

# T I J D S C H R I F T

DER

NEDERLANDSCHE

# DIERKUNDIGE VEREENIGING

ONDER REDACTIE VAN

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2<sup>de</sup> SERIE

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DEEL XI

BOEKHANDEL EN DRUKKERIJ

VOORHEEN

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DIAGNOSES OF NEW SPECIES  
OF MACRUROUS DECAPOD CRUSTACEA FROM THE  
„SIBOGA-EXPEDITION”

BY

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V<sup>1)</sup>

This paper contains the diagnoses of 29 new Species and of 3 new Varieties, all belonging to the Family *Alpheidae*. All the *Alpheidae*, collected by this Expedition, have now been worked out: 113 species and 20 varieties, of which 57, respectively 15, proved to be new to science. One new genus, *Aretopsis*, has been created. The *Macrura*, collected by the „Siboga-Expedition,” are at present at Ierseke, but will be transferred to the Zoological Museum of the University of Amsterdam, as soon as they have been worked out.

1. *Alpheus Stanleyi* Cout., var. *dearmatus* n.

Station 152. Wunoh-bay, N.W. Coast of Waigeu-island. Reef.

Station 240. Banda-anchorage. Depth from 9—36 M.

This variety differs from the typical species by the meropodite of 4th legs being *quite unarmed* at apex, while, according to

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1) The first Part, containing the diagnoses of 28 new Species and of 1 new Variety, was published in 1905 in the „Tijdschrift der Ned. Dierk. Vereen.” (2) T. IX, pp. 587—614, the second Part with 19 new Species and 1 new Variety in 1907 in the „Notes from the Leyden Museum,” Vol. XXIX, pp. 127—147, the third Part with 11 new Species and 2 new Varieties in 1908 in the same, Vol. XXX, p. 98—112, the fourth Part with 17 new Species and 10 new Varieties in 1909 in the „Tijdschrift der Ned. Dierk. Vereen.” (2) T. XI, p. 99—125.

Coutière (in litteris) „la 4me paire a le méropodite épineux comme la 3me.” The description of the typical species, in: Bull. Soc. Philom. Paris, T. XI, 1908, p. 17, contains a typographical error in the relative dimensions of the small chela: the height, indeed, is 0,72, not 1,72 (Coutière, in litt.).

Frontal region as in *A. superciliaris* Cout., but the projecting median part glabrous; rostral carina sharp, compressed. Antennular and antennal peduncles as in the typical species, but the terminal spine of the scaphocerite reaches almost to the extremity of antennular peduncle and the scale to the 2nd third part of distal article.

Relative dimensions of the 1st., 2nd and 3rd legs as in the typical species, those of 4th pair: Meropodite 2,45, carpus 1, propodite 1,5. Meropodite 5,6 times, propodite 6 times as long as wide.

Length of the largest specimen, a male, 14 mm.

## 2. *Alpheus tenuipes*, n. sp.

Station 204. Lat. 4° 20' S., long. 122° 58' E. Between islands of Wowoni and Buton; northern entrance of Buton-Strait. Depth from 75—94 M.

A new species of the group „*insignis*” Cout., closely related to *A. paracrinitus* Miers and to its var. *bengalensis* Cout.

Frontal margin transverse as in *A. paracrinitus* var. *bengalensis*, rostrum a little shorter than half the visible part of basal article, obtuse above and separated by feeble depressions from the orbits; the orbits quite open anteriorly, the rostrum being, as in *A. alpheopsides*, not thickened inferiorly. Telson as in *A. paralpheopsides*, but 4,8 times as long as the posterior margin is wide. Antennular peduncle 5 times as long as thick, the 2nd article twice as long as thick, one fourth longer or as long as the visible part of basal article, 3rd a little more than half as long as the 2nd. Carpocerite and scaphocerite as in the var. *bengalensis*, but the latter shorter, the scale reaching only to the middle of 3rd article or hardly beyond the 2nd. Meropodite of large chelipede 5 times, that of the smaller 6 times as long as broad, upper

margin unarmed at apex, infero-internal margin with 4, respectively 2 small, movable spinules and a larger immovable spine near the apex. Large chela of the female as in the var. *bengalensis*, but 4 times as long as high in the plane of the fingers; small chela as in that variety, the palm unarmed.

Relative dimensions of 3rd pair: Meropodite 1,8; carpus 1, propodite 1,44. Meropodite 8,5 times, propodite 12 times as long as broad, the propodite with 4 or 5 spinules, dactylus slender, 8 times as long as thick at base, simple and measuring almost  $\frac{2}{5}$  of the propodite. Dactylus of 5th pair a little more than  $\frac{1}{3}$  of the propodite.

Length 13 mm.

3. *Alpheus dolichodactylus* Ortm., var. *letopus* n.

Station 12. Lat.  $7^{\circ} 15' S.$ , long.  $115^{\circ} 15'. 6 E.$  Depth 289 M.

Station 19. Lat.  $8^{\circ} 44'. 5 S.$ , long.  $116^{\circ} 2'. 5 E.$  Bay of Labuan Tring, west coast of Lombok. Depth 18—27 M.

Station 213. Saleyer-anchorage and Surroundings. Depth 18—45 M.

Station 311. Sapeh-bay, East coast of Sumbawa. Depth up to 36 M.

Rostrum acute, reaching to the middle or to the 2nd third of visible part of 1st antennular article, orbital hoods as prominent as in *A. paralpheopsides* Cout. Telson and antennal region as in the typical species, but the 2nd antennular article hardly one and a half or even only one third longer than basal article, in the typical species almost twice as long as the latter. Chelipedes and three posterior legs more slender than in the typical species. Proportion between length and height of larger chela in the male 3,2, in the female 3, 6; in the male of the typical species 2,5, in the female 3. Proportion between length and width of meropodite of the small chelipede in the female 6,2, in the female of the typical species 3,45; proportion between length and width of small chela in the female of the variety 8, in that of the typical species 5,7.

Relative dimensions of 3rd pair in the male; Meropodite 1,9—2,

carpus 1, propodite 1,6—1,63; meropodite 7 times, propodite 10—10,9 times as long as wide.

In the male of the typical species the relative dimensions of 3rd pair are: Meropodite 2,07, carpus 1, propodite 1,44; the meropodite is 5,43 times, the propodite 7 times as long as wide.

Length of adult specimens of the variety 26 mm., of the typical species 33 mm.

#### 4. *Synalpheus hilarulus*, n. sp.

Station 152. Wunoh-bay, N.W. coast of Waigeu-island. Reef.

A new species of the *Paulsoni*-group. Frontal and antennal region as in *Syn. Paulsoni* Nob. (vide: Coutière, in: Proc. U. S. Nat. Mus. XXXVI, 1909, p. 23, Fig. 2), but the terminal spine of the scaphocerite, though much longer than the antennular peduncle, does not reach to the tip of the carpocerite. Carpocerite 3,5 times longer than thick in the middle and exceeding the antennular peduncle by two thirds of distal article. Scaphocerite hardly shorter than antennular peduncle. Antennular peduncle stout, 3,66 times as long as thick (at distal end of median article), median article hardly longer than thick, visible part of basal article almost one and a half as long as the 2nd, 3rd article hardly shorter than 2nd. Upper spine of basicerite well developed, though very small.

Telson 2,44 times as long as the width of posterior margin, the outer angles of which are acute, though not spinous; spinules of upper surface small, the anterior pair just midway between the base and the posterior margin, spinules of anterior pair almost as far distant from the lateral margins as from the median line of the telson.

Meropodite of both chelipedes with a small, acute tooth at apex of upper margin. Relative dimensions of the larger chela: Fingers 1; total length 4,6; height 1,6; this chela 2,82 times longer than high and 2,46 times longer than the smaller chela. Anterior margin of palm of larger chela with a small, acute spine, that of the other unarmed. Relative dimensions of the

latter: Fingers 1; total length 2,44; height 0,81; fingers tapering.

First carpal segment of 2nd pair as long as the sum of the four following and a little longer than the chela.

