limited, and perhaps more exact definition of the genus based on present knowledge. The variation in the number and equipment of thoracic segments is striking and it is possible that more than one genus is involved in the concept as defined above.

Lysippe annectens Moore, 1923

Lysippe annectens Moore, 1923, pp. 201-202, pl. 17, figs. 11-13; Hartman, 1969, p. 563.

Records: 7229 (1); 7358 (5).

Remarks: L. annectens resembles L. capensis Day (1961, for full reference see below) and L. labiata Malmgren (1866) in that the lower lip is crenulated in all three species.

The thorax includes fifteen setigers in L. capensis, sixteen setigers in L. labiata and seventeen in L. annectens. Uncini are present from the fourth setiger in L. capensis and L. labiata and from the fifth setiger in L. annectens.

Distribution: L. annectens is found in shelf, slope and basin depths off southern California. The present records are from deep water off Cedros Island, Baja California.

Lysippe mexicana, new species

(Plate 61, Figs. b-d)

Records: 7231 (2); 7234 (1, TYPE).

Description: The type is a complete specimen which has sixteen thoracic and thirteen abdominal setigers. It

is 8 mm long and 1.2 mm wide with setae and is white with no color patterns. Eyes are absent. The slender body tapers evenly towards the posterior end. The anus has two short, tapering anal cirri.

The prostomium is a truncate fold (Fig. b) with two lateral longitudinal ridges. The peristomium is folded up dorsally lateral to the prostomium and is visible dorsally as two lateral ridges. The anterior edge of the peristomium is smooth or gently folded.

The first four setigers (including the paleal segment) have notopodia only. The notopodial parapodia are bluntly truncate distally; cirri are absent. The thoracic thori are low folds. The elongate abdominal neuropodia are distally truncate without cirri. The last few setigers are crowded with strongly reduced parapodia.

There are four pairs of branchiae; the outer and inner pairs are smooth; the two median pairs are finely annulated. The bases of the branchiae are connected by a branchial membrane.

The thoracic notopodial setae are slender capillaries, including the poorly developed paleal setae. Thoracic and abdominal uncini (Figs. c-d) are similar in structure; each has a short, blunt base and a crest of three teeth; six teeth are arranged in three rows below the crest. The abdominal uncini are somewhat smaller than the thoracic ones.

Tubes are absent.

The genus Lysippe is known for four species in addition to L. mexicana; these include L. aqulhasensis Day (1961, pp. 529-530, fig. 12e-k), L. annectens Moore (1923, pp. 201-202, pl. 17, figs. 11-13), L. capensis Day (1961, pp. 530-531, fig. 121-o) and the genotype L. labiata Malmgren (1866, p. 367, pl. 26, fig. 78).

The lower lip is crenulated in L. annectens, L. capensis and L. labiata and smooth in L. aqulhasensis and L. mexicana.

The thorax includes fifteen setigers in L. aqulhasensis (counting the paleal segment) and sixteen in L. mexi-

cana.

L. agulhasensis has rudimentary notopodial lobes in the anterior abdominal setigers; abdominal notopodia are absent in L. mexicana. Uncini are present from the fifth thoracic setiger in L. mexicana and from the fourth in L. agulhasensis.

Distribution: L. mexicana is known from two localities in the vicinity of Cedros Island, Baja California; complete data can be found in the station list.

Genus Melinna Malmgren, 1867

The genus is presently known for twenty species including the three newly described below. The different species can be separated only with difficulty and the validity of some of the described species is doubtful.

The species may be separated into groups based on the number of thoracic setigers. All species have a number of anterior segments with needle-setae in the neuropodia. The number of such setigers varies from two to four. All other thoracic setigers have slender, bilimbate setae in the notopodia and uncini in most neuropodia. Neuropodial setae may be absent in one or two segments between the last setiger with needle-setae and the first uncinigerous setiger.

The anterior setigers with needle-setae may be difficult to distinguish, but the number of thoracic setigers appears to offer the best solution to a subdivision of the genus.

The structure of the transverse membrane which is present posterior to the branchiae has been used to separate the different species. The anterior margin of this membrane may be clearly dentate or it may be smooth. Included in the group with smooth membranes are species that have gently undulating membranes. The number of teeth in the dentate membranes varies within each species and the

character cannot be used uncritically since the range of variability overlaps for several species. However, M. ochotica (Ushakov, 1950, for complete reference see Appendix 5) and M. exilia (described below) have very narrow transverse membranes with only a few teeth. The number of teeth in the dentate membrane appears in these cases to be a valid taxonomic character.

A survey of the subdivisions of the genus, based on these two characters, is given in Appendix 5 with reference to all original descriptions and pertinent revisions.

Melinna exilia, new species

(Plate 62, Figs. a-c)

Record: 11815 (3, TYPE).

Description: The type is a complete specimen with eighteen thoracic and approximately fifteen abdominal setigers; it is 15 mm long and 2 mm wide. It is greyish yellow with a white anterior ventral side.

The prostomium (Fig. a) is anteriorly truncate and has two well marked longitudinal folds. The peristomium is completely fused to the prostomium laterally and is visible dorsally as two lateral bulges. The lateral flanges of the anterior setigers barely project above the dorsal surface when viewed laterally. The transverse membrane is produced anteriorly as a narrow, deep funnel with a dentate margin. The lateral edges of the membrane are fused to the dorsolateral margins of the body just medial to the lateral flanges.

The thoracic notopodia are retractable into deep pockets on the dorsal side of the body; each is a truncate cone. There are eighteen thoracic setigers of which fourteen are uncinigerous.

The branchiae are separated into two groups, connected by a low branchial membrane. Each group is arranged so

that three branchiae form a semicircle around the fourth anteriormost one.

The first three neuropodia have needle-setae; a few slender, bilimbate setae are present in the middle of the third fascicle of needle-setae. Two large nuchal hooks are present dorsally just posterior to the branchiae. Each of the thoracic uncini (Fig. b) has four teeth in a single row; the abdominal uncini (Fig. c) are similar, but larger and usually have only three teeth, but a few uncini with four teeth are present in each abdominal fascicle.

M. exilia has eighteen thoracic setigers and a dentate transverse membrane and thus belongs to the largest group of species of Melinna. The transverse membrane in all other species in this group (see Appendix 5 for a listing) is very low with at most a shallow pocket and has numerous, slender dentitions. The transverse membrane in M. exilia forms a deep, funnel-shaped pocket and is anteriorly tipped with five or six thick, blunt dentitions. The notopodia are retractable into deep pockets on the dorsum in M. exilia; this is a feature not described for any other species in the genus.

A narrow free edge on the transverse membrane is also known from M. ochotica Ushakov (1950); the membrane forms a deep pocket in M. exilia, but not in M. ochotica.

Distribution: M. exilia is known from one locality in Guaymas Basin, Gulf of California.

Melinna heterodonta Moore, 1923

Melinna cristata heterodonta Moore, 1923, pp. 212-213, pl. 17, fig. 25.
Melinna heterodonta Hartman, 1969, p. 565.

Records: 1746 (1); P 201-60 (15); Scripps st. GC 26 (1).

Remarks: M. heterodonta has eighteen thoracic setigers of which fourteen are uncinigerous. Needle-setae are present in four anterior neuropodia; notosetae are present from the third setigerous segment. Each of the thoracal uncini has three teeth in a single row; each abdominal one has three or four teeth in a crest and two teeth below in a single median row.

Distribution: M. heterodonta is known from central and southern California in slope and abyssal depths. The present records come from similar depths in the Gulf of California.

Melinna plana, new species

(Plate 63, Figs. a-b)

Record: 11815 (1, TYPE).

Description: The type is an incomplete specimen which has 15 thoracic setigers; it is 10 mm long and 4 mm wide without setae. The anterior dorsum is strongly dorsoventrally flattened.

The prostomium (Fig. a) is a small transverse lobe with two longitudinal grooves that is fused laterally to the dorsal part of the peristomium and to the lateral flanges. The anterior part of the lateral flanges is very high and covers the bases of the branchiae completely when viewed laterally; the posterior part is lower and terminates at the anterior edge of the transverse membrane.

The transverse membrane is very low, and completely smooth; it is raised as a low ridge over the flattened low dorsum of the anterior end. Fifteen thoracic setigers are present; the notopodia, distinguishable from setiger 5 are cylindrical and distally truncate. Abdominal neuropodia are short and distally truncate.

The branchiae are arranged in two groups; a bran-

chial membrane is absent and each branchia in a group is free to the base. The branchiae are arranged in a semicircle of three enclosing the fourth anteriormost one.

The first four neuropodia have needle-setae; uncini are present from setiger 6, so setiger 5 lacks neuropodial fascicles. Notosetae are present from setiger 3; all notosetae are similar; each is slender and weakly bilimbate. The small thoracal and abdominal uncini (Fig. b) are similar; each has three teeth in a single row.

The tube is thick and composed of dark, fine-grained mud particles lined with a thin membrane of mucoid material.

M. plana is the only known species in the genus with only fifteen thoracic setigers. It is also characterized by strong dorsoventral flattening and by the presence of only ten uncinigerous segments in the thorax.

Distribution: M. plana is known from one locality in Guaymas Basin, Gulf of California.

Melinna tentaculata, new species

(Plate 64, Figs. a-d)

Records: 11792 (1, TYPE); 13731 (4); 13744 (1); 13767 (3).

Description: The type is an incomplete specimen with approximately twenty-five setigers, of which eighteen are thoracal. It is 12 mm long without the branchiae and 2.5 mm wide with setae. It is white; color patterns and eyes are absent.

The prostomium (Figs. c-d) is a short, distally rounded lobe, free laterally from the peristomium which is not visible dorsally. The peristomium is present only as a short, truncate lower lip. A pair of large oral tentacles and numerous short smooth ones are present.

The lateral flanges are high giving the anterior part of the body a slight lateral flattening; anteriorly the bases of the branchiae may be completely covered by the flanges. The nuchal hooks are attached to a small medial lobe at the inner edge of each lateral flange. The transverse membrane is low; it has eight visible dentitions; the lateral edges of the membrane are tucked under the lateral flanges and are not visible dorsally.

The thorax consists of eighteen setigers. Notopodia, which are distinct from setiger 7, are long, cylindrical and distally truncate. Neuropodia are not morphologically distinct in the thorax; in the abdomen they are short and distally rounded. Abdominal notopodia are absent.

The branchiae are fused into two groups dorsolaterally; a branchial membrane is absent. The outer branchiae are long and slender; the digitiform median pair is short and barely reaches beyond the tip of the prostomium. The two middle pairs have been broken off on both sides in the type; in other specimens they are slightly shorter than the outer branchiae.

The three anteriormost setigers have needle-setae in the neuropodia. Setiger 4 has slender, bilimbate setae in notopodial positions. Each of the remaining thoracic setigers has a notopodial fascicle of several long, bilimbate setae and uncini in neuropodial positions. Each of the thoracic uncini (Fig. a) has four teeth in a single row; the base is rounded and has a deep embayment opposite the attachment point. The abdominal uncini (Fig. b) are smaller than the thoracic ones and the embayment is less distinct; otherwise they are similar.

Tubes are absent.

M. tentaculata belongs to the largest group of species of Melinna (see Appendix 5). It differs from all other species in this group in that the median branchiae are short and digitiform; the branchiae are of similar length in all other species in the genus.

The prostomium is completely free from the peristo-

mium in M. tentaculata; in all other species in the genus the prostomium appears as a median ridge on a fused anterior mass.

Distribution: M. tentaculata is known from one locality in the southern part of the Gulf of California, and from the Central American Trench from Acapulco to the Tres Marias Islands.

Melinna, species indeterminable

(Plate 62, Figs. d-h)

Record: P 201-60 (1).

Remarks: The specimen consists of an anterior fragment; the number of thoracic setigers cannot be determined; thus it is impossible to reach any firm conclusion as to the specific identity of this specimen.

The anterior end (Fig. h) resembles M. oculata Hartman (1969). The branchiae form two distinct groups, not connected by a branchial membrane. The prostomium is anteriorly truncate and fused with the peristomium laterally. The lateral flanges are high and cover the bases of the branchiae completely. The three anteriormost setigers have needle-setae only; setiger 4 has normal thoracic notopodial setae; uncini are present from setiger 5. The transverse membrane is multidentate and forms a relatively deep narrow pocket dorsally. Each of the thoracic uncini (Figs. f-g) has four teeth in a single row; abdominal uncini (Figs. d-e) are similar.

Genus Melinnampharete Annenkova, 1937

Melinnampharete gracilis Hartman, 1969

(Plate 63, Fig. c)

Melinnampharete gracilis Hartman, 1969, pp. 569-570.

Records: 7228 (3); 7229 (5); 7231 (2); 7234 (2); 7235 (1); 7249 (2); 7358 (3); 11808 (1); 11813 (2); 12134 (2); 13752 (3); 13754 (2).

Remarks: M. gracilis resembles the genotype M. eoa Annenkova (1937, p. 187), but differs in that it has fourteen instead of seventeen thoracic segments and in that the thoracic uncini have seven instead of five teeth.

The inferior part of the prostomium (Fig. c) forms two anterolateral flattened wings with the mid-superior part forming a median keel. Two pairs of eyes are present on the lateral margins of the mid-superior part. The peristomium is visible dorsally as two rounded cushions, one on each side of the prostomium. A narrow (glandular?) transverse ridge is present between setigers 3 and 4 on the dorsal side, but may be difficult to see in some specimens.

The number of segments in the abdomen appears to vary somewhat; one specimen has fifteen abdominal segments; others have seventeen or eighteen.

The tubes are relatively thin-walled; they have inner linings of mucoid material covered with a thin layer of fine-grained mud and are usually dark grey or black.

Distribution: M. gracilis was originally described from Santa Cruz Basin off southern California. The present records are from both sides of the Baja California peninsula including the median portions of the Gulf of California. The species may be widespread in the eastern Pacific Ocean.

Genus Melinnexis Annenkova, 1931

Melinnexis moorei Hartman, 1960

Melinnexis moorei Hartman, 1960, p. 159; Hartman, 1969, pp. 571-572.

Records: 7236 (1); Stephen Calvert st. L 184 (several).

Remarks: The genus Melinnexis was reviewed by Hartman (1960, pp. 158-159); later (Hartman, 1969, pp. 531-534) the genus was further limited to include only species of the subfamily MELINNINAE with a transverse membrane, but without nuchal hooks. The present specimens fit descriptions and illustrations in Hartman (1969) very well. Characteristic are the thick, abruptly tapering branchiae and the short, high lateral flanges along the anterior end.

Distribution: M. moorei is known from southern California in canyon, basin and abyssal depths. The present records are from similar depths near Cedros Island, Baja California and from the upper end of the Gulf of California.

Genus Mexamage, new genus

This genus includes ampharetids with four pairs of branchiae arranged in a longitudinal series. All anterior segments have parapodia; anterior fused segments are absent. The prostomium is tripartite, with two large lateral lobes, representing the inferior part of the prostomium and with a large, scoop-shaped mid-superior part. Small glandular ridges are present near the posterior corners of the mid-superior part of the prostomium.

Fifteen thoracic segments are present; of these thirteen are setigerous; the two anteriormost segments are

represented by the notopodial lobes only. Ten thoracal uncinigerous segments are present; the abdominal segments have not been seen.

Mexamage resembles Amage in that it has four pairs of branchiae arranged in a longitudinal series and in that paleae and nuchal hooks are absent. It differs from all known ampharetids in that it lacks anterior fused segments; the anterior segments are distinct ventrally and can be recognized dorsally by the presence of notopodial lobes and/or setae. Each of the branchiae can be clearly assigned to a segment. The peristomium is incomplete dorsally, but forms a large lower lip ventrally and laterally. All tentacles are similar; each is slender and smooth.

Genotype is Mexamage corrugata, new species.

Mexamage corrugata, new species

(Plate 65, Figs. a-c)

Records: 11815 (4, TYPE).

Description: All four specimens are incomplete; the type has only a short fragment of the abdomen; it is 27 mm long and 5 mm wide without setae for fifteen thoracic segments. The anterior end is somewhat inflated, and the rest of the body is cylindrical.

The prostomium (Fig. a) is separated into two parts. The inferior part consists of two lateral lobes which are cone-shaped with a truncate distal end and are connected to each other posterior to the mid-superior part by a slightly raised ridge. The mid-superior part is a flattened, saddle-shaped lobe with a series of five to seven longitudinal folds dorsally; the anterior margin is thin, truncate and folded over dorsally. A pair of short, triangular glandular ridges are present near the posterior corners. The peristomium (Fig. b) forms a deep, scoop-shaped lower and lateral lip with the free edge visible dorsally postero-

laterally to the prostomium. The ventral edge of the peristomium is deeply split into fourteen to fifteen lobes anteriorly; these lobes continue as clearly marked ridges along the ventral side of the peristomium. Ventrolaterally are found two pairs of low, transverse ridges near the posterior margin of the peristomium.

The first three segments are fused dorsally, but are clearly visible ventrally as raised ridges. Each is equipped with a notopodial rudiment. The first pair of notopodial rudiments is composed of short, rounded, button-shaped lobes; the second and third pair are distinctly elongated; each of these two has a short dorsal cirrus. The fourth notopodium is similar to, but shorter than the notopodia in the remaining thoracic segments. The long normal thoracic notopodia are cylindrical and distally truncate; the longer ones project freely from the side of the body and may be as long as half the width of the body. Dorsal cirri are absent. Thoracic neuropodia are present from segment 5; each is a narrow, distally expanded flattened lobe with a truncate distal edge; the neuropodia are held erect on the ventral side. Neuropodia are on thickened ridges in all thoracic segments.

There are four pairs of branchiae arranged in two longitudinal groups; between the groups is found a complex branchial membrane; the anterior part of the membrane consists of six sharply defined longitudinal ridges and the posterior part is a single, elevated transverse ridge. Each of the four branchiae on a side is clearly related to a segment.

Setae include neuropodial uncini and slender, long, capillary notopodial setae with no traces of bilimbation. Each uncinus (Fig. c) has six teeth; the three uppermost teeth are in a single row; the next two are arranged side by side and the lowermost tooth is again in the midline. There is a very short, but distinct attachment point on the concave side of the base of the uncinus.

Abdominal segments are absent in all four specimens. Tubes are absent.

M. corrugata resembles species of the Amage-group in that it has four pairs of branchiae arranged in longitudinal groups; it also lacks paleae and nuchal hooks as do species of Amage. The structure of the uncini resembles that in species of Amage in that one of the teeth is doubled.

M. corrugata appears structurally to be a primitive ampharetid in that the cephalization which is so characteristic of the family is incomplete. The first three segments are more or less fused dorsally, but are distinct ventrally and remnants of the notopodia are visible dorsally.

Distribution: M. corrugata is known from one locality in Guaymas Basin, Gulf of California.

Genus Samythella Verrill, 1873

Samythella has fifteen thoracic setigers, three pairs of branchiae, smooth tentacles and uncini with the teeth in a single row, both in thoracic and abdominal setigers. Paleae are absent.

