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PLANKTON

FROM

THE INDIAN OCEAN AND THE MALAY ARCHIPELAGO

BY

P. T. CLEVE

—
WITH 8 PLATES
—

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The following paper is the result of my examination of four collections, viz:

A series of samples collected in March 1897 by the late Dr. E. NYMAN on the route from Aden to Java.

A series of samples collected in February and March 1899 on the same route by the late Dr. C. AURIVILLIUS.

A considerable number of samples collected, also by Dr. C. AURIVILLIUS, from May to September 1899, in the Malay Archipelago, from Billiton to Timor.

An extensive series collected by Dr. R. WILLEMSSEN of the Dutch Navy on the route from 45° S. 22° E. (end of December 1899) to 30° S. 91° E. (middle of January 1900) and from the last point to 2° N. 94° E. (beginning of February 1900).

The samples procured by Dr. NYMAN were all small and had been collected by means of pumping water through a fine silk-net. No observations on the temperature or the salinity of the water correspond to these samples, which were examined for diatoms, dinoflagellates and tintinnodea, but not for other organisms.

The series obtained by AURIVILLIUS from Aden to Java were collected by filtering water drawn from the sea. Observations on the temperature were carried out and samples for determination of the salinity were taken simultaneously.

The very rich collection from the Malay Archipelago had been obtained by means of a tow-net. This collection belongs to the »Riksmuseum» of Stockholm, and I take this opportunity of thanking Prof. HJ. THÉEL, who delivered the collection to me for examination.

The collection of Dr. R. WILLEMSSEN on board the steamer »Tromp» of the Dutch Navy, contained 37 samples, all obtained by pumping water through a silk-net. Observations on the temperature of the water were carried out at the same time as the samples of plankton were taken, and, besides, water for chemical tests was bottled. For this very valuable collection I beg to offer Dr. WILLEMSSEN my best thanks.

The determinations of the salinity of the water have been carried out by Professor S. O. PETERSSON, who kindly procured me all hydrographical data.

Although the collections contained a very large number of species, they cannot afford a complete insight into the plankton of the Indian Ocean. Vaste regions remain at present unexplored and, besides, no samples have been collected in the Ocean from April to December. Therefore I consider the following data merely as rudimentary material for future generalisations.

In the following account I use the signs *t.* for the temperature of the water in centigrades, *s.* for the salinity pro mille; *rr.* denotes very rare, *r.* rare, *+* not rare, *c.* common, *cc.* very common.

Plankton-organisms from the Indian Ocean and the Malay Archipelago.

Pteropoda.¹

Clio (*Cresels*) *conica* (ESCH.). *Malay Archip.*, Bali Sound, May, abundant (t. 25,5; s. 32,84).

Cladocera.

Evadne tergestina CLAUS. Off *Sumatra*, 4° N. 100° E. March (t. 29,35; s. 30,84).

Ostracoda.

Paraconchoecia oblonga CLAUS. var. *Malay Archip.*, Bali Sound, May, rr. (3 spec.), t. 25,5; s. 32,84 (Determination by J. GUNNAR ANDERSSON).

Copepoda.

Acartia erythræa GIESBR. *Malay Archip.*, + May to September (t. 27,6, mean of 9 obs. max. 29, min. 25,3; s. 32,52, mean of 9 obs. max. 33,80, min. 31,81).

Acartia negligens DANA. *Arabian Sea*, 10° N. 64° E. (t. 26,7; s. 35,77). — *Malay Archip.*, r. June—July (t. 26,8, mean of 3 obs. max. 28,35, min. 25,7; s. 33,57, mean of 3 obs. max. 33,88, min. 33,08).

Acartia spinicauda GIESBR. *Malay Archip.*, r. May—September (t. 26,8, mean of 5 obs. max. 28,5, min. 25,3; s. 33,05, mean of 5 obs. max. 33,80, min. 32,22).

Acartia tonsa DANA. *Malay Archip.*, r. July, September (t. 25,8—28,50; s. 33,84—32,43).

Acrocalanus gibber GIESBR. *Malay Archip.*, May—Sept. c. (t. 27,6, mean of 9 obs. max. 29,35, min. 25,3; s. 32,57, mean of 9 obs. max. 33,88, min. 30,84).

Acrocalanus gracilis GIESBR. *Arabian Sea* and *Indian Ocean*, 13°—7° N. 52°—79° E. (t. 26,9, mean of 4 obs. max. 28,15, min. 25,1; s. 35,11, mean of 4 obs. max. 36,20, min. 34,00). — *Malay Archip.*, May to July +, Sept. r. (t. 26,4, mean of 7 obs. max. 28,5, min. 25,3; s. 33,23, mean of 7 obs. max. 33,80, min. 32,43).

¹ Appendicularia occurred in most samples, collected by AURIVILLIUS in the Malay Archipelago, but were not examined.