Relative dimensions of 3rd pair: Meropodite 2,23; carpus 1; propodite 2,05. Meropodite unarmed, 3,66 times longer than wide, propodite 6 times longer than wide, with 6 spinules. Dactylus 3 times longer than broad, its length one fourth that of the propodite (when measured to extremity of ventral hook); dorsal hook twice as long, but just as broad at its base as the ventral, angle between both hooks acute.

Ova not numerous, large, 0,95 mm. long. Length of single specimen collected 15 mm.

5. *Synalpheus gracilirostris*, n. sp.

Station 282. Lat.  $8^{\circ} 25' . 2$  S., long.  $127^{\circ} 18' . 4$  E. Anchorage between Nusa Besi and the N.E. point of Timor. Depth 27—54 M.

A new species of the *Paulsoni*-group, closely related to *Syn. hululensis* Cout. and to *Syn. Mac-Cullochi* Cout.

Rostrum slender, 8 or 9 times as long as wide in the middle, extending to the 2nd third part of median antennular article; lateral spines also slender, but two fifths shorter than the rostrum. Antennular peduncle 4 times as long as thick, the relative proportions of the three articles are as 8 : 5 : 5; 2nd article slightly longer than thick at distal extremity. Stylocerite as in *Syn. hululensis*. Lateral spine of basicerite rather stout, as long as the basal portion and reaching as far forward as 1st article; upper angle subacute, but with no spine. Carpocerite 3,75—3,8 times as long as wide, hardly surpassing the antennule, terminal spine just exceeding the carpocerite, for the rest the scaphocerite as in *Syn. hululensis*. Telson 2,34—3 times as long as the posterior margin is wide, the latter as in *Syn. hululensis*, but the median part more prominent, almost semicircular.

First pair of legs as in that species, but the tapering fingers of the smaller chela are shorter, the relative dimensions being:

fingers 1; total length 3,25; height 1. Larger chela 2,4 times longer than the other, its dimensions are: fingers 1; total length 3,87; height 1,35; palm with an obtuse tubercle on the anterior margin.

Second legs as in *Syn. hululensis*; relative dimensions of 3rd legs: Meropodite 2,4—2,5; carpus 1; propodite 2,23—2,2. Meropodite 4,6—5 times longer than wide and 1,07—1,15 times longer than the propodite which is 7,1—7 times longer than wide and armed with 9 spinules. Dactylus, measured from the base of anterior margin to the tip of ventral hook, a little less than  $\frac{1}{5}$  the propodite, similar to that of *Syn. hululensis*.

Ova few in number, 0,6—0,75 mm. long.

Length of ova-bearing female 10 mm.

#### 6. *Synalpheus* Theophane, n. sp.

Station 78. Lumu-Lumu-shoal, Borneo-bank. Reef.

Station 144. Anchorage north of Salomakiee-(Damar-)island. Reef.

Station 282. Lat.  $8^{\circ} 25' . 2$  S., long.  $127^{\circ} 18' . 4$  E. Anchorage between Nusa-Besi and the N. E. point of Timor.

A new species of the *Paulsoni*-group, closely related to *Syn. tumidomanus* Paulson and to *Syn. hululensis* Cout.

Rostrum 3 or 4 times as long as wide at base, reaching a little beyond the middle or almost to the extremity of 1st antennular article, lateral spines one fourth shorter than the rostrum, rarely only a little shorter, the three spines projecting straight forward, the tips not curved upward. The visible part of 1st article and the two following articles in proportion of 5 : 3 : 3; 3rd article as long as 2nd; stylocerite extending to the distal third of median article. Carpocerite 4,3—4,5 times longer than wide, a little longer than antennular peduncle; terminal spine of scaphocerite a little longer than carpocerite, scale almost reaching to tip of antennular peduncle. Lateral spine of basicerite distinctly shorter than the stylocerite, upper angle with a spine that measures  $\frac{1}{4}$  of the lateral spine.

Telson 2,6—2,85 times longer than the width of posterior margin, the latter semicircular, with the outer angles spiniform, but short, only half as long as the outer spinules; spinules of upper surface inserted at the angles of a rectangle, that is wider than long, spinules rather far distant from the lateral margins, the anterior pair before the middle, the posterior pair just as far distant from the posterior extremity of the telson as the posterior margin is wide.

Meropodite of small chelipede with a spiniform tooth at apex of upper margin, relative dimensions of the smaller chela: Fingers 1; total length 3,2; height 1,1. First carpal segment of 2nd legs 1,23 times as long as the sum of the four following, this sum equal to the length of the chela.

Relative dimensions of 3rd pair: Meropodite 2,34—2,4; carpus 1; propodite 2,1—2,2. Meropodite 1,1 times as long as the propodite and 4—4,6 times as long as wide; propodite 6,2—6,6 times as long as wide with 8—10 spinules; dactylus one fifth the propodite, similar to that of *Syn. hululensis*, dorsal hook twice as long but as broad at its base as the ventral.

Ova rather numerous, 0,75—0,8 mm. long. Length 13,5 mm.

#### 7. *Synalpheus Antenor*, n. sp.

Syn: *Alpheus biunguiculatus*, de Man, in: Archiv f. Naturg. 53 Jahrg. 1888, p. 502, Pl. XXI, Fig. 6,6a.

Station 154. Lat.  $0^{\circ} 7'. 2$  N., long.  $130^{\circ} 25'. 5$  E. Depth decreased from 83 till 59 M., during the haul.

Station 164. Lat.  $1^{\circ} 42'. 5$  S., long.  $130^{\circ} 47'. 5$  E. Depth 32 M.

Station 240. Banda-anchorage. Depth from 9—36 M.

As regards the frontal and antennal region, I refer to Fig. 6 of the quoted paper. Antennular peduncle slender, 6 times longer than wide, 2nd article twice as long as wide distally, hardly shorter than the visible part of basal article. Carpocerite very slender, 9 times longer than wide; upper angle of basicerite subacute, without a spine. Spinules of upper surface of telson farther distant from the lateral margins than in most other species, arranged in a

regular quadrate, the anterior pair in the middle or just before it. Telson in the male 2,88 times, in the female 3,4 times as long as the posterior margin is wide.

Proportion, in the male, between the length of both chelae 2,7. Relative dimensions of small chela: Fingers 1; total length 2,6; height 0,86. Fingers enlarged laterally. Fingers of 2nd pair a little shorter than the palm. Relative dimensions of 3rd legs: Meropodite 2—2,28; carpus 1; propodite 1,4—1,48. Meropodite 3,1—3,3 times as long as wide, propodite 4,45—4,5 times, meropodite unarmed; dactylus resembling that of *Syn. laticeps* (Coutière, l. c. Fig. 11c<sup>1</sup>). Ova large, 1,46 mm. long.

This species that belongs to the *Biunguiculatus*-group, attains a length of 40 mm., being one of the largest of this genus.

8. *Synalpheus bituberculatus*, n. sp.

Station 60. Haingsisi, Samau Island, Timor. Depth 36 M.

Station 78. Lumu-Lumu-shoal, Borneo-bank. Reef.

Station 164. Lat. 1° 42'. 5 S., long. 130° 47'. 5 E. Depth 32 M.

Station 184. Anchorage off Kampong Kelang, South coast of Manipa-Island. Depth 36 M.

Station 273. Anchorage off Pulu Jedan, East coast of Aru-islands (Pearl-banks). Depth 13 M.

Station 282. Lat. 8° 25'. 2 S., long. 127° 18'. 4 E. Anchorage between Nusa Besi and the N. E. point of Timor. Depth 27—54 M.

Station 315. Anchorage East of Sailus Besar, Paternoster islands. Depth up to 36 M.