The prostomium is broadly truncate or may be laterally incised. Glandular ridges are absent. Two weak longitudinal ridges appear to be present laterally on the prostomium of most species.

The pygidium has a series of anal cirri; the number, relative size and arrangement of these cirri appear to be important taxonomically.

The number of abdominal setigers has been used as an important character in the genus; in view of the fact that other morphological characters appear to separate the species as well as, or better than this character, it has been slightly de-emphasized here.

Two species, both newly described, are present in the material from western Mexico; these represent the first records of the genus from the eastern Pacific Ocean.

Samythella interrupta, new species

(Plate 66, Figs. a-b)

Record: 7358 (1, TYPE).

Description: The type is a complete specimen which is 4.5 mm long and 1 mm wide without setae. It consists of fifteen thoracic and thirteen abdominal setigers. The anterior end is inflated and tapers abruptly in the posterior thoracic segments; the posterior part of the body is cylindrical and tapers abruptly at the posterior end. The pygidium is surrounded by a series of anal cirri. Middorsally is found a pair of short, blunt cirri; dorsolaterally are found two long digitiform ones; the ventrolateral and ventral sides are covered by two thick pads.

The prostomium (Fig. a) is broader than long with two poorly marked longitudinal depressions. The anterior end is broadly rounded. Eyes are absent. The peristomium is similar in shape, but is somewhat shorter and lacks the two longitudinal depressions; it is not directly connected to the prostomium. Numerous long, smooth tentacles are present.

The thorax consists of fifteen setigers; each notopodium is cylindrical and terminally truncate; the neuropodia are low ridges. Abdominal neuropodia are long and distally truncate; notopodial rudiments are present in all abdominal segments.

Three pairs of long, slender branchiae are present; they are arranged in two groups on either side of the midline and are attached to a low, distally smooth branchial membrane. The outer lateral pair is larger than the other branchiae. The gap between the two groups of branchiae is wider than the width of each branchia.

The notopodial setae are smooth, weakly bilimbate, simple setae; the small uncini (Fig. b) are similar in thoracal and abdominal setigers. Each is rounded with three or four slender teeth in a single row.

Tubes are absent.

S. interrupta resembles the other species in the genus in having fifteen thoracic setigers and three pairs of smooth branchiae, in having notopodial rudiments in abdominal segments and in lacking paleae. It also has the complex system of anal cirri characteristic of members of this genus. It differs sharply from the three known species in the genus, S. bathycola Ushakov (1950, pp. 220-221, pl. 2, fig. 10a-c), S. elongata Verrill (1873, p. 99, genotype) and S. neglecta Wollebaek (1912, pp. 62-64, pl. 12, figs. 1-9) in having only thirteen abdominal segments; all three formerly described species have at least twenty-nine to thirty abdominal segments. It also differs from these species in that the branchiae are separated into two groups with a large gap between the groups. In all other known species, including S. pala described below, the two groups of branchiae are separated only by a short distance or not separated at all.

The number and arrangement of anal cirri appear to be characteristic for each species. S. bathycola has fourteen anal cirri, seven long and seven short, alternating. S. elongata has eight anal cirri of which the two dorsalmost are the longer. S. neglecta also has eight cirri which decrease evenly in length from the dorsal towards the ventral side. S. interrupta has two short dorsally, two longer dorsolaterally, and two thick cushions ventrally. Finally, S. pala, described below, has two long ventrolateral cirri, two short lateral ones, two large cushions dorsally and a single median mid-ventral pad.

Distribution: S. interrupta is known from one locality off Cedros Island, Baja California.

Samythella pala, new species

(Plate 66, Figs. c-f)

Record: Stephen Calvert st. L 184 (4, TYPE).

Description: The type is a complete specimen with fifteen thoracic and twenty abdominal setigers; it is approximately 25 mm long and 2 mm wide without setae. The anterior one-third of the thorax is relatively wide; the remainder of the body is cylindrical and abruptly tapering at the posterior end. The pygidium has a series of anal cirri. Dorsally are found two large pads; laterally is a pair of short, digitiform cirri and ventrolaterally a pair of long, abruptly tapering cirri; mid-ventrally is found a small pad.

The prostomium (Figs. c and f) is approximately as wide as long; the lateral sides are tapering anteriorly and the anterior margin is truncate. Two poorly marked longitudinal ridges are present. The anterior end of the prostomium is slightly upturned. The peristomium is nearly as long as the prostomium ventrally and is completely reduced dorsally. It forms a large lower lip, which is anteriorly evenly rounded. A large number of long, slender smooth oral tentacles are present.

The short thoracic notopodia are cylindrical and distally truncate. The thoracic neuropodia are low ridges. Abdominal notopodial rudiments are present in all setigers. The short abdominal neuropodia are distally truncate.

Three pairs of long, cylindrical branchiae are present; each is abruptly tapering distally. The branchiae are in two groups connected by a high distally smooth branchial membrane. The gap between the two groups of branchiae is no wider than the width of the widest branchia.

Setae include slender, weakly bilimbate notopodial setae in the thorax and uncini both in the thoracal and abdominal neuropodia. The abdominal uncini resemble the thoracic ones except that they are approximately one-third

smaller. Each uncinus (Figs. d-e) has five, long slender teeth in a single row.

The tube is stiff with a thick inner membrane covered with coarse sand grains; all sand grains are light-colored or translucent.

S. pala resembles the other species in the genus in most important characters (see summary above for S. interrupta). It differs from the three earlier described species in having only twenty instead of twenty-nine to thirty abdominal setigers. The number and arrangement of anal cirri is characteristic for the species.

The structure of the tube is rather remarkable considering the fact that the bottom in the area in which the species was collected consists of dark-green to gray silty clay with only a few larger particles and even fewer light-colored ones.

Distribution: S. pala is known from one locality in the upper end of the Gulf of California.

Ampharetidae, indeterminable

Records: 6213; 7229; 7231; 7234; 7358; 11745; 11809; 11837; 11840; 12135; 13755; 13774; P 128-58; P 199-58.

Remarks: These samples contain fragments, juveniles or poorly preserved materials which cannot be further identified.

Family TEREBELLIDAE Malmgren, 1867

Six species have been identified in the material from deep water off western Mexico; one of these is newly described in a new genus.

Key to Species from Deep Water off Western Mexico

1. A permanently everted, cone-shaped proboscis present... ..... Artacama coniferi
1. Proboscis absent..... 2.
2. First four segments form an oblique dorsal plaque..... ..... Scionella japonica
2. Dorsal plaque absent..... 3.
3. Uncini in double rows on posterior thoracic setigers ..... 4.
3. Uncini in single rows on all thoracic setigers..... 5.
4. Seventeen thoracic setigers; anterior thoracic uncini long-handled..... Pista brevibranchiata
4. Sixteen thoracic setigers; all thoracic uncini short-handled..... Paraxionice artifex
5. Branchiae absent..... Polycirrus sp.
5. Branchiae present..... 6.
6. Branchiae arborescent... Nicolea latens
6. Branchiae filiform..... 7.
7. Three pairs of branchiae; setae first present from first branchial segment. Streblosoma crassibranchia
7. Two pairs of branchiae; setae first present from second branchial segment..... ..... Thelepus hamatus

Genus Artacama Malmgren, 1866

Artacama coniferi Moore, 1905

Artacama coniferi Moore, 1905b, pp. 853-855, pl. 44, figs. 11-13; Hartman, 1969, pp. 585-586, 4 figs.

Records: 7358 (1); 11815 (1).

Remarks: Both specimens are badly preserved; the characteristic proboscis and large notopodial lappets in the abdomen can be seen in both.

Distribution: A. coniferi is known from Alaska to southern California in slope and basin depths; the present records come from similar depths near Cedros Island, Baja California and from Guaymas Basin, Gulf of California.

Genus Nicolea Malmgren, 1866

Nicolea latens Chamberlin, 1919

Nicolea latens Chamberlin, 1919, pp. 430-432, pl. 79, figs. 10-11.

Earlier Record: Chamberlin (1919, p. 432): ALBATROSS st. 3435 (1, TYPE, USNM No. 19419).

Remarks: The specimen is as described by Chamberlin (1919); the generic assignment is somewhat dubious, but cannot be further clarified until more material becomes available.

Distribution: N. latens is known from one locality in the upper end of the Gulf of California.

Paraxionice, new genus

Paraxionice has sixteen thoracic setigers of which fifteen are uncinigerous. One pair of branchiae is present. The prostomium is a rounded ridge; the dorsal portions of the peristomium form a high ridge posterior to the prostomium. The frontal face of this ridge has numerous long, grooved tentacles. The ventral portion of the second segment forms the externally visible lower lip; the ventral portion of the peristomium is hidden below this conspicuous lip. The ventral side of the third, fourth and fifth setigers forms a large glandular apparatus opening laterally in a pair of large, trumpet-shaped openings.

Short-handled uncini with two large teeth above the main fang and a crest of four or five shorter teeth are present in all thoracic uncinigers; they are in double rows on the last five or six thoracic setigers.

Paraxionice resembles Axionice Malmgren (1866) and Pista Malmgren (1866) in the structure of the branchiae and the shape of the body. It has sixteen thoracic setigers and a single pair of branchiae; both the other genera mentioned have seventeen thoracic setigers and two or three pairs of branchiae. The uncini are short-handled in all thoracic setigers in Paraxionice and Axionice; at least the anterior ones are long-handled in Pista.

The development of the anterior end with the second segment forming the externally visible lower lip and the large ventral glandular organ appears unique to Paraxionice.

Genotype is P. artifex, new species.

Paraxionice artifex, new species

(Plate 67, Figs. a-e)

Record: Stephen Calvert st. L 184 (6, TYPE).

Description: The type is a female with large eggs in the body cavity. It is 20 mm long and 2 mm wide without setae, tentacles and branchiae and consists of 26 setigers. The tentacles and branchiae are 15 mm long. The specimen is white and has a few dark spots dorsally on the peristomium (eyes?).

The prostomium (Fig. d) is a rounded keel; the peristomium (Figs. c-d) forms dorsally a high ridge posterior to the prostomium; on the frontal face of this ridge are attached numerous, grooved tentacles (Fig. a). Ventrally the peristomium forms the lower lip which is hidden below a large fold in the second segment. The second segment is incomplete laterally; ventrally it forms a large, transverse lip; dorsally it is present as a small

fold.

Segments 3-5 are completely fused ventrally; laterally and dorsally they are more or less distinct. The fused portions of these three segments, which include the first two setigers, form a pair of large glands which are raised above the surface of the ventrum (Figs. c-d); each gland opens anterolaterally in a large trumpet-shaped opening.

Ventral scutes are present on eight segments starting on setiger 3; each is clearly distinct from the remainder of the ventral surface.

Parapodia are similar in all setigers; each notopodium is a short, truncate cone; each neuropodium is a low ridge.

One pair of branchiae (Fig. a) is present on the third and fourth segments. The branchial base overlaps two segments. The stem of each branchia is split nearly to the base, so that the branchiae appear as two fused pairs, rather than as a single pair. Each branchia is repeatedly dendritically divided; each branch ends in a densely bunched group of ten to twelve short, digitiform branchial filaments. The branchiae are very long; in the type they are longer than the length of the thorax; they are contractile.

Notosetae (Fig. b) are present in all thoracic setigers; each is slender and narrowly bilimbate with slightly frilled edges on the wings. Each thoracic uncinus (Fig. e) has a large main fang and two large teeth above it; the crest consists of four or five teeth on each side. Abdominal uncini are similar, but smaller.

The tube has a thick matrix in which numerous long, straight sponge spicules have been imbedded; each spicule is oriented with its long axis transverse to the long axis of the tube with the free ends of each spicule protruding, giving the tube a construction similar to that of a log cabin; the tubes are irregularly multi-angular however and there are large frills of the matrix material hanging from the corners of the tube. In the upper part of the tube sand grains are also imbedded between the sponge spicules.

P. artifex differs from all other terebellids as indicated in the discussion of the genus.

Distribution: P. artifex has been found in one locality in basin depths in Guaymas Basin, Gulf of California.

Genus Pista Malmgren, 1866

Pista brevibranchiata Moore, 1923

Pista brevibranchia Chamberlin, 1919, pp. 264-265, pl. 2, figs. 1-4 (name pre-occupied by Caullery, 1915, p. 76).

Pista brevibranchiata Moore, 1923, pp. 196-197; Hartman, 1969, pp. 613-614, 4 figs.

Records: 1746 (1); 6212 (1); 11758 (1); 11815 (30); 13744 (1); 13752 (1); 13767 (1).

Remarks: It is possible that more than one species is involved in the present concept of P. brevibranchiata as already remarked by Moore (1923, p. 196). The specimens from st. 11815 were rather badly mutilated in the trawl and have been identified mostly on setal characters.

Distribution: P. brevibranchiata is known from intertidal depths in northern and central California and from slope depths in southern California. The present records are from slope and abyssal depths in the Gulf of California and from the Central American Trench near the Tres Marias Islands and Punta San Telmo.

Genus Polycirrus Grube, 1850

Polycirrus, species indeterminable

Records: 7231 (1); 11792 (3); 13753 (1).

Remarks: The five specimens belong to Polycirrus, in that they have short-handled uncini present on late thoracal and abdominal setigers and lack branchiae. The genus is badly in need of a world-wide revision based on large amounts of material. The present specimens appear to belong to two different species, but the species concept in the genus is presently so diffuse that it was decided to await a revision before attempting to apply any specific names to the material.

Genus Scionella Moore, 1903

Scionella japonica Moore, 1903

Scionella japonica Moore, 1903, pp. 473-475, pl. 26, figs. 79-80; Hartman, 1969, pp. 635-636, 3 figs.

Records: 11815 (2); 11830 (1).

Remarks: The present specimens agree with S. japonica as described by Moore (1903) and Hartman (1969). The first four setigers appear less compressed than as illustrated by Hartman, so the slope of the dorsal plaque is somewhat gentler. The branchiae are as in Hartman (1969, fig. 1) rather than as illustrated by Berkeley and Berkeley (1952, fig. 176).

Distribution: S. japonica has been reported from Japan, western Canada and southern California in shelf, slope and canyon depths. The present records are from basin depths in Guaymas and Sal si Puedes Basins, Gulf of

California.

Genus Streblosoma M. Sars, 1872

Streblosoma crassibranchia Treadwell, 1914

Streblosoma crassibranchia Treadwell, 1914, pp. 208-209, pl. 12, figs. 30-31; Hartman, 1969, pp. 641-642, 5 figs.

Record: P 65-59 (1).

Remarks: The anterior ventrum has a series of strong scutes in the present specimen; it was originally described as being wrinkled. Otherwise the present specimen fits very well with the original description.

Distribution: S. crassibranchia is known from central and southern California from intertidal to deep basin depths. The present record is from the upper end of the Gulf of California in upper slope depths.

Genus Thelepus Leuckart, 1849

Thelepus hamatus Moore, 1905

Thelepus hamatus Moore, 1905b, pp. 856-858, pl. 44, figs. 16-18; Hartman, 1969, pp. 647-648.

Record: 11830 (2).

Remarks: The present specimens agree with T. hamatus as described by Moore (1905) except that the second pair of branchiae has six to seven filaments rather than two or three as originally described. The thoracic uncini have three large teeth in addition to the main fang; the

abdominal ones have crests of numerous smaller teeth.

Distribution: T. hamatus is known from Alaska and western Canada to southern California; it occurs mostly in upper slope and shelf depths. The present record is from basin depths in Sal si Puedes Basin, Gulf of California.

Terebellidae, indeterminable

Records: 11791 (fragment); 11815 (1).

Remarks: The two specimens are so badly preserved that any further identification was impossible.

Family TRICHOBRANCHIDAE Malmgren, 1866

Genus Terebellides M. Sars, 1835

Terebellides stroemi M. Sars, 1835

Terebellides stroemi M. Sars, 1835, pp. 48-50, pl. 13, fig. 31; Wollebaek, 1912, pp. 78-79, pl. 18, figs. 1-9; Hartman, 1969, pp. 653-654.

Records: 1105 (9); 1746 (1); 6212 (2); 7231 (6); 7235 (1); 7358 (3); 11791 (1); 11809 (1); 11812 (2); 11813 (5); 11815 (1); 11831 (3); 11837 (4); 13724 (2); 13743 (1); 13744 (4); 13753 (1); 13768 (1); 13775 (1); P 65-59 (3); P 201-60 (1); P 218-60 (2); ALBATROSS st. D 5692 (1, AMNH).

Remarks: T. stroemi was described as having eighteen thoracic setigers (M. Sars, 1835, p. 49; Wollebaek, 1912, p. 78). The specimens taken near the shelf-break in the present collections have eighteen thoracic setigers; those from deeper water have sixteen or seventeen. The

specimens are otherwise similar, except that the deep-water specimens tend to have the prostomium somewhat more prolonged anteriorly than those from shallower water, but this may be due to the fixation of the specimens.

Distribution: T. stroemi has been reported from world-wide areas in all depths. The present records are from slope and basin depths off Baja California and in the Gulf of California.

Family SABELLIDAE Malmgren, 1867

The three subfamilies proposed by Rioja (1923, p. 13) are here accepted with slightly different definitions. The subfamily SABELLINAE contains sabellids in which the thoracal neuropodia have pennoned setae in addition to the uncini. Pennoned setae are absent in the subfamilies FABRICINAE and MYXICOLINAE. The latter two subfamilies are separated on the distribution of setae in the posterior abdominal segments. The FABRICINAE have setae limited to clearly defined lateral parapodia; the MYXICOLINAE have setae in nearly complete cinctures around the posterior end.

Customarily, the FABRICINAE have been taken to include most smaller sabellids and the SABELLINAE the larger species in the family. The stricter definitions of the subfamilies will move some genera from one subfamily to another; thus Branchiomma Kölliker is here delegated to the FABRICINAE despite its large size.

It is here considered that the advantage in having the three subfamilies clearly delimited outweighs other considerations.

Six members of the family have been found in material from western Mexico; two of these are newly described.

Key to Species from Deep Water off Western Mexico

1. Thoracal neuropodia with pennoned setae in addition to uncini..... 4.
1. Thoracal neuropodia with uncini only..... 2.
2. Abdominal uncini with long curved shafts..... ..... Fabrisabella similis
2. Abdominal uncini avicular with short, quadrangular bases..... 3.
3. Radioles united by a membrane basally; body tapering evenly posteriorly to a small pygidium..... ..... Chone gracilis
3. Radioles free to the base; pygidium with a large, horseshoe-shaped anal plaque covering the last seven setigers..... Euchonella magna
4. Two or more dorsal radioli with large composite distal eyes..... 5.
4. Distal composite eyes absent from all radioli..... ..... Pseudopotamilla intermedia
5. Composite eyes spherical. Megalomma circumspectum
5. Composite eyes spiralled. Megalomma tenella

Genus Chone Kröyer, 1856

Chone gracilis Moore, 1906

Chone gracilis Moore, 1906, pp. 257-259, pl. 12, figs. 62-66; Hartman, 1969, pp. 665-666.

