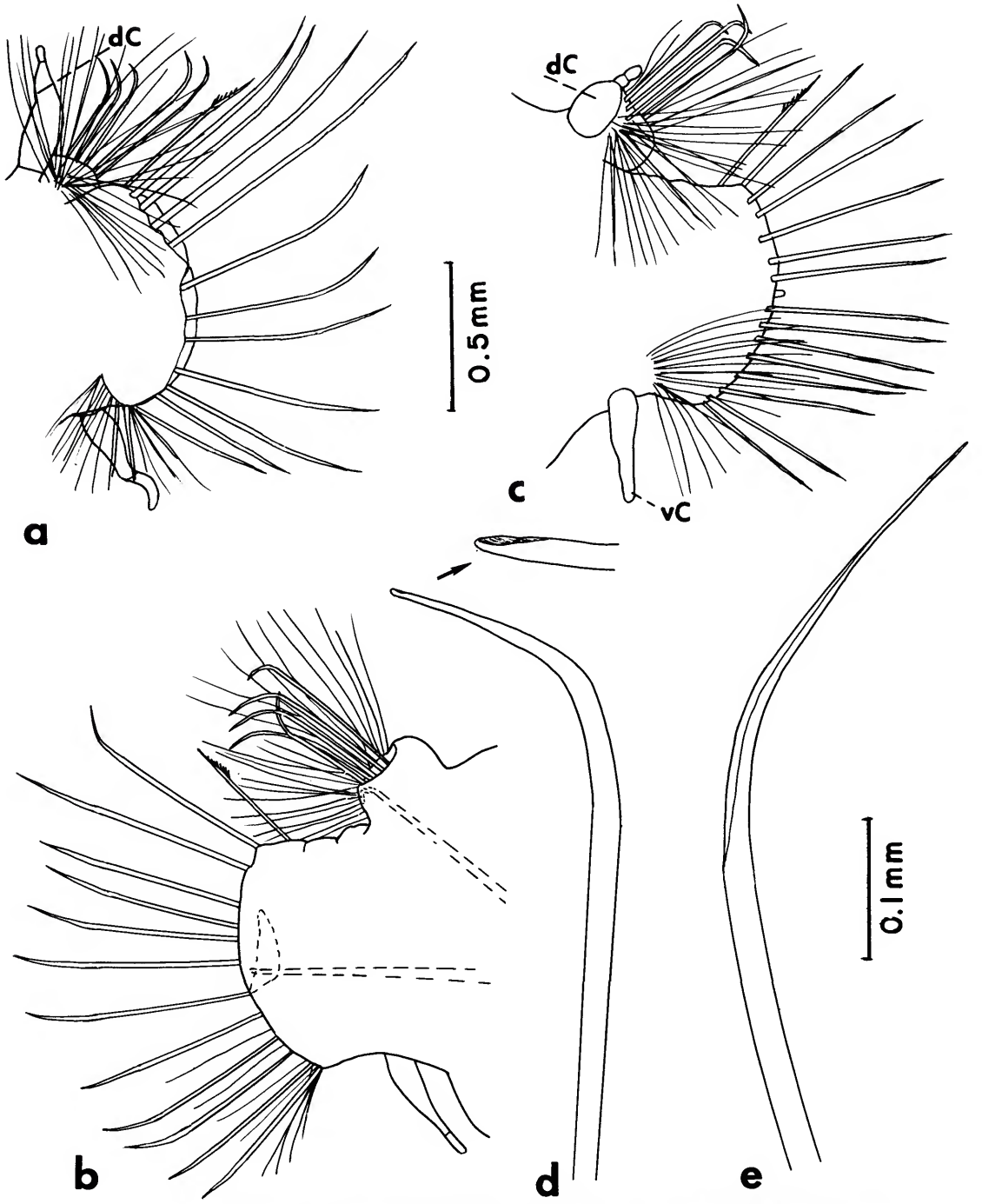

FIGURE 7.—*Pareulepis malayana* (USNM 39166): *a*, Parapodium from segment 3, posterior view; *b*, parapodium from segment 4, anterior view; *c*, parapodium from segment 6, posterior view; *d*, notopodial hook from same; *e*, limbate capillary neuroseta from same.

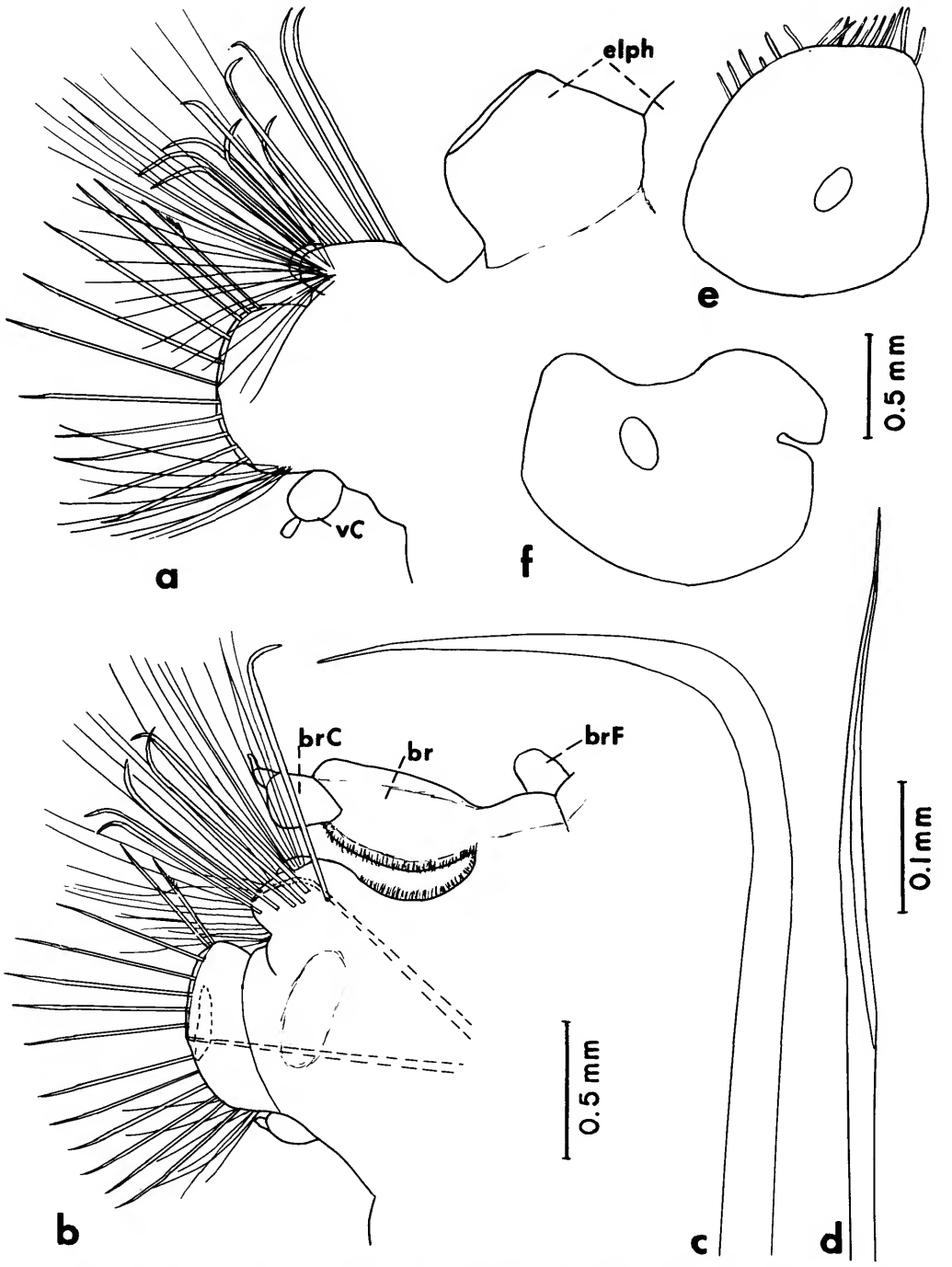

FIGURE 8.—*Pareulepis malayana* (USNM 39166): *a*, Middle elytrigerous parapodium, posterior view; *b*, middle branchial parapodium, anterior view; *c*, notopodial hook from same; *d*, limbate capillary neuroseta from same; *e*, right first elytron; *f*, right third elytron.

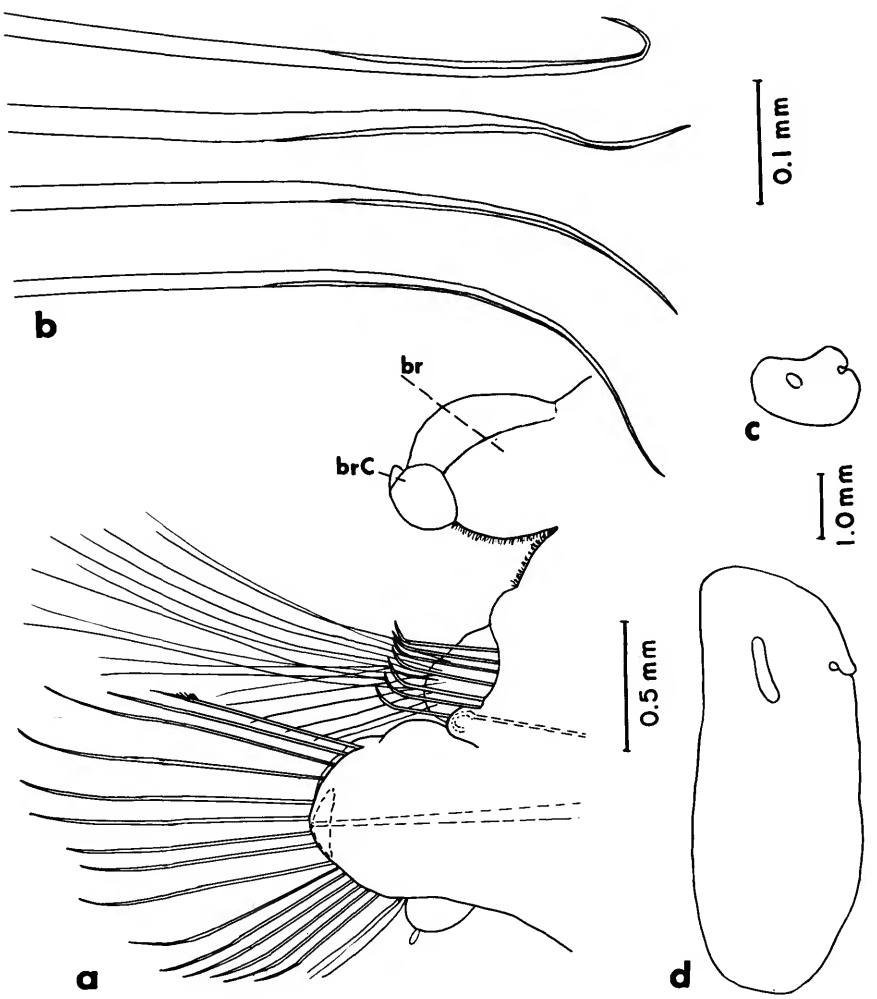

FIGURE 9.—*Pareulepis malayana* (syntype, ZMA 219): *a*, Middle branchial parapodium, anterior view. *b*, limbate capillary neurosetae from same; *c*, right middle elytron; *d*, right twelfth elytron.

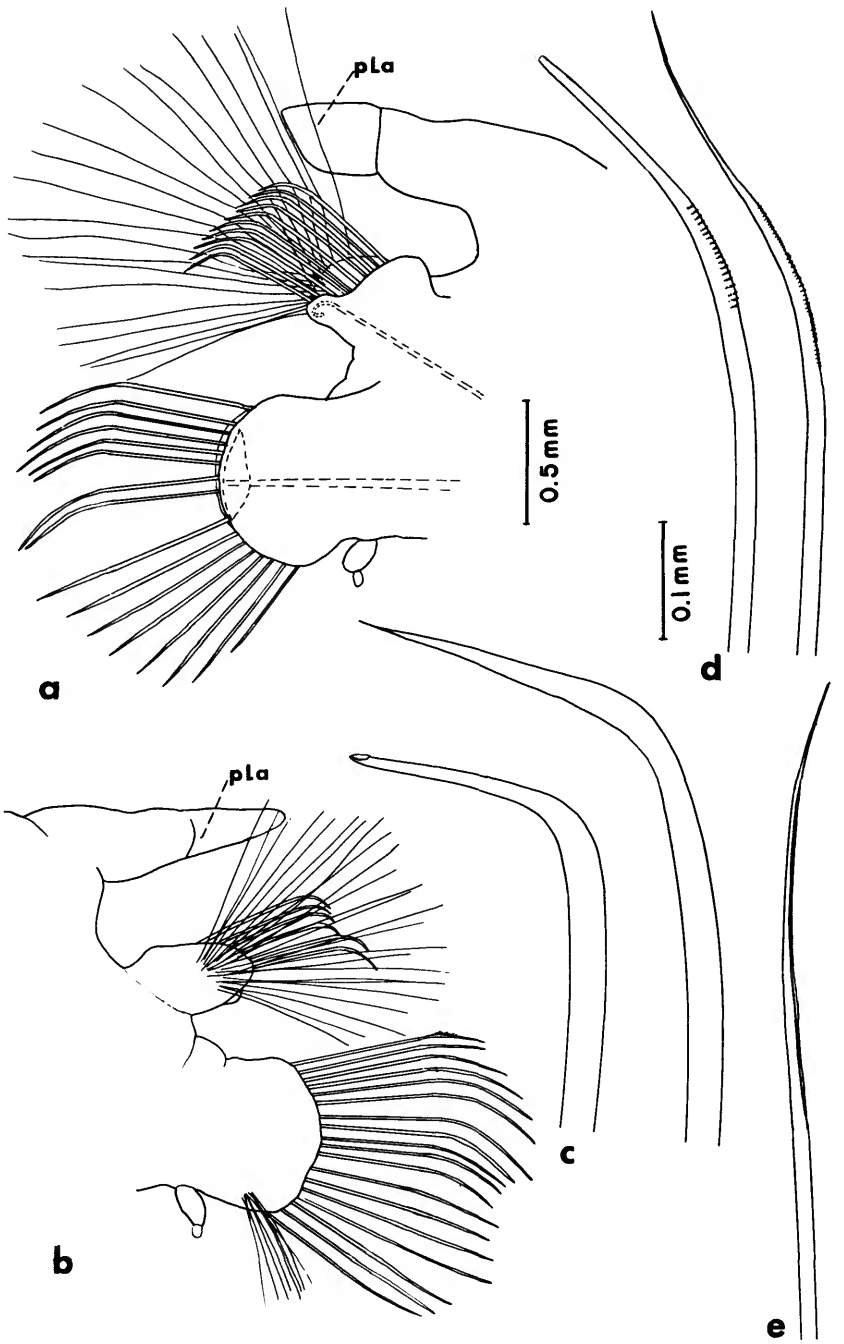

FIGURE 10.—*Pareulepis malayana* (syntype, ZMA 219): *a*, Posterior lamelligerous parapodium, anterior view; *b*, same, posterior view; *c*, notopodial hooks from same; *d*, upper neurosetae from same; *e*, lower neuroseta from same.

Mexieulepis weberi (Horst), new combination

FIGURES 11-14

Eulepis weberi Horst, 1922, p. 199, fig. 2.—Augener, 1927, p. 43.
Pareulepis weberi.—Hartman, 1959, p. 123.
Mexieulepis elongatus Rioja, 1961, p. 238, figs. 1-29.—Hartman, 1965, p. 15.

MATERIAL EXAMINED.—Spaansche Haven, Curaçao, West Indies, van der Horst, collector—holotype (ZMA 220). Spaansch Water, Curaçao, van der Horst, collector, 4 May 1920—1 specimen (ZMH 10324).

Sapelo Beach, Sapelo Island, SE Georgia, low intertidal, muddy sand, J. M. Teal, collector, 25 June 1957—1 specimen (USNM 32359).

