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FOUR NEW SPECIES OF *CARAZZIELLA* (POLYCHAETA: SPIONIDAE) FROM NORTH AND SOUTH AMERICA, WITH A REDESCRIPTION OF TWO PREVIOUSLY DESCRIBED FORMS

James A. Blake

Abstract.—Four new species of *Carazziella* are described from North and South America: *C. hobsonae* from Florida and Texas, *C. calafia* from central California, *C. carrascoi* from Chile and *C. patagonica* from Argentina. *Carazziella citrona* (Hartman, 1941), the type-species, is redescribed from the California type-collection and *C. reishi* (Woodwick, 1964) from the Marshall Islands is redescribed from the holotype and from new materials from Indonesia and Johnston Atoll. Relationships of the American species with counterparts in Australasia are discussed along with a consideration of the peculiar gizzard-like structure found in some species of *Carazziella* and *Polydora*.

The genus *Carazziella* was recently proposed by Blake & Kudenov (1978) in a study of Australian Spionidae. In their paper, 4 new species from Australia are described and 3 previously known species are referred to the genus: *C. citrona* (Hartman, 1941), designated as the type-species, *C. reishi* (Woodwick, 1964) from the Marshall Islands and *C. quadricirrata* (Rainer, 1973) from New Zealand.

Carazziella belongs to the so-called *Polydora*-complex and is distinguished from the other genera by having 2 types of major spines on the modified fifth setiger and by lacking branchiae anterior to setiger 5. Nine of the 11 species now known, including those described as new in this paper, have bristles on both types of the major spines.

Four new species of *Carazziella* from North and South America are described herein. The type-species, *C. citrona* (Hartman, 1941) from California, has been reexamined and is redescribed. The holotype of *C. reishi* (Woodwick, 1964) from Enewetak is redescribed and compared with additional materials from Indonesia and Johnston Atoll. Thanks are extended to the following individuals for the loan of materials upon which this report is based: Dr. James Nybakken, Moss Landing Marine Laboratories, Moss Landing, California; Dr. John L. Taylor, then of the National Marine Fisheries Service, St. Petersburg Beach, Florida; Mr. Clyde A. Henry, Texas A&M University, Galveston, Texas; Ms. Linda Ward, Naval Oceans Systems Center (NOSC), Kailua, Hawaii; Dr. José M. Orensanz, Instituto de

Biología Marina, Mar del Plata, Argentina; Dr. Franklin D. Carrasco, Instituto de Biología, Concepción, Chile; Dr. Kristian Fauchald, Allan Hancock Foundation (AHF) and Dr. Marian H. Pettibone, National Museum of Natural History, Smithsonian Institution (USNM). Mrs. Karen Green and Mr. Bob Osborn assisted my visit to AHF in May, 1978 by providing specimens and data. Mr. William J. Light read and commented on the manuscript.

Type-materials of the newly described species are deposited in the Smithsonian Institution (USNM), California Academy of Sciences (CAS), Museo Argentino de Ciencias Naturales, Buenos Aires (MACN) and Museo Zoologico, Instituto de Biología, Universidad de Concepción, Chile (MZC).

Genus *Carazziella* Blake & Kudenov, 1978

Type-species.—*Polydora citrona* Hartman, 1941, designated by Blake & Kudenov.

Diagnosis.—Prostomium rounded or incised, extending posteriorly as a caruncle; eyes present. Setiger 1 with or without notosetae. Setiger 5 modified, with 2 types of heavy spines arranged in a double curved row: (1) first type with expanded tip bearing bristles or cusps; (2) second type simple, falcate; both types usually bristle-topped; dorsal fascicles of capillaries present or absent; with a well-developed ventral fascicle of capillaries. Bidentate neuropodial hooded hooks without constriction on shaft, beginning on setiger 7–14, with conspicuous angle between teeth, both teeth forming oblique angle with shaft. Branchiae beginning posterior to setiger 5. Pygidium with 2–4 lobes or fingerlike cirri.

Carazziella citrona (Hartman, 1941) emended
Fig. 1

Polydora citrona Hartman, 1941:311–312, pl. 45, figs. 9–16; 1961:29; 1969:131–132. [*Not* Carrasco, 1974:193; 1976:25–28 (see below)].

Material examined.—CALIFORNIA: Mission Bay, Sept, 1938, coll. Olga Hartman.—holotype (AHF Poly 33) and 3 paratypes (AHF Poly 1266).

Description.—A large species, up to 30 mm long and 1.0 mm wide for about 120 segments. Color: ochre yellow in life (Hartman, 1941); light tan in alcohol.

Prostomium entire on anterior margin; caruncle narrow, extending to end of setiger 2; no occipital tentacle; 2 pairs of eyes: anterior pair cup-shaped, posterior pair oval. Peristomium greatly inflated, extending anteriorly beyond prostomium (Fig. 1A).

Setiger 1 greatly reduced, but with capillaries in both noto- and neuropodia (Fig. 1A). Setigers 2–4 with noto- and neuropodial fascicles of

