

Official Business

Schmitt, W.L. (1936)
Macruran and Anomuran Crustacea
from Bonaire, Curacao and Aruba. -
Zool. Jb. (Syst.) Bd. 67, S. 363-378,
Pls. 11-13.

LIBRARY
Division of Crustacea

ZOOLOGISCHE ERGEBNISSE EINER REISE
NACH BONAIRE, CURACAO UND ARUBA IM
JAHRE 1930. NO. 16. MACRURAN AND
ANOMURAN CRUSTACEA FROM BONAIRE,
CURACAO AND ARUBA

BY WALDO L. SCHMITT

1936

Abdruck aus
Zoologische Jahrbücher
Abteilung für Systematik, Ökologie und Geographie der Tiere

Begründet von J. W. Spengel
Herausgegeben von Prof. Dr. M. Hartmann in Berlin-Dahlem
und Prof. Dr. R. Hesse in Berlin

Band 67. Heft 5/6

Verlag von Gustav Fischer in Jena
1936

Zool. Jb. (Systematik) Band 67

Heft 5/6

S. 337—454 Jena, 15. 1. 1936

Vollständig liegt vor:

HANDWÖRTERBUCH DER NATUR- WISSENSCHAFTEN

◆ ZWEITE AUFLAGE ◆

Herausgegeben von

R. Dittler
Physiologie

G. Joos
Physik

E. Korschelt
Zoologie

G. Linck
Mineralogie, Geologie

F. Otmanns
Botanik

K. Schaum
Chemie

Zehn Bände und Registerband

Rmk 570.—, in 11 Halbledeebände gebunden Rmk 645.50

Verlag von Gustav Fischer in Jena

Was wird darüber gesagt?

Süddeutsche Apothekerzeitung. 1915 Nr. 74: Die Zeiten sind endgültig vorbei, wo ein Mensch die gesamte Naturwissenschaft beherrschte, was noch Humboldt möglich war, der um die Wende des 18. Jahrhunderts lebte und wirkte. Nur ganz hervorragenden Köpfen ist es heute noch möglich, ihr eigenes Fach ganz zu wissen, die übrigen müssen sich begnügen, neben größeren oder kleineren Bruchstücken ihres eigenen Faches etwas von den übrigen Disziplinen zu kennen. Für diese übergroße Mehrheit der naturwissenschaftlich Gebildeten ist es ein tägliches Bedürfnis, sich über fernerstehende Fragen auf diesem Gebiet sichere Auskunft zu holen. Einzelne können sich größerer Fachbüchereien bedienen, doch ist es zeitraubend, in dicken Spezialwerken sich die gewünschte kurze und zusammenfassende Auskunft zu suchen. Für solche Aufgaben ist das vorliegende Handwörterbuch der Naturwissenschaften die gegebene Lösung. In zehn stattlichen Lexikonbänden ist eine solche Menge von Wissen übersichtlich angeordnet, daß wohl keine vernünftige Frage ohne Antwort bleibt. In größeren Abschnitten bearbeitet von über 400 hervorragenden Fachgelehrten, sind unter zusammenfassenden Stichworten die neuesten Forschungsergebnisse aufgeführt und kritisch bearbeitet. Für weiter auszudehnende Arbeiten folgt nach jedem Artikel eine möglichst ausführliche Angabe des neuesten Schrifttums vom In- und Auslande.

Das Gesamtinhaltsverzeichnis bildet einen Band für sich und enthält etwa 35 000 Stichworte mit zum Teil mehrfachen Hinweisen. Dazu kommt eine systematische Inhaltsübersicht, geordnet nach den einzelnen Fachgebieten.

Aehnlich wie die 1915 vollendete erste Ausgabe wird auch die zweite auf Jahre hinaus ein Bild des heutigen Standes der Naturwissenschaften geben und somit ein Markstein für lange Zeit sein.

Wenn oben die Höhe der wissenschaftlichen Arbeit betont wurde, so darf daraus nicht geschlossen werden, daß die Abhandlungen trocken geschrieben wären und deshalb beim Lesen ermüden würden. Die Frische der Darstellung und die Straffheit des Stiles machten das Durchlesen zu einem hohen Genuß.

Zur leichteren Verständlichkeit trägt, wie schon mehrfach erwähnt, die reiche Ausstattung mit Tafeln, Zeichnungen und Abbildungen wesentlich bei, wobei darauf hinzuweisen ist, daß gegen die erste Ausgabe vielfach Vermehrung derselben erfolgte.

Berücksichtigt man noch den klaren, schönen Druck, das gute Papier und die sonstige vorzügliche Ausstattung, so kann mit voller Ueberzeugung das Gesamtwerk als mustergültig bezeichnet werden. Es ist ein Werk, das im Inland und im Ausland die höchste Schätzung verdient. Fr.

Ausführlicher Prospekt mit systematischer Inhaltsübersicht kostenfrei.

*Nachdruck verboten.
Übersetzungsrecht vorbehalten.*

Zoologische Ergebnisse einer Reise nach Bonaire, Curaçao und Aruba im Jahre 1930.

No. 16.

Macruran and Anomuran Crustacea from Bonaire, Curaçao and Aruba.

By

Waldo L. Schmitt.

(United States National Museum, Washington D. C.)

With plates 11—13.

Mr. P. HUMMELINCK's recent collections show very plainly that the Dutch West Indies, and, perhaps, by the same token, the whole of the West Indies, still offers a fruitful field of exploration for the enthusiastic and industrious field naturalist.

Two earlier more or less comprehensive reports have appeared on the crustacean fauna of certain islands of these Dutch possessions (RATHBUN, 1901¹); SCHMITT, 1924 a), but over and above the species recorded therein, Mr. HUMMELINCK has brought together not less than twelve species not previously reported from those islands; four new species are included:

1) Crangonidae not included.

<i>Alpheopsis hummelincki</i> n. sp.	<i>Periclimenes maxillulidens</i> n. sp.
<i>Jousseaumea arubae</i> n. sp.	<i>Stenopus semilaevis</i> VON MARTENS
<i>Crangon armatus</i> RATHBUN	<i>Upogebia affinis</i> (SAY)
<i>Crangon nuttingi</i> SCHMITT	<i>Clibanarius cubensis</i> (SAUSSURE)
<i>Synalpheus longicarpus</i> (HERRICK)	<i>Dardanus venosus</i> (MILNE EDWARDS)
<i>Synalpheus</i> near <i>paraneptunus</i> COUTIÈRE	<i>Pagurus bonairensis</i> n. sp.

The present report and the two referred to above list between them a grand total of 83¹⁾ species, subspecies and varieties. Incomplete specimens whose probable specific relationship was not attempted have not been counted. Of this total, Mr. P. HUMMELINCK secured representatives of 51¹⁾.

It was indeed a pleasure to see again several of the species described for the first time in my paper on the crustaceans taken in 1920 by Dr. C. J. VAN DER HORST on the island of Curaçao, and to be able here to add somewhat to our knowledge of some of them.