DESCRIPTION.—Length of holotype 52 mm, width, including setae, 12 mm, segments 52. Length of other specimen from Curaçao (ZMH 10324) 13 mm, width, including setae, 3 mm, segments 37. Length of specimen from Georgia (USNM 32359) 75 mm, width, including setae, 11 mm, segments 62. Anterior 12 pairs elytra larger, fimbriated along external border (flattened, leaflike processes); first pair elytra fimbriated on anterior border; elytral surface smooth except for scattered microtubercles on anterior part; elytriphores large, inflated, converging middorsally (Figure 11*a-c, e*). Smaller elytra on all posterior segments, beginning on segment 27 [specimens from Curaçao and Veracruz (Rioja, 1961)] or segment 28 (large specimen from Sapelo Island); elytra with few lateral processes or simply notched, attached by anterior borders to elytriphores, which are fused medially (Figure 11*d*). Branchiae 11-12 pairs, ciliated on underside, with distal branchial cirri (Figure 13*b*). Dorsal cirri, on segments 3 and 6, subulate (Figures 11*e*, 12*a*).

Prostomium partially hidden by and attached to underside of segment II; median antenna short, oval, inserted anterodorsally on prostomium; lateral antennae longer, conical, inserted anteroventrally; ventral palps elongate-tapered, extending slightly beyond parapodial lobes; no eyes visible; nuchal organs clavate, lateral to prostomium (Figure 11*e*). Tentacular parapodia (I) with short subulate tentacular cirri, ventral pair slightly longer than dorsal pair; 2 acicula with hooked tips; 2 bundles long, spreading capillary setae (Figure 11*e,g*). Ventral buccal cirri of segment II stouter and longer than those following (Figure 11*h*).

Biramous parapodia supported by reddish amber-colored acicula and neuropodial hammer-shaped distal plates (Figures 12*a,b;* 13*a,b*). Notopodial acicula with hooked tips. Notopodial capillary setae smooth and finely spinous, forming long spreading bundles on posterior parts of notopodia; some of capillary setae on segment II stouter, with spinous rows (Figure 11*i*); stout reddish amber-colored notopodial hooks, beginning on segment III, smooth, with tips finely tapered or flattened spoon-shaped (Figures 11*j*, 12*c*, 14*b*). Neuropodial acicula with conspicuous hammer-shaped distal plates. Neurosetae of several kinds: 1-2 upper pectinate setae (Figures 12*d*, 13*c*); upper and lower limbate and nonlimbate capillaries (Figures 12*e,g;* 13*d,f*); lower posterior bundles of long capillary setae (Figures 11*h*, 12*a,b*); middle stout smooth acicular setae, beginning on segment II (Figures 11*k*, 12*f*, 13*e*). In posterior region, upper neurosetae stout, bent downward, with tips slender or blunt; lower neurosetae slender, slightly limbate, with slender tips curved upward (Figure 14*a,c,d*). Ventral cirri of anterior few segments slender, tapered (Figure 12*a,b*); rest globular, with short distal tips (Figure 13*a,b*). Pygidium with single long anal cirrus on right side; cirrus papillate along one side; left cirrus short bulbous. Pharynx extended on specimen from Georgia, with 13 pairs larger papillae and small lateral pair; 2 pairs platelike chitinous ridges (not toothlike, as in Polynoidae or Sigalionidae; (Figure 11*e,f*).

DISTRIBUTION.—West Indies (Curaçao), Gulf of Mexico (Veracruz), Georgia (Sapelo Island). Low intertidal.

REMARKS.—The types of *Mexieulepis elongatus* Rioja no longer exist (M. E. Caso Muñoz of the Instituto de Biologia Universidad Nacional Autónoma de México, in litteris). Based on the original figures and description, it appears to agree with *M. weberi*.

M. weberi is the largest of the known species of Eulepethidae, the specimen from Sapelo Island reaching a length of 75 mm and a width of 11 mm for 62 segments. Horst's type-specimen from Curaçao is 52 mm long. Rioja indicated his specimens had a length of 50-56 mm. Augener's specimen from Curaçao is only 13 mm long.

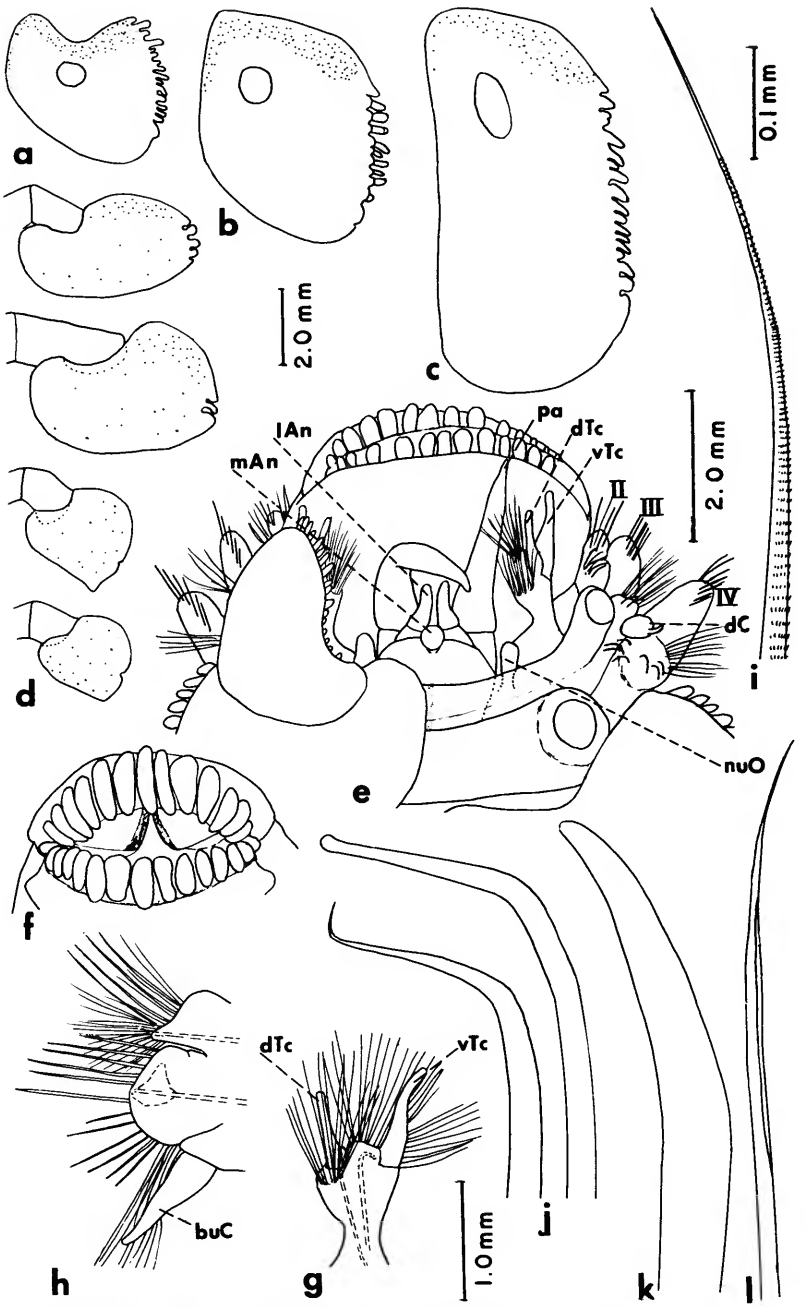

FIGURE 11.—*Mexieulepis weberi* (USNM 32359): *a*, Right third elytron; *b*, right eighth elytron; *c*, right twelfth elytron; *d*, four of right elytra and elytriphores from posterior region (anterior to posterior); *e*, dorsal view, anterior end, first two right elytra removed; pharynx extended; posterior part prostomium covered by segment II (place of attachment to midline stippled); *f*, distal tip of extended pharynx, anterior view; *g*, parapodium from segment I, lateral view; *h*, parapodium from segment II, anterior view; *i*, stouter capillary notoseta from same; *j*, notopodial hooks from same; *k*, stout acicular neuroseta from same; *l*, limbate neuroseta from same.

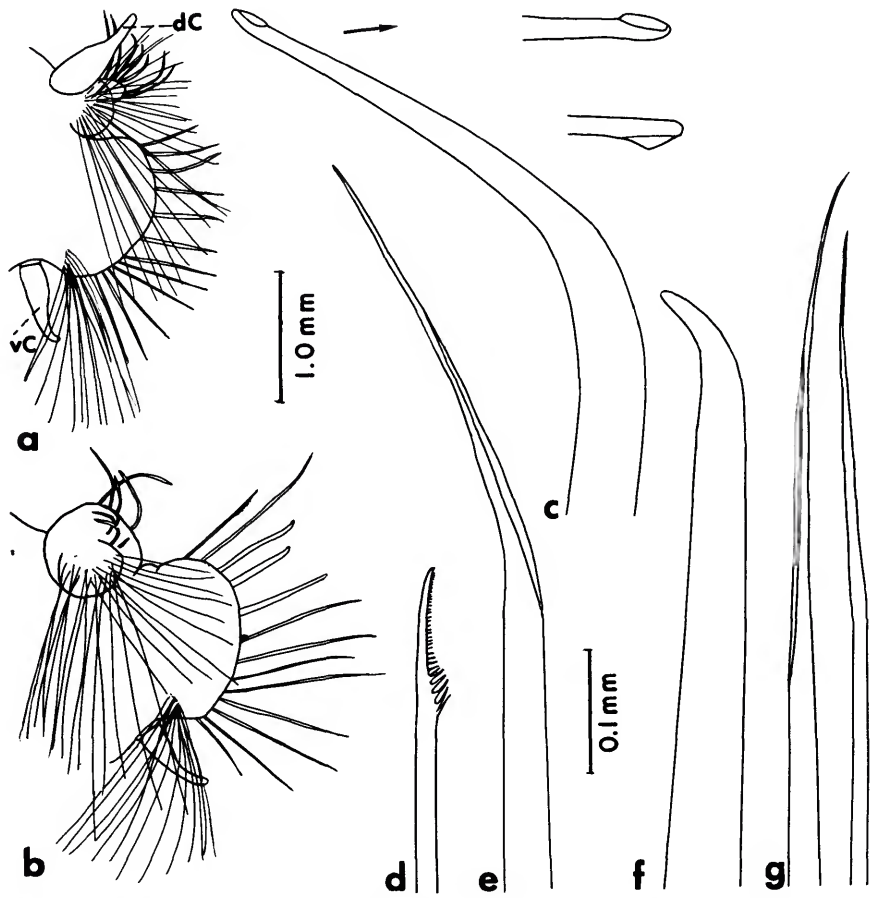

FIGURE 12.—*Mexieulepis weberi* (USNM 32359): *a*, Parapodium from segment III, posterior view; *b*, parapodium from segment V, posterior view; *c*, notopodial hook from same; *d*, pectinate neuroseta from same; *e*, upper limbate neuroseta from same; *f*, middle stout acicular neuroseta from same; *g*, lower limbate and nonlimbate neurosetae from same.

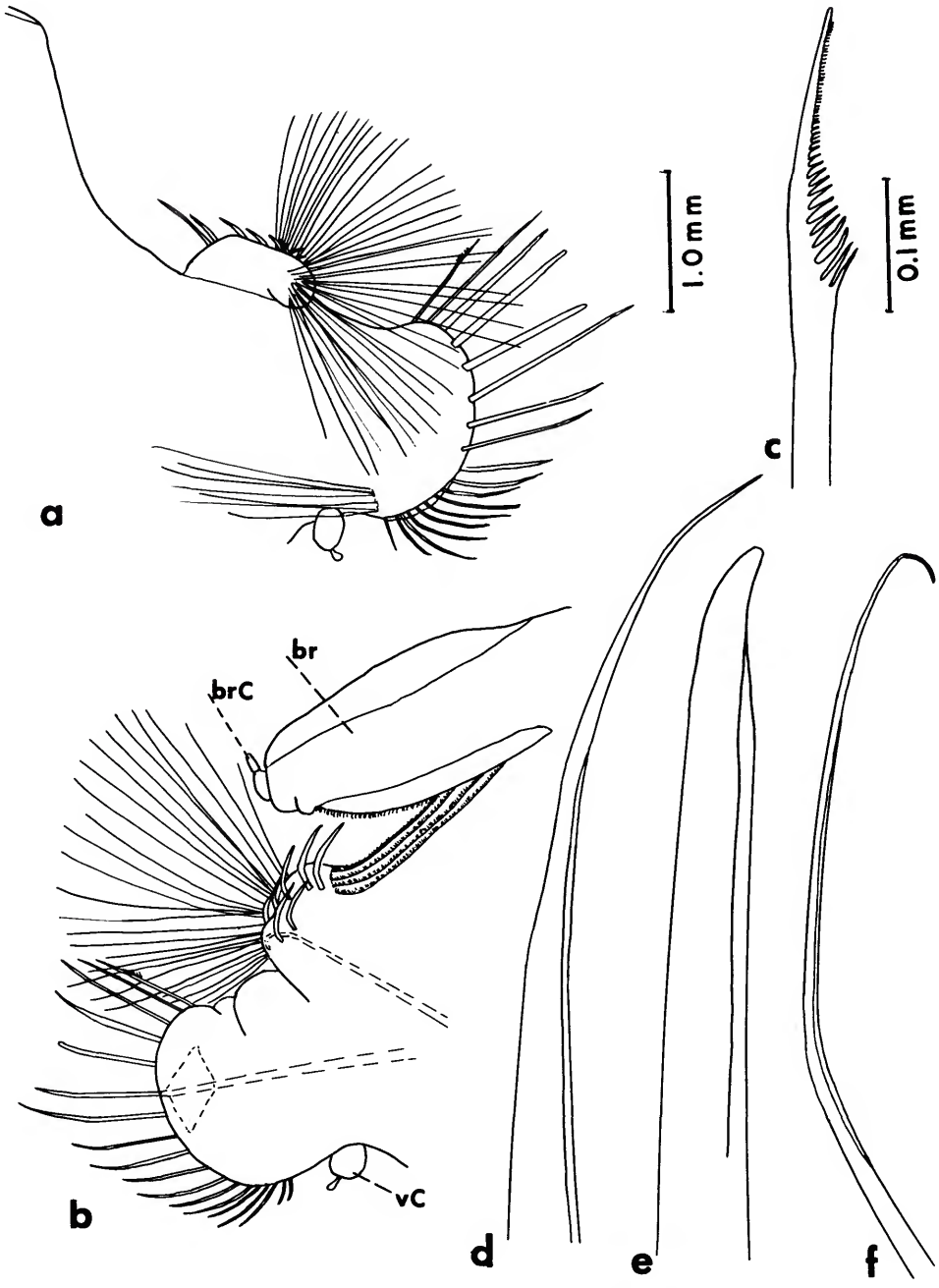

FIGURE 13.—*Mexieulepis weberi* (USNM 32359): *a*, Elytrigerous parapodium from middle region, posterior view; *b*, branchial parapodium from middle region, anterior view; *c*, upper pectinate neuroseta from same; *d*, upper limbate capillary neuroseta from same; *e*, middle acicular neuroseta from same; *f*, lower limbate capillary neuroseta from same.