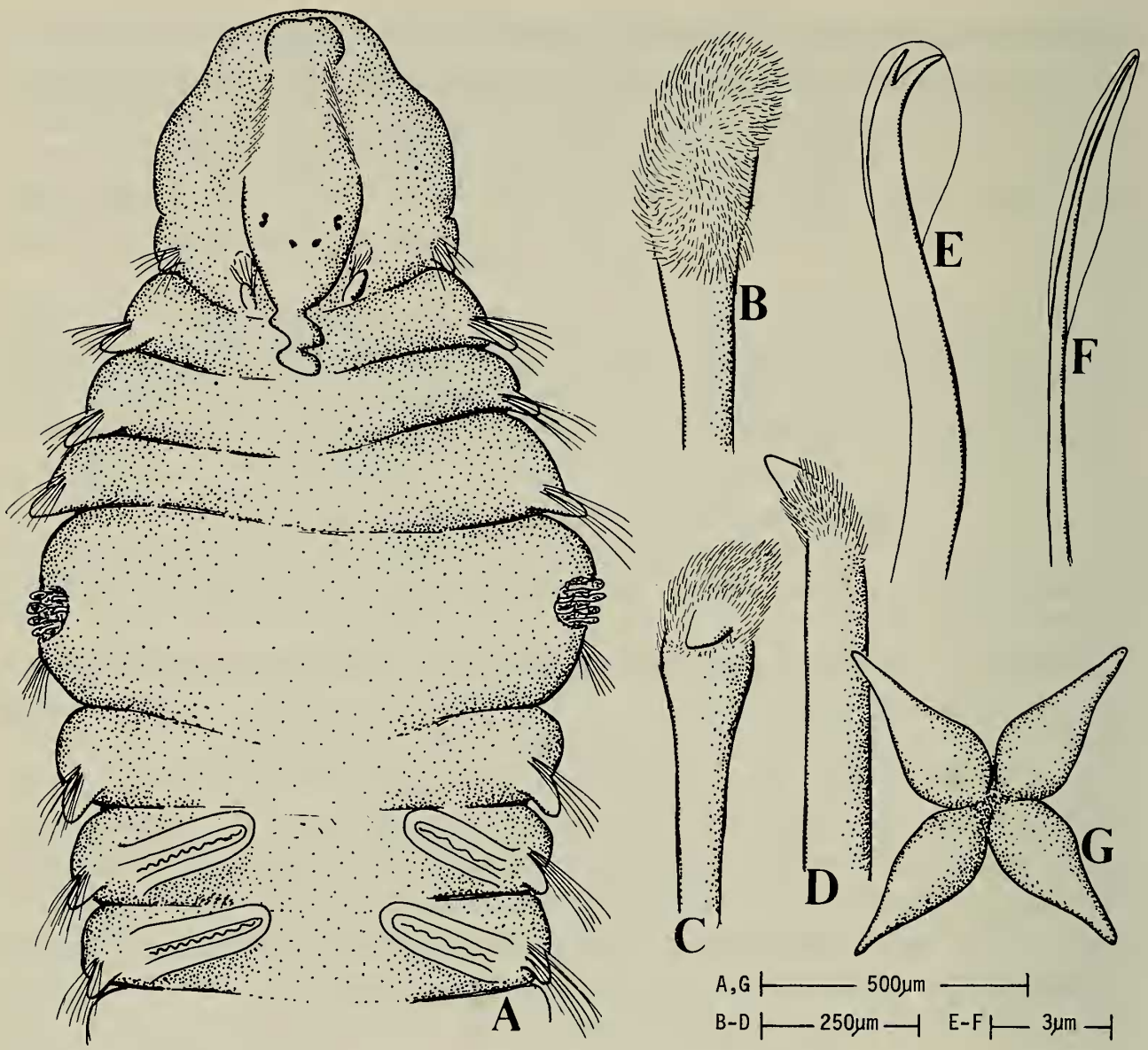

Fig. 1. *Carazziella citrona:* **A,** Anterior end of holotype in dorsal view; **B,** Ventral major spine from setiger 5; **C–D,** Dorsal falcate major spines from setiger 5; **E,** Hooded hook from anterior setiger; **F,** Hooded hook from posterior setiger; **G,** Pygidium, in posterior view.

unilimbate capillaries, neurosetae from setigers 6–9 unilimbate capillaries, these replaced by hooded hooks from setiger 10, hooks distally bifid in anterior setigers (Fig. 1E), secondary tooth gradually becoming smaller in middle and lost entirely in posterior setigers (Fig. 1F); hooks about 15–18 per fascicle in middle body region and accompanied throughout by superior and inferior capillaries.

Setiger 5 distinctly modified, bearing modified spines and a ventral fascicle of unilimbate capillaries, dorsal fascicle of capillaries lacking. Major spines of 2 types: (1) ventral row with expanded bristled ends (Fig. 1B); (2) dorsal spines smaller, falcate, with bare tip emerging from dense cloak of bristles (Fig. 1C–D).

Branchiae from setiger 7 (Fig. 1A), not overlapping at midline, continuing for over 70 setigers. Pygidium forming 4 subequal lobes (Fig. 1G).

Remarks.—*Carazziella citrona* is unique among species of the genus in the nature of the posterior unidentate hooded hooks and that they begin on setiger 10. *Carazziella hymenobranchiata* Blake & Kudenov, 1978, from Victoria, Australia, bears hooded hooks from setiger 11–14, but in other species they first occur from setiger 7 or 8.

Hartman (1941, pl. 45, fig. 13) described and figured the falcate spines of setiger 5 as being covered with both a hood and bristles. This appears to be an artifact of the angle of view and refraction of light. The curvature of the falcate spines often appears enlarged due to the crest of bristles; presumably Hartman mistook this for a hood.

Hartman (1966) recorded *Polydora citrona* from Los Angeles Harbor. It seems possible, however, that this record may represent another species, possibly *C. calafia;* for this reason, it is not cited in the synonymy above, pending the relocation and examination of those specimens.

Distribution.—California, Mission Bay (San Diego), intertidal in sandy mud areas inhabited by the thalassinid shrimp, *Upogebia* (Hartman, 1941).

Carazziella hobsonae, new species
Figs. 2–3

Material examined.—FLORIDA: Tampa Bay, 17 Oct. 1963, coll. John L. Taylor, dredged, 3 m.—holotype (USNM 56494) and 120+ paratypes (USNM 56495). TEXAS: 29°19′15″N; 94°38′42″W, 15 May 1975, coll. Texas A&M University, 13 m, sand-clay sediment.—3 paratypes (USNM 56496).

Description.—A small species, up to 4.5 mm long and 0.5 mm wide for 40 setigerous segments. Color obscured due to staining by Rose Bengal; smaller individuals with irregular flecks of black pigment on dorsum, presumably a vestige of larval pigment.

Prostomium entire to vaguely incised on anterior margin (Fig. 2B); caruncle divided into 2 parts; anterior part extending posteriorly to middle of setiger 2, followed immediately by another discrete ridge abutting against anterior portion and extending to middle of setiger 3 (Fig. 2A–B); no occipital tentacle; 2 pairs of eyes: posterior pair closely spaced, oval; anterior pair widely spaced and cup-shaped. Peristomium well-developed, but not inflated; palps extend posteriorly to setiger 8.

Setiger 1 with a dorsally situated fingerlike notopodial lobe lacking notosetae (Fig. 2A–B); neuropodium with well-developed fascicle of slender capillaries. Setigers 2, 3, 4, –, 6 and subsequent setigers with well-developed posteriorly directed fascicles of unilimbate capillary notosetae; capillaries of posterior notopodia longer, alimbate, no posterior spines. Neuropodia of setigers 2, 3, 4, –, 6 and 7 with short postsetal lobes and spreading fascicles of unilimbate capillaries; bidentate hooded hooks from setiger 8, accompanied by capillaries throughout; anterior setigers with 3 hooks per ramus,