The types of the new species, together with some material of 29 other species, have been presented to the United States National Museum (Cat. No. 67392—67426); the remaining material has been deposited in the Zoological Museum of Amsterdam.

List of species collected.

Family Penaeidae.

Penaeus brasiliensis LATREILLE.

RATHBUN, 1920, p. 319. SCHMITT, 1924 a, p. 61.
Curaçao: Asiento, in the Schottegat, Okt., 1 (V. H. VAN DEN BERGH coll.).

Penaeopsis smithi SCHMITT.

SCHMITT, 1924 a, p. 62, figs. 1, 2.
Bonaire: Kralendijk (de Hoop), under sandy debris, 11./11., 1.

Family Crangonidae.

Alpheopsis hummelincki n. sp.

A species near *Alpheopsis? euryone* DE MAN (1911, p. 184) from the Dutch East Indies, but differing at once in the shape of the median acute tooth which terminates the telson.

The frontal margin and appendages show a marked resemblance to DE MAN'S species. In it the rostrum forms a low, broader than

1) *Macrobrachium amazonicus* is not here considered, as it was collected by Mr. HUMMELINCK on occasion of a brief visit to La Ceiba, Venezuela.

high, acutely tipped triangle, while here it is narrower, more elongate, lingulate, and distally rounded off, obtusely pointed, its length measured from the level of the orbital borders is contained four and one half times in the distance between the orbito-lateral angles of the front. In *euryone* the rostrum is one-fifth as long as the distance between the orbital angles. The antennular peduncle of our species appears longer, and, therefore, relatively not so stout, chiefly because of the second article which is longer than wide. The reverse is true in DE MAN'S species. Furthermore, in the latter the outer margins of both the antennular and antennal scales are much more curved; in the new species the blade of the latter seems less truncate, and the former relatively a little longer.

The first legs, or chelipeds of the two species here compared, are not known. The second legs of both are very similar, DE MAN'S being the less slender with fingers and palm of chela subequal; the finger of *hummelincki* are half again as long as the palm. Of the second, third, and fourth joints of the carpus of DE MAN'S species, the fourth one is slightly the longest of the three named; in *hummelincki* the third joint is the longest. The dactyl of the third leg in our species is contained in the propodus less than two and one-half times, in DE MAN'S nearly two and three-fourths times; on the inferior margin of the ischium of both species near the base is a comparatively stout spine; not shown in DE MAN'S species if present, but occurring in ours, are two spines on the inferior margin of the merus, placed one near each end of the middle third of the joint.

The articulated epimera of the sixth abdominal somite are small and triangular. The hinder margin of the telson is most distinctive, forming a large triangular tooth, the sharply acute tip of which is formed by a narrowly pointed, flattened, lanceolate spine or process which of itself constitutes about three-fourths of the length of the median "tooth" of the telson. The same number of long slender setae appear to be common to both species. The large median tooth terminating the telson in DE MAN'S *euryone* is elongate-triangular, more or less linguliform, with a sub- or moderately-acute tip.

Holotype. — A single male specimen of approximately 13.5 mm in length from tip of rostrum to extremity of telson; taken by Mr. P. WAGENAAR HUMMELINCK, for whom the species is named, at Kralendijk (de Hoop), island of Bonaire, from under sandy coral débris, about 3 feet deep, 6./11. 1930. — U. S. Nat. Mus. Cat. No. 67395.

Remarks. — A most interesting result of Mr. HUMMELINCK'S investigation of the fauna of the Dutch West Indies; the second American species of *Alpheopsis*, and the first from the western tropical Atlantic.

DE MAN with some hesitation places his species in this genus, saying that the telson is like that of *Parabetaeus*, but the lack of a rostrum in that genus would definitely seem to preclude the inclusion of these two species. Except for this difference from the other members of the genus, which after all may be considered but one of degree, in view of the quite convex posterior telson margin of *A. trispinosus*, both species at present at least can best be accommodated in the genus *Alpheopsis*.

Jousseaumea arubae n. sp.

An apparently new species and the tenth to be described for the genus. The *Jousseaumeas* fall readily into two groups on the basis of the spinulation of the telson, inasmuch as the posterior border may be armed with either two or four spines either side of the median "trapeziform" notch. Our species, along with *J. sibogae* and *hilarula* of DE MAN (1911, p. 158, 160) and *J. [Athanas] ortmanni* (RANKIN) (1898, p. 251) belongs to the first mentioned, with two spines either side of the median notch. I have not yet examined the telson of that very distinctive species, *J. trigona* RATHBUN (1901, p. 111). Our species shows but a very slight trace of rostral carination, which cannot be seen unless the rostrum is well dried; moreover, the rostrum is broader and more distinctly triangular than in the other members of the genus. The lateral teeth of the front form an acute angle intermediate between the wider, more or less right-angled, approximately 90 degree, notch in DE MAN'S *Siboga* species and the sharply acute angle of COUTIÈRE'S (1896, 1897) *J. cristata* and *latirostris*. The antennular peduncle is short and stout, the rostrum attains the end of its second segment, and is exceeded by the antennular scale which reaches about to the middle of the outer border of the terminal segment.

Of the first pair of legs only the left, the smaller cheliped, is with the specimen. The first joint of the carpus of the second legs is longer than the remaining carpal joints taken together, the second joint is but very slightly longer than either the third or fourth joints which are about of equal length, the fifth joint is slightly longer than the sum of the third and fourth, and about equal to

the length of the second and third taken together; the chela is as long as the fifth, fourth, and two-thirds of the third taken together, fingers shorter than the palm, palm very little shorter than fifth joint of carpus.

The ischium of the third legs does not appear to be armed with the movable spine or spines that DE MAN has observed in the species he described from the Siboga collections (1911, p. 158, 160); the propodus has three spines beneath and two more at the distal end of the inferior or posterior margin; the dactyl is of good size and is contained in the propodus about two and one-third times.

The telson shows scarcely any trace of a "trapeziform" notch considered characteristic of the genus. It is but slightly emarginate medially, and in this emargination are six long slender setae between the two spines on either side.

Holotype. — A single specimen about 13 mm in length from the island of Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, about one foot deep, 18./6. 1930. — U. S. Nat. Mus. Cat. No. 67396.

Remarks. — Heretofore only two other species of *Jousseauzea* were known from the tropical Atlantic, *J. ortmanni* (RANKIN) (1898) and *J. trigona* RATHBUN (1901). The latter is a well marked species, but as the former has never had the rostrum and the frontal region satisfactorily figured, dorsal and lateral views are here supplied from a specimen in the National Museum identified with RANKIN's species by Dr. MARY J. RATHBUN and referred to by VERRILL (1900, 1922) in his accounts of Bermuda crustacea.

Crangon armatus RATHBUN.

RATHBUN, 1901, p. 108, fig. 20.

Curaçao: Boca Porto Marie, between corals, 15./4., 1.

Crangon candei (GUÉRIN).