A new species of the *Biunguiculatus*-group, closely related to *Syn. pachymeris* Cout., but distinguished from this and from all other species of *Synalpheus*, except *Syn. septemspinus*, by the anterior margin of the palm of larger chela terminating in two conical tubercles, placed abreast and directed obliquely upward and forward. Rostrum slender, with the tip curved upward and reaching to the middle, or in fully adult specimens to the 2nd third, of the visible part of basal antennular article; lateral spines triangular, acute, shorter

than the rostrum. Telson 3—3,24 times longer than the width of posterior margin, that is not prominent in the middle with the outer angles acute, though short; anterior pair of spinules placed far before the middle.

Antennular articles in the proportion of 6:4:3, stylocerite reaching to the second 3rd or 4th part of median article. Carpo-cerite slender, 5,5 times longer than thick, surpassing the antennular peduncle by the whole length of distal article; terminal spine of scaphocerite also longer than the antennule, scale very narrow, reaching to extremity of median article. Inferior spine of basicerite slender, longer than the stylocerite, upper spine well developed.

Third legs as in *Syn. pachymeris*, but the propodite a little longer and more slender with regard to the other joints; relative dimensions of 3rd legs: Meropodite 2,7—3; carpus 1; propodite 1,8—2,2. Proportion between length of meropodite and propodite 1,4—1,6. Meropodite 3,26—3,6 times longer than wide with 5—7 small, movable spinules on posterior margin; propodite 4,55—5,4 times longer than wide. Dactylus  $\frac{1}{6}$ — $\frac{1}{7}$  of the propodite, dorsal hook twice as long and one and a half as wide at its base as the ventral, interval between both hooks rounded at base.

Length of adult ova-bearing female 21,5 mm., ova 1,17 mm. long.

#### 9. *Synalpheus amabilis*, n. sp.

Station 240. Banda. Depth from 9—36 M.

A new species of the *Biunguiculatus*-group, closely related to *Syn. biunguiculatus exilipes* (Coutière, Fauna<sup>o</sup> Mald. and Laccad. Archip. 1905, p. 874, Pl. LXXI, Fig. 10).

Rostrum a little more than one and a half as long as wide at base, reaching to the middle of the visible part of 1st. antennular article, lateral spines one fifth shorter, projecting straight foreward. Antennal region as in the quoted species, but the three articles of the antennular peduncle, which is 4,3 times as long as thick, are in the proportion of 8:5:4. Stylocerite as long as

basal article, inferior spine of basicerite a little shorter than stylocerite, upper angle unarmed, obtuse.

Telson much narrowed backward, the proportion of its length to the width at base and to the width of the posterior margin are respectively as 4 : 3 and as 4 : 1; posterior margin prominent, semicircular, outer angles not acute. Spinules of upper surface small, inserted near the lateral margins, the anterior pair a little before the middle.

Relative dimensions of larger chela: Fingers 1; total length 3,77; height 1,18. This chela is 3,2 times as long as high, and 2,76 times longer than the smaller one, the proportions of which are: Fingers 1; total length 2,73; height 0,8. Palm of larger chela with an acute spiniform tooth at anterior margin, directed obliquely upward; palm of the smaller chela unarmed, fingers tapering, dactylus glabrous above. First carpal segment of 2nd legs 4 times as long as thick, being in proportion to the sum of the four following as 1 : 1,1; fingers in proportion to the palm as 7 : 5, chela as long as the sum of four last segments of carpus.

Following legs nearly as in *Syn. biunguiculatus exilipes*. Relative dimensions of 3rd pair: Meropodite 2,5; carpus 1; propodite 2,2. Meropodite unarmed, 4,8 times as long as wide, propodite 8 times, with 10 short spinules. Dactylus as in Fig. 10a'' (l. c.),  $\frac{1}{7}$  of the propodite, dorsal hook one and a half as long as the ventral.

Length of the single young specimen, that was collected, 10,5 mm.

#### 10. *Synalpheus* Theano, n. sp.

Station 164. Lat. 1° 42'. 5 S., long. 130° 47'. 5 E. Depth 32 M.

A new species of the *Biunguiculatus*-group, closely related to *Syn. neptunus* Dana.

Frontal spines as in this species, the rostrum 4 times as long as wide in the middle, hardly reaching beyond the middle of the visible part of 1st antennular article. Antennular peduncle 5 times as long as thick, visible part of 1st article one and a half as

long as the 2nd, 3rd a little shorter than 2nd, median article one third longer than thick distally. Stylocerite as in *Syn. neptunus*. Carpocerite 4,5 times longer than wide, as long as in *Syn. neptunus*, upper angle of basicerite acute, lateral spine reaching to the extremity of median antennular article. Lateral spine of scaphocerite only a little shorter than antennular peduncle, scale reaching almost to the extremity of median article.

Telson 4 times as long as the posterior margin is wide, outer angles of the latter not marked; spinules of upper surface large, those of the posterior pair measuring  $\frac{1}{7}$  the length of the telson and situated immediately before the middle; proportion between the length of telson and the distance of the anterior pair from the posterior margin 1,3.

Larger chela 2,7 times as long as high, relative dimensions: fingers 1; total length 3,85; height 1,4. Anterior margin of the palm as in *Syn. neptunus*. Fingers of the smaller chela enlarged laterally as in *Syn. neptunus*, but they are shorter, the relative dimensions being: Fingers 1; total length 2,7; height 0,9.

Following legs nearly as in *Syn. neptunus*. Proportion between 1st segment of carpus and the sum of the four following 1,41.

Relative dimensions of 3rd pair: Meropodite 2,4; carpus 1; propodite 1,8. Meropodite 3,64 times as long as wide, propodite 5 times, with 7 spinules; dactylus one sixth of the propodite, the two hooks subequal, almost parallel, the notch between both hooks broadly concave at base.

Length 10,5 mm.

#### 11. *Synalpheus septemspinosus*, n. sp.

Station 315. Anchorage East of Sailus Besar, Paternoster-islands.

Depth up to 36 M.

A new species of the *Biunguiculatus*-group, distinguished by the posterior margin of 6th abdominal somite being armed *with seven acute teeth*, one in the middle, one at the outer angles and two at either side between the median and the outer teeth; those at the outer angles are somewhat larger than the others.

Telson 3 times as long and twice as wide anteriorly as the posterior margin is broad, the latter not much prominent, with the outer angles acute, though very small. Rostrum reaching almost to the middle of visible part of 1st antennular article, lateral teeth triangular, subacute, half as long as the rostrum. Antennular peduncle and carpoperite rather slender, the former 5,4 times, the latter 5,65 times longer than thick; visible part of basal article one and a half as long as the 2nd and twice as long as the 3rd; stylocerite as long as 1st article. Terminal spine of scaphocerite reaching to midway between the tips of the two peduncles, scale reaching to the extremity of median article; spine at upper angle of basicerite well developed.

Larger chela 2,53 times longer than high, anterior margin of the palm with two tubercles, the inner twice as large as the outer. Small chela 3 times as long as high, fingers tapering, stout.

Second and following legs of a stout shape. Relative dimensions of 3rd legs, that closely resemble those of *Syn. pachymeris* Cout.: Meropodite 3, carpus 1, propodite 1,84. Meropodite 3,4 times longer than wide with 8 slender spinules and with setae on the distal half of posterior margin; propodite 4,3 times longer than wide, with 8 spinules. Meropodite of 4th pair unarmed.

Length of the single specimen collected 12,5 mm.

12. *Synalpheus quadrispinosus*, n. sp.

Station 49a. Lat.  $8^{\circ} 23'. 5$  S., long.  $119^{\circ} 4'. 6$  E. Sapeh-Strait. Depth 70 M.

Station 164. Lat.  $1^{\circ} 42'. 5$  S., long.  $130^{\circ} 47'. 5$  E. Depth 32 M.

Station 273. Anchorage off Pulu Jedan, East coast of Aru-islands. (Pearl-banks). Depth 13 M.

Station 310. Lat.  $8^{\circ} 30' 3.$  S., long  $119^{\circ} 7'. 5$  E. Depth 73 M.

Station 315. Anchorage East of Sailus Besar, Paternoster-islands. Depth up to 36 M.

