

POLYCHAETOUS ANNELIDS FROM FIJI, SAMOA, CHINA,  
AND JAPAN

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The following paper is a taxonomic study of three collections of polychaetous annelids. The first was made by myself in 1920 on an expedition to the Pacific of the department of marine biology of the Carnegie Institution of Washington, Dr. A. G. Mayor, director. Collecting was done in and around the harbor of Suva, Fiji, and in the harbor of Pango Pango, on the Island of Tutuila, in American Samoa. A description of the Leodicidae of this collection appeared in 1922. (Treadwell, 1922.) A second lot is from Japan and a third from China, the two latter having been sent me for study by Dr. Waldo L. Schmitt of the United States National Museum. All specimens noted as collected by N. Gist Gee are from China and the only locality information further than this is what is indicated in the description of the species. For the others "Japan" is the extent of my information.

A tabulation of the families and species represented is as follows:

FAMILY	SPECIES
Amphinomidae	<i>Eurythoe complanata</i> Pallas ( <i>E. pacifica</i> Kinberg). <i>Hermodice pennata</i> Treadwell, var. <i>tutuiliensis</i> , new variety. <i>Notopygos andrewsi</i> Monro. <i>Amphinome rostrata</i> Kinberg.
Polynoidae----	<i>Iphione ovata</i> Kinberg. <i>Lepidonotus squamatus</i> Linnaeus. <i>Thormora trissachacta</i> Grube. <i>Halosydna vexillarius</i> Moore. <i>Halosydna oculata</i> , new species. <i>Harmothoe villosa</i> , new species.
Phyllodoceidae_	<i>Phyllodoce pulla</i> , new species. <i>Phyllodoce violacea</i> , new species. <i>Phyllodoce fusea-cirrata</i> , new species. <i>Phyllodoce tenera</i> Grube.
Hesionidae----	<i>Leocerates iris</i> Grube.
Nereidae-----	<i>Nereis tongatabuensis</i> McIntosh. <i>Nereis pelagica</i> Linnaeus. <i>Nereis pusilla</i> Moore. <i>Nereis paucidentata</i> Moore.
Leodicidae ---	<i>Leodice aphroditois</i> Pallas. <i>Lysidice collaris</i> Grube.
Sabellidae-----	<i>Eurato punctata</i> , new species.
Terebellidae---	<i>Loimia montagu</i> Grube.
Serpulidae-----	<i>Pomatostegus latiscopus</i> v. Marenzellar.

## Family AMPHINOMIDAE

### Genus EURYTHOE Kinberg

#### EURYTHOE COMPLANATA Pallas

*Aphrodita complanata* PALLAS, 1766, p. 109, pl. 8, figs. 19-26.

Seven specimens are in the collection from Pango Pango, Samoa, only one of which is well developed. This measures 85 mm. in length and 7 mm. in greatest width. In the Japan collection is one specimen conforming to the description of the species and, in a separate bottle, a number of others in which no trace of eyes could be seen. I have assumed that this loss is only apparent and due to the preserving methods employed.

It seems certain that some if not all of these are identical with *E. pacifica* of Kinberg (1857, p. 14) but I have followed Chamberlin, who (1919, pp. 28, 29) discusses the synonymy and concludes that the following should all be grouped as *complanata*; *E. pacifica*, *kamahamecha*, and *corallina* of Kinberg; *E. pacifica*, var. *levukaensis* of Fischli; and *E. alcyonia* of Gravier.

### Genus HERMODICE Kinberg

#### HERMODICE PENNATA Treadwell, var. TUTUILENSIS, new variety

*Hermodice pennata* TREADWELL, 1906, p. 1165, fig. 41.

The variety differs from the species in that the triangular median portion of the caruncle is much smaller and neither pair of eyes is obscured by the caruncle. The caruncle is much smaller in extent than in the species, extending not quite to the posterior border of the second setigerous somite. The outer and inner paired tentacles are about equal in size and much smaller than the median unpaired, the inner paired lying close to the anterior pair of eyes. The first ventral cirrus is no longer than any others. In addition to the longitudinal pink lines on the dorsal surface, a pinkish band surrounds each notopodium at its base.

Three specimens, one regenerating the anterior eight somites were collected at Pango Pango, Samoa. The largest is 55 mm. long and (not counting the parapodia) has a body width of 5 mm.

### Genus AMPHINOME Brugiere

#### AMPHINOME ROSTRATA Kinberg

*Amphinome rostrata* KINBERG, 1857 p. 12.

Chamberlin (1919 p. 27) lists this species as *A. vagans* Savigny and gives the synonymy. I have followed McIntosh (1885, pp. 21 to

24, pl. 1, fig. 7; pl. 4, fig. 1; pl. 1a, fig. 16; pl. 2a, figs. 8 to 12), in assigning it to *rostrata*.

One specimen collected at Pango Pango, Samoa.

### Genus NOTOPYGOS Grube

#### NOTOPYGOS ANDREWSI Monro

*Notopygos andrewsi* Monro, 1924, pp. 73-75, figs. 5 and 6.

I had described and figured what seemed to be a new species of this genus when Monro's description of *N. andrewsi* appeared, and it is evidently the same species. Since the description I had prepared adds some data to that of Monro's I have decided to let it stand as originally written.

Two varieties of this species appeared in my collection. The first is colorless except for a narrow band of bluish gray pigment across the anterior face of the base of the notopodium in the anterior body somites, disappearing toward the posterior end of the body. In the two specimens representing this variety the anal opening is on the anterior margin of setigerous somite 23. Two specimens also represent the other variety, and in them the anal opening is on the anterior margin of setigerous somite 24. They are marked on the entire dorsal surface with blotches of bluish gray. In a general way, these blotches may be described as consisting in each somite of a band running across both the anterior and posterior dorsal margins, extending out on to the bases of the parapodia; and as four patches on the dorsal surface, two on either side of the mid-line, the posterior much the larger of the two, and much more irregular in outline. The center of each larger patch is lighter colored than the margin, and in the smaller individual these patches are in the form of rings. Both sets of patches connect irregularly with the lateral bands. Since the specimens agree in all other respects I consider these as at most varietal differences and in view of the limited number of specimens (4) consider it best to describe them as one species, without giving them varietal names.