SCHMITT, 1924b, p. 69.

Curaçao: St. Kruis Baai, rocky pools, 26./4., 2. — Bonaire: Lac (entrance), sandy débris behind the reef, 5./10., 4 (1 ovig.).

Crangon malleator (DANA).

SCHMITT, 1924a, p. 64.

Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock with algae, between tide marks, 5./9., 5; 20./9., 1. — Kralendijk (de Hoop), under sandy coral débris, 6./11., 1.

In error I placed *C. malleator* var. *edentatus* ZIMMER (1913) in synonymy under *C. nigrospinatus* in my "Report on the Macrura, Anomura and Stomatopoda collected by the Barbados-Antigua Ex-

pedition from the University of Iowa" (1924b, p. 71). It should have been referred to *C. malleator*, as in the reference above (1924a).

Crangon formosus (GIBBES).

SCHMITT, 1924a, p. 65.

Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 3 (1 ovig.). — Curaçao: Boca Porto Marie, between corals, 15./4., 2. — Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock, 16./9., 2. — Lac (entrance), sandy débris behind the reef, 5./10., 1.

Crangon cristulifrons (RATHBUN).

SCHMITT, 1924a, p. 65.

Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 1 ovig. — Curaçao: Boca Porto Marie, between corals, 15./4., 2; 17./4., 2. — Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock at water line: 3./9., 2 (1 ovig.); 5./9., 1; 16./9., 6 (3 ovig.); 20./9., 4 (1 ovig.). — Kralendijk (de Hoop), in colonies of *Zoanthus sociatus*, 6./11., 1 ovig.; under sandy coral débris, 6./11., 1 ovig. — Klein Bonaire: Eastern shore, sandy coral débris, 8./11., 5 (2 ovig.).

Crangon floridanus (KINGSLEY).

SCHMITT, 1924a, p. 65.

Bonaire: Lac (northern lagoon), sieved out of sand with *Halimeda*, about four feet deep, 12./10., one small broken specimen, which appears to be this species.

Crangon heterochaelis (SAY).

SCHMITT, 1924a, p. 65.

Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 1. — Bonaire: Lac (northern lagoon), sieved out of sand with *Halimeda*, depth about four feet, 12./10., 12 (9 ovig.).

Crangon nuttingi SCHMITT var.?

SCHMITT, 1924b, p. 78, tab. 2, figs. 4—6.

Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 6.

The carapace of this specimen in several features closely resembles *C. heterochaelis*, but identification with that species is precluded by the stouter ambulatory legs characteristic of *C. nuttingi*.

Crangon armillatus (MILNE EDWARDS).

SCHMITT, 1924a, p. 65.

Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 2. — Curaçao: Boca Porto Marie, between corals, 15./4., 1. — St. Kruis Baai, rocky pools, 26./4., 2. — Boca Grandi (Savouet), under stones, 2./5., 1.

Crangon bahamensis (RANKIN).

SCHMITT, 1924a, p. 65.

Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 17. — Curaçao: St. Kruis Baai, rocky pools, 26./4., 6. — Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock between tide marks, 5./9., 2; 19./9., 6 (4 juv.?, 1 ovig.). — Klein Bonaire: Eastern shore, 10./9. (5 tiny juv.).

Synalpheus fritzmülleri COUTIÈRE.

SCHMITT, 1924 a, p. 66.

Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 2 (1 ovig.). — Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock at water line, with algae: 5./9., 2; 16./9., 2 (1 ovig.); 20./9., 4 (1 ovig.). — Kralendijk (de Hoop), under stones, 12./5., 1; in colonies of *Zoanthus sociatus*, 6./11., 4 (1 ovig.) [these specimens approach closely the variety *elongatus*]. — Lac (entrance), sandy débris behind the reef, 5./10., 1. — Lac (Soerebon), 18./11., 1.

Synalpheus minus (SAY).

COUTIÈRE, 1909, p. 43, figs. 25—27.

Bonaire: Plaja Oranjepan, on *Sargassum* cast ashore, 7./9., 1. — Kralendijk (Pasangrahan), in mouldered coral rock at water line, with algae, 20./9., 1.

The front of this specimen is much like that of the subspecies *antillensis* COUTIÈRE (loc. cit.) but the carpocerite is of the character and of relative slenderness of the typical female figured by this author.

Synalpheus apioceros COUTIÈRE subsp.?

COUTIÈRE, 1909, p. 27, fig. 9.

Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock at water line, with algae, 19./9., 1 ovig.

An abnormal specimen inasmuch as the right orbital hood is bluntly rounded off and the outer spine of the basicerite is longer than in the typical form or any of the described subspecies (COUTIÈRE, op. cit.).

Synalpheus curaçaoensis SCHMITT.

SCHMITT, 1924 a, p. 66.

Bonaire: Kralendijk (de Hoop), in colonies of *Zoanthus sociatus*, 31./10., 1.

This find is the first indication that this species is not confined to the Island of Curaçao whence it was first described.

Synalpheus brevicarpus (HERRICK).

SCHMITT, 1924 a, p. 67.

Curaçao: Boca Porto Marie, between corals, 15./4., 1.

Synalpheus longicarpus (HERRICK).

COUTIÈRE, 1909, p. 53, figs. 31, 32.

Bonaire: Kralendijk (de Hoop), in colonies of *Zoanthus sociatus*, 6./11., 1.

Synalpheus sp. near *paraneptunus* COUTIÈRE.

Synalpheus paraneptunus COUTIÈRE, 1909, p. 86, fig. 52.

Bonaire: Kralendijk (de Hoop), in colonies of *Zoanthus sociatus*, 6./11., 1.

I find only two contiguous teeth on the outer uropod, where the typical species bears three or four. For want of further material, I hesitate to do more than tentatively determine this lone specimen.

Family **Hippolytidae**.*Hippolyte curaçaoensis* SCHMITT.

SCHMITT, 1924a, p. 68, fig. 4.

Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock at water line, with algae: 16./9., 1 juv.; 19./9., 1 ovig.; 20./9., 3 (1 ovig.). — Lac (entrance), sandy débris of corals, 5./10., 1 fragment. — Lac (northern lagoon), 12./10., 1.

The several specimens here recorded enable me to amplify the original description of the species which was based on a single specimen in poor condition. The number of rostral teeth appears quite variable, ranging from two to four above, and from one to three below. One specimen, indeed, had five teeth above on an abnormally slender rostrum; it is certainly not to be considered normal to the species. Three is the number of teeth most commonly found on the upper margin of the rostrum and one or two on the under side.

Lysmata intermedia (KINGSLEY).

Hippolysmata intermedia SCHMITT, 1924a, p. 69.

Curacao: Boca Porto Marie, between corals, 15./4., 1. — Bonaire: Lac (entrance), 26./10., 1.

Lysmata moorei (RATHBUN).

Hippolysmata moorei RATHBUN, 1901, p. 115, fig. 23.

Bonaire: Kralendijk (de Hoop), under stones, 12./5., 1.

