

ON SOME POLYCHAETE WORMS FROM THE NORTHERN COAST OF TAIWAN¹

SHI-KUEI WU²

Received for publication March 21, 1968

ABSTRACT

The present paper reports 34 species of polychaete worms from the northern coast of Taiwan. Except the 15 species of nereids, 1 species of polynoid and 1 species of eunicid, the rest of 17 species are the first records from Taiwan.

This paper deals with a collection of polychaete worms made during August 1963 to June 1966 between tidal marks of the northern coast of Taiwan, the area extending from Tamsui River to Su-au-wan. The collecting places were: Tamsui River (including Koan-tu, Long-shing, Tu-chuan-tou), Shih-men, Kan-hua, Yeh-liu, Wan-li, Wai-mu-shan, Pa-chih-men, Pa-tou-tzu, Keng-tzu-liaw, Fu-long, Tah-shi, Pei-fan-ao, Nan-fan-ao and Su-au-wan.

The study reports 34 species of the polychaete worms. Except for the 15 species of nereids (Wu, 1968), one species of polynoid (*Iphione muricata*) and one species of eunicid (*Marphysa sanguinea*), the rest of 17 species are recorded for the first time from Taiwan.

SYSTEMATIC ACCOUNTS

POLYCHAETA ERRANTIA

Family Polynoidae Malmgren

Genus *Lepidonotus* Leach

Lepidonotus tenuisetosus (Gravier)

Euphione tenuisetosa Gravier, 1901: 222-226, pl. 8, figs. 123-126, text-figs. 228-231;

-Fauvel, 1911: 638.

Lepidonotus tenuisetosus, Fauvel, 1919: 330-332; -Monro, 1934: 358; -Day, 1934: 20; 1962: 632; -Okuda, 1940: 4-6, fig. 2; -Imajima & Hartman, 1964: 27.

Locality: Shih-men.

Specific characters: Length usually measures 15 mm and width 3 mm without parapodium. Prostomium has 2 pairs of eyes, the two on the side almost contiguous; median antenna long and filiform; 2 lateral antennae filiform and shorter than the median antenna; 2 palps stout and same length as median antenna. Elytra 12 pairs. Each elytron has an oval shape, its surface covered with a few large and many small tubercles. The posterolateral margin of elytron is fringed with short papillae. Setigers 25. Parapodia except the first and the last, have small notopodia which are anterior and dorsal to the large, truncated neuropodia. Dorsal cirri are long, posterior to neuropodia; ventral cirri are small and directly ventral to neuropodia. Noto-setae are all slender, spinulose; neurosetae are rather long with a smooth, bent tip and spinulose subterminally. Ventral cirri of the first parapodium is the longest of all ventral cirri and is directed anteriorly. A pair of papillae appear on the ventral side of each segment from

1 This study was supported in part by the National Council on Science Development, Taipei, Taiwan.

2 Assistant research fellow, Institute of Zoology, Academia Sinica, Taiwan, Republic of China.

setigerous segment 7 to the posterior end.

Color: Elytra are dark-brown with 2 white oval patches in the center. Ceratophores of median and lateral antennae are darker than other parts of prostomium.

Distribution: Durban, Madagascar (Fauvel, 1919; Day, 1934, 1962); Red Sea (Gravier, 1901); Persian Gulf (Fauvel, 1911); China coast-Amoy (Monro, 1934); Ryukyu (Okuda, 1940); Japan (Imajima & Hartman, 1964). This is the first record of this species from Taiwan.

Genus *Thormora*, Baird

Thormora jukesii Baird

Fig. 1, A-F.

Polynoe (Lepidonotus) trissochaetus, Grube, 1878: 25-26, pl. 2, fig. 4.

Thormora (Lepidonotus) jukesii, Marenzeller, 1902: 571, pl. 2, fig. 6.

Lepidonotus trissochaetus, Willey, 1905: 249-250; -Potts, 1910: 331-332; -Day, 1934: 20.

Thormora trissochaeta, Horst, 1917: 75-76; -Treadwell, 1926: 6-8, pl. 1, figs. 4-8.

Lepidonotus (Thormora) trissochaetus, Fauvel, 1919: 332.

Thormora jukesii, Monro, 1924: 37-38, fig. 1; -Imajima & Hartman, 1964: 27.

Lepidonotus (Thormora) jukesii, Fauvel, 1930: 508; 1932: 16; -Pruvot, 1930: 9-11, pl. 1, figs. 11-15; -De Silva, 1961: 164-165, fig. 1.

Lepidonotus atratus, Treadwell, 1940: 3-4, figs. 10-13.

Locality: Pa-chih-men.

Specific characters: A single specimen (Fig. 1A) was collected under a coral fragment with an abundant growth of algae, *Corallina*. Length 10 mm and width 4 mm.

Prostomium (Fig. 1B) has 2 pairs of equal sized eyes; lateral antennae long and filiform; median antenna filiform and slightly longer than lateral antennae, with distinct subterminal enlargement; palps stout, same length as median antenna. Elytra 12 pairs. Parapodium (Fig. 1C) has a small notopodial lobe and a large truncated neuropodial lobe. Noto-setae are of 2 kinds: fine smooth hastate (Fig. 1D) and short spinulose (Fig. 1E); the latter surround the former. Neurosetae (Fig. 1F) are smooth except for the enlarged subterminal region with several rows of spines.

Color: First and anterior half of second pair of elytra are white; third to eleventh pairs of elytra are black except their lateral and posterolateral borders and the spots over the elytophores; last pair of elytra are white, with 2 small black spots on the center of anterior half of the elytra (Fig. 1A). On the exposed middorsum, where the elytra do not overlap, transverse parallel black lines are noted.

Remarks: This species agree with *Thormora trissochaeta* reported by Treadwell (1926) from Fiji and Samoa in every aspect except the lengths of lateral antennae and palps relative to the length of median antenna. The specimen from Taiwan has median and lateral antennae

Fig. 1. -*Thormora jukesii*: A, dorsal view; B, dorsal view of anterior end, with the first pair of elytra removed, 100X; C, posterior view of the tenth parapodium; D, hastate notoseta; E, spinulose notoseta; F, neuroseta. -*Iphione muricata*: G, dorsal view of the anterior end, 40X; H, anterior view of the protruded proboscis, 40X; I, third right elytron, dorsal view; J-L, notoseta (J, distal portion; K, middle portion, with granules; L, basal portion); M, neuroseta. -*Iphione ovata*: N, dorsal view of the anterior end, 40X; O-P, primary and secondary areolation of elytron, P with spine. (Scales of E, F, J-L at D; scales of P, O at M.)

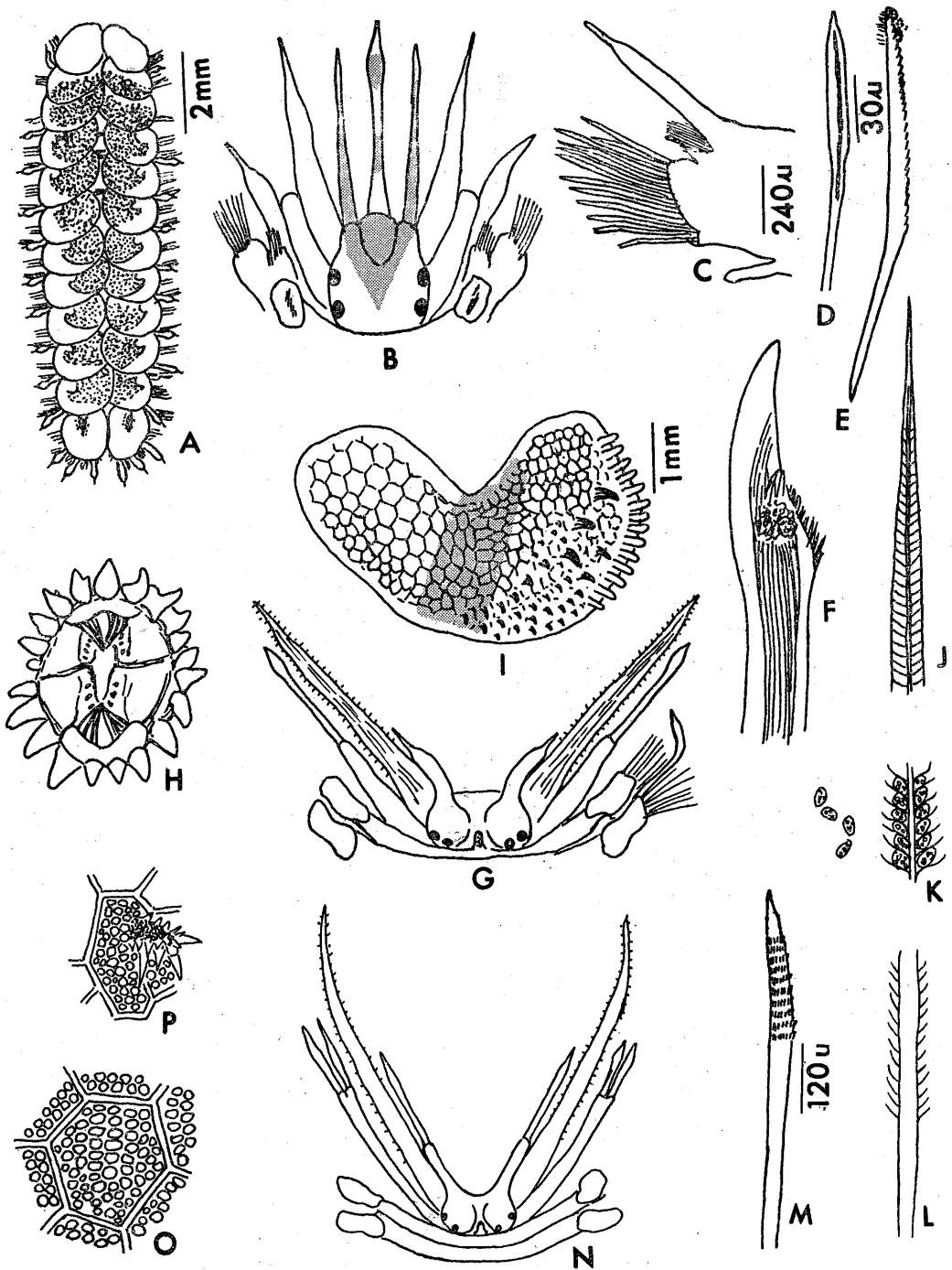


FIGURE 1

and palps subequal in length, while the specimens of Treadwell have median antenna twice the length of lateral antennae, and palps are twice the length of median antenna.

Distribution: Madagascar (Fauvel, 1919; Day, 1934); Mozambique (Day, 1934); Zanzibar (Potts, 1910); Red Sea (Fauvel, 1919); Ceylon (Willey, 1905; De Silva, 1961); Saya de Malha, Male Atoll, S. Mahlos (Potts, 1910); Andaman, Mergui Archipelago (Fauvel, 1932); Malay Archipelago (Horst, 1917); Philippines (Grube, 1878; Treadwell, 1940); Japan (Marenzeller, 1902; Imajima & Hartman, 1964); Fiji, Samoa (Treadwell, 1926); New Caledonia (Fauvel, 1930; Pruvot, 1930); Queensland-Port Mollé (Monro, 1924). This is the first record of this species from Taiwan.