Acrocalanus longicornis GIESBR. *Arabian Sea*, 13°—10° N. 52°—64° E. (t. 25,1—26,7; s. 36,20—35,77). — *Malay Archip.*, June, July, September r. (t. 25,6—28,35; s. 33,06—33,76).

Acrocalanus pediger CL. n. sp. *Malay Archip.*, June, July; Sumba, Timor (t. 25,7 to 26,8; s. 33,71 to 33,88) probably common. I at first considered this form to represent *A. monachus* GIESBR., but having found that it has the 5:th pair of legs developed, I leave out all my notes concerning the latter species, which probably has in many cases been confounded with *A. pediger*.

Calanopia Aurivillii CL. *Malay Archip.* (July, Semau Sound r., t. 25,6; s. 33,64).

Calanopia elliptica DANA. *Malay Archip.*, June—July r. (t. 25,6—28,35; s. 33,06—33,71).

Calanus Darwinii (LUBB.). *Malay Archip.*, May to July + (t. 26,2, mean of 5 obs. max. 28,35, min. 25,3; s. 33,46, mean of 5 obs. max. 33,88, min. 32,94).

Calanus minor (CLAUS). *Arabian Sea*, 12°—13° N. 46°—59° E. (t. 24,8—25,6; s. 36,20—36,37). *Malay Archip.*, May, July r. (t. 25,5—25,6; s. 32,91—33,64).

Calanus pauper GIESBR. *Malay Archip.*, June, September r. (t. 26,2—28,5; s. 32,43—33,80).

Calanus vulgaris (DANA). *Arabian Sea*, (11° N. 62° E., t. 26,35; s. 36,01). *Malay Archip.*, May to Sept. + (t. 27,26, mean of 10 obs. max. 28,8, min. 25,5; s. 32,99, mean of 10 obs. max. 33,80, min. 31,81).

Calocalanus pavo (DANA). *Indian Ocean* (January, 23° S. 90° E., t. 25,2; s. 35,22). *Malay Archip.*, May—July r. (t. 25,5—28,35; s. 32,91—33,76).

Candace catula GIESBR. *Malay Archip.*, May—July r. (t. 25,5—28,35; s. 32,91—33,88).

Candace pachydactyla DANA. *Malay Archip.*, May, July r. (t. 25,5; s. 32,91—33,64).

Candace simplex GIESBR. *Malay Archip.*, May r. (t. 25,3—25,5; s. 32,91—32,94).

Centropages calaninus (DANA). *Arabian Sea*, 12°—8° N. 44°—72° E. (t. 24,8—28,15; s. 34,47—36,20). *Malay Archip.*, May, July r. (t. 25,6; s. 32,91—33,88).

Centropages furcatus (DANA). *Malay Archip.*, May, June, September + (t. 28,3, mean of 8 obs. max. 29,3, min. 25,3; s. 32,21, mean of 8 obs. max. 33,06, min. 30,94).

Centropages gracilis (DANA). *Malay Archip.* (Bali Sound, May rr., t. 25,5; s. 32,91).

Centropages Orsinii GIESBR. *Arabian Sea*, (13° N. 52° E., t. 25,1; s. 36,20). *Malay Archip.*, June r., September + (t. 28,3, mean of 6 obs. max. 29, min. 26,80; s. 32,64, mean of 6 obs. max. 33,71, min. 31,99).

Clausocalanus arcuicornis (DANA). *Arabian Sea* (12° N. 46° E., t. 24,8; s. 36,20). *Indian Ocean* (6° N. 92° E., t. 27,8; s. 33,34 and 36° S. 89° E., t. 19; s. 35,32, January +). *Malay Archip.*, May—July, September r. (t. 26,8, mean of 5 obs. max. 28,80, min. 25,3; s. 32,90, mean of 5 obs. max. 33,80, min. 31,81).

Clausocalanus furcatus (BRADY). *Arabian Sea*, 12° N. 46° E. to 10° N. 64° E. + (t. 25,7, mean of 6 obs. max. 26,7, min. 24,7; s. 36,08, mean of 6 obs. max. 36,97, min. 35,77). *Indian Ocean* + (8° N. 72° E. to 6° N. 95° E., t. 27,8, mean of 6 obs. max. 28,2,

min. 27,8; s. 33,70, mean of 6 obs. max. 34,47, min. 32,31. 23° S. 90° E. +, t. 25,2; s. 35,22). *Malay Archip.*, + May to July, September (t. 26,5, mean of 6 obs. max. 28,50, min. 25,8; s. 33,14, max. 33,88, min. 32,43).

Clytemnestra scutellata DANA. *Malay Archip.*, rr. July, September (t. 25,8—28,5; s. 32,43—33,84).

Copilia mirabilis DANA. *Malay Archip.*, rr. May—July (t. 25,5—26,2; s. 32,01—33,80).