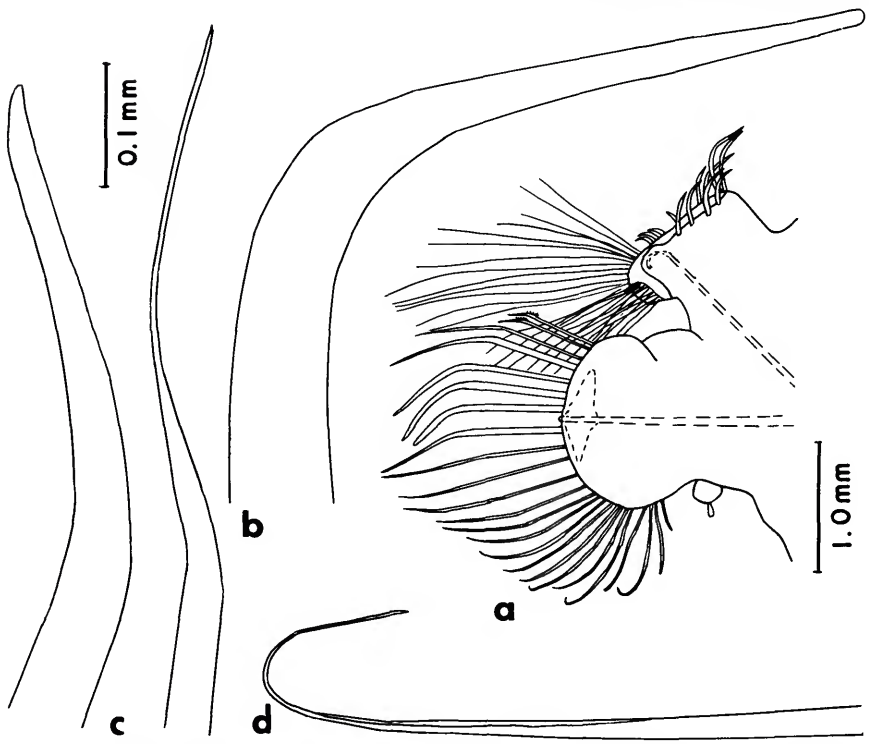

FIGURE 14.—*Mexieulepis weberi* (USNM 32359): *a*, Elytrigerous parapodium from posterior region, anterior view; *b*, notopodial hook from same; *c*, upper neurosetae from same; *d*, lower neuroseta from same.

Grubeulepis, new genus

TYPE-SPECIES.—*Eulepis fimbriata* Treadwell, 1901. Gender: feminine.

DIAGNOSIS.—Body short, segments about 38 (32-40). Elytra 12 pairs, on segments 2, 4, 5, 7 . . . 21, 24; elytra with lateral borders fimbriated. Dorsal cirri on segments 3 and 6. Branchiae 10-13 pairs, on segments 8, 10 . . . 22, 23, 25, (26, 27, 28). Posterior lamellae beginning on segments 26-29.

Key to the Species of *Grubeulepis*, New Genus

1. Lateral processes of elytra digitiform, not biarticulate (Figures 17*d-f*, 20*d-f*, 23*f-i*). [First pair elytra entire or with few minute papillae (Figures 15a, 23e). Last pair elytra (12th) with 13-21 lateral processes (Figures 17*f*, 20*f*, 23*i*)] 2

1′. Some lateral processes of some or all elytra biarticulate (Figures 27*f*, 29*e-h*, 30*f-h*, 31*h-k*) . 4

2. Upper neurosetae of posterior region not stouter than lower ones, not bent downward (not spinous; Figure 17*a, c*). Without acicular neurosetae in some anterior segments. [Notopodial hooks smooth (Figure 16*c*). Branchiae 12 pairs] . . . . . *G. fimbriata* (Treadwell)

2′ Upper neurosetae of posterior region stouter than lower ones and bent downward. With acicular neurosetae in some anterior segments (Figures 18*b, d;* 21*e, g*) 3

3. Upper neurosetae of posterior region finely spinous along bend, tapering to fine tips (Figure 23*a-c*). Notopodial hooks smooth (Figure 22*c*). Branchiae 12 pairs. . . . . *G. ecuadorensis*, new species

3′ Upper neurosetae of posterior region tapering abruptly to fine tips (not spinous; Figure 20*a, b*). Notopodial hooks spinous along bend (Figure 19*c*). Branchiae 13 pairs . *G. geayi* (Fauvel)

4. With acicular neurosetae in some anterior segments (Figure 25*e, i*). Last elytra (12th) each with more than 20 (22-25) entire processes (Figure 27*h*). Some anterior elytra with biarticulate processes (Figure 27*f*). Notopodial hooks spinous on upper distal part (Figure 26*c*). [Upper stouter neurosetae of posterior region serrulate along the bend (Figures 24*e*, 27*c*). Branchiae 11 pairs, 12th may be transitional.] . . . ***G. mexicana*** (Berkeley and Berkeley)

4'. Without acicular neurosetae in any anterior segments. Last elytra (12th) each with less than 15 lateral processes. Most elytra with biarticulate processes. Notopodial hooks smooth . . 5

5. Last elytra (12th) each with 5-6 subrectangular lateral processes (Figure 30*h*, 31*k*). First elytra each with 12-13 papillae on anterior border (Figures 30*e*, 31*f*). [Upper stouter neurosetae of posterior segments finely spinous along bend (Figure 31*d*). Branchiae 12 pairs.] . . . . . ***G. augeneri,*** new species

5' Last elytra (12th) each with 10-12 digitiform lateral processes (Figure 29*h*). First elytra each with 7-8 papillae on anterior border (Figure 8, in Jones, 1962) 6

6. Neurosetae of anterior segments bilimbate, with long tapering tips. Upper stouter neurosetae of posterior segments spinous along bend, tips limbate or scoop-shaped (Figure 25, in Jones, 1962). Branchiae 10 pairs . . . . . ***G. sulcatisetis*** (Jones)

6'. Neurosetae of anterior segments bilimbate, with short tips (Figure 28*d*). Upper stouter neurosetae of posterior segments smooth, tips limbate, spatulate (Figure 29*c*). Branchiae 11 pairs. . . . . ***G. tebblei,*** new species

Grubeulepis fimbriata (Treadwell), new combination

FIGURES 15-17

Eulepis fimbriata Treadwell, 1901, p. 190, figs. 23, 24.

Eulepethus fimbriatus.—Treadwell, 1939, p. 196, fig. 25.

Pareulepis fimbriata.—Hartman, 1944, p. 14.

Not *Eulepis fimbriata.*—Augener, 1918, p. 153 (=*Grubeulepis augeneri,* new species).

Not *Pareulepis fimbriata.*—Hartman, 1939, p. 79 (=*G. ecuadorensis,* new species, and *G. mexicana*).—Rullier, 1965, p. 16 (=*Grubeulepis augeneri,* new species.)—Reish, 1968, p. 73 (=*Grubeulepis mexicana*).

MATERIAL EXAMINED.—Mayaguez Harbor, Puerto Rico, *Fish Hawk* station 6061, 33 meters, sand, mud, 20 January 1899—4 syntypes (USNM 15640). Mayaguez, Puerto Rico, 11-15 meters, 10 December 1954, M. J. Allen, collector—3 specimens (AHF).

Caledonia Bay, Panama (Atlantic), shore, April 1939, station A 52-39—1 specimen (AHF).

DESCRIPTION.—Length 14-24 mm, width, including setae, 4-6 mm, segments 37-38. Elytra 12 pairs, becoming more elongate posteriorly; first pair elytra smooth except occasionally with 2 clavate papillae on anterior border; rest of elytra with variable number lateral leaflike processes arranged between anterior and posterior rounded lobes; twelfth pair each with 15-17 processes (Figures 15*a*, 17*d-f*). Branchiae 12 pairs, inflated, with distal branchial cirri (Figure 16*a*). Dorsal cirri, on segments 3 and 6, subulate (Figure 15*g*). Posterior lamellae, beginning on segment 28, oval (Figure 17*a*).

Prostomium covered by segment II and attached along midline on posterior half; median antenna short, globular, inserted anterodorsally on prostomium; lateral antennae slightly longer, conical, inserted more ventrally; ventral palps elongate-tapered, extending slightly beyond tentacular cirri; 2 pairs small eyes on anterolateral border (easily overlooked); nuchal organs oval, lateral to prostomium (Figure 15*b-d, h*). Tentacular parapodia (I) with short subulate tentacular cirri, ventral pair slightly longer than dorsal pair; 2 acicula; 2 tufts capillary setae (Figure 15*d,e,h*). Ventral buccal cirri on segment II thicker and longer than those following (Figure 15*f*).

Biramous parapodia supported by light amber-colored acicula and neuropodial hammer-shaped distal plates (Figures 16*a, b;* 17*a*). Notopodial acicula with hooked tips. Notopodial capillary setae smooth and spinous, forming long spreading bundles on posterior parts of notopodia; stout light amber-colored notopodial hooks, beginning on segment III, smooth, with tips finely tapered or flattened spoon-shaped (Figures 16*c*, 17*b*). Neuropodial acicula with hammer-shaped distal plates; thin-walled inflated areas on anterodorsal parts of neuropodial bases (Figure 16*b*). Neurosetae of several kinds: 1-2 upper pectinate setae (Figure 16*d*); limbate and nonlimbate capillaries (Figures 16*e*, 17*c*); neurosetae of posterior region similar to anterior region (without any stouter upper neurosetae; without acicular neurosetae in anterior segments). Ventral cirri of anterior few segments slender, tapered (Figure 15*g*); those of following segments globular,

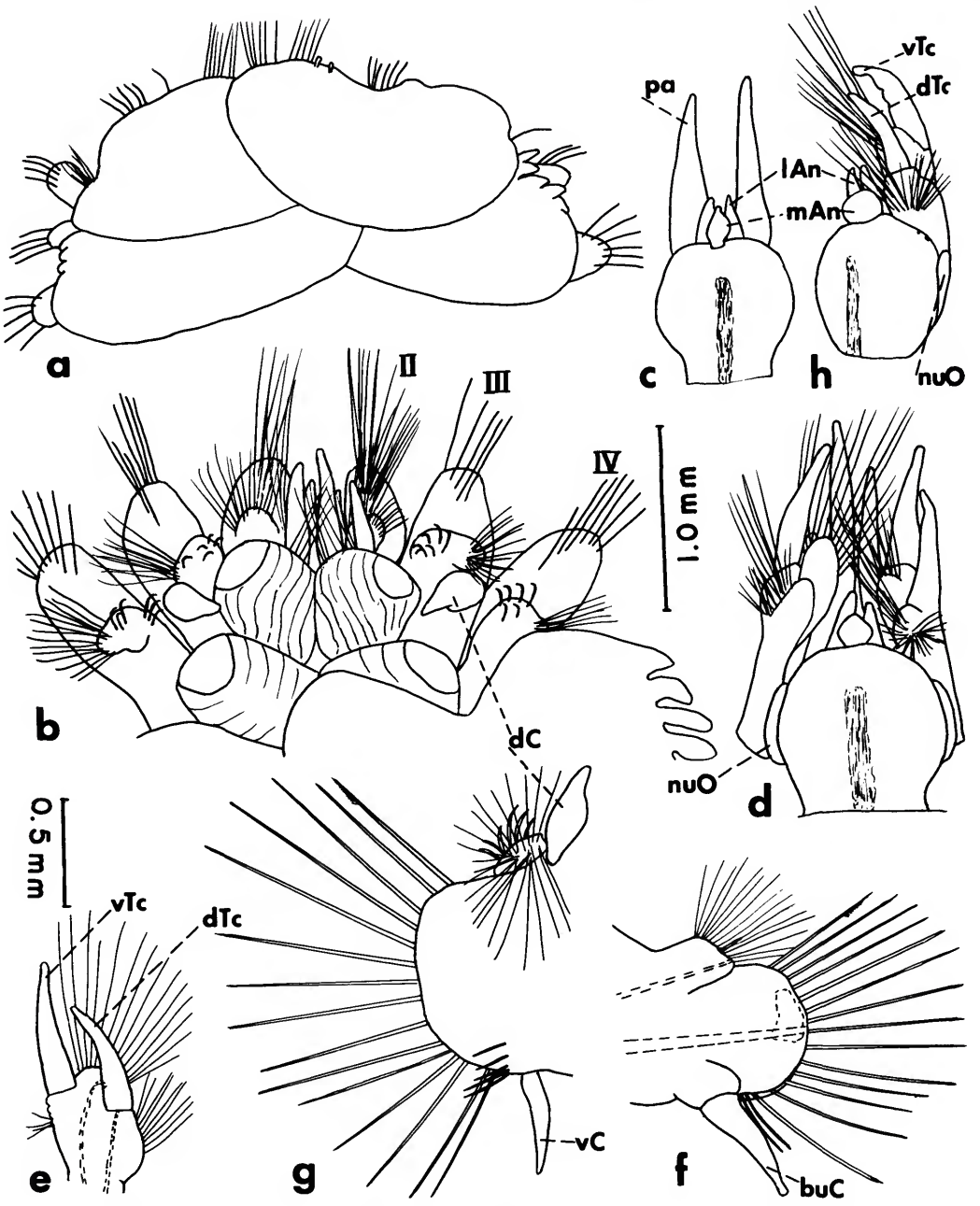

FIGURE 15.—*Grubeulepis fimbriata* (*a-g*, syntypes, USNM 15640; *h*, Puerto Rico, AHF): *a*, Anterior end, dorsal view; *b*, anterior end, dorsal view, first two pairs elytra removed; *c*, prostomium, dorsal view; shaded area indicates place of attachment to underside of segment II; *d*, prostomium and tentacular segment (I), dorsal view; *e*, tentacular parapodium (I), lateral view; *f*, parapodium from segment II, anterior view; *g*, parapodium from segment III, posterior view; *h*, prostomium and tentacular segment, dorsolateral view (palp not shown).

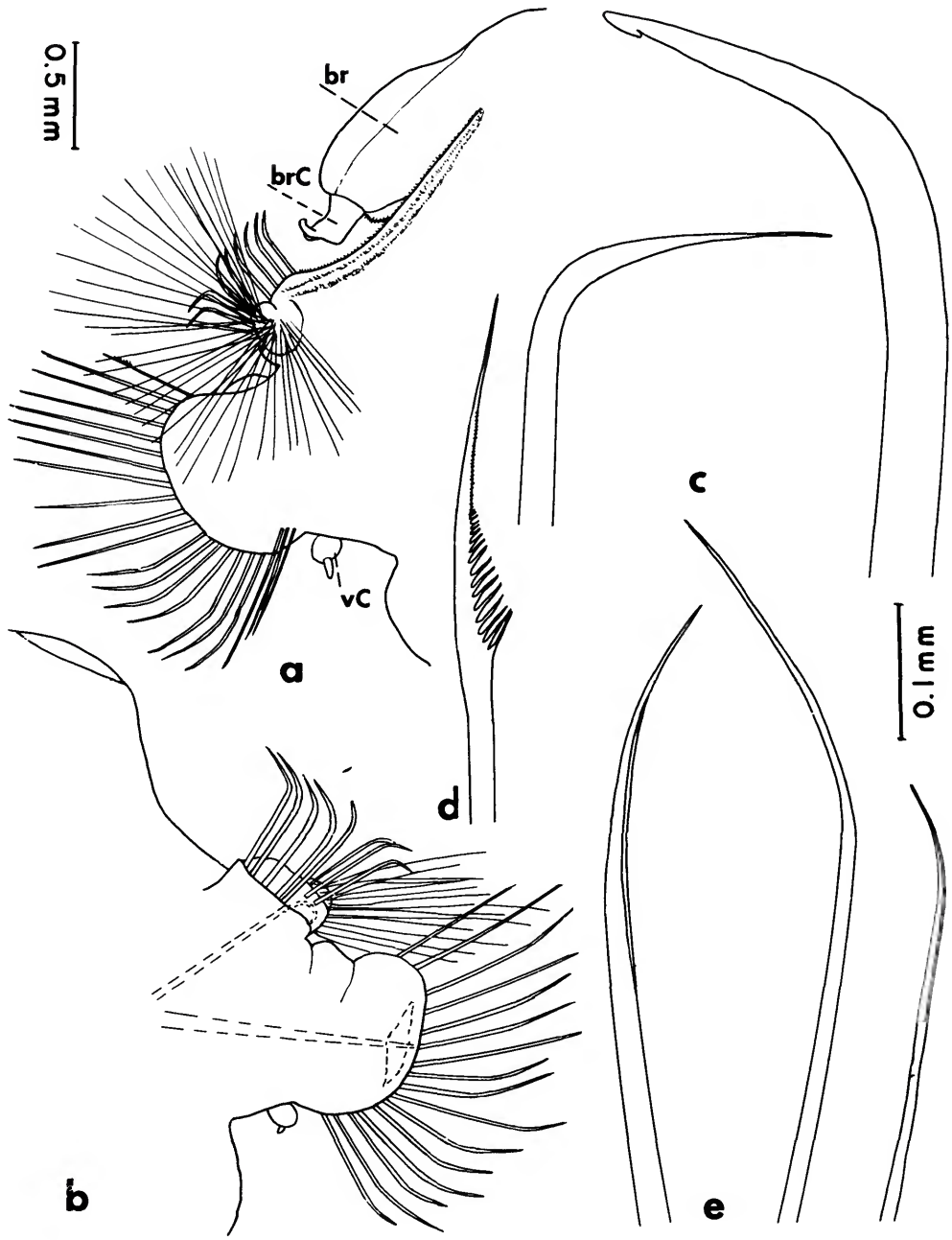

FIGURE 16.—*Grubeulepis fimbriata* (syntypes, USNM 15640): *a*, Middle branchial parapodium, posterior view; *b*, middle elytrigerous parapodium, anterior view; *c*, notopodial hooks from same; *d*, upper pectinate neuroseta from same; *e*, neurosetae from same.