Thor paschalis (HELLER).

SCHMITT, 1924a, p. 70.

Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 3 (2 ovig.). — Bonaire: Lagoen, on roots of *Rhizophora Mangle*: 16./11., 7 (3 ovig.) [in one of these the rostrum terminated in a simple acute tip]; 2./11., 3. — Lac (entrance), sandy débris of corals, 5./10., 1.

Family **Pontoniidae**.*Periclimenes americanus* (KINGSLEY).

RATHBUN, 1901, p. 121.

Bonaire: Lagoen, on roots of *Rhizophora Mangle*, 16./11., 1 ovig.

Periclimenes rathbunae SCHMITT.

SCHMITT, 1924a, p. 70, figs. 5, 6.

Bonaire: Kralendijk (de Hoop), under stones, 12./5., 2.

The rostra of these two specimens had respectively five and six teeth on the upper border. The latter is the same count as given for the type in the text of the original description, which is, however, at variance with the figure of the same specimen in which seven, the correct number of teeth, are shown.

Periclimenes maxillulidens n. sp.

A species reminding one of *P. atlantica* (RATHBUN). Many of the comments recently made upon that species in an account of the Macrura and Anomura of Porto Rico and the Virgin Islands collected by the expedition of the New York Academy of Science to those islands in 1914--15 (SCHMITT, 1935, p. 163), are equally applicable to the present species. Some of the mouth parts resemble the corresponding appendages of *Coralliocaris*, especially the third maxillipeds. The telson, the antennal scale, and the rudimentary or very short accessory branch of the outer flagellum of the antennule are reminiscent of *Pontonia* and *Conchodytes*.

The rostrum is short, as seen from above reaches about to the cornea; tridentate if the acute tip be included in the count, unarmed below; the rostral teeth are all well in advance of the hinder orbital margin. The basal joint of the antennular peduncle, as in Miss RATHBUN'S *P. atlantica*, is without the spine or spinous projection at the outer distal angle; however, I do not observe a spine as in that species on the under side of the inner margin of this joint; but like it the shorter ramus of the outer flagellum consists of a single free article. The antennal scale is much wider distally and more broadly rounded than in most species of *Periclimenes*, the spine is little conspicuous.

The maxillule may prove to be unique among the Pontonids. The several species I have had occasion to examine and those described and figured by others have the distal margin of the outer lacinia variously provided or armed with stout spines, setae or hairs, in various combinations. In none does the distal margin of this blade of the maxillule itself become forked, subdivided, or digitate as in the present species, these teeth or spines are in no way marked off from the rest of the lacinia. Otherwise, the outer lacinia is but sparsely and scatteringly haired; the endopodite was damaged in dissection. The third maxillipeds are quite stocky, the terminal joint measured on the median line being scarcely twice as long as its greatest width; it and the penultimate are nearly subequal, the latter being very slightly the longer; the penultimate joint is about one and two-thirds as long as wide, the exopodite reaches about to the middle of this joint.

In the first legs the chela is nearly as long as the carpus, with fingers about equal to the palm in length; carpus a little shorter

than the merus. Of the second pair only the large left one remains; the chela is very large and stout, though appearing quite flattened on the inner face; the carpus is very small, but half the length of the merus, and very feeble as compared with it. The ambulatory legs are of the general build of those of *P. atlantica* but much stouter; the propodus about or less than three and one-half times as long as its greatest width, in *P. atlantica* the ratio is nearer four and one-half times; the dactyls seem to have the terminal spine rather definitely marked off from the dactyl proper. The spine near the base of the dactyl of the third ambulatory leg of *P. atlantica* mentioned in the account of the *Macrura* of Porto Rico referred to above, may have been the result of a misinterpretation of an highly magnified microscopic preparation; a reexamination leaves me doubtful as to its actual presence, particularly as on the only other two ambulatory legs in the bottle with the type, but not attached to it, this spine is not apparent.

The abdominal epimera are all ventrally rounded off; those of the last somite are much narrower than the others. The telson has three pairs of spines on the hinder margin, of which the median pair is more slender, stout-setiform, and laterally haired, the intermediate pair is the longest and strongest, the outer pair short and stout; the dorsal spines of the telson are placed at the first and second thirds of its length, the proximal pair but slightly farther apart than the distal pair.

Holotype. — The species is founded on a single male specimen of which the carapace and rostrum together measure just about 2.2 mm in length; from Bonaire, collected by Mr. HUMMELINCK, in the Lac (entrance) from sandy debris behind the reef, about 4 feet deep, 5./10. 1930. — U. S. Nat. Mus. Cat. No. 67412.

Family Palaemonidae.

Macrobrachium olfersii (WIEGMANN).

RATHBUN, 1920, p. 324. HUMMELINCK, 1933, p. 319.

Bonaire: Pos Caranja, in a dim excavation filled with mesohaline water, 12./5., 5 (4 juv.); 17./5., 6 (1 young) [larger of these with an abnormal rostrum] 7./6., 16; 28./8., 12. Pos di Booi the same, 3./9., 3.

A number of the specimens of *M. olfersii* seem to be variants of the more typical individuals in having somewhat longer rostra and relatively slightly longer carpal joints in the second pair of legs. However, DE MAN (1904) describes and figures representatives of this species from West Africa showing like variations, and the specimens here recorded certainly fall within the limits he sets.

One might be tempted to describe these variants as a distinct form, but in view of the fact that there is not a single specimen that one might consider fully developed, showing fully mature characters, it seems best to let the matter rest as DE MAN did in the publication cited above.

Mr. HUMMELINCK has carefully color noted two specimens (Pos Caranja, 7.6.) as follows:

Larger specimen of about 57 mm in length from tip of rostrum to end of telson: „General appearance at first glance, dark violet; dorsally the abdomen is dark violet, with dull black spotted bands; third somite above with coarse yellow stripes bordered with black; sides dark violet, in general more or less dark speckled; hind portion of last two abdominal epimera yellow. An orange spot on either outer margin of the tail fan, likewise above the articulation of the somites of the abdomen; marginal hairs of tail fan orange. Carapace somewhat yellowish, sides brown-orange, anteriorly with narrow marginal bands and orange-brown spots. Antennae a hyalin orange-brown; eyes blackish violet. Legs brownish, darker margined; chela brown-violet, hairs brown; coxae of first legs violet, others brownish violet.“

Smaller specimens of about 40 mm in length: „Carapace milk-white-hyalin with stippled spottings of black, on sides with tiny spots of orange-brown, the same on the eyestalks. Legs with brownish-orange joints; chela brown, orange tipped; everywhere finely speckled with brown.“

Macrobrachium amazonicus (HELLER).

Palaemon amazonicus ORTMANN, 1897, p. 204.

Venezuela: La Ceiba, Estado Trujillo, in a ditch at the borders of the Lago di Maracaibo, fresh water, probably oligohaline, with *Metasesarma* and ?*Callinectes* 2., 8., 22.