Corycaeus Danæ GIESBR. *Arabian Sea* (13° N. 49° E., t. 24,75; s. 36,21). *Malay Archipelago*, May to July + (t. 26,3, mean of 7 obs. max. 28,35, min. 25,5; s. 33,54, mean of 7 obs. max. 33,88, min. 32,91).

Corycaeus elongatus CLAUS. *Malay Archip.*, rr. (Bali Sound, May, t. 25,3; s. 32,94).

Corycaeus furcifer CLAUS. *Malay Archip.*, May, July rr. (t. 25,5—25,8; s. 32,91—33,84).

Corycaeus gibbulus GIESBR. *Arabian Sea* +, 13° N. 49° E. to 9° N. 69° E. (t. 26,05, mean of 7 obs. max. 27,7, min. 24,75; s. 35,92, mean of 7 obs. max. 36,37, min. 34,98). *Indian Ocean* (8° N. 72° E. to 6° N. 95° E. +, t. 27,95, mean of 8 obs. max. 28,20, min. 27,8; 23° S. 90° E. to 2° S. 91° E., t. 25,2—28,2; s. 35,22—32,13). *Malay Archip.*, May to July, + (t. 26,1, mean of 8 obs. max. 28,35, min. 25,3; s. 33,46, mean of 8 obs. max. 33,88, min. 32,91).

Corycaeus gracilicaudatus GIESBR. *Indian Ocean* (6° N. 86° E., t. 27,8; s. 33,34; 23° S. 90° E., t. 25,2; s. 35,22). *Malay Archip.*, May to July, September, + (t. 27,2, mean of 10 obs. max. 28,80, min. 25,3; s. 32,86, mean of 10 obs. max. 33,80, min. 31,81).

Corycaeus longistylis DANA. *Malay Archip.*, rr. (May in Bali Sound, t. 25,5; s. 32,91).

Corycaeus obtusus DANA. *Arabian Sea* (12°—13° N. 46°—52° E., t. 24,8 to 25,1; s. 36,20). *Indian Ocean*. 6° N. 95° E., t. 28; s. 32,31. *Malay Archip.*, May to September, + (t. 27,1, mean of 10 obs. max. 28,70, min. 25,3; s. 33,08, mean of 10 obs. max. 33,80, min. 32,22).

Corycaeus ovalis CLAUS. *Arabian Sea*, 12°—10° N. 59°—64° E. (t. 25,8—26,7; s. 36,37—35,77). *Indian Ocean*, 6° N. 92° E. (t. 27,8; s. 33,34). *Malay Archip.*, June, July, September, + (t. 27,5, mean of 6 obs. max. 28,35, min. 25,8; s. 32,93, mean of 6 obs. max. 33,76, min. 32,22).

Corycaeus robustus GIESBR. *Arabian Sea*, 13°—12° N. 49°—59° E. (t. 25,4, mean of 4 obs. max. 26,1, min. 24,7; s. 36,17, max. 36,37, min. 35,92). *Indian Ocean*, 6° N. 86°—95° E. (t. 27,8—28,15; s. 33,34—32,31). *Malay Archip.*, Timor, July, r. (t. 25,8 to 25,7; s. 33,88 to 33,84).

Eucalanus attenuatus DANA. *Malay Archip.*, May to July, r. (t. 25,5 to 26,2; s. 32,91 to 33,80).

Eucalanus crassus GIESBR. *Malay Archip.*, May to July, September, r. (t. 26,3 mean of 4 obs. max. 28,5, min. 25,5; s. 33,19, max. 33,80, min. 32,43).

Eucalanus monachus GIESBR. *Malay Archip.*, Semau Sound, July (one male only), t. 25,8; s. 33,84.