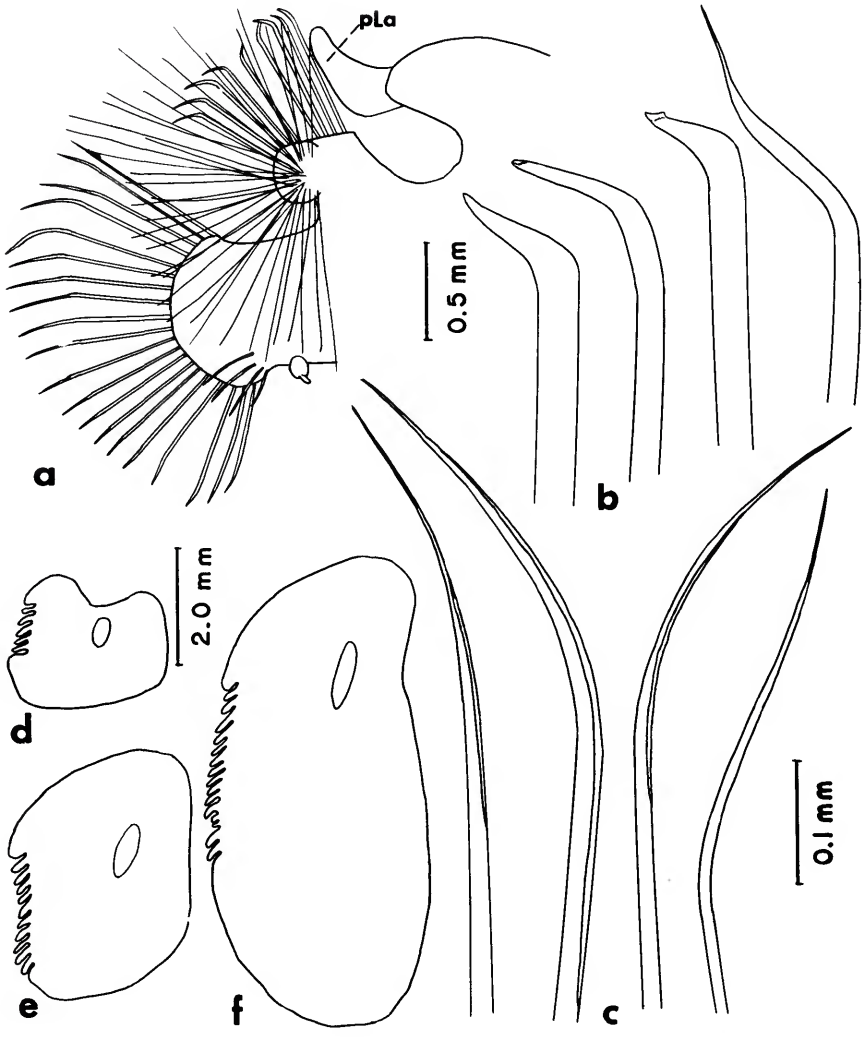

FIGURE 17.—*Grubeulepis fimbriata* (syntypes, USNM 15640): *a*, Posterior lamelligerous parapodium, posterior view; *b*, notopodial hooks from same; *c*, neurosetae from same; *d*, left third elytron; *e*, left eighth elytron; *f*, left twelfth elytron.

with short slender tips (Figure 16*a,b*). Pygidium with single long anal cirrus on right side; cirrus finely papillate along one side. Pharynx not extended.

DISTRIBUTION.—West Indies, Atlantic side Panama. Intertidal to 33 meters.

REMARKS.—The original description of *Eulepis fimbriata* by Treadwell (1901), based on four specimens from Puerto Rico, was sketchy and poorly illustrated. Reexamination of additional specimens, identified as this species, indicates that most of them should be referred to other species. This includes records by Augener (1918) and Rullier (1965) from West Africa, by Hartman (1939) from southern California and Ecuador, and by Reish (1968) from the Gulf of California. Both Hartman (1939) and Rullier (1965) included the Indo-Pacific *Eulepis geayi* under *Pareulepis fimbriata*. Thus, *G. fimbriata* is not as widely distributed as its records in the literature indicate.

Grubeulepis geayi (Fauvel), new combination

FIGURES 18-20

Eulepis geayi Fauvel, 1918, p. 503, fig. 1, a-h; 1919, p. 335, pl. 15: figs. 17-21, pl. 17: figs. 76-79.—Pruvot, 1930, p. 17, pl. 2: figs. 51-61.—Day, 1951, p. 14.

Pareulepis geayi.—Hartman, 1959, p. 123.—Day, 1962, p. 632; 1967, p. 45, fig. 1.3, q-u.

Not *Eulepis geayi*.—Fauvel, 1940, p. 9 (=*Grubeulepis augeneri*, new species).—Tebble, 1955, p. 79 (=*Grubeulepis tebblei*, new species).

MATERIAL EXAMINED.—Delagoa Bay, Inhaca Island, southeast Africa, intertidal—1 specimen (BMNH 1952: 1: 2: 1).

DESCRIPTION.—Length 35 mm (21-40 mm), width, including setae, 8 mm (5-8 mm), segments 39 (36-39). Elytra 12 pairs, becoming more elongate posteriorly; first pair (missing on specimen examined) with 3-4 papillae on anterior margin (Day, 1967); remaining elytra with variable number lateral leaf-like processes between anterior and posterior rounded lobes [for example, 3 on second, 8 on eighth, and 17 (left) and 21 (right) on twelfth)]; processes digitiform, not articulate (Figure 20*d-f*). Branchiae 13 pairs, inflated, with distal branchial cirrus (Figure 19*b*). Dorsal cirri on segments 3 and 6, subulate (Figure 18*b*). Posterior lamellae, beginning on segment 28, subreniform to subconical (Figure 20*a*).

Prostomium covered by segment II, attached middorsally on posterior half; median antenna short, conical, inserted anterodorsally on prostomium; lateral antennae conical, inserted more ventrally; palps elongate-tapered, extending beyond tentacular cirri; no eyes visible; nuchal organs clavate, lateral to prostomium (Figure 18*a*). Tentacular parapodia (I) narrower basally, enlarged distally, each with dorsal and ventral tentacular cirri, subequal in length, 2 acicula and 2 bundles of smooth and spinous capillary setae. Ventral buccal cirri on segment II thicker and longer than those following.

Biramous parapodia supported by reddish amber-colored acicula and neuropodial hammer-shaped distal plates (Figures 19*a,b;* 20*a*). Notopodial acicula with hooked tips. Notopodial capillary setae smooth and spinous, forming long spreading bundles emerging from posterior parts of notopodia; stout reddish amber-colored notopodial hooked setae, spinous along bend and distal part, tapering

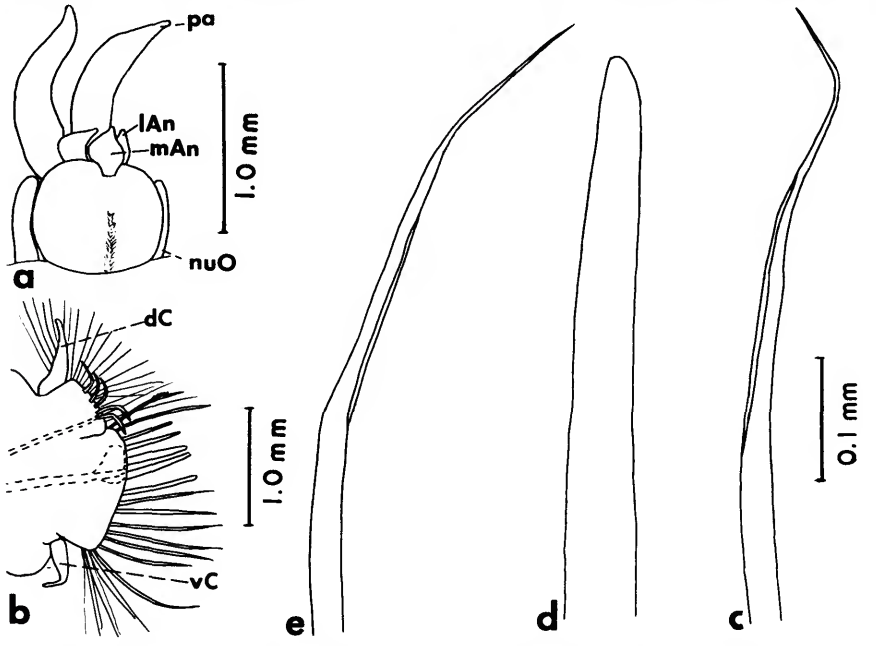

FIGURE 18.—*Grubeulepis geayi* (BMNH 1952: 1: 2: 1): *a*, Prostomium, dorsal view, turned slightly to right; *b*, parapodium from segment III, anterior view; *c*, upper neuroseta from same; *d*, middle acicular seta from same; *e*, lower neuroseta from same.

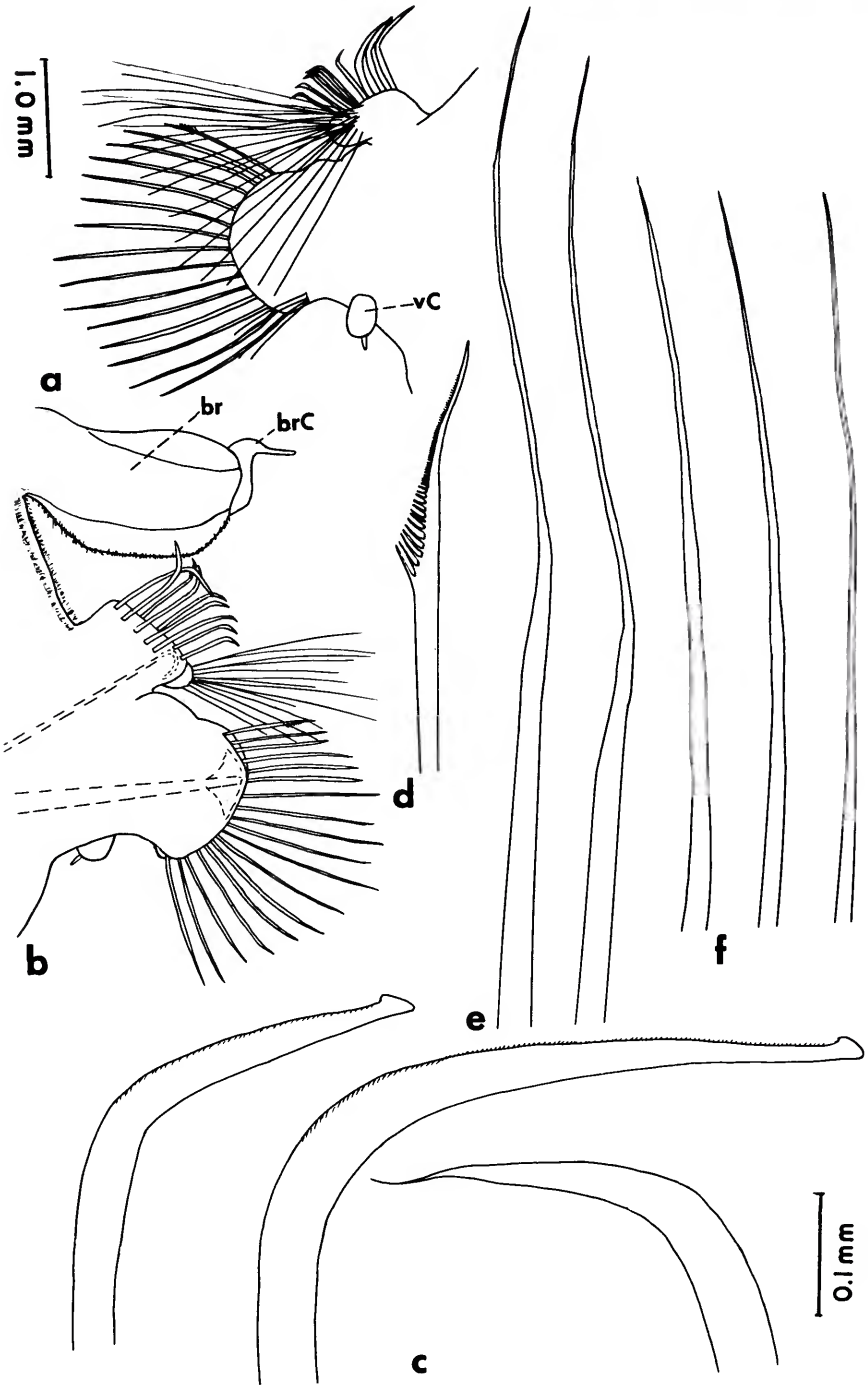

FIGURE 19.—*Grubeulepis geayi* (BMNH 1952: 1: 2: 1): *a*, Middle elytrigerous parapodium, posterior view; *b*, middle branchial parapodium, anterior view; *c*, hooked notosetae from same; *d*, upper pectinate neuroseta from same; *e*, upper neurosetae from same; *f*, lower neurosetae from same.

distally to fine tips or flattened spatulate (Figure 19*c*). Neuropodial acicula with hammer-shaped distal plates. Neurosetae of several kinds: 1-2 upper pectinate setae (Figure 19*d*); limbate capillaries (Figure 18*c,e*); slender setae, tapering gradually to long capillary tips (Figure 19*f*); slightly stouter setae tapering rather abruptly to capillary tips (Figure 19*e*); few stout acicular neurosetae in some anterior segments (Figure 18*d*). In posterior region, some of upper neurosetae much stouter than lower neurosetae, bent downward, tapering abruptly to fine tips (Figure 20*a-c*). Pygidium with single long anal cirrus on right side; left cirrus short, bulbous. Pharynx not extended.

DISTRIBUTION.—Indo-west-Pacific (Madagascar, Mozambique, Natal), Red Sea, South-west-Pacific (New Caledonia). Intertidal. May be commensal with *Polyodontes melanotus,* according to Day (1962).