Macrobrachium [*Palaemon*] *amazonicus* HELLER is the name which should be applied to the form from America assigned by various authors to *M. [P.] lamarrei* (MILNE EDWARDS), but the latter is from India and is distinct from the American species (cf. DE MAN, 1908).

Family **Gnathophyllidae**.

Gnathophyllum americanum (GUÉRIN).

SCHMITT, 1924 a, p. 72.

Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 2 (1 ovig.).

Family **Stenopidae**.

Stenopus semilaevis VON MARTENS.

SCHMITT, 1924 b, p. 86.

Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 1 ovig. — Boekoeti Reef (Oranjestad), between corals on a „Schorrenfläche“, 25./6., 1 ovig.

Family **Palinuridae**.

Panulirus argus (LATREILLE).

SCHMITT, 1924 a, p. 73, 1924 b, p. 86. HUMMELINCK, 1933, p. 304.

Aruba: Paardenbaai, 1930, 1 carapace. — Bonaire: Lac, Aug., 1 carapace; 2./12., 1 much broken, smaller specimen.

Family **Porcellanidae**.***Petrolisthes galathinus*** (Bosc).

SCHMITT, 1924 a, p. 73.

Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 2 (1 ovig.). — Lagoen Boekoeti (Oranjestad), from a shallow, muddy lagoon, 18./6., 3. — Boekoeti Reef (Oranjestad), between corals and débris of corals on the „Schorrenfläche“, 25./6., 2. — Bonaire: Kralendijk (de Hoop), in colonies of *Zoanthus sociatus*, 31./10., 1; under sandy coral débris: 12./5., 5; 6./11., 6; 11./11., 1.

Petrolisthes vanderhorsti SCHMITT.

SCHMITT, 1924 a, p. 73, tab. 8, fig. 7.

Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock at water line, with algae: 5./9., 3 (1 ovig., 1 juv.); 16./9., 3; 19./9., 1; 20./9. 4.

The carapace of some of these specimens (16./9.) are beautifully longitudinally striped in life. In alcohol the markings are of a greyish, bluish white on a ground of light tan, which anteriorly becomes almost orange in color.

Petrolisthes jugosus STREETS.

SCHMITT, 1924 a, p. 74.

Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock with algae at water line: 5./9., 12 (3 ovig.); 16./9., 2; 20./9., 3 (1 ovig.). — Kralendijk (de Hoop), in colonies of *Zoanthus sociatus*, 31./10., 1 ovig.; under sandy coral débris, 6./11., 8 (2 ovig.).

Petrolisthes amoenus (GUÉRIN).

SCHMITT, 1924 a, p. 74.

Bonaire: Kralendijk (de Hoop), under sandy coral débris, 6./11., 1. — Lac (entrance), sandy débris of corals behind the reef, 5./10., 1 ovig.

Petrolisthes politus (GRAY).*Petrolisthes magnifica* SCHMITT, 1924 a, p. 74.

Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock with algae at water line: 5./9., 2; 16./9., 4; 19./9., 1; 20./9., 1 + 1 cheliped. — Kralendijk (de Hoop), under sandy coral débris: 12./5., 3; 30./10., 7; 6./11., 4.

The color of two specimens (12./5.) were noted as „brown and violet“ and „red, with a bit of violet“, respectively.

Pisosoma angustifrons BENEDICT.

SCHMITT, 1924 a, p. 74.

Bonaire: Kralendijk (de Hoop), under stones in the surf (not heavy), 30./10., 1 ovig; in colonies of *Zoanthus sociatus*, 31./10., 6 (2 ovig.).

Pisosoma curaçaoensis SCHMITT.

SCHMITT, 1924 a, p. 75, tab. 8, figs. 1—3.

Bonaire: Kralendijk (de Hoop), in colonies of *Zoanthus sociatus*, 31./10., 7 (3 ovig., 1 juv.).

Megalobrachium poeyi (GUÉRIN),

SCHMITT, 1924 a, p. 76.
Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 1.

Pachycheles pilosus (MILNE EDWARDS).

SCHMITT, 1924 a, p. 76.
Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 1. — Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock, with algae at water line: 20./9., 1; 20./9., 1 ovig. — Kralendijk (de Hoop), under sandy coral débris, 12./5., 3 (1 ovig.); 6./11., 4 (1 ovig.).

Family Laomediidae.

Axianassa intermedia SCHMITT.

SCHMITT, 1924 a, p. 76, text-fig. 7, tab. 8, figs. 4, 5; DE MAN, 1928, pp. 15—17, tab. 1, fig. 2.
Aruba: Oranjestad, from a muddy pool, 5./7., 1.

I am pleased to see that this species has again been taken in the Dutch West Indies, this time from Aruba, an extension of its range, particularly as another attempt to obtain more specimens a few years ago at the type locality proved fruitless.

Family Callianassidae.

Callianidea laevicauda GILL.

SCHMITT, 1924 a, p. 79.
Bonaire: Kralendijk, from a narrow crevice in the rocky shore, 28./8., 1 ♂, 1 ♀ ovig. — Kralendijk (de Hoop), under sandy coral débris: 12./5., 1 ♂; 6./11., 1 ♀ ovig.

Upogebia affinis (SAY).

SCHMITT, 1924 b, p. 90.
Aruba: Punta Braboe (Oranjestad), between corals from a „Schorrenfläche“, 18./6., 1. — Bonaire: Lac (entrance), 26./10., 1 — Lac (northern lagoon), sieved out of sand with *Halimeda*, about four feet deep, 12./10., 1.

Family Paguridae.

Clibanarius antillensis (STIMPSON).

SCHMITT, 1924 a, p. 79.
Curaçao: St. Kruis Baai, in *Cerion wa*, in rocky pools, 23./4., 7. — Boca Grandi (Savonet), 28./4., 6; under stones, 2./5., 7; found together in clumps on stones on a sandy beach, 2./5., 100+; 2./5., 25+. — Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock at the water line: 5./9., 1; 20./9., 1. — Kralendijk (de Hoop), under stones, 12./5., 1. — Lagoen, on the roots of *Rhizophora Mangle*, 2./10., 1. — Lac (west from Rancho), crowded on a stone in a very shallow and muddy lagoon, 8./10., 100+. — Lac (entrance), on sandy débris behind the reef, 5./10., 6. — Klein Bonaire: East shore, on sandy débris of corals: 17./10., 2; 8./11., 3.

Clibanarius cubensis (SAUSSURE).

Clibanarius scolopetarius BENEDICT, 1901, p. 142.

Bonaire: Paloe Lechi, in a shallow pool, 28./8., 1 ♀.

Calcinus tibicen (HERBST).

SCHMITT, 1924 a, p. 79.

Bonaire: Kralendijk (Pasangrahan), in mouldered coral rock at the water line, with algae, 16./9., 2. — Kralendijk (de Hoop), under sandy débris, 11./11., 1. — Lagoen, on the roots of *Rhizophora Mangle*: 2./10., 3; 2./11., 1.