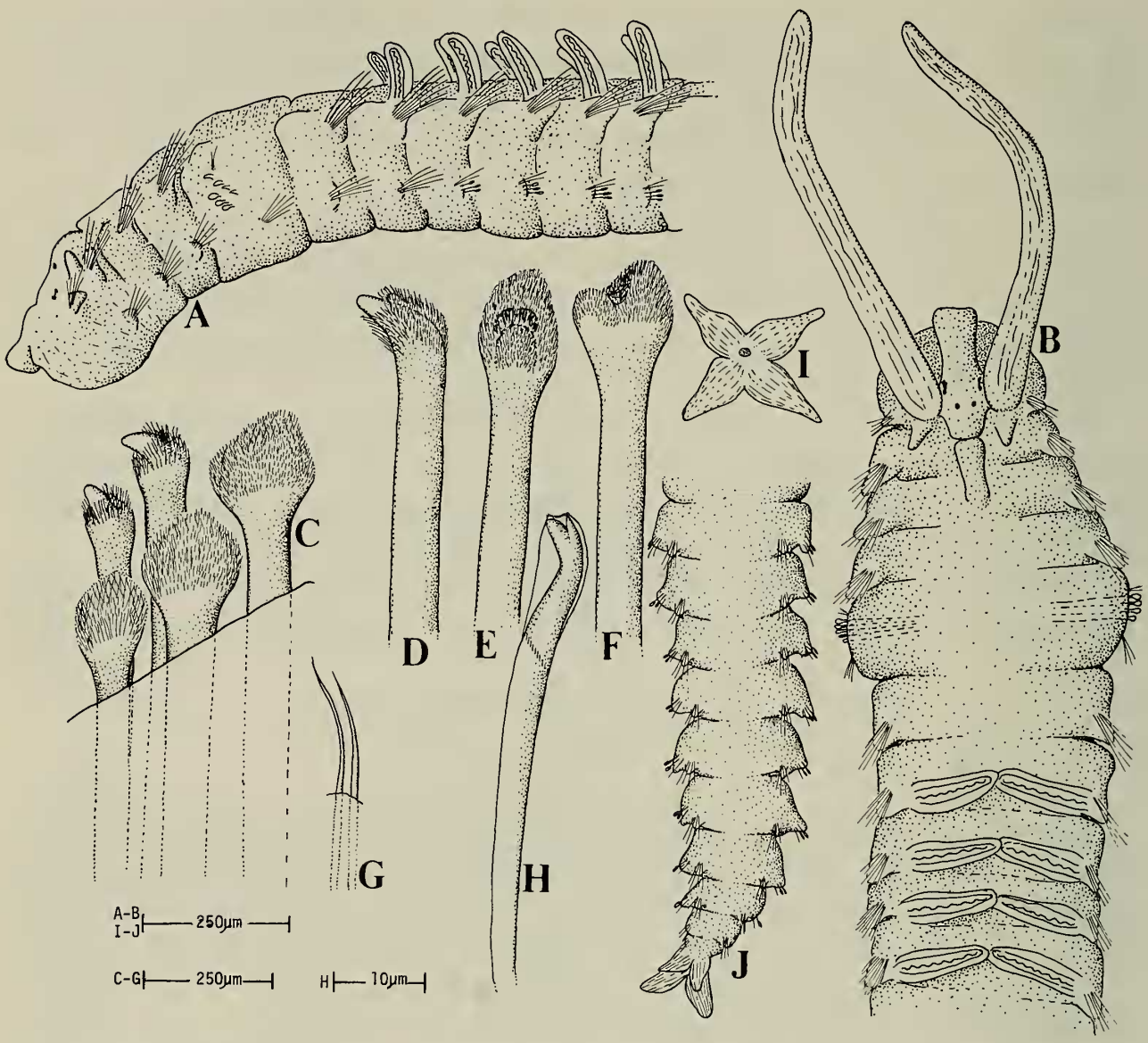

Fig. 2. *Carazziella hobsonae:* **A,** Anterior end in lateral view; **B,** Anterior end in dorsal view; **C,** Fascicle of major spines of setiger 5, in ventral view; **D,** Dorsal spines from setiger 5; **E–F,** Ventral spines from setiger 5; **G,** Superior dorsal capillary setae from setiger 5; **H,** Hooded hook; **I,** Pygidium in posterior view; **J,** Posterior end in dorsal view.

gradually increasing to 5–6 in middle, then decreasing to 2–3 in posterior setigers; hooks with only a slight angle between teeth (Fig. 2H).

Setiger 5 distinctly modified, with a superior dorsal fascicle of 1 or 2 capillaries, 2 types of heavy bristled spines and a fully developed fascicle of unilimbate capillary neurosetae. Major spines arranged in 2 rows (Fig. 2C): (1) ventral row with 3–4 spines bearing expanded bristled tops, these appearing entire in ventral view (Fig. 2C), but with 2 knobs in lateral view, one distinctly smaller (Fig. 2E–F); (2) dorsal row with 2–4 smaller, falcate spines bearing bristles not reaching tip (Fig. 2D).

Branchiae from setiger 7, continuing for 15–16 segments, these broad, straplike, overlapping at midline (Fig. 2B). Pygidium with 4 individual lobes (Fig. 2I–J).

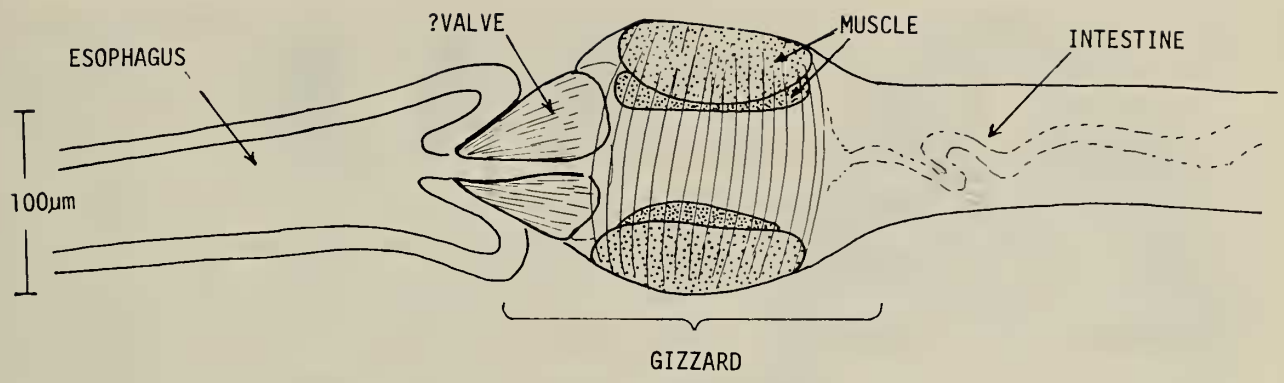

Fig. 3. *Carazziella hobsonae:* A, Anterior part of digestive tract showing the structure and relationship of the gizzard to the esophagus and intestine.

Digestive tract clearly visible through body wall, esophagus extending to about setiger 8, with a thickened muscular structure occupying setiger 9 (Fig. 3), followed by intestine [See also Blake, 1969, 1971, Blake & Woodwick, 1972 and Blake & Kudenov, 1978 for a similar structure in several species of *Polydora* related to *P. socialis* and *P. convexa;* believed to function as a gizzard].

Remarks.—See comments for *C. carrascoi.*

Ecology.—*Carrazziella hobsonae* occurs in soft sediments and is associated with an echiuroid, *Thallessena hartmanni* and a bivalve, *Paramya suborata* off Texas (Mr. Clyde Henry, personal communication).