- Eucalanus mucronatus* GIESBR. *Malay Archip.*, Bali Sound, rr., May (t. 25,3; s. 32,94).
- Eucalanus subcrassus* GIESBR. *Malay Archip.*, June, July, September, r. (t. 27,1, mean of 4 obs. max. 28,70, min. 25,6; s. 33,25, max. 33,76, min. 32,48).
- Eucalanus subtenuis* GIESBR. *Malay Archip.*, June, September, rr. (t. 28,35 to 28,45; s. 33,06 to 32,22).
- Euchæta concinna* DANA. *Indian Ocean* (4° N. 100° E., t. 29,35; s. 30,84). *Malay Archip.* (Bali Sound, May, t. 25,5; s. 32,91).
- Euchæta longicornis* GIESBR. *Malay Archip.*, rr. (Semau Sound, July, t. 25,6; s. 33,64).
- Euchæta marina* (PRESTANDREA). *Arabian Sea*, 12°—11° N. 59°—62° E. (t. 25,6—26,35; s. 36,37—36,01). *Malay Archip.*, r. (Bali Sound, Flores, Timor; May to July, t. 25,5—26,2; s. 32,91—33,88).
- Euterpe acutifrons* DANA. *Malay Archip.* (Straits of Malacca to Sumbava, May to September, c.; t. 27,9, mean of 9 obs. max. 28,80, min. 25,6; s. 32,67, max. 33,76, min. 31,81).
- Heterochæta papilligera* CLAUS. *Malay Archip.*, rr. (Bali Sound, May, t. 25,3; s. 32,94).
- Labidocera acutum* (DANA). *Arabian Sea* (13° N. 52° E., t. 25,1; s. 36,20). *Malay Archip.*, r., May to July (t. 25,5 to 28,3; s. 32,91 to 33,64).
- Labidocera Krøyeri* (BRADY). *Malay Archip.*, †, May to July, September (t. 26,9, mean of 4 obs. max. 28,50, min. 25,3; s. 33,02, max. 33,64, min. 32,94).
- Labidocera minutum* GIESBR. *Arabian Sea* (13° N. 52° E., t. 25,1; s. 36,20). *Malay Archip.*, July, September r. (t. 25,6—28,45; s. 33,76—32,22).
- Labidocera Nerii* KRØYER. *Malay Archip.*, May, July, r. (t. 25,3—25,7; s. 32,94—33,8).
- Labidocera pavo* GIESBR. *Malay Archip.*, May, July, rr. (t. 25,3; s. 32,94).
- Leuckartia Clausii* GIESBR. *Malay Archip.*, May, rr. (Bali Sound, t. 25,5; s. 32,91).
- Leuckartia flavicornis* CLAUS. *Malay Archip.*, May, rr. (Bali Sound, t. 25,3—25,5; s. 32,91—32,94).
- Metacalanus Aurivillii* CL. N. Sp. *Malay Archip.*, Langkûss, N. W. of Billiton, September, r. (t. 28,80; s. 31,81).
- Microsetella atlantica* BRADY & ROBTS. *Arabian Sea* (12° N. 46° E., t. 24,8; s. 36,20). *Indian Ocean* (6° N. 89° E., t. 28,05; s. 34,07; 0° S. 92° E., t. 29,6; s. 33,69). *Malay Archip.*, May to July, September, † (t. 27,3, mean of 9 obs. max. 29, min. 25,3; s. 32,79, max. 33,88, min. 31,81).
- Monops armatus* GIESBR. *Malay Archip.*, r. (Semau Sound, July, t. 25,8; s. 33,64).
- Monops regalis* (DANA). *Malay Archip.*, r. (Semau Sound, July, t. 25,7; s. 33,76).
- Monops strenuus* (DANA). *Malay Archip.*, July, September, † (t. 27,9, mean of 4 obs. max. 28,8, min. 25,7; s. 32,56, max. 33,80, min. 31,81).
- Oithona brevicornis* GIESBR. *Malay Archip.*, May, July, September (t. 26,8, mean of 4 obs. max. 28,50, min. 25,3; s. 33,22, max. 33,88, min. 32,43).
- Oithona nana* GIESBR. *Malay Archip.*, September, r. (t. 28,50; s. 32,43).

Oithona plumifera BAIRD. *Arabian Sea* (13° N. 56° E. to 8° N. 75° E., t. 26,8, mean of 4 obs. max. 28,20, min. 25,6; s. 35,61, max. 36,37, min. 34,40). *Malay Archip.*, May to September, c. (t. 27,3 mean of 14 obs. max. 28,80, min. 25,3; s. 32,80, max. 33,88, min. 31,62).

Oithona rigida GIESBR. *Malay Archip.*, June, September, + (t. 28,19, mean of 5 obs. max. 28,80, min. 26,80; s. 32,64, max. 33,71, min. 31,81).

Oithona similis CLAUS. *Arabian Sea* (13°—10° N. 52°—64° E., t. 25,1—26,7; s. 36,20—35,77). *Malay Archip.* (? young specimens).

Oncaea conferta GIESBR. *Malay Archip.*, May to September, c. (t. 27,5, mean of 11 obs. max. 28,80, min. 25,3; s. 32,74, max. 33,88, min. 31,62).

Oncaea media GIESBR. *Arabian Sea* (12° N. 46° E. to 9° N. 69° E., t. 24,8—27,7; s. 36,20—34,98). *Indian Ocean*. 6° N. 86°—89° E. (t. 27,8—28,5; s. 33,34—34,07). *Malay Archip.*, May—July, September, c. (t. 26,7, mean of 9 obs. max. 28,50, min. 25,5; s. 33,29, max. 33,88, min. 32,43).

Oncaea mediterranea (CLAUS). *Arabian Sea* (12°—10° N. 46°—64° E., t. 24,8—26,7; s. 36,20—35,77). *Indian Ocean* (8° N. 75° E., t. 28,2; s. 34,40). *Malay Archip.*, May to July, + (t. 26,4, mean of 5 obs. max. 28,35, min. 25,5; s. 33,42, max. 33,80, min. 32,91).