According to my record, one specimen of each variety was taken at Pango Pango, and the same number at Suva, Fiji. It is possible that there was a confusion of labels in transferring these, and that both of the second variety came from Suva, in which case these could be regarded as geographical varieties, but to the best of my knowledge each locality yielded one of each kind. The type was collected at Pango Pango.

In one specimen, the body is 45 mm. long, widest about midway, where it measures 8 mm. From here it tapers gradually to a width

of 4 mm. at the prostomium and more sharply to 2 mm. on the anal somite. There are 28 somites.

The caruncle (fig. 1) is divided longitudinally into a median and two lateral sections, the three being in contact anteriorly and posteriorly but widely separated throughout the greater part of their length. The median portion has a narrow central axis, with about 30 vertical lobes along either margin. Each lateral portion is a vertical lamella, bent so as to form about 20 close loops. Posteriorly the three sections unite to form a pointed end, just over the anterior margin of somite 6, the posterior point of attachment of the caruncle being on somite 4. Anteriorly the lateral portions merge into the margins of the prostomium, while the median portion, which throughout is higher than the others, is continued over the prostomium as a crest, ending in a rounded smooth lobe at the level of the anterior pair of eyes.

The unpaired tentacle is attached near the anterior end of this median division of the caruncle. It is slender and inconspicuous and extends to the posterior margin of setigerous somite 2. There are two pairs of prominent black eyes, the anterior ones slightly the larger, and situated in front of, and anterior to, the end of the caruncle. The posterior eyes are about as far from the anterior ones as these are from one another. The dorsal paired tentacles are similar in form and size to the median unpaired, and lie one on either side just in front of the anterior eye. From the base of each paired dorsal tentacle a ridge runs forward to merge with the anterior border of the prostomium. These diverge a little from one another so that the groove between them is widest at the anterior end. They merge into the surface of the upper lip which has no groove in its anterior margin. In the channels between these two ridges, and in a similar depression on either side is an accumulation of dark pigment, colored much like the eyes. The ventral paired tentacles are similar in form to the dorsal and lie between the anterior margin of the first setigerous somite and the pigmented channel. Aside from the above-mentioned pigment, the only trace of color is a narrow band on the anterior face of each notopodium of anterior somites. These are darkest in the anterior somites, become less intense farther back, and eventually disappear entirely at about the middle of the body.

On the ventral surface is a very shallow and broad median groove. The anterior margin of the fourth somite bounds the mouth posteriorly; anteriorly and laterally it is bounded by the narrow hoof-shaped upper lip, which is formed by setigerous somites 1 and 2, while its lateral margin on either side is formed by setigerous somite 3.

The gills appear first as relatively thick, finger-shaped filaments on the fifth setigerous somite. In the type there are six of these filaments on the right side, while those of the left side have been injured and the number is of no significance. In these first gills the filaments arise independently of one another, but in later gills they arise in bunches looking like the "hands" of a banana bunch, though some of the filaments may be branched. There are two of these "hands" each having about eight filaments and the outer one which is the larger bends over (in preserved material) and incloses the inner one. The gills occur on all somites posterior to the fifth setigerous though the number of filaments decreases toward the posterior end of the body.

In the parapodia the noto and neuro-podia are well separated. The gill is situated toward the posterior margin of the notopodium and a very delicate slender cirrus lies anterior to it. (Fig. 2 in which a very small portion of the gill is shown.) The notopodial setae arise in a circle inclined at an angle of about  $45^{\circ}$  with the perpendicular and a long cirrus-like lobe extends out from the center of this circle. By some writers this has been described as a second dorsal cirrus but it seems to me not homologous with a dorsal cirrus, but to be merely an outgrowth of the setal lobe. It extends from the body about as far as do the setae. The neuropodial setae form a smaller tuft than do the notopodial, the basal outline of the tuft being oval. The ventral cirrus is similar in form to the dorsal but is shorter than it. In anterior somites they are much larger than they are posteriorly. The setae are all alike, unequally forked at the end. (Fig. 3.)

In addition to the individuals above mentioned, the collection contains one specimen of the unpigmented variety, collected on Utilei reef, Pango Pango by F. A. Potts.

## Family POLYNOIDAE

### Genus IPHIONE Kinberg

#### IPHIONE OVATA Kinberg

*Iphione ovata* KINBERG, 1857 to 1910, p. 8, pl. 3, figs. 8, 8a to 8h; pl. 10, figs. 45 to 45e.

Kinberg's specimens were 12 mm. long and 7 mm. wide, and were collected in Honolulu. Chamberlin (1919 p. 64), described one specimen from Paumotu Island, measuring 17 mm. in length by 10 mm. in width. My collection includes two individuals, the larger of which is 25 mm. long and 10 mm. wide. The smaller is broken and measurements are of little significance. Mine were collected in Suva Harbor, Fiji.

Genus **LEPIDONOTUS** Leach**LEPIDONOTUS SQUAMATUS** Linnaeus

*Aphrodita squamata* LINNAEUS, 1766, p. 1084.

One small specimen collected at Pango Pango, Samoa.

Genus **THORMORA** Baird**THORMORA TRISSOCHAETA** Grube

*Lepidonotus trissochaetus* GRUBE, 1869, pp. 485, 486; 1878, pp. 25, 26, pl. 2, fig. 4.

Grube (1869) described this species from collections made by Ehrenberg in the Red Sea. Later (1878) he wrote a further description with a few figures, from material collected in the Philippines. It seems quite certain that this is identical with specimens in my own collections, but I have added the following descriptions and figures to what Grube has written.