Etymology.—This species is named in memory of the late Katharine D. Hobson, whose time with us was all too short, but whose excellent work on polychaetes will long be remembered.

Distribution.—Florida; Texas.

Carrazziella calafia, new species
Fig. 4

Pseudopolydora reishi: Reish, 1968:84. [*Not* Woodwick, 1964]

Material examined.—CALIFORNIA: Monterey Bay, coll. Moss Landing Marine Laboratories: 21 Aug. 1971, Sta. 1156, 36°53′N, 121°55′W, 37 m, grab No. 8.—1 paratype (CAS 00712); 21 Aug. 1971, Sta. 1157, 36°50.2′N; 121°50.2′W, 36.5 m, grab No. 2.—67 paratypes (USNM 56493); 21 Aug. 1971, Sta. 1158, 36°55′N; 121°56′W, 25.5 m, grab No. 5.—2 paratypes (CAS 00711): Elkhorn Slough, 15 June 1976, coll. J. A. Blake, approximately 250 m upstream from highway bridge, intertidal, sand-mud.—holotype (USNM 56491) and 1 paratype (CAS 00714); coll. Moss Landing Marine Laboratories: 20 July 1974, Sta. Sk 7, sand.—5 paratypes (CAS 00713); Sta. Sk 6.—1 paratype (USNM 56492); Los Angeles Harbor, coll. Harbors Environmental Projects: 21 May 1974, Sta. A2a, 10.7 m.—12 specimens (AHF); 20

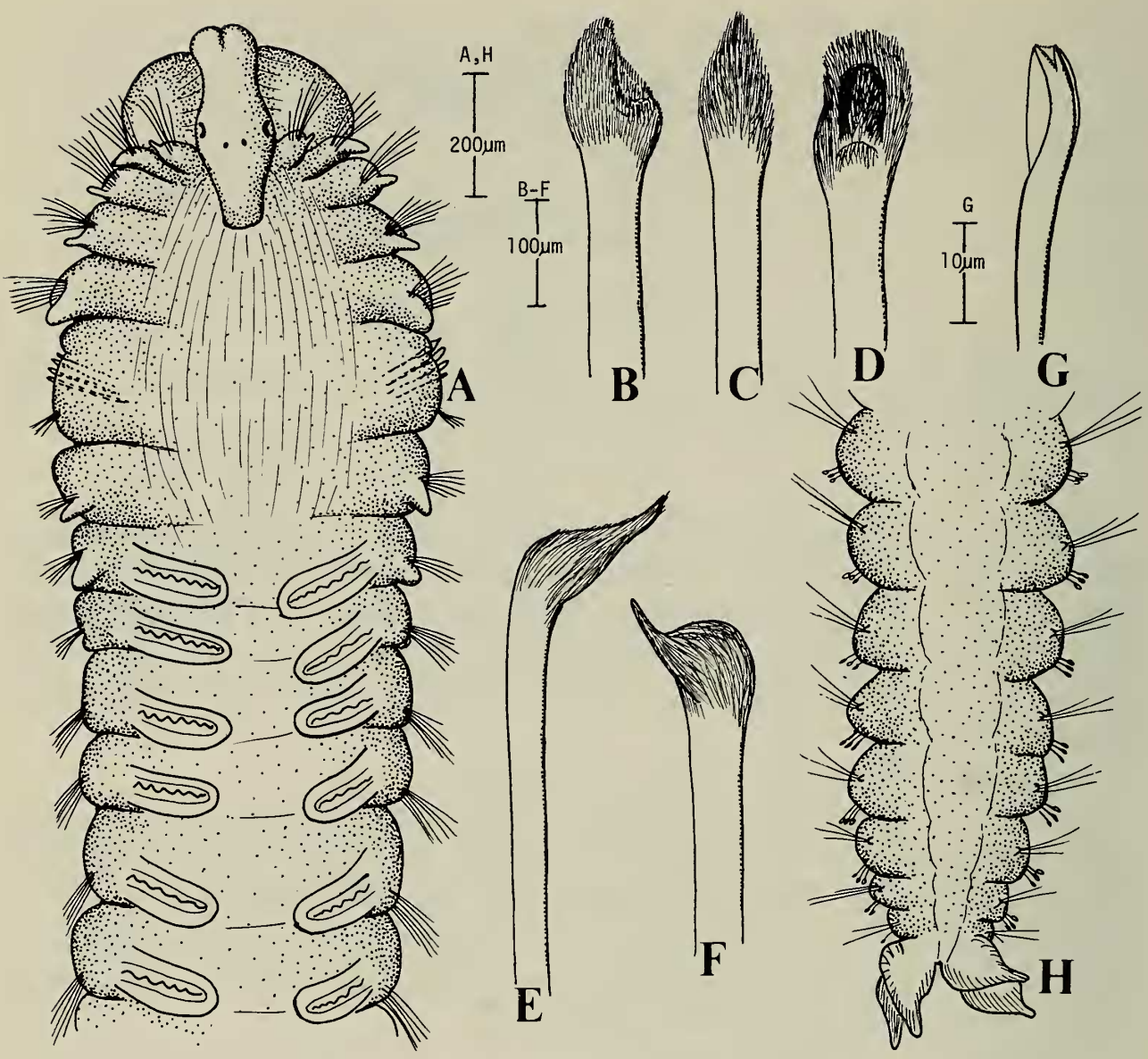

Fig. 4. *Carazziella calafia:* **A,** Anterior end in dorsal view; **B–D,** Ventral major spines from setiger 5; **E–F,** Dorsal major spines from setiger 5; **G,** Hooded hook; **H,** Posterior end in dorsal view.

May 1974, Sta. A12, 11.3 m.—3 specimens (AHF); 21 May 1974, Sta. A9, 10.7 m.—8 specimens (AHF); 20 Aug. 1974, Sta. A2a, 10.7 m.—16 specimens (AHF); 7 May 1976, Sta. A11a, 6.1 m.—2 specimens (AHF); 5 Aug. 1976, Sta. A3a, 7.7 m.—2 specimens (AHF); 1 Dec. 1976, Sta. C1a, 12.8 m.—1 specimen (AHF); Santa Catalina Island, Indian Rock Reef, 12 m.—5 specimens (AHF). MEXICO: Bahía de Los Angeles, coll. Beaudette Foundation: Oct. 1962, Sta. 85, silty sand.—3, specimens (USNM 57480); sta. 102, silty sand.—1 specimen (USNM 57481).

Description.—A small species, up to 7 mm long and 1 mm wide for 48 setigerous segments. Color obscured on most specimens due to staining with Rose Bengal; no body pigment.

Prostomium entire to weakly incised on anterior margin (Fig. 4A); carun-

cle extending to anterior border of setiger 3; 4 eyes arranged as in *C. hobsonae*. Peristomium well-developed, inflated; palps extending posteriorly for 7–9 setigers.