A new species of the *Biunguiculatus*-group, distinguished, like also *Syn. quadridens*, n. sp., from all other species of this genus by the posterior margin of 6th abdominal somite being armed

with four acute teeth, two at the outer angles and two submedian; the external teeth are spiniform and twice as long as the submedian ones. Telson as in *Syn. biunguiculatus* (Stimps.) Coutière (in: Fauna Mald. and Laccad. Archip. 1905, Pl. LXXI, Fig. 8d), but the posterior margin less prominent than on that figure.

Frontal and antennal region as in that species (Coutière, l. c. Fig. 8), but the rostrum 3 times as long as wide in the middle, the stylocerite reaching almost to the middle or just beyond the middle of median article and the narrow scale of the scaphocerite extending to the middle of 3rd article. Relative dimensions of large chela: Fingers 1, total length 3,77—3,8, height 1,38—1,39, this chela 2,72—2,75 times as long as high. Anterior margin with an obtuse, flattened tubercle, that in young specimens appears rather acute. Large chela 2,7 times longer than the other. Relative dimensions of small chela: Fingers 1; total length 3—3,2; height 0,86—0,93, this chela 3,42—3,46 times longer than high. Fingers as in *Syn. biunguiculatus*, the outer margin of the dactylus fringed with long, stiff setae.

First segment of carpus of 2nd legs 3,7—4 times as long as thick distally, as long as the sum of the four following. Third legs as in *Syn. biunguiculatus*, dactylus  $\frac{1}{7}$ — $\frac{1}{6}$  the length of the propodite, dorsal hook a little longer and a little more slender than the ventral, the notch between both hooks concave at base, anterior margin of ventral hook perpendicular to the posterior margin of the dactylus.

Ova numerous, large, 1,25—1,5 mm. long.

Length of ova-bearing female 16—23 mm.

### 13. *Synalpheus quadridens*, n. sp.

Station 282. Lat. 8° 25'. 2 S., long. 127° 18'. 4 E. Anchorage between Nusa Besi and the N.E. point of Timor. Depth 27—54 M.

As in *Syn. quadrispinosus*, n. sp., in this species that also belongs to the *Biunguiculatus*-group, the posterior margin of 6th abdominal somite is armed, in the same manner, with four trian-

*gular teeth*, two at the outer angles and one at either side of the middle, the submedian teeth half as long as the outer.

Frontal teeth as in *Syn. pachymeris* (vide: Coutière, *Alpheidae* Mald. and Laccad. Archip. 1905, Pl. LXXI, Fig. 9). Antennular peduncle 4 times longer than thick at distal extremity of median article, visible part of basal article one and a half as long as the 2nd, 3rd a little shorter than 2nd. Stylocerite and outer antennae as in *Syn. pachymeris*, the carpocerite 5 times as long as thick in the middle, but the terminal spine of the scaphocerite is as long as the antennular peduncle and the narrow scale reaches to the extremity of median article.

Telson as in *Syn. quadrispinosus*, as regards the arrangement of the spinules of the upper surface and the form of the posterior margin, but the proportion between the latter and the length of the telson is 2,8, in *Syn. quadrispinosus*, 3,2—3,4.

Relative dimensions of small chela: Fingers 1; total length 3, height 1,2; the shape of this chela is stouter than in *Syn. quadrispinosus*, fingers as in this species.

Relative dimensions of 3rd pair: Meropodite 2,71; carpus 1; propodite 1,77, meropodite 1,53 times longer than propodite. Meropodite 3,05 times, propodite 4,2 times longer than wide, both of a stouter shape than in *Syn. quadrispinosus*; propodite with 8 spinules, dactylus as in that species.

Ova large, 1,3 mm. long. Length 12 mm.

#### 14. *Synalpheus trispinosus*, n. sp.

Station 51. Madura-bay and other localities in the southern part of Molo-strait. Depth from 54—90 M.

A new species of the *Biunguiculatus*-group, distinguished, like *Syn. triacanthus*, n. sp., by the posterior margin of 6th abdominal somite being *trispinose*. Frontal region prominent, rostrum slender, acuminate, with the tip curved upward and just reaching beyond 1st antennular article; lateral spines also slender and acuminate, reaching to the middle of that article. Antennular peduncle 4,5 times as long as wide at distal extremity of median article, the

three articles in proportion to one another as 16 : 11 : 8. Stylocerite just as long as the rostrum. Carpocerite 6,5 times longer than wide, as long as antennular peduncle, lateral spine of basicerite a little shorter than stylocerite, spine at upper angle half as long as the lateral. Terminal spine of scaphocerite a little longer than the peduncles, scale a little shorter than antennular peduncle.

Sixth abdominal somite 1,6 times as wide as long, posterior margin with an acute spine at the outer angles and with a third, slightly shorter, in the middle. Telson 2,47 times as long as the posterior margin is wide, posterior margin as in *Syn. acanthitelsonis* Cout.

Relative dimensions of larger chela: fingers 1, total length 4,3, height 1,53; anterior margin of the palm with a conical tubercle directed obliquely upward. Relative dimensions of smaller chela: fingers 1; total length 2,64; height 0,95. Dactylus tapering, slender.

Second legs slender; 1st carpal segment 6,55 times longer than thick at distal extremity, 1,31 times as long as the sum of the four following.

Proportions of 3rd pair: Meropodite 2,38; carpus 1; propodite 1,87; meropodite 3,36 times as long as wide, its posterior margin with 9 short spinules, inserted almost along the whole length. Meropodite of 4th pair with 7 spinules.

Ova numerous, 0,8—0,88 mm. long.

Length of ova-bearing female 19,5 mm.

#### 15. *Synalpheus triacanthus*, n. sp.

Station 289. Lat. 9° 0'. 3 S., long. 126° 24'. 5 E. Depth 112 M.

Living in *Solenocaulon* Gray.

A new species of the *Biunguiculatus*-group, distinguished, like *Syn. trispinosus*, by the posterior margin of 6th abdominal somite being armed with three spines, one at the outer angles and one in the middle. Telson also in this species, but the spiniform angles less prominent. Rostrum slender, acuminate, with the tip

curved upward and reaching to the 2nd third part of median article; lateral spines also slender and acuminate, slightly directed outward and upward, much shorter than the rostrum, and reaching almost to the middle of 1st antennular article. Antennal region as in *Syn. trispinosus*, but the stylocerite very slender, spiniform, except its basal part, and longer than the rostrum, just reaching beyond the middle of median article; carpocerite 4,5—5 times as long as wide.

Anterior pair of legs nearly as in *Syn. trispinosus*, but the smaller chela less high, this chela being 3,1 times as long as high; its relative dimensions are; fingers 1; total length 2,45; height 0,77. First segment of carpus of 2nd legs 5,2 times as long as thick at distal extremity,  $\frac{1}{10}$  longer than the sum of the four following. Relative dimensions of the following legs as in *Syn. trispinosus*, but the members are more slender and the meropodites are unarmed; meropodite of 3rd pair 4,5 times as long as wide, propodite 6,6 times. Dactylus of 3rd pair  $\frac{1}{8}$  of the propodite, dorsal hook twice as long as the ventral. Length 16 mm.

16. *Synalpheus bispinosus*, n. sp.

Station 33. Bay of Pidjot, Lombok. Depth 9—22 M.

Station 240. Banda-anchorage. Depth from 9—36 M.

A new species of the *Biunguiculatus*-group, closely approaching *Syn. biunguiculatus* (Stimps.) Coutière, and its variety *exilipes* Cout., but distinguished from all the species of this genus by the posterior margin of 6th abdominal somite being *bispinose*, the outer angles being produced into an acute tooth. Rostrum in the male 4 times, in the female 5 times as long as wide in the middle, reaching in the former almost to the middle, in the latter to the distal third part of 1st antennular article; lateral spines as the var. *exilipes* Cout. (*Alpheidae* Mald. and Laccad. Archip. 1905, Pl. LXXI, Fig. 10), a little shorter than the rostrum. Telson 3,44 times as long as the posterior margin is wide, the latter as in *Syn. biunguiculatus* (Coutière, l.c., Fig. 8d),

but less prominent in the middle; spinules of upper surface large, arranged as in *Syn. biunguiculatus*.