These specimens have two forms of setae in the notopodium, and the elytra leave a portion of the mid-dorsal line of the body uncovered, in both of which points they differ from the usual diagnosis of *Lepidonotus*, and agree with Baird's (1865, p. 199), diagnosis of a new genus *Thormora*. I have, accordingly listed them under this genus. It should be noted that the double nature of the notopodial setae is not always clearly seen. The smaller, smooth margined setae are quite obvious in some specimens, while in others it was necessary to examine a number of parapodia before any were found. I have no information as to whether there is any regular discontinuity in their distribution along the animal, but think there is not, and that this was an individual variation. To determine this point would involve destroying a considerable number of specimens which I did not have at my disposal. It would, however, be safe to suspect that a *Lepidonotus-like Polynoid* with a bare dorsal surface has two kinds of dorsal setae.

The prostomium (fig. 4), is small, not more than 0.6 mm. in width, its width being slightly greater than its length. The dorsal surface is without pigment but is faintly iridescent. Its posterior border is covered by a nuchal fold from the anterior border of the first somite. The posterior eyes are near the border and are obscured by the nuchal fold, while the anterior eyes are situated at the widest part of the prostomium and are larger than the posterior. On the dorsal surface of the prostomium is a distinct depression, widest at the anterior border of the prostomium and running posteriorly nearly to the middle of the latter. The ceratophore of the median tentacle fits into this depression. The lateral tentacular ceratophores are slender, about half as long as the prostomium, and are dark gray in tone, with the margin of the apex

uncolored. The terminal joint is fully as long as the prostomium, its filamentous apical region being nearly as long as its basal portion. The latter narrows slightly from the base, then widens into a globular swelling which is followed by the filamentous portion. It is colored brown from its base to about half way up the swollen portion with the remainder uncolored. The ceratophore of the median tentacle is about twice as wide as that of the lateral and extends to a short distance beyond it. The terminal joint of the median tentacle is fully twice the size of either lateral, but resembles them in form though the terminal filament is relatively much shorter. The bulbous portion of the median tentacle is about at the level of the anterior end of the lateral ones. The two tentacular cirri of the same side resemble one another in form and size and are about the size of the median tentacle. They are pigmented only on a narrow band just proximal to the bulbous swelling. The palps are large, extending to a distance of about twice the length of the median tentacle and taper uniformly from the base to the apex, where they end in a filamentous tip. Their surfaces are unpigmented and are covered with densely arranged and relatively large, "cilia."

The body is mostly without color. On the mid-dorsal line of each somite is a patch of dark pigment made up of minute transverse parallel lines. In anterior somites these are darkest near the anterior border of the somite extending as a diffuse patch toward the posterior border. Toward the middle of the body this pigment appears as a small, dark, median patch with its long axis parallel to the axis of the body and a diffuse patch forming a "wing" on either side. All elytra show some pigment. In the type specimen the first four are faintly pigmented, the fifth to the eleventh, inclusive, intensely so, the twelfth, again, has very little color. The distribution of the pigment is the same in all elytra (fig. 5), the pigmented area occupying a little more than one quarter of the surface. It begins in the form of a blunt point near the anterior end of the elytron and covers the whole extent of its dorsal margin and extending inward from this in a gradually widening area which abruptly ends at about the level of the beginning of the pigment patch on the following elytron. Under low magnification this pigment is seen to be broken up into angular areas, each with a colorless spot in the center. There are 12 pairs of elytra overlapping one another on the same side, leaving the mid-dorsal surface of the body uncovered. They are approximately of the same form throughout the body, have entirely smooth margins, and are translucent except where pigmented. There is a single row of minute spines near the latero-anterior border with a few similar spines irregularly arranged elsewhere on the surface. (Fig. 5.)

The notopodium (fig. 6) is rudimentary and has a single acicula. On its dorsal surface is a small tuft of setae of two kinds. The larger ones are bluntly rounded at the apex and have a number of transverse rows of minute teeth continued nearly to the tip. (Fig. 7.) The smaller ones are slightly swollen toward the apex but narrow to an acute point, and have smooth margins. They are figured by Grube (1878, fig. 4*b*) with sufficient accuracy though he exaggerates the depth of the surface depression. The end of the neuropodium is more or less lobed but the anterior and posterior lips are approximately of the same length. There is a single very heavy acicula. The neuropodial setae project to a considerable distance beyond the apex of the neuropodium. They have stout shafts which widen toward the apices and then narrow rapidly and asymmetrically to form a blunt point, one side of which is convex, the other slightly concave. At a short distance behind this widened area are 7 or 8 rows of toothed plates (fig. 8). There is no sub-terminal tooth.

Grube's (1869) description was of specimens labeled merely as from the Red Sea, and he refers to some in the Godeffroy collection "von Samoa und der Vitit-Inseln." Those in his 1878 paper were collected at Bohol in the Philippines. My specimens were collected at both Suva, Fiji, and Pango Pango, Samoa.

Genus HALOSYDNA Kinberg

HALOSYDNA VEXILLARIUS Moore

*Halosydna vexillarius* MOORE, 1903, pp. 415-417; pl. 23, figs. 13, 14, 15.

Moore's description was based on a single specimen. In this present collection from China is one entire individual collected by Dr. N. Gist Gee at Peiyushan Lighthouse Station; with a fragment of another, labeled as from "side saddle." These differ from Moore's description in such details as proportionate length of tentacles, which in view of the limited number observed seem not be of sufficient importance to outweigh the points of agreement.

HALOSYDNA OCULATA, new species

The type specimen is 22 mm. long, with a greatest body width of 2.5 mm., the prostomium being about 1 mm. wide.

The prostomium is slightly wider than long. (Fig. 9.) It is divided by two ( ) shaped lines into a narrow central region, and two lateral regions, the latter rounded dorsally and dorso-ventrally are thicker than the former. Posteriorly the three areas are confluent, this region being overlapped by a fold from the anterior margin of somite 1. The cirrophore of the median tentacle is a little narrower than the central prostomial area and extends forward from it. It



is about one-half as long as the distinct portion of the central area. The slender terminal joint of the median tentacle is about six times as long as the cirrophore, has a slight swelling near the end, and terminates in a filamentous tip. The cirrophores of the lateral tentacles are closely crowded ventro-laterally to the median and are about equal to it in size. In the type specimen the terminal joint of the left paired tentacle while more slender than the median, resembles it in form and is nearly as long as it is. That of the right side is smaller and is evidently regenerating. The cirrophores of the tentacular cirri are long and slender, their terminal joints shaped like those of the tentacles. The palps are slender and about twice as long as the longest tentacles. On either side of the prostomium is what appears to be two large confluent eyes, the anterior of each pair being the larger. In the center of each is a white spot which represents the lens. It is possible that these "eyes" are really dense accumulations of pigment, obscuring the real eyes which lie in the position indicated by the "lenses." They are dark brown in color, contrasting strongly with the general tint of the prostomium, which in preserved material is light brown with numerous darker patches.