Setiger 1 well-developed; prominent fascicles of capillaries in both rami of setigers 1–4; notopodia of setiger 6 and subsequent segments with fascicles of long capillaries; setigers 6–7 with capillary neurosetae; bidentate hooded hooks from setiger 8 (Fig. 4G) accompanied by unilimbate capillaries throughout; hooks numbering 4 per ramus in anterior setigers, gradually increasing to 6 in middle and posterior setigers.

Setiger 5 distinctly modified, with a prominent fascicle of capillary neurosetae (Fig. 4A); no dorsal capillaries. Major spines of 2 types: (1) a ventral row with expanded tips bearing bristles and terminal depression (Fig. 4B–D); (2) dorsal row of falcate spines with bristles extending to end of spine and obscuring its tip (Fig. 4E–F).

Branchiae broad, not meeting at midline, present from setiger 7 (Fig. 4A), continuing through middle body region. Pygidium with 4 lobes (Fig. 4H).

Digestive tract with "gizzard" similar to that of *C. hobsonae*.

Remarks.—See comments below under *C. carrascoi*.

Ecology.—Intertidal to about 40 m, in substrata composed mostly of sand.

Etymology.—The epithet originates from Calafia, the legendary black amazon queen of an island utopia, as described by the sixteenth century Spanish author Montalvo in *Las Sergas de Esplandian,* a continuation of his famous romance, *Amadis de Gaula*. California was the island where Calafia ruled.

Distribution.—California: Monterey Bay, Los Angeles Harbor, Santa Catalina Island; Mexico: Bahía de Los Angeles (Gulf of California).

Carazziella carrascoi, new species
Fig. 5

Polydora citrona: Carrasco, 1974:193; 1976:25–28. [*Not* Hartman, 1941].

Material examined.—CHILE: Bahía de Concepción, Jan. 1969, coll. V. A. Gallardo.—holotype (MZC 14652) and 2 paratypes (MZC 14653–4).

Description.—A small species, up to 2.8 mm long and 0.4 mm wide for 25 segments for the type-material, but reported up to 7 mm long and 0.6 mm wide for 31 segments (Carrasco, 1974). Body light tan in alcohol with brown pigment along margin of caruncle.

Prostomium flattened or rounded on anterior margin (Fig. 5A); caruncle extending to middle of setiger 2 thereupon terminating, followed immediately by a discrete second ridge extending onto setiger 3; no occipital tentacle; 2 pairs of eyes: anterior pair cup-shaped, widely spaced; posterior pair oval, closely spaced. Peristomium inflated, extending anteriorly to and,

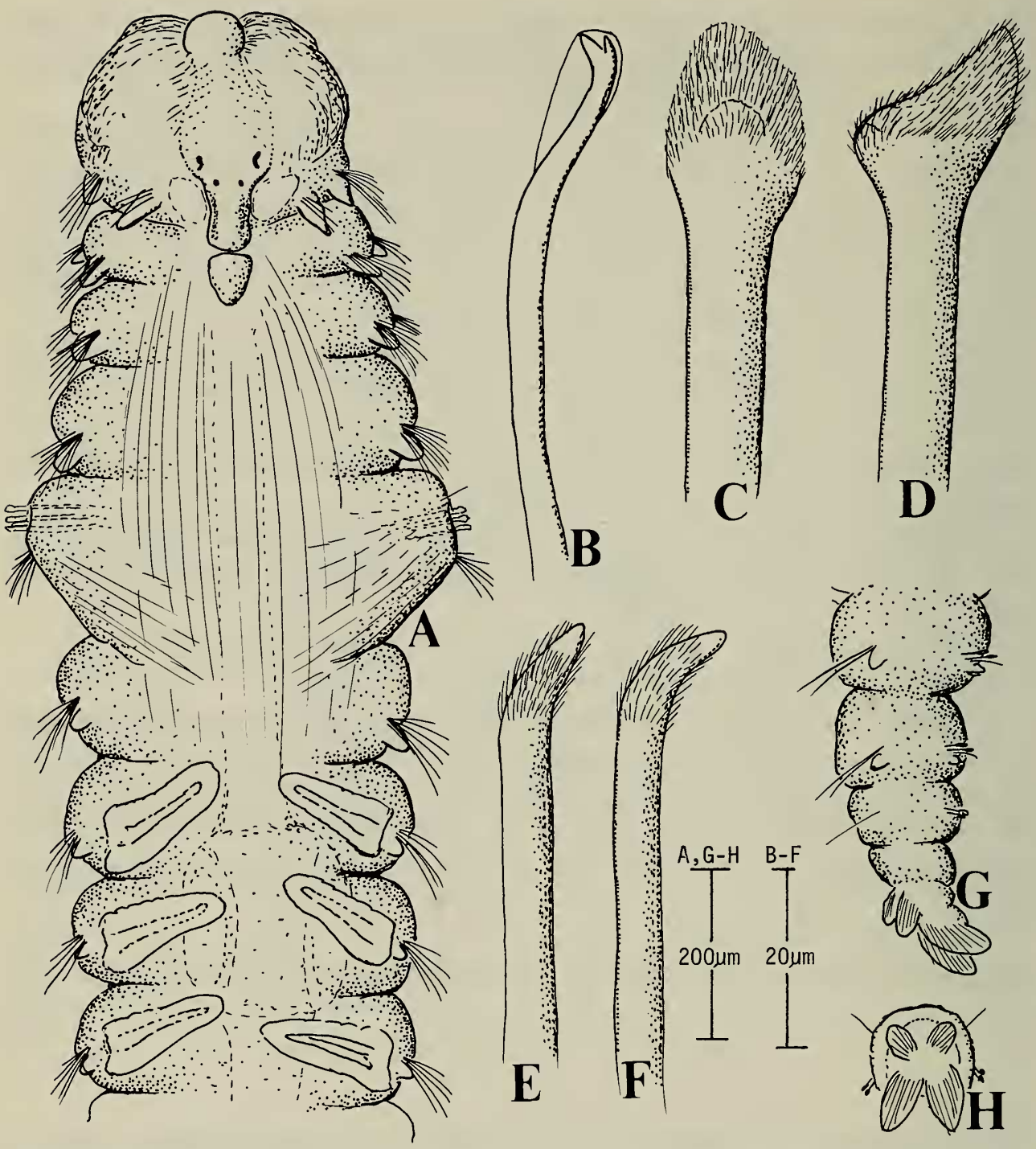

Fig. 5. *Carazziella carrascoi:* **A,** Anterior end in dorsal view; **b,** Hooded hook; **C–D,** Ventral major spines from setiger 5; **E–F,** Dorsal major spines from setiger 5; **G,** Posterior end in lateral view; **H,** Pygidium in posterior view.

sometimes, beyond prostomium; palps extending posteriorly for 7–8 setigers.

