POLYCHAETA ERRANTIA OF THE SIBOGA EXPEDITION

PART I

AMPHINOMIDAE

Siboga-Expeditie
XXIV[1]a

POLYCHAETA ERRANTIA OF THE SIBOGA EXPEDITION

BY

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PART I

AMPHINOMIDAE

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PART I

Family AMPHINOMIDAE.

The number of Amphinomidae, hitherto recorded from the Malay Archipelago, is very small and does not amount to more than eleven species and varieties, met with at the following localities:

Euphrosyne laureata Sav. Amboina (SEMON)[1]), Timor (WIENECKE)[2]).

Chloeia flava Pall. juv. (perhaps *Ch. fusca* Mc Int.) Amboina (SEMON)[1]), var. (Exp. of the Gazelle)[3]), Salawatti (idem), Arafura Sea? (Exp. of the Challenger)[4]), Banka (VOSMAER)[2]).

Chloeia fusca Mc Int. Banda (Exp. of the Challenger)[4]).

Notopygos crinitus Gr. (afterwards proved to be *N. sibogae* n. sp.) Amboina (LUDEKING)[2]).

Notopygos splendens Kinb. Amboina (SEMON)[1]).

Notopygos maculata Kinb. Amboina (BEDOT)[5]).

Notopygos labiatus Mc Int. Amboina (BEDOT)[5]).

Pherecardia lobata Horst.

(*Eucarunculata grubei* Malaq. et Deh. / *Amphinome sericata* Fischli.) Amboina (SEMON)[1]) and (BEDOT)[5]), Ternate (KÜKENTHAL)[6]).

Eurythoe complanata (Pall.).

(*Eurythoe alcyonia* Sav. / *Eurythoe pacifica* Kinb.) Amboina (SEMON)[1]), (HOEDT)[2]) and (BEDOT)[5]).

Eurythoe complanata (Pall.),

var. *levukaensis* Mc Int. Batjan (SEMON)[1]), Ternate (SEMON)[1]).

Amphinome (Eurythoe) incarunculata Pet. New Guinea (Exp. of the Gazelle)[3]).

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1) Zoolog. Forschungsreisen in Australien und dem Malayischen Archipel: Verzeichniss der von Prof. SEMON bei Amboina und Thursday island gesammelten Polychäten by COLLIN, 1902.

2) R. HORST, Contributions towards the knowledge of the Annelida Polychaeta; Notes from the Leyden Museum, Vol. VIII, 1886, p. 157, pls. 7 and 8.

3) GRUBE, Annelidenausbeute von S. M. S. Gazelle; Monatsber. d. K. Akad. d. Wissenschaften zu Berlin, 1877.

4) MC INTOSH, Annelida Polychaeta, Reports on the scientific results of the Voyage of H. M. S. Challenger. Zoology, Vol. XII, 1885.

5) MALAQUIN et DEHORNE, Annélides d'Amboine; Revue Suisse de Zoologie, Vol. XV, 1907, pls. 51—58.

6) FISCHLI, Polychäten von Ternate, gesammelt von KÜKENTHAL; Abhandl. Senckenb. Naturf. Gesellschaft, Bd XXV, 1903, pls. IV—VIII.

The Siboga expedition [1] however brought home no less than thirty-five species and varieties, among which there are twenty five new to science, viz.:

Euphrosyne affinis Horst.
Euphrosyne globosa n. sp.
Euphrosyne hystrix Horst.
Euphrosyne laureata Sav.
Euphrosyne longesetosa Horst.
Euphrosyne maculata Horst.
Euphrosyne mucosa Horst.
Euphrosyne obiensis Horst.
Euphrosyne pelagica Horst.
Euphrosyne pilosa Horst.
Euphrosyne sibogae Horst.
Euphrosyne superba Marenz.
Chlocia amphora Horst.
Chlocia conspicua Horst.
Chlocia flava (Pall.).
Chlocia flava var. *pulchella* Baird.
Chlocia fusca Mc Int.
Chlocia parva Baird.
Chlocia violacea Horst.
Bathychlocia sibogae Horst.
Notopygos cirratus Horst.
Notopygos gigas Horst.
?*Notopygos rayneri* (Baird).
Notopygos sibogae Horst.
Sangiria hystrix Horst.
Parachlocia marmorata n. g. n. sp.
Pherecardia lobata Horst.
Pherecardites parva n. g. n. sp.
?*Eurythoe chilensis* Kinb.
Eurythoe complanata (Pall.).
Eurythoe dubia n. sp.
Eurythoe parvecaruncnlata n. sp.
Benthoscolex coccus n. g. n. sp.
Amphinome nigrobranchiata n. sp.
Amphinome pulchra n. sp.

Only five species of this list (those marked with an asterisk) had already been mentioned from the Malay Archipelago, whereas five other ones (*Euphrosyne superba*, *Chlocia parva*, *Chlocia flava* var. *pulchella*, *Notopygos rayneri* and *Eurythoe chilensis*) were met with in neighbouring seas. Among the Annelida described as new, there are four species that were dregded at great depths, viz. *Bathychlocia sibogae* at a depth of 1158 m., *Sangiria hystrix* of 2053 m., *Pherecardites parva* of 397—1264 m. and *Benthoscolex coccus* of 694—794 m.; this is a very interesting result of the Siboga-investigations, as the Amphinomidae are chiefly inhabitants of shallow water and hitherto only three species had been discovered at great depths, viz. *Chlocia venusta* from 415 m., *Chlocia atlantica* from 2745 m. and *Paramphinome pulchella* Sars from 40 to 1080 m.[2]). Neither in the results of the expeditions of the Travailleur and Talisman[3]) nor in those of the Valdivia[4])

1. Incorporated with these are the Annelida collected by Mr. P. N. VAN KAMPEN, during his cruises with the Government-Steamer „de Lynx" in the years 1907 and 1908, and kindly placed by him at my disposal; moreover I mention some interesting species, collected by Mr. J. BOEKHOUDT, Dr. J. W. R. KORT, Mr. J. W. VAN NOUHUYS, a. o.
2. M. JOHNSTON, A Monograph of the British Annelids, Part II, 1900, p. 222.
3. [illegible] Les Annélides et Gephyriens : Expéditions scientifiques du „Travailleur et du Talisman" pendant les années 1880—1883. 1900.
4. [illegible] Die Tiefseefauna. Abtheilen aus den Sammlungen der deutschen Tiefsee-Expedition. 1908. pls. I—XXIII.

a single Amphinomid is mentioned as obtained at a great depth. However, the Siboga-expedition was fortunate enough to collect also in shallow water several new species, especially belonging to the genus *Euphrosyne*; it is not impossible that this rich harvest partly may be ascribed to the use of better appliances in the plankton-investigations.

The state of preservation of most of the worms was very good; in those from great depth the tissues appear to be softer and looser than in those from shallow water. As a mere description of Annelida without figures is almost of no value for a sure identification of the species, I am much indebted to the able pencil of Miss C. RITSEMA and Mr. CH. F. H. DUMONT, who endeavoured to render the structural details of several species as correct as possible.

Sub-family Euphrosyninae.

Body generally short, with few segments. The syncipital region of the head elongated and bending over the tip of the snout, partly ventral. Eyes both on the dorsal and ventral sides. An unpaired median tentacle and one pair of lateral ones, arising in front of the ventral eyes. Dorsal cirri two on each side, a lateral (dorsal) and a median (branchial) one. Branchiae generally several in a row on each segment. Two anal cirri.

Genus **Euphrosyne** Savigny.

The Siboga-expedition had the good luck to collect a rather great number of *Euphrosyne*-specimens, that only partly could be referred to the known species *E. laureata* Sav. and *E. superba* Marenz., whereas for the remaining ones ten new species must be established. Among these are some interesting small species (*E. affinis*, *E. hystrix*, *E. maculata*, *E. pelagica*, *E. pilosa*, *E. sibogae*) which, by the presence of enlarged eyes, elongated bristles in the neuropodium and a transparent body, show a marked pelagic character, the other species of this genus having a more sedentary manner of living, under stones and corals, upon roots of sea-plants etc. Whereas hitherto only a single species (*E. laureata*) was mentioned from the Malay Archipelago, thanks to the investigations of the Siboga-expedition the number of species from this part of the Indian Ocean now amounts to twelve. They may easily be identified by means of the following key:

Malayan species of *Euphrosyne*.

Branchiae present.	5 to 6 pairs	branchiae not ramose, cirriform		*E. pilosa* Horst.
		branchiae ramose; tips tapering.	not pelagic; ventral bristles of normal length.	*E. globosa* n. sp.
			pelagic; ventral bristles elongated.	*E. affinis* Horst.
	7 to 8 pairs	branchiae ramose; tips tapering.	not pelagic; ventral bristles of normal length.	*E. superba* Marenz. / *E. mucosa* Horst.
			pelagic; ventral bristles elongated.	*E. hystrix* Horst.
		branchiae ramose; tips expanded.	not pelagic; ventral bristles of normal length.	*E. laureata* Sav.
			pelagic; ventral bristles elongated.	*E. pelagica* Horst. / *E. sibogae* Horst.
	9 to 10 pairs	branchiae not ramose; dorsal bristles elongated.		*E. longesetosa* Horst.
		branchiae ramose; tips expanded		*E. obiensis* Horst.
	12 pairs of ramose branchiae, tips not expanded; pelagic			*E. maculata* Horst.

1. *Euphrosyne pilosa* Horst. Pl. I, figs. 1—6; Pl. VI, fig. 1.

HORST, Notes from the Leyden Museum, vol. XXIII, p. 220.

Stat. 40. Paternoster-islands. 3 specimens.

A slender, pelagic worm, measuring at the most $8^1/_2$ mm. in length and $2^1/_2$ mm. in breadth (without bristles), with six cylindrical, undivided branchiae on each side. The dorsal cirri situated in front of the branchiae, longer than these; the lateral one corresponding to the interval between the third and fourth branchiae. The dorsal fascicle contains ringent bristles of the type of *E. foliosa* and forked ones, with small spines on their shaft. Some of the ventral bristles slender and elongated, as long as two thirds of the breadth of the body. The caruncle three-lobed, extending till segment IV.

Among the numerous specimens of *E. sibogae* (see afterwards), collected with the townet near the Paternoster-islands, I found three individuals of an other species, immediately recognizable by the strong development of its bristles. The largest specimen measures $8^1/_2$ mm. in length and $2^1/_2$ mm. in breadth (the bristles not included); the diameter of its bare medio-dorsal field is about one third of the total breadth. The number of its segments amounts to 22. The caruncle (Pl. I, fig. 1) terminates in three cylindrical lobes, the middle one of which extends to segment IV, the lateral ones reaching only the third one. The unpaired tentacle, arising in front of the large dorsal orange-coloured eyes, is very long; with its slender terminal joint it stretches till the posterior end of the median caruncle-lobe. The ventral eyes are remoted from the front by an interval, which is about a third of the space between the frontal end and the mouth; the palp-plates are oblong, pyriform.

The dorsal region of each segment carries on both sides six cylindrical, undivided branchiae, the outermost of which is the shortest, about half as long as the other ones (Pl. I, fig. 2, *b*). In each branchia two large blood-vessels are visible, connected by a number of transverse branches and upward passing the one into the other at a rather great distance from the tip. The dorsal cirri (Pl. I, fig. 2, *d. c*) are long and slender, projecting beyond the branchiae; they stand in front of them, the lateral one corresponding to the interval between the third and fourth gill. There is a double row of forked bristles, provided with small spines on their shaft; they all are not of the same length and in the largest of them (Pl. I, fig. 3) the longest limb has a somewhat greater length in proportion to the shorter one than is the case in the smaller bristles. Moreover the dorsal series contains some ringent bristles (Pl. VI, fig. 1), with a very slender stalk, of the type of *E. foliosa*[1]); however the shortest limb in *E. pilosa* is more blunt, almost semilunar, and the longest limb with its inferior grooved

1) I think we can recognize two kinds of the remarkable serrated bristles, that characterize the genus *Euphrosyne* and that probably are different in each of its species (see Pl. VI); some of them (as in *E. borealis*) not much deviate from the common bifid bristle, by having both limbs of the fork only slightly bent and thickened, while in others (as in *E. foliosa*) the shortest limb of the fork is more or less club-shaped and the largest one strongly curved and enlarged. JOHNSON, in his "Pacific Coast Annelids", calls these bristles "ringent", what I think to be a very expressive name; they had already been compared by HASWELL (1879) with a bird's head. His statement, that in *E. mastersii* these ringent bristles should also be present in the ventral fascicle is probably a mistake, for it should be the first example, as far I am aware of.

portion follows the opposed curvature of the short one, whereas its upper extremity is bent backward. In the region where these bristles emerge from the body-wall, the cuticula has not only a granular structure, but, instead of being plane, it shows irregular conical protuberances around the bases of the bristles (Pl. I, fig. 4); I supposed that probably the upper cuticular layers were impregnated with calcic carbonate, but this cannot be the case, as the treatment with acids did not reveal any trace of carbonic acid. The neuropodium is provided with a rounded anterior lip[1]) and a rather long ventral cirrus; its fascicle contains two kinds of bifurcated bristles: *a* (Pl. I, fig. 5) slender ones, being as long as two thirds of the breadth of the body; they have both limbs nearly straight and the longest of them measures about five times the length of the shortest one: *b* (Pl. I, fig. 6) shorter bristles, with a thicker stalk, the largest limb of which is bent forward and is twice and a half as long as the shortest one. There are two small, flat, angular anal cirri.

In the presence of a three-lobed caruncle *E. pilosa* agrees with *E. triloba*, described by Ehlers (1887) from the coast of Florida; this species however lacks the extraordinarily elongated bristles of the neuropodium and is provided with eight pairs of ramose branchiae on each segment.

2. *Euphrosyne globosa* n. sp. Pl. I, figs. 7—9; Pl. VI, fig. 11.

Stat. 115. East side of Pajunga-island, Kwandang-bay (N. Celebes). Reef. 1 female specimen.
Stat. 313. Saleh-bay, north coast of Sumbawa. Reef. 1 female specimen.

A small Annelid of an oblong oval shape, with on each segment six pairs of branchiae, divided in several filaments, tapering at the tip, except those of the median gill, that are globularly dilated near their extremity (sexual character?). The lateral dorsal cirrus situated between the second and third branchiae. The transverse row of dorsal bristles in front of the region between the 2^{d} and 4th gill; ringent bristles of the type of *E. foliosa* gathered in a group in front of the region between the first and the second branchia. Caruncle extending till the fifth segment.

At Stat. 115 and 313, on the reef, a small *Euphrosyne* was found, containing ripe ova. The largest one has an oblong oval body of about 11 mm. in length and $4^{1}/_{2}$ mm. in breadth; its bare medio-dorsal field is rather narrow, about a fourth of the total breadth, and shows a faint reticular appearance. The number of its segments amounts to 22.

The caruncle reaches the anterior part of the fifth segment and has a rather broad median ridge, that is longitudinally folded: its eyes are not very large and in front of the dorsal ones a short, thick, unpaired tentacle arises, twice as long as the eyes and tapering posteriorly, whereas the ventral ones are flanked by a small antenna. There are two pyriform palp-plates in front of the mouth and its posterior border is bounded by a cordate lobe, folded longitudinally and wedged into the fourth and fifth segment. Each parapodium carries a transverse group of six branchial arbuscles (Pl. I, fig. 7) dichotomously divided in filaments, tapering at their distal extremity, except the median gill, the distal processes of which are

1 The illustrations of the neuropodium of *Euphrosyne* by different authors are very poor, representing the chaetiferous sac [illegible] I find in most of the species the anterior lip very well developed, more or less auriculate.

globularly dilated at a short distance beneath the tip; I think it not improbable, that this afterwards may prove to be a sexual character, because both specimens contained mature ova. The lateral dorsal cirrus is situated between the second and third branchiae and is a trifle longer than these; the median cirrus is about as long as the corresponding branchia. In front of the region between the 2^{d} and 4th gills a double series of forked bristles arises, the longest of which project somewhat beyond their tips, whereas the shortest ones only reach about half the length of the gills; the first named ones have their long limb somewhat bent backward and it measures 2$^{1}/_{2}$ times the length of the short one. There are numerous ringent chaetae of the type of *E. foliosa*, situated in a group in front of the interval between the first and second branchia (Pl. VI, fig. 11). The neuropodial fascicle consists of bifid bristles of different length, but not projecting beyond the gills; their longest limb is faintly curved forward and measures five times the length of the short one. The ventral cirrus is slender, but does not reach the extremity of the corresponding setae.

3. *Euphrosyne affinis* Horst. Pl. II, figs. 1—6; Pl. VI, fig. 2.

HORST, loc. cit. p. 219.

? Stat. 37. Sailus ketjil, Paternoster-islands. 1 badly preserved specimen.
Stat. 40. Anchorage off Pulu Kawassang, Paternoster-islands. 5 specimens.

A small, pelagic worm, measuring 8$^{1}/_{2}$ mm. in length and 2$^{1}/_{2}$ mm. in breadth (the bristles not included), with six sparingly branched gills, the filaments of which are somewhat tapering towards the tip. Lateral dorsal cirrus between the second and third branchiae, as long as these. In front of the branchiae a double row of forked bristles; ringent bristles, of the type of *E. foliosa*, crowded in a median group, corresponding to the interval between the dorsal cirri. Ventral bristles partly elongated and slender. Caruncle extending over four segments; its median keel reaching the anterior part of segment V.