Record: 7358 (1).

Remarks: C. gracilis has three kinds of notosetae in the thorax. Superiorly is found a series of bilimbate, straight setae; medially are spatulate setae and inferiorly a series of setae which appear twisted. The latter setae are similar to the bilimbate ones, but are considerably shorter and distinctly geniculate in two planes.

Distribution: C. gracilis is known from Alaska to southern California in shelf and upper slope depths. The present record is from the vicinity of Cedros Island, Baja California in slope depths.

Euchonella, new genus

The genus includes sabellids with eight thoracic setigers, in which the last three pairs of notopodia are shifted into lateral positions. The abdomen has thirty-nine setigers in the only specimen known. The pygidium is expanded to a large horseshoe-shaped cushion which opens anteriorly; it is fused to the ventral side of the last seven setigers. The collar is highest ventrally and is incised both dorsally and ventrally. Notosetae include narrow, slender bilimbate setae in superior positions and spatulate, distally mucronate setae in inferior positions in the thorax. All thoracic neurosetae are long-shafted, acicular uncini. Abdominal uncini are avicular; abdominal neurosetae are long, slender capillaries.

Euchonella belongs to the subfamily FABRICINAE in that neuropodial pennoned setae are absent in the thorax and abdominal setae are in lateral bundles. It resembles Euchone in that the posterior end is modified; in Euchone the last few segments are transformed into part of the anal plaque; in Euchonella the pygidium is expanded and covers the last few segments ventrally, but leaves the lateral and dorsal portions of each segment free. Species of Euchone have less than twenty abdominal setigers; the single known species of Euchonella has thirty-nine.

Genotype is Euchonella magna, new species.

Euchonella magna, new species

(Plate 68, Figs. a-f)

Record: 11776 (1, TYPE).

Description: The type is a complete specimen with forty-seven setigers, of which eight are in the thorax. It is 37 mm long with the tentacular crown and 1.75 mm wide with setae; the tentacular crown is 14 mm long. The specimen is yellow and lacks color patterns; eyes are absent.

The collar segment is anteriorly produced into a low collar on the dorsal side and a somewhat higher collar ventrally (Figs. a-b). Dorsally the collar is deeply split; both anteromedial corners of the collar are produced into rounded lappets. Ventrolaterally the collar is relatively shallowly undulating. It is medially produced into two slender, digitiform lappets bordering the shallow ventral split. The frontal face of the collar segment is smooth and slopes anteriorly from the dorsal side ventrally. The tentacular crown consists of twelve pairs of radioles in two semi-circles; each radiole is long and slender and is covered with short, slender pinnules. Radiolar eyes are absent.

The anterior five setigers are similar; the first pair of notopodia is somewhat medial to the other notopodia, but is otherwise similar; each is a bluntly truncate cone. Neuropodia are present from the second setiger; each is a barely distinct low welt. The notopodia in setigers 6-8 are lateral in position; the neuropodia in these segments retain the same ventrolateral position as in the more anterior segments. Abdominal parapodia are low welts; the notopodia are transversely elongated and the neuropodia are rounded.

The pygidium (Fig. e) is expanded into a large, horseshoe-shaped anal plaque covering the dorsal side of the last seven setigers. The margin of the anal plaque is a raised ridge which opens anteriorly into the fecal groove.

The opening of the anus is at the level of the fifth from the last setiger.

Thoracic notosetae are of two kinds; superiorly are found a number of slender, bilimbate setae; inferiorly are mucronate, spatulate setae, (Fig. f) which are less than half as long as the superior setae. Thoracic neuropodia have long-shafted acicular uncini present from the second setiger; each uncinus (Fig. c) has a large main fang and a dense crest of fifteen to twenty small teeth which are closely appended to the main fang. Pennoned setae are absent. Abdominal notopodial uncini (Fig. d) are avicular; each has a large square base with a large main fang and a crest of twelve to fourteen small teeth. Uncini are absent in the last setiger. The long, slender abdominal neurosetae are capillaries.

The tube has a thin lining of mucoid material covered with a thin layer of mud and silt particles.

E. magna differs from other known sabellids as indicated above.

Distribution: E. magna is known from one locality in the southern end of the Gulf of California.

Genus Fabrisabella Hartman, 1969

Fabrisabella similis, new species

(Plate 69, Figs. a-f)

Record: 13756 (1, TYPE).

Description: The type is a complete specimen with eight thoracic and twenty-six abdominal setigers; it is 12 mm long and 1.2 mm wide without setae. The body is cylindrical; the color is whitish yellow without any color patterns.

The tentacular crown is very short and the radioles

appear fused for nearly the total length (in regeneration?). The radioles are arranged in a weakly marked spiral; approximately 30 radioles are present. The collar is separated in two dorsally (Fig. a); each part forms a high, loosely attached lobe which can be folded over the rest of the anterior end to form a deep pocket on either side. Each pocket encloses one large vascular coil. Laterally the collar is low (Fig. c), but it is extended forwards ventrally nearly to the base of the tentacular crown. The collar has a narrow deep slit ventrally (Fig. b).

Thoracic notopodia are short and truncate; neuropodia are present from the second setiger; each is barely raised above the surface of the ventrum. Medially each of the thoracic setigers has a deep cleft (Fig. b).

Thoracic notosetae include long, bilimbate smooth setae and shorter, spatulate and mucronate smooth setae (Fig. d). Similar setae are present in abdominal neuropodia. Thoracic uncini are long-handled and slender (Fig. f); each has a large main fang and a crest of seven or eight teeth. Abdominal uncini have a somewhat shorter, strongly recurved handle (Fig. e); each has a large main fang and five or six teeth in the crest.

Tubes are absent.

F. similis resembles F. vasculosa Hartman (1969, pp. 699-700, 4 figs.) in the structure of the collar and setae. F. vasculosa has two vascular coils within each pocket on the dorsal side of the collar; F. similis has only one. The dorsal collar forms two separated, anteriorly directed points in F. similis; the medial portions are fused in F. vasculosa. The thoracic uncini are relatively strongly curved and have a distinct subdistal swelling in F. vasculosa; they are nearly straight and evenly narrow in F. similis.

Distribution: F. similis is known from one locality off Cabo Corrientes.

Genus Megalomma Johansson, 1925

Species of the genus have pennoned setae and uncini in the thoracic neuropodia and thus belong to the subfamily SABELLINAE (see Johansson, 1927, p. 130). The use of the name Megalomma has been confused and the name Branchiomma is frequently applied to species of this genus.

The reasons for this confusion may be summarized as follows: Dalyell (1853) described Amphitrite bombyx from England; this species was made the type of the genus Branchiomma by Kölliker (1858). Sars (1862a) described a Dasychone argus from Norway; on the specific level this species is considered synoymous with Dalyell's species and the generic name Dasychone is thus unavailable for this and related species as a junior synonym of Branchiomma Kölliker.

Claparède (1870) used the generic name Branchiomma for his species B. koellikeri, which differs generically from the species earlier assigned to this genus.

The present use of the names for these two genera appears to follow Fauvel (1927) in most cases. He used Dasychone for Amphitrite bombyx and related species and Branchiomma based on B. koellikeri for this and related species.

Johansson (1925, pp. 9-10) corrected the situation by using Branchiomma sensu Kölliker, i.e., as historically correct, and erected a new genus, Megalomma, to contain Claparède's and related species. This appears to be the only solution to the problem.

There are sharp differences between the two genera. Branchiomma Kölliker lacks pennoned setae in the thoracic neuropodia and thus belongs to the subfamily FABRICINAE; it also has only small, usually paired eyespots on the radioli and paired small appendages on the outside of the radioli.

Megalomma belongs to the SABELLINAE in that it has pennoned setae in the thoracic neuropodia. Large, composite distal eyes are present on some radioli and smaller, single eyes may be present proximally on the radioli. The

outside of the radioli is smooth.

The genotype for Branchiomma is usually considered to be Amphitrite bombyx Dalyell (1853); there is some doubt as to the validity of this name; Saint-Joseph (1894, pp. 309-316) reviewed the situation, but may not have had all the details clear (see Johansson, 1927, p. 158). The problem can probably only be solved by comparing material from the different localities of the several species presently referred to Branchiomma bombyx.

Genotype for Megalomma is Branchiomma koellikeri Claparède (1870).

Megalomma circumspectum (Moore, 1923)

Branchiomma circumspectum Moore, 1923, pp. 239-241, pl. 18, figs. 41-42.
Megalomma circumspectum Hartman, 1969, pp. 707-708.

Record: 1105 (5 and tubes).

Remarks: M. circumspectum has large, nearly spherical terminal compound eyes on the radioli; the collar is quadrilobate. The tube is relatively stiff and brittle and is externally covered with small shell fragments set on edge.

Distribution: M. circumspectum is known from shelf and slope areas off southern California and western Mexico; the present record is from the southern part of the Gulf of California in upper slope depths.

Megalomma splendida (Moore, 1905)

Pseudopotamilla splendida Moore, 1905a, pp. 564-566, pl. 37, figs. 23-27.

Branchiomma burrardum Berkeley, 1930, p. 7, fig. 1a-e; Pettibone, 1967, p. 18.
Megalomma splendida Hartman, 1969, pp. 713-714.

Record: 1084 (2).

Remarks: A re-examination of the types of Pseudopotamilla splendida Moore (USNM No. 5538) and Branchiomma burrardum Berkeley (USNM No. 32828) and other material of the latter species identified by Berkeley and Berkeley and deposited in the United States National Museum has demonstrated that the two species are in fact identical. M. splendida belongs to the genus Megalomma in that it has composite, spiralled terminal eyes on the radioli. The species is otherwise primarily characterized by the quadrilobate collar. The depth of the dorsal and ventral clefts varies somewhat in the different specimens examined and the shape of the two small dorsolateral lobes varies; they may be distally truncate or distally rounded.

Distribution: M. splendida is known from Alaska to southern California; the present record is from the upper end of the Gulf of California in upper slope depths.

Genus Pseudopotamilla Bush, 1904

Pseudopotamilla intermedia Moore, 1905

Pseudopotamilla intermedia Moore, 1905a, pp. 562-564, pl. 37, figs. 15-22; Hartman, 1969, pp. 727-728.

Record: 11838 (1).

Remarks: P. intermedia is a large species; the present specimen is nearly 60 mm long. The radiolar eyes are relatively small, and not as conspicuous as in P. occelata Moore (1905). The tube resembles that of the latter

species in that it is tough and horny and covered with a few scattered sand grains.

Distribution: P. intermedia was originally described from Alaska and has been reported from central California in shelf and slope depths. The present record is from Sal si Puedes Basin, Gulf of California in approximately 735 m depth.

Sabellidae, indeterminable

Records: 7234 (1); 7249 (1).

Remarks: Both fragments belong to the subfamily FABRICINAE and resemble, in setal structures, Euchonella magna as described above. Neither specimen is, however, sufficiently complete and in good enough condition to permit closer identification.

BIOGEOGRAPHY

The geographical distribution of the polychaetous annelids reported from deep water off western Mexico is indicated in Tables 3-8. A special table covers the species reported from Sal si Puedes Basin, Gulf of California (Table 9). The tables are divided into several groups according to the total known depth range for each species. This was done in an attempt to show the relationship between depth distribution and geographical distribution of the different polychaetes.

Table 3 contains the species that are known only from waters shallower than 500 m. This group was selected to cover those species that have the centers of their depth distribution on the continental shelves, but which have been reported from upper slope depths, partially because of local variations in the depth of the shelf break, partially

because they may be found in true slope areas as well as on the continental shelves.

A second table (Table 4) contains species reported down to 1000 m; this group includes those species which are found in shelf and slope depths generally. Table 5 contains a large group of species that appear to be distributed independently of depth. Similar sets of tables cover species that have been found deeper than 500 m only (Tables 6 and 7), and one table (Table 8) covers those species that have been found only in depths greater than 1000 m.

The scope of this survey was limited to cover only records deeper than 200 m; the shelf areas off western Mexico have been only partially investigated for their polychaete fauna (see Fauchald, 1970). It is thus possible that some of the species that presently appear to be limited to slope or abyssal depths are in fact also found in shelf areas. It is not anticipated that this will be the case for the greatest number of species; characteristically, species present on the lower half of the shelf off western Mexico are also present in similar environments off southern California (Fauchald, 1969). Thus if a species presently found on the slope off western Mexico were also present on the shelf, it should have been recorded also from southern California. Similarly, a very large number of species have been reported only from abyssal depths off western Mexico, but have never been found off southern California. With the much greater density of samples taken off southern California, these species should have been found, if they were present. The difference in fauna between the deep basins off southern California and western Mexico appears to reflect the composition of the fauna rather than the accuracy in sampling in the two areas. It is possible that some of the species found off western Mexico are present in far offshore areas off southern California, since these areas have been poorly investigated, but nothing can be stated on this possibility until more material becomes available.

It should be noted that, in all cases possible,

comparisons between western Mexico material and material from southern California were done directly, rather than through descriptions.

A large number of species have been found in western Mexico alone; this apparent endemism includes approximately 80 of the 225 species reported. It is anticipated that several of these species may be found elsewhere along the eastern Pacific coastline, but, for reasons indicated above, their main distribution will probably be south of southern California or in areas off the California Continental Borderland.

There are indications in Table 8 that a characteristic deep-water fauna may exist in the eastern Pacific Ocean. The borders of this faunal region cannot yet be clearly stated, but it is clear that it is isolated from other deep-water areas as far as is known. Thus very few species have been reported both from western Mexico and from deep-water areas off Asia (see inter alia Ushakov, 1955 and Levenstein, 1961). The only species reported from both western Mexico and the deep Atlantic Ocean (Hartman, 1965b; Hartman and Fauchald, 1971) or the Antarctic Ocean (Hartman, 1967) are species that have been reported from cosmopolitan areas in all depths; these species include Maldane sarsi and Terebellides stroemi, both of which must be characterized as taxonomic enigmas.

The analysis of polychaetes from deep-water areas of the eastern Pacific Ocean must be considered very incomplete. Most of the surveys have been limited to areas near the coastlines and the distribution of most deep-water species in the central Pacific Ocean remains unknown. For this reason it is difficult at present to determine what deep-water faunal connections might exist across the Pacific Ocean. It should, however, be remarked that very few of the species reported from the SIBOGA-Expedition to the Malayan Archipelago (Caullery, 1914, 1944; Mesnil and Fauvel, 1939; Pettibone, 1970) have been reported from the eastern Pacific Ocean. This indicates that the two sides of the Pacific Ocean may be fairly well isolated in terms

of the polychaete fauna, but where the two faunal regions merge is still unknown.

A survey is given below of the detailed geographical distribution of the species in the different depth categories, and a discussion of the fauna of Sal si Puedes Basin is included.

A. Species limited to water shallower than 500 m.

The shelf break is usually considered to be at 200 m depth. As an overall value this figure appears to be appropriate for western Mexico. There is, however, for geological or oceanographical reasons, some variation in the distribution of the organisms usually limited to shelf areas. The material included in this paper was taken from depths greater than 200 m, but as a consequence of local variations in the depth of the functional shelf break, some twenty-eight species that truly belong to the shelf fauna have been included.

Eight of these species are commonly found along the coast from southern California northwards to western Canada and Alaska; one species has been reported generally from the northern hemisphere, both in Atlantic and Pacific waters and its southern limit appears to be in the eastern Pacific Ocean off western Mexico.

One species, Platynereis bicanaliculata, has been reported from all areas of the Pacific Ocean. Two species, Notodasus magnus and Piromis hospitis, have not been reported from areas outside western Mexico, but are probably found elsewhere in the warmer portions of the eastern Pacific Ocean; both type localities are in the Gulf of California.

The remaining sixteen species have generally warm-water distributions. Four of these species are circumtropical; five have been reported from areas between southern California and Panama; one species has a similar distribution, but has been reported as far north as western Canada. Two species have typical southerly distributions and have not been reported from areas north of southern California. Finally, two species are limited to the waters

off southern and central California and western Mexico.

The geographical distribution of these twenty-eight species indicates that the source areas for the polychaete shelf fauna off western Mexico may be more diverse than the simple coastline would indicate. Two different source areas are indicated, roughly one-half of the species reported have generally northerly distributions; the other half appear to have geographical distributions centered in warm waters. Both groups appear to have sub-groups, indicating perhaps different waves of invasion of the area.

B. Species limited to waters shallower than 1000 m.

Five species are included in this group; two of these have their only deep-water occurrences in Sal si Puedes Basin, Gulf of California; this basin is discussed below in some detail. The other three species all have a generally northerly distribution; one of them, Ammotrypane aulogaster is common also in the northern Atlantic Ocean.

C. Species reported from all depths.

Fifty species are included in this large group; fourteen of these species have their only deep-water occurrences in Sal si Puedes Basin and are discussed below.

Of the remaining thirty-six species, those that have been reported generally from areas north of western Mexico have the deeper parts of their depth range in southern California and western Mexico and the shelf locations further north in their range. Species showing this "tropical submergence" include: Chone gracilis, Drilonereis falcata, Laonice sacculata, Lumbrineris californiensis, Notomastus (Clistomastus) tenuis, Onuphis vexillaria, Pista brevibranchiata, Praxillella gracilis, Prionospio cirrifera, Scionella japonica, Streblosoma crassibranchia, Tharyx monilaris and multifilis and Travisia brevis. Other species may belong to this group, including several that have been reported from shelf localities only in southern California; these have not been included in the list above, since their geo-

graphical distributions appear presently to be somewhat unsettled.

One interesting group of species included in this depth category are the cosmopolitan species. With one exception, all cosmopolitan species reported from western Mexico fall within this depth category. It is considered probable that several of the nine cosmopolitan species will prove to be species-complexes when better and more completely analyzed.

Only one of the species reported in this group, Poecilochaetus johnsoni, has a distribution that appears to be centered in warm waters.

In general, this whole group of species appears to consist mainly of forms limited to colder waters independent of the depth at which such waters occur.

D. Species reported from depths ranging from 500 to 1000 m.

Four species have been found in this depth category; two of these are endemic to western Mexico; the other two are limited to the eastern Pacific Ocean.

E. Species reported from depths greater than 500 m.

Twenty-eight species have been reported in this depth category. Two of these are endemic to western Mexico. The majority of the species in this category, nineteen in all, have been found in southern California in slope and basin depths, but have not been reported from other areas. Four species have been reported from slope areas elsewhere in the eastern Pacific Ocean, primarily north of western Mexico, and one species has been reported from deep-water areas between southern California and Panama. One species, Haploscoloplos kerguelensis has been reported from the Antarctic Ocean and from deep waters off India and Japan, and one species, Paralacydonia paradoxa, may be cosmopolitan in deep slope depths.

This depth category, which includes what might be

termed the deep slope fauna, appears to contain elements mainly limited to the eastern Pacific Ocean; most of the species will probably be found to be more widespread in the eastern Pacific Ocean than is presently indicated.