Setiger 1 with notopodial lobes significantly longer than neuropodial lobes; with 2–3 very thin, short capillary notosetae and well-developed fascicle of prominent unilimbate neuropodial capillaries. Setigers 2–4 with fascicles of unilimbate capillaries in both rami, from setiger 6, long, thin, unilimbate capillary notosetae; neuropodia of setigers 6 and 7 bearing cap-

illaries only; bidentate hooded hooks first appearing in neuropodia from setiger 8 (rarely 9) (Fig. 5B), these numbering 3–5 per fascicle, accompanied by 2–3 inferior capillaries and occasionally, also by a single superior capillary, for most of body length.

Setiger 5 distinctly modified, with heavy dorsal musculature overlapping onto setiger 6; with or without a simple superior dorsal seta, and bearing a prominent fascicle of bilimbate neurosetae. Major spines of 2 types in a double curved row: (1) ventral row of large spines distally expanded into 2 indistinct rounded knobs, one more distal to the other in lateral view. (Fig. 5C–D); (2) dorsal row of smaller, falcate spines with bristles surrounding shaft subdistally, leaving tip free (Fig. 5E–F).

Branchiae from setiger 7, not overlapping at midline, continuing for 6–8 setigers (Fig. 5A). Pygidium with 4 conical lobes, the dorsal pair less than half as large as the ventral pair (Fig. 5G–H).

A highly muscular gizzard present in gut at level of setigers 7–9.

Remarks.—*Carazziella hobsonae, C. calafia* and *C. carrascoi* are closely related and form a distinct species-group, characterized by having a "gizzard" in the digestive tract. This structure has not been observed in the other 8 species of the genus. The caruncle is divided in *C. hobsonae* and *C. carrascoi,* and undivided in *C. calafia*. Notosetae are present on setiger 1 of both *C. calafia* and *C. carrascoi*: the former species has a well-developed fascicle, whereas the latter has only 2–3 very delicate setae. *C. hobsonae* lacks notosetae on setiger 1 altogether. The superior dorsal fascicle is absent from setiger 5 in *C. calafia,* present in *C. hobsonae,* and may be present or absent in *C. carrascoi.* Each species differs from the others in the configuration of the major spines of setiger 5 (compare Figs. 2C–F; 4B–F; 5C–F). *Carazziella hobsonae* and *C. calafia* each have a terminal depression on these setae; this is lacking on *C. carrascoi.*

Etymology.—This species is named in honor of Dr. Franklin D. Carrasco, polychaete systematist of the Instituto de Biología (MZC), who supplied the specimens on which this description is based.

Distribution.—Chile, Bahía de Concepción, subtidal in mixed sediments.

Carazziella patagonica, new species
Fig. 6

Material examined.—ARGENTINA: Golfo San Matías, Sta. SAO I-49, 41°16′S; 65°04′W, coll. 1971, J. Orensanz, 36 m, mixed sand-mud substratum.—holotype (MACN 29262).

Description.—Holotype small, measuring 1.7 mm long and 0.27 mm wide for 25 setigers. Color light tan, with a few small black medial pigment spots.

Prostomium entire on anterior margin; with caruncle extending posteriorly into setiger 2; no occipital tentacle. but posterior part of caruncle

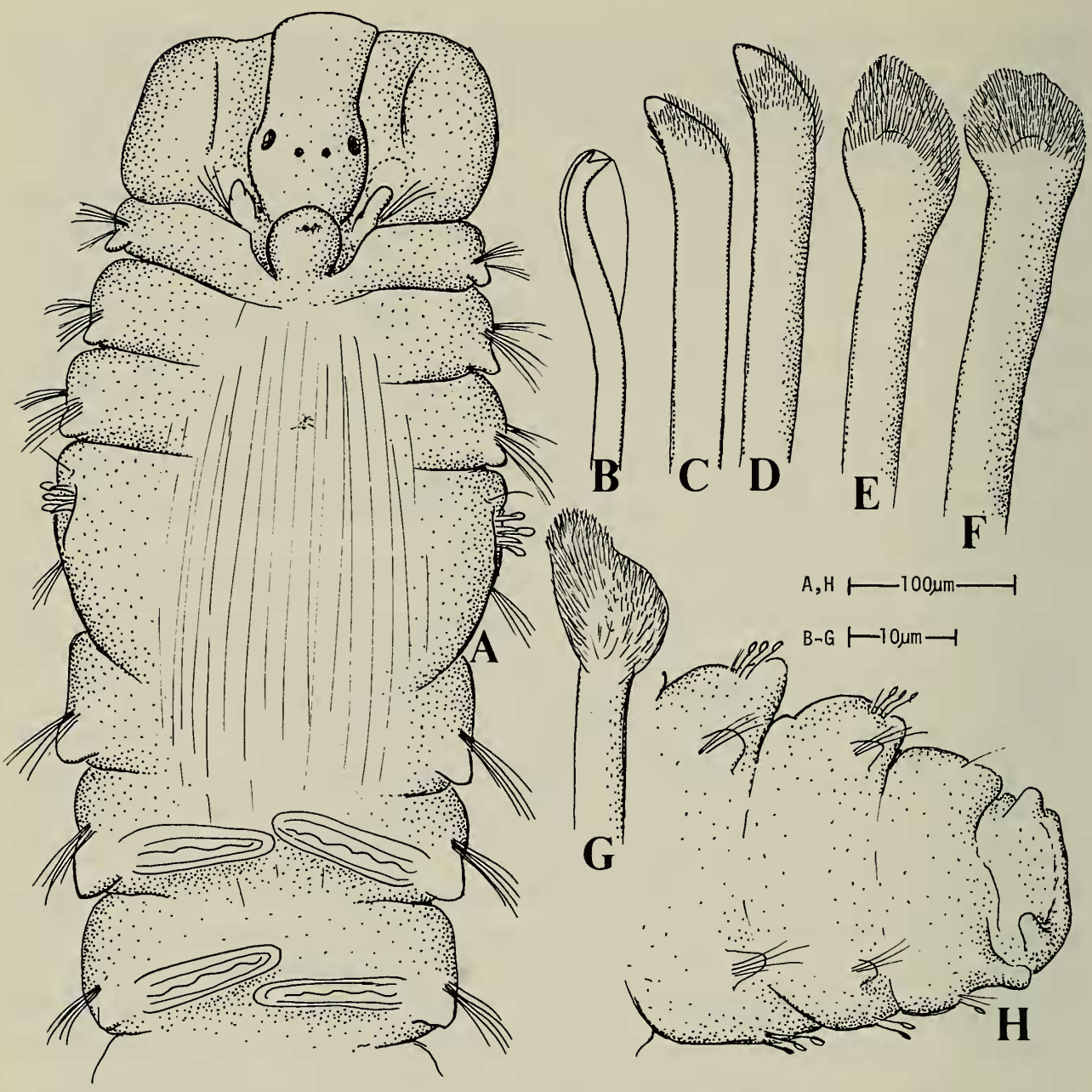

Fig. 6. *Carazziella patagonica:* **A,** Anterior end in dorsal view; **B,** Hooded hook; **C–D,** Dorsal major spines from setiger 5; **E–G,** Ventral major spines from setiger 5; **H,** Posterior end in dorsolateral view.

forming a fold overlapping anterior portion of caruncle (Fig. 6A); 2 pairs of eyes arranged in wide crescent; lateral pair larger, cup-shaped; medial pair smaller, rounded. Peristomium greatly enlarged; palps missing.