Genus *Iphione* Kinberg

Iphione muricata (Savigny)

Fig. 1, G-M.

Iphione muricata, Grube, 1878: 21-22; -Gravier, 1901: 226-231, pl. 9, figs. 129-135, text-figs. 232-239; -Willey, 1905: 246-248, pl. 1, fig. 6; -Potts, 1910: 341; -Horst, 1917: 65-66; -Fauvel, 1919: 334; 1930: 509; 1932: 12; 1936: 51; -Ehlers, 1920: 17; -Treadwell, 1925: 115; 1939: 183; -Gravely, 1927: 58, pl. 9, fig. 1; -Monro, 1931: 35; -Day, 1934: 25; 1962: 628; -Okuda, 1937a: 266-267, fig. 6; -Imajima & Hartman, 1964: 17.

Locality: Pa-chih-men.

Specific characters: Body length measures 25 mm; protruded proboscis, 8 mm. Prostomium (Fig. 1G) bilobed, has a median notch and a pair of short antenna anteriorly; a median papilla and 2 pairs of eyes posteriorly. Tentacular cirri have subterminal swelling cirrostyle (Fig. 1G). Proboscis (Fig. 1H) has 4 golden-colored jaws, 3 pairs of small jaw behind, and 21 papillae at anterior end. Elytra 13 pairs, except the first and last pairs, are reniform (Fig. 1I). The surface of each elytron

(Fig. 1, I) is divided into polygonal area, mostly hexagonal of various size, as described by Willey (1905), with 3 or 4 oblique rows of hooked spines at the posterolateral area. The spines are larger anterolaterally, gradually becoming smaller posteromedially. The lateral margin is fringed with papillae. The first pair of elytra are suboval and the last pair are triangular in shape. Styles of dorsal cirri have a subterminal swelling; ventral cirri short. Notosetae are extremely long, divided into 3 portions: 1) pinnate distal portion (Fig. 1J), 2) lacinate middle portion with strongly refractory granules (Fig. 1K), and 3) basal portion (Fig. 1L). Notosetae (Fig. 1M) are simple, with about 10 transverse rows of serrations subterminally. Anus opens dorsally between the last pair of elytra.

Distribution: Durban, Mombasa (Day, 1962); Madagasaar (Fauvel, 1919; Day, 1934, 1962); Zanzibar (Potts, 1910); Red Sea (Gravier, 1901; Fauvel, 1919); Ceylon (Willey, 1905; Gravely, 1927); Maldives (Potts, 1910; Fauvel, 1932); Andamans, Diamond Island, Snod Island, Coco Island, Kilakarai, Mergui, Pamban (Fauvel, 1932); Seychelles, Minokoi (Potts, 1910); Singapore (Monro, 1931); Malay Archipelago (Horst, 1917); Amboina, Pulo Edam (Ehlers, 1920); Taiwan (Treadwell, 1939); Japan (Fauvel, 1936; Imajima & Hartman, 1964); Lanai Island (Treadwell, 1925); Philippines (Grube, 1878); Palau Island (Okuda, 1937a); New Caledonia (Fauvel, 1930).

Iphione ovata Kinberg

Fig. 1, N-P.

Iphione hirotai Izuka, 1912: 63-65, pl. 7, figs. 8-15.

Iphione ovata, Chamberlin, 1919: 64; -Treadwell, 1926: 5; -Monro, 1928: 471-472; -Hartman, 1939: 27, pl. 3, figs. 31-32; -Rioja, 1962: 137-141, text-figs. 30-36.

Iphione muricata, Pruvot, 1930: 3-5, fig. 1.

Localities: Shih-men, Pa-tou-tzu.

Specific characters: Length up to 14 mm, width up to 7 mm. Prostomium, elytra,

parapodia and setae are similar to *I. muricata* except several characters indicated in the following *Table 1*.

TABLE I

The differences between *I. ovata* and *I. muricata* of Taiwan

	<i>I. ovata</i>	<i>I. muricata</i>
1. Lateral antenna	Longer and slender (Fig. 1N)	shorter and thick (Fig. 1G)
2. Relative length of styles to phores of lateral antenna	1:1	1:3
3. Relative length of cirrostyles to cirrophores of tentacular cirri	1:2	1:1
4. Spines on the lateral side of elytra	Spiny (Fig. 1P)	Smooth (Fig. 1, I)
5. Lateral margin of elytra	Without papillae	With papillae (Fig. 1, I)
6. Color in alcohol	Orange-red	Dark brown

Distribution: Japan (Izuka, 1912); Fiji (Treadwell, 1926); Tahiti, Marquesas, Moorea Island (Monro, 1928); Paumotu Island (Chamberlin, 1919); Hawaii (Hartman, 1939); New Caledonia (Pruvot, 1930); Galapagos Island, Ecuador to Agua Verde Bay, Gulf of California (Hartman, 1939); Pacific side of Mexico (Rioja, 1962). This is the first record of this species from Taiwan.

Family Amphinomidae Savigny

Genus *Eurythoë* Kinberg

Eurythoë complanata (Pallas)

Fig. 2, A-G.

Eurythoë alcyonia, Gravier, 1901: 248-254, pl. 9, figs. 140-143, pl. 10, figs. 144-146, text-figs. 257-268.

Eurythoë complanata, Potts, 1909: 367-369, pl. 46, fig. 20; -Horst, 1912: 34-36, pl. 9, fig. 20; -Chamberlin, 1919: 28-30, pl. 14, figs. 3-8; -Fauvel, 1919: 348-349; 1930: 510-511; 1932: 45-46; -Ehlers, 1920: 15-16; -Treadwell, 1926: 2; -Gravely, 1927: 59; -Monro, 1930: 27-28; 1931: 35; 1933: 4-5; 1937: 252; -Pruvot, 1930: 23-25; -Day, 1934: 27; 1962: 635; -Okuda, 1937a: 263-264, figs. 1-2; -Hartman, 1940: 202-203, pl. 3, figs.

1-4; 1948: 42-44; -Rioja, 1941: 681; 1962: 157; -De Silva, 1961: 169; -Imajima & Hartman, 1964: 51; -Pillai, 1965: 119-120, fig. 4, C-E.

Locality: Pa-chih-men.

Specific characters: Length up to 46 mm and width 4 mm not including setae. Prostomium (Fig. 2A) has 2 pairs of orange eyes, the anterior pair being larger than posterior pair. Caruncle extends from the level between anterior pair of eyes to anterior margin of setigerous segment 4. Branchiae begin on the second setiger. Parapodium (Fig. 2B) is indistinctly bilobed. Notosetae located anterior to dorsal cirri, of 3 kinds: 1) short, serrated (Fig. 2C); 2) short, straight, smooth (Fig. 2D); and 3) long, with small spur (Fig. 2F). Neurosetae located anterior to ventral cirri, of 2 kinds: 1) long, stout, furcate, with unequal arms (Fig. 2E); and 2) long, fine (about 2.5 μ in diameter), with basal spur (Fig. 2G). Dorsal cirri are much longer than ventral cirri.

Distribution: Madagascar (Fauvel, 1919; Day, 1934); Natal (Day, 1934); Mozambique, Red Sea (Fauvel, 1919; Monro, 1937); Gulf

of Mannar, Seychelles (Potts, 1909; Monro, 1924); Chagos, Maldives (Potts, 1909); Kurusadai Island (Gravely, 1927); Ceylon (De Silva, 1961); Bengal (Hartman, 1948); Malay Archipelago (Horst, 1912); Singapore (Monro, 1931); Amboina (Ehlers, 1920); Philippines (Pillai, 1965); Japan (Treadwell, 1926); Honolulu, Society Island, Fiji, Funafuti (Potts, 1909); Tahiti (Hartman, 1948); New Caledonia (Fauvel, 1930; Pruvot, 1930); Queensland, Christmas Island (Monro, 1924); Gulf of California to Peru (Hartman, 1948; Monro, 1933 Rioja, 1941, 1962); Galapagos Islands (Monro, 1933; Chamberlin, 1919); Gulf of Guinea, Ascension Island (Monro, 1930); West Indies (Hartman, 1948). This is the first record of this species from Taiwan.

Family Phyllocodidae Williams

Genus *Phyllococe* Savigny

Phyllococe quadraticeps Grube

Fig. 2, H-I.

Phyllococe quadraticeps Grube, 1878: 98-99, pl. 6, fig. 2; -Gravier, 1900: 198, pl. 10, figs. 22-24, text-figs. 56-60; -Ehlers, 1920: 24; -Fauvel, 1930: 511-512; 1932: 68; -Monro, 1931: 36.

Localities: Pa-chih-men, Shih-men.

Specific characters: Length up to 77.7 cm. Prostomium (Fig. 2H) nearly square, with 4 blunt antennae and nuchal papilla at the mid-posterior margin. A pair of eye are brown red, with white lenses. First 2 segments fused and have 4 pairs of tentacular cirri of which 3 anterior pairs are short, ovoid and thick; the fourth pair subulate. A pair of nuchal organs present directly anterior to the cirro-

phores of first pair of tentacular cirri. Parapodia uniramous. Both dorsal and ventral foliaceous; dorsal cirri have their posterior margin covering the anterior margin of succeeding dorsal cirri; ventral cirri thick. Setae are all composite (Fig. 2I).

Color: Dorsal side is dirty yellow green and ventral side is yellow. Each segment has a dark, broad, transverse streak. All cirrophores of tentacular cirri are black.

Distribution: Red Sea (Gravier, 1900); Sipora Island-off West Sumatra (Monro, 1931), Nicobars (Fauvel, 1932), Nordwacher (Ehlers, 1920), Philippines (Grube, 1878), New Caledonia (Fauvel, 1930). This is the first record of this species from Taiwan.

Genus *Eulalia* Savigny

Eulalia viridis (Linnaeus)

Fig. 2, J-L.

Eulalia viridis, Izuka, 1912: 205-206, pl. 21, fig. 6; -Fauvel, 1923: 160, fig. 57, a-h; 1930: 515; 1936: 58; -Monro, 1930: 76; 1933: 19; -Day, 1934: 30-31; -Okuda, 1938a: 88; -Berkeley & Berkeley, 1948: 48; -Okuda & Izuka, 1954: 1318, fig. 3732; -Ushakov, 1955: 98 (*vide* 1965: 80), fig. 5, D-F; -Hartman, 1961: 61-62; -Pettibone, 1963: 85-86, fig. 19; -Imajima & Hartman, 1964: 63.

Locality: Shih-men.