Oncaea venusta PHILIPPI. *Arabian Sea* (13° N. 49°—52° E., t. 24,75—25,1; s. 36,20). *Malay Archip.*, May to July, c. (Bali Sound to Timor, t. 26,2, mean of 7 obs. max. 28,33, min. 25,5; s. 33,54, max. 33,88, min. 32,91).

Paracalanus aculeatus GIESBR. *Arabian Sea* (12° N. 46° E. to 10° N. 64° E., t. 25,4, mean of 5 obs. max. 26,7, min. 24,8; s. 36,15, max. 36,37, min. 35,77). *Indian Ocean*, 6° N. 92° E. (t. 27,8; s. 33,34). *Malay Archip.*, May—July, September (t. 26,98, mean of 10 obs. max. 28,80, min. 25,5; s. 33,07, max. 33,88, min. 31,81).

Paracalanus parvus CLAUS. *Arabian Sea* (12°—10° N. 46°—64° E., t. 24,8—26,7; s. 36,20—35,77). *Indian Ocean* (7° N. 79° E. to 4° N. 100° E., t. 28,1, mean of 5 obs. max. 29,35, min. 27,7; s. 33,32, max. 34,98, min. 30,84; 36° S. 89° E., +, t. 19; s. 35,32). *Malay Archip.*, May to September, c. (t. 27,2, mean of 12 obs. max. 28,70, min. 25,3; s. 33,08, max. 33,80 min. 32,22).

Pleuromma abdominale (LUBB.). *Malay Archip.*, rr. (May, Bali Sound, t. 25,3; s. 32,94).

Pleuromma gracile CLAUS. *Malay Archip.*, rr. (May, Bali Sound, t. 25,4; s. 32,93).

Pontellina plumata DANA. *Malay Archip.*, rr. (July, Semau Sound, t. 25,6; s. 33,70).

Pseudodiaptomus Aurivillii CL., n. sp. *Malay Archip.*, June, July, r. (t. 26,8; s. 33,71).

Reticulina Aurivillii CL., n. sp. *Malay Archip.*, Gaspar Sound, September, rr. (t. 28,5; s. 32,22).

Rhinoecalanus cornutus DANA. *Malay Archip.*, r. (May, Bali Sound; July, Timor and Semau Sound, t. 25,8; s. 32,91—33,88).

Sapphirina auronitens CLAUS. *Malay Archip.*, rr. (June at Flores, t. 26,6; s. 33,80).

- Sapphirina gemma* DANA. *Arabian Sea*, rr. (13° N. 56° E., t. 26,16; s. 35,92).
Sapphirina metallina DANA. *Malay Archip.*, rr. (July at Timor, t. 25,7; s. 33,88).
Sapphirina nigromaculata CLAUS. *Malay Archip.*, rr. (May, Bali Sound; June, Flores, t. 25,3 to 26,2; s. 32,94 to 33,80).
Sapphirina vorax GIESBR. *Malay Archip.*, Semau Sound, July, rr. (t. 25,6; s. 33,64).
Scolecithrix Bradyi GIESBR. *Malay Archip.*, rr. (July, Semau Sound, t. 25,6; s. 33,64).
Scolecithrix Danæ (LUBB.). *Malay Archip.*, rr. (July, Timor, t. 25,7; s. 33,88).
Setella gracilis DANA. *Arabian Sea* (12° N. 46° E., 8° N. 75° E., t. 24,8—28,2; s. 36,20—34,40). *Indian Ocean* (6° N. 89°—92° E., t. 28,05—27,8; s. 34,07—33,34). *Malay Archip.*, May—July, September, c. (t. 27,2 mean of 8 obs. max. 28,50, min. 25,3; s. 33,08; max. 33,88, min. 32,22).
Temora discaudata GIESBR. *Arabian Sea* (13° N. 49°—56° E., t. 24,75—25,1; s. 36,20). *Malay Archip.*, May to July (t. 26,05, mean of 4 obs. max. 26,8, min. 25,5; s. 33,57, max. 33,88, min. 32,91).
Temora stylifera DANA. *Arabian Sea* (13° N. 49°—52° E., t. 24,75—25,1; s. 36,31—36,20). *Malay Archip.*, May to September, + (t. 26,8, mean of 9 obs. max. 28,7, min. 25,5; s. 33,13, max. 33,91, min. 32,42).
Tortanus gracilis (BRADY). *Malay Archip.*, September, r. (t. 28,5; s. 32,42).

Chaetognata.