REMARKS.—The type-specimens of *Eulepis geayi* from Madagascar apparently are no longer available, at least they were not found in the Museum

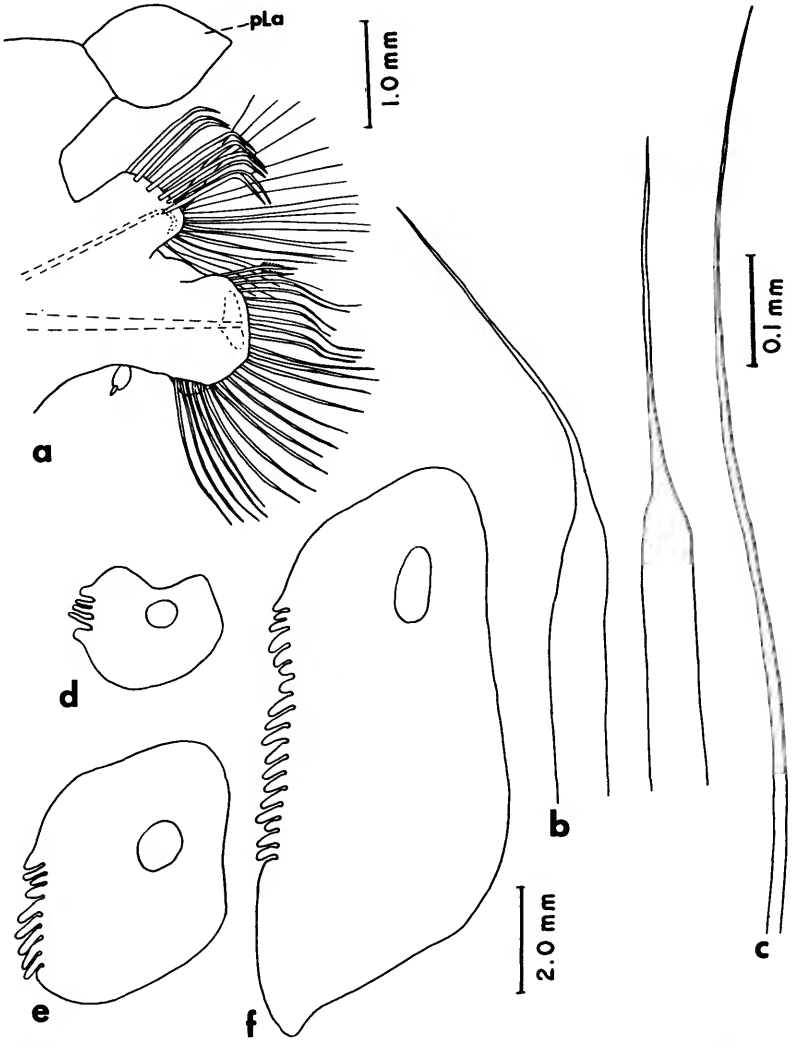

FIGURE 20.—*Grubeulepis geayi* (BMNH 1952: 1: 2: 1): *a,* Posterior lamelligerous parapodium, anterior view; *b,* upper neurosetae from same; *c,* lower neuroseta from same; *d,* left second elytron; *e,* left eighth elytron; *f,* left twelfth elytron.

National d'Historie Naturelle, Paris (J. Renaud-Mornant, in litteris) or in the collections of Polychaeta at the Université Catholique, Angers (F. Rullier, in litteris). The specimen from Inhaca Island, deposited in the British Museum (Natural History) and identified by J. H. Day, seems to agree with Fauvel's original description. Reexamination of additional specimens, identified as belonging to this species, indicates that they should be referred to other species. This includes the record of Fauvel (1940) from the Adriatic and that of Tebble (1955) from West Africa. Thus, *G. geayi* is not as widely distributed as its records in the literature indicate.

Eulepis geayi was referred to *Pareulepis fimbriata* (Treadwell) by Hartman (1939). In her Catalogue, Hartman (1959) listed the two species as distinct.

Grubeulepis ecuadorensis, new species

FIGURES 21–23

Pareulepis fimbriata.—Hartman, 1939, p. 79, pl. 23: figs. 280, 282-285, 287, 288 (part; *Velero* station 216-34). [Not *Eulepis fimbriata* Treadwell, 1901.]

MATERIAL EXAMINED.—Cape San Francisco, Ecuador, 36.5 meters, muck, *Velero* station 216-34, 11 February 1934—holotype (AHF).

DESCRIPTION.—Length of holotype 35 mm, width, including setae, 8 mm, segments 40, last small. Elytra 12 pairs, becoming more elongate posteriorly; first pair oval, with entire margins (no papillae); rest of elytra with variable number lateral leaflike processes (3-13) arranged between anterior and posterior rounded lobes; processes digitiform, not articulate (Figure 23*e-i;* plate 23: figs. 285, 287, in Hartman, 1939). Branchiae 12 pairs, inflated, with distal branchial cirrus (Figure 22*a*). Dorsal cirri, on segments 3 and 6, subulate (Figure 21*e;* plate 23: fig. 280, in Hartman, 1939). Posterior lamellae, beginning on segment 28, subcordiform to subconical (Figure 23*a,b*).

Prostomium covered by segment II and attached middorsally by more than half its length; median antenna short, oval, inserted anterodorsally on prostomium; lateral antennae conical, inserted more ventrally; palps elongate-tapered, extending beyond tentacular cirri; 3 pairs small eyes anterolaterally in close groups; nuchal organs clavate, lateral to prostomium (Figure 21*a*). Tentacular parapodia (I) narrower basally, enlarged distally, each with dorsal and ventral tentacular cirri, subequal in length, 2 acicula and 2 bundles of smooth and spinous capillary setae (Figure 21*a,b*). Ventral buccal cirri on segment II thicker and longer than those following (Figure 21*c*).

Biramous parapodia supported by light amber-colored acicula and neuropodial hammer-shaped distal plates (Figures 22*a,b;* 23*a,b*). Notopodial acicula with hooked tips. Notopodial capillary setae smooth and spinous, forming long, spreading bundles emerging from posterior parts of notopodia; stout light amber-colored notopodial hooks, beginning on segment III, smooth, tapering distally to fine tips or flattened spatulate (Figure 22*c*). Neuropodial acicula with hammer-shaped distal plates. Neurosetae of several kinds: 1-2 upper pectinate setae (Figure 22*d*); widely bilimbate neurosetae with short tips in anterior parapodia (Figure 21*d,f,h*); limbate and non-limbate neurosetae with tapering tips (Figure 22*e,f*); single dark acicular neuroseta in segments 3-8 (Figure 21*g*). Upper neurosetae of posterior region much stouter than lower ones, curved downward, tapering to fine tips, finely spinous along bend (Figure 23*a-d*). Ventral cirri of anterior few segments subulate, tapered (Figure 21*e*); following ventral cirri globular, with short slender tips (Figure 22*a,b*). Pygidium with single long anal cirrus on right side; cirrus finely papillate along one side; left cirrus short, bulbous. Pharynx not extended.

DISTRIBUTION.—Central Pacific (off Ecuador). In 36.5 meters.

Grubeulepis mexicana (Berkeley and Berkeley), new combination

FIGURES 24–27

Eulepethus mexicanus Berkeley and Berkeley, 1939, p. 328, figs. 4-7.

Pareulepis fimbriata.—Hartman, 1939, p. 79, pl. 23: figs. 281, 286 (part; *Velero* station 770-38; Mission Bay, California); 1961, p. 54.—Reish, 1968, p. 73. [Not *Eulepis fimbriata* Treadwell, 1901.]

MATERIAL EXAMINED.—Isle Grande Bay, Mexico, M/S *Stranger,* 11 meters, fine sand, 8 April 1937, W. Williams, collector—holotype of *Eulepethus mexicanus* (USNM 32893).

Bahía de los Angeles, Gulf of California, Mexico, 30 meters, brown silty very fine sand, station 45, 27 April 1962, J. L. Barnard, J. R. Grady, and

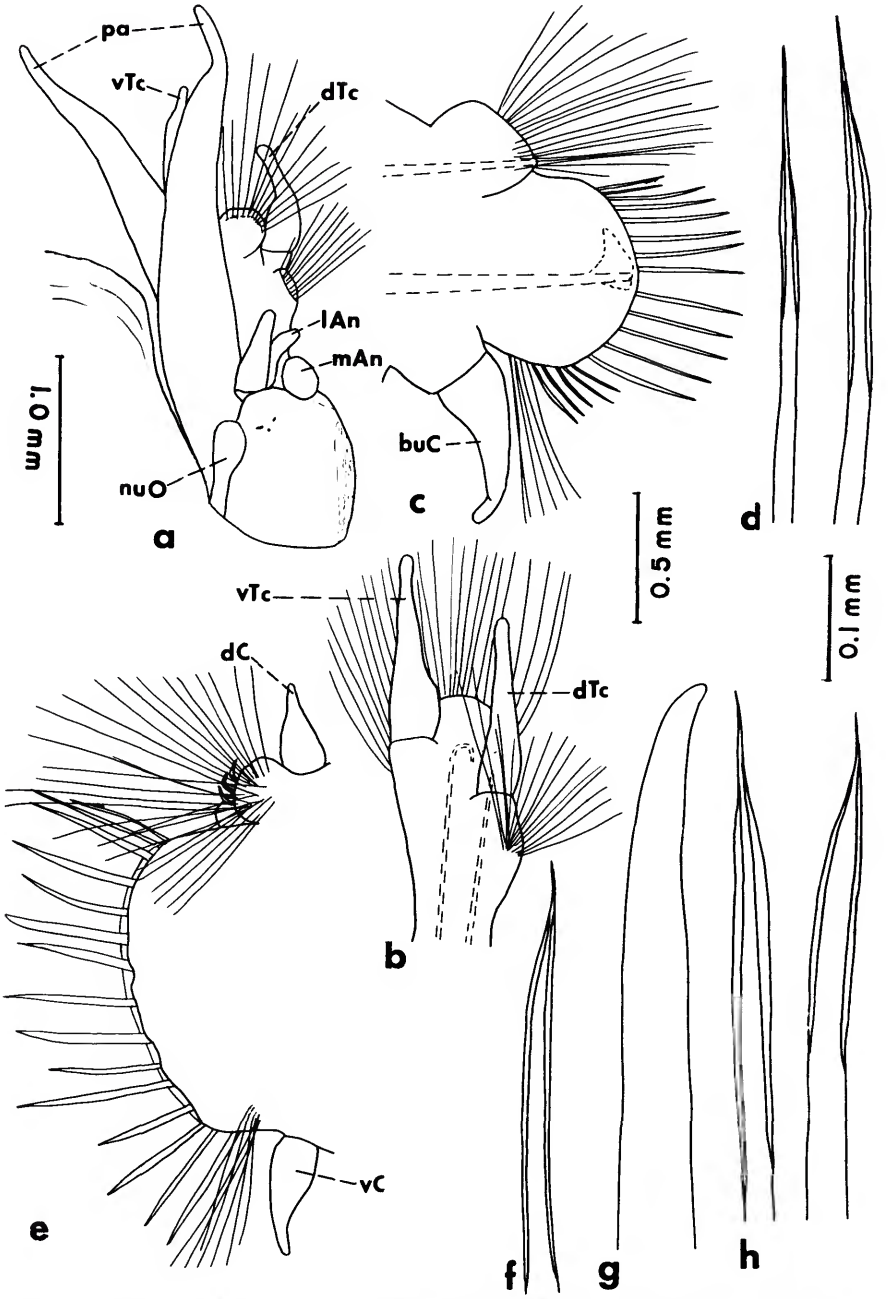

FIGURE 21.—*Grubeulepis ecuadorensis*, new species (holotype, AHF): *a*, Prostomium and tentacular segment, left lateral view; *b*, tentacular parapodium, lateral view; *c*, parapodium from segment II, anterior view; *d*, bilimbate neurosetae from same; *e*, parapodium from segment III, posterior view; *f*, upper bilimbate neuroseta from same; *g*, middle acicular seta from same; *h*, lower bilimbate neurosetae from same.

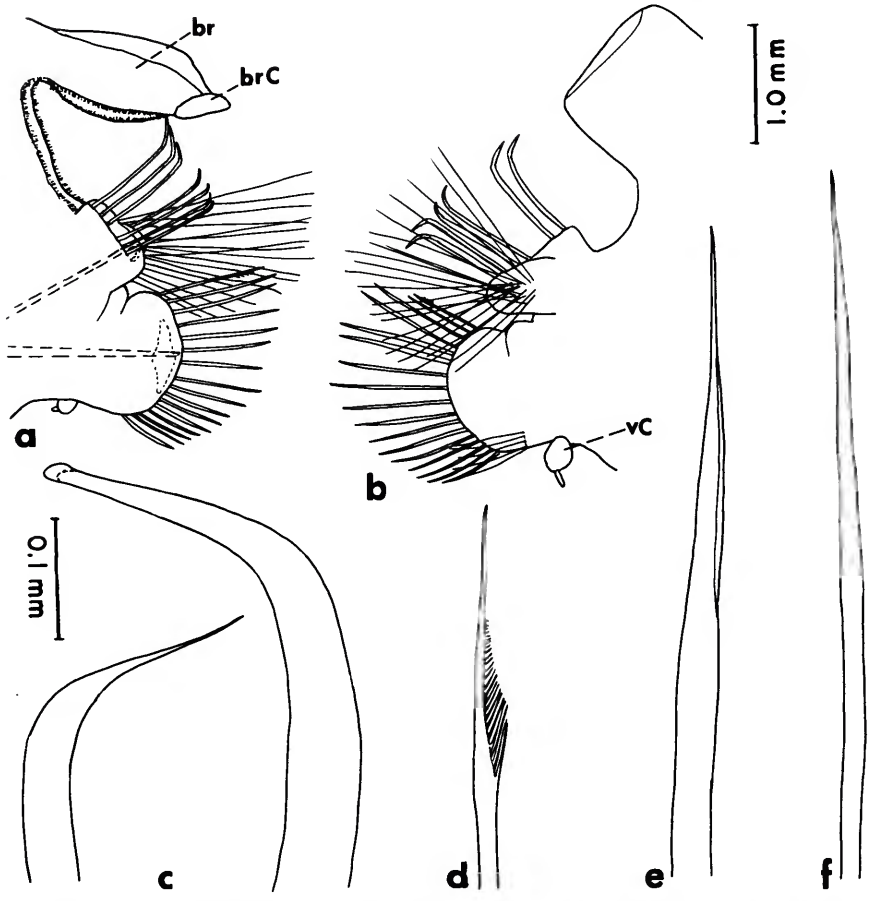

FIGURE 22.—*Grubeulepis ecuadorensis*, new species (holotype, AHF): *a*, Middle branchial parapodium, anterior view; *b*, middle elytrigerous parapodium, posterior view; *c*, notopodial hooks from same; *d*, upper pectinate neuroseta from same; *e*, middle neuroseta from same; *f*, lower neuroseta from same.

D. J. Reish, collectors—3 specimens (USNM 39283).

Off San Juan Light, Guatemala, 13-20 meters, sand, shells, mud, *Velero* station 770-38, 11 January 1938—2 specimens (AHF).

Southern California: Mission Bay, intertidal—4 specimens (AHF). Newport Bay, intertidal—1 specimen (AHF). *Velero* station 4720-56, 33° 37′ 39″ N, 117° 58′ 16″ W, 15 meters, dark green silt, broken shells, 21 November 1956—3 small specimens (AHF). *Velero* station 6731-59, Newport shelf, 34° 17′ 53″ N, 119° 21′ 05″ W, 7 meters, very fine silty sand, 6 December 1959—4 small specimens (AHF).

DESCRIPTION.—Length up to 33 mm, width, including setae, up to 9 mm, segments up to 37. Holotype of *E. mexicanus* rather small, with length of 15 mm for 38 segments. Elytra 12 pairs, becoming more elongate posteriorly; first pair of elytra with anterior fringe of minute papillae (about 7); rest of elytra with variable number digitiform lateral processes (3-25) arranged between anterior and posterior rounded lobes; some of processes on more anterior elytra biarticulate (Figures 24*a*; 27*e-h*; pl. 23: figs. 281, 286, in Hartman, 1939). Branchiae 11 pairs, inflated, with distal branchial cirrus (Figure 26*b*). Dorsal cirri, on segments 3 and 6, subulate (Figures 24*a*, 25*e*). Posterior lamellae, beginning on segment 27, oval to lanceolate (Figures 24*c*, 27*a*).