Specific characters: Length up to 84 mm. Prostomium (Fig. 2J) suboval, wider than long, with 5 antennae: 4 subequal at the anterior end and one median at the level between 2 eyes, extending posteriorly to third tentacular segment. Eyes 2,

Fig. 2. -*Eurythoe complanata*: A, dorsal view of the anterior end, 40X; B, anterior view of a parapodium, 40X; C, D, F, notosetae; E, G, neurosetae. -*Phyllococe quadraticeps*: H, dorsal view of the anterior end, 40X; I, seta. -*Eulalia viridis*: J, dorsal view of anterior end, 40X; K, anterior view of a parapodium; L, seta. -*Eunice antennata*: M, ventral view of maxillae, 40X; N, dorsal view of mandibles, 40X; O, posterior view of a parapodium; P-R, setae. (Scales of D-G, I, L, P-R at C; scales of O at K.)

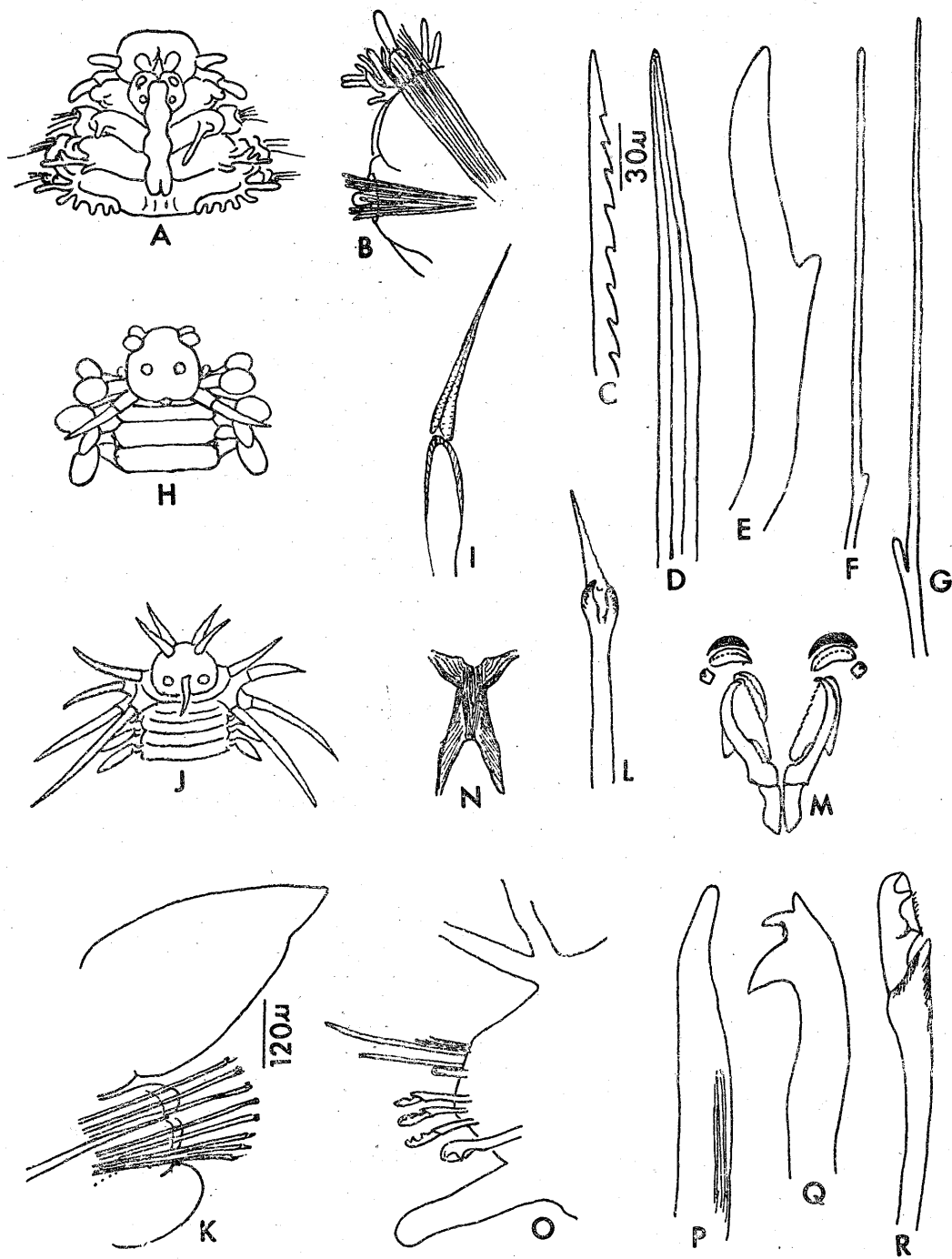


FIGURE 2

reddish brown, with white lenses. Four pairs of tentacular cirri present: a pair on the first, 2 pairs on the second and a pair on the third tentacular segments. Dorsal pair of tentacular cirri on the second tentacular segment are the longest, extending posteriorly to setiger 5; ventral pair of tentacular cirri are thick and flat. Proboscis is uniformly papillated. Dorsal cirri are large, lanceolate; ventral cirri are ovate, of same length as setal lobes (Fig. 2K). Setae (Fig. 2L) have long shaft with enlarged, spinous ends which articulated with short terminal pieces, tapering rapidly, serrated along one side. Anal cirri 2, lanceolate.

Color: Dorsal side is dark olive, green or orange. Each segment has 2 dark, broad transverse bands.

Distribution: South Africa (Day, 1934), Madeira (Monro, 1933); Japan (Izuka, 1912; Okuda, 1938a; Okuda & Izuka, 1954; Imajima & Hartman, 1964); Okhotsk Sea, Southern Kamchatka (Ushakov, 1955); Pacific side of Canada (Berkeley & Berkeley, 1948); California (Hartman, 1961); New Caledonia (Fauvel, 1930); North Pacific, North Atlantic (Pettibone, 1963); North Sea, English Channel, Atlantic, Mediterranean (Fauvel, 1923); Gulf of Guinea (Monro, 1930). This is the first record of this species from Taiwan.

Family Nereidae Johnston

Synonyms, specific characters, colors, remarks and distributions are same as in the previous paper on the nereid worms of Taiwan (Wu, 1968).

Genus *Namalycastis* Hartman
Namalycastis indica (Southern)

Locality: Long-shing.

Genus *Ceratonereis* Kinberg
Ceratonereis burmensis Monro

Locality: Koan-tu.

Genus *Pseudonereis* Kinberg
Pseudonereis anomala Gravier

Localities: Yeh-liu, Wan-li, Pa-chih-men, Pei-fan-ao.

Pseudonereis formosa Kinberg

Localities: Shih-men, Yeh-liu, Wan-li, Pa-tou-tzu, Keng-tzu-liao, Fu-long, Tah-shi, Su-ao-wan.

Genus *Platynereis* Kinberg
Platynereis bicanaliculata (Baird)

Locality: Shih-men.

Platynereis dumerillii (Audouin & Milne-Edwards)

Localities: Shih-men, Nan-fan-ao.

Genus *Nereis* Linnaeus
Nereis heterocirrata Treadwell

Localities: Yeh-liu, Pa-chih-men, Tah-shi.

Genus *Neanthes* Kinberg
Neanthes glandicineta (Southern)

Localities: Koan-tu, Long-shing, Tu-chuan-tou.

Genus *Perinereis* Kinberg
Perinereis nigropunctata Horst

Locality: Shih-men.

Perinereis helleri (Grube)

Locality: Wan-li.

Perinereis cultrifera (Grube)

Localities: Shih-men, Wan-li, Keng-tzu-liao.

Perinereis singaporiensis (Grube)

Locality: Keng-tzu-liao.

Perinereis aibuhitensis Grube

Locality: Koan-tu.

Perinereis vancaurica (Ehlers)

Localities: Shih-men, Kan-hua, Yeh-liu, Wan-li, Pa-tou-tzu, Keng-tzu-liao, Fu-long.

Perinereis brevicirris (Grube)

Localities: Shih-men, Koan-tu, Wan-li, Wai-mu-shan, Pa-chih-men, Keng-tzu-liao.

Family Eunicidae Savigny

Genus *Eunice* Cuvier
Eunice antennata (Savigny)

Fig. 2, M-R.

Eunice antennata, Grube, 1878: 149-150; -Crossland, 1904: 312-318, pl. 22, figs. 1-7, text-figs. 56-60, -Willey, 1905: 280; -Fauvel, 1911: 404-405; 1917: 225-228, fig. 20; 1921: 15-16; 1930: 536; 1932: 138; 1936: 66; -Ehlers, 1920: 31; -Monro, 1924: 53-54; 1933: 59-60; 1937: 287; -Gravely, 1927: 71; -Pruvot, 1930: 72-73; -Day, 1934: 49; 1962: 642; -Okuda, 1937a: 282-283, figs. 26-27; 1938a: 96; -Hartman, 1944b: 115-117, pl. 7, figs. 154-156; 1948: 78-79; -Rioja, 1960: 301; 1962: 174-175; -De Silva, 1961: 178; -Imajima & Hartman, 1964: 255; -Pillai 1965: 148-150, fig. 15, A-H, fig. 16, A-D.

Leodice antennata, Treadwell, 1922: 136.

Localities: Shih-men, Pa-tou-tzu.

Specific characters: Length up to 125 mm, width up to 4 mm, segments 180. Median tentacle extends posteriorly to setiger 4, and has 28 annuli; inner and outer tentacles have 22 and 11 annuli respectively. Peristomial tentacles extend posteriorly to anterior margin of first setiger and have 9 annuli. Branchiae begin on setiger 4 as a single filament, with 3 filaments on setiger 5, 6 filaments on setiger 6, and 7 filaments on setiger 10, number of filaments gradually decreasing with only 2 to 3 filaments about setiger 30. At the posterior fourth of the body, the branchial filaments again increase to 3 to 4 filaments. Maxillary formula as follows (Fig. 2M): Maxillae I, falcate; maxillae II, 4-6 left, 6 right; maxilla III, 6 left, 0 right; maxillae IV, 6 left, 10 right; maxillae V, single denticulation. Mandibles (Fig. 2N) are yellow or light brown, having peculiar horn-like extension at the outer anterior angle. Parapodium (Fig. 2, O) have 2 dorsal aciculae (Fig. 2P) and tridentate ventral aciculae (Fig. 2Q). Setae are of 3 kinds: 1) pectinate comb with 8 teeth, 2) simple capillary, and 3) bidentate heterogomph falciger (Fig. 2R).

Distribution: Madagascar (Fauvel, 1921;

Day, 1934, 1962): Mombasa (Day, 1962); Natal (Day, 1934); Zanzibar (Crossland, 1904); Gulf of Suez (Fauvel, 1932); Red Sea (Monro, 1937); Sinai Peninsula-Tor (Fauvel, 1932); Persian Gulf (Fauvel, 1911, 1932), Madras, Tuticorin, Kilakarai, Gulf of Mannar (Fauvel, 1932); Ceylon (Willey, 1905; Fauvel, 1932; De Silva, 1961); Kru-sadai, Shingle Island (Gravely, 1927; Fauvel, 1932); Pamban, Andaman, Addu Atoll, Pedro Shoal, Mergui (Fauvel, 1932); Maldives (Crossland, 1904; Monro, 1924); Amboina, Nordwachter Island, Pulo Edam (Ehlers, 1920); Philippines (Grube, 1878; Pillai, 1965); Japan (Fauvel, 1936; Okuda, 1938a; Imajima & Hartman, 1964); Palau Island (Okuda, 1937a); Foua, Hawaii, Eimeo, Tahiti (Hartman, 1948); Samoa (Treadwell, 1922); New Caledonia (Pruvot, 1930; Fauvel, 1930); Queensland (Monro, 1924); Australia (Fauvel, 1917); Southern California to Ecuador (Hartman, 1944b; Rioja, 1962); Galapagos Islands (Hartman, 1944b; Monro, 1933); West Indies to Venezuela (Hartman, 1944b; Rioja, 1960). This is the first record of this species from Taiwan.