F. Polychaetes limited to waters deeper than 1000 m.

This depth category includes the largest group of species; 104 species in all have been listed in Table 8. Of these only twenty-one have been recorded from areas outside western Mexico; the remaining 83 are presently considered endemic. Twelve of the twenty-one species that have been reported from other areas have been found only in the deep basins off southern California. Five species have been found in deep water from southern California or western Mexico to Panama. Three species have been found between the northwestern Pacific Ocean and western Mexico, and one species appears to be widespread in the Pacific Ocean.

As mentioned above, it is anticipated that several of these species will be found elsewhere in the eastern Pacific Ocean, but it is not anticipated that many of them will prove to be distributed in other areas, except perhaps in the central Pacific Ocean.

G. Some notes on Sal si Puedes Basin.

Sal si Puedes Basin is a deep, narrow basin between Angel de la Guarda Island and associated islands and the Baja California mainland. Its greatest depth is more than 1400 m and it is separated from other deep basins in the Gulf of California by sills at approximately 400 m. The water in the basin is well oxygenated to the bottom due to mixing by strong tidal currents that run through Canal de Ballenas, which is the name for the shallow-water portion of the narrows between Angel de la Guarda and the mainland (Roden, 1964).

Thirty-one species of polychaetes were found in 11 hauls from Sal si Puedes Basin (Table 9); two of these

hauls were with a 6' beam trawl; the others were with a Campbell grab.

A very large group of species, seventeen in all, representing more than half of the species collected, have their major distribution in shelf and upper slope areas from southern California northwards along the west coast of the United States. Some of these species have been reported as far north as Alaska and some are also known from shelf areas in the northern Atlantic Ocean. Two of these species with a predominantly northerly distribution have also been found in deep water in the Central American Trench, but are apparently absent in the deep basins in the Gulf of California apart from the isolated records from Sal si Puedes Basin. None of the seventeen species have been found in shelf depths further south than Cedros Island, Baja California on the ocean-side of that peninsula.

Six species are newly described from Sal si Puedes Basin; all six belong to genera that are better represented in shallow than in deep water (e.g. Eulalia and Idanthyrsus).

Two of the species found in Sal si Puedes Basin are also present in Guaymas Basin, which is just outside the sill to Sal si Puedes Basin. Both species have also been reported from other deep-water areas off western Mexico and appear to represent the normal deep-water fauna of western Mexico in Sal si Puedes Basin.

The faunal composition of Sal si Puedes Basin indicates that the fauna of the deeper waters has been recruited from a shallow-water fauna; the characteristic composition of the deep-water polychaete fauna elsewhere in western Mexico includes a large number of species of ONUPHIDAE and AMPHARETIDAE. The only onuphid found in Sal si Puedes Basin is Onuphis nebulosa which elsewhere is characteristically found in shelf depths. Anobothrus bimaculatus is the only ampharetid reported.

There are also indications that the polychaete fauna of the basin was recruited at a time when the regional water temperature was lower than at present. Only two of

the thirty-one species found in the basin have been recorded from shallow-water locations in the Gulf of California or further south. Both are widely distributed in warm waters; in fact, one of them, Glycera tesselata, is considered circumtropical. The other species, Nephtys squamosa, has been reported from both sides of the Isthmus of Panama. The faunal composition of shallow-water areas in the vicinity of Sal si Puedes Basin (Hartman, 1939 and later; Reish, 1969) indicates that a large number of forms limited to warm waters are present in intertidal or shelf localities.

Since most of the characteristic deep-water polychaetes found elsewhere in western Mexico are absent from Sal si Puedes Basin, it seems probable that this basin has been isolated from the remainder of the Gulf of California. As far as is known, this does not contradict the geological findings in the area.

As indicated above, the fauna must have been recruited at a time when the regional water temperature was lower than at present. The basin fauna of Sal si Puedes Basin may thus be considered a relict fauna. Relict elements appear to be present among the brachyuran crabs (Garth, 1961) and among the bryozoans (Soule, 1961) in shallow water in the upper end of the Gulf of California; such a relict element could not be demonstrated for the shallow-water eunicid polychaetes in the same area (Fauchald, 1969). However, a very strong relict fauna appears to be present in the deeper portions of Sal si Puedes Basin as demonstrated by the present findings.

It should be noted that sampling density and gear used in Sal si Puedes Basin were the same as those used elsewhere in the Gulf of California; thus the differences in faunal composition cannot be due to sampling errors, but must reflect the composition of the fauna.

Table 3. Geographical distribution of polychaetes reported from waters shallower than 500 m only. The general distribution is given on the first line and the local distribution on the second line. Species doubtfully recognized from western Mexico have been excluded.

BC = Baja California; GC = Gulf of California; CAT = Central American Trench.

Amphicteis mucronata	Western Canada-southern California. BC only.
Dasybranchus lumbricoides	Circumtropical; central California-Galapagos. GC only.
Dorvillea annulata	Washington- GC (Isolated?) BC only.
Eunice americana	Southern California-Baja California. BC only.
Eunice antennata	Circumtropical, southern California-Peru. GC only.
Eunice aphroditois	Circumtropical; western Mexico-Galapagos. GC only.
Eunice vittata	Circumtropical; southern California-Peru. BC; GC.
Glycera americana	Atlantic and Pacific Americas, western Pacific. GC only.
Glycera oxycephala	Atlantic and Pacific Americas up to Oregon. BC only.
Goniada annulata	Alaska to Baja California. BC only.
Haploscoloplos elongatus	Alaska to southern California. BC only.
Hyalinoecia juvenalis	Southern California-Panama, West Indies. BC; GC.

Lepidonotus versicolor	Gulf of California to Chile. GC.
Lumbrineris cruzensis	Western Canada to Gulf of California. BC.
Megalomma circumspectum	Southern California-western Mexico. GC.
Megalomma splendida	Alaska to southern California. GC.
Nephtys cornuta	Washington-southern California. BC.
Nephtys ferruginea	Western Canada-Peru. BC, GC.
Nereis zonata	Northern hemisphere, Atlantic and Pacific. BC.
Nothria iridescens	Western Canada to Baja California. BC.
Notodasus magnus	Endemic to GC.
Panthalis pacifica	Southern California-Panama. GC.
Paraprionospio pinnata	(Cosmopolitan?) Chile-southern California. BC.
Piromis hospitis	Endemic to GC.
Platynereis bicanaliculata	Eastern and western Pacific Ocean. GC.
Polyodontes panamensis	Southern California-Panama. GC.
Sthenelais tertiaglabra	Central and southern California. BC.
Sthenelanella uniformis	Southern California to Ecuador. GC.

Table 4. Geographical distribution of polychaetes reported from waters shallower than 1000 m only. Geographical distribution is given as the general distribution on the first line and as the local distribution on the second line. Species doubtfully recognized from western Mexico are excluded.

BC = Baja California; GC = Gulf of California; CAT = Central American Trench.

Ammotrypane aulogaster	North Atlantic Ocean; Pacific Ocean to western Mexico. BC.
Notomastus magnus	Central and southern California. Sal si Puedes Basin, GC.
Onuphis parva	Central California to western Mexico. GC.
Pseudopotamilla intermedia	Alaska to central California. Sal si Puedes Basin, GC.
Sphaerodoropsis sphaerulifer	Central California to western Mexico. BC. (New record, not discussed)

Table 5. Geographical distribution of polychaetes reported from all depths. The geographical distribution is given as the general distribution on the first line and as the local distribution on the second line. Species doubtfully recognized from western Mexico have been excluded.

BC = Baja California; GC = Gulf of California; CAT = Central American Trench.

Amage scutata	Central California. BC; GC.
Amphicteis scaphobranchiata	Southern California. BC.
Anobothrus bimaculatus	Endemic to BC; GC.
Asychis disparidentata	Western Canada to southern California. Sal si Puedes Basin, GC.

Ceratocephale loveni pacifica	Southern California. BC; GC; CAT.
Chaetozone setosa	Cosmopolitan. BC; GC; CAT.
Chone gracilis	Alaska to southern California. BC.
Clavodorum clavatum	Southern California. BC.
Cossura candida	Southern California. BC; CAT.
Drilonereis falcata	Central California-western Mexico. Sal si Puedes Basin, GC; CAT.
Euclymene reticulata	Southern California. BC; Sal si Puedes Basin, GC.
Glycera capitata	Northern hemisphere, Atlantic and Pacific. BC; Sal si Puedes Basin, GC.
Glycera tesselata	Circumtropical. Sal si Puedes Basin, GC.
Glycinde armigera	Western Canada to Galapagos Islands. Sal si Puedes Basin, GC.
Goniada brunnea	Alaska to western Mexico. BC; GC; CAT.
Isocirrus longiceps	Western Canada to southern California. Sal si Puedes Basin, GC.
Laonice sacculata	Central and southern California. BC; CAT.
Lepidonotus squamatus	Northern hemisphere, Atlantic and Pacific. Sal si Puedes Basin, GC.
Lumbrineris californiensis	Central California-western Mexico. GC.

Lumbrineris index	Central and southern California. Sal si Puedes Basin, GC.
Lumbrineris lagunae	Southern California-Baja California. BC; Sal si Puedes Basin, GC.
Lysippe annectens	Southern California. BC.
Magelona californica	Southern California. CAT.
Maldane sarsi	Cosmopolitan. CAT.
Myriochele gracilis	Southern California. BC.
Myriochele heeri	Cosmopolitan. BC.
Nephtys paradoxa	Cosmopolitan. CAT.
Nephtys squamosa	Warm Atlantic and Pacific Oceans. Sal si Puedes Basin, GC.
Ninoe foliosa	BC; Sal si Puedes Basin, GC.
Notomastus (C.) tenuis	Western Canada to southern California. GC.
Onuphis nebulosa	Central California to Panama. Sal si Puedes Basin, GC.
Onuphis vexillaria	Southern California-western Mexico. BC.
Paradoneis lyra	North and South Atlantic Ocean, Southern California. GC; CAT.
Paraonis gracilis	Nearly cosmopolitan. BC.
Pista brevibranchiata	Northern to southern California. BC; GC; CAT.
Poecilochaetus johnsoni	Southern California, Gulf of Mexico. BC; CAT.

Praxillella gracilis	Northern hemisphere, Atlantic and Pacific. BC; GC.
Prionospio cirrifera	Bering Sea to southern California, Japan. GC.
Prionospio malmgreni	Cosmopolitan? BC; GC.
Rhodine bitorquata	Western Canada to southern California. BC; Sal si Puedes Basin, GC.
Scalibregma inflatum	Cosmopolitan. Sal si Puedes Basin, GC; CAT.
Scionella japonica	Japan to southern California. GC.
Sternaspis fossor	Cosmopolitan. BC; GC; CAT.
Streblosoma crassibranchia	Central and southern California. GC.
Terebellides stroemi	Cosmopolitan. BC; GC; CAT.
Tharyx monilaris	Southern California. BC; GC; CAT.
Tharyx multifilis	Southern California. BC; GC; CAT.
Thelepus hamatus	Alaska to southern California. Sal si Puedes Basin, GC.
Travisia brevis	Alaska to southern California. CAT.
Travisia foetida	Southern California. BC; GC; CAT.

Table 6. Geographical distribution of polychaetes found in depths ranging from 500 to 1000 m. The general geographical distribution is given on the first line; on the second line the local distribution is given. Species doubtfully recognized from western Mexico have been excluded.

BC = Baja California; GC = Gulf of California; CAT = Central American Trench.

Eulalia mexicana	Endemic, Sal si Puedes Basin.
Harmothoe mexicana	Western Mexico to Panama. BC; CAT.
Subadyte mexicana	Endemic to BC.
Therochaeta pacifica	Southern California-western Mexico. BC.

Table 7. Geographical distribution of polychaetes reported from waters deeper than 500 m only. The geographical distribution is given as the general distribution on the first line and the local distribution on the second line. Species doubtfully recognized from western Mexico have been excluded.

BC = Baja California; GC = Gulf of California; CAT = Central American Trench.

Aedicira antennata	Northwestern Pacific Ocean to southern California. BC; CAT.
Ammotrypane pallida	Southern California. BC; CAT.
Aphrodita longipalpa	Southern California, western Mexico. BC.
Aphrodita negligens	Japan to Panama. BC; CAT.
Aricidea similis	Endemic to BC; CAT.
Artacama coniferi	Alaska to southern California. BC; GC.

Califia calida	Southern California. BC.
Cirrophorus aciculatus	Southern California. CAT.
Clymenopsis californiensis	Southern California. BC.
Ephesiella brevicapitis	Southern California. CAT.
Eunice segregata	Southern California-Panama. BC; CAT.
Eunice semisegregata	Endemic to CAT.
Euphrosine paucibranchiata	Southern California. BC.
Fauveliopsis glabra	Southern California. BC; CAT.
Glycera branchiopoda	Southern California. BC.
Haploscoloplos kerguelensis	Antarctic Ocean, India, Japan. BC; CAT.
Leiochrides hemipodus	Southern California. CAT.
Melinna heterodonta	Central and southern California. GC.
Melinnexis moorei	Southern California. BC; GC.
Neoheteromastus lineus	Southern California. GC; CAT.
Paralacydonia paradoxa	Cosmopolitan (?) CAT.
Paranaitis polynoides	Western Canada to southern California. BC.
Paraonis gracilis oculata	California. CAT.
Petaloproctus ornatus	Southern California. BC.
Phyllochaetopterus limicolus	Southern California. GC.

Polyophthalmus translucens	Southern California. BC.
Praxillella trifila	Southern California. BC.
Spiophanes pallidus	Southern California. BC.

Table 8. Geographical distribution of polychaetes reported from waters deeper than 1000 meters only. The general distribution is given on the first line and the local distribution on the second line. Species doubtfully recognized from western Mexico have been excluded.

BC = Baja California; GC = Gulf of California; CAT = Central American Trench.

Admetella hastigerens	Southern California-Panama. BC; GC.
Aedicira alisetosa	Endemic to GC.
Aedicira longicirrata	Endemic to GC; CAT.
Aglaophamus eugeniae	Endemic to BC.
Aglaophamus fossae	Endemic; Sal si Puedes Basin, GC.
Aglaophamus paucilamellata	Endemic to BC.
Aglaophamus surrufa	Endemic to CAT.
Amage delus	Endemic to GC.
Amphicteis obscurior	Endemic to CAT.
Amphicteis orphnius	Endemic to CAT.
Amphicteis uncopalea	Endemic to GC.
Anaitides dubia	Endemic to CAT.
Ancistargis verrucosa	Endemic to BC; CAT.
Anobothrus mancus	Endemic to GC; CAT.
Aricidea crassicapitis	Endemic to BC; CAT.
Asychis lobata	Endemic to BC; CAT.

Asychis ramosus	Northwestern Pacific Ocean. GC; CAT.
Austrophyllum exsilium	Endemic to BC; CAT.
Bathyglycinde cedroensis	Endemic to BC; CAT.
Bathyglycinde mexicana	Endemic to BC; CAT.
Brada pluribranchiata	Southern California. BC.
Brada verrucosa	Endemic to CAT.
Califia mexicana	Endemic to BC; GC.
Ceratonereis vermillionensis	Endemic to GC; CAT.
Cirratulus sinincolens	Endemic to GC.
Clymaldane laevis	Endemic to BC.
Cossura brunnea	Endemic to BC; GC; CAT.
Cossura rostrata	Endemic to CAT.
Cossura sima	Endemic to CAT.
Diplocirrus micans	Endemic to BC; CAT.
Ecamphicteis elongata	Endemic to CAT.
Egamella quadribranchiata	Endemic to BC.
Euchonella magna	Endemic to GC.
Eulalia anoculata	Endemic to BC.
Eunice megabranchia	Endemic to GC.
Fabrisabella similis	Endemic to CAT.
Fauveliopsis rugosa	Endemic to BC; CAT.
Flabelliderma macrochaeta	Endemic to CAT.
Flabelligella mexicana	Endemic to BC.
Glycera profundi	Endemic to GC; CAT.
Haploscoloplos mexicanus	Endemic; Sal si Puedes Basin, GC.
Hyalinoecia leucacra	Endemic to CAT.
Hyalinoecia stricta	Southern California to Panama. BC; CAT.

Hyalinoecia tecton	Endemic to BC.
Idanthyrsus armatopsis	Endemic; Sal si Puedes Basin, GC.
Ilyphagus bythincola	Endemic to CAT.
Leanira calcis	Southern California. BC.
Lepidasthenia curta	Endemic to BC; CAT.
Lumbrineris cedroensis	Endemic to BC; CAT.
Lumbrineris eugeniae	Endemic to BC; GC.
Lumbrineris longensis	Southern California. BC; GC.
Lumbrineris moorei	Southern California-western Mexico. BC.
Lysippe mexicana	Endemic to BC.
Maldane cristata	Southern California to Panama. BC; CAT.
Maldane monilata	Endemic to BC; CAT.
Melinna tentaculata	Endemic to GC.
Melinnampharete gracilis	Southern California. BC; GC; CAT.
Mexamage corrugata	Endemic to GC.
Myriochele pygidialis	Southern California. BC.
Neanthes mexicana	Endemic to BC.
Neomediomastus glabrus	Southern California. BC; CAT.
Neonotomastus glabrus	Endemic to GC; CAT.
Nereis angelensis	Endemic, Sal si Puedes Basin, GC.
Nereis anoculopsis	Endemic to GC.
Nereis fossae	Endemic, Sal si Puedes Basin, GC.
Nicolea latens	Endemic to GC.

Ninoe fusca	Southern California. BC.
Ninoe fuscoides	Endemic to BC; GC; CAT.
Ninoe longibranchia	Endemic to GC; CAT.
Nothria abyssalis	Endemic to BC.
Nothria hiatidentata	Southern California-western Mexico. BC.
Nothria lepta	Western Mexico to Panama. BC; CAT.
Nothria mexicana	Endemic to BC; GC; CAT.
Nothria vibex	Endemic to BC.
Notomastus (N.) abyssalis	Endemic to GC; CAT.
Notomastus (N.) cinctus	Endemic to BC; CAT.
Notomastus (N.) precocis	Southern California. BC; CAT.
Onuphis litabranchia	Endemic to CAT.
Onuphis nannognathus	Endemic to GC.
Onuphis profundi	Endemic to BC; CAT.
Paranorthia fissurata	Western Mexico to Panama. BC; CAT.
Paraonides cedroensis	Endemic to BC.
Paraonis pycnobranchiata	Endemic to GC.
Paraxionice artifex	Endemic to GC.
Paronuphis abyssorum	Antarctic Ocean, Peru. BC; CAT.
Pherusa abyssalis	Endemic to GC; CAT.
Pilargis mirasetis	Endemic to CAT.
Pirakia brunnea	Endemic to CAT.
Prionospio (Apoprionospio) vermillionensis	Endemic to GC.
Prionospio anuncata	Endemic to CAT.
Prionospio lobulata	Endemic to BC.