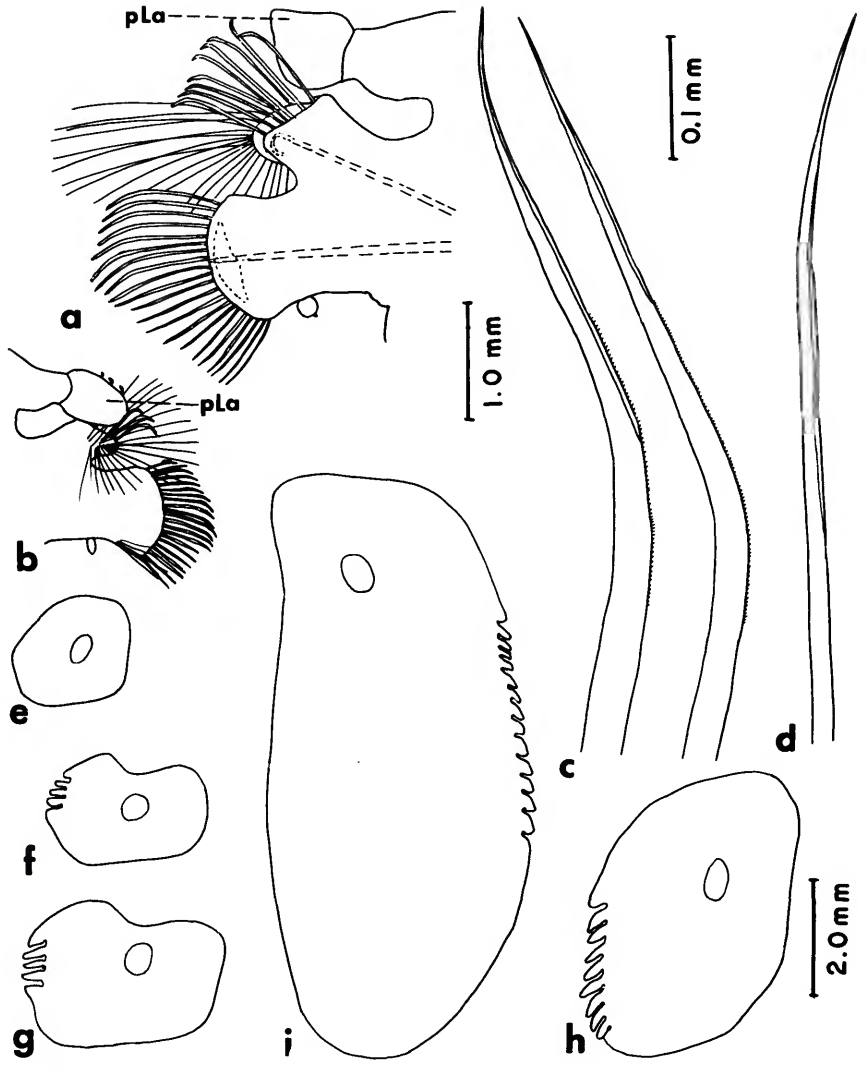

FIGURE 23.—*Grubeulepis ecuadorensis*, new species (holotype, AHF): *a*, Posterior lamelligerous parapodium, anterior view; *b*, same, posterior view; *c*, upper neurosetae from same; *d*, lower neuroseta from same; *e*, left first elytron; *f*, left second elytron; *g*, left third elytron; *h*, left seventh elytron; *i*, right twelfth elytron.

Prostomium nearly covered by segment II and attached along midline; median antenna short, globular, inserted anterodorsally on prostomium; lateral antennae longer, conical, inserted more ventrally; ventral palps elongate-tapered, extending slightly beyond tentacular cirri; 3 to 5 pairs small eyes visible (easily overlooked); nuchal organs oval, lateral to prostomium (Figures 24*a*,*b*; 25*a*). Tentacular parapodia (I) with short subulate tentacular cirri, lower pair slightly longer than upper pair; 2 acicula; 2 tufts capillary setae (Figures 24*a*, 25*a*, *b*). Ventral buccal cirri on segment II thicker and longer than those following (Figure 25 *a*, *c*).

Biramous parapodia supported by light amber-

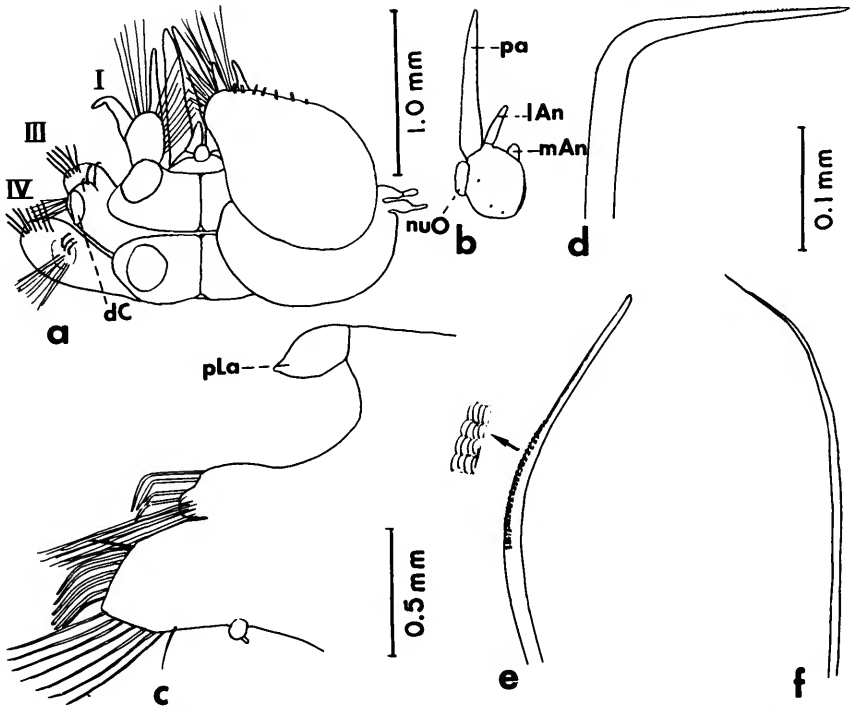

FIGURE 24.—*Grubeulepis mexicana* (holotype, USNM 32893): *a*, Anterior end, dorsal view, left two elytra removed; left parapodium II had been previously removed; *b*, prostomium, left lateral view (not to scale); *c*, posterior lamelligerous parapodium, posterior view; *d*, hooked notoseta from same; *e*, upper neuroseta from same; *f*, lower neuroseta from same.

colored acicula and neuropodial hammer-shaped distal plates (Figure 26*a,b*). Notopodial acicula with hooked tips. Notopodial capillary setae smooth and spinous, forming long, spreading bundles on posterior parts of notopodia; stout light amber-colored notopodial hooks, beginning on segment III, with tips finely tapered or flattened spoon-shaped, finely spinous on upper distal part (Figures 24*d*, 25*f*, 26*c*, 27*b*). Neuropodial acicula with hammer-shaped distal plates. Neurosetae of several kinds: 1-2 upper pectinate setae (Figure 25*g*); stout acicular neurosetae in some anterior segments (Figure 25*i*); limbate and non-limbate capillary neurosetae (Figures 25*d, h,j;* 26*d*). Upper neurosetae of posterior region stouter and darker than lower neurosetae, bent downward, corrugated or serrulate along bend (Figures 24*c,e,f;* 27*a,c,d*). Ventral cirri of few anterior segments slender, tapered (Figure 25*e*); rest globular, with short slender tips (Figure 26*a,b*). Pygidium with single long anal cirrus on right side; cirrus finely papillate along one side. Pharynx not extended.

DISTRIBUTION.—Southern California, Gulf of California, Mexico (Isle Grand Bay), Guatemala. Intertidal to 30 meters.

REMARKS.—The small oval specimens from southern California (*Velero* stations 4721-56 and 6731-59), reported by Hartman (1961) as *P. fimbriata,* have only 16-18 segments; the elytral papillar processes are 2 jointed; the upper neurosetae are serrated and stouter than the lower neurosetae; they appear to be the young of *G. mexicana.*

Fauvel (1940: 9) referred *Eulepethus mexicanus* to *Eulepis geayi.* Hartman (1959: 123) referred the same species to *Pareulepis fimbriata.* The three species are herein considered to be distinct.

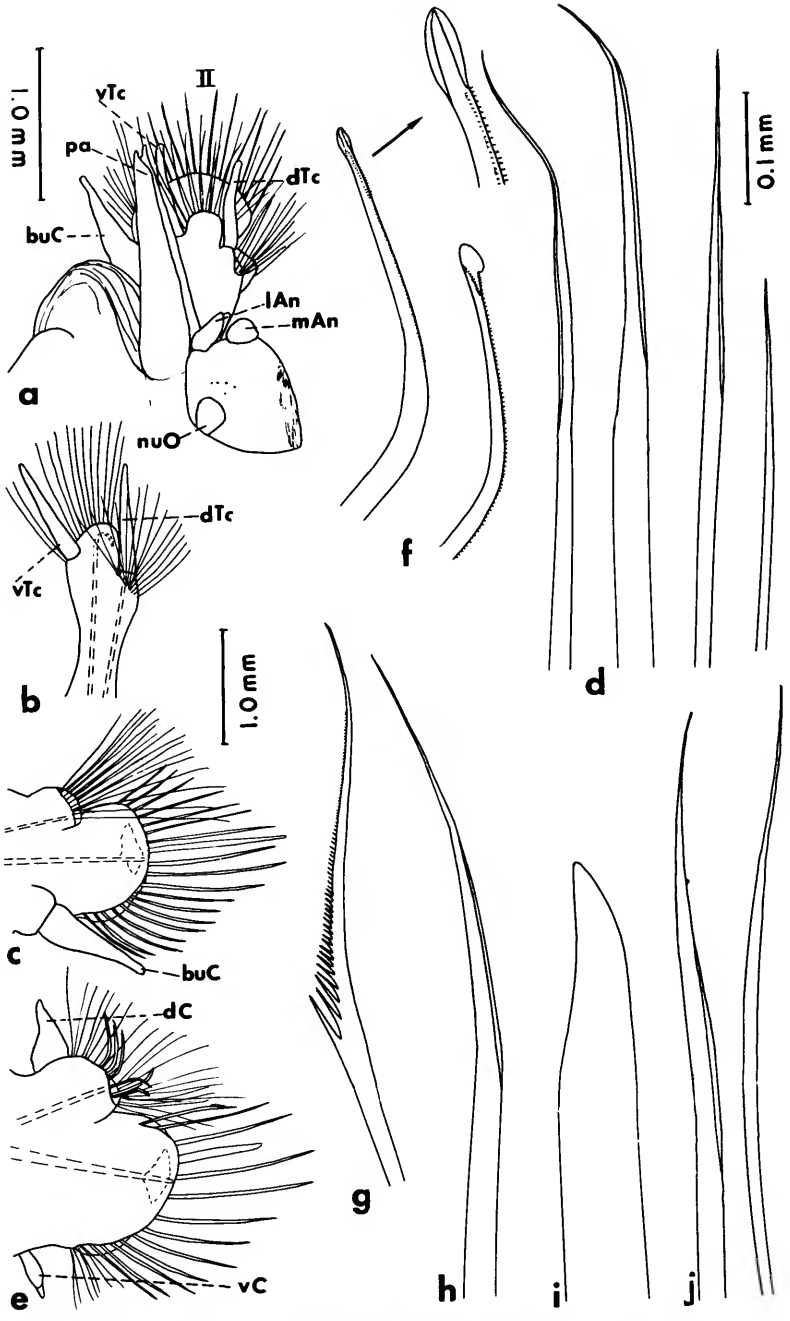

FIGURE 25.—*Grubeulepis mexicana* (Mission Bay, southern California, AHF): *a*, Left lateral view anterior end, segment II cut back; *b*, tentacular segment (I), lateral view; *c*, parapodium from segment II, anterior view; *d*, upper, middle and lower neurosetae from same; *e*, parapodium from segment III, anterior view; *f*, notopodial hooks from same; *g*, upper pectinate neuroseta from same; *h*, upper limbate capillary neuroseta from same; *i*, middle acicular neuroseta from same; *j*, lower limbate and nonlimbate capillary neurosetae from same.

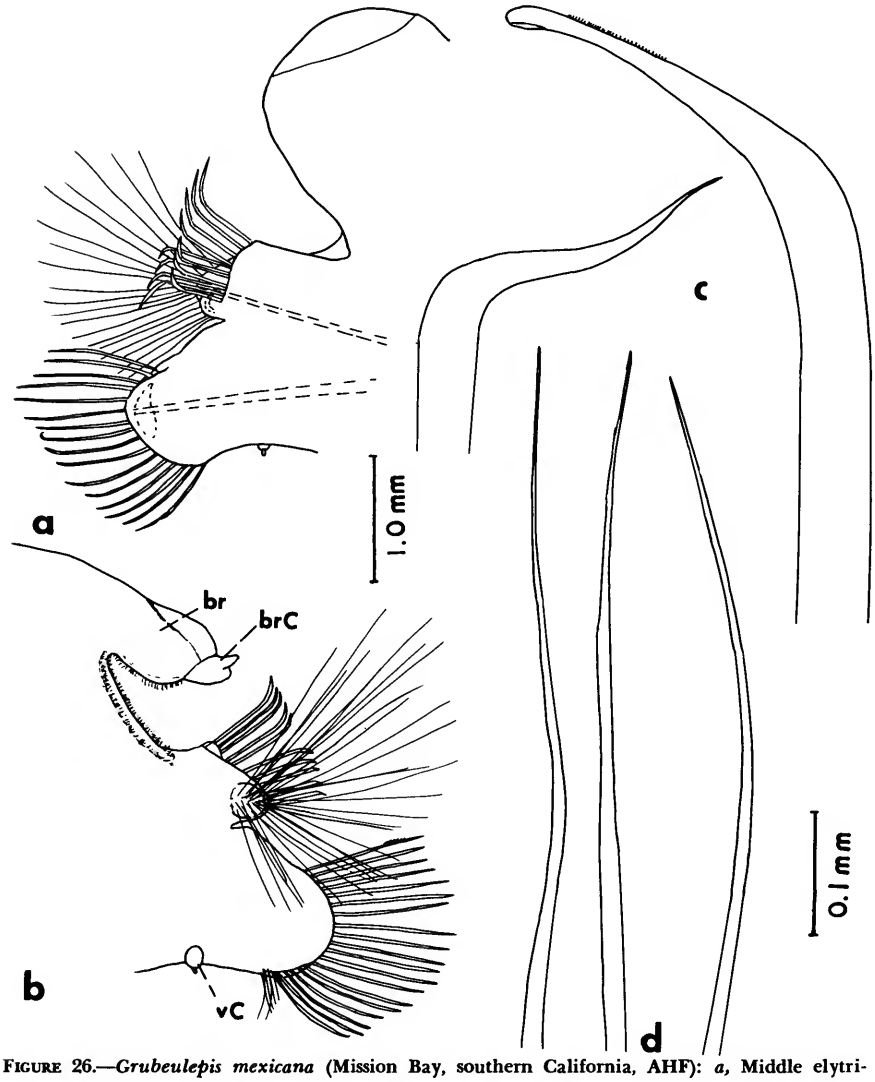

FIGURE 26.—*Grubeulepis mexicana* (Mission Bay, southern California, AHF): *a*, Middle elytrigerous parapodium, anterior view; *b*, middle branchial parapodium, posterior view; *c*, notopodial hooks from same; *d*, upper, middle and lower neurosetae from same.

Grubeulepis sulcatisetis (Jones), new combination

Pareulepis sulcatisetis Jones, 1962, p. 174, figs. 1-27.—Hartman, 1965, p. 15.

MATERIAL EXAMINED.—Green Bay, Jamaica, West Indies, 11 February 1960, I. M. Goodbody, collector —holotype and paratype (AMNH 3605, 3606).