Besides the preceding species, five individuals of an other pelagic *Euphrosyne* were found among the swarm of *E. sibogae*, collected near the Paternoster-islands. They are characterized by a slender body, tapering at its anterior and posterior extremities. The length of the largest specimen is 8$^{1}/_{2}$ mm., its breadth 2$^{1}/_{2}$ mm. (without the bristles). The bare medio-dorsal field is rather broad, almost a third of the total breadth. The number of its segments amounts to 28. The caruncle has an oval shape and is about twice as long as broad; it extends over four segments, the median keel reaching the fifth one. There are large eyes at the dorsal and ventral side of the caruncle; in front of the former the unpaired tentacle is inserted, with a small conical terminal joint, stretching only a little beyond the eyes. The palp-plates are oblong, pyriform.

Each parapodium (Pl. II, fig. 1) carries a series of six branchial arbuscles; some of them consist of a single, rather stout stem, dividing at its upper extremity in five or six terminal filaments, while others have the main stem dichotomously divided in branches, which carry the terminal filaments. These filaments are not expanded at the tip, but rather somewhat tapering. The lateral dorsal cirrus is situated between the second and third branchiae

and nearly as long as these; the median one is shorter. Both cirri as well as the gills are characterized by the presence of numerous small bodies, highly refracting the light. In front of the branchiae a double series of forked bristles projects; the shortest of them (Pl. II, fig. 2), situated most anteriorly, have their longest limb curved backward, about four times as long as the short one. In the longest bristles however (Pl. II, fig. 3), situated in a posterior series, the longest limb is more straight and measures about five times the short one. The ringent chaetae (Pl. VI, fig. 2) are gathered in a median group, corresponding to the interval between the median and lateral dorsal cirri; they are of the type of *E. foliosa*, like those of *E. pilosa*, but their shortest limb is not so blunt and the tip of the longest one, in stead of being bent backward, shows a forward curvature.

The neuropodium shows a rounded triangular anterior lip and is provided with a rather long and slender cirrus. Its fascicle contains three kinds of bifurcated chaetae: *a* (Pl. II, fig. 4), the shortest ones, which are faintly forked and have the short limb only represented by a spur; *b* (Pl. II, fig. 5), these are about twice as long and broad as the first ones, and have the longest limb slightly curved, with a faint notch near the tip, whereas the short one is pointed and measures about a fourth of the longest limb; *c* (Pl. II, fig. 6), slender, elongated bristles, with the longest limb nearly straight, serrated near the tip and about six times as long as the short one. The anal cirri are two small rounded plates, with a straight, median border; in one specimen their transverse diameter is longer than the longitudinal one, in an other specimen both plates were coalesced.

This species is nearly allied to *E. globosa*.

4. *Euphrosyne hystrix* Horst. Pl. II, figs. 7—11; Pl. VI, fig. 3.

HORST, loc. cit. p. 219.

Stat. 37. Sailus ketjil. 2 specimens.

A small pelagic worm, of a squat shape, measuring $5^1/_2$ mm. in length, and about 2 mm. in breadth; each segment provided with seven pairs of stout, dichotomously branched gills, the terminal filaments of which are not dilated at the tip. Lateral dorsal cirrus between the second and third gills, not quite as long as these. In front of the branchiae a transverse series of forked bristles, the median ones of which extend from both sides over the bare medio-dorsal field; ringent bristles of the type of *E. foliosa*. Ventral bristles partly elongated and slender, half as long as the breadth of the body. Caruncle rather broad, reaching segment V.

Near Sailus ketjil two small specimens of an *Euphrosyne*-species were collected with the townet, which species, though closely allied to *E. affinis*, cannot be identified with it. The body has a squat shape and measures in the largest specimen $5^1/_2$ mm. in length and about 2 mm. in breadth. The bare medio-dorsal field is very narrow, hardly visible by the dorsal bristles, from both sides bending over it. The number of segments amounts to 29.

The caruncle is rather broad and reaches the fifth segment; its median keel hardly extends beyond the lateral lobes. There are large dorsal and ventral eyes; the unpaired conical

tentacle, inserted between the former of them, has a short terminal joint and does not stretch far beyond the eyes. The palp-plates are pyriform. Each parapodium carries seven branchial arbuscles, with a short, stout stem, dichotomously branched and terminating in numerous filaments, not expanded at the tip. The lateral dorsal cirrus, situated between the second and third branchiae, is not so long as these. In front of the branchiae a series of stout, bifid bristles projects from the dorsum; they are yellow-coloured and the longest median ones of both sides are crossing each other over the bare dorsal field and the caruncle. There are two kinds of them, long and short ones, which however agree very well in shape and have the shortest limb measuring about a third of the long one (Pl. II, fig. 8). The ringent chaetae (Pl. VI, fig. 3) appear to be very rare; I could only detect a single one at one side, in the vicinity of the medio-dorsal field. It is of the type of *E. foliosa*, with the shortest limb rather slender, not much enlarged; the smooth tip of the longest limb is about half as long as its concave, grooved portion [1]).

The neuropodium has an anterior lip of a rounded, triangular shape and its fascicle contains three kinds of bristles, *a*: short ones, faintly forked, with only a rudiment of a second limb (Pl. II, fig. 9); *b*: somewhat longer than the preceding ones, distinctly forked, with a short limb, measuring about a fourth of the long one (Pl. II, fig. 10); *c*: elongated ones, vitreous, with a long, serrated limb, about six times as long as the short one (Pl. II, fig. 11). The anal cirri are two small plates, rounded or faintly cordate.

5. *Euphrosyne mucosa* Horst. Pl. III, figs. 2—4; Pl. VI, fig. 4.

HORST, loc. cit. p. 218.

Stat. 109. Pulu Tongkil, Sulu-archipelago. 13 M. Lithothamnion-bottom. 1 female specimen.

A small Annelid, with an oblong oval body, about 7 mm. long and 4 mm. broad (with the bristles). On each side of the dorsum eight branchial arbuscles, strongly branched, with filaments not expanded at the tip. The lateral dorsal cirrus opposite to the third branchia, about as long as this. In front of the branchiae a double series of forked bristles; ringent chaetae of the type of *E. foliosa*. Caruncle with a thick, cylindrical, median ridge, extending to the anterior region of segment V.

At Station 109, in the Sulu-archipelago, at a depth of 13 M., a small *Euphrosyne* was dredged, the upper side of its body covered with much mucus and containing ripe ova. The oblong oval body has a length of about 7 mm., whereas its breadth measures 4 mm., the bristles included. The bare medio-dorsal field is narrow, its diameter being only one eighth of the breadth of the body. The number of its segments amounts to 27. The caruncle is rather broad and reaches the anterior region of the fifth segment; it consists of a thick, cylindrical median ridge and two plane lateral lobes, which are somewhat narrower. The eyes are not

1) EHLERS' suggestion (1901, p. 37), that in *E. armadilloides* the ringent chaetae should be entirely absent, therefore appears to me not without doubt; for, when there are only few of these bristles in each segment, they are easily overlooked, as is already stated in my description of a specimen of *E. laureata* from Timor (1886, p. 172).

very large, in front of the dorsal ones a short, thick, unpaired tentacle arises, furnished with a small terminal joint and measuring a fourth of the total length of the caruncle. The ventral eyes are flanked by a small antenna. The palp-plates in front of the mouth are two oval lobes, extending over the first and second segment; at its posterior border the mouth is bounded by a cordate plate, folded longitudinally and inclosed within the median field of the third and fourth segment.

Each parapodium carries a transverse group of eight stout branchial arbuscles (Pl. III, fig. 2), not arranged in a single series, but some of them in front of the other ones; their short stem divides in numerous cylindrical processes, which are not dilated at the tip. The lateral dorsal cirrus, situated opposite to the third gill, has about the same length as this; the median cirrus is somewhat shorter. In front of the branchiae a double series of forked bristles projects, the longest of which extend somewhat beyond their tips, whereas the shortest ones only reach half the length of the gills; the forks of those bristles are vitreous, impregnated with calcium carbonate, and, in the longest of them (Pl. III, fig. 3), the length of the short limb measures about a fifth of the long one. There are numerous ringent chaetae of the type of *E. foliosa* (Pl. VI, fig. 4). The neuropodium has an ear-shaped anterior lip and contains a fascicle of bifid bristles (Pl. III, fig. 4, *a*, *b*, *c*) of different length, but not stretching far beyond the gills: their longest limb is faintly curved, about four times as long as the short one.

The anal cirri are two short, oval plates.

Though already several *Euphrosyne*-species (*E. aurantiaca*, *E. borealis*, *E. superba* and *E. ceylonica*) are described with eight pairs of branchiae on each segment, the filaments of which are not expanded at the tip, the Siboga-specimen however could not be identified with one of these. In the three first-named species the lateral dorsal cirrus is situated between the third and fourth branchiae; moreover the ringent chaetae of *E. borealis* and *E. superba* have an other shape, their longest limb being only faintly curved and the short one hardly enlarged. *E. ceylonica* also is distinguished by ringent chaetae of an other feature and by the manner of their being gathered in a median group.

6. *Euphrosyne superba* Marenz.

E. von Marenzeller, Südjapanische Anneliden, Denkschr. Math.-Naturw. Cl. K. Akad. Wissensch. Wien. Bd. XLI. 1879. p. 2. Pl. I, figs. 1 and 1*a*.

Stat. 12. 7° 15′ Lat. S., 115° 15′.6 Long. E. Bali Sea. Depth 289 M.; mud. 1 specimen.

An Annelid of squat shape, with on each segment seven to eight pairs of branchiae, that are divided in numerous filaments, not dilated at the tip. The lateral dorsal cirrus situated between the third and fourth branchiae. The transverse row of dorsal bristles in front of the six median gills; ringent chaetae of the type of *E. borealis*. Caruncle extending to segment VI.

Though the Siboga-specimen is much smaller than the specimen, described by von Marenzeller, it agrees nearly in all other regards with his description, so I think it to be identical with this species. The length of its body is about 34 mm., whereas the specimen of

Japan measures 60 mm. in length; the breadth of the Siboga-specimen is 15 mm., that of the Japanese worm 23 mm. The number of segments of our specimen is only 40, whereas von Marenzeller mentions 48. In the Siboga-specimen the diameter of the bare medio-dorsal field is only $1^1/_2$ mm., half as broad as in that from Japan. Also with regard to the number of branchiae our specimen shows some difference, as I could recognize but seven pairs of them in stead of eight (v. Marenzeller); however the seventh gill is already dichotomously divided at its base, and can easily be split in two distinct ones, so I think this a discrepancy of little importance. Moore also found only 7 pairs of branchiae to each somite in a specimen from Suruga-bay (Proc. Acad. Nat. Sc. Philadelphia, 1903, p. 426). Marenzeller utters some doubt about the true nature of the branchial processes of the dorsum; though by the observations of Mc Intosh (1885, p. 3) and St. Joseph (1888, p. 191) this uncertainty was rather well put aside, I think that our investigations about *E. pilosa* will now settle this question definitively. Von Marenzeller's statement, that the ordinary bifid bristles of the notopodium and those of the neuropodium should be identical, is not quite right.

7. *Euphrosyne laureata* Sav. Pl. VI, fig. 10.

J. C. Savigny, Système des Annelides, p. 63, Pl. II, fig 1.

Stat. 115. East side of Pajunga-island, Kwandang-bay (N. Celebes). Reef. 2 specimens.
Stat. 127. Taruna-bay, Great-Sangir-island. Reef. 1 specimen.
Stat. 131. Beo, Karakelang-islands. Reef. 1 specimen.
Stat. 144. North of Salomakiëe (Damar)-island. Reef. 1 specimen.
Stat. 152. Wunoh-bay, N.W.-coast of Waigeu-island. 1 specimen.

An Annelid of elongated shape, with on each segment seven to eight pairs of branchiae, divided in numerous filaments, that are foliaceously dilated at the tip. The lateral dorsal cirrus situated between the second and third branchiae. The transverse row of dorsal bristles in front of the three to four median gills; ringent bristles of the type of *E. foliosa* gathered in a group in front of the median branchia. Caruncle extending over five segments.

Euphrosyne laureata appears to be widely distributed in the Malay Archipelago, for it was collected by the Siboga-expedition on the reefs of five different Stations and it was already mentioned by myself in 1885 from Timor; moreover Savigny's specimens came from the Red Sea and Semper found it near the Philippines (Grube 1878, p. 11). The largest specimen, collected at Station 127, measures 32 mm. in length and $12^1/_2$ mm. in breadth (the branchiae included) and has 38 segments, whereas the specimen mentioned by Savigny has a length of 50 mm. and a breadth of 25 mm., the number of its segments amounting to 41. The specimen of the Philippines has, according to Grube, only 35 segments and measured $26^1/_2$ mm. in length. The bare medio-dorsal field is somewhat narrower than the latero-dorsal part, covered with branchiae. The caruncle, as already stated by Grube, extends over five segments till the anterior margin of segment VI, whereas according to Savigny's illustrations it should only reach the fourth ring; its lateral lobes, with an undulated border, commence from the inter-segmental groove between the first and second ring. The ventral eyes and the adjoining tentacles

though small and overlooked by SAVIGNY as well as by GRUBE, are plainly visible. The notopodium of this species according to SAVIGNY's description, is provided with seven branchial arbuscles, the filaments of which have foliaceous dilatations at the tip; however in my description of the Timor-specimen it was already stated, that at the external end of the series an eighth gill can be seen, often so small, that it easily may be overlooked.

The dorsal fascicle of setae, according to SAVIGNY, is rather narrow and does only extend till the third median gill; however in most of the Siboga-specimens it is somewhat broader and reaches the fourth branchia. It contains two kinds of bristles, for besides the ordinary bifid ones, there are other setae, nearly half as long, that show only a trace of the second limb. Also the ringent setae are not wanting in *E. laurcata* and were already figured in my paper on the Timor-specimen; however this worm being in an indifferent state of preservation I was not able to determine their exact situation. In the Siboga-specimens I find them always densely crowded together in a group of about ten, in the region of the median branchia; they (Pl. VI, fig. 10) are of the type of *E. foliosa*, with the plain tip of their long limb rather short and blunt, faintly curved backward; their short limb is moderately dilated. In one specimen the slender stalk of these bristles showed small, oval, clear spots, perhaps pits; they were also observed in the ventral setae, but it is not a common appearance. The ventral fascicle besides the ordinary bifid bristles, also contains some shorter ones, that are not forked and that only show a trace of the second limb.

8. *Euphrosyne pelagica* Horst. Pl. III, figs. 5, 6*a*, 6*b*, 7*a*, 7*b*, 7*c*; Pl. VI, fig. 5

HORST, loc. cit. p. 217.

Stat. 40. Paternoster-islands. 4 specimens.
? Stat. 105. 6°8′ Lat. N., 121°19′ Long. E. Sulu Sea. Depth 275 M.; coralbottom. 1 young specimen.

A small pelagic Annelid, measuring at the most 8 mm. in length and $2^1/_2$ mm. in breadth, provided on each segment with seven pairs of short, stout branchial arbuscles, which are dichotomously divided and carry on the tip a tuft of 3 to 6 digitate processes. Lateral dorsal cirrus situated between the second and third branchiae, nearly as long as these. In front of the branchiae a double row of forked bristles; among them some ringent chaetae of the type of *E. borealis*. Ventral bristles partly slender and elongated, as long as half the breadth of the body. Caruncle with an elevated median keel, extending over four segments.

Among the numerous *Euphrosyne*-specimens collected near the Paternoster-islands, I met with some individuals of a small species, already recognizable to the naked eye by their transverse series of dark brownish gills. The largest specimen measures about 8 mm. in length, its breadth being $2^1/_2$ mm., without the bristles, projecting beyond the body as far as half its diameter. The breadth of the bare dorso-median field is about one fourth of that of the body. The number of segments amounts to 30.

The caruncle extends over four segments; it has an elevated median keel, stretching sowewhat beyond the lateral lobes. There are large, oval eyes, at the dorsal as well as at the

ventral side of the caruncle; in front of the former the unpaired tentacle is inserted, with a short, conical terminal joint, stretching not far beyond the eyes. In front of the oral orifice there are two oblong, oval palp-plates; its posterior margin is divided by grooves in six digitate lobes. Each parapodium (Pl. III, fig. 5) is provided with seven branchial arbuscles, with a short, stout stem, dividing at half its length in two branches, which carry on their tip a tuft of 3 to 6 digitate processes. The median dorsal cirrus is short, conical, not so long as the branchiae; the lateral one, situated in the interval between the second and third branchiae, is more slender, especially in its terminal portion and projects a little beyond the branchiae. In front of the branchiae a double row of bifid bristles projects; the posterior of these are the longest (Pl. III, fig. 6*a*), stretching a good deal beyond the branchiae, and have a short limb, that measures about a fourth of the long one. The bristles of the anterior series (Pl. III, fig. 6*b*) are not much longer than the branchiae and have a blunt, short limb, measuring only a fifth of the long one. In the median portion of this dorsal row some ringent bristles of the type of *E. borealis* (Pl. VI, fig. 5) are present; their longest limb is about twice as long as the short one and only grooved in its inferior half.