Genus *Palola* Gray

Palola siciliensis (Grube)

Fig. 3, A-J.

Eunice siciliensis, Grube, 1878: 161-163; -Gravier, 1900: 261-264; pl. 13, figs. 78-79, text-figs. 130-133; -Crossland, 1904: 323-326, pl. 22, figs. 8-9; -Willey, 1905: 282; -Fauvel, 1911: 406-407; 1914: 127-128; 1917: 231-232; 1919: 379-380, pl. 15, fig. 4; 1921: 16-17; 1923: 405-407, fig. 159, e-m; 1930: 538-539; 1932: 139-140; -Ehlers, 1920: 31; -Monro, 1924: 58; 1930: 120; 1933: 62; -Gravely, 1927: 71; -Day, 1934: 49; 1962: 643; -Okuda, 1937a: 279-280, figs. 22-23; 1938a: 95; 1940: 17; -Hartman, 1944b: 131; -Rioja, 1946: 194; 1962: 178; -De Silva, 1961: 178.

Leodice siciliensis, Chamberlin, 1919: 236-

237.

Leodice viridis var. *vernalis* Treadwell, 1922: 133-134, pl. 1, figs. 8-11.

Palola siciliensis, Hartman, 1944b: 131; 1951: 57-58; 1954: 629; fig. 169D; 1956: 284; -Tenerelli, 1961: 249; -Imajima & Hartman, 1964: 261.

Locality: Shih-men.

Specific characters: An anterior fragment of 156 segments measures 170 mm in length and 2.6 mm in width. Tentacles, tentacular and dorsal cirri are all annulated. Median tentacle extends posteriorly to setiger 2. Tentacular cirri are short; the 2 tentacular segments are equal in length. Branchiae are simple cirriform, beginning on setiger 94. The dorsum is convex; the ventral side is slightly convex before segment 10 (Fig. 3D), flat between segments 10 to 110 (Fig. 3E) and convex again after segment 110 (Fig. 3F). Dorsal cirri cirriform; ventral cirri extremely small; both decrease in size posteriorly. Ventral pads are present, but decrease in size and finally disappear posteriorly (Figs. 3, G-J). Maxillary formula as follows: Maxillae I, falcate; maxillae II, 3 left, 2 right; maxilla III, left present, right 0; maxillae IV and V, single on each side (Fig. 3A). Mandibles (Fig. 3B) are larger than maxillae. Setae are of 3 kinds: capillary, acicular, and composite heterogomph falcigers. Acicular setae begin after segment 40, orange to brown in color. Capillary setae long, those from the posterior region have terminal ends curved.

Color: Brown dotted with white, deepest

anteriorly and gradually fading after segment 16. Anterior margin of the bilobed prostomium, bases of tentacles and bases of parapodia are colorless. Dorsal side is iridescent with a strong greenish hue.

Distribution: South Africa (Day, 1934); Natal, Mombasa (Day, 1962); Madagascar (Fauvel, 1919, 1921); Zanzibar (Crossland, 1904); Red Sea (Fauvel, 1919; Gravier, 1900); Aden (Day, 1962); Persian Gulf (Fauvel, 1911, 1919, 1921); Gulf of Oman (Fauvel, 1932); Ceylon (Willey, 1905; De Silva, 1961); India-Kirakarai (Fauvel, 1932); Pamban, shingle Island (Gravelly, 1927); Andaman, Nicobar, Diamond Islands, Mergui Archipelago (Fauvel, 1932); Amirante Islands (Monro, 1924); Ambon (Ehlers, 1920); China Sea (Monro, 1924); Philippines (Grube, 1878); Ryukyu (Okuda, 1940); Japan (Okuda, 1938a; Imajima & Hartman, 1964); Marshall Islands (Hartman, 1954); Palau Islands (Okuda, 1937a); Fiji (Treadwell, 1922; Hartman, 1956); Thursday Island (Monro, 1924); New Caledonia (Fauvel, 1930); Galapago Islands (Hartman, 1944b); Gorgona Island, Toboga Island, Coiba Island (Monro, 1833); Gulf of California to Columbia (Chamberlin, 1919; Hartman, 1944b; Rioja, 1962); Atlantic side of Mexico (Rioja, 1946) and Panama (Monro, 1933); West Africa (Fauvel, 1914); Mediterranean (Fauvel, 1923; Tenerelli, 1961). This is the first record of this species from Taiwan.

Genus *Marphysa* Quatrefages
Marphysa sanguinea (Montagu)

Fig. 3. -*Palola siciliensis*: A, ventral view of maxillae, 40X; B, dorsal view of mandibles, 40X; C, seta; D, cross section anterior to segment 10; E, cross section between segments 10 to 110; F, cross section after segment 110; G-J, anterior views of parapodia of segments 10, 40, 80 and 120, respectively. -*Nothria holobranchiata*: K, dorsal view of anterior end, 40X; L, ventral view of anterior end, 40X; M, ventral view of maxillae; N, dorsal view of mandibles; O, anterior view of middle parapodium; P-S, setae. (Scales of P-S at C, scales of H-J, O at G.)

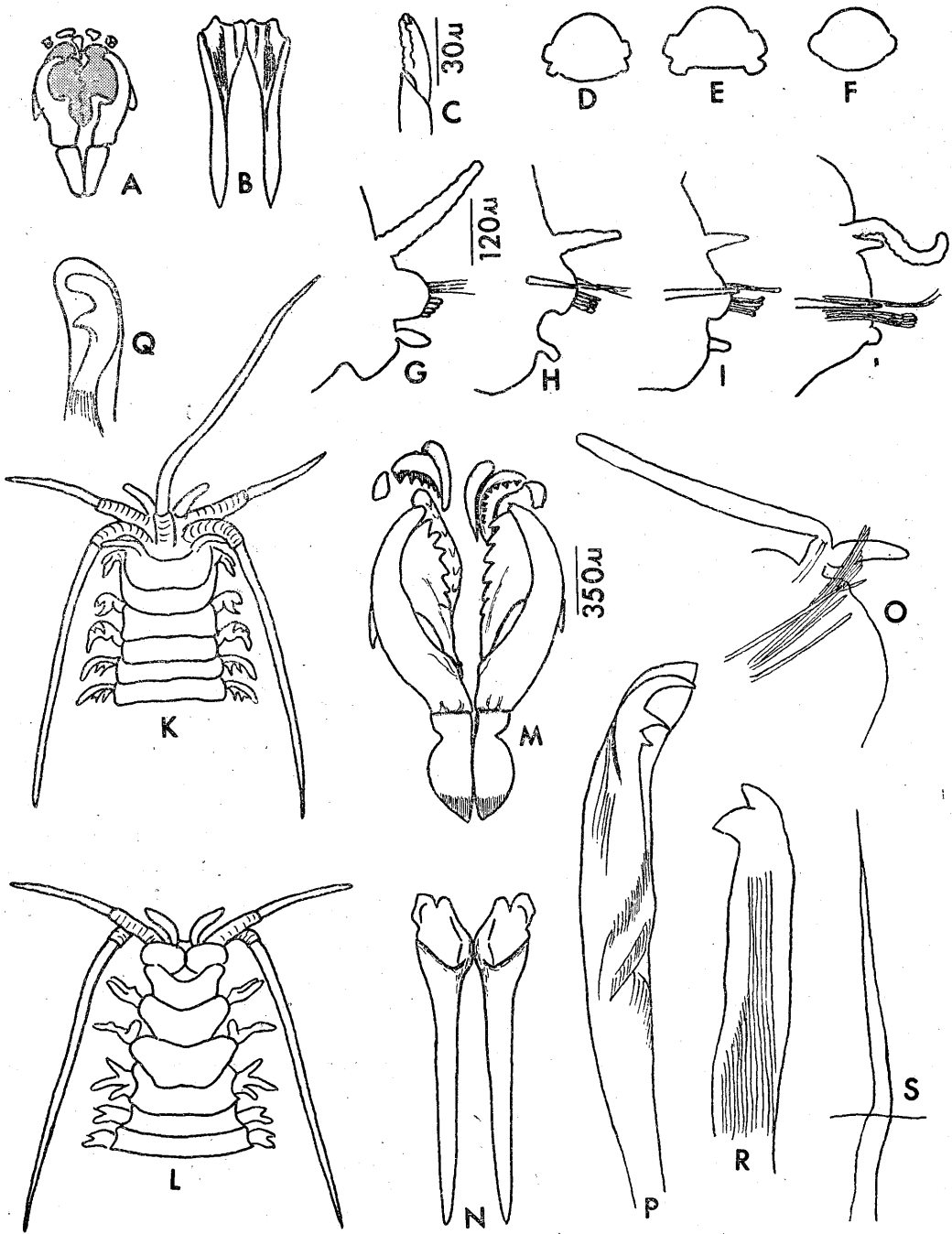


FIGURE 3

Marphysa furcellata Crossland, 1903: 141-143, pl. 15, figs. 13-14, text-fig. 15; -Gravelly, 1927: 72.

Marphysa sanguinea haemasoma; Willey, 1904: 263, pl. 13, fig. 15.

Marphysa iwamushi Izuka, 1912: 131-133, pl. 1, fig. 8, pl. 14, figs. 11-16.

Marphysa sanguinea, Fauvel, 1919: 381-382; 1923: 408-410, fig. 161, a-h; 1930: 539; 1932: 141-142; 1936: 69-70; -Day, 1934: 50; 1960: 335; -Monro, 1934: 367; -Okuda & Ishikawa, 1936: 1861-1863, fig. 13; -Okuda, 1937a: 285-286, fig. 31; 1938a: 96; 1939: 236; -Abbott, 1946: 6-11, pl. 1, A-O; -Hartman, 1951: 57, pl. 14, figs. 3-6; 1956: 284-285; 1961: 84-85; -Okuda & Izuka, 1954: 1328, fig. 3761; -Okuda & Yamada, 1954: 188; -Pillai, 1961: 12-13, fig. 4, L-N, fig. 5, A-E; -Rioja, 1962: 179; -Pettibone, 1963: 236-238, fig. 62; Imajima & Hartman, 1964: 259-260.

Localities: Shih-men, Wan-li, Pa-chih-men.