Antennular peduncle in the male 4,4 times, in the female 4 times as long as wide, the three articles being in the proportion of 7:4:3 in the male, while in the female the 1st is one and a half as long as the 2nd, the 2nd hardly longer than the 3rd. The stylocerite, the carpocerite which is 5 times as long as wide, the scaphocerite and the spines of the basicerite about as in *Syn. biunguiculatus*. Relative dimensions of large chela: fingers 1, total length 3,7, height 1,33; anterior margin of the palm with an obtuse tubercle. Proportion between the length of both chelae 2,4. Relative dimensions of small chela; fingers 1; total length 3,1; height 0,92. Dactylus tapering, its outer margin fringed with stiff setae.

Carpus of 2nd legs stout, 1st segment 2,75 times as long as thick distally, the sum of the four following one fourth longer than 1st segment.

Relative dimensions of 3rd pair as in *Syn. biunguiculatus*, but the meropodite 4 times as long as wide, the propodite 5 times; dactylus a little more than  $\frac{1}{7}$  the propodite, dorsal hook one and a half as long as the ventral, notch between both concave at its base.

Ova 0,75 mm. long. Length of the male 15 mm., of the ova-bearing female 14 mm.

#### 17. *Jousseaumea Sibogae*, n. sp.

Station 225. 5700 M. N. 279° E. from South point of South-Lucipara-island. Reef-exploration.

Rostrum triangular, acuminate,  $\frac{1}{4}$  longer than wide at base, extending a little beyond the middle of 3rd antennular article, upper surface slightly convex, not carinate; extra-corneal teeth as in *Jous. serratidigitus* Cout., measuring  $\frac{1}{5}$  the length of the rostrum, their internal margin making a right angle with the lateral margins of the rostrum. Antennal region as in that

species, the stylocerite extending to the middle of 3rd antennular article.

Pleura of 6th abdominal somite immovable. Length of telson equal to 4,5 times the width of posterior margin, the latter presenting a trapeziform notch in the middle, on each side of which *two* spinules are inserted; the inner longer spinule nearly as long as the posterior margin is wide.

Larger chelipede much resembling that of *Jous. serratidigitus*, but the slender meropodite slightly curved, its concave lower surface embracing the convex, lower surface of the palm. Palm ovoid, swollen, only a little longer than the fingers, the palm notched, near the carpal articulation, at the lower side, fingers exactly as in *Jous. serratidigitus*. Second legs as in *Jous. latirostris* Cout., but the chela twice as long as 5th carpal article.

Relative dimensions of 3rd legs: Meropodite 1,5; carpus 1; propodite 1,15. Meropodite 4,3 times as long as wide, carpus 5,2 times, propodite 7,7 times, the latter with 2 feeble spinules on the posterior margin and a stronger one at its distal extremity; dactylus simple, slender, half as long as the propodite.

Ova 0,63 mm. long. Length of ova-bearing female 10,5 mm.

18. *Jousseamea hilarula*, n. sp.

Station 164. Lat.  $1^{\circ} 42'. 5$  S., long.  $130^{\circ} 47'. 5$  E. Depth 32 M.

Carapace depressed. Rostrum acuminate, a little wider at its base than long and reaching to the extremity of median antennular article, with the lateral margins slightly concave; extra-corneal teeth very small, acute, directed as in *Jous. serratidigitus*, their inner margins making a right angle with the lateral margins of the rostrum. Median antennular article hardly longer than thick, twice as long as the visible part of basal article and about as long as the 3rd; carpocerite as long as antennal scale, reaching to the middle of 3rd article. Stylocerite a little shorter than rostrum.

Telson as in *Jous. Sibogae*, n. sp., the posterior margin with a small, trapeziform notch, at either side of which two spinules are inserted.

Large chelipede unknown. Meropodite of the small, other chelipede slightly curved, 4 times as long as wide; carpus three fourths, chela four fifths of the meropodite; chela 2,4 times as long as broad or high, fingers shorter than the palm, the proportion being as 1 : 1,35.

The measurements of the meropodite, the five segments of the carpus and the chela of 2nd legs are respectively: 1,85 mm.; 1,12 mm., 0,34 mm., 0,21 mm., 0,25 mm., 0.46 mm.; chela 0,77 mm.

Relative dimensions of 3rd pair: Meropodite 1,57; carpus 1; propodite 0,91. Meropodite 4,45 times as long as wide, carpus and propodite each 5,7 times, the propodite with 4 small spinules; dactylus simple, short,  $\frac{1}{4}$  of the propodite, of a rather stout form, 3 times as long as thick at base.

Dactylus of 5th pair similar to that of 3rd, but measuring  $\frac{1}{6}$  of the propodite.

Length 13,5 mm.

19. *Alpheopsis consobrinus*, n. sp.

Station 282. Lat.  $8^{\circ} 25'. 2$  S., long.  $127^{\circ} 18'. 4$  E. Anchorage between Nusa Besi and the N. E.-point of Timor.

Depth 27—54 M.

A new species closely related to *A. aequalis* Cout. Rostrum triangular, acuminate, as long as wide at its base, obtusely carinate above and just reaching beyond 1st antennular article. At each side of the rostrum the frontal margin soon curves downward, the front being rather narrow, without any trace of extra-corneal teeth. Pterygostomian angle armed with a small, acute tooth. Sixth abdominal pleura articulate, movable. Telson 5 times as long as the posterior margin is wide, the latter almost straight. Antennal region as in *A. aequalis* var. *truncatus* (Coutière, *Alpheidae* Mald. and Laccad. Archip. 1905, p. 869, Fig. 139b). Second article a little broader than long. Outer flagellum with two articles before bifurcation, the 1st slightly longer than the 2nd. Stylocerite acuminate, almost reaching to the middle of 3rd article.

Chelipedes nearly as in *A. aequalis*, the left much larger than the right. Meropodite of larger leg 2,8 times as long as broad, quite unarmed, but the outer surface with a ridge running obliquely over it. Carpus short, cyathiform. Chela 2,7 mm. long, 2,3 times as long as the meropodite, resembling that of *aequalis*, but the palm one fourth longer than the fingers. Smaller chela half as long as the larger.

Meropodite of 2nd legs 6,25 times as long as wide. The five carpal articles are 0,45 mm., 0,18 mm., 0,2 mm., 0,2 mm., and 0,3 mm. long; 2nd article one and a half as long as thick. Chela twice as long as 5th article, fingers slightly shorter than the palm. Following legs as in *A. trispinosus*. Ischiopodite of 3rd legs 5 times as long as wide in the middle, bispinose. Both the meropodite and the propodite are twice as long as the carpus, the meropodite 6 times, the propodite 10 times as long as broad; dactylus simple, two fifths of the propodite, slender, 7 times as long as broad at its base.

Length of the only specimen collected 10 mm.

20. *Alpheopsis Chalciope*, n. sp.

Station 154. Lat.  $0^{\circ} 7'. 2$  N., long.  $130^{\circ} 25'. 5$  E. Depth 83 M., decreased till 59 M. during the haul.

Rostrum slender, acuminate, almost as long as basal antennular article; extra-corneal teeth also acute, slightly curved inward, much shorter than the rostrum, hardly measuring one third. Corneae very black, entirely covered by the carapace. Pterygostomian angle terminating in a short, acute spine. Telson 4,7 times as long as the width of posterior margin, the latter as in *Alph. trispinosus* (Stimps).

The three antennular articles subequal, the 2nd one and a half as long as thick. Outer flagellum composed of two articles before bifurcation, the 1st twice as long as the 2nd (in *A. trispinosus* the 2nd is much longer than the 1st). Stylocerite acuminate, reaching almost to apex of median article.

Carpocerite 4 times as long as thick, as long as antennular

peduncle, scale of scaphocerite a little longer than median article, outer margin terminating in a slender spine. Basal article of external maxillipedes almost 6 times as long as broad.