- Sagitta bipunctata* QUOY & GAIM. *Malay Archip.*, May—September, + (t. 26,9, mean of 7 obs. max. 29, min. 25,3; s. 33,09, max. 33,80, min. 31,99).
Sagitta enflata (GRASSI). *Malay Archip.*, May to September, c. (t. 27,3, mean of 9 obs. max. 28,8, min. 25,3; s. 32,91, max. 33,76, min. 32,22).
Sagitta serrato-dentata (KROHN). *Malay Archip.*, Bali Sound in May, c. (t. 25,3; s. 32,94).

Ciliata.

- Amphorella* (?) *antarctica* CL. *S. Indian Ocean*, 45° S. 29° and 34° E., December, r. (t. 6,4 to 8,2; s. 34,07 to 34,28).
Amphorella (?) *Norvegica* (v. DAD.). *S. Indian Ocean*, 45° S. 29° E., December, rr. (t. 8,2; s. 34,28).
Amphorella Steenstrupii (CLAP. & LACHM.). *S. Indian Ocean*, December, January, 45° S. 26° E., 43° S. 71° E. (t. 6,8—10,4; s. 34,12—34,24).
Codonella fenestrata CL., n. sp. *Malay Archip.*, August, September, + (t. 28,8, mean of 7 obs. max. 29, min. 28,35; s. 32,11, max. 32,48, min. 31,62).
Codonella ingenula (CLAP. & LACHM.). *Arabian Sea*, 11°—9° N. 51°—59° E. *Indian Ocean*, 3° N. 86° E. *Malay Archip.*, September, rr. (t. 28,70; s. 32,48).
Codonella cassis (HKL). *Indian Ocean*, 3° N. 86° E., rr.

Codonella morchella CL. *Arabian Sea*, 11° N. 51° E. *Malay Archip.*, May—September, r. (t. 26,9, mean of 4 obs. max. 28,4, min. 25,3; s. 32,96, max. 33,64, min. 32,22).

Codonella orthoceras HKL. *Arabian Sea*, 12°—11° N. 47°—51° E. *Indian Ocean*, 7°—3° N. 73°—86° E. *Malay Archip.*, June, rr. (Flores, t. 26,2; s. 33,80).

Cyttarocyllis acuminata v. DAD. *Arabian Sea*, 12°—9° N. 49°—59° E. *Indian Ocean*, 7° N. 73° E. to 3° N. 86° E.; 23° S. 90° E. (t. 25,2; s. 35,22).

Cyttarocyllis amor CL. *Indian Ocean*, 3° N. 86° E.

Cyttarocyllis hebe CL. *Arabian Sea*, 11°—9° N. 51°—59° E. *Indian Ocean*, 7° N. 73° E. to 3° N. 86° E.; 42° S. 76° E. to 0° S. 92° E. (t. 25,3, mean of 7 obs. max. 29,8, min. 13,2; s. 34,18, max. 35,75, min. 32,12). *Malay Archip.*, September, r. (t. 28,50; s. 32,22 to 32,43).

Cyttarocyllis Markusovszkyi v. DAD.? *Malay Archip.*, May, June, r. (t. 25,3; s. 32,94).

Cyttarocyllis simplex CL. *Indian Ocean*, 43° S. 73° E. to 32° S. 91° E., January, r. (t. 14,9, mean of 5 obs. max. 21, min. 12,2; s. 35,19, max. 35,75, min. 34,69).

Cyttarocyllis striata CL. *S. Indian Ocean*, 45° S. 29° E. to 40° S. 82° E., January, r. (t. 11,5, mean of 7 obs. max. 14, min. 8,2). *Malay Archip.*, September, rr. (t. 28,45—28,80; s. 31,81 to 32,48).

Dietyocysta elegans EHB. (inclusive *D. templum*). *Arabian Sea*, 9°—11° N. 59°—51° E. *Indian Ocean*, 7° N. 73° E.; 42°—41° S. 76°—80° E. (t. 12,2—12,3; s. 34,69—35,20).

Dietyocysta mitra HKL. *S. Indian Ocean*, 43° S. 57° E. to 41° S. 80° E. (t. 12,25, mean of 4 obs. max. 14, min. 9,8; s. 34,80, max. 35,25, min. 34,05).

Porella apiculata CL. *S. Indian Ocean*, 42° S. 76° E., January, rr. (t. 13,2; s. 35,20).

Tintinnopsis Davidoffi v. DAD. *Malay Archip.*, August, September, † (t. 28,5, mean of 7 obs. max. 28,8, min. 28,35; s. 32,17, max. 32,48, min. 31,62).

Tintinnus acuminatus ENTZ. *Gulf of Aden*, 12° N. 47° E., March rr.

Tintinnus Brandtii NORDQV. *Malay Archip.*, May, September, r. (t. 28,6, mean of 4 obs. max. 28,8, min. 28,45; s. 32,25, max. 32,48, min. 31,81).