Specific characters: Length up to 150 mm, width up to 5 mm, segments up to 240. Prostomium bilobed with 5 tentacles on its posterior half. Median and inner lateral pair of tentacles are same length while the outer pair are slightly shorter than the latter. Branchiae begin on about setiger 30, with 2 filaments at setiger 100, decreasing to 2 filaments about setiger 170. Parapodia have short dorsal cirri and digitiform ventral cirri, the latter being very small anteriorly, gradually disappearing toward the posterior region. Maxillary formula as follows: Maxillae I, falcate; maxillae II and IV, 3 on both sides; maxilla III, 3 left, 0 right; maxillae V, 1 on both sides. Setae are of 3 kinds: capillary, acicular and composite spinigers. Capillary setae are both long and short; single acicular setae begin on setiger 32; spinigers are heterogomph with long or short terminal blades.

Color: Zinc-black dotted with white, dark-

est anteriorly and fading posteriorly.

Distribution: False Bay (Willey, 1904); South Africa (Day, 1934, 1960); Zanzibar (Crossland, 1903); Red Sea (Fauvel, 1919); Ceylon (Pillai, 1961); Krusadai Island, Kutikal backwater (Gravelly, 1927; Fauvel, 1932); Pamban, Tuticorin, Mormugao Bay, Vizagapatnam Harbour (Fauvel, 1932); Taiwan (Izuka, 1912); China coast-Amoy (Monro, 1934); Japan (Izuka, 1912; Fauvel, 1936; Okuda & Ishikawa, 1936; Okuda, 1938a, 1939; Okuda & Izuka, 1954; Okuda & Yamada, 1954; Imajima & Hartman, 1964); Palau Islands (Okuda, 1937a); Hawaii (Abbott, 1946); New Caledonia (Fauvel, 1930); California (Hartman, 1961); Pacific side of Mexico (Rioja, 1962); New England to Florida (Pettibone, 1963; Hartman, 1956); Gulf of Mexico (Hartman, 1951); English Channel, North and South Atlantic, Mediterranean Sea (Fauvel, 1932).

Family Onuphidae Kinberg

Genus *Nothria* Malmgren

Nothria holobranchiata (Marenzeller)

Fig. 3, K-S.

Onuphis holobranchiata Marenzeller, 1879: 132-134, pl. 4, fig. 1; -Crossland, 1903: 135, pl. 14, fig. 2; -Willey, 1905: 278-279, pl. 4, fig. 101; -Izuka, 1912: 106-108, pl. 11, figs. 10-12; -Treadwell, 1922: 154; -Fauvel, 1932: 146; -Day, 1934: 53; -Okuda, 1938a: 96; -Okuda & Izuka, 1954: 1329, fig. 3765.

Onuphis (Nothria) holobranchiata, Ushakov, 1955: 236 (*vide* 1965: 214); -Day, 1960: 336-337.

Nothria holobranchiata, Imajima & Hartman, 1964: 244-245.

Locality: Pa-chih-men.

Specific characters: Single incomplete specimen of 40 segments measures 20 mm. Prostomium (Fig. 3K) has 5 long, occipital tentacles and 2 small, fusiform frontal antennae (Figs. 3, K, L). Median and inner paired tentacles are subequal

in length. The cirrophore of median tentacle is $3/4$ of those of paired inner tentacles. The latter, in turn, are $3/4$ of that of paired outer tentacles. Peristomial segment (Fig. 3K) concave anteriorly and bears 2 short peristomial cirri. Branchiae begin on the first setiger. Each parapodium has single branchial filament which increases in length posteriorly and cross each other with its opposite filament at about setiger 25. Dorsal cirri digitiform; ventral cirri absent in posterior region (Fig. 3, O). Maxillary formula as follows (Fig. 3M): Maxillae I, falcate; maxillae II, 7 on both sides; maxilla III, 8-9 left, 0 right; maxillae IV, 4 left, 7 right; maxillae V, single on both sides. Mandibles (Fig. 3N) have long posterior support. First 3 parapodia have hooded, long, tridentate pseudo-compound setae (Fig. 3P); short, bidentate, simple setae (Fig. 3Q) and capillary setae. Other parapodia have simple hooded bidentate setae (Fig. 3R), pectinated setae, bilimbate capillary setae and slightly curved, finely tipped neuroacicula (Fig. 3S).

Color: The styles of the occipital tentacles and peristomial segment are purplish. The dorsum has a round white patch at mid-dorsal part of each segment. Dorsal base of each parapodium is purplish.

Remarks: The present species agrees closely with description by Izuka (1912) and the color patterns indicated by Crossland (1903).

Distribution: False Bay (Day, 1934); Off Cape Coasts (Day, 1960); Wasin Harbour, Zanzibar (Crossland 1903); Ceylon (Willey, 1905); Nankauri Harbour (Fauvel, 1932); Japan (Marenzeller, 1879; Izuka, 1912; Okuda, 1938a; Okuda & Izuka, 1954; Imajima & Hartman, 1964) Japan Sea-Peter the Great, Siaukhu Bay (Ushakov, 1955); Fiji (Treadwell, 1922). This is the first record of this species from Taiwan.

Family Arabellidae Hartman

Genus *Arabella* Grube

Arabella iricolor (Montague)

Fig. 4, A-F.

Maclovia iricolor capensis, Willey, 1904: 264, pl. 13, figs. 19-20.

Maclovia iricolor, Fauvel, 1914: 137-138.

Arabella (Maclovia) iricolor, Fauvel, 1919: 389; 1921: 20.

Arabella dubia, Treadwell, 1922: 160-161, fig. 52, pl. 7, figs. 11-12, pl. 8, figs. 8-9.

Arabella iricolor, Fauvel, 1923: 438-439, fig. 175, a-h; 1930: 540; 1932: 158; 1936: 70; -Monro, 1930: 142; -Day, 1934: 56-57; -Okuda, 1938a: 97; 1939: 236; 1940: 18; -Rioja, 1941: 724; 1962: 180; -Hartman, 1944b: 173; 1944c: 257; 1956: 288; 1964: 124-125; -Okuda & Izuka, 1954: 1331, fig. 3772; -Okuda & Yamada, 1954: 189; -Ushakov, 1955: 243-244 (*vide* 1965: 221-222), fig. 81, A-F; -Pettibone, 1963: 269-271, fig. 71, a-e; -Imajima & Hartman, 1964: 265.

Localities: Shih-men, Wan-li.

Specific characters: Length up to 124 mm, width up to 1.7 mm. Prostomium (Fig. 4A) has 2 pairs of red eyes on the posterior margin: outer pair are larger than inner pair. Anal segment (Fig. 4F) has a pair of short anal cirri. Postsetal lobes of parapodia (Fig. 4D) are well developed. All setae are limbate capillary (Figs. 4, D, E) with curved ends. Maxillae (Fig. 4B) as follows: Maxillae have 3 supporters; median one shorter, about $3/5$ th of lateral ones; maxillae I, the bases of scissors are slightly asymmetrical, with right one possessing 8 teeth, left 4-5; maxillae II, asymmetrical, with left one longer; maxillae III and IV, 7 to 8 teeth; maxillae V, single tooth lying closely to IV. Mandibles (Fig. 4C) form stout plates.

Color: Strongly iridescent and orange in color. Darker anteriorly and lighter posteriorly. Anterior half of the first

achaetous segment is yellow; the rest of dorsum has 3 longitudinal dark lines.

Remarks: The present specimens agree with the description of *A. dubia* by Treadwell (1922) but differs in that of maxillae III and IV possess 7 to 8 teeth instead of 3 and 4 teeth respectively.

Distribution: Cape Good Hope (Willey, 1904); South Africa (Day, 1934); Madagascar, Red Sea (Fauvel, 1919); Gulf of Mannar, Krusadai Island, Madras coast, Vizagapatam Harbour, Camorta Island, Nicobar (Fauvel, 1932); Yellow Sea, Japan Sea, La Perouse Strait (Ushakov, 1955); Ryukyu (Okuda, 1940); Japan (Fauvel, 1936; Okuda, 1938a, 1939; Okuda & Izuka, 1954; Okuda & Yamada, 1954; Imajima & Hartman, 1964); Samoa (Treadwell, 1922; Hartman, 1956); New Caledonia (Fauvel, 1930); Antarctic Sea (Hartman, 1964); Pacific side of America (Rioja, 1941, 1962; Hartman, 1944b, c); Gulf of Mexico (Pettibone, 1963); Atlantic side of America (Hartman, 1944b; Pettibone, 1963); West Indies (Hartman, 1956); English Channel, Atlantic, Mediterranean (Fauvel, 1923); East Falk Island (Monro, 1930); Gulf of Guinea (Fauvel, 1914). This is the first record of this species from Taiwan.

POLYCHAETA SEDENTARIA

Family Cirratulidae Carus

Genus *Cirratulus* Lamarck

Cirratulus cirratus (Müller)

Fig. 4, G-J.

Cirratulus cirrtus, Fauvel, 1927: 24, fig. 33, a-g; 1936: 72-73; -Monro, 1930; 154-155;

1936: 161; -Hartman, 1944c: 263; 1953: 46; 1961: 105; Hartman & Reish, 1950: 34; -Berkeley & Berkeley, 1952: 31-32, figs. 58-59; -Okuda & Izuka, 1954: 1335, fig. 3782; -Day, 1955: 418; -Ushakov, 1955: 298-299 (*vide* 1965: 276), figs. 108, 109D; -Imajima & Hartman, 1964: 298.

Locality: Pa-tou-tzu.

Specific characters: Prostomium conical with black eye spots. Branchiae begin on the first setiger and continue to about setiger 55. The distance between the branchial filament and notopodium is less than that between the two rami in anterior region, and about equal in posterior region. Tentacular filaments 5-9 in number, arranged at the anterior border of the first setiger. Noto- and neuropodial crotchets (Figs. 4, I, J) begin about setiger 13-16. Notopodia have capillary setae, finely serrated on one edge (Fig. 4G) and crotchets; neuropodia have spear-shaped setae (Fig. 4H) and crotchets. Both the noto- and neuropodial setae decrease in number posteriorly.

Distribution: Port Nolloth (Day, 1955); Japan (Fauvel, 1936; Okuda & Izuka, 1954; Imajima & Hartman, 1964); Japan Sea, Bering to Yellow Sea (Ushakov, 1955); Pacific side of Canada (Berkeley & Berkeley, 1952); California (Hartman, 1944c; 1961); South Georgia (Monro, 1930, 1936); North Sea, English Channel (Fauvel, 1927); Gulf of Mexico (Hartman & Reish, 1950); Magellan, Falkland, Kerguelen Islands (Fauvel, 1927). This is the first

Fig. 4. -Arabella iricolor: A, dorsal view of anterior end, 40X; B, ventral view of maxillae, 40X; C, dorsal view of mandible, 40X; D, anterior view of a parapodium; E, Seta; F, dorsal view of posterior end, 40X. *-Cirratulus cirratus:* G, capillary notoseta; H, spear-shaped neuroseta; I, neuropodial crotchet; J, notopodial crotchet. *-Idanthyrus pennatus:* K, lateral view of anterior end, 40X; L, portion of abdominal neuroseta; M, abdominal notopodial uncinus; N, thoracic neuroseta; O-P, parathoracic notosetae. *-Amphitrite ramosissima:* Q, lateral view of anterior end, 20X; R, capillary notoseta; S, uncinus from setiger 8. (Scales of O, P at D, scales of G-J, L-N, R at E.)