The neuropodium possesses rounded lips and is furnished with a rather long, slender ventral cirrus; its fascicle shows three kinds of bristles, differring not only in their length, but also in the shape of their bifurcated end. The shortest of them (Pl. III, fig. 7*a*), of about the same length as the ventral cirrus, have a short limb like a spur, whereas the longer one is nearly straight, conical; the second kind of bristles (Pl. III, fig. 7*b*) are about twice as long as the preceding ones, with the longest limb faintly bent, serrated at the tip, and the short one measuring about a fourth of the long limb; the bristles of the third kind (Pl. III, fig. 7*c*) have about double the length of the preceding ones, but are more slender and terminate in a fork, the longest limb of which is faintly serrated and nearly six times as long as the short one.

The anal cirri are two small, oval appendages.

9. *Euphrosyne sibogae* Horst. Pl. III, fig. 1; Pl. IV, figs. 1, 2, 3*a*, 3*b*, 3*c*; Pl. VI, fig. 6.

HORST, loc. cit. p. 216.

Stat. 40. Paternoster-islands. 50 specimens.

A small pelagic Annelid, measuring at the most 10 mm. in length, and 3 mm. in breadth (the bristles not included); each segment with seven to eight pairs of highly branched gills, the terminal processes of which are elliptically expanded at the tip. The lateral dorsal cirrus, situated between the second and third branchiae, longer than these; the median one somewhat shorter. The dorsal row of bristles in front of the five median branchial arbuscles; ringent setae of the type of *E. foliosa*. Ventral bristles partly slender and elongated. Caruncle narrow, extending till segment VI.

In the vicinity of the Paternoster-islands, numerous specimens of a pelagic *Euphrosyne* were collected with the townet. They could not be identified with one of the known species. The largest of them have a length of about 10 mm., and a breadth of 3 mm. (the bristles not

included), the specimens however are not only of a different size, but the proportion of their dimensions is also very variable according to their state of contraction. The bare medio-dorsal field in some specimens is very narrow, hardly visible, in other ones its diameter measures a third of the breadth of the body. The number of the segments amounts to 26.

The caruncle (Pl. III, fig. 1) is oblong and narrow, its breadth measuring about one fourth of its length; it extends over five segments and reaches the anterior part of the sixth one. In front of the large dorsal eyes, situated in the anterior half of the caruncle, a cylindrical cirrus with a short conical joint is inserted, stretching not far beyond them. The eyes on the ventral side of the caruncle are also exceedingly developed. The oral orifice is bordered in front by a pair of pyriform palp-lobes, joining each other in the middle. Each parapodium (Pl. IV, fig. 1) carries seven to eight branchial arbuscles, with a short, stout stem dichotomously dividing in several branches, that are elliptically dilated at the tips; this expanded extremity differs in structure from the remaining portion of the gill, and contains a group of thick-walled cells of a yellowish tint, highly refracting the light, that are probably of a glandular nature and secrete mucus.

The lateral dorsal cirrus, placed between the second and third branchiae, is slender and projects a great deal beyond the tips of the gills, whereas the median one is much shorter. In front of the five median branchiae there is a single series of bifid bristles, somewhat longer than these; they have a short limb of about a fourth of the length of the long one, that is furnished with a vitreous tip (Pl. IV, fig. 2). Among them are some ringent setae of the type of *E. foliosa* (Pl. VI, fig. 6); they have the short limb strongly enlarged and curved, whereas the long one has its inferior grooved part bent over it, its plain, triangular, superior extremity being directed upward. The neuropodium has a rounded triangular anterior lip and is furnished with a slender, ventral cirrus; as in other pelagic species its fascicle contains three kinds of bristles, *a*: short ones, with a blunt extremity and a tubercle, not far from the tip, as a rudiment of the short limb (Pl. IV, fig. 3*a*); *b*: longer ones, plainly bifurcated, with a long, faintly curved limb, about four times as long as the short one (Pl. IV, fig. 3*b*); *c*: slender, elongated bristles, as long as the ventral distance between the neuropodia; they have the long limb nearly straight, faintly serrated, about six times as long as the short one (Pl. IV, fig. 3*c*). The anal cirri have a semicircular shape.

10. *Euphrosyne longesetosa* Horst. Pl. V, figs. 1, 2, 3, 4; Pl. VI, fig. 7.

Horst, loc. cit. p. 215.

Stat. 310. 8° 30′ Lat. S., 119° 7′.5 Long. E. Flores Sea. Depth 73 M. Sand with dead coral. 1 specimen.

Stat. 315. Anchorage east of Sailus Besar, Paternoster-islands. Depth up to 36 M. Coral and lithothamnion. 1 specimen.

A small worm, measuring 10 mm. in length, and 6 mm. in breadth (the bristles included); with ten pairs of cirriform branchiae on each segment. The lateral dorsal cirrus, situated between the second and third branchiae, somewhat longer than these. In front of the gills a transverse series of bifid bristles, some of which have an enormous length, being thrice as long

as the short ones; ringent bristles of the type of *E. foliosa*. Ventral bristles shorter than the largest dorsal ones. Caruncle three-lobed, extending with its median keel till segment V.

At station 310 and 315, an *Euphrosyne*-species was dredged, obvious by the enormous length of its dorsal bristles. Its body has an oblong, oval shape, not much narrowed at its posterior end. The largest specimen measures about 10 mm. in length, its breadth being 6 mm., the bristles included. The diameter of the bare medio-dorsal region is about one fourth of the breadth of the body. The number of segments amounts to 24. The specimen of Stat. 315 only measures $5^1/_2$ mm. in length.

The caruncle is three-lobed; it consists of a broad, elevated keel, extending till the anterior half of segment V, and of two lateral bands, reaching the posterior margin of the fourth segment. The eyes are small; the stout, unpaired tentacle, inserted between them, has a long, slender terminal joint, stretching as far as the end of the lateral bands. In front of the oral orifice there are two pyriform palp-plates, directed forward with their narrow end; its posterior margin is bordered by a wedgeshaped lobe, lying in the middle of the ventral region of segments III and IV. Each parapodium (Pl. V, fig. 1) carries ten cirriform branchiae; the eight lateral ones stay crowded next to each other, whereas the two median gills are separated by a rather great distance. Both dorsal cirri are somewhat longer than the branchiae; the lateral one of them is situated between the second and third gill. The dorsal fascicle contains two kinds of forked bristles. Some of them (Pl. V, fig. 2), placed in a single series directly in front of the branchiae, are nearly as long as these and have their shaft covered with small, triangular spines; their longest limb is about thrice as long as the short one. Among these bristles are ringent setae of the type of *E. foliosa*, of nearly the same length (Pl. VI, fig. 7); they have a slender shaft, and the plain, superior half of their longer limb is nearly vertical, making a sharp angle with their curved and grooved inferior part. In front of this series there is another row of stout bristles (Pl. V, fig. 3), thrice as long as the preceding, vitreous and impregnated with calcium carbonate over their total length or only at the forked tip; their longest limb is three to four times longer than the short one. The neuropodium has an auricular anterior lip, and is furnished with a slender ventral cirrus; its fascicle contains forked bristles of different length (Pl. V, fig. 4), the longest of which however measure only two thirds of the length of the long setae of the notopodium. The anal cirri are two small oval plates.

Hitherto no species of *Euphrosyne* was known, provided with such a great number of cirriform branchiae.

11. *Euphrosyne obiensis* Horst. Pl. IV, figs. 4—6; Pl. VI, fig. 8.

HORST, loc. cit. p. 215.

Stat. 142. Laiwui, Obi major; reef. 1 specimen.

An Annelid of moderate size, about 30 mm. long and 10 mm. broad; each segment with nine pairs of short, stout, highly ramose branchial arbuscles, the branches of which are

dilated at the tip. Lateral dorsal cirrus, situated between the second and third gills, as long as these, the median one, heavy, somewhat shorter. Dorsal series of forked bristles in front of the four median gills; ringent setae, of the type of *E. foliosa*, gathered in a median group. Carunele with an undulated margin and an elevated, median keel, extending over five segments.

On the reef near Laiwui (Obi major) an *Euphrosyne*-specimen was collected, that I first thought to be identical with *E. Mastersii* Hasw. from Darnley-island, agreeing with it in several charakters, f. i. the number of branchiae etc. The oblong, oval body, strongly bent by the preservation in spirits, measures about 30 mm. in length, its breadth being 10 mm. The bare median field of the dorsum is somewhat narrower than its lateral parts, that are covered with branchiae, and measures about $2^1/_2$ mm. in diameter; its surface is divided in a number of polygonal area's and shows on the middle of each segment a spot of dark pigment. The number of its segments amounts to 41.

The caruncle, extending over five segments, has an oblong oval shape, but suddenly becomes narrower in the region of the eyes and like a wedge-shaped lobe of about a fourth of its total length it pushes between the two anterior segments; it has an undulated margin and an elevated median keel. In front of the eyes a short, thick antenna is inserted, measuring only twice the diameter of the eyes and provided with a short terminal joint. In front of the oral orifice two long, pyriform lobes are visible, extending between the first, second and third segments; its posterior margin is bordered by a longitudinally folded, triangular lobe, lying in the middle of the ventral region of segments IV and V.

Each parapodium (Pl. IV, fig. 4) carries a series of nine branchial arbuscles with a short stout stem, directly dividing dichotomously after its origin, the numerous branches of which are not very long and elliptically expanded at the tip. The lateral dorsal cirrus is situated between the second and third gills, having about the same length as these; the median one is blunt and somewhat shorter. The double row of forked bristles (Pl. IV, fig. 5), placed in front of the branchiae, does not reach farther than the fourth gill; the longest of them project a good deal beyond the branchiae, whereas the shortest ones are hardly as long as these. The ringent setae (Pl. VI, fig. 8), of the type of *E. foliosa*, are gathered in a median group; they have a stout, blunt short limb, and the long one, with its inferior grooved part, bending over it, has only a small, plain superior extremity, triangular and somewhat directed backward.

The neuropodium has a rounded, auricular anterior lip and a fascicle of stout, bifurcated bristles, the long limb of which measures about five times the short one (Pl. IV, fig 6).

As already stated above, I first thought our specimen to be identical with *E. Mastersii*, which is about of the same size (one inch), and presents also nine or ten ramose branchiae, which form dendroidal masses, with slightly expanded terminal twigs. However Haswell's paper (1879) is not accompanied by any figure, which are yet indispensable especially for the identification of the ringent setae: moreover his description contains some statements, that make the identity of the species rather doubtful. F. i. he describes the terminal twigs to be phylloid, a definition that certainly is not applicable to the branchiae of the Siboga-specimen; also the proportion between the breadth and the length of *E. Mastersii* differs from that in our specimen.

12. *Euphrosyne maculata* Horst. Pl. IV, fig. 7; Pl. V, figs. 5—7; Pl. VI, fig. 9.

HORST, loc. cit. p. 214.

Stat. 296. Noimini-bay, South-coast of Timor. 1 specimen.

A slender, pelagic Annelid, measuring 25 mm. in length and 7 mm. in breadth. Each segment carrying twelve pairs of ramose branchiae, with a spot of black pigment on their stem and with filaments that are not expanded at the tip. The lateral dorsal cirrus situated between the second and third gill. A series of dorsal bristles in front of the ten median branchiae; ringent setae of the type of *E. foliosa*. The ventral bristles partly slender and elongate. Caruncle extending till segment V.

A pelagic Annelid of moderate size, with a slender body, measuring 25 mm. in length and 7 mm. in breadth. The number of its segments amounts to 40. The bare medio-dorsal field has a diameter of $1^1/_2$ mm.; it is irregularly wrinkled, with a lozenge-shaped area in the middle, especially obvious in the posterior half of the body. Its ventral side shows densely crowded, undulated longitudinal grooves, except on a narrow mesial band. The bristles are of a white colour.

The caruncle (Pl. IV, fig. 7) is oblong and extends to the middle of the fifth segment; its posterior half is broader and consists of two lateral lobes and a median, elevated keel, reaching the anterior margin of segment VI. Along the base of this keel, on both sides, there is a band of black pigment. The caruncle carries at its dorsal and ventral sides a pair of rather large eyes. The median tentacle, arising between the dorsal eyes, is furnished with a short terminal joint and measures but one fourth of the total length of the caruncle; the ventral eyes are flanked on each side by a short antenna.

Each parapodium (Pl. V, fig. 5) is provided with twelve branchial arbuscles; they consist of a short, main stem, that is marked with a black spot and dichotomously divided into numerous branches, which are not dilated at the tip. The lateral cirrus is situated between the second and third branchiae and is only a trifle shorter than these; the median cirrus, though contracted, appears to be somewhat shorter and carries also a black spot like the gills do. In front of the ten median branchiae a row of forked bristles (Pl. V, fig. 6) projects, most of these shorter than, some as long as the branchiae; their longest limb is impregnated with calcium carbonate and shows longitudinal stripes. Among them are some ringent setae (Pl. VI, fig. 9) of the type of *E. foliosa*, with a slender fork, the longest limb of which is not strongly curved.

The neuropodium has an auricular anterior lip and is provided with a rather short ventral cirrus. Its fascicle contains three kinds of bifurcated bristles, *a*: (Pl. V, fig. 7*a*) short, stout ones, in which the short limb of the fork is only represented by a spur; *b*: (Pl. V, fig. 7*b*) longer ones, that have the long faintly curved limb three to five times longer than the short one; *c*: (Pl. V, fig. 7*c*) slender, elongated bristles, as long as the distance between the neuropodium and the ventral mesial line, with their longest limb nearly straight, five to six times longer than the short one.

The anal cirri are two oblong oval appendages, coloured over two thirds of their length by a brownish pigment, in the pattern of a V.

The only species, hitherto known, which is provided with more than ten branchiae on each side of the dorsum, is *E. capensis* Kinb. (*E. polybranchia* Schmarda), subsequently described by Kinberg[1]), Schmarda[2]), Grube[3]) (from St. Paul) and Mc Intosh[4]); in this species however the caruncle reaches the eighth segment, the branchiae have their filaments elliptically dilated at the tip and the ringent setae are of the type of *E. borealis*.

Sub-family Amphinominae.

Body short or elongate, generally with numerous segments. The syncipital region of the head dorsal, usually with two pairs of eyes. An unpaired median tentacle and two pairs of lateral ones. Dorsal cirri one or two on each side. A single branchia on each segment, simple or ramified. One or two anal cirri.

Genus **Chloeia** Savigny.

Body oval. Caruncle composed of a plaited crest, arising from a horizontal plate, folded along its margin. Pinnated branchiae. All bristles more or less bifurcated; the ventral ones smooth, those of the dorsal fascicle in some anterior segments smooth, in those of the posterior body-region serrated along the outer border. Two anal cirri sausage- or finger-shaped. Anus in the last segment.

1. *Chloeia flava* (Pallas). Pl. VII, fig. 2.

Stat. 162. Between Loslos and Broken-islands. 1 specimen.

It is a surprising fact, that this species, that may be considered as a common Indian worm, is represented in the Siboga-material by a fragment only, consisting of some anterior body-segments. Hitherto it was met with in a region, extending from Salawatti westward till Ceylon, while northward it was found near the Philippines and the Coast of Japan[5]). In the narrative of the cruise of the "Gazelle", we find mentioned, that it was also found near Cape Verd; however this locality appears to me very dubious or perhaps it concerns an individual accidentally went astray like the specimen of *Hermodice caruncula ta* met with near Doggersbank by the "Valdivia". Mc Intosh, in a critical account of the synonymy of this species, pointed out that *Chl. incerta* Qtrf. as well as *Chl. tumida* Baird must be identified with this species; certainly the confusion must be ascribed for a great part to the investigation of specimens preserved during a long period, in which not only the original colour nearly totally disappeared,

1) Kinberg, 1857, p. 14.
2) Schmarda, 1861, p. 136, Pl. XXXIII, figs. 264—287.
3) Grube, 1867, p. 6, Pl. I. fig. 1.
4) Mc Intosh, 1885, p. 1, Pl. II, fig. 5 and Pl. I A, figs. 1—3.
5) Eucleta from the coastal slope of Japan: Moore, Proc. Ac. Nat. Sc. of Philadelphia, 1903, p. 401.

but also the bristles were remarkably disorganized. So, f. i., a specimen of *Chl. flava* in the Leyden Museum, brought home from Japan by VON SIEBOLD, has lost all the dorsal spots. After the addition of hydrochloric acid the dorsal bristles do not only show a strong development of carbonic acid, proving that these setae contain a great deal of calcareous matter, but at the end of the reaction they have lost all their serrations, that appear to consist only of carbonate of lime [1]). Therefore I think it not improbable, that in the preserving fluid of old, during many years preserved specimens, traces of an acid may have been developed, by the action of which the serrations of the dorsal setae are totally dissolved. In the collections of the Leyden Museum there is a specimen from the port of Singapore, that has been preserved for some time in formaline and now possesses only s m o o t h bristles. Also the *Chloeia flava*, characterized by QUATREFAGES [2]) "remus superus setis l a e v i b u s" may be explained in this manner. The serrated bristles in the dorsal fascicle are commencing with the fifth segment.