Tintinnus Fraknoi v. DAD. *Arabian Sea*, 11°—9° N. 51°—59° E. *S. Indian Ocean*, 42° S. 76° E. (t. 13,2; s. 35,20). Off *Sumatra* 4° N. 100° E. (t. 29,3; s. 30,84). *Malay Archip.*, September, rr. (Gaspar Sound, t. 28,35; s. 31,62).

Tintinnus lusus undæ ENTZ. *Indian Ocean*, 40° S. 82° E. (t. 14; s. 35,08).

Undella caudata (OSTR.). *S. Indian Ocean*, 45° S. 29° E. and 41° S. 80° E. (t. 8,2—12,2; s. 34,28—34,69).

Undella Claparedii (ENTZ.). *Indian Ocean*, 3° N. 86° E.

Radiolaria.

Acanthometron catervatum HKL. *Arabian Sea*, 12° N. 46° E. (t. 24,8; s. 36,20). *Malay Archip.*, May, June, September, rr. (t. 25,3 to 28,5; s. 32,42 to 33,06).

Acanthometron pellucidum J. MÜLL. (incl. *A. elasticum*). *Indian Ocean*, 8° N. 75° E. (t. 28,20; s. 34,40). *Malay Archip.*, June, September, r. (t. 28,35 to 28,50; s. 31,02 to 33,00).

- Acanthonia cuspidata* HKL. *Malay Archip.*, May, rr. (Bali Sound, t. 25,3; s. 32,94).
- Amphilonche belonoides* HKL. *Arabian Sea*, 9° N. 69° E. (t. 27,7; s. 34,98). *Malay Archip.*, May, rr. (t. 25,3; s. 32,94).
- Amphilonche elongata* (MÜLL.). *Malay Archip.*, May, June, rr. (t. 25,3 to 28,3; s. 32,94 to 33,08).
- Amphilonche ovata* (MÜLL.). *Arabian Sea*, 9° N. 69° E. (t. 27,7; s. 34,98). *Indian Ocean*, 8°—6° N. 75°—85° E. (t. 27,8 to 28,20; s. 33,34 to 34,40).
- Amphilonche tenuis* HKL. *Malay Archip.*, September, rr. (t. 28,70; s. 32,48).
- Amphilonche tetraptera* HKL. *Malay Archip.*, June, rr. (t. 28,35; s. 33,08).
- Aulosphaera cruciata* HKL. *Malay Archip.*, June, July, r. (t. 25,7 to 26,8; s. 33,73).
- Belonozoum atlanticum* HKL. *Malay Archip.*, rr. (t. 25,6; s. 33,84).
- Botryopyle setosa* CL. *Malay Archip.*, rr. (Bali Sound, May, t. 25,3; s. 32,94).
- Callimitra Emmæ* HKL. *Malay Archip.*, Bali Sound, May, rr. (t. 25,5; s. 32,91).
- Ceratospyris polygona* HKL. *Malay Archip.*, May, rr. (Bali Sound, t. 25,5; s. 32,94).
- Collosphaera Huxleyi* J. MÜLL. *Indian Ocean* 8° N. 72° E. (t. 28,15; s. 34,47). *Malay Archip.*, June, July, rr. (t. 25,6 to 26,2; s. 33,84 to 33,90).
- Collozoum inerme* (J. MÜLL.). *Malay Archip.*, July, r. (t. 25,6; s. 33,72).
- Dictyoceras melitta* HKL. *Malay Archip.*, May, rr. (Bali Sound, t. 25,5; s. 32,94).
- Dictyoceras Virchowii* HKL. *Malay Archip.*, May, rr. (Bali Sound, t. 25,5; s. 32,94).
- Diploconus fascies* HKL. *Malay Archip.*, June, September, r. (t. 28,5 to 28,8; s. 31,81 to 32,43).
- Euchitonia elegans* (EHB.). *Malay Archip.*, May, July, rr. (t. 25,3; s. 32,94).
- Euchitonia Mülleri* HKL. (incl. *E. ypsiloides*). *Malay Archip.*, May, rr. (t. 25,3; s. 32,94).
- Eucyrtidium Cienkowskii* HKL. *Malay Archip.*, May, rr. (t. 25,5; s. 32,94).
- Hymeniastrum Euclidis* HKL. *Malay Archip.*, May, rr. (Bali Sound, t. 25,3; s. 32,94).
- Hystrihaspis dorsata* HKL. *Malay Archip.*, May, rr. (Bali Sound, t. 25,3; s. 32,94).
- Lithomelissa thoracites* HKL. *Indian Ocean*, 4°—11° S. 89° E., rr. (t. 28,2 to 30,4; s. 34,22 to 34,69).
- Myelastrum Aurivillii* CL. n. sp. *Malay Archip.*, August, rr. (Semau Sound, t. 25,6; s. 33,84).
- Pterocanium prætextum* (EHB.). *Malay Archip.*, Timor, July, rr. (t. 25,7; s. 33,88).
- Pteroscenium Aurivillii* CL., n. sp. *Malay Archip.*, Bali Sound, May, rr. (t. 25,5; s. 32,94).
- Semantis distephanus* HKL. *Malay Archip.*, Bali Sound, May, rr. (t. 25,5; s. 32,94).
- Sethoconus anthocyrtis* HKL. *Malay Archip.*, Bali Sound, May, rr. (t. 25,5; s. 32,91).
- Siphonosphaera socialis* HKL. *Malay Archip.*, Semau Sound, July, rr. (t. 25,6; s. 33,84).
- Spermatogonia antiqua* LEUD. FORTM. *Malay Archip.*, June, September, r. (t. 26,8 to 29; s. 31,98 to 33,71).