DESCRIPTION.—Length 9.5-10 mm, width, including setae, 2.4 mm, segments 32. Elytra 12 pairs, becoming more elongate posteriorly; first pair with anterior fringe of minute papillae (about 7); rest of elytra with variable number digitiform processes (4-10) arranged between anterior and posterior rounded lobes; some of processes on more anterior elytra biarticulate, some on posterior elytra tripartite (Figures 8-11, in Jones, 1962). Branchiae 10 pairs, inflated, with distal branchial cirrus (Figure 7, B-E, in Jones, 1962). Dorsal cirri, on segments 3 and 6, subulate (Figures 3, 6, 7,A, in Jones, 1962). Pos-

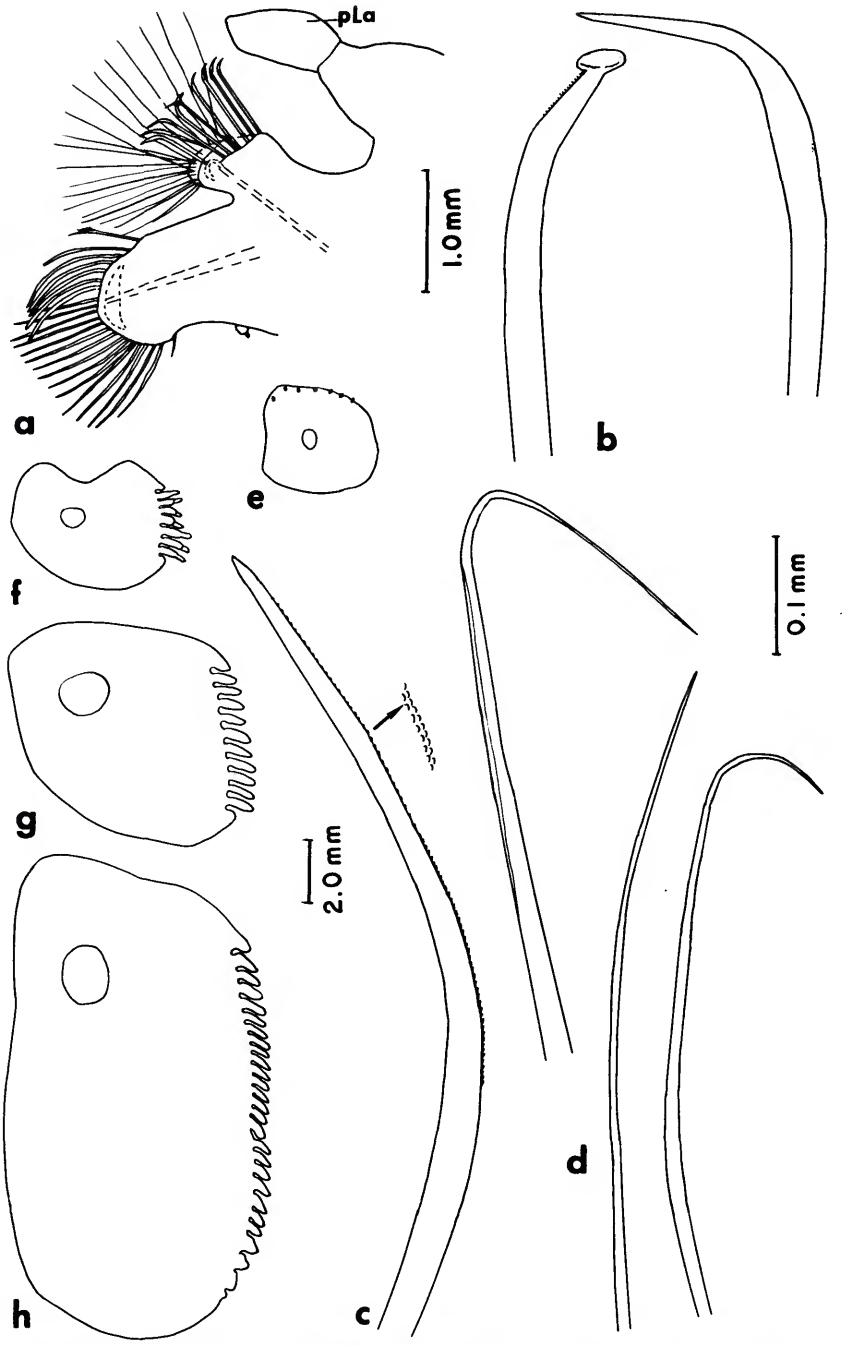

FIGURE 27.—*Grubeulepis mexicana* (Mission Bay, southern California, AHF): *a*, Posterior lamelligerous parapodium, anterior view; *b*, notopodial hooks from same; *c*, upper neuroseta from same; *d*, lower neurosetae from same; *e*, right first elytron; *f*, right second elytron; *g*, right sixth elytron; *h*, right twelfth elytron.

terior lamellae pyriform, beginning on segment 26 (Figure 7, F-H, in Jones, 1962).

Prostomium covered by segment II and attached middorsally by more than half its length; median and lateral antennae subequal, short, conical; 3 pairs small eyes (Figures 1,2, in Jones, 1962). Tentacular parapodia (I) with dorsal and ventral tentacular cirri subequal in length (Figure 4, in Jones, 1962).

Neurosetae of several kinds: 1-2 upper pectinate setae; bilimbate and unilimbate capillaries; slender capillaries on lower posterior face of neuropodia; without acicular setae in some anterior segments. Upper neurosetae of posterior segments stouter than lower neurosetae, bent downward, spinous along bend, with tips scoop-shaped (Figures 24, 25, in Jones, 1962). Pharynx with about 14 pairs distal papillae (15+18—Jones) and 2 pairs chitinous plates (no definite teeth).

DISTRIBUTION.—West Indies (Jamaica).

REMARKS.—Jones did not distinguish between dorsal cirri, branchiae, and posterior lamellae (Figure 7, A-H, in Jones, 1962).

Grubeulepis tebblei, new species

FIGURES 28-29

Pareulepis geayi.—Tebble, 1955, p. 79, fig. 2. [Not *Eulepis geayi* Fauvel, 1918.]

MATERIAL EXAMINED.—Gold Coast, West Africa, off Accra and off Christiansborg Castle, Buchanan survey, 11-13 meters, station 123—holotype (BMNH 1953: 1: 623); station 118—paratype (BMNH 1953: 1: 622).

DESCRIPTION.—Length 13-17 mm, width, including setae, 4 mm, segments 33. Elytra 12 pairs, becoming more elongate posteriorly; first pair with fringe of about 8 papillae on anterior border; rest of elytra with variable number of digitiform lateral processes—about 12 on twelfth elytra, some biarticulate (Figure 29*e-h*). Branchiae 11 pairs, inflated, with distal branchial cirrus (Figure 28*e*). Dorsal cirri, on segments 3 and 6, subulate (Figure 28*c*). Posterior lamellae, beginning on segment 27, subcordiform to lanceolate (Figure 29*a*).

Prostomium nearly covered by segment II and attached along midline on posterior half; median antenna short, conical, inserted anterodorsally on prostomium; lateral antenna short, conical, inserted more ventrally; ventral palps elongate-tapered, extending slightly beyond tentacular cirri; 2 pairs small eyes on posterior part; nuchal organs oval, lateral to prostomium (Figure 28*a*). Tentacular parapodia (I) with short subulate tentacular cirri, subequal in length or ventral pair slightly longer than dorsal pair; 2 acicula; 2 tufts capillary setae (Figure 28*b*). Ventral buccal cirri on segment II thicker and longer than those following.

Biramous parapodia supported by reddish amber-colored acicula and neuropodial hammer-shaped distal plates (Figure 28*e*). Notopodial acicula with hooked tips. Notopodial setae smooth and spinous, forming long, spreading bundles on posterior parts of notopodia; stout reddish amber-colored notopodial hooks smooth, with tips finely tapered or spatulate (Figures 28*f*, 29*b*). Neuropodial acicula with hammer-shaped distal plates. Neurosetae of several kinds: upper pectinate setae; bilimbate setae with short tips in some anterior parapodia (Figure 28*d*); lower group slender limbate and non-limbate setae tapering gradually to slender tips (Figure 28*g*). Upper neurosetae of posterior parapodia stouter than lower neurosetae, bent downward, with tips limbate, spatulate (Figure 29*a,c,d*). Ventral cirri of anterior few segments slender, tapered (Figure 28*c*); rest of ventral cirri globular, with short slender tips (Figure 28*e*). Pygidium with single long anal cirrus on right side; short rudiment on left side. Pharynx not extended.

DISTRIBUTION.—West Africa (Gold Coast). In 11-13 meters.

REMARKS.—The prostomium was incorrectly shown by Tebble (1955)—it is not bifurcate anteriorly and the median antenna is located anterodorsally and not posteriorly on the prostomium.

Grubeulepis augeneri, new species

FIGURES 30-31

Eulepis fimbriata.—Augener, 1918, p. 153, pl. 3: figs. 39-41, text-fig. 10. [Not Treadwell, 1901.]
Eulepis geayi.—Fauvel, 1940, p. 9, fig. 1a. [Not Fauvel, 1918.]
Pareulepis fimbriata.—Rullier, 1965, p. 16. [Not *Eulepis fimbriata* Treadwell, 1901.]

MATERIAL EXAMINED.—French Congo, Setté Cama, A. Hupfer, collector—holotype (ZMH 592). Adriatic, station 434—paratype (MNHNP). Togo, West Africa, 6° 05′ N, 1° 32′ E, 34 meters, fine

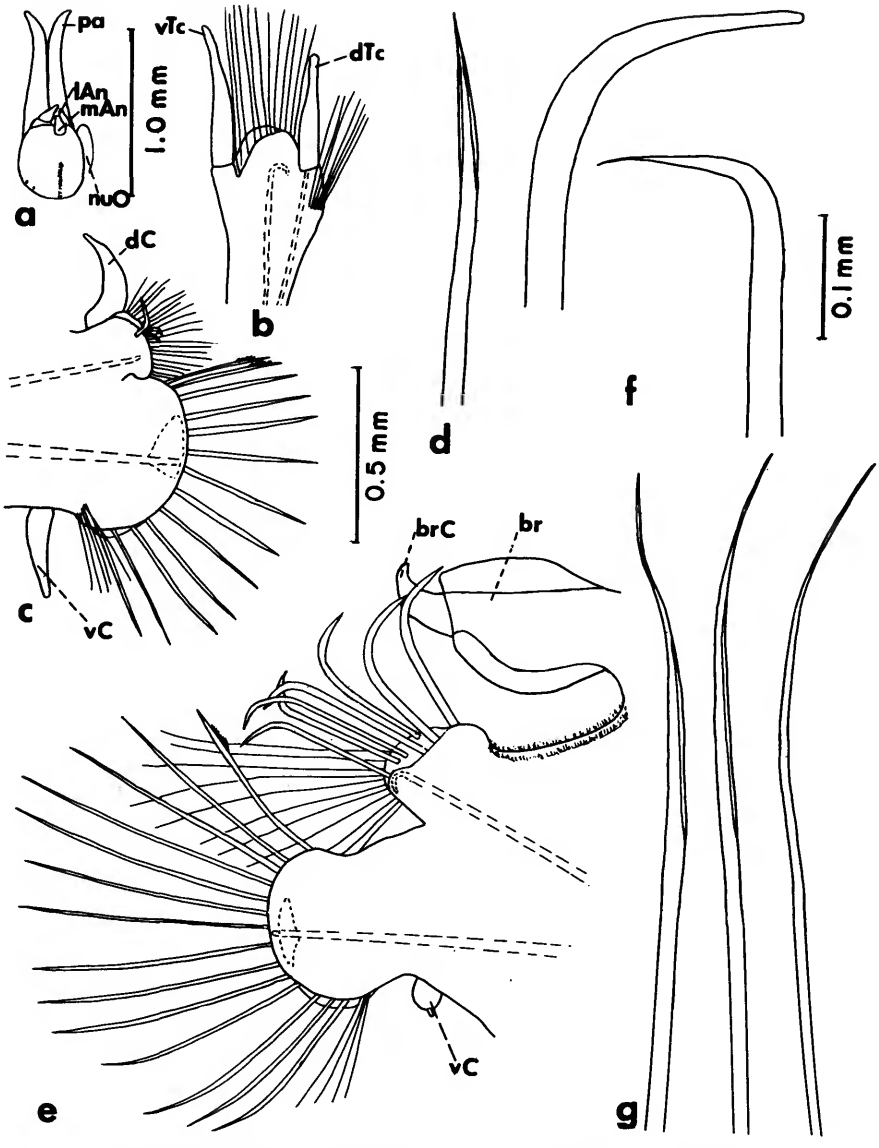

FIGURE 28.—*Grubeulepis tebblei*, new species (holotype, BMNH 1953: 1: 623): *a*, Prostomium, dorsal view, turned slightly to right; stippled area indicates point of attachment to II; *b*, tentacular parapodium (I), lateral view; *c*, parapodium from segment III, anterior view; *d*, bilimbate neuroseta from same; *e*, middle branchial parapodium, anterior view; *f*, notopodial hooks from same; *g*, neurosetae from same.

muddy sand—paratype (F. Rullier, private collection).

DESCRIPTION.—Length of holotype 11.5 mm, width, including setae, 4 mm, segments 33, last one small. Length of paratype from Adriatic 17 mm, width, including setae, 3.5 mm, segments 35. Length of paratype from Togo 11 mm, width, including setae, 4 mm, segments 33, last one very small. Elytra 12 pairs, becoming more elongate posteriorly (Figures 30*e-h*; 31*f-k*); first pair subtriangular, each with

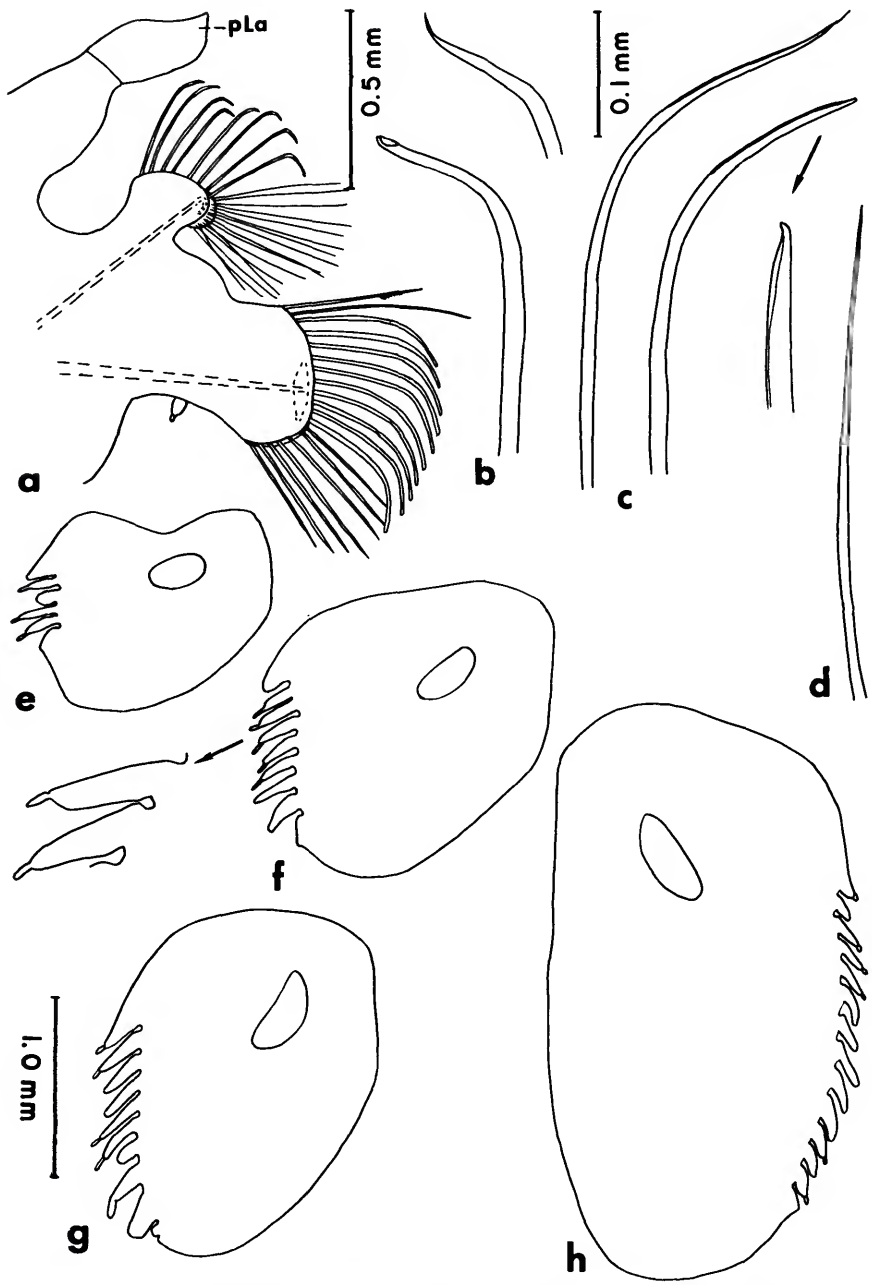

FIGURE 29.—*Grubeulepis tebblei*, new species (hototype, BMNH 1953: 1: 623): *a*, Lamelligerous parapodium from posterior region, anterior view; *b*, notopodial hooks from same; *c*, upper neurosetae from same; *d*, lower neuroseta from same; *e*, left third elytron; *f*, left fifth elytron; *g*, left eighth elytron; *h*, right twelfth elytron.