On the anterior face of each half of the prostomium at the base of the cirrophore of the lateral tentacle is a patch of pigment. The entire dorsal surface of the body is colored like the prostomium, though the parapodia and all cirri are colorless. The brown spots are more or less irregularly arranged but show a tendency to group themselves into two double rows, one near the anterior and one near the posterior margin of the somite, the portion between the members of the double row appearing as a white line. Other markings occur in the form of more or less irregular transverse lines. This color arrangement is most clearly seen toward the posterior end of the body.

The elytra are translucent and delicate, the first one noticeably smaller than the second. In the type which has its pharynx partially protruded, the second elytron covers the prostomium and extends as far as the apex of the cirrophore of the tentacular cirri while the first elytron is crowded ventrally so as to lie on the lateral face of the prostomium. This may be an abnormal arrangement due to the action of the preserving fluids. There are 19 pairs of elytra and in life they must have met over the dorsum, especially toward the middle of the body. Each has a smooth, more or less wavy outline, the surface being smooth except for the dorsalmost quarter of its area where it is thickly studded with spines, each with a trifid apex. A detail of this region is shown in figure 10.

The parapodia (fig. 11), have pointed setal lobes, into which the aciculae extend, and very small ventral cirri, each globular at the base but with a slender tip. The dorsal cirri are similar in form to

the tentacles. A dorsal acicula comes to the surface at the base of the dorsal cirrus and is surrounded by a tuft of setae. The notopodial setae are straight with smooth margins and taper to a blunt point. (Fig. 12.) The neuropodial setae widen toward the apex terminating in an unsymmetrically bifid apex. The length of the widened portion is least in the most ventrally placed setae of the tuft. On the side of the seta corresponding to the larger terminal branch are a number of slender teeth. A smaller number of somewhat larger teeth occur on the opposite margin. (Fig. 13.)

The species was collected at Pango Pango, Samoa, in 1920. The type is Cat. No. 19141 of the U.S.N.M.

**Genus HARMOTHOE Kinberg**

**HARMOTHOE VILLOSA, new species**

The type is 15 mm. long. Owing to the peculiar bristly character of the setae, measurements of the transverse diameter are hard to make but from tip to tip of the setae is 5 mm. The prostomium is not more than 0.5 mm. wide.

The prostomium (fig. 14), has a length about equal to its width, and its anterior margin is excavated for the cirrophores of the tentacles of which the median fills rather more than half the space. The posterior eyes are the smaller and lie near the posterior border of the prostomium, while the anterior ones are situated on the latero-ventral face just at the bases of the anterior peaks, and are visible from above only as seen through the translucent prostomial tissue. The lateral margins of the prostomium are smoothly rounded and meet the outer margins of the anterior depression in blunt points. If continued at their regular curvature they would meet one another at the distal end of the cirrophore of the median tentacle. This latter organ is short, and its style is about twice the length of the prostomium, tapering very slightly to near the end and abruptly terminating in an acute point without any subterminal swelling. The paired tentacles are in width and length less than half the size of the median and arise partly ventral to it. They are pigmented except for the terminal one-third. A similar pigmentation occurs on the basal joint of the median tentacle and there is heavy pigmentation around the mouth. As a consequence the anterior part of the prostomium has a dark tint, shading back to about the region of the anterior eyes. The tentacular cirri are about equal to the lateral median tentacle in size and have very slight subterminal swellings. At the bases of their cirrophores are masses of pigment. The palps extend to about one-third of their length beyond the median antenna. Their surfaces are smooth, but all cirri are thickly studded with villi. (Fig. 15.)

A parapodium from near the middle of the body (fig. 15), has a hemispherical notopodial lobe carrying on its outer margin a conical projection into which the large acicula extends. In the cirrus-bearing parapodia, the cirrus is attached to the extreme dorsal margin of the notopodial lobe, and extends to a short distance beyond the longest setae. The cirrus tapers very gradually until near the end, when it rapidly narrows. Throughout its length, leaving only the slender terminal apex bare, the surface is studded with villi, each equal in length to about one half the transverse diameter of the cirrus. The neuropodium consists of a rounded post-setal and conical pre-setal lobe, the acicula extending into the latter. Beyond the apex of the acicula the lobe extends as a slender finger-shaped process, very much narrower than the main portion of the lobe. The post-setal lobe has the form of a blunt cone. The ventral cirrus is conical and extends to the bases of the ventralmost setae. Its surface is smooth.

The notopodial setae arise in the form of a fan-shaped row from the anterior face of the base of the notopodial lobe, the ventralmost of the row overlapping the anterior face of the neuropodium. They are all alike in form but differ in length. The shaft is stout, ending in a single smooth, terminal, tooth. With the exception of the terminal tooth, the whole seta carries series of regularly spaced thin plates toothed at their margins and attached at an angle to the shaft. These are most clearly seen when in profile, and then (especially in the smaller setae), appear as if there were distinct longitudinal rows, but at least in some cases, they extend entirely around the shaft (fig. 16). The neuropodial setae are about equal in length to the notopodial and have slightly more slender shafts. Toward the end they widen rather abruptly, and then gradually narrow to terminate in a curved apical tooth, with a second, sub-apical, tooth arising near its base, the subapical tooth being much smaller than the apical. The shaft of the seta and the terminal toothed portion are smooth but the subterminal, wider area carries many toothed plates similar to those found on the notopodial setae. I think that these do not extend entirely around the shaft but leave entirely free a narrow strip on the side corresponding to the convexity of the terminal tooth. (Fig. 17.)