2. *Chloeia flava*, var. *pulchella* Baird. Pl. VII, fig. 3.

? *Chloeia pulchella* Baird, Monograph of the Amphinomacea: Journ. of the Linnean Society, Zoology, Vol. X, 1870, p. 234.

Stat. 162. Between Loslos and Broken-islands. 2 specimens.
Stat. 258. Tual anchorage, Kei-islands. 1 specimen.

With this name Mr. BAIRD has indicated a couple of *Chloeia*-specimens, found on the reefs of the north-east coast of Australia and charakterized by "macula a n g u s t a nigra in medio segmentorum". According to MC INTOSH (loc. cit. p. 9) they must be identified with *Chl. flava* and therefore they probably represent young individuals of this species. At the above-named stations the "Siboga" collected three specimens, agreeing in so many regards with BAIRD's description, that, in my opinion, they must be identified with his species. The largest of the Siboga-specimens has a length of 40 mm. and the number of its segments amounts to 32; the two other specimens are about half as large. All have the dorsum strongly wrinkled and a dark narrow oval spot on the middle of the posterior half of each segment (Pl. VII, fig. 3), sometimes surrounded by a white border; moreover there is a dark band running over the front side of each parapodium. The dorsal cirri are dark coloured, especially in their basal part. There occurs an undulated dark line over the middle of the caruncle; also the labial folds show a dusk hue. The bristles are pale yellow and in their appearance they are so much agreeing with those of *Chl. flava*, that our specimens can only be considered to belong to a variety of that species. The serrated bristles of the dorsal fascicle are also commencing with the 5th segment.

3. *Chloeia parva* Baird. Pl. VII, fig. 4; Pl. VIII, figs. 1—3.
(*Chl. merguiensis* Bedd.).

BAIRD, loc. cit. p. 233, Pl. IV, figs. 8*a* and *b*.
HORST, loc. cit. 1886, p. 167.
BEDDARD, Journ. Linnean Soc. (Zoology), Vol. XXI, 1889, p. 258, Pl. 21, figs. 2, 8 and 9.

1) Already observed by MC INTOSH with the bristles of *Chl. fucata* (*venusta* Qtrf.): Trans. Zool. Soc. Vol. IX, 1877, p. 396.
2) Hist. nat. des Annelés, p. 387.

South-west coast of Dutch New Guinea. Expedition of the Dutch geographical Society, 1904, Dr. KOCH. 8 specimens.
Road of Semarang: P. BUITENDIJK, July 1908 and Dec. 1910. 8 specimens.
Aru-bay, East coast of Sumatra: J. W. VAN NOUHUYS. 2 specimens.
Bay of Batavia: P. BUITENDIJK, March 1911. 1 specimen.

Our largest specimen has a length of 70 mm., whereas the number of its segments amounts to 37; the smallest specimen measures only 22 mm. The body, tapering in breadth posteriorly, has a pale wine-red colour. Each segment bears on the middle of the dorsum a violet Y-shaped spot, the limbs of which are extending at the right and the left over the preceding segment in front of the gills and the parapodium (Pl. VII, fig. 4). Usually the spot does not reach the posterior border of the segment; when this really happens, the marking can acquire the shape of an anchor, like in the worm of the Utrecht Museum, described in my above-named paper. A faint coloured band runs behind the gills and along the posterior side of the notopodium. A violet stripe occurs over the middle of the caruncle and the main stem of the branchiae; the dorsal cirri are dark coloured in their basal part, paler distally. The caruncle extends till upon the anterior part of the 5th segment; its median crest consists of 22 to 23 folds. The unpaired antenna hardly reaches to half the length of the caruncle. The first branchia is situated on the 4th segment. The bristles are not yellow like in *Chl. flava*, but have a yellow-red hue, especially those of the neuropodium. The neuropodium bears a thick fascicle of slender, capillary bristles (Pl. VIII, fig. 3), with a shortly bifurcated tip, the short branch more resembling a tooth (BAIRD). The notopodial setae are much stronger, serrated, with harpoon-shaped teeth below the apex and not bifurcated but only provided with a very small, pointed spur (Pl. VIII, fig. 1); this could only be observed in fresh specimens, preserved in formaline. The tip of these bristles has a translucent, vitreous appearance, whereas the shaft has a yellow-red hue. In the anterior five segments the setae are bifurcated, but they want the teeth; these appear at first in the bristles of the 6th or 7th segment. The posterior body-segments possess only serrated and some quite smooth bristles (Pl. VIII, fig. 2). BAIRD, who first described *Chloeia parva*, had at his disposal only a small specimen, 25 mm. in length, the locality of which was unknown; nevertheless I do not hesitate to identify our worms with his species. I think that also two specimens from Aru-bay (East Sumatra), collected by VAN NOUHUYS, belong to this species, though the bristles are too much disorganized to recognize their true nature; also the red body-colour was quite lost.

4. *Chloeia conspicua* Horst. Pl. VII, fig. 5; Pl. VIII, figs. 4 and 5.

HORST, On the genus Chloeia etc.: Notes Leyden Museum, Vol. XXXII, 1910, p. 173.

West-coast of Atjeh, Sumatra: C. F. KRUISINGA, Aug. 1893 and W. BAERTS, 1895. 4 specimens.
Dirk de Vries-bay, South-coast of Java: P. N. VAN KAMPEN, Dec. 1909. 1 specimen.

The largest specimen has a length of 65 mm., its greatest breadth (without bristles) being 13 mm.; the number of its segments amounts to 37. The body is more slender than that of *Chl. flava*; specimens of this worm of about the same size are much broader (18 mm.) than those of *Chl. conspicua*. The ground-colour is yellowish grey, nearly white, but there are

distinct markings on the dorsum (Pl. VII, fig. 5). Here each segment shows a violet longitudinal stripe, somewhat narrower in the middle of its length and interrupted in the intersegmental grooves. On both sides this stripe is accompanied by a >-shaped band, including thus a rhomboid area on the middle of the back, from which laterally a dark band emerges, that runs along the anterior side of the parapodium and the distal end of which becomes visible at the ventral side of some anterior segments. A similar band extends from the base of each branchia towards the notopodium, and another one over the frontal side of the neuropodium, just over the origin of the bristle-fascicle. The dorsal cirri, posteriorly increasing in length, are dark violet except a short basal part, that only is coloured at its anterior side; the ventral cirri are colourless. An undulated dark stripe runs over the middle of the caruncle, that extends till upon the 4th segment. The unpaired antenna violet, almost as long as the caruncle; the paired antennae colourless, the posterior ones reaching to half the length of the caruncle, the anterior pair shorter. The anterior three segments with a pair of cirrus-like, colourless branchiae; their notopodial cirri with a dark, dorsal stripe. The branchiae commence upon the 4th segment; their main stem and branches are violet, the secondary pinnae ferrugineous. The palps with a dark line over their anterior part, just where they are lying against one another; the margin of the mouth marked with small longitudinal stripes.

The bristles elongate, of a pale yellow-red colour in the Java-specimen, in the specimens from Atjeh golden-yellow. The ventral setae slender, bifurcated with a short limb having more the charakter of a spine (Pl. VIII, fig. 5); the dorsal bristles of the 6th segment and those of the following ones stouter, serrated, with a hardly visible spur (Pl. VIII, fig. 4).

This species is closely allied to *Chl. parva*; however it could not be identified with one of the known species of *Chloeia*.

5. *Chloeia amphora* Horst. Pl. VII, fig. 6; Pl. VIII, figs. 6 and 7.

HORST, loc. cit. Vol. XXXII, p. 172.

Stat. 104. Sulu-harbour. Depth 14 M. 1 specimen.
Stat. 240. Banda-anchorage. Depth 9—45 M. 2 specimens. Reef. 1 specimen.
Stat. 303. Haingsisi, Samau-island. Depth 36 M. 1 specimen.
Nassi Bezaar, Strait of Malacca: P. N. VAN KAMPEN, 1908. 1 specimen.

The length of the largest specimen is 26 mm., its greatest breadth (without bristles) 7 mm.; the number of its segments amounts to 26. The smallest specimen measures only 16 mm. The body is somewhat heavy, not tapering posteriorly, of a buff colour; the bristles are pale yellow. The skin of the dorsum is wrinkled; here each segment shows in the middle a violet spot, somewhat resembling a roman *amphora*, surrounded by a white band (Pl. VII, fig. 6). Moreover in the anterior segment an oblique band is visible, running over the frontside of the parapodium. A violet stripe runs over the middle of the caruncle; the labial folds are dusky. The dorsal cirri are dark violet, the ventral ones colourless. The caruncle bears about 20 lateral folds and extends till upon the anterior border of the 4th segment. The unpaired antenna does not reach the posterior end of the caruncle; of the paired antennae the superior ones are about half as long as the unpaired, the inferior ones are much shorter. The anal cirri are rather long,

finger-shaped. The first branchia lies upon segment IV; in the smallest specimen, that from Sulu harbour, they are remarkably large.

The ventral bristles (Pl. VIII, fig. 7) are slender, with bifurcated tip; their short limb measures about the half of the long one. The dorsal bristles (Pl. VIII, fig. 6) of the 7th segment and the following ones are only slightly stouter, with a blunt spur and with the long limb serrated along its exterior border; they show a great resemblance to the dorsal setae of *Chl. flava*. However, I think there is a charakteristic difference between the ventral bristles of both species, those of *Chl. amphora* having the limbs more pointed and more slender than in *Chl. flava*; moreover the number of lateral folds of the caruncle appears to be greater in the last-named species.

6. *Chlocia violacea* Horst. Pl. VII, fig. 8; Pl. VIII, figs. 8—11.

HORST, loc. cit. Vol. XXXII, p. 174.

Stat. 47. Bay of Bima. 1 young specimen.
Stat. 164. East of Misool. 1 specimen.
Stat. 174. Waru-bay, Ceram. 1 specimen.
Stat. 204. 4° 20′ Lat. S., 122° 58′ Long. E. Between Wowoni and Buton. 1 young specimen.
Stat. 260. 5° 36′.5 Lat. S., 132° 55′.2 Long. E. Near Kei-islands. Depth 90 M. 1 specimen.

A small slender worm, measuring only 22 mm. in length, its greatest breadth (without bristles) in the anterior third of the body being only 5 mm.; the number of its segments amounts to 26. The body has a greyish brown colour; the bristles are yellow. Each segment has in the middle of its dorsum a violet spot, shaped like an inverted T, the horizontal limb of which just corresponds to the posterior border of the segment. The main stem of the branchiae and the dorsal cirri are dark violet, and also a violet stripe runs over the middle of the caruncle. The caruncle reaches till upon the 4th segment; the unpaired antenna extends beyond its posterior end, and the paired antennae too are rather long. The mouth seems to be limited posteriorly by the 2d segment, that is strongly folded in the middle. The ventral cirrus of the second segment is extraordinarily elongated, being about twice as long as that of the following segments (Pl. VIII, fig. 8). There are two long, tapering anal cirri. The first branchia occurs on the 4th segment. The ventral bristles (Pl. VIII, fig. 11) are slender, capillary, bifurcated; their shortest limb measures about a fifth of the length of the long one. The dorsal bristles of the anterior segments are stouter, also bifurcated, but the short limb measures only a third of the long one (Pl. VIII, fig. 10); in the 9th segment and in the following ones these bristles have the long limb serrulated along its exterior border (Pl. VIII, fig. 9). These specimens could not be identified with one of the described species of *Chlocia*.

7. *Chlocia fusca* Mc Int. Pl. VII, fig. 7.

W. C. MC INTOSH, Annelida Polychaeta, 1885, p. 14, Pl. II, figs. 1, 2; Pl. I A, figs. 14, 15, Pl. II A, figs. 1, 2.
F. A. POTTS, Polychaeta of the Indian Ocean, The Percy Sladen Trust-expedition in 1905; Trans. Linn. Soc. (2) Vol. XII, Zoology, 1907—09, p. 356, Pl. 45, figs. 1, 2.

Stat. 37. Paternoster-islands. Pelagic. 3 specimens.
Stat. 66. Bank between islands of Bahuluwang and Tambolungan. Depth 7 to 8 M. 3 young specimens.
Stat. 99. N. Ubian, Sulu-archipelago. 2 specimens.
Stat. 104. Sulu-harbour. 1 specimen.
Stat. 240. Banda-anchorage. Depth 9—45 M. 17 specimens. Reef. 1 specimen.
Stat. 251. Kei-islands. 1 specimen.

This fine little *Chloeia* has first been collected by the Challenger-expedition near Banda and is described by Mc Intosh, who had only a single badly preserved specimen at his disposal; his description therefore remained somewhat incomplete, but was afterwards accomplished by Potts, who examined several specimens found near the Amirante-islands by the Percy Sladen Trust-expedition.

The length of the largest Siboga-specimen is 20 mm.; the number of its segments amounts to 25. The colour is usually pale brown, buff, in some specimens dusky brown as stated by Mc Intosh, its palps being somewhat darker; examined however with the microscope this brown appears to be stippled with small violet dots. Over the middle of the dorsum, in the space between the branchiae, there occurs a pale band, in which a couple of longitudinal parallel lines is situated next to one another (Pl. VII, fig. 7); with the worms from the Amirante-islands these stripes appear to be much thinner, whence may be concluded, that they perhaps represent a variety. Also over the ventral middle there runs a pale stripe, in which lies a dark line, that is continued along the internal side of both anal cirri. Moreover the anterior part of the cephalic lobe has a dusky hue, like the two posterior antennae; also the caruncle does not appear quite colourless, at least upon the lateral sides a number of pale, parallel transverse stripes could be observed. External and parallel to the longitudinal stripes the dorsum bears a row of orange-coloured crescentic markings, each of which is connected with a dark band running over the front-side of the parapodium; also the dorsal cirrus has a dark-violet colour, except in its basal and distal part. The main stem of the gills is tinged with orange, their primary branches with violet. Bristles with a yellow tinge.

The caruncle, with a crest consisting of 16 lamellae or folds, extends till on the 4th segment; in front of it arises the median tentacle, that is nearly of the same length or somewhat longer. However in the young specimens (St. 66) it extends only to $^2/_3$ of the length of the caruncle. The branchiae commence on the 5th segment [1]), whereas on the anterior four segments they are replaced by a cirrus-like appendage (in figure 1 of Pl. II of the Challenger-report, by a mistake of the artist, the first branchia is placed on the 4th segment; also in other regards this figure is rather inaccurate, for the above-named cirrus-like appendages are wanting on the anterior four segments and, as is rightly stated by Potts, the short anal cirri are figured as a pair of long slender styles). Each gill has 7 to 8 alternating branches, more strongly developed at one side than at the other; the superior of these do not bear secundary pinnae.

The bristles of the neuropodium emerge from a fissure-like groove, bounded by a pair

1) Potts (loc. cit.) described from the western part of the Indian Ocean three other small *Chlocia*-species (*Chlocia rosea*, *Chlocia longisetosa* and *Chloeia maculata*) nearly allied to *Chl. fusca* and having also the first gill on the fifth segment. It appears to me somewhat doubtful whether his *Chloeia maculata* can be ranged among the genus *Chlocia*, because it has the ventral bristles and some dorsal ones serrated along the inner edge of the long limb; it also has the anal cirri rather longer than in the other species.

of convex lips, at the distal end of this groove the ventral cirrus is situated upon a short basal joint. The ventral fascicle, much stronger than the dorsal one, consists mainly of bifurcated bristles, of which some have their distal end tinged with yellow, as rightly stated by Mc Intosh; however in its anterior row a number of stout plain bristles are visible, measuring hardly a fourth of the length of the longer ones of this fascicle. The notopodium has a conical posterior lip, from which the dorsal cirrus arises; its anterior lip is plain, somewhat concave. The dorsal fascicle of the anterior 10 segments contains smooth bifurcated bristles, like as the ventral one, however they are less slender and their shortest limb measures about a fourth of the length of the longer one. In their distal end they show very conspicuous grains and some of them are tinged with yellow. Moreover in this species the dorsal fascicle contains some characteristic long slender bristles, in which the difference of length between the two limbs is much greater than in the foregoing (Challenger-report, Pl. 1A, fig. 14). In the segments behind the 10th one the dorsal fascicle shows a third kind of the bristles, with the long limb serrated along its outer edge, as is also recognized by Mc Intosh. In the posterior body-segments of *Chl. fusca* the dorsal fascicle consists of only the two last-named kinds of bristles and wants entirely the usual bifurcated ones. It is proved hereby, that von Marenzeller's supposition, that the anterior four segments should differ from the following ones by the presence of only smooth bristles[1]), does not hold for all the species of *Chlocia*.

Among the worms catched with the tow-net near the Paternoster-islands there is a gigantic specimen, measuring 37 mm. in length; its eyes are extraordinarily developed and coalesced, whereas in the dorsal fascicles the long and slender bristles are prevailing.

8. *Chlocia* sp. Pl. VII, fig. 9.

Stat. 303. Haingsisi, Samau-island. Depth 36 M. 1 specimen.