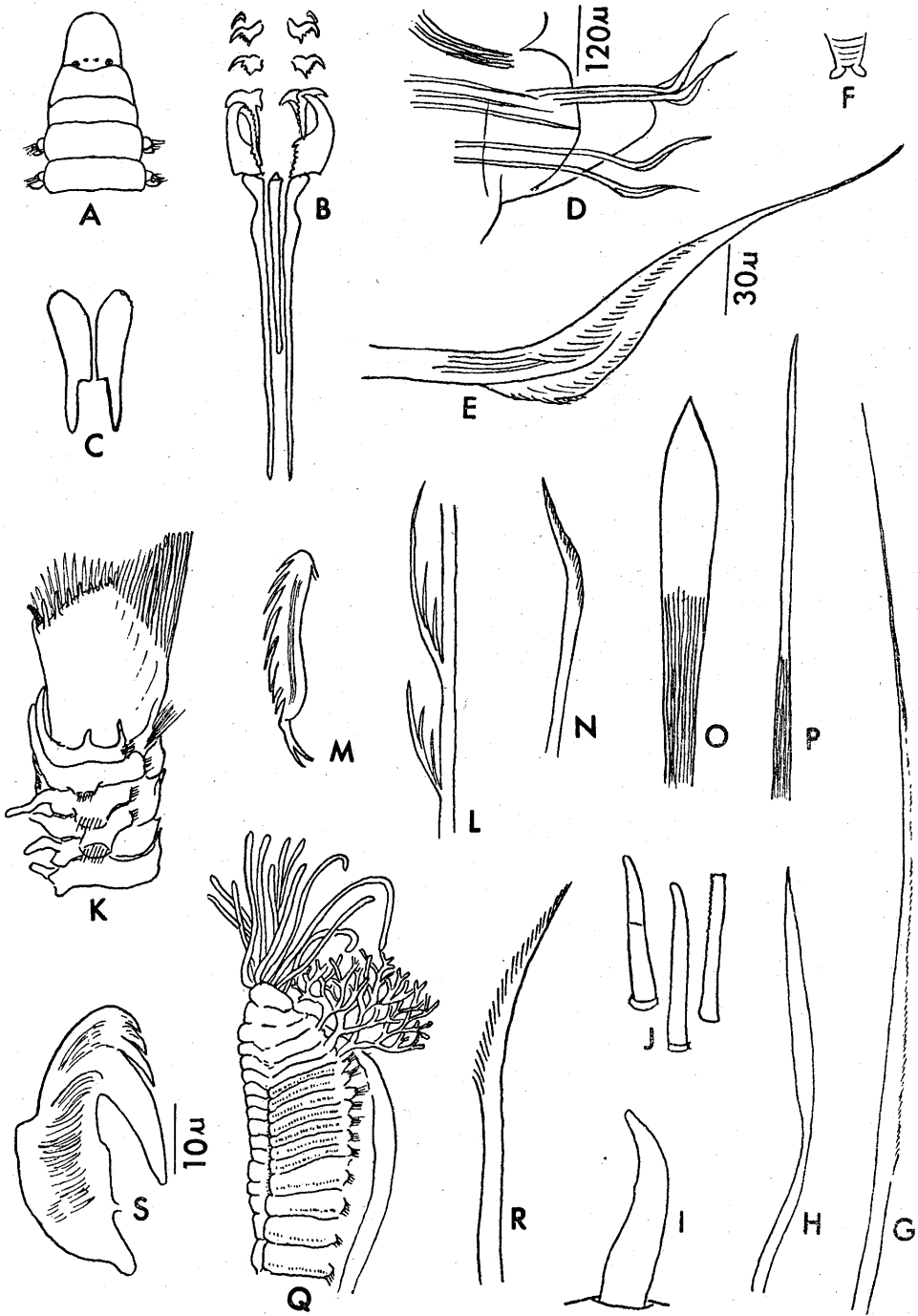


FIGURE 4

record of this species from Taiwan.

Genus *Cirriformia* Hartman

Cirriformia tentaculata (Montague)

Cirratulus comosus Marenzeller, 1879: 147-148, fig. 7; -Ehlers, 1920: 62.

Cirratula capensis Willey, 1904: 266.

Audouinia comosa, Monro, 1934: 370-371; -Fauvel, 1936: 73-74; -Okuda, 1937b: 51, pl. 2, fig. B; 1938a: 99; 1938c: 128; -Okuda & Izuka, 1954: 1335, fig. 3783; -Okuda & Yamada, 1954: 191.

Audouinia anchylochaeta, Okuda, 1940: 18; Knox, 1951: 73-74.

Cirriformia tentaculata, Imajima & Hartman, 1964: 299.

Localities: Shih-men, Pa-chih-men.

Specific characters: Prostomium conical; anterior 3 segments are achaetous. Ventral side of anterior region is hollowed. Branchiae begin from first setiger. In the anterior region branchial filaments usually are inserted directly above the notosetae and in posterior region the distance between the branchial insertion and the notosetae is still shorter than that of between the two rami. Tentacular filaments about 15 in number, arranged on setigers 4 to 5. Both noto- and neurosetae are capillary and acicular. Notopodial hooks appears at setigers 40 to 50; nduropodial hooks begin at setigers 19 to 30.

Distribution: Table Bay (Willey, 1904); Amboina (Ehlers, 1920); China coast-Chefoo (Monro, 1934); Ryukyu (Okuda, 1940); Japan (Marenzeller, 1879; Fauvel, 1936; Okuda, 1937, 1938a, 1938b; Okuda & Izuka, 1954; Okuda & Yamada, 1954; Imajima & Hartman, 1964); New Zealand (Knox, 1951). This is the first record of this species from Taiwan.

Family Sabellaridae Johnston

Genus *Idanthysus* Kinberg

Idanthysus pennatus (Peters)

Fig. 4, K-P.

Pallasia pennata, Willey, 1905: 296-297, pl. 8, figs. 1-2; -Fauvel, 1917: 262-264; 1919: 450; 1932: 212; 1936: 79-80.

Idanthysus pennatus, Monro, 1930: 178, fig. 74; -Day, 1934: 68; 1955: 431; 1962: 652-653; -Okuda, 1938a: 100-101; 1938b: 245-247, figs. 6-7; 1940: 21; -Hartman, 1944d: 336, pl. 31, fig. 35; -Okuda & Izuka, 1954: 1341, fig. 3801; Ushakov, 1955: 352 (*vide* 1965: 327); -De Silva, 1961: 188; -Rioja, 1962: 199; -Imajima & Hartman, 1964: 324.

Localities: Pa-tou-tzu, Shih-men.

Specific characters: Outer paleae, in number of 28-30, are curved and strongly serrated; inner paleae, in number of 12-19, are smooth. Below outer paleae are 8-17 rather short conical papillae (Fig. 4K). Second segment has branchiae, 2 pointed lappets and slender setae. The three parathoracic segments have notosetae of 2 kinds which alternate: wide spatulate (Fig. 4, O) and long limbate (Fig. 4P). Neurosetae are spatulate, and long, curved limbate (Fig. 4N) but not arranged in alternating manner. Abdominal segments are 45. Branchiae are well developed between abdominal segments 1 to 16. Notopodial uncini have 8 teeth (Fig. 4M), and neurosetae bears fimbriate, slender teeth (Fig. 4L). Caudal region is abbranchiate and its ventro-lateral sides are dark. This region is usually recurved on the ventral surface of the abdominal region.

Distribution: Natal, Haven (Day, 1955); Madagascar (Fauvel, 1919; Day, 1934); Mozambique (Day, 1934); Red Sea (Fauvel, 1919); Pakistan-Karachi (Fauvel, 1932); Ceylon (Willey, 1905; De Silva, 1961); Nicobar, Andamans (Fauvel, 1932); Ryukyu (Okuda, 1940); Japan (Fauvel, 1936; Okuda, 1938a, 1938b; Okuda & Izuka, 1954; Ushakov, 1955; Imajima & Hartman, 1964); Australia (Fauvel, 1917); Pacific sides of Mexico to Ecuador (Hartman, 1944d; Rioja, 1962). This is the first record of

this species from Taiwan.

Family Terebellidae Malmgren

Genus *Amphitrite* Müller

Amphitrite ramosissima Marenzeller

Fig. 4, Q-S.

Amphitrite ramosissima Marenzeller, 1885: 200-201, pl. 1, fig. 2; -Okuda, 1937b: 57-58, text-fig. 6; -Imajima & Hartman, 1964: 336.

Locality: Pa-tou-tzu.

Specific characters: Branchiae (Fig. 4Q) arborescent, 3 pairs. Lateral lobes present on the first to third segments. Notopodial fascicles begin in the third branchial segment and occur in 20 to 21 segments. Notosetae are capillary with denticulated tips (Fig. 4R). Ventral uncini (Fig. 4S) arranged in 2 rows beginning on setiger 8. Abdominal region includes about 44 to 50 segments. Ventral side has 14 glandular shields. Nephridial papillae present on segments 3 to 8, the 3 anterior pairs are distinctly visible.

Distribution: Japan (Marenzeller, 1885; Okuda, 1937b; Imajima & Hartman, 1964). This is the first record of this species from Taiwan.

Family Sabellidae Malmgren

Genus *Hypsicomus* Grube

Hypsicomus phaeotaenia (Schmarda)

Fig. 5, A-F.

Hypsicomus phaeotaenia, Marenzeller, 1885: 212, pl. 3, fig. 3; -Willey, 1905: 307-308; -Fauvel, 1911: 423-424; 1919: 460; 1921: 22; 1927: 312-314, fig. 108, a-1; 1932: 238-239; -Ehlers, 1920: 69-70; -Hoagland, 1920: 626; -Day, 1934: 76; 1962: 654; -Okuda, 1937a: 305-307, figs. 51-52; 1940: 22; -Okuda & Izuka, 1954: 1346, fig. 3817; -Hartman, 1954: 629; -De Silva, 1961: 190; -Imajima & Hartman, 1964: 357.

Hypsicomus (Sabella) phaeotaenia, Gravier, 1908: 84-87, pl. 6, figs. 255-259, text-figs. 432.

Hypsicomus pigmentatus, Fauvel, 1914: 146-

148, pl. 8, figs. 54-61.

Locality: Shih-men.

Specific characters: Branchiae bilobed, each lobe having 17 to 18 filaments; each filament is crossed by about 4 rows of purplish stripes; on the middle region of each rachis clusters of about 40 eyespots. Dorsal side of collar straight, with 2 oblique black lines; ventral side of collar has a transverse, black line. Thoracic region has 7 segments; notosetae elongated blade-like (Fig. 5C) and spatulate (Figs. 5, A, B); neuropodia with avicular uncini (Fig. 5E). Abdominal region has 110 segments; notosetae are winged capillary and spatulate; neuropodia with avicular uncini (Fig. 5F) only. Abdominal glandular shields are chocolate-colored.