Setiger 1 reduced, lacking distinct segmental boundaries; neuropodium completely absent; notopodium with short postsetal lobe bearing 2–3 thin capillaries (Fig. 6A). Setigers 2, 3, 4, –, 6 and subsequent segments with well-developed notopodia bearing unilimbate capillaries with finely granulated shafts and thin transparent sheaths. Similar neurosetae in setigers 2, 3, 4, –, 6 and 7; bidentate hooded hooks in neuropodia from setiger 8 (Fig. 6B) numbering 3–4 per ramus, accompanied by 2 thin inferior capillaries.

Setiger 5 distinctly modified, bearing a single unilimbate, granulated superior dorsal capillary and a ventral fascicle of 4–5 unilimbate nongranulated capillaries. Major spines including 2 dorsal falcate spines bearing a distinct crest of bristles partly surrounding the tip (Fig. 6C–D) and 3–4 ventral apically expanded spines, each surmounted by a tall cone of bristles (Fig. 6E–G).

Branchiae from setigers 7–10, each gill long, straplike (Fig. 6A), gills meeting middorsally. Pygidium with 2 small cirri (Fig. 6H), but specimen may be damaged.

Remarks.—The reduction of setiger 1 in *C. patagonica* is unique in the genus. No other species in the entire *Polydora*—complex has a well-developed notopodium with setae on setiger 1 while entirely lacking a neuropodium.

Etymology.—The epithet is derived from Patagonia, the general regional name applied to the southern half of Argentina.

Distribution.—Argentina, in shallow subtidal sediments.

Carazziella reishi (Woodwick, 1964)
Fig. 7

Pseudopolydora reishi Woodwick, 1964:152; Kohn & Lloyd, 1973:381. [*Not* Reish, 1968:84].

Material examined.—ENIWETOK: Engebi, 7 Sept. 1956, coll. D. J. Reish, hard coral rocks, in sand.—holotype (USNM 32611). INDONESIA: Pulo Boonda, NW of Sumatra, 5°33′N; 95°09′E, TeVega Sta. 93, Nov. 1963, coll. A. J. Kohn, coral rocks.—4 specimens (USNM 45318). JOHNSTON ATOLL: Sta. 3–5, 25 April 1976, coll. R. Brock.—98 specimens (NOSC 770030JI).

Description.—A small species, up to 3.0 mm long and 0.2 mm wide for 35 setigers. Body light tan in alcohol with no pigment.

Prostomium incised on anterior margin (Fig. 7A); caruncle extending to end of setiger 2; no occipital tentacle; no eyes. Peristomium well-developed, but not inflated; palps missing from all material examined.

Setiger 1 well developed, with conical postsetal lobes in both noto- and neuropodia, each lobe with fascicle of capillaries (Fig. 7A); setigers 2, 3, 4, –, 6 and subsequent setigers with well-developed fascicles of unilimbate capillary notosetae; no specialized posterior spines. Neuropodia of setigers 2, 3, 4, –, 6 and 7 with short conical postsetal lobes and spreading fascicles of unilimbate capillaries; 2–3 bidentate hooded hooks beginning on setiger 8, accompanied throughout by 1–2 inferior capillaries; margin of hood serrated (Fig. 7B).

Setiger 5 distinctly modified, with a superior dorsal fascicle of 2–3 capillaries located anterodorsal to the major spines; with a prominent fascicle of unilimbate neurosetal capillaries. Major spines arranged in 2 curved rows:

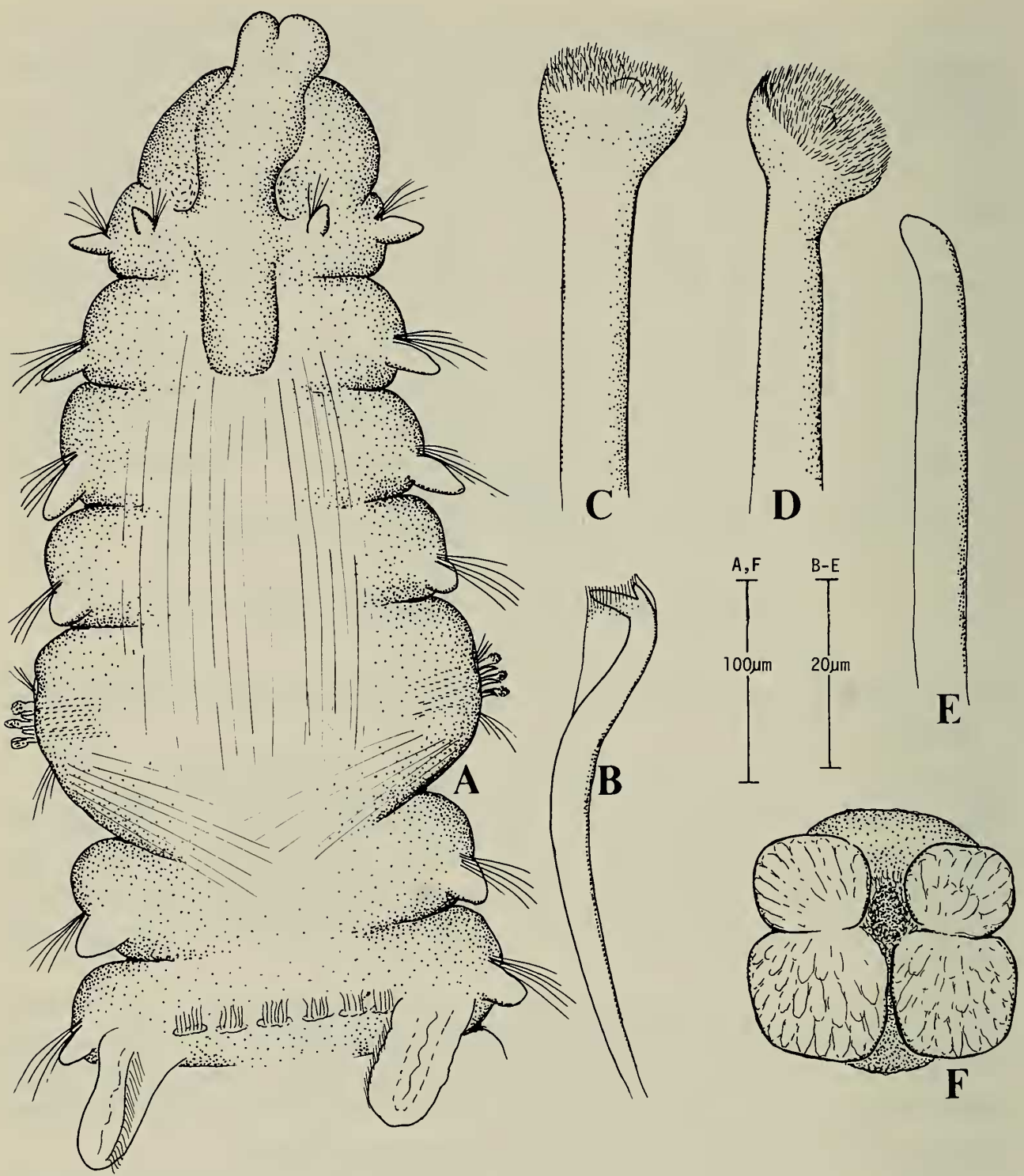

Fig. 7. *Carazziella reishi*: **A,** Anterior end in dorsal view; **B,** Hooded hook; **C–D,** Ventral major spines from setiger 5; **E,** Falcate dorsal spine from setiger 5; **F,** Pygidium in posterior view.

(1) a ventral row of 3 spines with expanded bristled tops bearing a small barely visible apical cone (Fig. 7C–D); (2) a dorsal row of 2–3 simple falcate spines, lacking bristles (Fig. 7E).

Branchiae from setiger 7, continuing for only 5 setigers; each gill broad, reaching to the midline, with 6 patches of cilia extending in a line across dorsum between each gill pair (Fig. 7A). Pygidium with 4 short thickened lobes (Fig. 7F), these not conical as in most species of genus.

Remarks.—This species was well described by Woodwick (1964). However, the new material from Indonesia (see Kohn & Lloyd, 1973) and Johnston Atoll has permitted a more detailed study of the morphology of this form for comparison with the now numerous other species of the genus. As a result of these studies, it was noted that the hooded hooks on the Indonesian and Johnston Atoll specimens bear fine serrations on their hood openings; such serrations were not observed on the holotype due to the small size of that specimen and its setae, precluding observation of that character with light microscopy. The bristle-topped spines of setiger 5 have a small central cone among the bristles of all specimens examined. The 6 ciliary patches located on the dorsum between each gill pair were clearly visible on the Indonesian and Johnston Atoll specimens, but only partially discernible on the holotype because it was dorsally damaged. The pygidium is definitely composed of 4 lobes, and not 2 as stated by Woodwick (1964).

Carazziella reishi is unique within the genus in exhibiting enlarged bristle-topped spines accompanied by *unbristled* falcate spines. In 9 other species (Blake & Kudenov, 1978; this paper) both types of spines are bristle-topped. In *C. quadricirrata* (Rainer, 1973) both the cusped spines and the simple, falcate spines lack bristles. *C. reishi* has less of an oblique angle between the main fang and shaft of the hooded hooks than other species of the genus, is the only species known to have serrations on the opening of the hooded hooks, discrete ciliary patches between the gill pairs and is the only species lacking eyes. Moreover, *C. reishi* is the only species of the genus reported to bore into calcareous substrata.

Distribution.—Indonesia; Johnston Atoll; Enewetak.

Discussion

The *Polydora*-complex has been revised by Blake & Kudenov (1978) to include 6 genera: *Polydora* Bosc. 1802; *Pseudopolydora* Czerniavsky, 1881; *Carazziella* Blake & Kudenov, 1978; *Tripolydora* Woodwick, 1964; *Boccardiella* Blake & Kudenov, 1978 and *Boccardia* Carazzi, 1893. The first 3 genera have branchiae beginning posterior to setiger 5, while the last 3 bear branchiae beginning on setiger 2. Blake & Kudenov (1978) present a complete review of the characters which separate and distinguish these 6 genera.

Woodwick (1964) was the first to observe that *Polydora citrona* Hartman is a species which does not completely agree with the generic definition of *Polydora*. Blake & Kudenov (1978) designated *P. citrona* as the type-species of *Carazziella* which now contains the following 11 species, listed geographically:

C. victoriensis Blake & Kudenov, 1978. Victoria, Australia
C. phillipensis Blake & Kudenov, 1978. Victoria, Australia
C. hymenobranchiata Blake & Kudenov, 1978. Victoria, Australia

C. hirsutiseta Blake & Kudenov, 1978. New South Wales, Australia
C. quadricirrata (Rainer, 1973). New Zealand
C. reishi (Woodwick, 1964). Enewetak; Indonesia; Johnston Atoll
C. citrona (Hartman, 1941). California
C. calafia, new species. California; western Mexico
C. hobsonae, new species. Gulf of Mexico
C. carrascoi, new species. Chile
C. patagonica, new species. Argentina.

Only 2 of these species, *C. hobsonae* and *C. patagonica,* occur outside of the Pacific basin.

Of the 11 species, *C. hymenobranchiata, C. hirsutiseta, C. quadricirrata, C. citrona, C. reishi* and *C. patagonica* are specifically unique and readily separable from one another. *Carazziella victoriensis, C. phillipensis, C. hobsonae, C. calafia* and *C. carrascoi,* however, are all closely related. *Carazziella victoriensis* and *C. phillipensis* from Australia, lack a gizzard between the esophagus and intestine, whereas *C. hobsonae, C. calafia* and *C. carrascoi,* all from American waters, possess such a gizzard. Species within these 2 groups may be distinguished from one another by considering the presence or absence of notosetae on setiger 1, shape of the prostomium and caruncle, presence or absence of superior dorsal capillaries on setiger 5 and the form of the major spines of setiger 5. Each of these species is small and careful attention to detail is required for accurate identification.

The occurrence of a gizzard in the *C. hobsonae* group is interesting. The structure was first reported from larvae and adults of *Polydora socialis* (Blake, 1969; 1971). Blake & Woodwick (1972) report a similar structure in *P. convexa.* Blake & Kudenov (1978) report the occurrence of gizzards in *P. socialis, P. protuberata* and *P. tentaculata,* all of which are very closely related. The structure also occurs in the closely related *P. cardalia* (Blake, in preparation). In each genus, whether *Polydora* or *Carazziella,* the structure consists of 4 symmetrically arranged muscles which apparently serve to crush or otherwise treat food materials as they pass from the esophagus to the intestine. The specimens of *C. hobsonae* permit a clear look at the gross morphology of this structure (Fig. 3) and there appears to be a valve which may control entry of materials into the gizzard. A histological study is needed to assess the fine structure and function of this gizzard. The gizzard is easily overlooked in routine investigation, especially when searching for the other more obvious external taxonomic characters.

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