A very young specimen, not longer than 3 mm., consisting of only 12 segments; it is distinguished not only by its conspicuous marking, but also by the length of its bristles and of its dorsal cirri, that are longer than half the body-length. There is a row of small black spots on both sides of the median dorsal line, each spot being situated just upon the base of a branchia; moreover a similar smaller spot lies in front of the neuropodium. All the bristles are yellow and bifurcated, somewhat resembling those of *Bathychlocia* (see afterwards); the ventral ones are smooth, their short limb measuring about a third of the longer one, those of the dorsal fascicles whether smooth or serrated along the outer border. The caruncle extends till upon the fourth segment, that bears the first branchia.

Stat. 4. Anchorage off Djangkar (Java). Depth 9 M. 4 specimens.

The longest specimen measures only 10 mm., and consists of about 20 segments. Their body is nearly colourless, pale yellow-red; the dorsal cirri and the main stem of the branchiae are pale violet. The bristles are vitreous, those of the dorsal fascicle somewhat resembling those

1) Polychaeten des Grundes, Denkschr. d. Mathem.-Naturw. Classe d. K. Acad. d. Wissensch. Wien, Bd. LX, 1893. p. 3.

of *Chl. fusca*. The caruncle extends to the third segment; the median antenna is somewhat shorter. The branchiae commence on the 4th segment.

Stat. 51. Madura-bay, in Molo-strait. 1 specimen.

Perhaps a young specimen of *Chl. violacea*, with a similar marking on the dorsum of the segments; it has a length of 7 mm. and consists of about 20 segments.

Genus **Bathychloeia** Horst.

Branchiae bipinnate like in *Chloeia*; first pair, on the fifth body-segment, much larger than those of the following ones. Eyes absent. Ventral bristles along the inner border coarsely denticulated.

1. *Bathychloeia sibogae* Horst. Pl. VIII, figs. 12—17.

HORST, loc. cit. Vol. XXXII, p. 175.

Stat. 211. 5°40'.7 Lat. S., 120°45'.5 Long. E. Banda-Sea. Depth 1158 M. 1 specimen.

The length of the single specimen is $7^1/_2$ mm., its greatest breadth 3 mm.; the number of its segments amounts to 16. The body (Pl. VIII, fig. 12) has an elongated oval shape, tapering posteriorly; it is colourless except the anterior part of the prostomium, that is dark black with a pale margin. This black colour is also visible at the ventral side, as a triangular spot, situated between the distal part of the palps (Pl. VIII, fig. 13); the surface of the latter is covered with small black dots, that are caused by pale brown granules, lying in the distal end of the long, cylindrical cells, that compose the outer layer of those organs. The bristles are pale yellow, opalescent, in the posterior segments strongly elongated, dorsally as well as ventrally, and surrounding the anal extremity with a hairy envelopment. The caruncle extends backward till upon the third segment and shows 10 to 12 loose, indistinct folds; the median tentacle hardly reaches to half its length. No eyes are visible. The mouth seems to be limited posteriorly by the 2d segment, that is longitudinally folded in the middle (Pl. VIII, fig. 13). The branchiae are small, consisting of a main stem and four plain lateral branches, except the first pair, that is situated on the 5th segment; these are strongly developed, extending over two segments and bear six ramified lateral branches. In the anterior segments the branchiae are supplied by a rather long cirrus-like appendage. The dorsal cirri are very slender, not quite as long as the tuft of setae; the ventral cirri rather long, with an enlarged basal part. The anal cirri are tapering, as long as the two posterior segments. The bristles much resemble those of *Chloenea atlantica* [1]), also dredged at a great depth (2745 M.); those of the ventral fascicle (Pl. VIII, fig. 14) are very slender, bifurcated, the short limb more resembling a tooth, whereas the long limb has its inner border slightly convex and coarsely serrated. The dorsal bristles are thicker, their short limb measuring about a fourth of the long one; beyond the fork the last one is somewhat curved outward and faintly serrated along its inner border (Pl. VIII, fig. 15).

1) Annel. polychaeta, p. 15, Pl. I, fig. 4; Pl. 1A, figs. 10—13.

In the segments behind the 6th one there occur also other bristles, having their outer border furnished with regular serrations (Pl. VIII, fig. 17), whereas the inner one is smooth; another set of bristles appears to be quite smooth (Pl. VIII, fig. 16).

The genus *Chloeia* M'Int. (not Kinberg), established by Mc Intosh for another deep-sea form of the *Chloeia*-group, though in many regards agreeing with *Bathychloeia*, is sufficiently distinguished by the uniformity of its branchiae and by the presence of a branchial cirrus, besides the dorsal one, on each parapodium.

Genus **Notopygos** Grube (*Lirione* Kinberg).

Body oval. Caruncle composed of a plaited crest, arising from a horizontal plate, folded along its margin. Branchiae ramified, not pinnate. An accessory cirrus at the proximal side of each branchia. All bristles bifurcated, smooth or denticulated; those of one or more anterior segments always denticulated along the inner border of their long limb. Two anal cirri, club-shaped, consisting of a reversed conical stalk and a semiglobular terminal piece. Anus dorsal, at some distance from the last segment.

1. *Notopygos gigas* Horst. Pl. IX, figs. 1—3.

Horst, loc. cit. Vol. XXXIII, p. 244.

Stat. 296. Anchorage off Noimini (South-coast of Timor), surface. 9 specimens.

The body has an oblong oval shape and a length from 45 to 75 mm., whereas the number of segments amounts from 33 to 36. The colour is pale buff, in the middle of the dorsum brown or violet, irregularly interrupted by a great number of white lines, crossing each other in various directions; a dark band occurs around the base of each notopodium and also the main stem of the branchiae is dusky coloured. Moreover the horizontal plate of the caruncle as well as the palpi have a dark hue and the accessory cirri of the anterior segments show a violet stripe. Over the dorsal side of each segment there runs a transverse groove, dividing it in an anterior and a posterior area; the last one is transversely folded or strongly wrinkled, but the anterior area is smooth and usually divided in three triangular fields, a median one and two lateral ones. Over the middle of the ventral side there runs a couple of dark parallel longitudinal lines.

The caruncle consists of a plaited crest arising from a horizontal plate, that is furnished on each side along its margin with 30 folds: it extends till upon the anterior part of the 6th segment and is rounded posteriorly, not straightly cut off like in *Notop. labiatus* according to the figure of Malaquin and Dehorne[1]). The unpaired antenna is short, measuring about a third of the caruncle; the anterior pair of eyes larger than the posterior one. The mouth seems to be limited posteriorly by the 4th segment, that is strongly folded in its middle. The anus is situated on the anterior part of segment 25, usually upon the top of a conical papilla. The branchiae commence on the 5th segment; each of them consists of three large stems, branching dichotomously after their origin. The dorsal cirrus, arising behind the notopodial bristle-fascicle,

1 Malaquin & Antheaume: Revue Suisse de Zoologie, t. XV, 1907. Pl. 53, fig. 16.

does not reach till its distal extremity and consists of a rather thick brownish coloured, basal part, and a thinner terminal part. The accessory cirrus is much smaller, colourless, situated at the median side of the bristle-fascicle. The ventral cirrus, also colourless, is furnished with a short basal part and reaches only to half the length of the bristle-fascicle. The anal cirri are two club-shaped processes, composed of a conical basal joint and a globular terminal piece, that has a dark hue.

The bristles are vitreous; those of the dorsal fascicles with a pale greenish hue. The dorsal as well as the ventral bristles are bifurcate, smooth, with a yellow tip; in the ventral ones (Pl. IX, fig. 3) the longer limb is faintly convex, whereas the short one measures about a fifth of its length. The central canal of the shaft bifurcates at a short distance below the fork. The dorsal bristles (Pl. IX, fig. 1), that are somewhat more slender, have both limbs nearly straight, situated next to each other, with a granular shagreen below the fork; their central canal is not bifurcated but extends directly into the short limb, that measures about a fourth of the long one. The anterior three segments contain only denticulated setae with a rather divergent fork; they are usually triserrate in the first segment, bi- or uniserrate in the next two (Pl. IX, fig. 2).

This worm could not be identified with one of the *Notopygos*-species hitherto described; it is characterized not only by its great length, but also by the great number of its caruncle-folds and the situation of the anal pore, that lies far backward. In *Notopygos (Lirione) rayneri*, measuring about 56 mm. in length, the anus is situated on segment 22, in *Notop. maculata* (20 mm. of length) in segment 23, whereas in *Notop. variabilis*, (55 mm. long), according to Potts, it lies on segment 22 or 25; this statement however appears somewhat dubious to me, for in all the none Siboga-specimens the anal orifice constantly is situated on the same segment (25th) and therefore it may be supposed, that in *Notop. variabilis* specimens are ranged, belonging to two different species. In *Notop. maculata* the caruncle has a much smaller number of folds, only 15, and in *Notop. labiatus* about 17, according to Malaquin and Dehorne; moreover in the last species it is straightly cut off at its posterior extremity. The Siboga-species comes next to Potts' *Notop. gardineri*, but in this species the anus lies on segment 24, and its caruncle is furnished with close-set folds, that are narrow and not grooved.

2. *Notopygos sibogae* Hörst. Pl. IX, figs. 4 and 5.

Horst, loc. cit. Vol. XXXIII, p. 245.

Stat. 144. Anchorage north of Salomakiëe (Damar-)island. 1 specimen.
Stat. 169. Anchorage off Atjatuning, West-coast of New-Guinea. 3 specimens.
Stat. 193. Sanana-bay, East-coast of Sula Besi. Reef. 1 specimen.
Stat. 234. Nalahia-bay, Nusa-Laut island. Reef. 2 specimens.

A rather stout worm, though half as large as the foregoing one. The largest specimen has a length of 35 mm., and a breadth of $8^1/_2$ mm. (without bristles), whereas the number of its segments amounts to 30. The smallest specimen measures only 21 mm. in length. The body has an elongated oval shape, somewhat obtuse anteriorly, tapering posteriorly; its lateral sides are rectangular. On the dorsum of each segment there is an area, having the shape of a

triangle, the base of which is formed by the frontal margin of the segment, whereas the tip lies on its middle, from the middle of the base of the triangle a line is running to its lateral sides, dividing thus the triangular field in three smaller areas, an apical and two basal ones. A shallow longitudinal groove runs over the middle of the ventral side. The dorsal side is colourless except a narrow, violet band around the notopodium and a violet stripe over the middle of the accessory cirrus of the anterior five segments; the ventral side is buff-coloured, whereas the palps have a dusky hue like the horizontal plate of the caruncle. The caruncle extends till upon the 6th segment; its horizontal plate is furnished on each side with 16 to 17 folds. The unpaired antenna is short, measuring about a third of the length of the caruncle. The mouth seems to be limited by the 4th segment, that shows a couple of median, longitudinal folds. The branchiae commence on the 5th segment; they are composed of three main stems, that are branching in several filaments. The accessory cirri of the anterior five segments are longer than those of the following ones, that have nearly the same length as the branchiae. The anus is situated on the anterior part of segment 23, upon the top of a papilla.

The dorsal setae are greenish, the ventral ones opalescent. Each dorsal bristle (Pl. IX, fig. 4) is nearly straight, stouter than in the foregoing species, but the short limb relatively smaller, measuring about a fourth to a sixth of the long one; the axial canal of its shaft is narrow, granulated beneath the bifurcation. Each ventral bristle (Pl. IX, fig. 5) with a rather wide axial canal, divided on a short distance beneath the fork in two branches, that are somewhat inflated in the middle; its long limb somewhat bent, without serrulations, the short limb hardly a fourth of the long one. In the first segment the bristles have the long limb more divergent, with four faint denticulations.

The smallest of the specimens examined by myself in 1886 [1]) (that from Amboina, Ludeking) probably belongs to this species and was uncorrectly identified with *N. crinata*, for in this species the anal opening is situated on the posterior part of segment 21 according to Ehlers, or on the intersegmental groove $^{21}/_{22}$, according to Grube.

These worms could not be identified with one of the two *Notopygos*-species, hitherto mentioned from the Malay Archipelago. In *Notop. maculata* Kinb., that has the anus also situated in segment 23, the caruncle shows according to Grube a much smaller number of folds; by Malmgren and Diesing [2]) unfortunately nothing is mentioned about this species but its habitat: Amboina. As to *Notop. labiatus* Mc Int., the situation of the anus in this species is unknown, and the ventral bristles are described as serrulated.

3. ? *Notopygos Rayneri* (Baird).

(*Lirione Rayneri* Baird).

Baird, loc. cit. p. 226, Pl. IV. figs. *6a* and *b*.

Stat. 42. 7° 20'.7 Lat. S., 117° 58'.3 Long. E. Flores-Sea. Surface. 2 specimens.

The length of the body is 32 mm.; the number of segments amounts to 30. The ventral

1 [illegible], p. 168.
2 [illegible], p. 357

side is buff, with a pale median band limited laterally by a dark line; the dorsal side is brown violet with a number of white lines crossing each other in various directions, except on the anterior part of segment 23, that bears the anal papilla and on the posterior segments, where it more and more becomes obliterated. A dark band runs around the base of the notopodial fascicle and also the main stem of the branchiae and the basal part of the dorsal cirri are dark coloured. The branchial cirri with a dark line and the horizontal plate of the caruncle with a dark hue. The caruncle reaches to the 7th segment and is furnished on each side with about 20 folds; the median antenna measures about half the length of the caruncle. The branchiae commence on segment 5; they consist of two main stems, from which the filaments are emerging laterally. The ventral bristles have a yellow tip; their axial canal is wide, granular, with a short isthmus beneath the fork. Their short limb measures about a fourth of the long one, that is smooth. The dorsal bristles are more straight, covered with a microscopic shagreen beneath the bifurcation. In the anterior segment the longest limb of the bristles is denticulated, more divergent and six times longer than the short one. The anus is situated on the anterior part of segment 23, upon a small papilla.

At the above-named station two *Notopygos*-specimens were collected, one well preserved, the other distorted and discoloured; the first specimen much agrees with BAIRD's *Notop. (Lirione) rayneri* from the reefs off the north-east-coast of Australia. BAIRD however mentions, that the anus lies on the 22d segment, whereas in the Siboga-worm it is situated on the succeeding one; perhaps he made a mistake in counting the segments, what may happen very easily.

4. *Notopygos cirratus* Horst. Pl. IX, figs. 6 and 7.

HORST, loc. cit. Vol. XXXIII, p. 246.

Stat. 23. 8°48'.5 Lat. S., 115°40' Long. E. Lombok-Strait. Surface. 1 specimen.
Stat. 99. Anchorage off North-Ubian. Sulu-Archipelago. 2 specimens.

A slender worm, rather tapering towards the anal extremity. The largest specimen measures $18^1/_2$ mm. in length, the number of its segments amounting to 28; the smallest specimen has only a length of 10 mm. The ground-colour is leady grey; a dark band runs around the base of the notopodium and the basal joint of the dorsal cirri is violet. The elliptical palps are of a dark hue. A shallow groove runs over the median ventral line. The anterior part of the dorsal side of each segment is divided in three areas, nearly as in *Notop. sibogae*. The caruncle extends to segment 5 and is furnished on each side with 11 folds. The median antenna is very short, about a fifth of the length of the caruncle. The anal opening is situated upon a papilla in the intersegmental groove $^{23}/_{24}$. This species is characterized by the length of its accessory cirri, that are much longer and thicker than the branchial filaments and extend to the middle of the dorsum. The branchiae commence on segment 5.

The ventral bristles (Pl. IX, fig. 6) have their long limb somewhat divergent, three times longer than the short one and furnished with a couple of conspicuous denticles; the axial canal of the shaft is wide and forms after dividing a short peninsula beneath the fork. The dorsal setae (Pl. IX, fig. 7) much resemble the ventral ones, but their long limb usually has only a

single denticle and is more slender, four times as long as the short one; the axial canal of the shaft is narrow.

Genus Sangiria [1] Horst.

Body oblong oval, agreeing in general appearance with that of *Chlocia* and *Notopygos*; however its caruncle is without crest and folds, wedge-shaped, with indistinct transverse grooves. Eyes absent. Branchiae small, only consisting of a few filaments; first pair of them on the fifth segment. Branchial cirri present. Ventral bristles denticulated. Anal cirri paired.

1. *Sangiria hystrix* Horst. Pl. IX, figs. 8—12.

Horst, loc. cit. Vol. XXXIII, p. 240.

Stat. 120. 3° 27.1 Lat. N., 125° 18.7 Long. E. Celebes-Sea. Depth 2053 M. 6 specimens.