There are 15 pairs of elytra, carried on short stout elytophores, and they overlap so as to completely cover the dorsum of the animal. The first pair had been lost. The second pair are kidney shaped with a rather wide depression on the outer lateral margin. This depression disappears in later elytra which are broad oval in outline. The second pair are pigmented for rather more than one quarter of their surface. In preserved material this pigment is a

very dark green as seen with transmitted light, and numerous small black dots, marking the position of short spines, are scattered over its surface. In later somites the pigment is more diffusely scattered though the greater bulk is always toward the dorsal margin of the elytron. Figure 18 was taken of the fourth elytron. The margin is entire. The surface is dotted with short spines, each with a dark central axis when located in the pigmented area but colorless elsewhere. A single row of larger and more distinct spines lies along the colorless margin.

Collected at Pango Pango, Samoa and one incomplete specimen was found at Suva, Fiji.

The type came from Pango Pango and is Cat. No. 19142 in the U.S.N.M.

### Family PHYLLODOCIDAE

#### Genus PHYLLODOCE Savigny

##### PHYLLODOCE PULLA, new species

A single specimen, measuring not less than 170 mm. in length, and 1.5 in body width. Because of the twistings of the body accuracy in measurements of this preserved material is quite impossible.

The general color effect is that of a light brown. The anterior region of the body is dark iridescent violet but this weakens in later somites and practically disappears by the middle of the body. All cirri and parapodia and the entire ventral surface of the body, are brown in color.

The prostomium (fig. 19), is cordate in outline with a rounded apex, and with a triangular posterior incision, the latter nearly filled by a large nuchal papilla. On either side of the papilla is a rounded pedicle-like connection between the prostomium and the first somite. One pair of large eyes showing no trace of lenses, lie opposite the anterior end of the posterior incision. The prostomium is light-brown in color, contrasting in this respect with the iridescent violet of the following somites. The tentacles are all alike in form, rather stout, and about one-third as long as the prostomium. The tentacular cirri have light-brown cirrophores, the styles being a trifle darker in tint. The longest is the single one carried on somite 2, and it extends to the tenth setigerous somite.

The parapodium (fig. 20) has a single setal lobe with longer anterior than posterior lip, and a single acicula. The dorsal cirrus is asymmetrically lanceolate and erect. There is much less difference in the sizes of the dorsal and ventral cirri in this species than in *P. variegata*. (See below.)

The setae (fig. 21) are slender, the basal joint having a beveled end with a few spikes, the terminal joint rather long, curved, with teeth along its convex edge.

In the taxonomy of *Phyllodoce* the character of the proboscis is important, but neither in this nor the following species was this organ protruded.

The specimen was labeled as No. 15 in the Japan collection. The type is Cat. No. 19143 in the collections of the U.S.N.M.

PHYLLODOCE VIOLACEA, new species

While collecting on the coral rocks in the harbor of Suva, Fiji, my companion, F. A. Potts, called my attention to a large number of Phyllodocids lying on top of the rocks left bare by the outgoing tide, where they were kept from drying only by the splashing of water over them by an occasional wave. It seemed probable that if they had been in this position before the tide went out they would have been washed away by the waves, but we saw no trace of burrows from which they might have come, and in any case it is not easy to understand why they should have come out of burrows at a time when they might easily have been dried by the sun or caught by birds.

An unusual feature of this species is the great length of the animals. The type after preservation, measures 990 mm. and must in life have been well over 1,000 mm. in length. The largest somites are 1 mm. broad and 0.75 mm. long.

The dorsal surface of the prostomium is, roughly speaking, oval in outline, broken by a small median depression, in which lies a small nuchal papilla, and indented at the point of insertion of the tentacles. (Fig. 22.) If the proboscis is protruded, the prostomium appears shorter and more nearly circular in outline. The tentacles equal one another in size and are about half as long as the prostomium. The eyes are very small and difficult to see. In the type the proboscis is protruded to a length of 7 mm. and is densely studded with dark brown papillae uniformly distributed over its entire surface. There is a small nuchal organ on either side of the prostomium.

The tentacular cirri are short (fig. 22), the longest, the dorsal one on the first somite, extending to somite 7. This one is a trifle more slender than the others. The first cirrus is almost as long as this, the others intermediate between these in length.

To the naked eye the color is throughout a dark brown, but under a lens it is seen to have a brilliant violet iridescence, most intense anteriorly but visible throughout the entire extent of the body. Minute white spots are scattered irregularly over the surface. On the prostomium the iridescence is obscured by a brown pigment which in places allows the iridescence to show, but is denser in an area having roughly an X outline, each anterior arm of the X ending at the base of a dorsal tentacle, the posterior arm on either side running to the postero-lateral angle of the prostomium. The

tentacles, the terminal joints of the tentacular cirri, the ventral cirri, and the margins of the dorsal cirri, are light brown in color, while the cirrophores of the tentacular cirri, and the median areas of all dorsal cirri are dark brown without any trace of iridescence.

Posteriorly the body narrows very decidedly, the anal somite being rather prominent in comparison with the ones immediately preceding it. In specimens which seemed entire I could find no trace of anal cirri.

The parapodium has a setal lobe with anterior and posterior lips, the latter being bifid. (Fig. 23.) The dorsal cirri are thick and firm (in preserved material), and overlap one another posteriorly, leaving a large part of the dorsal surface of the animal uncovered. The setae form a single vertical row.

The setae are all compound, of the type characteristic of this genus. (Fig. 24.) At the apex of the basal joint are some short spines. The terminal joint is relatively short and thick, with very minute denticulations along one edge.

Collected in Suva Harbor, Fiji, and one specimen is in the collection from Japan.

The type is Cat. No. 19144 of the U.S.N.M.

**PHYLLODOCE FUSCA-CIRRATA, new species**

The type specimen is 150 mm. long, with a greatest body width of 3 mm. about one quarter of the length behind the anterior end. Posteriorly it narrows very decidedly. In the preserved material the main color features are the iridescence of the anterior region and the dense brown pigmentation of all cirri on the posterior region of the body.