Distribution: Madagascar (Fauvel, 1921; Day, 1934, 1962); Mombasa (Day, 1934, 1962); Red Sea (Gravier, 1908); Persian Gulf (Fauvel, 1911, 1919); Ceylon (Willey, 1905; De Silva, 1961); Maldives, Nankauri, Mergui Archipelago, Great Coco Island, Kirakarai (Fauvel, 1932); Amboina, Pulo Edam (Ehlers, 1920); Philippines (Hoagland, 1920); Ryukyu (Okuda, 1940); Japan (Marenzeller, 1885; Okuda & Izuka, 1954; Imajima & Hartman, 1964); Palau Island (Okuda, 1937a); Marshall Island (Hartman, 1954); Gulf of Guinea (Fauvel, 1914); Mediterranean (Fauvel, 1927). This is the first record of this species from Taiwan.

Genus Sabellastarte Kroyer

Sabellastarte indica (Savigny)

Fig. 5, G-H.

Sabellastarte indica, Willey, 1905: 311, pl. 7, fig. 177A; -Fauvel, 1919: 461-462; 1930: 555-556; 1932: 238; 1936: 84-85; -Pruvot, 1930: 85-88, pl. 2, figs. 39-50; -Monro, 1931: 45; 1934: 376; -Day, 1934: 75; -Okuda, 1937a: 307-308, fig. 53; 1938a: 103; -Rioja, 1946: 198-199; -Okuda & Izuka, 1954: 1346,

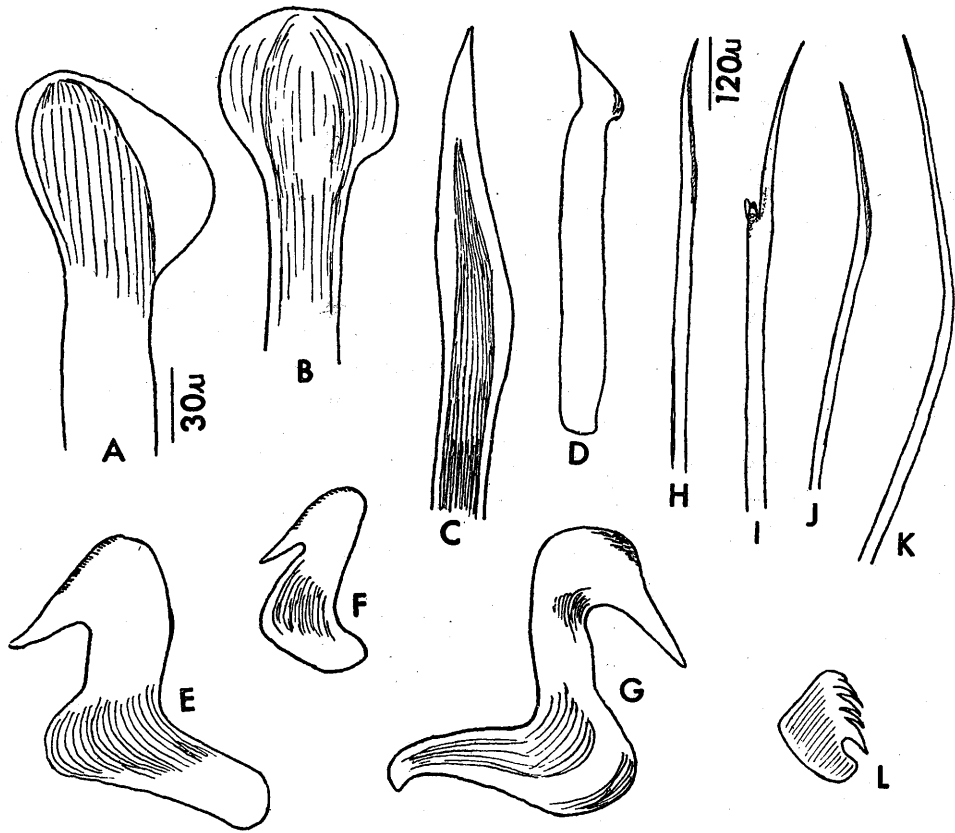


FIGURE 5

Fig. 5. -*Hypsicomus phaeotaenia*: A, thoracic spatulate notoseta, lateral view; B, thoracic spatulate notoseta, frontal view; C, thoracic blade-like notoseta; D, thoracic pennoned seta; E, thoracic neuropodial avicular uncinus; F, abdominal avicular uncinus. -*Sabellastarte indica*: G, avicular uncinus; H, limbate notoseta. -*Hydroides minax*: I, bayonet-shaped collar seta; J, thoracic capillary seta; K, capillary collar seta; L, thoracic uncinus. (Scales of B-G, L are at A; scales of I-K are at H.)

fig. 3815; -Okuda & Yamada, 1954: 196-197.

Locality: Pa-tou-tzu.

Specific characters: Branchial filaments about 45; collar is dark purplish. Thoracic region composed of 8-9 segments; a pair of white spots or lines beginning from thoracic segment 5, one on each side of glandular shields. Thoracic and

abdominal regions are mottled with violet or dark violet pigment on the dorsal and ventral margins of neuropodia. Collar setae, thoracic and abdominal setae are similar, being limbate capillary (Fig. 5H). Thoracic and abdominal uncini are avicular (Fig. 5G).

Distribution: Mozambique, Madagascar

(Day, 1934); Red Sea (Fauvel, 1919); Ceylon (Willey, 1905); Karachi, Burma Coast, Madras, Akyab (Fauvel, 1932); Mergui Archipelago, Elephant, Druid and Bedford Rocks, Paway Island, Andamans (Fauvel, 1932); Singapore (Monro, 1931); China coast-Amoy (Monro, 1934); Japan (Fauvel, 1936; Okuda, 1938a; Okuda & Izuka, 1954; Okuda & Yamada, 1954); Palau Island (Okuda, 1937a); New Caledonia (Fauvel, 1930; Pruvot, 1930); Gulf of Mexico (Rioja, 1946). This is the first record of this species from Taiwan.

Family Serpulidae Savigny

Genus *Hydroïdes* Gunnerus

Hydroïdes minax (Grube)

Fig. 5, I-L.

Serpula minax Grube, 1878; 269-271, pl. 15, fig. 5.

Eupomatius minax, Willey, 1905: 314.

Hydroïdes minax, Pillai, 1960: 8-10, figs. 3, A-E.

Locality: Pa-tou-tzu.

Specific characters: Gills form a funnel surrounding the mouth and composed of 2 semicircular or spiral lobes, each lobe bearing 17 to 18 filaments. Operculum is associated with left gill, the rudimentary operculum being with right gill. Operculum bears 24 outwardly directed basal spines and a crown of 9 outwardly directed horny spines, and a dorsal fleshy strongly recurved hook with a pair of lateral accessory hooks. Collar setae are of bayonet-shaped (Fig. 5I), and slender capillary (Fig. 5K). Thoracic region has 6 segments; setae are simple, curved, winged capillary (Fig. 5J) and uncini have 6 teeth (Fig. 5L). Tube calcareous, white outside and light yellow inside.

Distribution: Ceylon (Willey, 1905; Pillai, 1960); Philippines (Grube, 1878). This is the first record of this species from Taiwan.

Acknowledgements. The author wishes to thank the National Council of Science

Development, Taipei, for partial support of this study and to Dr. Marian H. Pettibone, Smithsonian Institution, Washington, D. C., U. S. A. for helpful criticism and reading the manuscript.

LITERATURE CITED

- Abbott, D. P. 1946 Some polychaetous annelids from a Hawaiian fish pond. *Univ. Hawaii Res. Publ.* No. 23: 1-24.
- Berkeley, E. & Berkeley, C. 1948 Annelida, Polychaeta Errantia. In Canadian Pacific Fauna. *Fish. Res. Board Canada*, No. 9b (1): 1-100.
- _____ 1952 Annelida, polychaeta Sedentaria. *Ibid.* No. 9b (2): 1-139.
- Chamberlin, R. V. 1919 The Annelida Polychaeta of the tropical Pacific. *Mem. Mus. Comp. Zool. Harvard*, 48: 1-514.
- Crossland, C. 1903 On the marine fauna of Zanzibar and British East Africa, from collections made by Cyril Crossland in the years 1901 and 1902. Polychaeta. Pt. 2. *Proc. zool. Soc. London*, 1903 (2): 129-144.
- _____ 1904 Ditto. Pt. 3. *Ibid.* 1904 (1): 287-330.
- Day, J. H. 1934 On a collection of South African Polychaeta with a catalogue of the species recorded from South Africa, Angola, Mozambique and Madagascar. *J. Linn. Soc. London*, 39: 15-82.
- _____ 1955 Polychaeta of South Africa. Pt. 3. Sedentary species from Cape shores and estuaries. *Ibid.* 92: 407-452.
- _____ 1960 The polychaete fauna of South Africa. Pt. 5. Errant species dredged off Cape Coasts. *Ann. S. Afr. Mus.* 45: 261-373.
- _____ 1962 Polychaeta from several localities in the Western Indian Ocean. *Proc. zool. Soc. London*, 139: 627-656.
- De Silva, P. H. D. H. 1961 Contributions to the knowledge of polychaete fauna of Ceylon. I. Five new species, two new varieties and several new records principally from the southern coast. *Spolia Zeylanica*, 29: 164-194.
- Ehlers, E. 1920 Polychaeten von Java und Amboina. *Abhand. Konig. Gessell. Wissen. Gottingen, Neue Folge*, 10 (7): 1-73.
- Fauvel, P. 1911 Annélides polychètes du golfe