Pseudeurythoe abyssalis	Endemic to BC; CAT.
Samythella interrupta	Endemic to BC.
Samythella pala	Endemic to GC.
Scoloplos (Leodamas) mazatlanensis	Endemic to GC; CAT.
Siqambra rugosa	Endemic to GC.
Siqambra setosa	Endemic to GC.
Spiophanes anoculata	Southern California. BC.
Spiophanes fimbriata	Central to southern California. BC; GC; CAT.
Sthenolepis areolata	Japan to southern California. GC; CAT.
Sthenolepis racemosa	Endemic to BC; GC.
Sthenolepis spargens	Endemic to BC; GC.

Table 9. Polychaetous annelids reported from Sal si Puedes Basin, Gulf of California. General geographical distribution and depth records from other areas are indicated.

Aglaophamus fossae	Endemic.
Anobothrus bimaculatus	Guaymas Basin, Gulf of California possibly near Cedros Island; 1800 m, possibly 250 m.
Asychis disparidentata	Western Canada to southern California; shelf depths.
Drilonereis falcata	Central California to western Mexico; Central American Trench; shelf depths in northerly part of range; 3000 m and deeper in southern part.
Euclymene reticulata	Southern California to Baja California; shelf and slope depths.
Eulalia mexicana	Endemic.

Glycera capitata	Northern hemisphere to Baja California; shelf depths.
Glycera profundi	Guaymas Basin, Gulf of California and Central American Trench; 1800 m and deeper.
Glycera tesselata	Circumtropical in shelf depths.
Glycinde armigera	Western Canada to Galapagos Islands; shelf and upper slope depths.
Haploscoloplos mexicanus	Endemic.
Idanthyrsus armatopsis	Endemic.
Isocirrus longiceps	Western Canada to southern California; shelf depths.
Lepidonotus squamatus	Northern hemisphere to southern California; shelf depths.
Lumbrineris index	Central and southern California; shelf and upper slope depths.
Lumbrineris lagunae	Southern California to Baja California; shelf and upper slope depths.
Nephtys squamosa	Atlantic and Pacific Oceans; warm water; shelf depths.
Nereis angelensis	Endemic.
Nereis fossae	Endemic.
Ninoe foliosa	Cedros Island, Baja California; upper slope depths.
Notomastus (Clistomastus) tenuis	Western Canada to southern California; shelf depths; Central American Trench; 3000 m.
Notomastus (N.) magnus	Central and southern California; shelf depths.
Onuphis nebulosa	Central California to Panama; shelf and upper slope depths.
Pseudopotamilla intermedia	Alaska to southern California; shelf depths.

Rhodine bitorquata	Western Canada to Baja California; shelf and slope depths.
Scalibregma inflatum	Cosmopolitan in all depths.
Scionella japonica	Japan to southern California; shelf and slope depths; Guaymas Basin; Gulf of California, 1800 m.
Terebellides stroemi	Cosmopolitan in all depths.
Tharyx monilaris	Southern California in all depths; western Mexico in 1800 m and deeper.
Tharyx multifilis	Southern California and western Mexico in all depths.
Thelepus hamatus	Alaska to southern California; shelf and upper slope depths.

STATION DATA

A. Collections made by the VELERO III

523-36. Feb. 28, 1936, S. of Coronados Island; 26° 03' 45" N, 111° 17' W; 100-120 fms; broken shell.

529-36. March 1, 1936, off San Francisquito Bay; 28° 27' 10" N, 112° 49' 25" W; 165 fms; shale, gray mud.

735-37. March 29, 1937, off San Pedro Nolasco Island; 28° 00' 20" N, 111° 24' 40" W; 110 fms; sand.

1037-40. (D-1) Jan. 21, 1940, Boca de la Trinidad; from 23° 38' 12" N, 109° 30' 00" W, to 23° 38' 00" N, 109° 28' 22" W; 150 fms; sand, coralline.

1084-40. Feb. 6, 1940, San Pedro Nolasco Island; 27° 58' 35" N, 111° 22' 40" W; 111-93 fms; rock.

1105-40. Feb. 13, 1940, 4 mi. SE of Marcial Point; from 25° 27' 20" N, 110° 58' 00" W, to 25° 28' 28" N, 110° 58' 00" W; 127-113 fms; green mud.

B. Collections made by the VELERO IV

1746-49. March 18, 1949, 3/4 mi. SW of Pta. Arena, Carmen Isl.; from 25° 46' 00" N, 111° 15' 00" W, to 25° 49' 40" N, 111° 15' 30" W; 115-95 fms; dredge, sand, mud, pebbles, worms.

1921-49. Dec. 19, 1949, 1 3/4 mi. from Smith Bluff; 28° 51' 41" N, 118° 15' 25" W, to 28° 51' 20" N, 118° 15' 31" W; 123-110 fms; dredge, rock.

2035-51. May 19, 1951, 8 mi. 154°T from Pt. Fermin; 33° 34' 48" N, 118° 13' 44" W, to 33° 35' 09" N, 118° 12' 46" W; 50-32 fms; fine to medium sand and mud.

2114-52. June 18, 1952, 1.9 mi. 252°T from end of Newport Beach pier; OPG; 33° 35' 45" N, 117° 57' 57" W; black muddy sand.

2646-54. April 25, 1954, 1.1 mi. 228°T from Huntington Beach pier; 33° 37' 58" N, 118° 01' 57" W; Vv. G.; 12 fms; mud.

3394-55. Aug. 23, 1955, 5.7 mi. 265.5°T from end of El Segundo pier; 33° 56' 14" N, 118° 32' 27" W; 32 fms; OPG.

3489-55. Sept. 15, 1955, Santa Monica Bay; 33° 54' 40" N, 118° 28' 37" W; 23 fms; OPG; green, sticky mud, slight H_2S odor.

4938-57. April 9, 1957, 12.7 mi. 86.5°T from Point Conception light; 34° 27' 25" N, 120° 12' 55" W; 9.5 fms, OPG.

5736-58. May 15, 1958, 8.75 mi. 254.5°T from Hyperion stack; 33° 53' 25" N, 118° 36' 00" W; 44 fms; rock, sand, and silt.

5737-58. May 15, 1958, 5.7 mi. 235° from Hyperion stack; 33° 52' 30" N, 118° 31' 25" W; 34.5 fms; silty, coarse sand.

5743-58. May 16, 1958, 7.2 mi. 125° from L.A. Harbor light; 33° 38' 20" N, 118° 07' 47" W; 19 fms; fine, green sand.

5746-58. May 16, 1958, 10.35 mi. 146°T from L.A. Harbor light; 33° 33' 50" N, 118° 08' 10" W; 68 fms; glauconitic sand and rubble.

6212-59. March 28, 1959, Todos Santos Bay, 6.5 mi. 241°T from Ensenada light; 31° 47' 54" N, 116° 45' 00" W; 120 fms; olive green silt.

6213-59. March 28, 1959, Todos Santos Bay, 7.4 mi. 242°T from Ensenada breakwater; 31° 47' 36" N, 116° 45' 58" W; 142 fms; green silt.

6812-59. Dec. 22, 1959, 4.2 mi. 130.5°T from Gull Isl., Santa Cruz Island; 33° 54' 17" N, 11° 45' 42" W; 365 fms; green mud; Campbell grab.

6823-60. Jan. 27, 1960, 2.25 mi. 156.5°T from Catalina Head, Santa Catalina Island; 33° 23' 10" N, 118° 29' 38" W; 47 fms, gray, clay-like mud.

6832-60. Jan. 29, 1960, 28.9 mi. 236°T from China Pt., San Clemente Island; 32° 32' 15" N, 118° 54' 02" W; 722 fms; green mud; Campbell grab.

6834-60. Jan. 29, 1960, 31.5 mi. 254°T from China Pt., San Clemente Island; 32° 39' 33" N, 119° 01' 24" W; 320 fms; green, sandy mud; Campbell grab.

6841-60. Jan. 30, 1960, 8.2 mi. 123°T from Pyramid Head, San Clemente Island; 32° 44' 29" N, 118° 12' 30" W; 700 fms; rocks and green sand.

6851-60. Feb. 1, 1960, 4.65 mi. 322.5°T from North Coronado Island; 32° 30' 42" N, 117° 21' 37" W; 434 fms; green mud; Campbell grab.

7047-60. May 7, 1960, 10.8 mi. 286.5°T from Point La Jolla; 32° 54' 21" N, 117° 29' 33" W; 424 fms; green sand, mud; Campbell grab.

7228-60. Dec. 31, 1960, 30 mi. from Natividad Island light; from 27° 37' 17" N, 115° 49' 16" W, to 27° 30' 35" N, 115° 48' 00" W; 2402-2036 fms; red and green clay with rock fragment and pebbles, ophiuroids, crustacea, echinoids, forams.

7229-60. Dec. 31, 1960, 26.3 mi. 273.5°T from Natividad Island light; from 27° 54' 25" N, 115° 40' 00" W; 957-942 fms; green mud, foraminifera, crustacea, polychaetes.

7231-61. Jan. 1, 1961, 29 mi. from Natividad Island light; from 27° 24' 00" N, 115° 12' 15" W, to 27° 23' 17" N, 115° 13' 45" W; 1355-1312 fms; forams, worms, crustaceans, green mud.

7233-61. Jan. 2, 1961, 20.75 mi. from Natividad Island light; 27° 34' 00" N, 115° 00' 30" W; 310 fms; green mud.

7234-61. Jan. 2, 1961, 15.5 mi. from Natividad Island light; from 27° 38' 00" N, 115° 16' 16" W, to 27° 37' 48" N, 115° 16' 05" W; 461-433 fms; mud and glauconitic sand.

7235-61. Jan. 2, 1961, 16.45 mi. from Natividad Island light; from 27° 42' 30" N, 115° 25' 55" W, to

27° 42' 25" N, 115° 25' 30" W; 709-683 fms; green mud.

7236-61. Jan. 2, 1961, 14.2 mi. from Natividad Island light; from 27° 44' 33" N, 115° 24' 05" W, to 27° 45' 05" N, 115° 23' 40" W; 295-255 fms; rocky bottom, echinoderms.

7249-61. Jan. 4, 1961, 43.8 mi. from Natividad Island light; 27° 36' 25" N, 115° 56' 25" W; 2050-2027 fms; red clay and rock.

7358-61. April 21, 1961, 19 mi. from Natividad Island; from 27° 35' 45" N, 115° 08' 30" W, to 27° 32' 15" N, 115° 05' 00" W; 660-600 fms; rock, foram sand, Menzies small.

11738-67. Nov. 9, 1967, 13.8 mi. 217°T from Punta Oeste, Isla Maria Magdalena; 21° 15' 00" N, 106° 40' 00" W; 1920 fms; 12090' cable, Campbell grab.

11739-67. Nov. 9, 1967, 15 mi. 211°T from Punta Oeste, Isla Maria Magdalena; 21° 13' 15" N, 106° 39' 15" W; 1920 fms; 12224' cable; Campbell grab.

11743-67. Nov. 10, 1967, 12 mi. 237°T from Punta Oeste, Isla Maria Magdalena; 21° 19' 30" N, 106° 42' 00" W; 1743 fms; 10850' cable; Campbell grab.

11744-67. Nov. 10, 1967, 11.5 mi. 236°T from Punta Oeste, Isla Maria Magdalena; 21° 19' 30" N, 106° 41' 30" W; 1860 fms; 11525' cable; Campbell grab.

11745-67. Nov. 10, 1967, 14 mi. 250°T from Punta Oeste, Isla Maria Magdalena; 21° 21' 36" N, 106° 45' 03" W; 1723 fms; 10180' cable; Campbell grab.

11753-67. Nov. 13, 1967, 94 mi. 254°T from Mazatlan Lighthouse; 22° 44' 00" N, 108° 04' 45" W; 1700 fms; 10970' cable; Campbell grab.

11758-67. Nov. 14, 1967, 81 mi. 269°T from Creston Island light, Mazatlan; 23° 09' 00" N, 107° 54' 30" W; 1360 fms; 8450' cable; Campbell grab.

11759-67. Nov. 14, 1967, 87.5 mi. 269°T from Creston Island light, Mazatlan; 23° 09' 00" N, 108° 02' 00" W; 1375 fms; 8550' cable; Campbell grab.

11760-67. Nov. 14, 1967, 87.5 mi. 267.5°T from Creston Island light, Mazatlan; 23° 05' 46" N, 108° 01' 30" W; 1340 fms; 8400' cable; Campbell grab.

11761-67. Nov. 14, 1967, 85.5 mi. 267°T from Creston Island light, Mazatlan; 23° 05' 00" N, 107° 59' 20" W; 1330 fms; 8260' cable; Campbell grab.

11769-67. Nov. 17, 1967, 44 mi. 076°T from Punta Arena light, B.C.; 24° 14' 00" N, 109° 02' 00" W; 1730 fms; 10765' cable; Campbell grab.

11773-67. Nov. 18, 1967, 8.5 mi. 110°T from Lobos Pt., Espiritu Santo Island; 24° 25' 03" N, 110° 08' 16" W; 400 fms; 2530' cable; Campbell grab.

11774-67. Nov. 18, 1967, 8.75 mi. 112°T from Lobos Pt., Espiritu Santo Island; 24° 25' 32" N, 110° 07' 48" W; 395 fms; 2472' cable; Campbell grab.

11776-67. Nov. 18, 1967, 18.75 mi. 358°T from N. end Isla Ceralbo; 24° 41' 30" N, 109° 56' 20" W; 595 fms; 3470' cable; Campbell grab.

11788-67. Nov. 23, 1967, 33.5 mi. 053°T from Punta Colorado, Isla San José; 25° 21' 00" N, 110° 05' 00" W; 1290 fms; 8070' cable; Campbell grab.

11790-67. Nov. 24, 1967, 33.5 mi. 058°T from San José Island light; 25° 19' 25" N, 110° 03' 50" W; 1338 fms, 8240' cable; Campbell grab.

11791-67. Nov. 24, 1967, 36.5 mi. 063°T from Isla San José light; 25° 18' 30" N, 110° 00' 00" W; 1330 fms; 7980' cable; Campbell grab.

11792-67. Nov. 24, 1967, 37.5 mi. 061°T from Punta Colorado, Isla San José; 25° 20' 00" N, 109° 58' 30" W; 1330 fms; 8245' cable; Campbell grab.

11793-67. Nov. 24, 1967, 37 mi. 060°T from Punta Colorado, Isla San José; 25° 20' 00" N, 109° 59' 00" W; 1338 fms; 8310' cable; Campbell grab.

11805-67. Nov. 27, 1967, 23 mi. 088.5°T from Isla Tortuga; 27° 26' 12" N, 111° 26' 00" W; 997 fms; 6215' cable; Campbell grab.

11806-67. Nov. 27, 1967, 20 mi. 087°T from Isla Tortuga; 27° 27' 00" N, 111° 29' 00" W; 997 fms; 6202' cable; Campbell grab.

11807-67. Nov. 27, 1967, 18.25 mi. 090°T from Isla Tortuga; 27° 26' 30" N, 111° 31' 00" W; 995 fms; 6226' cable; Campbell grab.

11808-67. Nov. 27, 1967, 15.5 mi. 073°T from Isla Tortuga; 27° 31' 00" N, 111° 35' 10" W; 975 fms; 6047' cable; Campbell grab.

11809-67. Nov. 27, 1967, 16 mi. 073°T from E. end Isla Tortuga; 27° 31' 30" N, 111° 34' 30" W; 970 fms; 6040' cable; Campbell grab.

11810-67. Nov. 27, 1967, 12.7 mi. 073°T from Isla Tortuga; 27° 30' 30" N, 111° 38' 20" W; 970 fms; 6040' cable; Campbell grab.

11812-67. Nov. 27, 1967, 7.3 mi. 044°T from Isla Tortuga; 27° 31' 30" N, 111° 46' 20" W; 880 fms; 5554' cable; Campbell grab.

11813-67. Nov. 28, 1967, 7.2 mi. 054°T from Isla Tortuga; 27° 31' 00" N, 111° 44' 55" W; 892 fms; 5574' cable; Campbell grab.

11814-67. Nov. 28, 1967, 7.3 mi. 059°T from Isla Tortuga; 27° 30' 30" N, 111° 44' 00" W; 900 fms; 5521' cable; Campbell grab.

11815-67. Nov. 28, 1967, 11 mi. 118°T from Isla Tortuga; from 27° 28' 30" N, 111° 43' 30" W, to 27° 18' 00" N, 111° 35' 30" W; 880-900 fms; beam trawl.

11825-67. Dec. 1, 1967, 10 mi. 290°T from S. end Isla Angel de la Guarda; 29° 03' 30" N, 113° 20' 00" W; 560 fms; 3700' cable; Campbell grab.

11826-67. Dec. 1, 1967, 12.3 mi. 285°T from S. end Isla Angel de la Guarda; 29° 03' 15" N, 113° 21' 56" W; 565 fms; 3740' cable; Campbell grab.

11827-67. Dec. 1, 1967, 7 mi. 253°T from S. end Isla Angel de la Guarda; 28° 58' 13" N, 113° 16' 28" W; 623 fms; 3900' cable; Campbell grab.

11829-67. Dec. 1, 1967, 7 mi. 245°T from S. end Isla Angel de la Guarda; 28° 56' 45" N, 113° 15' 30" W;

595 fms; 4028' cable; Campbell grab.

11830-67. Dec. 1, 1967, 5 mi. 093°T from N. end Isla las Animas; 28° 43' 15" N, 113° 03' 00" W; 770 fms; 4700' cable; Campbell grab.

11831-67. Dec. 1, 1967, 4.5 mi. 252°T from N. end Isla las Animas; 28° 41' 30" N, 113° 02' 00" W; 682 fms; 3640' cable; Campbell grab.

11832-67. Dec. 1, 1967, 5 mi. 093°T from N. end Isla las Animas; 28° 43' 00" N, 113° 03' 00" W; 775 fms; 5025' cable; Campbell grab.

11833-67. Dec. 1, 1967, 5 mi. 092°T from N. end Isla las Animas; 28° 43' 58" N, 113° 03' 06" W; 774 fms; 4899' cable; Campbell grab.

11834-67. Dec. 1, 1967, 5 mi. 092°T from N. end Isla las Animas; 28° 42' 56" N, 113° 03' 05" W; 753 fms; 5075' cable; Campbell grab.

11837-67. Dec. 2, 1967, 5 mi. 194°T from N. end Isla las Animas; 28° 37' 00" N, 112° 56' 00" W, to 28° 40' 30" N, 113° 01' 30" W; 665-480 fms; beam trawl.

11838-67. Dec. 2, 1967, 8 mi. 283°T from S. end Isla San Lorenzo; 28° 38' 45" N, 113° 00' 00" W, to 28° 33' 15" N, 112° 50' 45" W; 400-430 fms; beam trawl.

11840-67. Dec. 5, 1967, 4 mi. 163°T from Cabo San Lucas; from 22° 48' 12" N, 108° 47' 25" W, to 22° 48' 29" N, 109° 56' 44" W; 640-210 fms; biol. dredge.