The prostomium (fig. 25) is about 1 mm. in diameter on the posterior border, and has a shallow median notch on its posterior margin, into which fits a small nuchal organ. From each rounded postero-lateral angle of the prostomium the lateral margins diverge slightly to the corresponding antero-lateral angle, the large eye on either side lying about its own width nearer the posterior than the anterior angle. The antennae are situated at a distance of about twice their own diameter from the anterior margin of the prostomium and extend as far as the posterior margin of the eyes. They are approximately equal in size. The anterior margin of the prostomium is rounded and prominent, the median antero-posterior diameter is about equal to the greatest prostomial width. A rounded nuchal organ on either side lies just ventral to the eye.

The longest tentacular cirrus is the dorsal one of somite one, its cirrophore extending over two somites and its terminal joint reaching somite 10. The tentacular cirrus of somite 2 reaches somite 9, the

two remaining ones are about equal in length and reach as far as the anterior border of somite 6. In the type the pharynx is partially expanded. On either side it carries six longitudinal rows of semicircular plates, about eight in a row, each plate colored dark brown on its outer margin.

The dorsal cirri are all prominent, asymmetrically lanceolate in outline, attached to a broad cirrophore. Throughout they contain radiating pigmented lines, which in the anterior regions of the body make them much darker than the reddish much arched, iridescent dorsal body-surface. (Fig. 26.) This distinction is intensified posteriorly where the pigment becomes much darker.

The setal lobe of the parapodium has a rounded posterior and longer, asymmetrically cleft anterior lip, with a single acicula and a vertical row of setae coming to the surface between the lips. The ventral cirrus is about as long as the setal lobe and lies posterior to it, which posteriorly it nearly covers. In the figure it is represented as pushed ventrally away from its usual position. The setae are compound, 20 to 25 in number in a vertical row, the basal joint having a bunch of stiff spines and the long slender terminal joint carries on its concave surface a row of rounded denticulations. (Fig. 27.)

In the type the posterior end is missing. In a second specimen of about the same size as the type, there is a gradual decrease in body width until at the posterior end it is not more than 0.25 mm. in diameter, the dorsal and ventral cirri being relatively much larger than they are farther forward. There is a single pair of dark brown anal cirri, as long as the last 4 or 5 somites.

Having pharyngeal papillae arranged in rows, this species would be classed by some taxonomists as *Anaitides* rather than *Phyllodoce*. This structural character seems to me hardly of generic value.

Collected at Pango Pango, Samoa. The type is Cat. No. 19145 in the U.S.N.M.

PHYLLODOCE TENERA Grube

*Phyllodoce tenera* GRUBE, 1878, p. 97.

Grube gives no figures for this species, and identification is rather difficult from his description but I have doubtfully identified these as belonging here. The animals are noteworthy from the large size of the eyes and the relatively narrow lanceolate dorsal cirri, especially those toward the posterior end of the body. The tentacular cirri are shorter than in Grube's description.

There is a considerable variation in coloration. Some are entirely colorless, while others have a uniformly distributed dark brown tint over the whole anterior region. In general the cirri are dark brown in color, but there seems to be no uniformity in this respect.

Grube's specimens were from the Philippines, mine were collected at Pango Pango, Samoa.

## Family HESIONIDAE

## Genus LEOCRATES Kinberg

## LEOCRATES IRIS Grube

*Leocrates iris* GRUBE, 1878, pp. 105, 106.

Nine specimens collected at Pango Pango, Samoa, and one at Suva, Fiji. Grube described his species from a specimen collected at Zamboanga in the Philippines but says that it occurs in Samoa. Chamberlain (1919, p. 190) records one specimen from Papeete in the Society Islands.

## Family NEREIDAE

## Genus NEREIS Cuvier

## NEREIS (PLATYNEREIS) TONGATABENSIS McIntosh

*Nereis tongatabuensis* MCINTOSH, 1885, pp. 212 to 214, pl. 34, figs. 7, 8, 9; pl. 16a, figs. 5, 6, 7.

I have identified these on the basis of the body pigmentation, the form of the prostomium, and the length of the tentacular cirri. The first somites are not so narrow in comparison to later ones as McIntosh found in his material, but this may be a matter of preservation. McIntosh's figure 7, plate 34, shows a deep depression between the bases of the tentacles. In my material this is a definite cut, the bases of the tentacles being completely separated as far back as a line drawn horizontally across the middle of the two anterior eyes. In my specimens also, the parapodia do not modify posteriorly as was the case with McIntosh's but retain their sharp-pointed lobes to the posterior end of the body. The setae agree with those in McIntosh's material.

Collected at Pango Pango, Samoa.

## NEREIS PELAGICA Linnaeus

*Nereis pelagica* LINNAEUS, 1767, p. 1086.—EHLERS, 1864 to 1868, pp. 511 to 523, pl. 20, figs. 11 to 20.—V. MARENZELLAR, 1879, p. 14.

v. Marenzellar's specimen is recorded as probably collected at Yokohama. I have doubtfully identified one very small individual collected at Peiyushan Light House by N. Gist Gee, as belonging to this species.

## NEREIS PUSILLA Moore

*Nereis pusilla* MOORE, 1903, pp. 428 to 429, pl. 24, figs. 25, 26, 27.

A single specimen, lacking color, except that in the posterior somites the dorsal surface of each parapodium has a large dark brown patch near the apex, and a much smaller one at the base.



Moore's specimens from Suruga Bay, Japan, are described as having a delicate rose-red tint on anterior somites.

Collected by N. Gist Gee at Shroud Island.

**NEREIS PAUCIDENTATA Moore**

*Nereis paucidentata* MOORE, 1903, pp. 430, 431, pl. 24, figs. 28, 29, 30.

A fragment of the anterior end of one specimen undoubtedly of this species.

Collected at "side saddle" by N. Gist Gee.

**Family LEODICIDAE**

**Genus LEODICE Savigny**

**LEODICE APHRODITOIS Pallas**

*Nereis aphroditois* PALLAS, 1788, p. 229, pl. 5, figs. 1-7.