Dardanus venosus (MILNE EDWARDS).

SCHMITT, 1924 b, p. 95.

Bonaire: Lac (entrance), in a young *Strombus*, about 20 feet deep, 5./10., 1 ♀.

The large hand of this specimen seems narrower than usual, but as the other characters are those of the species, and as the difference in the width of the hand may perhaps be due to regeneration, variation within the species, or sex, I think it had better rest here.

Pagurus bonairensis n. sp.

A small pagurid which at first glance might well be mistaken for *P. marshi* BENEDICT (1901). The lack of an acute median frontal tooth or rostral projection at once sets the two apart. The front of our species is but gently convex medially, with a slight emargination either side before rising to the later convexities on either side, which are as far, or a little more, advanced than the median convexity; either lateral projection is armed with a short, sharp sub-apical spine. The anterior portion of the carapace is a little longer than wide across the antero-lateral angles; the entire carapace measured on the median line in the type is about equal to propodus of the larger cheliped in length.

The antennular peduncle exceeds the eyes, their terminal joints are at least two and a half times as long as the second or penultimate joints; the frontal width, measured across the widest part of the anterior or hard portion of the carapace, just behind the antero-lateral angles, is longer than the antennular peduncle measured from the rostral convexity.

The large chela is much like that of *P. marshi*, but the serrations on the outer margin are finer and the individual spines ornamenting the palm appear sharper. Moreover, the intermediate or secondary row of spines between the outer margin and the right hand moiety of the central \wedge present in *P. marshi* are wanting in our species. The small chela is quite triangular, not so in *P. marshi*.

The carpi have two rows of spines on the dorsal surface, with more or less of a trough-like area between them, the one row is a little to the outside of the median line of the joint, the other marks the inner margin of the carpus, just below and close to the latter is a second marginal, or rather a submarginal, row of spines. The spines forming these rows are more numerous, longer, and sharper than in *P. marshi*, in which the spines on the carpus do not so definitely form two rows on the upper surface of the carpus.

Holotype. Male, with carapace about 4.5 mm long, harder anterior portion 2.6 mm long by 2.4 mm wide; the large hand, or propodus, is 4.5 mm long. Taken by Mr. HUMMELINCK from sandy débris in the Lac (entrance), Bonaire, depth about 3 feet, 26./10. 1930. Two other much smaller specimens are in the bottle with the type. — U. S. Nat. Mus. Cat. No. 67425.

Otherwise, Mr. HUMMELINCK has three tiny specimens which appear to be of this species: two from Bonaire, Lac (entrance), from sandy débris of corals, 5./10., and Lac (northern lagoon), margin of *Rhizophora*, 16./10. 1930, and one from Aruba Boekoeti reef (Oranjestad), between corals at water line, 25./6. 1930.

Family Coenobitidae.

Coenobita clypeatus (HERBST).

SCHMITT, 1924 a, p. 80.

Aruba: Boekoeti Reef (Oranjestad), 25./6., 1. — Fontein (before the cave), 2./7., 2; (in the cave), 29./6., 1. — Curaçao: Hofje St. Kruis, very common land hermit, in shells of *Cerion uva* and *Drymaeus virgulatus* which they ordinarily do not seem to use, 24./4., 2. — Bonaire: Kralendijk, the common land hermit of Aruba, Curaçao, and Bonaire, leaves its „hole“ at night, or during the rain in the dry season, 2./12., 2. — Dos Pos, 24./5., 2. — Pekelmeer, 8./6., 1.

Family Hippidae.

Hippa cubensis (SAUSSURE).

SCHMITT, 1924 a, p. 80.

Aruba: Boca Prins, 28./6., 1 ♀ ovig. — Curaçao: Playa Manzanilla (St. Jan), on a sandy beach, eating dead fish, 18./4., 4 ♀ (3 ovig.) (P. J. PIJPEERS coll.). — Bonaire: Kralendijk (landing place), „tortugas“ burrowing in sand: 21./9., 2 ♀ ovig.; 23./9., 10 ♀ ovig. — Lac (Cay), „tortugas“ burrowing in the sandy beach, 5./10., 11 ♂ 4 ♀ ovig.

Literature cited.

- BENEDICT, JAMES E., 1901, The Anomuran Collections made by the Fish Hawk Expedition to Porto Rico, in: U. S. Fish Comm. Bull. for 1900, Vol. 20, pt. 2, p. 129—148, tab. 3—6.
- COUTIÈRE, H., 1896, Note sur quelques genres nouveaux ou peu connus d'Alphéidés, formant la sous-famille des Alphéopsidés, in: Bull. Mus. Hist. Nat. [Paris], Vol. 2, p. 380—386.
- , 1897, Note sur quelques Alphéidés nouveaux ou peu connus rapportés de Djibouti (Afrique Orientale), *ibid.*, Vol. 3, p. 233—236.
- HUMMELINK, P. WAGENAAR, 1909, The American species of snapping shrimps of the genus *Synalpheus*, in: Proc. U. S. Nat. Mus., Vol. 36, No. 1659, p. 1—93, figs. 1—54.
- , 1933, Reisebericht, Zool. Ergebn. Bonaire 1930, No. 1, in: Zool. Jahrb. (Syst.), Vol. 64.

- DE MAN, J. G., 1904, On Some Species of the Genus *Palaemon* Fabr., from Tahiti, Shanghai, New Guinea, and West Africa, in: *Trans. Linn. Soc. London, Zool.*, Vol. 9, pt. 8, p. 291—327, tab. 18—20.
- , 1908, Decapod Crustacea, with an account of a small collection from brackish water near Calcutta and in the Dacca District, Eastern Bengal, in: *Rec. Indian Mus.*, Vol. 2, pt. 3, No. 24, p. 211—231, tab. 18, 19.
- , 1911, The Decapoda of the Siboga Expedition, Part II, Family Alpheidae, in: *Siboga-Expeditie, 39 a¹*, p. 133—465; 1915, tab. 1—23.
- , 1928, The Decapoda of the Siboga Expedition, Part VII., The Thalassinidae and Callianassidae collected by the Siboga Expedition with some remarks on the Laomedidae, in: *Siboga Expeditie, 39 a²*, 1—187, tab. 1—20.
- ORTMANN, A. E., 1897, Os Camarões da Agua Doce da America do Sul, in: *Rev. Mus. Paulista*, Vol. 2, p. 173—216, 1 tab.
- RANKIN, W. M., 1898, The Northrop Collection of Crustacea from the Bahamas, in: *Ann. N. Y. Acad. Sci.*, Vol. 11, No. 12, p. 225—254, tab. 29, 30.
- RATHBUN, MARY J., 1901, The Brachyura and Macrura of Porto Rico, in: *Bull. U. S. Fish Comm. for 1900*, Vol. 20, pt. 2, p. 1—127, figs. 1—26, tab. 1, 2.
- , 1920, Stalk-eyed Crustaceans of the Dutch West Indies, collected by Dr. J. BOEKKE, 1904—1905, in: *Rappt. Vissch. Industr. Zeeprod. Curaçao*, pt. 2, p. 317—349, figs. 1—5.
- SCHMITT, WALDO L., 1924 a, The Macruran, Anomuran, and Stomatopod Crustacea. Bijdragen tot de Kennis der Fauna van Curaçao. Resultaten eener reis van Dr. C. J. VAN DER HORST in 1920, in: *Bijdragen tot de Dierkunde*, Vol. 23, Amsterdam, p. 61—81, figs. 1—7, tab. 8.
- , 1924 b, Report on the Macrura, Anomura and Stomatopoda, in: *Univ. Iowa Studies Nat. Hist.*, Vol. 10, No. 4, p. 65—99, tab. 1—5.
- , 1935, Crustacea Macrura and Anomura of Porto Rico and the Virgin Islands, in: *Sci. Survey Porto Rico and the Virgin Islands*, N. Y. Acad. Sci., Vol. 15, pt. 2, p. 125—227, figs. 1—80, tab. 1—4.
- VERRILL, A. E., 1900, Additions to the Crustacea and Pycnogonida of the Bermudas, in: *Trans. Conn. Acad. Art Sci.*, Vol. 10, pt. 2, p. 573—582, figs. 1—4, tab. 20 (part).
- , 1922, Decapod Crustacea of Bermuda, Pt. II, Macrura, *ibid.*, Vol. 26, p. 1—179, figs. 1—12, tab. 1—48.
- ZIMMER, C., 1913, Die Familie Alpheidae. Westindische Decapoden, 1, in: *Zool. Jahrb., Suppl.* 11, p. 381—412, text figs. A—G².