12134-68. June 22, 1968, 47 mi. 197°T from Punta Abreojos, B.C.; 25° 57' 08" N, 113° 49' 30" W; 1085 fms; 6800' cable; Campbell grab; grey mud.

12135-68. June 22, 1968, 47 mi. 197°T from Punta Abreojos, B.C.; 25° 57' 09" N, 113° 49' 32" W; 1110 fms; 6934' cable; Campbell grab; grey mud.

13724-70. Jan. 12, 1970, 19.2 mi. 248°T from Acapulco light; 16° 42' 10" N, 100° 12' 45" W; 650 fms; 3750' cable; mud, wood debris.

13727-70. Jan. 12, 1970, 32 mi. 236°T from Acapulco light; 16° 29' 00" N, 100° 16' 00" W; 1850 fms; 11315' cable.

13731-70. Jan. 13, 1970, 44 mi. 215°T from Zihuatanejo light; 17° 00' 33" N, 101° 59' 00" W; 1860 fms; 11722' cable.

13733-70. Jan. 13, 1970, 33 mi. 216°T from Roca Negra, Bahia Zihuatanejo; 17° 09' 00" N, 101° 55' 43" W; 1900 fms; 12000' cable.

13742-70. Jan. 15, 1970, 31.5 mi. 256°T from Punta San Telmo light; 18° 12' 00" N, 104° 01' 30" W; 1250 fms; 7500' cable.

13743-70. Jan. 15, 1970, 31.5 mi. 256°T from Punta San Telmo light; 18° 12' 03" N, 104° 01' 32" W; 1240 fms; 7549' cable.

13744-70. Jan. 16, 1970, 30 mi. 254°T from Punta San Telmo light; 18° 12' 00" N, 104° 00' 00" W; 1255 fms; 7581' cable.

13747-70. Jan. 16, 1970, 36.5 mi. 258°T from Punta San Telmo light; 18° 13' 00" N, 104° 06' 00" W; 1275 fms; 7891' cable.

13752-70. Jan. 18, 1970, 43 mi. 193°T from Cabo Corrientes light; 19° 41' 08" N, 105° 53' 30" W; 1235 fms; 7615' cable.

13753-70. Jan. 18, 1970, 43 mi. 193°T from Cabo Corrientes light; 19° 41' 10" N, 105° 53' 30" W; 1250 fms; 7822' cable.

13754-70. Jan. 18, 1970, 44 mi. 192°T from Cabo Corrientes light; 19° 41' 15" N, 105° 53' 00" W; 1220 fms; 7700' cable.

13755-70. Jan. 18, 1970, 35.3 mi. 205°T from Cabo Corrientes light; 19° 51' 30" N, 105° 58' 00" W; 1400 fms; 8775' cable.

13756-70. Jan. 18, 1970, 35 mi. 204°T from Cabo Corrientes light; 19° 51' 00" N, 105° 57' 30" W; 1400 fms; 8765' cable.

13765-70. Jan. 20, 1970, 16 mi. 245°T from Isla San Juanito light, Tres Marias Islands; 21° 37' 00" N, 106°

57' 30" W; 1580 fms; 9880' cable.

13767-70. Jan. 20, 1970, 12.4 mi. 321°T from Punta Piedras light, Isla San Juanito; 21° 54' 30" N, 106° 50' 00" W; 810 fms; 5200' cable

13768-70. Jan. 20, 1970, 11 mi. 320°T from Punta Piedras light, Isla San Juanito; 21° 53' 00" N, 106° 49' 00" W; 840 fms; 5800' cable.

13774-70. Jan. 22, 1970, 27 mi. 130°T from Cabo Falso, B. C.; 22° 35' 00" N, 109° 35' 00" W; 1400 fms; 8875' cable.

13775-70. Jan. 22, 1970, 31 mi. 126°T from Cabo Falso, B. C.; 22° 34' 00" N, 109° 35' 45" W; 1450 fms; 9080' cable.

13776-70. Jan. 22, 1970, 29 mi. 127°T from Cabo Falso light; 22° 34' 15" N, 109° 32' 30" W; 1450 fms; 9425' cable.

13780-70. Jan. 23, 1970, 30 mi. 248°T from Cabo Falso, B. C.; 22° 42' 00" N, 110° 27' 15" W; 1235 fms; 7660' cable.

13781-70. Jan. 23, 1970, 29.8 mi. 247°T from Cabo Falso, B.C.; 22° 41' 15" N, 110° 26' 30" W; 1210 fms; 7500' cable.

13782-70. Jan. 23, 1970, 29 mi. 247°T from Cabo Falso light; 22° 41' 00" N, 110° 26' 00" W; 1200 fms; 7414' cable.

C. Collections made by the ALBATROSS

ALB 2992. March 6, 1889; 18° 17' 30" N, 114° 43' 15" W; 460 fms; large beam trawl; black sand and rock.

ALB 3353. Feb. 23, 1891; 7° 06' 15" N, 80° 34' 00" W; 695 fms; green mud, large beam trawl.

ALB 3354. Feb. 23, 1891; 7° 09' 45" N, 80° 50' 00" W; 322 fms; green mud, large beam trawl.

ALB 3356. Feb. 23, 1891; 7° 09' 30" N, 81° 08' 30" W; 546 fms; soft blue mud, large beam trawl.

ALB 3358. Feb. 24, 1891; 6° 30' 00" N, 81° 44' 00" W; 555 fms; green sand, large beam trawl.

ALB 3362. Feb. 26, 1891; 5° 56' 00" N, 85° 10' 30" W; 1175 fms; green mud, sand, rock, large beam trawl.

ALB 3366. Feb. 27, 1891; 5° 30' 00" N, 86° 45' 00" W; 1067 fms; yellow globigerina ooze, large beam trawl.

ALB 3376. March 4, 1891; 3° 09' 00" N, 82° 08' 00" W; 1132 fms; grey globigerina ooze, large beam trawl, mud bay.

ALB 3392. March 10, 1891; 7° 05' 30" N, 79° 40' 00" W; 1270 fms; large beam trawl, hard bottom.

ALB 3393. March 10, 1891; 7° 15' 00" N, 79° 36' 00" W; 1020 fms; green mud, large beam trawl.

ALB 3399. March 24, 1891; 1° 07' 00" N, 81° 04' 00" W; 1740 fms; green ooze, large beam trawl.

ALB 3415. April 10, 1891; 14° 46' 00" N, 98° 40' 00" W; 1879 fms; brown mud, globigerina ooze, large beam trawl.

ALB 3417. April 11, 1891; 16° 32' 00" N, 99° 48' 00" W; 493 fms; green mud, large beam trawl.

ALB 3418. April 11, 1891; 16° 33' 00" N, 99° 52' 30" W; 660 fms; brown sand, black specks, small beam trawl.

ALB 3424. April 18, 1891; 21° 15' 00" N, 106° 23' 00" W; 676 fms; gray sand, black specks, small beam trawl.

ALB 3425. April 18, 1891; 21° 19' 00" N, 106° 24' 00" W; 680 fms; green mud and sand, small beam trawl.

ALB 3430. April 19, 1891; 23° 16' 00" N, 107° 31' 00" W; 852 fms; black sand, small beam trawl.

ALB 3431. April 20, 1891; 23° 59' 00" N, 108° 40' 00" W; 995 fms; light brown mud, small beam trawl.

ALB 3435. April 22, 1891; 26° 48' 00" N, 110° 45' 20" W; 859 fms; brown mud, black specks, small beam trawl.

ALB 3436. April 22, 1891; 27° 03' 40" N, 110° 53' 40" W; 905 fms; brown mud, black specks, small beam trawl.

ALB 3437. April 23, 1891; 27° 39' 40" N, 111° 00' 30" W; 628 fms; brown mud, black specks, submarine tow net.

ALB 4261. Oct. 21, 1904; 6° 36' N, 81° 45' W; 581 fms; green sand.

ALB 5673. (D) March 1, 1911; 32° 18' 30" N, 116° 46' W; 1090 fms; black and gray mud, a few Globigerina, Agassiz trawl.

ALB D5675. March 15, 1911; 27° 07' 08" N, 114° 33' 10" W; 284 fms; green mud, fine sand; Agassiz trawl.

ALB D5676. March 17, 1911; 25° 31' 15" N, 113° 29' 30" W; 645 fms; green mud, fine sand, Globigerina; Agassiz trawl.

ALB D5677. March 17, 1911; 25° 23' 45" N, 113° 16' W; 735 fms; green mud, fine sand, Globigerina; Agassiz trawl.

ALB D5682. March 24, 1911; 22° 48' 20" N, 109° 52' 40" W; 491 fms; sand; Agassiz trawl.

ALB D5683. April 20, 1911; 22° 46' 45" N, 109° 50' 15" W; 630 fms; coarse sand, green mud, gravel; Agassiz trawl.

ALB D5684. April 21, 1911; S. of Magdalena Bay; 23° 23' 30" N, 112° 30' W; 1760 fms; Agassiz trawl.

ALB D5685. April 22, 1911; S. of Abreojos Pt.; 25° 42' 45" N, 113° 38' 30" W; 645 fms; black sand, coral; Agassiz trawl.

ALB D5686. April 22, 1911; SW of Abreojos Pt.; 26° 14' N, 114° W; 930 fms; green mud, Globigerina; Agassiz trawl.

ALB D5687. April 23, 1911; S. of Isla Cedros; 27° 39' 15" N, 115° 16' W; 480 fms; green mud, Globigerina; Agassiz trawl.

ALB D5689. April 24, 1911; E. of Isla Guadalupe; 29° 23' N, 116° 14' W; 879 fms; gray mud, fine sand, gravel, Globigerina; Agassiz trawl.

ALB D5690. April 24, 1911; E. of Isla Guadalupe; 29° 29' N, 116° 18' W; 1101 fms; green mud, Globigerina; Agassiz trawl.

ALB D5691. April 25, 1911; SW of San Diego; 31° 08' 20" N, 118° 29' 30" W; 868 fms; gray mud; Agassiz trawl.

ALB D5692. April 25, 1911; SW of San Diego; 31° 23' 45" N, 118° 31' 30" W; 1076 fms; gray mud; Agassiz trawl.

ALB D5695. April 26, 1911; 33° 33' N, 120° 17' 30" W; 534 fms; green sand, Globigerina; Agassiz trawl.

ALB D5697. April 27, 1911; W. of Piedras Blancas; 35° 35' N, 121° 39' W; 485 fms; green mud, black sand; Agassiz trawl.

D. Collected by Dr. Robert H. Parker, 1958-1961.

P 3-59. March 8, 1959; 23° 58.4' N, 108° 59.5' W; appr. 1100 fms.

P 39-59. March 20, 1959; 22° 48.1' N, 110° 11.2' W; 999 fms.

P 41-59. March 22, 1959; 22° 32.2' N, 109° 43.0' W, to 22° 35.8' N, 109° 47.9' W; 1520-1535 fms.

P 42-59. March 26, 1959; from 22° 35.6' N, 110° 06.5' W, to 22° 38.6' N, 110° 01.0' W; 1431-1490 fms.

P 58-59. April 5, 1959; 28° 37.2' N, 113° 02.5' W; 250 fms.

P 65-59. April 9, 1959; 29° 28' N, 113° 02.0' W; 175 fms.

P 96-59. May 15, 1959; from 22° 11.2' N, 107° 46.1' W, to 22° 25.5' N, 107° 49.5' W; 1640-1638 fms.

P 127-58. Nov. 18, 1958; from 14° 47' N, 96° 19' W, to 14° 50.5' N, 96° 13' W; 570-620 fms.

P 128-58. Nov. 18, 1958; from 14° 28' N, 93° 09' W, to 14° 29' N, 93° 10' W; 1935-1974 fms.

P 131-58. Nov. 21, 1958; from 12° 20' N, 91° 51' W, to 12° 24' N, 91° 54' W; 1965-1990 fms.

P 135-59. Jan. 29, 1959; off San Diego; 32° 36.6' N, 117° 35.2' W; 650 fms; deep diving dredge.

P 137-60. Feb. 13, 1960; off Punta Banda; 31° 16.4' N, 117° 34.2' W; 1130-1140 fms; otter trawl.

P 167-60. Mar. 21, 1960; offshore San Juan, S. of San Pedro; 28° 2' N, 111° 47.2' W; 175-170 fms; otter trawl.

P 199-60. Mar. 27, 1960; 28° 39.2' N, 112° 26.4' W; 152 fms.

P 201-60. March 27, 1960; 28° 30' N, 112° 22' W; 125 fms.

P 218-60. May 30, 1960; La Jolla Canyon; 32° 51.2' N, 117° 16.3' W; 127 fms; Petersen grab.

P 219-60. May 30, 1960; La Jolla Canyon; 32° 52.5' N, 117° 16.5' W; 174 fms; Petersen grab.

P 274-61. April 28, 1961; off Baja California; from 30° 52' N, 116° 53' W, to 30° 42.3' N, 116° 50.7' W; 1086-1081 fms; otter trawl.

P 287-61. May 6-7, 1961; Cedros Trough; 27° 20' N, 115° 23.1' W; 2235-2260 fms; beam trawl.

E. Collected by Stephen Calvert

SI L184. ; 27° 03' N, 112° 18' W; 894 m; O_2: 0.21ml/L.

SI L190. ; 27° 11' N, 111° 23' W; 1910 m; O_2: 0.5ml/L.

F. Collected by M.W. Johnson

March 3, 1939; Gulf of California; "L.W. Scripps"; Position GC 26; 1248 m; attached to "spiders".

LITERATURE CITED

ANNENKOVA, N.

1924. Neues über die Verbreitung einiger Arten der Polychaeten. Akad. Nauk SSSR , Doklady, (A)1924: 125-128.

1931. Zur Polychaetenfauna von Franz-Joseph-Land (Melinnexis gen. nov. arctica sp. n.). Zool. Anz., 95: 269-272, 4 figs.

1934. [Meeres-Paraoniden im Fernen Osten der USSR.] (In Russian with German summary.) Akad. Nauk SSSR , Doklady, (n.s.)3[i.e., 4]: 656-661, 3 figs.

1937. [The polychaete fauna of the northern part of the Japan Sea.] (In Russian.) Leningrad, Gosudarst. Gidrol. Inst., Issledovaniia Morei SSSR , fasc. 23, pp. 139-216, 60 figs.

1938. [Polychaeta of the North Japan Sea and their horizontal and vertical distribution. Hydrobiol. Exped. U.S.S.R. in 1934 to the Japanese Sea.] (In Russian.) Akad. Nauk SSSR, Dal'nevost. Filial Vladivostok, Zool. Inst., Trudy gidrobiol. eksped., 1: 81-230, 16 figs.

ARWIDSSON, I.

1907. Studien über die skandinavischen und arktischen Maldaniden nebst Zusammenstellung der übrigen bisher bekannten Arten dieser Familie. Zool. Jahrb. Suppl., 9: 1-308, pls. 1-12.

AUDOUIN, J.V., and H. MILNE EDWARDS

1832-1833. Classification des Annélides, et description de celles qui habitent les côtes de la France. Ann. Sci. Nat., (1)27: 337-447, 1832; 28: 187-247, 1833; 29: 195-269, 388-412, 1833; 30: 411-425, 1833.

1834. Recherches pour servir à l'histoire naturelle du littoral de la France, ou Recueil de mémoires sur l'anatomie, la physiologie, la classification et les moeurs des animaux de nos côtes; ouvrage accompagné de planches faites d'après nature. 2. Annélides. 1. ptie. Paris, 290 pp., 8 pls.

AUGENER, H.

1906. Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico and the Caribbean Sea, and on the east coast of the United States, 1877 to 1880, by the U.S. Coast Survey Steamer BLAKE. XLII, Westindische Polychaeten. Mus. Comp. Zool. Harvard, Bull., 43: 91[bis]-196, 8 pls.

1913. Polychaeta I, Errantia. In Michaelsen, W. and R. Hartmeyer, eds. Die Fauna Südwest-Australiens. Jena. 4: 65-304, 2 pls., 42 figs.

1914. Polychaeta II, Sedentaria. In Michaelsen, W. and R. Hartmeyer, eds. Die Fauna Südwest-Australiens. Jena. 5(1): 1-170, 1 pl.

1918. Polychaeta. In Michaelsen, W., ed. Beiträge zur Kenntnis der Meeresfauna West-Afrikas. Hamburg. 2(2): 67-625, pls. 2-7.

1922a. Litorale Polychaeten von Juan Fernandez. In C. Skottsberg [ed.] The Natural History of Juan Fernandez and Easter Island. Uppsala. 3: 161-218, pl. 7.

1922b. Revision der Australischen Polychaeten-Typen von Kinberg. Ark. Zool., 14(8): 1-42.

BAIRD, W.

1863. Descriptions of several new species of worms belonging to the Annelida Errantia and Seden-

taria or Tubicola of Milne-Edwards. Zool. Soc. London, Proc., 1863: 106-110.

BENHAM, W.B.

1927. Polychaeta. In British Antarctic TERRA NOVA Expedition, 1910. Nat. Hist. Rept., Zool. London. 7(2): 47-182, 6 pls.

BERGSTRÖM, E.

1914. Zur Systematik der Polychaetenfamilie der Phyllodociden. Zool. Bidr. Uppsala, 3: 37-224, 81 figs.

BERKELEY, E.

1930. Polychaetous annelids from the Nanaimo district. 5. Ammocharidae to Myzostomidae... Contr. Canad. Biol., (n.s.)6: 65-77, 8 figs.

BERKELEY, E. and C. BERKELEY

1938. Rhamphobrachium longisetosum sp. n., with some observations on the regeneration of the specialized anterior setae. Ann. Mag. Nat. Hist., (11)1: 428-435, 8 figs.

1945. Notes on Polychaeta from the coast of western Canada. 3. Further notes on Syllidae and some observations on other Polychaeta errantia. Ann. Mag. Nat. Hist., (11)12: 316-335, 6 figs.

1950. Notes on Polychaeta from the coast of western Canada. IV. Polychaeta Sedentaria. Ann. Mag. Nat. Hist., (12)3: 50-69, 8 figs.

1952. Annelida. Polychaeta Sedentaria. Canad. Pac. Fauna, 9b(2), 139 pp., 292 figs.

1956a. Notes on Polychaeta from the east coast of Vancouver Island and from adjacent waters,

with a description of a new species of Aricidea. Canada, Fish. Res. Bd., J., 13(4): 541-546, 6 figs.

1956b. A new species and two new records of Polychaeta from eastern Canada. Canad. J. Zool., 34: 267-271, 3 figs.

BLAINVILLE, H. de

1828. Vers à sang rouge. In Dictionnaire des Sciences naturelles. Paris, 57: 368-501.

BUSH, K.J.

1904. Tubicolous annelids of the tribes Sabellides and Serpulides from the Pacific Ocean. In Harriman Alaska Exped., N.Y., 12: 169-355, pls. 21-44.