A single specimen. I have elsewhere (1922, pp. 134 to 136, pl. 1, figs. 12-17, text figs. 3-7), described and figured this species from Samoa, and have given there references to the literature from which it appears that this is a very variable species. This single specimen from Japan does not agree in all details with any others I have seen, or with the various descriptions in the literature, but resembles them all sufficiently closely so that I have placed it in this species. My identification is largely based on the character of the jaws and gills. The dorsal cirri are much more slender than in those I collected in Samoa.

"Japan" is the only locality given.

**Genus LYSIDICE Savigny**

**LYSIDICE COLLARIS Grube**

*Lysidice collaris* GRUBE, 1878, pp. 166 and 167.

A single specimen, collected at Peiyushan Light House Station, by N. Gist Gee.

**Family SABELLIDAE**

**Genus EURATO St. Joseph**

**EURATO PUNCTATA, new species**

Two specimens are in the collection, one, the type, being entire. This has a body-length of 35 mm. and a width of 2.75 mm. and is composed of about 100 somites. The body tapers uniformly and rather sharply to the pygidium which is not more than 0.5 mm. in diameter. In each somite on either side is a pair of dark spots, one dorsal and one ventral to the seta tuft, the dorsal one being the larger and the more prominent. These are the only constant

color features in the body, but colored spots are scattered irregularly over the entire surface, with a tendency to collect in greater numbers near the anterior end. The faecal groove is relatively prominent throughout the entire length of the abdomen, and in the usual fashion, it crosses the ventral face of the anterior abdominal somites to pass to the dorsal surface. The collar is small, straight sided, with a deep notch on either side on the dorsal surface. Toward the median line from these is on either side a rounded lobe, the two not being in contact, and the ventral ends of the collar are prolonged into overlapping lobes. (Fig. 28.) The tentacles are large and between them and the collar, near the mouth, is a pair of prominent rounded lobes.

The gills are carried on prominent bases, which are united for a short distance by a membrane. This membrane, in a line corresponding to a continuation of the free portion of the gill, is colored a deep purple, while between these it is colorless. Throughout their entire extent the gills are marked with alternating bands of purple and white, this coloration extending over the pinnules. A short portion of the apex of each gill is free from pinnules.

The thoracic setae are all essentially alike in form but differ in length and the larger ones are less broadened toward the end than are the shorter. Both (fig. 29) broaden toward the apex, this broadened portion being striated and they terminate in very fine tips. The uncinus (fig. 30) has a bluntly truncated base, a single prominent tooth, and a denticulated apex. Abdominal setae and uncini are similar to the thoracic in form.

Collected at Pango Pango, Samoa. The type is Cat. No. 19146 of the U.S.N.M.

## Family TERESELLIDAE

### LOIMIA Malmgren

#### LOIMIA MONTAGUI Grube

*Terebella montagui* GRUBE, 1878, pp. 224 and 225, pl. 12, fig. 3.

*Loimia montagui* v. MARENZELLER, 1884, pp. 9 to 11, pl. 2, fig. 1.

As was noted by v. Marenzeller, Grube's description of this species is not very satisfactory and I have based my identification mostly on the description given by the former writer, the important details being the structure of the lobes on the second and third somites, the gills, and the form and arrangement of the setae. Black inter-segmental bands mentioned by Grube do not appear in my material. The tubes have a basal structure of tough material thickly covered on the outside by small pebbles and bits of shell.

Grube's specimen is recorded as collected at "Canal Lapaing, Philippinen." v. Marenzeller states that his were collected by Dr.

A. v. Roritz who is credited in an earlier paper (v. Marenzeller, 1879, p. 1) with collections made at Yokohama and at various places on the islands Kiuschiu and Shikoku, but the paper contains no more definite locality data. Mine were collected at Pango Pango, Samoa.

## Family SERPULIDAE

### POMATOSTEGUS Schmarda

#### POMATOSTEGUS LATISCAPUS v. Marenzeller

*Pomatostegus laticapus* v. MARENZELLER, 1884, pp. 22, 23, pl. 4, fig. 5.

A single specimen, incomplete posteriorly. v. Marenzeller's description is very brief and possibly a comparison with the type would reveal specific differences but with the information available it seems best to place it here.

Collected at Pango Pango, Samoa.