The length of this worm is about 9 mm.: the number of its segments amounts to 19. The body is oblong oval, rather obtuse anteriorly, tapering posteriorly, with long, opalescent bristles, projecting as much on each side as two thirds of the breadth of the body, especially in the posterior segments and giving to the animal a spiny appearance. No eyes are visible. The anterior part of the head (Pl. IX, fig. 8) shows a dark pigment on its dorsal side, except on a small oval spot in the middle and a crescentic one on each side, that remain uncoloured. Posteriorly the cephalic lobe is provided with a narrow, wedge-shaped caruncle, showing five indistinct, transverse grooves; the caruncle has a rather loose structure and extends till upon the posterior part of the 4th segment. In front of the caruncle a short, median antenna is inserted; the first pair of tentacles spring from the middle of the dorsum of the cephalic lobe next to each other, whereas the other pair is situated laterally. The mouth seems to be limited posteriorly by the third segment, that is longitudinally folded in its middle. The surface of the palps, that have an elliptical shape, is covered with small black dots, like in *Bathychlocia*. The branchiae commence on the fifth segment; they are very small, composed only of a few undulated filaments. There occur branchial cirri like in *Notopygos*; they are much longer than the filaments of the gills and extend to the middle of the dorsum. The dorsal cirri, furnished with an enlarged basal part, do not reach the distal extremity of the bristle-fascicles; the ventral cirri are rather short in comparison with the ventral bristles. The ventral bristles (Pl. IX, fig. 9) much resemble those of *Notopygos megalops* [2]; their long limb, about thrice as long as the short one, is somewhat curved outward beyond the fork and furnished with 2 to 4 conspicuous denticulations. The dorsal setae (Pl. IX, fig. 10) have about the same shape, but are more slender; their longest limb, about four times longer than the short one, is smooth or only provided with a couple of faint denticles. In the bristles of the first segment (Pl. IX, fig. 11) the longer limb is much more curved outward, five times longer than the short one and furnished with a greater number of denticles (8). The anal orifice is probably terminal. There are two anal cirri,

1) Named after the Sangir-islands, in the vicinity of which the station lies, where these worms have been dredged.
2) M. Traquair, 1885, pl. II, *A*, fig. 4.

mushroom-shaped, with a short stalk and a round distal part with faintly folded border (Pl. IX, fig. 12); they somewhat resemble the anal appendages of *Notopygos*, though they are sufficiently distinguished from them.

This worm, though in general configuration, in the shape of its bristles and the presence of paired anal cirri approaching *Notopygos* and *Chlocia*, differs by the structure of its caruncle that lacks the crest and folds; moreover the branchiae are much less developed than in the last-named genera. By the absence of eyes and the strong development of its bristles it agrees with the other deep-sea Amphinomidae, *Chloenea* Mc Int. and *Bathychloeia* Horst.

Nov. Genus **Parachloeia.**

Body oblong oval, like in *Sangiria*. A long and narrow plaited caruncle, with a crenulated horizontal plate. Eyes present. Branchiae small, only consisting of a few filaments, the first pair of them on the fifth segment. Branchial cirri present. Bristles bifurcated. Anal cirri paired. Nearly allied to *Sangiria*, but sufficiently distinguished by the shape of its caruncle and the presence of eyes.

1. *Parachloeia marmorata* n. sp. Pl. IX, figs. 13—16.

Stat. 43. Anchorage off Pulu Sarassa, Postillon-islands. Depth 36 M. 1 specimen.
Stat. 78. Lunau-Lumu-shoal, Borneo-bank. Depth 34 M. 1 specimen.

A minute worm, measuring only 7 to 8 mm. in length, with 18 to 22 segments; its body, oblong oval like in *Chloeia* and *Notopygos*, has the back marmorated, of a violet colour with pale spots, whereas the gills are black at their base. The bristles are rather long, especially the dorsal ones, yellowish.

The cephalic lobe (Pl. IX, fig. 13) is provided with two pairs of jet-black eyes, the anterior of which are the largest. Its palpar region (Pl. IX, fig. 14) is heart-shaped, with a longitudinal median groove, and terminates anteriorly in a narrow roundish plate, that is blackish except its margin. The caruncle is a long and narrow plaited crest, with a crenulated horizontal plate, extending to the 5th segment. In front of it an unpaired antenna arises, that is rather short and measures only a sixth of the length of the caruncle. The paired antennae are much longer.

The branchial tufts are very small, consisting only of a few short filaments; they commence on the 5th segment. The dorsal cirri, consisting of a long cylindrical basal joint and a distal part, are not quite as long as the dorsal bristles. There are also slender branchial cirri, extending to the dorsal median line, like in the deep-sea species of *Chloenea*.

The bristles are all bifurcated; those of the neuropodial fascicle (Pl. IX, fig. 16) much resemble the bristles of *Sangiria* and have a long limb, thrice as long as the short one, somewhat curved outward beyond the fork and furnished with two faint denticulations. The dorsal setae (Pl. IX, fig. 15) have about the same shape, but are more slender; their longest limb, about four times longer than the short one, is smooth.

There are two short cylindrical anal cirri, with a dark club-shaped extremity.

Genus Pherecardia Horst.

(*Amphinome* Fischli).
(*Eucaruncula* Malaquin et Dehorne).

Horst, Notes from the Leyden Museum, Vol. VIII, 1886, p. 157.
Fischli, Abhandl. Senckenberg. Naturf. Gesellschaft, Bd. XXV, 1903, p. 95.
Malaquin et Dehorne, Revue Suisse de Zoologie, Vol. XV, 1907, p. 335.

Body elongate. Caruncle heart-shaped, consisting of a median axis and several folded lateral plates on each side, directed backward. Branchiae ramified, commencing on the first segment. Bristles simple (not bifurcated); those of the ventral fascicle with a hooklike bent tip, those of the dorsal one harpoon-shaped, with serrations having the shape of a Y. Anus dorsal, slit-like, with an unpaired cirrus.

1. *Pherecardia lobata* Horst.

(*Amphinome sericata* Fischli).
(*Eucaruncula grubei* Mal. et Dch.).

Horst, loc. cit. Vol. XXXIV, 1911, p. 17, with text-figure.

Stat. 60. Haingsisi, Samau-island. 1 specimen.
Stat. 240. Banda. Depth 9—45 M. 1 young specimen.
Stat. 282. Anchorage between Nusa Besi and N.E. point of Timor. Depth 27—54 M. 1 specimen.
Stat. 300. 10° 48.6 Lat. S., 123° 23'.1 Long. E. Timor-Sea. Depth 918 M. 1 young specimen.
Amboina. van Kampen. 3 Febr. 1907.

The specimen from Haingsisi measures about 50 mm. in length and 6 mm. in breadth (without bristles), whereas the number of its segments amounts to 48. In this worm the palpar region of the head shows the same four-lobed shape as in the specimen figured by Malaquin and Dehorne (Pl. LIII, fig. 12). There is an unpaired heart-shaped, anal cirrus, with a longitudinal median groove. The specimen from Station 282 is a slender worm, about 65 mm. long, with 64 segments; in the posterior part of the body the segments seem not to be normally developed and have enormously elongated dorsal bristles. The Amboina-specimen is longer than the preceding ones, measuring 90 mm. in length and 9 mm. in breadth, whereas the number of its segments amounts to 60. It is a female with ripe eggs; its bristles have a yellowish hue. The specimens from Stat. 300 and those from Banda are very young ones, only 18 and 17 mm. in length, with 33 segments; the branchiae are very conspicuous by their dark basal part.

The coloration and markings of these specimens, from four different localities in the Malay Archipelago, very well correspond to the description given by Fischli, Malaquin and Dehorne and Ports, viz. a brown or buff ground-colour, with bronze-coloured longitudinal stripes over each segment on the dorsal as well as on the ventral side and on the lateral parts of the body: whereas these stripes on the dorsum are rather broad and densely crowded, they are on the ventral side obsolete, sometimes even totally absent in its posterior part. A dark violet band runs around the frontal side of the notopodia; the gills are also dark coloured with pale tips. The bristles are silky, white or yellowish, strongly contrasting with the dark coloured body. The cephalic lobe, very short in longitudinal direction, is rectangular, almost entirely hidden under

the anterior part of the caruncle, that is enlarged. The latter organ bears 6 or 7 lateral lamellae on each side of its axis. Considering the facts mentioned in the present paper, it is somewhat doubtful to me if the specimens from Pulu Weh, described in my paper above referred to, do not belong to an other species of the genus *Pherecardia*, for they want the buff ground-colour, whereas their cephalic lobe is not hidden under the anterior part of the caruncle; their caruncle is larger and has more lateral lamellae and also their branchiae appear to be more developed. However this question can only be decided, when more well-preserved specimens will be at our disposal.

Genus nov. **Pherecardites.**

Body elongate. Caruncle consisting of a median axis and some lateral lamellae, directed backward. Eyes dubious. Branchiae ramified, commencing on the first segment. Ventral bristles partly bifurcated; dorsal ones harpoon-shaped, with serrations having the shape of an Y. This genus is intermediate between *Hermodice* and *Pherecardia*, its ventral bristles resembling those of *Hermodice*, the dorsal ones those of *Pherecardia*.

1. *Pherecardites parva* n. sp. Pl. IX, figs. 17—19.

Stat. 122. 1° 58′.5 Lat. N., 125° 0′.5 Long. E. Celebes-sea. Depth 1264—1165 M. 2 specimens.
Stat. 139. 0° 11′ Lat. S., 127° 25′ Long. E. Near Batjan. Depth 397 M. 1 specimen.
Stat. 173. 3° 27′ Lat. S., 131° 0′.5 Long. E. Ceram-sea. Depth 567 M. 1 specimen.

This is a small worm, the largest specimen of which does not measure more than 7 mm. in length and $2^1/_2$ mm. in breadth; its body, much resembling that of a Polynoid, consists of about 30 segments, that are nearly of the same breadth over its entire length, only posteriorly they become somewhat narrower. The prostomium has a frontal part, that is trapezoidal of shape and provided with black spots; its caruncle extends over three segments and consists of a median axis and four lateral lobes, directed backward. In front of it a long unpaired antenna arises, that has a stout base and reaches with its tapering distal extremity nearly to the end of the caruncle; the paired antennae are rather short. Whether there are real eyes could not be settled decidedly; there is some aggregation of pigment, but it is not conspicuously limited. The branchiae commence on the first segment; they consist of a small tuft of branched filaments. The neuropodial fascicle contains a number of short, bifurcated bristles (Pl. IX, fig. 17), the long limb of which has a somewhat convex dorsal side, whereas its internal border is coarsely denticulated; their short limb is not much more as a spur and their shaft has a granular axis. These bristles show great resemblance to the ventral setae of *Hermodice carunculata* (Chall. Annel. Pl. III A, figs. 3 and 4). Some of these bristles (Pl. IX, fig. 18) are longer and even have lost their spur; they much resemble the corresponding setae of *Pherecardia lobata* (*Eucarunculata grubei* var. *gracilis* Potts: loc. cit. pl. 46, fig. 11). Besides these bifurcated setae there occur some simple capillary bristles, with a serrulated distal extremity. The notopodial fascicle is provided with a great number of harpoon-shaped bristles (Pl. IX, fig. 19), with a row of Y-like denticles along one border, about of the same feature as the dorsal setae of *Pherecardia lobata*;

moreover there are some simple, capillary bristles, with a coarsely denticulated extremity, like in the neuropodial fascicle. The dorsal and ventral cirri nearly reach to half the length of the respective setae.

Genus **Eurythoë** Kinberg.

Body elongate. Caruncle consisting of a flexuous crest, with vertical folds along its lateral sides. Branchiae ramified, commencing on the 2^{d} (or 3^{d}) segments. Ventral bristles bifurcated, generally short and thick; dorsal ones usually longer, partially faintly bifurcated, partially harpoon-shaped. Anus dorsal, extending over several segments, with an unpaired knob-like cirrus.

1. *Eurythoë complanata* (Pallas). Pl. IX, fig. 20.
(*Pleione alcyonia* Sav.).
[*Eurythoe pacifica* Kinb. (nec Mc Int.)].

EHLERS, Die Polychaeten des Magellanischen und Chilenischen Strandes, 1901, p. 34.
POTTS, Polychaeta of the Indian Ocean, p. 367.

Stat. 7. Reef of Batjulmati, Java. 50 young specimens.
Stat. 34. Anchorage off Labuan Pandan, Lombok. Reef. 1 specimen.
Stat. 37. Sailus ketjil, Paternoster-islands. Depth 27 M. and less. 2 small specimens.
Stat. 53. Bay of Nangamessi, Sumba. 1 specimen.
Stat. 58. Savu. Reef. 24th April. 4 specimens.
Stat. 60. Haingsisi, Samau-island. Reef. 2 specimens.
Stat. 61. Lamakera, Solor-island. Reef. 1 specimen.
Stat. 81. Pulu Sebangkatan, Borneo-bank. Depth 34 M. 1 specimen.
Stat. 86. Dongala, Palos-bay, Celebes. 1 specimen.
Stat. 93. Pulu Sanguisiapo, Tawi-Tawi-islands, Sulu-archipelago. 4 specimens.
Stat. 96. Near Pearl-bank, Sulu-archipelago. Depth 15 M. 1 young specimen.
Stat. 99. Anchorage off North-Ubian, Sulu-archipelago. Depth 16—23 M. 1 small specimen.
Stat. 115. Pajunga-island, Kwandang-bay (N. Celebes). Reef. 9 specimens.
Stat. 125. Anchorage of Sawan, Siau-island. 1 specimen.
Stat. 127. Taruna-bay, Great-Sangir-island. Reef. 2 specimens.
Stat. 129. Anchorage off Kawio- and Kamboling-islands, Karkaralong-group. Reef. 1 small specimen with regenerated anterior segments.
Stat. 131. Anchorage off Beo, Karakelang--islands. 2 specimens.
Stat. 144. Anchorage north of Salomakiëe (Damar)-island. Reef. 2 specimens, adult and young; depth of 45 M. 2 young specimens, one with regenerated body-end.
Stat. 152. Wunoh-bay, N.W.-coast of Waigeu-island. Reef. 3 specimens.
Stat. 169. Anchorage off Atjatuning, west-coast of New Guinea. 1 specimen.
Stat. 172. Between Gisser and Ceram-Laut. Reef. 2 specimens.
Stat. 176. Anchorage off Lilintah, Misool. Reef. 1 specimen.
Stat. 193. Sanana-bay, Sula Besi. Reef. 6 specimens.
Stat. 220. Anchorage off Pasir Pandjang, West-coast of Binongka. Reef. 4 specimens.
Stat. 225. Near Southpoint of South Lueipara-island. Reef. 4 specimens.
Stat. 231. Amboina. Reef. 25 specimens.
Stat. 234. Nalahia-bay, Nusa-Laut-island. Reef. 4 adult specimens, one with fish-eggs attached to its notopodial bristles.
Stat. 240. Banda. Depth 9—45 M. 1 young specimen.
Stat. 250. Anchorage off Kilsuin, West-coast of Kur-island. Reef. 1 specimen.
Stat. 258. Tual, Kei-islands. 6 young specimens.

Stat. 273. Anchorage off Pulu Jedan, Aru-islands. Depth 13 M. 1 specimen.
Stat. 282. Anchorage between Nusa Besi and the N.E.-point of Timor. Reef. 1 specimen.
Stat. 296. Anchorage off Noimini, South-coast of Timor. Reef. 1 specimen.
Stat. 301. Pepela-bay, east-coast of Rotti-island. Reef. 1 specimen.
De Bril near Makassar. 1 specimen. (Mr. KRAAY don.).

All the *Eurythoë*-specimens from the above-named localities in the Malay-Archipelago appear to belong to *Eurythoë complanata* (Pall.), with which *E. alcyonia* Sav. and *E. pacifica* Kinb. must be considered to be identical, according to the recent investigations of EHLERS [1]) and POTTS [2]). The species is characterized by the presence of a caruncle (Pl. IX, fig. 20), commencing on the middle of the syncipital region of the prostomium and extending till upon the third or to the anterior part of the fourth segment; in *E. borealis*, according to RACOVITZA [3]), the caruncle only commences at the posterior border of the prostomium. The caruncle of *E. complanata* is a rather narrow flexuous crest with 6 to 7 vertical folds along its lateral sides, situated like the buttresses against a wall; a horizontal plate, as present in *Chloeia* and *Notopygos*, could not be detected. The unpaired antenna, placed in front of the caruncle, is small, usually shorter than the paired ones; however in some specimens the difference is not very great. The mouth is surrounded by the anterior four segments; however the wedge-shaped buccal segment lies thus inclosed between the palpar region and the second segment, that it does not reach the margin of the mouth, exactly as stated in my description of *E. alcyonia* in 1886 [4]). The anal opening is an elongated oval fissure, extending over 6 or 7 posterior segments, that are very narrow and densely crowded together; a rounded papilla is situated at its distal end. When EHLERS (Florida-Annel. p. 30) says: "das letzte Segment trägt zwei knötchenförmige Aftercirren", this must undoubtedly be considered as a slip of the pen.

The neuropodial fascicle principally contains short, thick, bifurcated bristles; in the majority of the specimens I examined, they did not show any conspicuous serrations, at the most one or two shallow denticles were visible. Therefore I cannot understand how MC INTOSH [5]) — on the authority of GRUBE — could identify his worms from Bermuda with the *E. pacifica* of KINBERG, who in his diagnosis of this species [6]) clearly states: "setae pedum ventralium laeves", whereas those of *E. corallina* and *E. chilensis* are described and figured as subserratae. Besides these short bristles there occur in the ventral fascicle some (usually one or two) slender ones, that have the furcated part twice or thrice as long as that of the preceding; their longest limb is finely serrated in its distal part, as already described and figured by myself 25 years ago and afterwards confirmed by BEDDARD [7]). Therefore I presume, that these denticulations have been overlooked by GRAVIER [8]), as may happen easily when the bristles are not situated and drawn justly in profile. Also the faintly bifurcated setae of the dorsal fascicle,

1) Polych. d. Magell. Strandes, p. 34.
2) loc. cit. p. 367.
3) Lobe céphal. p. 181.
4) N. L. M. Vol. VIII, p. 163, pl. 7, fig. 2.
5) Chall. Annel. p. 27.
6) Öfversigt 1857, p. 14.
7) Journ. L. Soc. XXI, p. 261.
8) Annél. Mer rouge, p. 251.

that are more slender than the ventral ones, are conspicuously serrated over the entire length of their longest limb.