CAULLERY, M.

1914. Sur les polychètes du genre Prionospio Malmgr. Soc. Zool. France, Bull., 39: 355-361.

1915. Sur les térébelliens du genre Pista Malmg. et en particulier sur les uncini de ces annélides. Soc. Zool. France, Bull., 40: 68-78, 2 figs.

1944. Polychètes sédentaires de l'Expédition du SIBOGA: Ariciidae, Spionidae, Chaetopteridae, Chlorhaemidae, Opheliidae, Oweniidae, Sabellariidae, Sternaspidae, Amphictenidae, Ampharetidae, Terebellidae. In Siboga-Exped., Leiden, 24(2 bis): 1-204, 157 figs.

CERRUTI, A.

1909. Contributo all'anatomia, biologia e sistematica delle Paraonidae (Levinsenidae) con particolare riguardo alle specie del golfo di Napoli. Zool. Stat. Neapel, Mitt., 19: 459-

512, pls. 18-19.

CHAMBERLIN, R.V.

1919. The Annelida Polychaeta. Harvard, Mus. Comp. Zool., Mem., 48: 1-514, pls. 1-80.

CHIAJE, S. DELLE

1828. Memorie sulla storia e notomia degli animali senza vertebre del regno di Napoli. Naples. 3: XX and 232 pp.

1841. Descrizione e notomia degli animali invertebrati della Sicilia citeriore osservati vivi negli anni 1822-1830. Naples. 5 vols., 137 pls. (Annelids in vol. 3).

CHLEBOVITSCH, V.V.

1963. [The littoral nereids from Hainan Island.] (In Chinese and Russian.) Studia Marina Sinica, 4: 48-75, 5 pls.

CHLEBOVITSCH, V.V. and BAO-LING WU

1962. [Polychaetes from the Yellow Sea, Part 5, Additions to the nereid fauna.] (In Chinese.) Acta Zool. Sinica, 14(2): 267-274, 3 pls.

CLAPARÈDE, E.

1870a. Les annélides chétopodes du Golfe de Naples. Seconde partie. Soc. Phys. Hist. Nat. Genève, Mém., 20(1): 1-225, pls. 17-31.

1870b. Les annélides chétopodes du Golfe de Naples. Supplément. Soc. Phys. Hist. Nat. Genève, Mém., 20(2): 365-542, 14 pls.

CLARK, R.B.

1952. New records of sub-littoral polychaetes from

the Clyde Sea area, with a description of a new species. Roy. Soc. Edinburgh, Proc., Sec. B.(Biol.), 65: 1-26, 4 figs.

CUNNINGHAM, J.T. and G.A. RAMAGE

1888. The Polychaeta sedentaria of the Firth of Forth. Roy. Soc. Edinburgh, Trans., 33: 635-684, pls. 36-47.

CUVIER, G.

1817. Le règne animal distribué d'après son organisation, pour servir de base à l'histoire naturelle des animaux et d'introduction à l'anatomie comparée. Paris, Deterville, 2: XVIII and 532 pp.

CZERNIAVSKY, V.

1882. Materialia ad zoographiam Ponticam comparatam. Soc. Imp. Nat. Moscow, Bull., 57: 146-198.

DALYELL, J.G.

1853. The powers of the Creator displayed in the creation; or, observations on life amidst the various forms of the humbler tribes of animated nature; with practical comments and illustrations. London, John van Voorst, 2: 1-359, 46 pls.

DAY, J.H.

1934. On a collection of South African Polychaeta, with a catalogue of the species recorded from South Africa, Angola, Mosambique and Madagascar. Linn. Soc. London, Jour., Zool., 39 (263): 15-82, 16 figs.

1949. On the Polychaeta collected by Mr. J. Colman at St. Helena. Linn. Soc. London, Jour.,

Zool., 41(281): 434-451, 4 figs.

1957. The polychaet fauna of South Africa. Part 4. New species and records from Natal and Moçambique. Natal Museum, Ann., 14: 59-129, 8 text figs.

1960. The polychaet fauna of South Africa. Part 5. Errant species dredged off Cape coasts. South African Mus., Ann., 45: 261-373, 14 figs.

1961. The polychaet fauna of South Africa. Part 6. Sedentary species dredged off Cape coasts with a few new records from the shore. Linn. Soc. London, J., Zool., 44(299): 463-560, 18 figs.

1963a. The polychaete fauna of South Africa. Part 8: New species and records from grab samples and dredgings. Brit. Mus. (Nat. Hist.), Bull., Zool., 10: 381-445, 12 figs.

1963b. Polychaete fauna of South Africa: Part 7: Species from depths between 1,000 and 3,330 metres west of Cape Town. South African Mus., Ann., 46: 353-371, 3 figs.

1964. A review of the family Ampharetidae (Polychaeta). South African Mus., Ann., 48: 97-120, 2 tables.

1967. A monograph on the Polychaeta of Southern Africa. Part I. Errantia; Part II. Sedentaria. Brit. Mus. (Nat. Hist.), Publ. no. 656, XXIX and XVII + 878 pp., numerous illustrations.

EHLERS, E.

1864, 1868. Die Borstenwürmer (Annelida Chaetopoda) nach systematischen und anatomischen Untersuchungen. Bd. 1. Leipzig, Wilhelm Engelmann. pp.

1-268, pls. 1-11 (1864); pp. 269-748, pls. 12-24 (1868).

1874. Annulata nova vel minus cognita in Expeditione Porcupine capta. Ann. Mag. Nat. Hist., (4)13: 292-298.

1887. Report on the annelids of the dredging expedition of the U.S. Coast Survey Steamer BLAKE. Harvard, Mus. Comp. Zool., Mem., 15: VI and 335 pp., 60 pls.

1897. Polychaeten. In Ergebnisse der Hamburger Magalhaenischen Sammelreise. Hamburg. 3: 1-148, 9 pls.

1901. Die Polychaeten des magellanischen und chilenischen Strandes. Ein faunistischer Versuch. In Festschrift zur Feier des Hundertfünfzigjährigen Bestehens der königlichen Gesellschaft der Wissenschaften zu Göttingen. (Abh. Math.-Phys.) Berlin, Wiedmannsche Buchhandlung. 232 pp., 25 pls.

1905. Neuseeländische Anneliden. K. Ges. Wiss. Göttingen, Math.-Phys., Kl., Abh., (n.f.) 3(1): 1-80, 9 pls. (for the year 1904.)

1908. Die bodensässigen Anneliden aus den Sammlungen der deutschen Tiefsee-Expedition. In Wissenschaftliche Ergebnisse der deutschen Tiefsee-Expedition auf dem Dampfer VALDIVIA 1898-1899. Jena. 16(1): 1-168, 23 pls.

EISIG, H.

1887. Monographie der Capitelliden des Golfes von Neapel. Fauna u. Flora Golfes Neapel, 16: 1-906, 37 pls.

ELIASON, A.

1951. Polychaeta. In Rep. Swedish Deep-Sea Exped.

Göteborg. II(11): 129-148, 2 pls., 5 text figs.

1962. Die Polychaeten der Skagerak-Expedition. Zool. Bidr. Uppsala, 33: 207-293, 23 figs.

ESSENBERG, C.

1917. On some new species of Aphroditidae from the coast of California. Univ. Calif. Publ. Zool., 16(22): 401-430, pls. 31-37.

ESTCOURT, I.N.

1966. A new polychaete from Three Kings Islands. Roy. Soc. New Zealand, Trans., Zool., 7(15): 205-207, 3 figs.

FAUCHALD, K.

1963. Nephtyidae (Polychaeta) from Norwegian waters. Sarsia, 13: 1-32, 9 figs.

1968. Onuphidae (Polychaeta) from western Mexico. Allan Hancock Monogr. Mar. Biol., 3: 1-82, 12 pls.

1969. A revision of six species of the flavus-bidentatus group of Eunice (Eunicidae: Polychaeta). Smithson. Contribs. Zool., 6: 1-15, 6 figs.

1970. Polychaetous annelids of the families Eunicidae, Lumbrineridae, Iphitimidae, Arabellidae, Lysaretidae and Dorvilleidae from western Mexico. Allan Hancock Monogr. Mar. Biol., 5: 1-335, 27 pls.

FAUVEL, P.

1913. Quatrième note préliminaire sur les Polychètes provenant des campagnes de l'HIRONDELLE et de la PRINCESSE-ALICE, ou déposées dans le Musée océanographique de Monaco. Inst. Océanogr. Monaco, Bull., 270: 1-80, 13 figs.

1918. Annélides polychètes nouvelles de l'Afrique orientale. Paris, Mus. Hist. nat., Bull., 24: 503-509, 4 figs.

1923. Polychètes errantes. Faune de France, Paris, 5, 488 pp., 18 figs.

1927. Polychètes sédentaires. Addenda aux Errantes, Archiannélides, Myzostomaires. Faune de France, 16, 494 pp., 152 figs.

1928. Annélides polychètes nouvelles de l'Inde. Pt. I. Paris, Mus. Hist. nat., Bull., 34: 90-96, 3 figs.

1932. Annelida Polychaeta of the Indian Museum, Calcutta. Indian Mus., Calcutta, Mem., 12: 1-262, 9 pls., 40 figs.

1934. Polychètes nouvelles de l'Annam. Paris, Mus. Hist. nat., Bull., (sér. 2) 6(1): 40-43, 3 figs.

1936a. Polychètes d'Expédition antarctique belge. In Résultats du voyage de la BELGICA en 1897-1899, sous le commandement de A. de Gerlache de Gomery. Anvers. 44 pp., 4 figs., 1 pl.

1936b. Contribution à la faune des Annélides polychètes du Maroc. Soc. Sci. nat. Maroc, Mém., 43: 1-143, 14 figs.

1937. Deux néréidiens nouveaux d'Indochine. Soc. Zool. France, Bull., 62: 297-301, 2 figs.

FAUVEL, P. and F. RULLIER

1957. Nouvelle contribution à la faune des Annélides Polychètes du Sénégal. Inst. Franç. d'Afrique Noire, Bull., (Sér. A), 19: 24-96, 3 figs.; 373-399.

FOSTER, N.M.

1969. New species of spionids (Polychaeta) from the

Gulf of Mexico and Caribbean Sea with a partial revision of the genus Prionospio. Biol. Soc. Wash., Proc., 82: 381-400, 33 figs.

FREY, H. and R.S. LEUCKART

1847. Beiträge zur Kenntniss wirbelloser Thiere, mit besonderer Berücksichtigung der Fauna des Norddeutschen Meeres. Braunschweig, Friedrich Vieweg. 170 pp., 2 pls.

FRIEDRICH, H.

1956. Mitteilungen über neue und wenig bekannte Polychaeten aus Mittel- und Südamerika. Senckenbergiana. Biologica, 37: 57-68, 7 figs.

GALLARDO, V.A.

1968. Polychaeta from the Bay of Nha Trang, South Viet Nam. NAGA Rep., 4(3): 35-279, 49 pls., chart. (Title page reads 1967.)

GARTH, J.S.

1961. Distribution and affinities of the Brachyura Crustacea. In Symposium: The biogeography of Baja California and adjacent seas. Syst. Zool. 9(3): 105-123, 3 figs., 5 tables. (Incorrectly dated 1960.)

GRAVIER, C.

1911. Vers. Annélides polychètes. In Expédition antarctique française (1903-05) commandée par le Dr. Jean Charcot. Sciences naturelles: documents scientifiques. Paris, Masson et Cie, 1: 1-75, 5 pls., 47 figs.

GRAVIER, C. and J.L. DANTAN

1928. Sur une nouvelle forme hétéronéréidienne mâle de la Méditerranée, (Nereis s. st. icosiensis n. sp.). Paris, Mus. Hist. nat., Bull., 34: 154-158, 3 figs.

1934. Annélides polychètes recueillies au cours de pêches nocturnes à la lumière sur les côtes d'Annam. Inst. océanogr. Monaco, Ann., (n.s.) 14(3): 37-136, 130 figs.

GRUBE, A.E.

1846-1863. Beschreibungen neuer oder weniger bekannter Anneliden. Arch. Naturgesch., vols. 12-29: 1. Sabella - Arten, 12(1): 45-59, 1 pl. (1846); 2. Corephorus, Ammochares, Dasymallus, Scalis - Arten, 12(1): 161-171, 1 pl. (1846); 3. Gattung Sabellaria. 14(1): 34-52, 1 pl. (1848); 4. Zahlreiche Gattungen. 26: 71-118, 3 pls. (1860); 5. Zahlreiche Gattungen. 29: 37-69, 3 pls. (1863).

1850. Die Familien der Anneliden. Arch. Naturgesch., 16(1): 249-364.

1861. Ein Ausflug nach Triest und dem Quarnero. Beiträge zur Kenntniss der Thierwelt dieses Gebietes. Berlin, Nicolaische Verlagsbuchh., 175 pp., 5 pls.

1862-1863. Noch ein Wort über die Capitellen und ihre Stelle im Systeme der Anneliden. Arch. Naturgesch., 28(1): 366-378, (1862). Transl: Ann. Mag. Nat. Hist., (3)11: 393-402, (1863).

1868. Beschreibungen einiger von Georg Ritter von Frauenfeld gesammelter Anneliden und Gephyreen des rothen Meeres. Zool.-Bot. Gesells. Wien, Verh., 18: 629-650, pls. 7-8.

1870. [Ueber zwei neue Anneliden von St. Malo (Mellina palmata, Ereutho serrisetis).] Schles. Gesells. Vaterl. Kultur, Jahresber., 47: 68-69.

1873. Ueber ein paar neue Anneliden aus der Familie der Spiodeen. Schles. Gesells. Vaterl. Kultur, Jahresber., 50: 57-58.

1877. Mittheilungen über die Familie der Chlorhaeminen. Schles. Gesells. Vaterl. Kultur, Jahresber., 54: pp. 60-73.

1878. Annulata Semperiana. Beiträge zur Kenntniss der Annelidenfauna der Philippinen nach den von Herrn Prof. Semper mitgebrachten Sammlungen. Akad. Nauk SSSR, Mem., (7)25(8): i-ix, 1-300, 15 pls.

1880. Mittheilungen über die Familie der Phyllodoceen und Hesioneen. Schles. Gesells. Vaterl. Kultur, Breslau, Jahresber., 57: 204-228.

1881. Beschreibungen von neuen Anneliden des zoologischen Museums zu Berlin. Gesells. naturf. Freunde, Sitzber., 1881: 109-117.

HAASE, P.

1915. Boreale und arktische Chloraemiden. Wiss. Meeresunters., Abt. Kiel, (N.F.)17: 169-228, pls. 1-2.

HANNERZ, L.

1956. Larval development of the polychaete families Spionidae Sars, Disomidae Mesnil and Poecilochaetidae n. fam. in the Gullmar Fjord (Sweden). Zool. Bidr. Uppsala, 31: 1-204, 57 figs.

HANSEN, G.A.

1879. Annelider fra den norske Nordhavsexpedition i

1876. Nyt Mag. Naturv. Oslo, 24(1): 1-17, pls. 1-10.

HARTMAN, O.

1939a. The polychaetous annelids collected on the Presidential Cruise of 1938. Smithson. Misc. Coll., 98(13): 1-22, 3 figs.

1939b. Polychaetous annelids: Pt. 1; Aphroditidae to Pisionidae. Allan Hancock Pacific Exped., 7: 1-156, pls. 1-28.

1939c. New species of polychaetous annelids from southern California. Allan Hancock Pacific Exped., 7: 157-172, pls. 29-30.

1940. Polychaetous annelids: Pt. 2; Chrysopetalidae to Goniadidae. Allan Hancock Pacific Exped., 7: 173-288, pls. 31-44.

1942a. The identity of some marine annelid worms in the United States National Museum. U.S. Natl. Mus., Proc., 92: 101-140, 15 figs.

1942b. A review of the types of polychaetous annelids at the Peabody Museum of Natural History, Yale University. Yale, Bingham Oceanogr. Coll., Bull., 8: 1-98, 161 figs.

1944a. Polychaetous annelids. Pt. 5: Eunicea. Allan Hancock Pacific Exped., 10: 1-238, 18 pls.

1944b. Polychaetous annelids. Pt. 6: Paraonidae, Magelonidae, Longosomidae, Ctenodrilidae and Sabellariidae. Allan Hancock Pacific Exped., 10: 311-390, pls. 27-42.

1947. Polychaetous annelids. Pt. 7: Capitellidae. Allan Hancock Pacific Exped., 10: 391-482, pls. 43-58, 1 chart.

1948. The marine annelids erected by Kinberg, with notes on some other types in the Swedish State

Museum. Ark. Zool., 42A(1): 1-137, 18 pls.

1950. Goniadidae, Glyceridae and Nephtyidae. Allan Hancock Pacific Exped., 15: 1-181, 19 pls.

1951. The littoral marine annelids of the Gulf of Mexico. Texas, Univ., Inst. Mar. Sci., Publ., 2: 7-124, 27 pls.

1953. Non-pelagic Polychaeta of the Swedish Antarctic Expedition 1901-1903. In Further Zool. Res. Swedish Antarctic Exped. Stockholm. IV (11): 1-83, 21 figs., 1 chart.

1954. Australian Nereidae, including descriptions of three new species and one genus, together with summaries of previous records and keys to species. Roy. Soc. S. Austr., Trans., 77: 1-41, 39 figs.

1955. Endemism in the North Pacific Ocean, with emphasis on the distribution of marine annelids, and descriptions of new or little known species. In Ess. in Nat. Sci. in honor of Captain Allan Hancock, Los Angeles, Calif., pp. 39-60, pls. 1-4.

1957. Orbiniidae, Apistobranchidae, Paraonidae and Longosomidae. Allan Hancock Pacific Exped., 15: 211-394, pls. 20-44, 1 chart.

1959, 1965a. Catalogue of the polychaetous annelids of the world. Allan Hancock Fdn. Occ. Papers, 23: parts I and II: 1-628, 1959. Supplement 1960-1965 and index: 1-197, 1965a.

1960. Systematic account of some marine invertebrate animals from the deep basins off southern California. Allan Hancock Pacific Exped., 22: 69-216, pls. 1-19.

1961. Polychaetous annelids from California. Allan Hancock Pacific Exped., 25: 1-226, 34 pls.

1963. Submarine canyons of Southern California. Part III. Systematics: Polychaetes. Allan Hancock Pacific Exped., 27: 1-93, 4 figs.

1964. Polychaeta Errantia of Antarctica. Amer. Geophys. Union, Antarctic Res. Ser., 3: XI + 131 pp., 39 pls.

1965b. Deep-water benthic polychaetous annelids off New England to Bermuda and other North Atlantic areas. Allan Hancock Fdn. Occ. Papers, 28: pp. 1-378, 52 pls.

1966. Polychaeta Myzostomidae and Sedentaria of Antarctica. Amer. Geophys. Union, Antarctic Res. Series, 7: IX + 158 pp., 46 pls, 5 charts.