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#### EXPLANATION OF PLATES

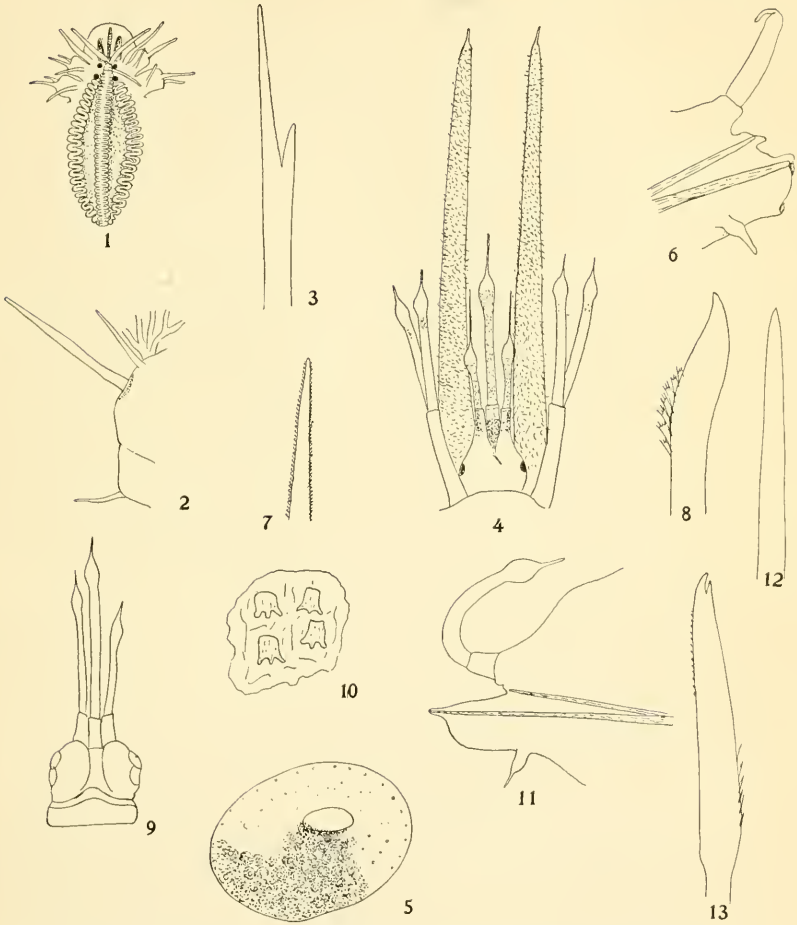
##### PLATE 1

- FIGS. 1–3.—*Notopygos andrewsi* Monro. Fig. 1, anterior end  $\times 4$ ; fig. 2, parapodium  $\times 4$ ; fig. 3 seta  $\times 35$ .
- 4–8.—*Thormora trissochaeta* Grube. Fig. 4, anterior end  $\times 20$  fig. 5, elytron  $\times 15$ ; fig. 6, parapodium  $\times 20$ ; fig. 7, dorsal seta  $\times 250$ ; fig. 8, ventral seta  $\times 250$ .
- 9–13.—*Halosydna oculata* Treadwell. Fig. 9, anterior end  $\times 10$ ; fig. 10, elytron  $\times 10$ ; fig. 11, parapodium  $\times 25$ ; smooth seta  $\times 250$ ; fig. 13, toothed seta  $\times 250$ .

##### PLATE 2

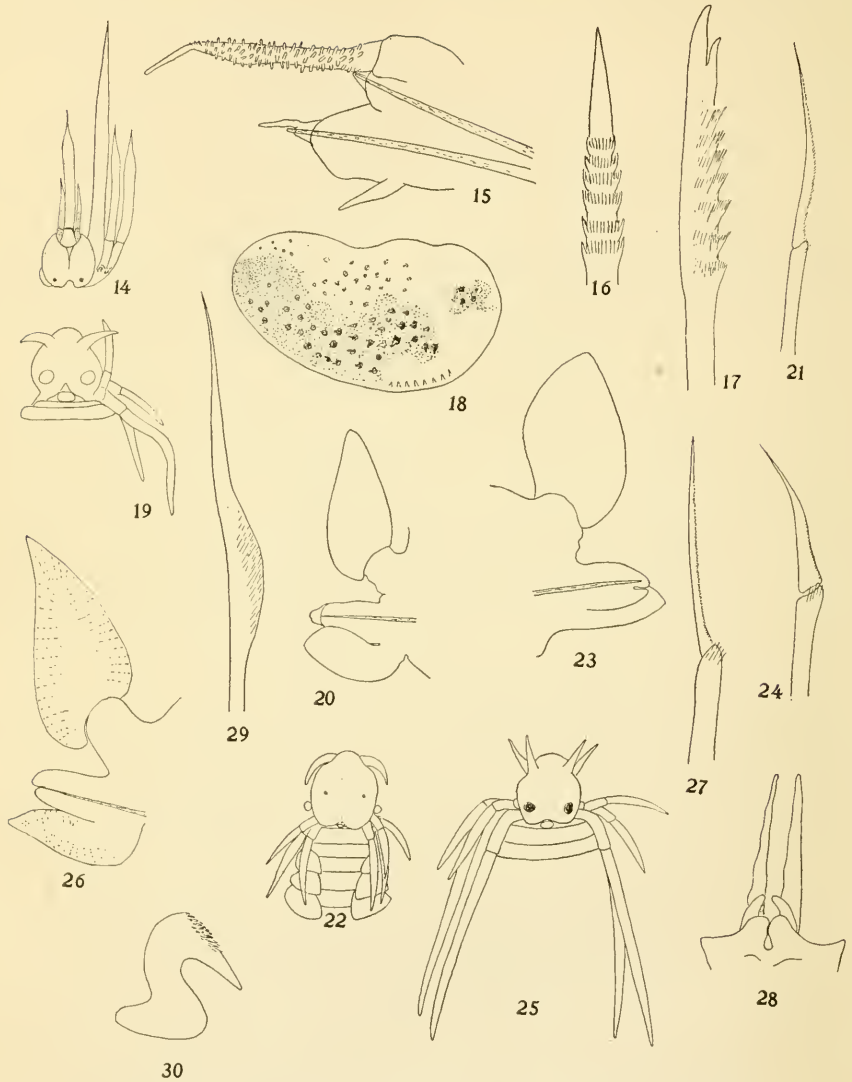
- FIGS. 14–18.—*Harmothoe villosa* Treadwell. Fig. 14, anterior end  $\times 15$ ; fig. 15, parapodium  $\times 23$ ; fig. 16, toothed seta  $\times 250$ ; fig. 17, second form of seta  $\times 135$ ; fig. 18, elytron  $\times 45$ .
- 19–21.—*Phyllodoce pulla* Treadwell. Fig. 19, anterior end  $\times 10$ ; fig. 20, parapodium  $\times 28$ ; fig. 21, seta  $\times 250$ .
- 22–24.—*Phyllodoce violacea* Treadwell. Fig. 22, anterior end  $\times 10$ , fig. 23, parapodium  $\times 28$ ; fig. 24, seta  $\times 250$ .
- 25–27.—*Phyllodoce fusca-cirrata* Treadwell. Fig. 25, anterior end  $\times 7.5$ ; fig. 26, parapodium  $\times 12$ ; fig. 27, seta  $\times 250$ .
- 28–30.—*Euratio punctata* Treadwell. Fig. 28, showing collar, tentacles and mouth lobes  $\times 5$ ; fig. 29, seta  $\times 250$ ; fig. 30, uncinus  $\times 250$ .





POLYCHAETOUS ANNELIDS FROM FIJI, SAMOA, CHINA, AND JAPAN

FOR EXPLANATION OF PLATE SEE PAGE 20



POLYCHAETOUS ANNELIDS FROM FIJI, SAMOA, CHINA, AND JAPAN

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