- Persique recueillies par M. N. Bogoyawlensky. *Arch. zool. exp. gén. Paris*, 5, 6: 353-439.
- _____ 1914 Annélides polychètes de san Thome (Golfe de Guinée) recueillies par M. Ch. Gravier. *Ibid.* 54: 105-155.
- _____ 1917 Annélides polychètes de l' Australie meridionale. *Ibid.* 56: 159-276.
- _____ 1919 Annélides polychètes de Madagascar, de Djibouti et du golfe Persique. *Ibid.* 58: 315-473.
- _____ 1921 Annélides polychètes de Madagascar, du Museum R, d'Histoire Naturelle recueillies par M. le Dr. W. Kaudern. *Arkiv f. Zool.* 13(3/4): 1-32.
- _____ 1923 Polychètes Errantes. *Faune de France*, 5: 1-488.
- _____ 1927 Polychètes Sédentaires. *Ibid.*, 16: 1-494.
- _____ 1930 Annélides polychètes de nouvelle-Caledonie, recueillies par Mme. A. Pruvot-Folen 1928. *Arch. zool. exp. gén. Paris*, 69: 501-562.
- _____ 1932 Annelida Polychaeta of the Indian Museum, Calcutta. *Mem. Ind. Mus.* 12: 41-92.
- _____ 1936 Annélides polychètes du Japon. *Mem. Coll. Sci. Kyoto Imp. Univ.* 12: 41-92.
- Gravelly, F. H. 1927 Chaetopoda. The littoral fauna of Krusadai Island. *Bull. Madras Govnt. Mus. New Series, Nat. Hist. Sec.* 1: 55-86.
- Gravier, M. C. 1900 Contribution à l'étude des Annélides Polychètes de la Mer Rouge. *Arch. Mus. Paris*, 4, 2: 137-282.
- _____ 1901 *Ditto*. *Ibid.* 4, 3: 147-268.
- _____ 1908 *Ditto*. *Ibid.* 4, 10: 67-168.
- Grube, E. 1878 Annulata Semperiana. *Mem. Acad. Sci. St. Petersburg*, 7, 25(8): 1-300.
- Hartman, O. 1939 Polychaetous annelids. Pt. I. Aphroditidae to Pisionidae. *Allan Hancock Pacif. Exped.* 7: 1-155.
- _____ 1940 Polychaetous annelids. Pt. II. Chrysopetalidae to Goniadidae. *Ibid.* 7: 173-282.
- _____ 1944a Polychaetous annelids. *Allan Hancock Atlantic Exped. Rept.* No. 3: 1-32.
- _____ 1944b Polychaetous annelids. Pt. V. Eunicea. *Allan Hancock Pacif. Exped.* 10: 1-236.
- _____ 1944c Polychaetous annelids from California including the descriptions of two new genera and nine new species. *Ibid.* 10: 239-307.
- _____ 1944d Polychaetous annelids. Pt. VI. Paraonidae, Magelonidae, Longosomidae, Ctenodrilidae, and Sabellariidae. *Ibid.* 10: 311-389.
- _____ 1948 The marine annelids erected by Kinberg with notes on some other types in the Swedish State Museum. *Arkiv f. Zool.* 42A(1): 1-137.
- _____ 1951 The littoral marine annelids of the Gulf of Mexico. *Publ. Inst. Mar. Sci.* 2: 7-124.
- _____ 1953 Non-pelagic Polychaeta of the Swedish Antarctic Expedition 1901-1903. *Further Zool. Results Swedish Antarctic Exped.* 4(11): 1-83.
- _____ 1954 Marine annelids from the northern Marshall Islands. *Geol. Sur. Prof. Paper*, 260-Q: 619-644.
- _____ 1956 Polychaetous annelids erected by Treadwell, 1891 to 1948, together with a brief chronology. *Bull. Am. Mus. Nat. Hist.* 109: 245-310.
- _____ 1961 Polychaetous annelids from California. *Allan Hancock Pacif. Exped.* 25: 1-226.
- _____ 1964 Polychaeta Errantia of Antarctica. *Antarctica Research Series*, 3: 1-131.
- Hartman, O. & Reish, D. J. 1950 The marine annelids of Oregon. *Oregon State Monogr. Stu. Zool.* No. 6: 1-64.
- Hoagland, R. A. 1920 Polychaetous annelids collected by the United States Fisheries Steamer "Albatross" during the Philippine Expedition of 1907-1909. *Bull. U. S. Nat. Mus.* 100, 1: 603-635.
- Horst, R. 1912 Polychaeta Errantia of the Siboga-Expedition. Pt. 1. Amphinomidae. *Siboga-Exped.* 24a: 1-43.
- _____ 1917 *Ditto*. Pt. 2. Aphroditidae and Chrysopetalidae. *Ibid.* 24b: 45-143.
- Imajima, M. & Hartman, O. 1964 The polychaetous annelids of Japan. *Occas. Pap. Allan Hancock Found. Publ.* No. 26: 1-452.
- Izuka, A. 1912 Errantiate Polychaeta of Japan. *J. Coll. Sci. Imp. Univ. Tokyo*, 30(2): 1-262.
- Knox, G. A. 1951 The polychaetous annelids of Banks Peninsula. Pt. 2. A rock bottom fauna from 80 fathoms. *Rec. Canterbury Mus.* 6: 61-81.
- Marenzeller, E. V. 1879 Sudjapanische Anneli-

- den, I. (Amphinomea, Aphroditea, Lycoridea, Phyllodocea, Hesionea, Syllidea, Eunicea, Glycera, Sternaspidea, Chaetoptera, Cirratulea, Amphictenea). *Denkschr. Kais. Akad. Wiss. (Math.-Nat.)* 41: 102-154.
- _____ 1885 *Ditto*, II. (Ampharetea, Terebellacea, Sabellacea, Serpulacea). *Ibid.* 49: 197-224.
- _____ 1902 *Ditto*, III. (Aphroditea, Eunicea). *Ibid.* 122: 563-582.
- Monro, C. C. A. 1924 Polychaeta collected by H. M. S. "Alert". *J. Linn. Soc. London, Zool.* 36: 37-77.
- _____ 1928 On some Polychaeta of the family Polynoidae from Tahiti and the Marquesas. *Ann. Mag. Nat. Hist.* 10, 2: 467-473.
- _____ 1930 Polychaete worms. *Discovery Repts.* 2: 1-222.
- _____ 1931 On a collection of Polychaeta in Raffles Museum, Singapore. *Bull. Raffles Mus. Singapore*, No. 5: 33-46.
- _____ 1933 The Polychaeta Errantia collected by Dr. C. Crossland at Colon, in the Panama Region, and the Galapagos Islands during the expedition of the S. Y. "St. George". *Proc. zool. Soc. London*, 1933(1): 1-96.
- _____ 1934 A collection of Polychaeta from coast of China. *Ann. Mag. Nat. Hist.* 10, 13: 353-380.
- _____ 1936 Polychaete worms. II. *Discovery Repts.* 12: 59-198.
- _____ 1937 Polychaeta. John Murray Expedition 1933-34. *Sci. Rept.* 4: 243-321.
- Okuda, S. 1937a Polychaetous annelids from the Palau Island and adjacent waters, the South Sea Islands. *Bull. Biogeogr. Soc. Japan*, 7: 257-316.
- _____ 1937b Annelida Polychaeta in Onagawa Bay and its vicinity. I. Polychaeta Sedentaria. *Sci. Rept. Tohoku Imp. Univ.* 4, 12: 45-69.
- _____ 1938a Polychaetous annelids from the vicinity of the Mitsui Institute of Marine Biology. *Jap. J. Zool.* 8: 75-105.
- _____ 1938b The Sabellariidae of Japan. *J. Fac. Sci. Hokkaido Imp. Univ.* 6, 6: 235-253.
- _____ 1938c Polychaetous annelids from the Ise Sea. *Zool. Mag. Japan*, 50: 122-131. (In Japanese with English summary)
- _____ 1939 Annelida Polychaeta in Onagawa Bay and its vicinity. II. Polychaeta Errantia with some addenda for Polychaeta Sedentaria. *Sci. Rept. Tohoku Imp. Univ.* 4, 14: 219-243.
- _____ 1940 Polychaetous annelids of the Ryukyu Islands. *Bull. Biogeogr. Soc. Japan*, 10: 1-24.
- Okuda, S. & Ishikawa, H. 1936 Polychaete worms used as baits in Japan. I-III. *Bot. & Zool. Japan*, 4: 1698-1706, 1861-1868, 2025-2032. (In Japanese)
- Okuda, S. & Izuka, A. 1954 *Illustrated Encyclopedia of the Fauna of Japan*. Pt. I. 7A Polychaeta. pp. 1307-1351. Hokuryukan Co., Tokyo. (In Japanese)
- Okuda, S. & Yamada, M. 1954 Polychaetous annelids from Matsushima Bay. *J. Fac. Sci. Hokkaido Univ.* 12: 175-199.
- Pettibone, M. H. 1963 Marine polychaete worms of the New England Region. I. Aphroditidae through Trochochaetidae. *Bull. U. S. Natl. Mus.*, 227(1): 1-356.
- Pillai, T. G. 1960 Some marine and brackish-water serpulid Polychaeta from Ceylon, including new genera and species. *Ceylon J. Sci. Biol. Sci.* 3: 1-40.
- _____ 1961 Annelida Polychaeta of Tambalagam Lake, Ceylon. *Ibid.* 4: 1-40.
- _____ 1965 Annelida Polychaeta from the Philippines and Indonesia. *Ibid.* 5: 110-177.
- Potts, F. A. 1909 Polychaeta of the Indian Ocean. Pt. 1. The Amphinomidae. *Trans. Linn. Soc. London, Zool.* 2, 12: 355-371.
- _____ 1910 *Ditto*. Pt. 2. The Palmyridae, Aphroditidae, Polynoidae, Acoetidae and Sigalionidae. *Ibid.* 2, 13: 325-353.
- Pruvot, G. 1930 Annelides polychètes de Nouvelle-Calédonie. *Arch. zool. exp. gen. Paris*, 70: 1-94.
- Rioja, E. 1941 Estudios anelidológicos. III. Datos para el conocimiento de la fauna de poliquetos de las costas del Pacífico de México. *Ann. Inst. Biol. Mexico*, 12: 669-746.
- _____ 1946 *Ditto*. XIV. Observaciones sobre algunos poliquetos de las costas del Golfo de México. *Ibid.* 16: 193-203.
- _____ 1960 *Ditto*. XXIV Adiciones a la fauna de anelidos poliquetos de las costas orientales de México. *Ibid.* 31: 289-316.
- _____ 1962 *Ditto*. XXVI Algunos anelidos poliquetos de las costas del Pacífico de México. *Ibid.* 33: 131-229.
- Tenerelli, V. 1961 Contributo alla conoscenza dei Policheti delle coste della Sicilia Orientale.

- I. I Policheti delle Isole del Ciclopi (Catania). *Boll. Sedute Accad. Gioenia Sci. Nat. Catania*, 6: 234-264.
- Treadwell, A. L. 1922 Leodicidae from Fiji and Samoa. *Pap. Dept. Mar. Biol. Carnegie Inst. Washington*, 18: 129-170.
- _____ 1925 Polychaetous annelids of tropical Central Pacific. *Bull. Bernice P. Bishop Mus. Honolulu*, 27: 113-119.
- _____ 1926 Polychaetous annelids from Fiji, Samoa, China and Japan. *Proc. U. S. Natl. Mus.* 69(15): 1-20.
- _____ 1939 Additions to the polychaetous annelids collected by the United States Fisheries Steamer "Albatross", 1907-1910, including one new genus and three new species. *Bull. U.S. Natl. Mus.* 100, 6: 183-193.
- _____ 1940 A new genus and two new species of polychaetous annelids from Texas and one new species from the Philippine Islands. *Am. Mus. Novitates*, No. 1089: 1-4.
- Ushakov, P. V. 1955 Polychaeta of the Far Eastern Seas of the U. S. S. R. *Acad. Sci. U. S. S. R.* No. 56: 1-445. (*vide* English Translation, 1965)
- Willey, A. 1904 The littoral Polychaeta from the Cape of Good Hope. *Trans. Linn. Soc. London, Zool.* 2, 9: 255-268.
- _____ 1905 Report on the Polychaeta. *Ceylon Pearl Oyster Fisheries, Suppl. Rept.* 30: 243-324.
- Wu, S. K. 1967 The nereid worms of Taiwan. *Bull. Inst. Zool. Academia Sinica*, 6(2): 5-34