1967. Polychaetous annelids collected by the USNS ELTANIN and STATEN ISLAND cruises, chiefly from Antarctic seas. Allan Hancock Monogr. Mar. Biol., 2: 1-387, 51 pls.

1968. Atlas of errantiate polychaetous annelids from California. Allan Hancock Foundation, University of Southern California, 828 pp., illus.

1969. Atlas of sedentariate polychaetous annelids from California. Allan Hancock Foundation, University of Southern California, 812 pp., illus.

HARTMAN, O. and K. FAUCHALD

1971. Deep-water benthic polychaetous annelids off New England to Bermuda and other North Atlantic areas. Part 2. Allan Hancock Monogr. Mar. Biol., 6: 1-327, 34 pls.

HARTMANN-SCHROEDER, G.

1959. Zur Oekologie der Polychaeten des Mangrove-

Estero-Gebietes von El Salvador. Beitr. zur neotrop. Fauna, 1: 69-183, 188 figs.

1962. Zweiter Beitrag zur Polychaetenfauna von Peru. Kieler Meeresforsch., 18: 109-147, 20 pls.

1965. Zur Kenntnis des Sublitorals der chilenischen Küste unter besonderer Berücksichtigung der Polychaeten und Ostracoden. (Mit Bemerkungen über den Einfluss sauerstoffarmer Strömungen auf die Besiedlung von marinen Sedimenten). Teil II: Die Polychaeten des Sublitorals. Hamburg, Zool. Mus. Inst., Mitt., 62(Suppl.): 59-305, figs. 1-300.

HESSLE, C.

1917. Zur Kenntnis der terebellomorphen Polychaeten. Zool. Bidr. Uppsala, 5: 39-258, pls. I-V, figs. 1-66.

HOAGLAND, R.A.

1919. Polychaetous annelids from Porto Rico, the Florida Keys, and Bermuda. Amer. Mus. Nat. Hist., Bull., 41: 571-591, pls. 29-32.

1920. Polychaetous annelids collected by the United States Fisheries Steamer ALBATROSS during the Philippine Expedition of 1907 - 1909. U.S. Natl. Mus., Bull., 100, (1,9): 603-634, pls. 46-52.

HORST, R.

1912. Polychaeta Errantia of the SIBOGA Expedition, Pt. 1: Amphinomidae. In Siboga-Exped. Leiden, 24a: 1-43, pls. 1-10.

1915. On new and little-known species of Polynoinae from the Netherlands East Indies. Zool. Meded. Leiden, 1: 2-20.

1917. Polychaeta Errantia of the SIBOGA Expedition, Pt. 2: Aphroditidae and Chrysopetalidae. In Siboga-Exped. Leiden, 24b: 1-143, pls. 11-29, 5 figs.

1919. Three new Nereis-species from the Dutch East Indies. Zool. Meded. Leiden, 5: 59-64, 3 figs.

1924. Polychaeta Errantia of the SIBOGA Expedition, Pt. 3: Nereidae and Hesionidae. In Siboga-Exped. Leiden, 24^{1}c: 145-198, pls. 30-36.

IZUKA, A.

1902. On two new species of the family Maldanidae from the Sagami Bay. Annot. Zool. Japon., Tokyo, 4: 109-114, pl. 3.

1912. The errantiate Polychaeta of Japan. Tokyo Univ., Coll. Sci., Jour., 30(2): 1-262, 24 pls.

JOHANSSON, K.E.

1925. Bemerkungen über die Kinberg'schen Arten der Familien Hermellidae und Sabellidae. Ark. Zool., 18A(7): 1-28, 9 figs.

1927. Beiträge zur Kenntnis der Polychaeten-Familien Hermellidae, Sabellidae, und Serpulidae. Zool. Bidr. Uppsala, 11: 1-184, pls. 1-5, 15 figs.

JOHNSON, H.P.

1897. A preliminary account of the marine annelids of the Pacific coast, with descriptions of new species. Pt. 1. The Euphrosynidae, Amphinomidae, Palmyridae, Polynoidae and Sigalionidae. Calif. Acad. Sci., Proc., (ser. 3, Zool)1: 153-198, pls. 5-10.

1901. The Polychaeta of the Puget Sound region. Boston Soc. Nat. Hist., Proc., 29: 381-437, pls. 1-19.

JOHNSTON, G.

1839-1840. Miscellanea Zoologica. Ann. Mag. Nat. Hist.: The British Aphroditaceae: (1)2: 424-441, pls. 21-23 (1839).

The British Nereides. (1). (1)3: 289-295, pl. 6 (1839).

The British Nereides. (2). (1)4: 224-232, pls. 6-7, (1840).

British Annelides. (1)4: 368-375, pls. 10-11, (1840).

Contributions towards a history of the Irish Annelides. (1)5: 168-179, 9 figs.; 305-309, pl. 5, (1840).

1865. A catalogue of the British non-parasitical worms in the collection of the British Museum. London, 365 pp., 20 pls.

JONES, M.L.

1961. Two new polychaetes of the families Pilargidae and Capitellidae from the Gulf of Mexico. Amer. Mus. Novitat., 2049: 1-18, 27 figs.

1963. Four new species of Magelona (Annelida, Polychaeta) and a redescription of Magelona longicornis Johnson. Amer. Mus. Novitat., 2164: 1-31, 72 figs.

KINBERG, J.G.H.

1855, 1857. Nya slägten och arter af Annelider. Svenska Vet. Akad., Oefv. Foerh., 12: 381-388, 1855; 14: 11-14, 1857.

1865-1867. Annulata nova. Svenska Vet. Akad., Oefv. Foerh., 21: 559-574, 1865; 22: 167-179, 1866; 22: 239-258, 1866; 23: 337-357, 1867.

1910. Annulater. In K. Svenska fregatten Eugenies resa omkring jorden... Uppsala and Stockholm. 2(Zool. VII): 33-78, pls. 9-29.

KIRKEGAARD, J.B.

1956. Benthic Polychaeta from depths exceeding 6000 meters. In Galathea Report; sci. res. of the Danish Deep-Sea Exped. round the world 1950-52. Copenhagen. 2: 63-78, 13 figs, 1 table.

1959. The Polychaeta of West Africa. Pt. I. Sedentary species. In Atlantide-report; scientific results of the Danish Expedition to the Coasts of Tropical West Africa, 1945-1946. Copenhagen. 5: 7-117, 25 figs.

KITAMORI, R.

1960. Description of two new species of Pilargiidae (Annelida: Polychaeta) from the Seto-Inland Sea. Jap. Soc. Sci. Fish., Bull., 26: 1086-1090, 2 figs.

KNOX, G.A.

1960. Biological results of the Chatham Islands 1954 Expedition. Part 3. Polychaeta Errantia. New Zealand Oceanogr. Inst., Mem., 6: 77-143, 238 figs.

KOELLIKER, A.

1858. Ueber Kopfkiemer mit Augen an den Kiemen. Zeits. wiss. Zool., 9: 536-541.

KRÖYER, H.

1856. Meddelelser af Ormeslaegten Sabella, isaer dens nordiske Arter. Danske Vid. Selsk., Ov. Forh., 1856: 1-36.

LAMARCK, J.B.

1801. Système des animaux sans vertèbres ou tableau général des classes, des ordres et des genres de ces animaux... précédé du discours d'ouverture du cours de zoologie, donné dans la Muséum national d'histoire naturelle l'an 8 de la République. Paris, Deterville, VIII and 432 pp.

LANGERHANS, P.

1881. Ueber einige canarische Anneliden. Deut. Akad. Naturf., Nova Acta, 42: 93-124, 2 pls.

LARSON, R.L., H.W. MENARD and S.M. SMITH

1968. Gulf of California: A result of ocean-floor spreading and transform faulting. Science, 161: 781-784, 3 figs.

LAUBIER, L.

1962. Quelques annélides polychètes de la lagune de Venise; description de Prionospio caspersi n. sp. Vie et Milieu, 13: 123-159, 3 figs.

1967. Sur quelques Aricidea (Polychètes, Paraonidae) de Banyuls-sur-Mer. Vie et Milieu (Sér. A: Biol. Mar.)18: 99-132, 9 figs.

LEACH, W.E.

1816. Vermes Polychaeta. Encycl. Brit. Suppl. Ed. 4, 6: 451-452.

LEIDY, J.

1855. Contributions towards a knowledge of the marine invertebrate fauna of the coasts of Rhode Island and New Jersey. Acad. Nat. Sci. Phila., Jour., (Ser. 2)3: 135-152, pls. 10-11.

LEUCKART, R.

1849. Zur Kenntniss der Fauna von Island. Arch. Naturgesch., 15(1): 149-208, pl. 3.

LEVENSTEIN, R.

1961. Manybristled worms (Polychaeta) from deep water from the Bering Sea. (In Russian.) Akad. Nauk SSSR, Inst. Okeanol., Trudy, 46: 147-178, 10 figs., 1 table.

LEVINSEN, G.M.R.

1883. Systematisk-geografisk oversigt over de nordiske Annulata, Gephyrea, Chaetognathi og Balanoglossi. Dansk Naturh. Foren., Vidensk. Medd., Part I: pp. 160-250, pl. 7; Part II: pp. 92-348, pls. 2-3.

LINNAEUS, C.

1735. Systema naturae, sive regna tria naturae systematice proposita per classes, ordines, genera, et species. Lugduni Batavorum. [11] pp.

1748. Systema naturae... Editio sexta... Stockholmiae. 224[27]pp., 8 pls.

1758. Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus differentiis, synonymis, locis... Ed. 10. Holmiae. vol. 1, 824 pp.

1766-1768. Systema naturae...Editio duodecima reformata. Holmiae. 3 vols., illus.

1788. Systema naturae, sive regna tria naturae systematice...Editio decima tertia, aucta, reformata, cura J.F. Gmelin. Lipsiae. 1(6) Vermes: 3021-3910.

McINTOSH, W.C.

1885. Report on the Annelida Polychaeta collected by H.M.S. CHALLENGER during the years 1873-76. In Great Britain, Challenger Reports, Zool. [Edinburgh, etc.] 12: 1-554, pls. 1-55 and 1A-39A.

1914. Notes from the Gatty Marine Laboratory, St. Andrews, no. 36: 2. On some of the species of Prionospio Malmgren; 3. On the British Amphictenidae; 4. On the British Ampharetidae. Ann. Mag. Nat. Hist., (8)13: 80-110, 2 pls.

1922. Notes from the Gatty Marine Laboratory, St. Andrews, no. 44: 1. On new and rare Polychaeta, Gephyrea, etc., from various regions; 2. Recent additions to the British marine Polychaeta (continued). Ann. Mag. Nat. Hist., (9): 1-30, pls. 1-3.

MALM, A.W.

1874. Annulater i hafvet utmed Sverges vestkust och omkring Göteborg. Göteborg Vetensk-Samh., Handl., (n.s.)14: 69-105, 1 pl.

MALMGREN, A.J.

1865-1866. Nordiska Hafs-Annulater. Svenska Vetensk. Akad., Oefv. Förh., 22: 51-110, 181-192, pls. 8-15; 22: 355-410, pls. 18-29. Abst.: Amer. Jour. Sci., (2)42: 284-285, 1865.

1867. Annulata Polychaeta Spetsbergiae, Grönlandiae, Islandiae et Scandinaviae hactenus cognita. Svenska Vetensk. Akad., Oefv. Förh., 24: 127-235, pls. 2-15.

MARENZELLER, E. von

1879, 1884. Südjapanische Anneliden. I and II. Akad. Wiss. Wien, Math.-Nat. Kl., Denkschr., 41(2): 109-154, pls. 1-6, 1879; 49(2): 197-224, 4 pls. 1884.

1890. Annulaten des Beringsmeeres. Vienna, Naturhist. Hofmus., Ann., 5: 1-8, 1 pl.

1902. Südjapanische Anneliden. III. Aphroditea, Eunicea. Akad. Wiss. Wien, Math.-Nat. Kl., Denkschr., 72: 563-582, pls. 1-3.

MENARD, H.W.

1964. Marine geology of the Pacific. New York, McGraw-Hill Book Company. X and 271 pp., map, illus.

MESNIL, F. and P. FAUVEL

1939. Polychètes sédentaires de l'expédition du SIBOGA; Maldanidae, Cirratulidae, Capitellidae, Sabellidae et Serpulidae. In Siboga-Exped., Leiden, 24(2): 1-42, 12 figs.

MONRO, C.C.A.

1928. On the Polychaeta collected by Dr. Th. Mortensen off the coast of Panama. Dansk Naturh. Foren., Vidensk. Medd., 85: 75-103, 19 figs.

1930. Polychaete worms. In Discovery Reports. Cambridge. 2: 1-222, 91 figs.

1931. A new brackish-water polychaete from Rangoon, Nereis (Neanthes) meggitti, sp. n. Ann. Mag.

Nat. Hist., (10)8: 580-585, 6 figs.

1933a. The Polychaeta Errantia collected by Dr. C. Crossland at Colón in the Panama region and the Galapagos Islands during the expedition of the S.Y. 'ST. GEORGE'. Zool. Soc. London, Proc., 1933(1): 1-96, 36 figs.

1933b. The Polychaeta Sedentaria collected by Dr. C. Crossland at Colón in the Panama region and the Galapagos Islands during the expedition of the S.Y. 'ST. GEORGE'. Zool. Soc. London, Proc., 1933(2): 1039-1092, figs. 1-31.

1936. Polychaete worms II. In Discovery Reports. Cambridge. 12: 59-198, 34 figs.

1937. Polychaeta. In Sci. Rep. John Murray Exped., London. 4(8): 243-321, 28 figs.

1939. Polychaeta. In Rep. B.A.N.Z. Antarc. Res. Exped., 1929-1931. Adelaide. (ser. B)4(4): 89-156, 28 figs.

MOORE, D.G. and E.C. BUFFINGTON

1968. Transform faulting and growth of the Gulf of California since the Late Pliocene. Science, 161: 1238-1241.

MOORE, J.P.

1902. Descriptions of some new Polynoidae, with a list of other Polychaeta from North Greenland waters. Acad. Nat. Sci. Phila., Proc., 54: 258-278, pls. 13-14.

1903. Polychaeta from the coastal slope of Japan and from Kamchatka and Bering Sea. Acad. Nat. Sci. Phila., Proc., 55: 401-490, pls. 23-27.

1904. New Polychaeta from California. Acad. Nat. Sci. Phila., Proc., 56: 484-503, pls. 37-38.

1905a. New species of Polychaeta from the north Pacific, chiefly from Alaskan waters. Acad. Nat. Sci. Phila., Proc., 57: 525-554, pls. 34-36.

1905b. New species of Ampharetidae and Terebellidae from the north Pacific. Acad. Nat. Sci. Phila., Proc., 57: 846-860, pl. 44.

1906. Additional new species of Polychaeta from the north Pacific. Acad. Nat. Sci. Phila., Proc., 58: 217-260, pls. 10-12.

1907. Descriptions of new species of spioniform annelids. Acad. Nat. Sci. Phila., Proc., 59: 195-207, pls. 15-16.

1908. Some polychaetous annelids of the northern Pacific coast of North America. Acad. Nat. Sci. Phila., Proc., 60: 321-364.

1909. The polychaetous annelids dredged by the U.S.S. ALBATROSS off the coast of southern California in 1904. I. Syllidae, Sphaerodoridae, Hesionidae, and Phyllodocidae. Acad. Nat. Sci. Phila., Proc., 61: 321-351, pls. 15-16.

1910. The polychaetous annelids dredged by the U.S.S. ALBATROSS off the coast of southern California in 1904: II. Polynoidae, Aphroditidae and Segaleonidae [sic]. Acad. Nat. Sci. Phila., Proc., 62: 328-402, pls. 28-33.

1911. The polychaetous annelids dredged by the U.S.S. ALBATROSS off the coast of southern California in 1904: III. Euphrosynidae to Goniadidae. Acad. Nat. Sci. Phila., Proc., 63: 234-318, pls. 15-21.

1923. The polychaetous annelids dredged by the U.S.S. ALBATROSS off the coast of southern California in 1904: IV. Spionidae to

Sabellariidae. Acad. Nat. Sci. Phila., Proc., 75: 179-259, pls. 17-18.

MUELLER, F.

1858. Einiges über die Annelidenfauna der Insel Santa Catharina an der brasilianischen Küste. Arch. Naturgesch., 24(1): 211-220, pls. 6-7.

MUELLER, O.F.

1776. Zoologiae Danicae Prodromus; seu animalium Daniae et Norvegiae indigenarum characteres, nomina et synonyma imprimis popularium. Havniae. XXXII and 274 pp., (plates, 1777).

1788, 1789, 1806. Zoologica Danica, seu Animalium Daniae et Norvegiae rariorum ac minus notorum descriptiones et historia. Havniae. 1: 1-52, 1788; 2: 1-56, 1788; 3: 1-71, 1789; 4: 1-46. Atlas, pp. 1-160, 1806.

NONATO, E.

1966. Anelídeos Poliquetas de Campanha Científica do Pesqueiro "Pescal II". São Paulo Univ., Inst. Oceanogr., Bol., 15: 65-74, 12 figs.

ÖRSTED, A.S.

1843. Annulatorum danicorum conspectus, Fasc. 1. Maricolae. Hafniae. 52 pp., 7 pls.

1844-1845. Fortegnelse over Dyr, samlede i Christianiafjord ved Drøbak fra 21-24 Juli, 1844. Naturh. Tidsskr., (2)1: 400-427, pl. 5.

OKUDA, S.

1935. Two brackish-water Polychaetes from Sakhalin. Annot. Zool. Japon., 15: 54-57, 3 figs.

OTTO, A.W.

1821. Animalium maritimorum nondum editorum genera duo. Acad. Leop.-Carol., Nova acta, Phys.-Med., 10(2): 617-634, 2 pls.

PALLAS, P.S.

1788. Marina varia nova et rariora. Acad. Imp. Sci. Petropol., Nova Acta, 2: 229-249, pl. 5.

PARKER, R.H.

1964a. Zoogeography and ecology of macro-invertebrates of Gulf of California and continental slope of western Mexico. In Andel, T.H. van and G.S. Shor, Jr., eds. Marine geology of the Gulf of California. Tulsa. Amer. Assn. Petr. Geol., Mem., 3: 331-376, 10 pls., 21 figs., tables.

1964b. Zoogeography and ecology of some macroinvertebrates, particularly mollusks, in the Gulf of California and the continental slope off Mexico. Dansk Naturh. Foren., Vidensk. Medd., 126: 1-178, 15 pls., 29 figs., 3 tables.

PETTIBONE, M.H.

1957. North American genera of the family Orbiniidae (Annelida: Polychaeta), with descriptions of new species. Wash. Acad. Sci., J., 47: 159-167, 4 figs.

1966. Revision of the Pilargidae (Annelida: Polychaeta), including descriptions of new species, and redescription of the pelagic Podarmus ploa Chamberlin (Polynoidae). U.S. Natl. Mus., Proc., 118(3525): 155-208, 26 figs.