Explanation of Plates.

Plates 11—13.

Fig 1. *Alpheopsis hummelincki*, new species. *a* front from above. *b* same, lateral view. *c* second leg. *d* third leg. *e* telson. *f* extremity of telson, more enlarged. *g* uropod *h* same, distal margin of outer branch, more enlarged.

Fig. 2. *Jousseaumea arubae*, new species. *a* front from above. *b* same, lateral view. *c* smaller of first legs. *d* second leg. *e* third leg. *f* telson. *g* extremity of same, more enlarged. *h—i* *Jousseaumea ortmanni* (RANKIN); *h* front from above; *i* same, lateral view.

Fig. 3. *Periclimes maxillulidens*, new species. *a* lateral view of front. *b* carapace and front from above. *c* antennule and antennal scale. *d* mandible. *e* maxillula. *f* maxilla. *g, h, i* first, second, and third maxillipeds. *j* first leg. *k* left leg of second pair. *l* third leg. *m* dactyl of same, more enlarged. *n* telson. *o* extremity of same, more enlarged.

Fig. 4. *Pagurus bonairensis*, new species. *a* front from above. *b* larger chela and carpus. *c* small chela.

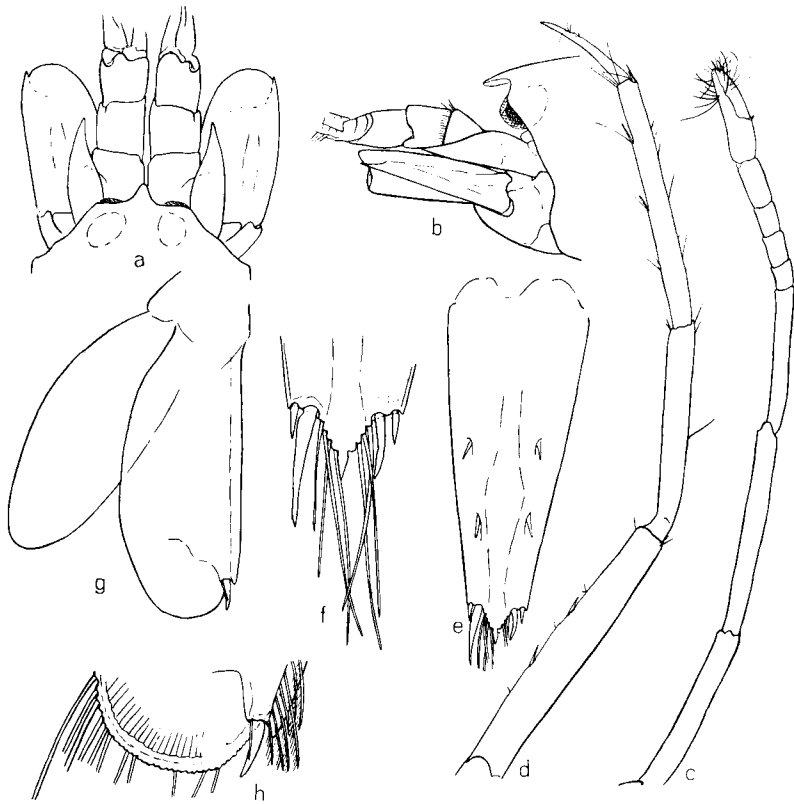


Fig. 1

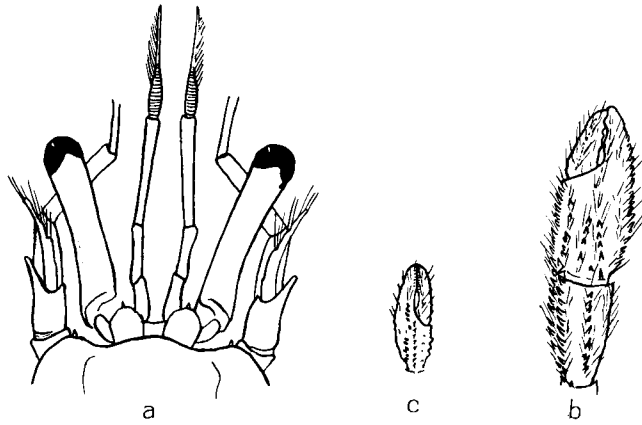


Fig. 4

Schmitt.