2. ? *Eurythoë chilensis* Kinb. Pl. IX, figs. 21—23.

KINBERG, loc. cit. p. 35, Pl. XII, figs. 9, A, B, C, D, F, G, X.

Stat. 47. Bay of Bima. Depth 55 M. 1 specimen, female.
Stat. 51. Southern part of Molo-strait. Depth 69 to 91 M. An incomplete specimen, that lacks the anterior segments.
Stat. 274. 5° 28'.2 Lat. S., 134° 53'.9 Long. E. Near Aru-islands. Depth 57 M. 1 specimen.
Stat. 315. Anchorage east of Sailus Besar, Paternoster-islands. Depth 36 M. 2 specimens.

There are from Stat. 315 two small, indifferently preserved specimens, that for the structure as well as for the arrangement of their ventral bristles cannot be identified with *E. complanata* Pall. The length of the largest specimen is about 10 mm., whereas the number of its segments amounts to nearly 40; the smaller one is incomplete. Of course it is not without doubt whether these worms are full-grown; however in young specimens of *E. complanata* of the same length the bristles have already the appearance, that is characteristic to this species.

The caruncle is short, flexuous, in the smallest specimen extending to the fourth (fifth KINBERG) segment, whereas in the largest specimen it only reaches the third one; it is remarkable, that in the description KINBERG says "segmentum quintum attingens", whereas in the figure it only attains the third (fourth KINBERG) segment. The unpaired antenna is small; the paired ones are much larger and coarser and consist of a basal part and a distal one.

The neuropodial fascicle contains short bifurcated bristles, having the longest limb either smooth (Pl. IX, fig. 21) or conspicuously serrated (Pl. IX, fig. 22); moreover this limb usually is not incurved, but either nearly straight or even somewhat bent backward. Besides these this fascicle shows several (not one or two as in *E. complanata*) slender subfurcated setae (Pl. IX, fig. 23), the shortest limb of which is only a mere spur, whereas the longest limb is densely serrated along its interior margin. In the notopodial fascicle the harpoon-shaped bristles are faintly developed, showing only some small denticulations in their distal part; the subfurcated bristles much resemble those of the neuropodium, but the longest limb is more coarsely serrated. The setae of our worms show a great resemblance to those of *E. chilensis*, figured by KINBERG on Plate XII, figs. 9 G *u*, *s''*, *s'* and *s*; however I suggest, that a mistake has crept into this delineation and that *s''* should be *u* and also represents another kind of ventral bristle, for I never met with a dorsal bristle of this shape in the *Eurythoë*-species.

The specimen of Stat. 47 is an incomplete worm, that lacks the posterior segments; it is a female with eggs, about 10 mm. in length. The caruncle is very faintly developed, extending only over the first segment; its neuropodial fascicle contains a great number of elongated bristles, with a denticulated distal extremity, but even wanting the spur-like limb of the shorter bifurcated setae.

The specimen of Stat. 274 has a length of 30 mm., but its head is strongly withdrawn and therefore the caruncle could not be recognized.

3. *Eurythoë parvecarunculata* n. sp. Pl. X, figs. 1—5.

Stat. 312. Saleh-bay, north-coast of Sumbawa. Depth 274 M. 1 specimen.

A slender worm, of about the same breadth over its total length, only somewhat tapering posteriorly, with glossy white bristles; its measures about 14 mm. in length, the number of its segments amounting to 50. The rounded cephalic lobe (Pl. X, fig. 1) has a large heart-shaped palpar part and is provided with four eyes; upon its posterior border it bears a long unpaired antenna, that reaches the 4th segment, when bent backward. Of the paired antennae the anterior are somewhat longer than the posterior ones. There is a small caruncle, only extending over the first segment. The strongly ramified branchiae commence on the third segment; they are most developed in the anterior part of the body, decreasing posteriorly.

This species is distinguished from its congeners besides by its minute caruncle, by the characteristic shape of the furcated extremity of its neuropodial bristles (Pl. X, fig. 2); for their short limb is rather long and measures more than a third of the long one and the last named limb is not curved, but straight or somewhat bent backward and provided with a couple of faint denticulations along its external border. Only in the anterior segments they are associated with a couple of slender elongated setae, with a spur-like short limb and a coarsely denticulated long one; in the posterior part of the body these setae are wanting. The spines (Pl. X, fig. 3) have an elongated oval extremity. The large fan-shaped notopodial fascicle contains, besides some short harpoon-shaped bristles with faint denticulations (Pl. X, fig. 4), a great number of slender, elongated bifurcated setae (Pl. X, fig. 5) with a short limb, that is longer than usually in this kind of bristles and with a long limb, coarsely denticulated along its internal border; moreover there are some of these slender bristles, in which the short limb has the shape of a mere spur. The ventral cirrus of the parapodia is short and conical, the dorsal one is about as long as half the length of the dorsal setae.

4. *Eurythoë dubia* n. sp. Pl. VII, fig. 1; Pl. X, figs. 6—10.

Stat. 272. Dobo, Aru-islands, pelagic. 1 specimen, female.

Length 255 mm.; the number of its segments about 135.

This worm, much more slender than the well-known species of *Eurythoë*, has a characteristic appearance by its glossy, dark-yellow bristles, the ventral of which project much farther outward than the dorsal ones. The body is rectangular on transverse section, much broader than high, somewhat flattened; its colour is dark brown, with a violet hue. The dorsal side is faintly rugous; there is a median groove on the ventral side and the nephridial openings are very obvious.

The cephalic lobe (Pl. X, fig. 6) is heart-shaped with the anterior pair of eyes lying hidden under its frontal margin; the caruncle is small, flexuous, arising from the posterior half of the head and extending only to the middle of the second segment, somewhat as in *Eurythoë californica* Johns. [1]). The unpaired antenna, situated between the posterior pair of eyes, does not extend to the end of the caruncle; the paired antennae, that are nearly equal in length, are somewhat shorter.

1) A prelimin. account of the Marine Annelids of the Pacific-Coast, Pl. V, fig. 8.

The neuropodium is a rather long, cylindrical appendage, obliquely truncated at its distal end. Its bristle-fascicle contains a great number of slender, capillary bristles (Pl. X, fig. 7), without any trace of bifurcation, with their distal part furnished all around with small denticles, whereas their shaft is beset with dimples resembling those of *Pherecardia lobata*. There are only few real bifurcate bristles (Pl. X, fig. 8), so they can be overlooked easily; moreover their short limb is not much more as a spur. However in the anterior segments there are well developed bifurcated setae of the usual shape (Pl. X, fig. 9). The spines (Pl. X, fig. 10) are not pointed as in other *Eurythoë*-species but have an obtuse, oval tip, somewhat resembling those of the dorsal foot in *Amphinome rostrata* (Chall. Pl. II A, figs. 11 and 12). The notopodium is very short and its fascicle contains long, simple bristles of the same kind as those of the neuropodium; moreover there is a small number of harpoon-like setae, conspicuous by their white colour, about half as long as the preceding and with denticles of moderate size. Whereas the ventral cirrus represents only a short conical appendage, the dorsal cirrus extends to half the length of the bristle-fascicle. The branchiae commence on the third segment and consist of a strongly ramified bush of filaments.

It is with some hesitancy that this species is ranged among the genus *Eurythoë*, from which it deviates not only by its general appearance, the long neuropodia, the simple elongated bristles, the situation of the first pair of branchiae [1]) etc.; however because the neuropodial fascicle besides the simple elongate bristles contains some shorter bifurcate ones, it may be supposed that the Dobo-specimen perhaps represents an epitocous form, for this worm was catched with the pelagic net, while numerous other *Eurythoë*-specimens all were obtained on reefs.

In the collections of the Leyden Museum I met with a smaller specimen, collected by Mr. SCHADLER on the West-coast of New Guinea, Skroe; it is also a female, full of eggs. Its length measures 72 mm., whereas the number of segments amounts to about 120; each segment has a brown spot in the ventral median line. Its caruncle is very small and only extends over the first segment; the anal cirrus is a rectangular papilla with round corners and a black spot in the middle.

Genus nov. **Benthoscolex** [2]).

Body oblong oval, agreeing in general appearance with that of *Chlocia*. Caruncle short, with three parallel, longitudinal ridges. Eyes absent. Branchiae commencing on the 6th segment, strongly developed on the posterior segments. Furcate bristles. An unpaired anal cirrus.

1. *Benthoscolex coccus* n. sp. Pl. X, figs. 11—16.

Stat. 45. 7° 24' Lat. S., 118° 15'.2 Long. E. Flores-sea. Depth 794 M. 1 specimen.
Stat. 314. 7° 36' Lat. S., 117° 30'.8 Long. E. Flores-sea. Depth 694 M. 6 specimens.

The largest specimen measures 34 mm. in length, its breadth (without bristles) being 8 mm.; the number of its segments amounts to 30. It is a female worm, densely filled with

1) In IMHOF's *Eurythoë heteretricha* the gills also begin on the third body segment.
2) Derived from Βένθος, depth and σκωληξ, worm.

eggs; its shape is oblong oval, tapering nearly equally forward and backward, like in *Chloeia*. The body (Pl. X, fig. 11) is colourless, only traces of a couple of longitudinal parallel stripes are present over the middle of the ventral side and there is some dark pigment on the anterior side of the cephalic lobe. No eyes are present. The bristles are vitreous, those of the neuropodium projecting much farther outward than those of the notopodium. The branchiae commence on the 6th segment as a bifurcated filament; farther backward they become more and more branched and they are strongly developed on the posterior segments. The prostomium (Pl. X, fig. 12) is heart-shaped, with a short caruncle consisting of three longitudinal ridges, that do not extend beyond the first segment; in front of it a small antenna is situated. Of the paired antennae one couple, nearly as long as the unpaired one, is situated on each side of the median dorsal line, whereas the other pair, emerging from the sides of the prostomium, is much longer. The palpar region (Pl. X, fig. 13) is strongly developed and consists of two crescent lobes, upon which two arched spots of black pigment are visible. There is an unpaired anal papilla, faintly emarginated.

The ventral bristle-fascicle is fan-shaped, nearly twice as long as the dorsal one; it contains only bifurcated setae, much resembling those of *Eurythoë*. The shorter, thick bristles have a long limb, that is rather obtuse and either plain (Pl. X, fig. 14) or furnished with one to three denticulations (Pl. X, fig. 15) and a short limb, like a spine; moreover there is a great number of much more slender setae (Pl. X, fig. 16) with a long limb, coarsely denticulated nearly over its total length and a short limb, like a spur. The spines are not dilated below the tip. The bristles of the notopodial fascicle much agree with the preceding ones, only their number is not so great and among them there are also some harpoon-shaped ones.

The dorsal cirrus is rather long, almost as long as the dorsal bristles, whereas the ventral one is much shorter; in some of the anterior segments the last organ was bifurcated or doubled.

Benthoscolex agrees with its deep-sea congeners *Chloenea*, *Bathychloeia* and *Sangiria* in the shape of its body and in the absence of eyes; but it is conspicuously distinguished from them by the structure of the caruncle as well as by the appearance of the bristles, the unpaired anal papilla etc.

Genus **Amphinome** Bruguière.

Body elongate. Caruncle small, usually tongue-shaped. Branchiae ramified, commencing on the 3d segment. Ventral bristles simple, hook-shaped; dorsal ones longer, partially harpoon-like, denticulated along two borders, partially elongated, more or less spinose. Anus dorsal, extending over several segments, with an unpaired cirrus.

1. *Amphinome nigro-branchiata* n. sp. Pl. X, figs. 17—20.

Stat. 213. Pulu Pasi Tanette. Reef. 1 specimen.
Stat. 313. Saleh-bay, Sumbawa. Reef. 2 specimens, adult and young.

This Amphinomid is characterized by its squat form, resembling somewhat a thick caterpillar, and by its dark coloured gills. The length of the largest specimen is about 60 mm., its

greatest breadth being 11 mm., whereas the number of segments amounts to 53. The body has a quadrangular cross-section, tapering only a little towards the anterior and the posterior end, that both are rounded; it is colourless, only the branchiae appear as a row of black spots on each side of the dorsum. The skin is wrinkled, showing polygonal areas; moreover there runs a transverse groove over the dorsum of each segment, separating from its anterior half a narrow elliptical field, that has the appearance of an intercalated segment, like in *Notopygos*.

The prostomium (Pl. X, fig. 17) has its anterior border nearly straight, whereas its posterior margin is rather deeply emarginated; it bears four indistinct eyes, differing not much in size. In front of it the anterior pair of antennae arise, that are rather long; the posterior pair, situated laterally from the anterior corner of the cephalic lobe, are smaller. The unpaired antenna, arising from the cephalic notch, is very tapering towards its distal end and does not reach half the length of the caruncle. The latter organ is narrow, ridge-shaped and does not extend beyond the posterior border of the buccal segment. The mouth is limited anteriorly by a vaulted palpar area with a longitudinal groove in the middle, posteriorly by the 4th segment. The palpar area as well as the frontal side of the prostomium are covered with small black dots.

The parapodia are faintly developed, separated from each other by a great distance, that measures about half the breadth of the body; the neuropodial bristle-fascicles are much longer than the notopodial ones. In the anterior segments the neuropodial fascicle besides some hastate spines contains in its upper half some slender bifurcated bristles (Pl. X, fig. 19), consisting of a short limb and a much longer one, that appears to be faintly serrated; its inferior half has only simple bristles, about half as long as the preceding, faintly curved, with some denticles below the tip (Pl. X, fig. 18). In the segments that are situated more posteriorly, only the last kind of bristles is represented (Pl. X, fig. 20), but they are stronger, with a slightly curved tip, remembering those of *Pherecardia*; the distal part of these setae has a yellowish hue. Such bifurcated bristles, as mentioned by Potts in *A. maldivensis* (Pl. XLVI, figs. 15 and 16), could not be observed. The notopodial fascicle contains simple, capillary bristles, glossy as silk: they are serrated, but the denticles could only be detected with high powers. The branchiae commence on the 3d segment; they consist of a compact fascicle of dark brown filaments, that are hardly branched and situated behind the bristle-fascicle, not in front of it, as observed by Gravier and Potts in the species they examined. The dorsal cirrus is about as long as the branchial filaments (in contracted state); however the ventral one hardly extends to half the length of the neuropodial bristle-fascicle. The anal fissure lies dorsally, limited by the four posterior segments; there is an unpaired anal cirrus. This species is closely allied to *A. maldivensis* Potts and *A. djiboutensis* Perr.; they belong to a group of Amphinomidae, ranged by de Quatrefages in the genus *Linopherus*, characterized by a squat form, by a small caruncle not extending beyond the buccal segment, and by slightly branched gills.

2. *Amphinome pulchra* n. sp. Pl. X, figs. 21—23.

Stat. 230. 3° 58′ Lat. S., 128° 20′ Long. E. Banda-sea. Among floating Sargassum. 1 specimen.

A nice small Amphinomid, somewhat resembling a nudibranchiate mollusc; its body

is short and thick, only somewhat tapering posteriorly, with a quadrangular cross-section and a wrinkled skin, especially on the ventral side. Its length is about 15 mm., whereas its greatest breadth measures 4 mm.; the number of segments amounts to 31. The dorsal side is dark brown, the ventral one paler, orange-coloured; the branchiae are greenish with orange-coloured tips, whereas the cirri and the antennae are of the last named colour. The bristles are brilliant white.

The head is strongly withdrawn, therefore not much is to be seen neither of the eyes nor of the caruncle; this organ is emarginated anteriorly and from its notch a rather long unpaired antenna emerges. The two antennae situated in front of it are of about the same length, but those of the inferior pair are shorter. The mouth is bounded anteriorly by the palpar area, longitudinally grooved in the middle, posteriorly by the 4th segment, laterally by the anterior three segments. The notopodia are separated by a great distance from the neuropodia and the first named bear much longer setae than the latter ones. The dorsal fascicle contains some acute harpoon-shaped bristles with a row of narrow denticles on both sides (Pl. X, fig. 22); moreover there are several longer, more slender setae with a granular axis and a plain, curved, tapering distal extremity. The ventral fascicle, besides some small spines with dilated tip (Pl. X, fig. 23), possesses only hook-shaped bristles like in *Amphinome rostrata* (Chall. Pl. II A, fig. 10). In a young specimen (with only 11 segments), found in the same glass-tube and probably belonging to the present species, I observed in the ventral bristles a small spine beneath the curved tip, like in the ventral hooks of *Hipponoë* (loc. cit. Pl. III A, fig. 17). The branchiae consist of a dense tuft of branched filaments and commence on the third segment. The dorsal cirri, consisting of a basal joint and a long distal part, are almost as long as the dorsal bristles; the ventral cirri extend only to half the length of the ventral setae.