Chelipedes of the female feeble, resembling those of *A. aequalis* (Coutière, Les Alphéidae. 1899, p. 193, Fig. 233), but the meropodite longer, 5 times as long as thick at distal extremity, and measuring two thirds the length of the chela; its distal angles obtuse. Palm without grooves, only a little shorter than the fingers. Length of chelipedes almost two fifths the length of the body.

First segment of carpus of 2nd legs twice as long as the 2nd and as the 5th that are equal and that are a little longer than the 3rd which is as long as the 4th.; chela as long as 1st segment and half as long as the meropodite. Third legs as in *A. trispinosus*, but the propodite almost just as long as the meropodite, not longer, dactylus simple, about  $\frac{1}{3}$  of the propodite.

Ova 0,6 mm. long. Length 10 mm.

#### 21. *Alpheopsis Sibogae*, n. sp.

Station 49a. Lat.  $8^{\circ} 23'. 5$  S., long.  $119^{\circ} 4'. 6$  E. Sapeh-strait.  
Depth 70 M.

Rostrum acute, short, hardly reaching beyond the proximal third of the visible part of basal antennular article; frontal margin broad, its outer angles slightly projecting forward and terminating in the acute extra-corneal teeth, that are directed inward, reaching to the middle of the rostrum. Eyes entirely covered above by the carapace. Pterygostomian angle rounded. Telson as in *Alpheopsis consobrinus*, but the posterior margin prominent.

Antennular peduncle slender, 2nd article twice as long as thick, as long as the visible part of the 1st., and one and a half as long as the 3rd; undivided part of outer flagellum composed of 4 short articles. Stylocerite acuminate, a little longer than basal article. Carpocerite slender, 6 times as long as thick and as long as antennular peduncle; scale narrow, just reaching beyond median antennular article.

Chelipedes equal, half as long as the body, directed straight foreward. Meropodite feeble, 4 times as long as its outer surface is wide, quite unarmed. Carpus short, cyathiform, anteriorly emarginate at either side, outer angle of anterior margin of upper surface terminating in an acute spine, inner angle obtuse. Chela slender, altogether inverted, the dactylus situated inferiorly and the plane of the fingers parallel with the sagittal plane of the body. Chelae 5,9 mm. long, fingers strongly compressed, much shorter than the palm, proportion between the length of the palm and that of the fingers as 1 : 0,55. Palm cylindrical, the lower (upper) border presents a rather broad though shallow groove running from the carpal articulation about to the middle, no transverse groove near the articulation of the dactylus. Immobile finger with an oblong groove beyond the middle, as in *Amphibetaeus*, a rounded prominence of the dactylus fitting into that groove; between this groove respectively this prominence and the articulation, the immobile finger bears 6, the dactylus 4 small, conical teeth. First segment of carpus of 2nd legs 1,3 times as long as the sum of the four following, very slender, 8,6 times as long as thick distally; 2nd and 4th segments equal, each of them one sixth the 1st., 3rd a little shorter, 5th one and a half as long as the 4th. Three posterior legs very slender, as in *A. trispinosus*, dactylus simple,  $\frac{1}{3}$  of the propodite.

Length of the only specimen collected 16 mm.

## 22. *Alpheopsis*? *Euryone*, n. sp.

Station 129. Anchorage off Kawio- and Kamboling-islands, Karkarolong-group. Reef.

Frontal margin as in *Alpheopsis aequalis* Cout., but the rostrum, that does not yet reach to the middle of the visible part of basal antennular article, a little wider than long; ophthalmopods widely accessible from before. Antennal region as in *A. aequalis* var. *truncatus* (Coutière, *Alpheidae* Mald. and Laccad. Archip. 1905, p. 869, Fig. 139), but the stylocerite reaching to the middle of median antennular article or hardly beyond it and with the terminal

spine of the rather broad scaphocerite very small, curved inward and not reaching beyond the rounded anterior margin of the scale; carpocerite about twice as long as thick, a little shorter than antennular peduncle.

Sixth abdominal somite with the pleura movable, articulate. Telson, as in *Parabetaeus Culliereti*, strongly narrowed backward and terminating in an acute tooth, that measures  $\frac{1}{9}$  the whole length of the telson and that makes distinct obtuse angles with the lateral parts of the posterior margin; spinules of upper surface and of posterior margin as in the genus *Parabetaeus*.

First pair of legs wanting. Second legs as in *Parabetaeus*, 1st carpal segment longer than the sum of the four following, the proportion being as 1:0,85; 2nd and 4th equal, a little longer than 3rd, 5th twice as long as 3rd; chela twice as long as 5th segment.

Relative dimensions of 3rd pair: Meropodite 1,4; carpus 1; propodite 1,16. Meropodite 6 times, propodite 9 times as long as wide, carpus 7 times as long as thick. Meropodite with one or two spinules on posterior margin, propodite with five; dactylus simple,  $\frac{2}{5}$  of the propodite, slender.

Ova 0,65 mm. long. Length of the single specimen collected 18,5 mm.

### 23. *Betaeus indicus*, n. sp.

Station 34. Anchorage off Labuan Pandan, Lombok. Depth 18 M.

Closely related to *Bet. aequimanus* Dana. Frontal margin but *very slightly* emarginate, the emargination concave. A fine suture runs from the antero-internal angle of the orbital hoods, on their inner side, backward and both sutures unite, at the base of the hoods, to run as a narrow, median suture or groove backward, almost to the middle of the carapace; orbital hoods separated from one another by a shallow, triangular groove. Eyes almost entirely covered by the carapace, ophthalmopods produced forward

from under the frontal margin and armed each with a strong, acute and compressed tooth.

Pleura of 6th somite not articulate. Telson 4,5 times as long as the posterior margin is wide, the latter as in *Bet. aequimanus*, but the spinules of upper surface nearer to the lateral margins.

Antennal region about as in *Bet. aequimanus*. Second antennular article hardly more than half as long as the 1st., 3rd almost one and a half as long as 2nd; stylocerite reaching to apex of median article. Carpocerite a little longer than antennular peduncle, scale reaching to the middle of 3rd article.

Meropodite of left chelipede of female unarmed, 3,2 times as long as broad; chela one and a half as long as the meropodite, 3,3 times as long as high and 2,75 times as long as the fingers. Fingers shutting close together, the dactylus situated inferiorly. Second legs as in *Bet. aequimanus*, but the 1st carpal segment, that is 4 times as long as thick, a little longer than the sum of the three middle segments that are equal; chela twice as long as 5th segment.

Three posterior legs as in *aequimanus*, the meropodite armed with a movable spine near the base and the dactyli biunguiculate, but the propodite *more slender*, that of 3rd legs 8,4 times as long as broad in the middle.

Ova 1,05—1,1 mm. long. Length of ova-bearing female 20 mm.

#### *Aretopsis*, nov. gen.

A new genus of Alpheidae, closely related to *Arete* Stimps. Looked at from above, the short rostrum appears acute, triangular, carinate, without any trace of supra-corneal teeth; in a lateral view it appears strongly compressed, with rounded tip, as in the genus *Athanopsis*. Extra-corneal teeth wanting, infra-corneal teeth (= outer angles of the orbits) acute, dentiform. Eyes as in *Arete*. Pterygostomian angle rounded. Pleura of 6th abdominal somite articulate, movable.

Antennal region as in *Arete*, but stylocerite shorter. Only one chelipede is known, it resembles the smaller of *Arete*. Meropodite

short, not vaginiform; carpus short, cyathiform. Chela compressed, turned outward, with both margins of the palm entire, but with a small groove on the upper (inner) surface just behind the articulation of the dactylus. Fingers compressed, cutting-edges sharp, that of the dactylus finely denticulate.

Legs of 2nd pair with the carpus as in *Synalpheus*, 5-articulate. Following legs stout, meropodite unarmed, dactylus biunguiculate.

24. *Aretopsis amabilis*, n. gen. n. sp.