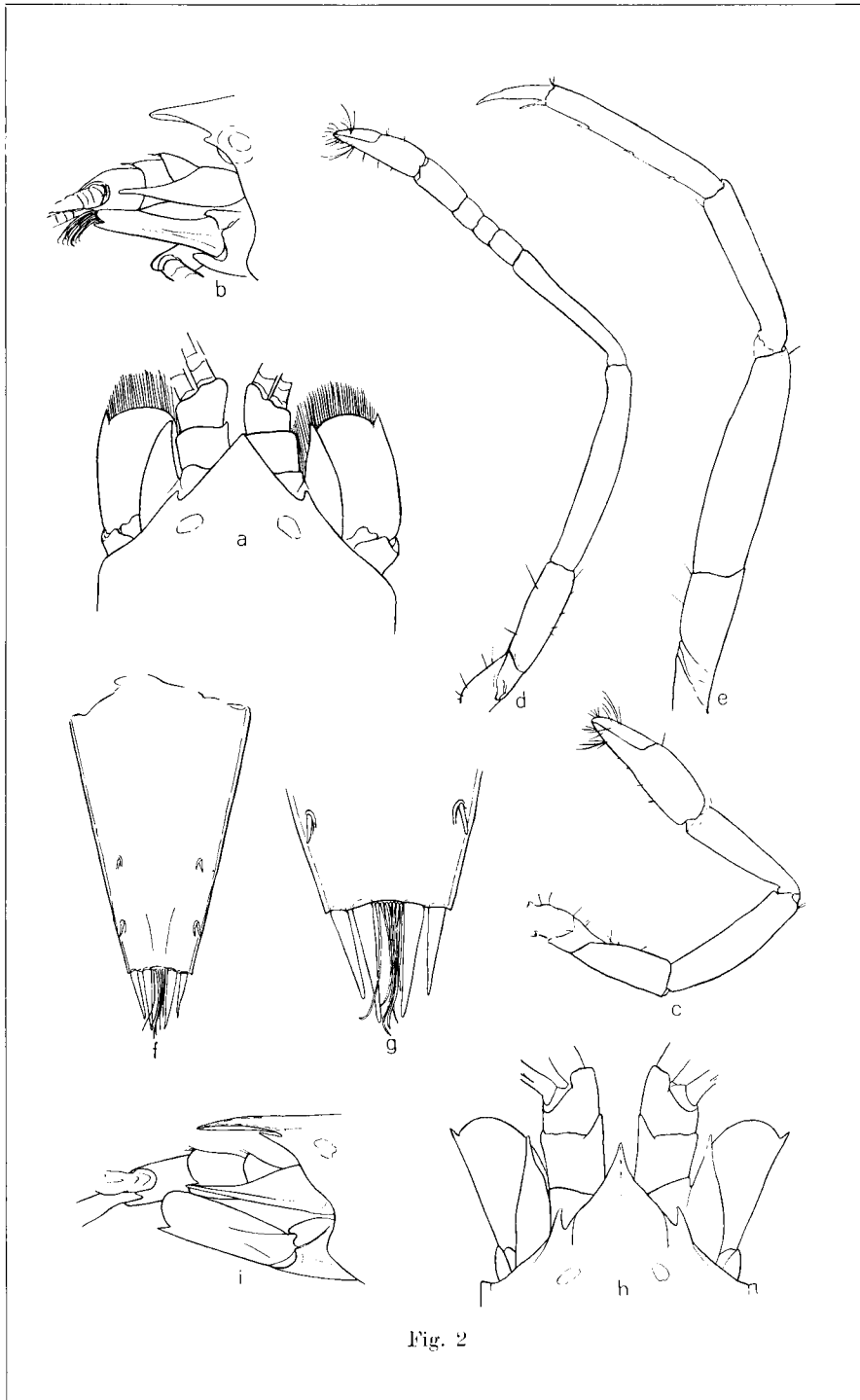


Fig. 2

Schmitt.

VERLAG VON GUSTAV FISCHER IN JENA.

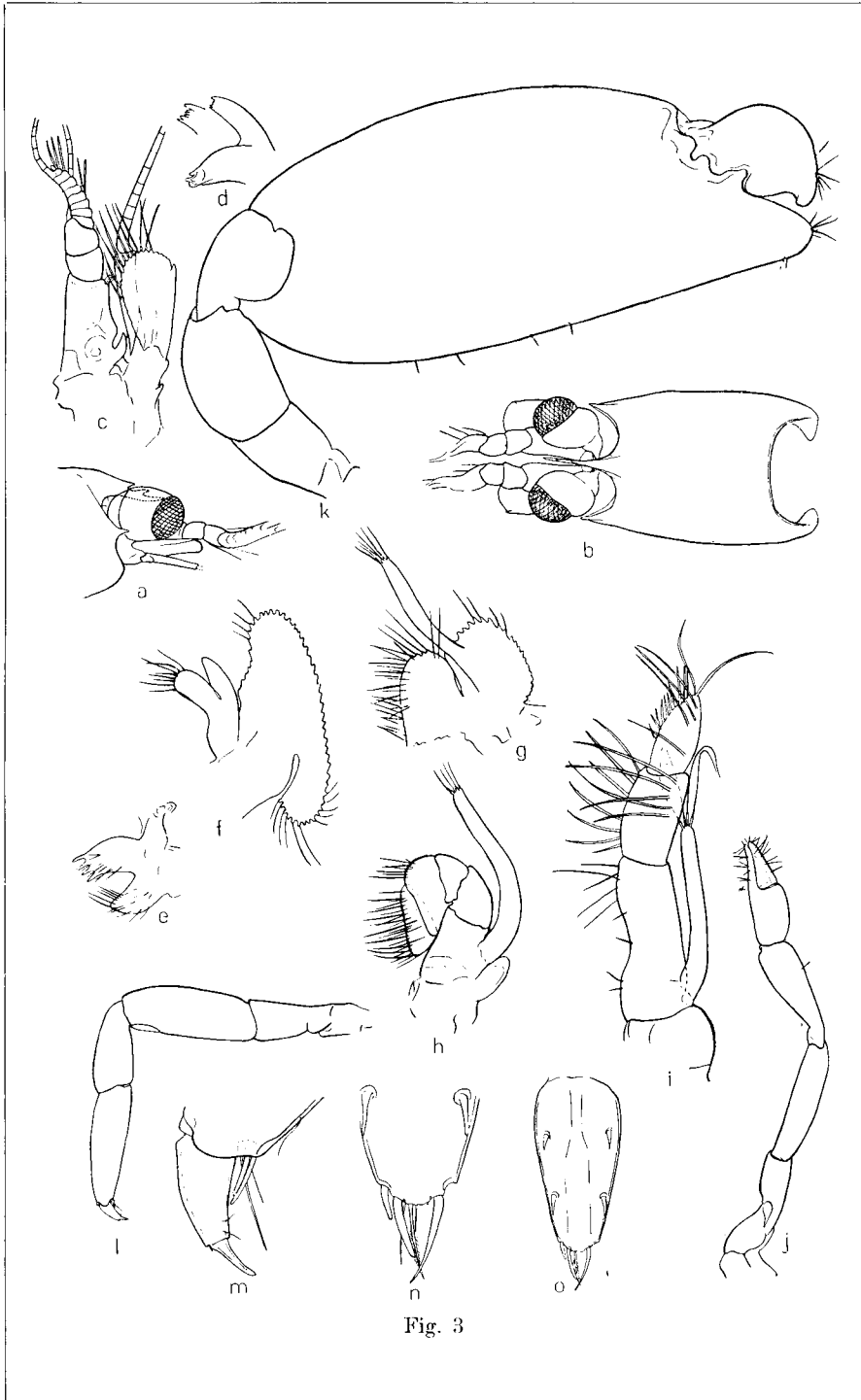


Fig. 3

Schmitt.

VERLAG VON GUSTAV FISCHER IN JENA.