Upon the left side of the body (Pl. X, fig. 21), somewhat behind the middle, a small worm is visible, undoubtedly a young of the present species; it lies between the notopodia, with its oral extremity directed to the middle of the dorsum, while its anal end is situated on the lateral side of the adult one. It has a length of $4^1/_2$ mm., and consists of 15 segments; the notopodia are already furnished with some branchial filaments, the anterior of which are situated on the third segment. It is nearly coloured like the adult worm, only its intersegmental grooves have a paler hue and therefore the body looks as being marked with transverse bands. This is the second example in the family of *Amphinomidae* that the adult worms take some care of their offspring, for AUGENER [1]) has pointed out, that the small animals already observed by BAIRD [2]) on the ventral side of *Hipponoë*-specimens, but considered by him as parasites, represent the young ones of this worm. Our species appears to be allied to *Amph. nitida*, described by HASWELL from Cape Grenville [3]).

1) Zool. Anzeiger, Bd. XXXVI, 1910, p. 246.
2) loc. cit. p. 240.
3) Proc. Linn. Soc. of N. S. Wales, III, 1879, p. 341.

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——, On the genus *Notopygos* etc.: ibidem, Vol. XXXIII, p. 241.

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EXPLANATION OF PLATES

PLATE I.

Figs. 1—6. *Euphrosyne pilosa* Horst.

Fig. 1. Dorsal view of the anterior extremity of *Euphrosyne pilosa*. × 20.
Fig. 2. Parapodium, to show the arrangement of branchiae, cirri and setae; *b.* branchiae; *d.c.* dorsal cirri; *v.c.* ventral cirrus. × 50.
Fig. 3. Tip of a long bifurcated dorsal bristle. Highly magnified.
Fig. 4. Portion of the cuticula around the bases of dorsal spines. Highly magnified.
Fig. 5. Tip of an elongated ventral bristle. Highly magnified.
Fig. 6. Tip of a short ventral bristle. Highly magnified.

Figs. 7—9. *Euphrosyne globosa* n. sp.

Fig. 7. Parapodium of *Euphrosyne globosa*. × 35.
Fig. 8. Tip of a long dorsal bristle of the same species. × 325.
Fig. 9. Tip of a short dorsal bristle of the same species. × 325.

Fig. 7—9 Ch. F. H. Dumont, cet. C. Ritsema del.

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PLATE II.

Figs. 1—6. *Euphrosyne affinis* Horst.

Fig. 1. Parapodium of *Euphrosyne affinis*. · 65.
Figs. 2 and 3. Dorsal bristles of the same species. × 405.
Figs. 4—6. Ventral bristles of the same. × 405.

Figs. 7—11. *Euphrosyne hystrix* Horst.

Fig. 7. Parapodium of *Euphrosyne hystrix*. < 105.
Fig. 8. Dorsal bristle of the same species. × 325.
Figs. 9—11. Ventral bristles of the same. × 325.

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PLATE III.

Fig. 1. *Euphrosyne sibogae* Horst.

Fig. 1. Dorsal view of the anterior extremity of *Euphrosyne sibogae*. × 20.

Figs. 2—4. *Euphrosyne mucosa* Horst.

Fig. 2. Parapodium of *Euphrosyne mucosa*. · 35.
Fig. 3. Dorsal bristle of the same species. · 325.
Figs. 4, *a, b, c*. Ventral bristles of the same. · 325.

Figs. 5—7. *Euphrosyne pelagica* Horst.

Fig. 5. Parapodium of *Euphrosyne pelagica*. × 65.
Figs. 6, *a, b*. Dorsal bristles of the same species. Highly magnified.
Figs. 7, *a, b, c*. Ventral bristles of the same. Highly magnified.

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PLATE IV.

Figs. 1—3. *Euphrosyne sibogae* Horst.

Fig. 1. Parapodium of *Euphrosyne sibogae*. × 50.
Fig. 2. Dorsal bristle of the same species. Highly magnified.
Figs. 3, *a*, *b*, *c*. Ventral bristles of the same. Highly magnified.

Figs. 4—6. *Euphrosyne obiensis* Horst.

Fig. 4. Parapodium of *Euphrosyne obiensis*. × 20.
Fig. 5. Tip of a dorsal bristle of the same species. × 225.
Fig. 6. Tip of a ventral bristle of the same. × 225.

Fig. 7. *Euphrosyne maculata* Horst.

Fig. 7. Dorsal view of the anterior extremity of *Euphrosyne maculata*. × 16.

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PLATE V.

Figs. 1—4. *Euphrosyne longesetosa* Horst.

Fig. 1. Parapodium of *Euphrosyne longesetosa*. × 35.
Figs. 2 and 3. Tip of dorsal bristles of the same species. × 225.
Fig. 4. Tip of a ventral bristle of the same. × 225.

Figs. 5—7. *Euphrosyne maculata* Horst.

Fig. 5. Parapodium of *Euphrosyne maculata*. × 20.
Fig. 6. Tip of a dorsal bristle of the same species. × 325.
Figs. 7, *a*, *b*, *c*. Ventral bristles of the same. × 325.

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PLATE VI.

Fig. 1. Ringent bristle of *Euphrosyne pilosa*. × 325.
Fig. 2. Ringent bristle of *Euphrosyne affinis*. × 325.
Fig. 3. Ringent bristle of *Euphrosyne hystrix*. × 325.
Fig. 4. Ringent bristle of *Euphrosyne mucosa*. × 325.
Fig. 5. Ringent bristle of *Euphrosyne pelagica*. × 325.
Fig. 6. Ringent bristle of *Euphrosyne sibogae*. × 325.
Fig. 7. Ringent bristle of *Euphrosyne longesetosa*. × 325.
Fig. 8. Ringent bristle of *Euphrosyne obiensis*. × 325.
Fig. 9. Ringent bristle of *Euphrosyne maculata*. × 325.
Fig. 10. Ringent bristle of *Euphrosyne laureata*. × 325.
Fig. 11. Ringent bristle of *Euphrosyne globosa*. × 325.

Fig. 11 Ch. F. H. Dumont, cet. C. Ritsema del. Fa. P. W. M. Trap impr.

PLATE VII.

Fig. 1. *Eurythoe dubia* n. sp., dorsal view. Nat. size.
Fig. 2. *Chlocia flava*, dorsal view of two segments of the middle of the body. × 4.
Fig. 3. *Chlocia flava* var. *pulchella* (Baird), dorsal view of four segments of the middle of the body. × 10.
Fig. 4. *Chlocia parva*, dorsal view of four segments of the middle of the body. × 6.
Fig. 5. *Chlocia conspicua*, dorsal view of two segments of the middle of the body. × 4.
Fig. 6. *Chlocia amphora*, dorsal view of four segments of the middle of the body. × $5^1/_2$.
Fig. 7. *Chlocia fusca*, dorsal view of two segments of the middle of the body. × 8.
Fig. 8. *Chlocia violacea*, dorsal view of three segments of the middle of the body. × 8.
Fig. 9. A young *Chlocia*-specimen, dorsal view. × 15.

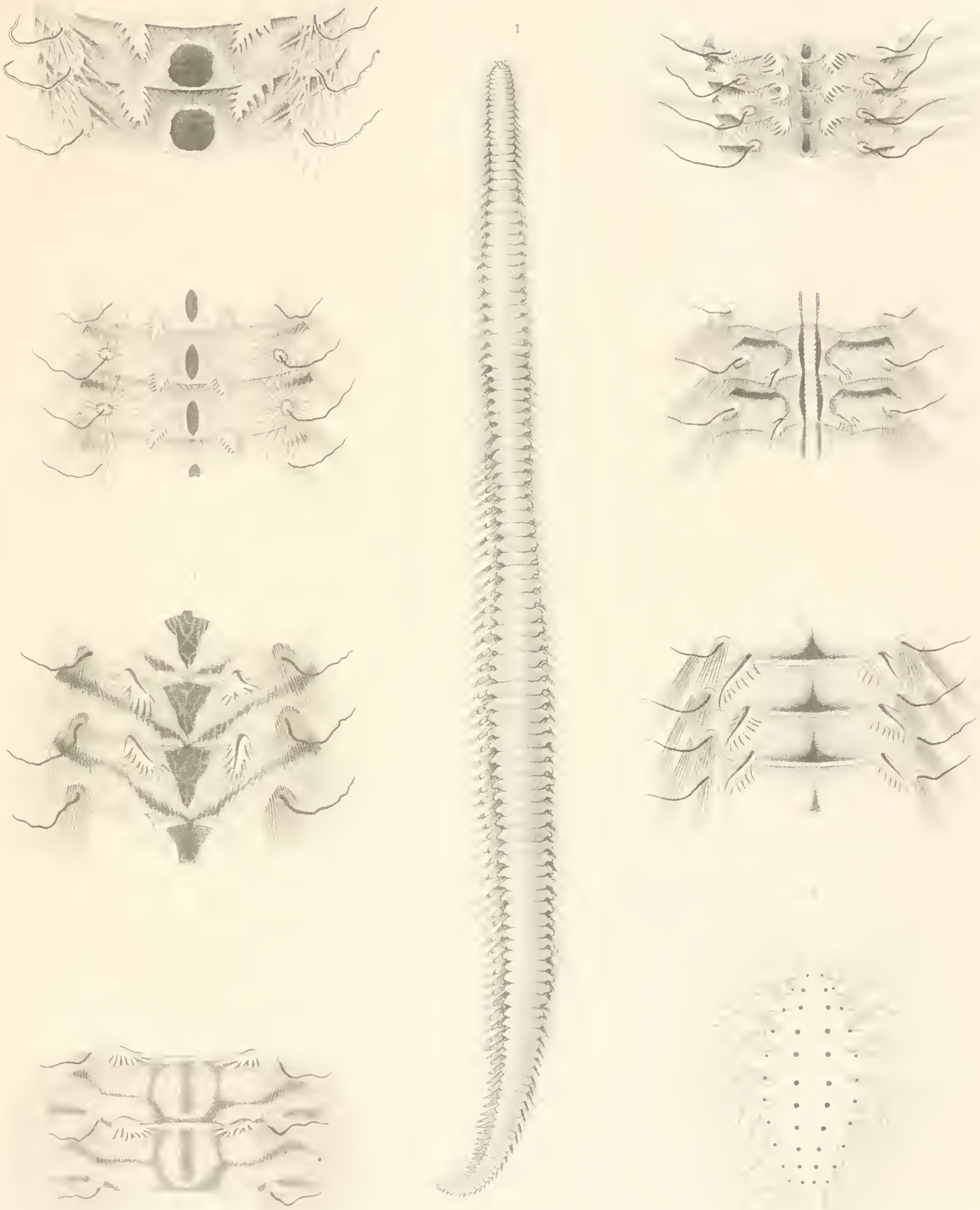

Fig. 9 autor, cet. Ch. F. H. Dumont del. Fa. P. W. M. Trap impr.

PLATE VIII.

Fig. 1. Serrated dorsal bristle of *Chlocia parva*. × 230.
Fig. 2. Smooth dorsal bristle of the same species. × 300.
Fig. 3. Ventral bristle of the same species. × 300.
Fig. 4. Serrated dorsal bristle of *Chlocia conspicua*. × 230.
Fig. 5. Ventral bristle of the same species. × 300.
Fig. 6. Serrated dorsal bristle of *Chlocia amphora*. × 230.
Fig. 7. Ventral bristle of the same species. × 300.
Fig. 8. Ventral view of the anterior segments of *Chlocia violacea*. × 6.
Fig. 9. Serrated dorsal bristle of the same species. × 230.
Fig. 10. Smooth dorsal bristle of the same species. × 230.
Fig. 11. Ventral bristle of the same species. × 300.
Fig. 12. *Bathychlocia sibogae*, dorsal view. × 30.
Fig. 13. Ventral view of the anterior segments of the same species. Magnified.
Fig. 14. Ventral bristle of the same species. × 300.
Fig. 15. Ordinary dorsal bristle of the same species. × 230.
Fig. 16. Smooth dorsal bristle of the same species. × 230.
Fig. 17. Serrated dorsal bristle of the same species. × 230.

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PLATE IX.

Fig. 1. Dorsal bristle of *Notopiges* [illegible] s. × 230.
Fig. 2. Dorsal bristle of the first segment of the same species. × 230.
Fig. 3. Ventral bristle of the same species. × 80.
Fig. 4. Dorsal bristle of *Notopiges sibogae*. × 80.
Fig. 5. Ventral bristle of the same species. × 80.
Fig. 6. Ventral bristle of *Notopiges cirratus*. × 230.
Fig. 7. Dorsal bristle of the same species. × 230.
Fig. 8. Dorsal view of the anterior segments of *Sangvinia hystrix*. × 55.
Fig. 9. Ventral bristle of the same species. × 230.
Fig. 10. Dorsal bristle of the same species. × 120.
Fig. 11. Dorsal bristle of the first segment of the same species. × 230.
Fig. 12. Anal cirrus of the same species. Highly magnified.
Fig. 13. Dorsal view of the anterior segments of *Parachloeia marmorata* n. sp. × 20.
Fig. 14. Ventral view of the head of the same species. × 20.
Fig. 15. Dorsal bristle of the same species. × 230.
Fig. 16. Ventral bristle of the same species. × 230.
Fig. 17. Bifurcated ventral bristle of *Phercardites parva* n. sp. × 300.
Fig. 18. Simple ventral bristle of the same species. × 300.
Fig. 19. Harpoon-shaped dorsal bristle of the same species. × 300.
Fig. 20. Dorsal view of the anterior segments of *Eurythoe complanata*. × 6.
Fig. 21. Smooth ventral bristle of *Eurythoe chilensis*. × 300.
Fig. 22. Serrated ventral bristle of the same species. × 300.
Fig. 23. Elongated ventral bristle of the same species. × 300.

Fig. 8 et 12 autor, cet. Ch. F. H. Dumont del.

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PLATE X.

Fig. 1. Dorsal view of the anterior segments of *Eurythoe parvecarunculata* n. sp. 32.
Fig. 2. Ventral bristle of the same species. × 300.
Fig. 3. Ventral spine of the same species. × 300.
Fig. 4. Harpoon-shaped dorsal bristle of the same species. × 230.
Fig. 5. Elongated dorsal bristle of the same species. 230.
Fig. 6. Dorsal view of the anterior segments of *Eurythoe dubia* n. sp. × 8.
Fig. 7. Elongated ventral bristle of the same species. × 230.
Fig. 8. Short bifurcated ventral bristle of the same species. × 100.
Fig. 9. Ventral bristle of the first segment of the same species. × 230.
Fig. 10. Ventral spine of the same species. × 230.
Fig. 11. Dorsal view of *Benthoscolex coccus* n. sp. × $1^1/_2$.
Fig. 12. Dorsal view of the anterior segments of the same species. × 25.
Fig. 13. Ventral view of the head of the same species. × 25.
Figs. 14 and 15. Short ventral bristles of the same species. × 300.
Fig. 16. Elongated ventral bristle of the same species. × 300.
Fig. 17. Dorsal view of the anterior segments of *Amphinome nigrobranchiata* n. sp. × 15.
Fig. 18. Inferior ventral bristle of the anterior segments of the same species. × 300.
Fig. 19. Superior ventral bristle of the anterior segments of the same species. × 300.
Fig. 20. Ventral bristle of the posterior segments of the same species. × 300.
Fig. 21. Lateral view of *Amphinome pulchra* n. sp., with a young one on its back. × 3.
Fig. 22. Harpoon-shaped dorsal bristle of the same species. × 300.
Fig. 23. Ventral spine of the same species. 300.

Siboga-Expeditie

POLYCHAETA ERRANTIA OF THE SIBOGA EXPEDITION

BY

Dr. R. HORST
Leyden

PART I

AMPHINOMIDAE

With 10 plates

Monographie XXIV[1]*a* of:

UITKOMSTEN OP ZOOLOGISCH, BOTANISCH, OCEANOGRAPHISCH EN GEOLOGISCH GEBIED

verzameld in Nederlandsch Oost-Indië 1899—1900

aan boord H. M. Siboga onder commando van Luitenant ter zee 1e kl. G. F. TYDEMAN

UITGEGEVEN DOOR

Dr. MAX WEBER
Prof. in Amsterdam, Leider der Expeditie

(met medewerking van de Maatschappij ter bevordering van het Natuurkundig Onderzoek der Nederlandsche Koloniën)

BOEKHANDEL EN DRUKKERIJ
VOORHEEN
E. J. BRILL
LEIDEN

RÉSULTATS DES EXPLORATIONS ZOOLOGIQUES, BOTANIQUES, OCÉANOGRAPHIQUES ET GÉOLOGIQUES
ENTREPRISES AUX
INDES NÉERLANDAISES ORIENTALES en 1899—1900,
à bord du SIBOGA
SOUS LE COMMANDEMENT DE
G. F. TYDEMAN
PUBLIÉS PAR
MAX WEBER
Chef de l'expédition.

Publié Juillet 1912

* Les numéros avec un astérique ont déjà paru; ceux marqués 1) seulement en partie

Voor de uitgave van de resultaten der Siboga-Expeditie hebben bijdragen beschikbaar gesteld:

De Maatschappij ter bevordering van het Natuurkundig Onderzoek der Nederlandsche Koloniën.

Het Ministerie van Koloniën.

Het Ministerie van Binnenlandsche Zaken.

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