Station 89. Pulu Kaniungan ketjil. Reef.

Besides the characters indicated for the genus, the only collected specimen, long 11 mm., presents still the following. Length of telson 3,5 times the width of posterior margin, that is truncate in the middle with two spinules near the hardly marked, outer angles; anterior pair of spinules of upper surface just before the middle. Second joint of antennular peduncle one and a half as wide as long, a little shorter than the visible part of the 1st., 3rd as long as the two preceding taken together. Stylocerite reaching to the middle of median article. Carpocerite and scaphocerite a little longer than antennular peduncle.

Outer surface of meropodite of (smaller) chelipede twice as long as wide in the middle, upper and infero-internal margins unarmed, infero-external with three slender, S-like, movable spinules on the middle. Chela one and a half as long as the meropodite, fingers just as long as the palm, which is one and a half as long as wide, with the inner (lower) margin carinate.

Meropodite of 2nd legs 5 times as long as wide and as long as the carpus. Carpal joints long 0,58 mm.; 0,14 mm., 0,14 mm., 0,14 mm., and 0,34 mm.; chela 0,78 mm. long, fingers as long as the palm.

Ischiopodite of the three following legs with a small spinule near the base. Measurements of 3rd pair: Meropodite 2, carpus 1, propodite 1,33. Meropodite 3,7 times, propodite 4,66 times as long as wide, the latter with 8 or 9 spinules. Dactylus  $\frac{3}{8}$  of the propodite, 4 times as long as wide; ventral accessory hook stout,

a little shorter than the other, but almost 3 times as thick at its base.

25. *Arete Iphianassa*, n. sp.

Station 125. Anchorage off Sawan, Siau-island. Reef.

A new species closely related to *Arete indicus* Cout. Frontal region and antennular peduncle with the stylocerite as in *A. indicus*, but the anterior margin of 1st and 2nd antennular article finely denticulate and the outer flagellum presenting, before bifurcation, four articles that are one and a half as long as thick. Carpocerite stout, one and a half as long as wide, hardly as long as antennular peduncle; scaphocerite as in *A. indicus*. Telson resembling that of *A. dorsalis* Stimps., 4 times as long as the posterior margin is wide; in the exopodite of caudal fan the distal extremity of outer margin is not curved outward.

First pair of legs asymmetrical in the male, symmetrical in the female. Meropodite of larger chelipede in the male twice as long as wide, palm and chela as in *A. indicus*, but the immobile finger is armed in the middle with a strong, truncate tooth and with another, smaller and obtuse, between this tooth and the articulation, while the dactylus bears, also in the middle, a rounded tooth, situated between the two of the immobile finger and intermediate in size. Small chela of the male as in *A. indicus*. In the female the chelae resemble the smaller of the male, but the fingers are a little shorter than the palm.

Second legs of a stouter form than in *A. indicus*, meropodite 3,5 times longer than wide, 1st segment of carpus a little shorter than the sum of the following and 3 times as long as thick distally.

Relative dimensions of 3rd pair in the male: Meropodite 2,1, carpus 1, propodite 1,7. These joints have the same form as in *A. indicus*, but the apical tooth of the meropodite is a little larger and the propodite bears 12 spinules, in the female 8; dactylus one third of the propodite, similar to that of *A. indicus*.

Ova of moderate size. Length 9,5 mm., both of the male and of the ova-bearing female.

26. *Arete maruteensis* Cout., var. *salibabuensis*, n.

Station 133. Anchorage off Lirung, Salibabu-island. Depth up to 36 M.

The single specimen that was collected, is a young female, long 8,5 mm., in which the chelipedes are equal and closely resemble the small chelipede of the female of *A. maruteensis* (Coutière, in: Bull. Mus. Paris, XI, 1905, p. 21, Fig. 4, the left). Second legs also as in this species, but the carpus is 1,5 times as long as the chela, instead of 1,4 times. Third legs a little less stout than in the typical species. Both the meropodite and the propodite are twice as long as the carpus; the meropodite is 3,35 times as long as wide, instead of 2,75 times, but for the rest agrees with that of the typical species; carpus twice as long as thick, the propodite not 4-, but 5 times as long as wide, dactylus one third of the propodite. Rostrum not one and a half, but twice as long as broad at its base, at each side a slight, rounded trace of supra-corneal teeth. Median antennular article one and a half as wide as long, distinctly shorter than the visible part of 1st and half as long as 3rd article. Stylocerite, carpocerite and scaphocerite as in the typical species.

Telson 3,5 times as long as the posterior margin is wide.

27. *Athanas jedanensis*, n. sp.

Station 273. Anchorage off Pulu Jedan, East coast of Aru-islands. (Pearl-banks).

A new species of the group „*dimorphus*”. Rostrum triangular, carinate, acuminate, projecting about to the middle of 3rd antennular article. Supra-corneal spine and infra-corneal spine wanting; extra-corneal spine reaching in the male with half its length beyond the eyes, in the female shorter. Antennal region nearly as in *A. naifaroensis* (vide: Coutière, Alpheidae Mald. and Laccad. Archip. 1905, p. 859, Fig. 131a). Telson slender, 4 times as long

as the posterior margin is wide, the latter half as wide as the width at base.

Meropodite of right chelipede of the male 3 times as long as the ischiopodite and 3 times as long as wide, presenting its greatest width at  $\frac{2}{7}$  of its length from the distal extremity; upper margin straight, lower S-like, the width at proximal extremity being in proportion to the greatest width as 17:40. Chela 1,4 times as long as the meropodite, resembling the small chela of *A. djiboutensis* (Coutière, Les Alpheidae, 1899, Fig. 209, the left). Left chelipede unknown. Chelipedes of the female equal, small, different from that of the male. Meropodite 3,5 times as long as wide and 1,7 times as long as the carpus, which is twice as long as thick distally; chela twice as long as the ischiopodite and hardly longer than the meropodite, length of the chela in proportion to that of the fingers as 16:7.

Relative dimensions of 3rd pair: Meropodite 1,9 (♂), 1,82 (♀); carpus 1; propodite 1,92 (♂), 1,93 (♀). Proportion between length and width of meropodite, in the male, 4,42, in the female 5,2; for the propodite these numbers are respectively 6,7 and 7,7. Dactylus slender,  $\frac{1}{3}$  of the propodite, 5 times as long as wide, with a small, ventral, accessory hook.

Ova numerous, small, 0,42—0,45 mm. long. Length of male 8,5 mm., of female 12 mm.

28. *Athanas Sibogae*, n. sp.

Station 37. Sailus ketjil, Paternoster-islands. Depth 27 M. and less.

Station 125. Anchorage off Sawan, Siau-island. Depth 31 M.

Station 162. Between Loslos and Broken-islands, West coast of Salawatti. Depth 18 M.

Station 258. Tual-anchorage, Kei-islands. Depth 22 M.

Station 273. Anchorage off Pulu Jedan, East coast of Aru-islands. (Pearl-banks). Depth 13 M. (Type locality).

Station 315. Anchorage East of Sailus Besar, Paternoster-islands. Depth up to 36 M.

A new species of the group „*dimorphus*.” Rostrum triangular, carinate, acuminate, reaching to just beyond the extremity of median antennular article. Supra-corneal spine wanting, extra-corneal spine as long as the eyes, infra-corneal spine also well developed. Antennal region as in *A. Naifaroensis* Cout., median antennular article slightly longer than thick, scale of scaphocerite a little longer than antennular peduncle. Telson 4,2 times as long as the posterior margin is wide, anterior pair of spinules a little before the middle; angles of posterior margin not prominent. Chelipedes in the male unequal, the larger closely resembling that of *A. djiboutensis* (Coutière, Alpheidae Mald. and Laccad. Archip. p. 857, Fig. 129e), the fingers gaping, but the immobile finger armed with a strong, compressed tooth, reaching to near the tip, dactylus strongly curved, with a tridentate, longitudinal lobe near the base and with three very small, conical teeth on the distal half. Ischiopodite in both legs with 6 movable spinules on the upper margin. Carpus of equal shape in both legs, very short, almost globular. Small chela like the larger, but the fingers shut close together and are finely denticulate. Chelipedes of the female similar to the smaller of the male, but the meropodite a little broader.