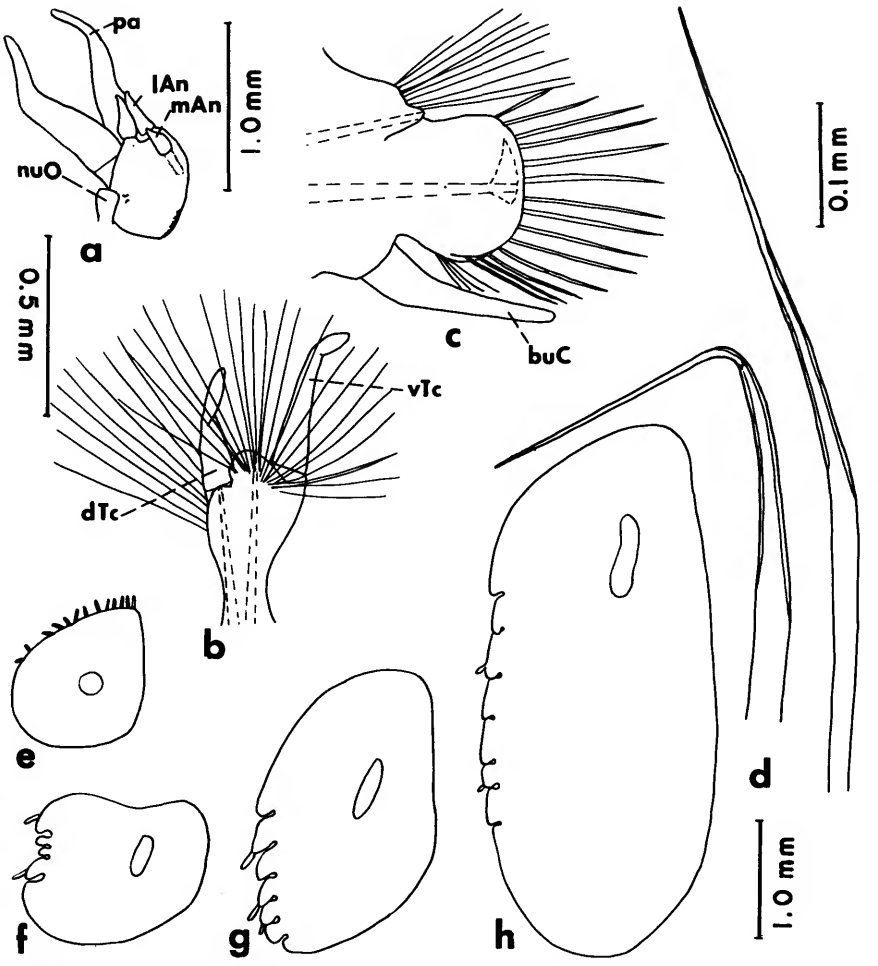

FIGURE 30.—*Grubeulepis augeneri*, new species (paratype MNHNP): *a*, Prostomium, left lateral view; stippled area indicates point of attachment to II; *b*, tentacular parapodium (I), medial view; *c*, parapodium from segment II, anterior view; *d*, neurosetae from segment IV; *e*, left first elytron; *f*, left third elytron; *g*, left seventh elytron; *h*, left twelfth elytron.

12-13 papillae on anterior and lateral borders; rest of elytra subreniform to subrectangular, lateral borders with single notch or up to 8 digitiform or wide processes between anterior and posterior rounded lobes, some biarticulate. Branchiae 12 (holotype and paratype from Togo) or 13 (paratype from Adriatic) pairs, inflated, with distal branchial cirrus (Figure 31*a*). Dorsal cirri, on segments 3 and 6, subulate. Posterior lamellae, beginning on segment 28 or 29, subcordiform to subconical (Figure 31*b*).

Prostomium covered by segment II and attached middorsally on posterior half; median antenna short, conical, inserted anterodorsally on prostomium; lateral antennae conical, inserted more ventrally; palps elongate-tapered, extending beyond tentacular cirri; 2 pairs small eyes on lateral border; nuchal organs oval, lateral to prostomium (Figure 30*a*). Tentacular parapodia (I) narrower basally, enlarged distally, each with dorsal and ventral tentacular cirri, subequal in length or ventral slightly longer, 2 acicula and 2 bundles of smooth

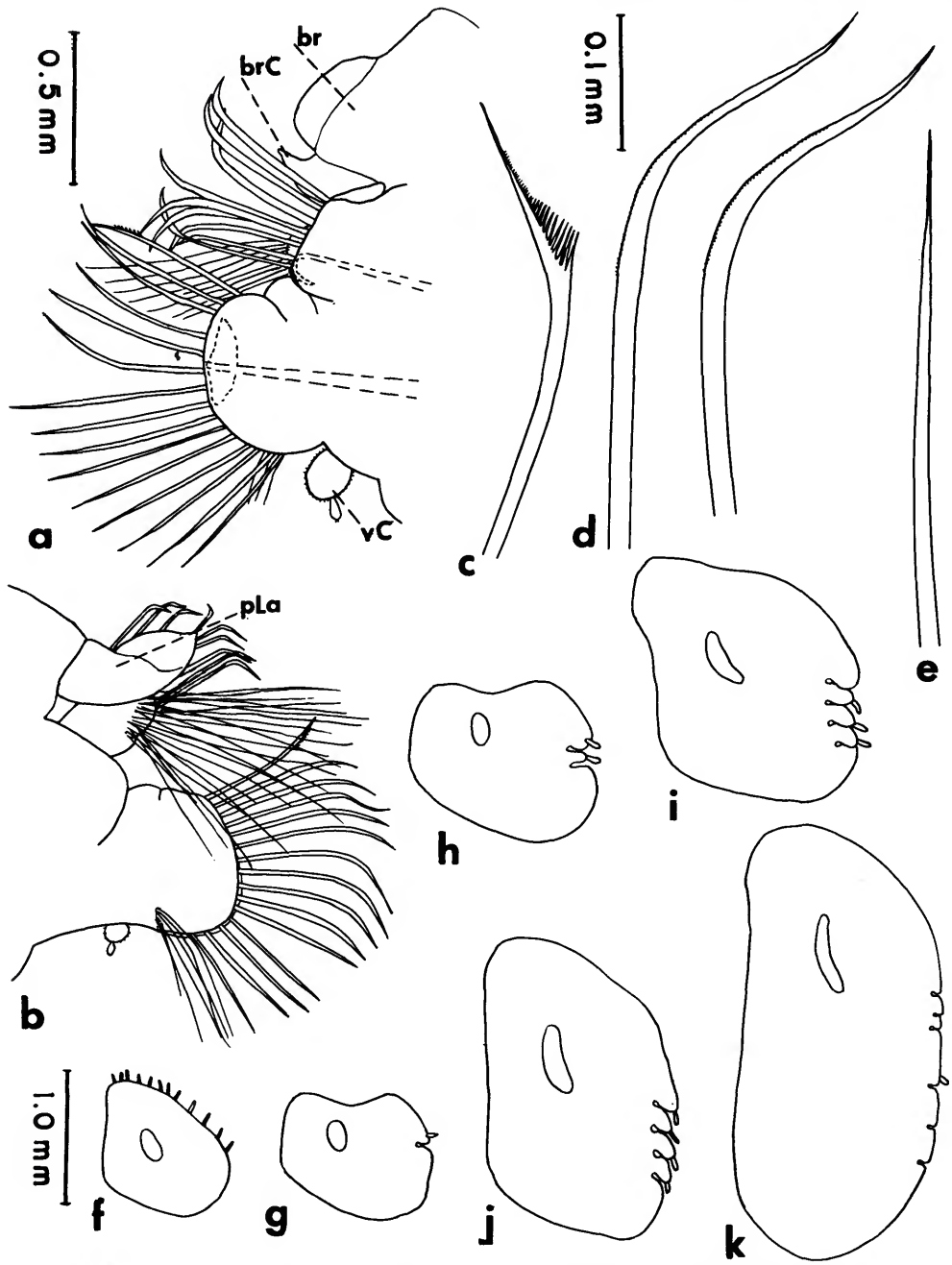

FIGURE 31.—*Grubeulepis augeneri*, new species (holotype, ZMH 592): *a*, Middle branchial parapodium, anterior view; *b*, posterior lamelligerous parapodium, posterior view; *c*, upper pectinate neuroseta from same; *d*, upper neurosetae from same; *e*, lower neuroseta from same; *f*, right first elytron; *g*, right second elytron; *h*, right third elytron; *i*, right fifth elytron; *j*, right eighth elytron; *k*, right twelfth elytron.

and spinous capillary setae (Figure 30*b*). Ventral buccal cirri on segment II thicker and longer than those following (Figure 30*c*).

Biramous parapodia supported by light amber-colored acicula and neuropodial hammer-shaped distal plates (Figure 31*a*). Notopodial acicula with hooked tips. Notopodial capillary setae smooth and spinous, forming long, spreading bundles on posterior parts of notopodia; stout light amber-colored notopodial hooks, beginning on segment III, smooth, with tips tapered to fine tips or flattened spatulate. Neuropodial acicula with hammer-shaped distal plates. Neurosetae of several kinds: 1-2 upper pectinate setae (Figure 31*c*); limbate capillary neurosetae with long tapering tips (Figure 30*d*); lower more slender nonlimbate neurosetae; without acicular neurosetae in anterior segments. Upper neurosetae of posterior region stouter than lower ones, curved downward, tapering to fine tips, faintly spinous along bend (Figure 31*b,d,e*). Ventral cirri of anterior few segments subulate, tapered; following ventral cirri globular, with short clavate tips (Figure 31*a,b*). Pygidium with single long anal cirrus on right side; cirrus finely papillate along one side; left cirrus short, rudimentary. Pharynx not extended.

DISTRIBUTION.—West Africa, Central-east Atlantic (French Congo, Togo), Adriatic. In 34 meters.

Questionable eulepethid: genus and species questionable

Eulepis challengeriae
McIntosh, 1885, p. 134, pl. 20: fig. 1, pl. 23: fig. 1, pl. 24: fig. 1, pl. 14A: figs. 7, 8.
Pareulepis challengeriae.—Hartman, 1959, p. 123.

MATERIAL EXAMINED.—*Challenger* station, off Sombrero and St. Thomas, West Indies, 713 to 823 meters—holotype (BMNH 1885: 12: 1: 104).

REMARKS.—The holotype consists of an anterior fragment of 18 segments. Only three elytra remain, the left one on segment 13 and a pair on segment 15. The elytral margins are entire, with only a slight indication of a lateral notch. The absence of a distinct notch or fimbriated external margin on the elytra sets *E. chalengeriae* apart from the other species of eulepethids. Most of the notopodial hooks are broken off; one of the remaining ones shows a spinous margin along the bend, as indicated by McIntosh (1885, pl. 14a: fig. 7). Because of the lack of the posterior end and the poor condition of the single specimen, the generic status and additional specific characters of *E. challengeriae* must remain doubtful.

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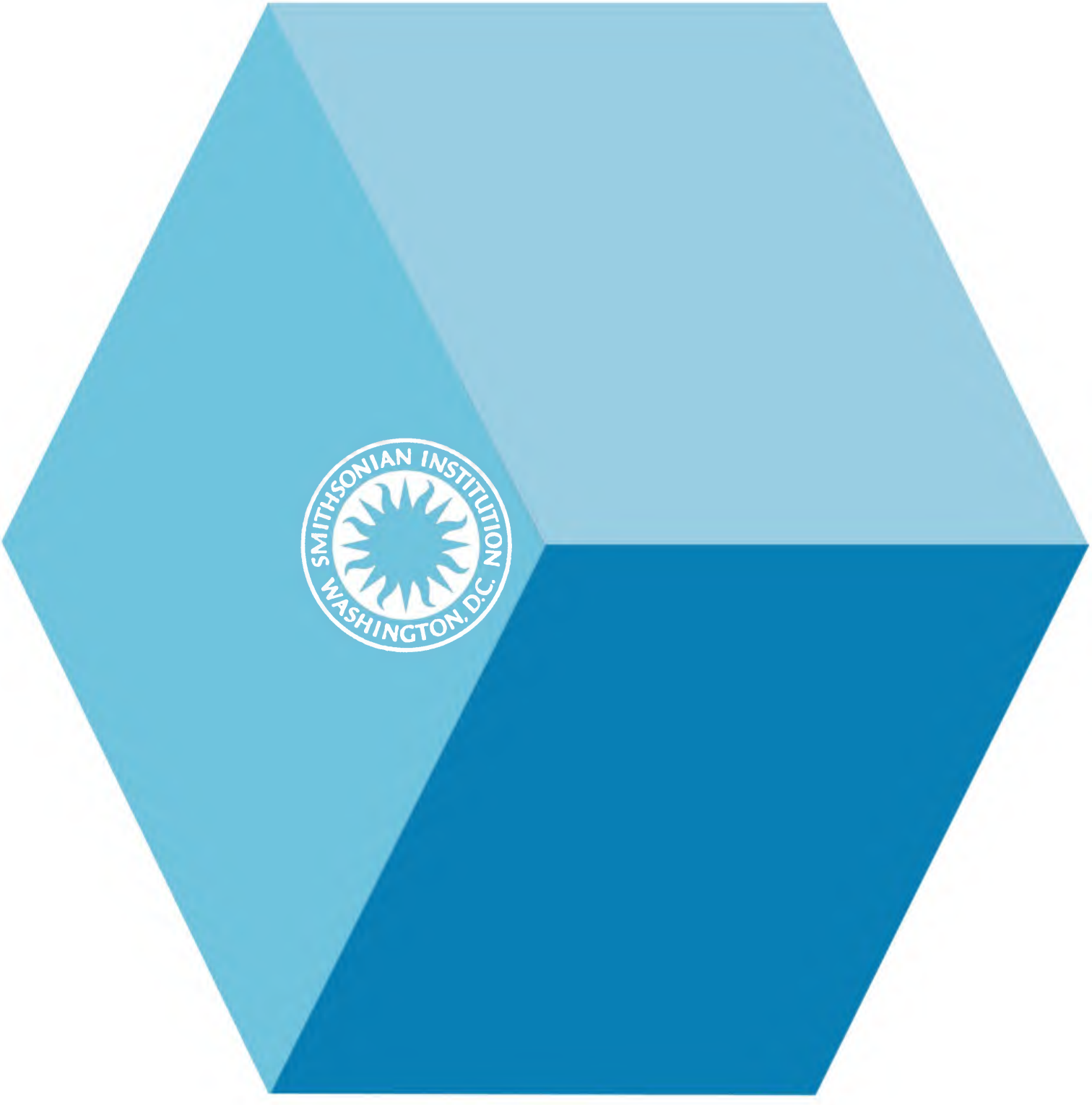
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