Second, third and fourth carpal segments equal, slightly longer than thick.

Relative dimensions of 3rd pair: Meropodite 2, carpus 1, propodite 2,18. Meropodite 6 times, propodite 9,6 times as long as wide; dactylus  $\frac{1}{3}$  of the propodite, slender, 6 times as long as broad at its base, biunguiculate, the ventral accessory hook half as long as the other, and half as broad at its base. Fourth and fifth legs also biunguiculate.

Length 8,5 mm.

29. *Athanas parvus*, n. sp.

Station 285. Lat. 8° 39'. 1 S., long. 127° 4'. 4 E. Anchorage South coast of Timor. Depth 34 M.

A new species of the group „*nitescens*”, closely related to *A. Granti*

Cout. from the South Adelaide Coast. Frontal region as in *A. Sibogae*, n. sp., but extra-corneal spine extending by half its length beyond the eye, infra-corneal spine but a little shorter. Median antennular article a little wider than long, half as long as the visible part of the 1st., 3rd a little longer than 2nd. Stylocerite and antenna as in *A. Sibogae*, like also the telson. Legs of 1st pair of female (the male is unknown) equal, feeble. Meropodite 1,7 times as long as the ischiopodite and 4,4 times as long as wide in the middle; carpus measuring two thirds the meropodite and  $2\frac{1}{2}$  times as long as thick at distal extremity; chela as in the female of *A. Naifaroensis* Cout., but hardly longer than the meropodite, the proportion being 1,08, and 4,4 times as long as high in the plane of the fingers.

Dactyli of the three posterior legs slender, 7 times as long as wide at base,  $\frac{1}{3}$  of the propodite, and biunguiculate; ventral hook half as long as the dorsal, its width at base one third that of the other. Relative dimensions of 3rd pair: Meropodite 2, carpus 1, propodite 2,25. Meropodite 7 times, propodite 10,2 times as long as wide.

Ova 0,5 mm. long. Length of ova-bearing female 6,5 mm.

30. *Athanas tenuipes*, n. sp.

Station 116. Lat.  $0^{\circ} 58' . 5$  N., long.  $122^{\circ} 42' . 5$  E. West of Kwandang-bay-entrance. Depth 72 M.

Rostrum slender, acute, 6 times as long as wide in the middle and just reaching beyond basal antennular article. Eyes almost entirely uncovered by the carapace. No supra-corneal spines. Extra-corneal spine almost as long as the eyes, infra-corneal tooth acute, dentiform, small, half as long as the extra-corneal spine. Measured from the base of the rostrum, the basal antennular article appears slightly longer than the two following that are subequal, taken together; stylocerite just reaching beyond the middle of median article. Carpocerite as long as antennular peduncle, scaphocerite slightly longer.

Telson 5 times as long as the posterior margin is wide; posterior

margin slightly emarginate or concave in the middle, with 2 long spinules at either side, the outer as long as the posterior margin is wide, the inner one and a half as long; width at base twice that of posterior margin.

Four posterior legs slender and thin. Meropodite of 2nd legs 12 times as long as thick; carpus 1,17 times as long as the meropodite. Carpal segments 0,61 mm., 0,09 mm., 0,1 mm., 0,1 mm., and 0,2 mm. long; 1st segment 8 times as long as thick, the three following almost as thick as long. Chela twice as long as 5th segment, fingers one and a half as long as the palm.

Measurements of 3rd legs: Meropodite 1,6; carpus 1; propodite 1,53. Ischiopodite with 2 spines. Meropodite 9 times, propodite 14 times as long as wide, the propodite without spinules. Dactylus  $\frac{2}{5}$  of the propodite, simple, slender, 10 times as long as thick at its base. Dactylus of 5th legs  $\frac{3}{5}$  of the propodite, slightly curved, tapering and simple like that of 3rd, 13 times as long as thick at base.

Length of the only, mutilated, specimen collected 7,3 mm.

31. *Automate anacanthopus*, n. sp.

Station 114. Lat.  $0^{\circ} 58' . 5$  N., long.  $122^{\circ} 55'$  E. Kwandang-bay entrance. Depth 75 M.

Station 193. Sanana-bay, East coast of Sula Besi. Depth 22 M.

Rostrum acute, very small,  $\frac{1}{5}$  the length of the eye-peduncles, that are a little shorter than the visible part of basal antennular article; this visible part and the two following articles are in proportion to one another as 4 : 5 : 2. Stylocerite a little shorter than basal article. Antennular peduncle slender, median article 3 times as long as thick in the middle. Carpocerite slender, 6 times as long as thick, slightly longer than antennular peduncle; terminal spine of scaphocerite reaching to the extremity of median article.

Telson 4,5—4,7 times as long as the width of posterior margin; lateral margins slightly emarginate on their proximal half.

Meropodite of small chelipede of female 3 times as long as wide, unarmed; carpus  $\frac{2}{5}$  the length of meropodite, one third longer than thick, with a small, acute tooth at distal end of upper margin and another larger one at that of the lower, both at the outer side. Chela a little more than 3 times as long as the carpus, and 3,3 times as long as high; fingers slightly shorter than the palm, shutting together with crossed tips, dactylus with small teeth along its whole length, immobile finger slightly dentate at its base and near the tip. Relative dimensions of 3rd legs: Meropodite 2, carpus 1, propodite 1,33. Meropodite 3,82 times as long as wide, carpus 3,3 times, propodite 5,3 times; the propodite narrowing distally, *devoid of spines* on its posterior margin, but setose; dactylus simple, measuring almost  $\frac{2}{3}$  of the propodite.

Length 9—10 mm.

32. *Ogyris Sibogae*, n. sp.

Station 102. Lat.  $6^{\circ} 4'. 1$  N., long.  $120^{\circ} 44'$  E. Depth 535 M.

Rostrum triangular, acute, slightly curved downward, just reaching beyond the rounded, extra-orbital angles and continued in a low, rounded crest, that reaches to the middle of the carapace and that is armed with 4 small, spiniform teeth. Carapace pubescent, anteriorly. Telson as in *O. occidentalis* Ortm., but the lateral margins with an obtuse prominence just before the middle; exopodite of caudal fan acute at the tip, narrow and curved outward.

Eye-peduncles slender, thickened at either extremity, a little less than half as long as the carapace, slightly shorter than the carpocerite, but as long as antennular peduncle. Median antennular article 3 times as long as thick and half as long as basal article. Stylocerite terminating in *two* acuminate spines, as in *O. occidentalis* Ortm., a little shorter than basal antennular article.

Carpocerite 5 times as long as thick, scaphocerite hardly reaching beyond the middle of carpocerite.

Legs of 1st pair equal, feeble, about as in *O. occidentalis*, chelae turned outward, measuring  $\frac{5}{7}$  of the carpus, fingers one third longer than the palm. Meropodite of 2nd legs 9 times as long

as wide in the middle, carpus 1,27 times as long as the meropodite, 4-articulate, the articles 1,34 mm., 0,36 mm., 0,3 mm. and 0,54 mm. long; chela just as long as that of 1st pair, twice as long as the 4th segment of the carpus.

Third and 4th legs about as in *O. occidentalis*. Proportions of 3rd pair: Meropodite 1,42, carpus 1, propodite 0,58. Meropodite 4 times, carpus 3 times as long as wide, propodite compressed, twice as long as wide at its base, dactylus as long as the propodite. Propodite fringed with long feathered setae, that occur also on the preceding joints.

Fourth legs fringed with long feathered setae along both margins, except the dactylus that measures one fourth the propodite; carpus a little more than half as long as the meropodite, propodite as long as the carpus.

Length of the single specimen collected 18 mm., carapace 5,5 mm. long, eye-peduncles 2,4 mm.