- Sphærozoum punctatum* J. MÜLL. *Arabian Sea*, 13° N. 52° E. (t. 25,1; s. 36,20).
Malay Archip., July, + (t. 25,8 to 25,7; s. 33,84 to 33,80).
Spongosphæra streptacantha HKL. *Malay Archip.*, Sumba, June rr. (t. 26,8; s. 33,71).
Tessaraspis arachnoides HKL., *Arabian Sea*, 11° N. 62° E. (t. 26,35; s. 36,01).
Theoconus zancleus (J. MÜLL.) *Indian Ocean*, 19°—8° S. 90°—88° E., rr. (t. 26,2 to 29,2; s. 34,22 to 34,77).
Theopilium tricostatum HKL. *Malay Archip.*, Bali Sound, May, rr. (t. 25,5; s. 32,94).
Triastrum Aurivillii CL. *Malay Archip.*, Bali Sound, May rr. (t. 25,5; s. 32,94).
Zygocircus productus (HERRW.). *Indian Ocean*, 6° S. 89° E. (t. 31,2; s. 34,76). *Malay Archip.*, Bali Sound, May, rr. (t. 25,5; s. 32,94).

Rhizopoda.

- Cymbalopora bulloides* D'ORB. *Malay Archip.*, July, September, c. in some samples (t. 28, mean of 5 obs. max. 28,50, min. 25,7; s. 32,40, max. 33,76, min. 31,62).
Globigerina bulloides D'ORB. *S. Indian Ocean*, 44° S. 41° E. r. (t. 6,5; s. 33,92).

Cystoflagellata.

- Noctiluca miliaris* SURIR. *Malay Archip.*, Sumbava, June, very common.

Silicoflagellata.

- Dietyocha fibula* EHB. *Arabian Sea*, 11°—9° N. 51°—59° E. r. *S. Indian Ocean*, December, January not rare from 45° S. 22° E. to 42° S. 76° E. and at 32° S. 91° E. (t. 10,1, mean of 9 obs. max. 21, min 6,8; s. 34,57, max. 35,75, min. 34,07). *Malay Archip.* May, June, August, rr.
Distephanus speculum EHB. *S. Indian Ocean*, December, January rare to common from 45° S. 22° E. to 43° S. 73° E. and at 34°—33° S. 89°—90° E. (t. 9, mean of 11 obs. max. 19,8, min. 6,4; s. 34,53, max. 35,71, min. 33,92). *Malay Archip.* June rr.

Chlorophyllaceæ.

- Halosphæra viridis* SCHMITZ. *Arabian Sea*, 9° N. 59° E., r. *Indian Ocean*, 3° N. 86° E., rr.

Cyanophyceæ.

- Trichodesmium erythraeum* EHB. *Indian Ocean*, E. of Minicoi (Maldives), March, cc. colouring the sea for great distances; 8° N. 75° E. (t. 28,2; s. 34,40). *Malay Archip.*, Timor, July, (t. 25,7; s. 33,80).

Trichodesmium Thiebaultii GOMONT. *Indian Ocean* 8° N. 75° E. (t. 28,2; s. 34,40); 2° N. 94° E. February, r. (t. 31,2; s. 33,81). *Malay Archip.*, May, June, September + (t. 25,3 to 29; s. 31,98 to 33,06).

Murracytæ, Cystæ.

Diplocystis antarctica CL. *S. Indian Ocean*, from 45° S. 29° E. to 39° S. 85° E. and at 36° S. 89° E. (t. 12,8, mean of 9 obs. max. 19, min. 8,2; s. 34,8, max. 35,32, min. 34,05).

Pyrocystis fusiformis J. MURRAY. *Indian Ocean*, 4°—3° N. 81°—86° E. *Malay Archip.*, June, July, r. (t. 26,3, mean of 5 obs. max. 28,35, min. 25,8; s. 33,63, max. 33,88, min. 33,06).

Pyrocystis hamulus CL. *Indian Ocean*, March, 3°—4° N. 86°—81° E., r. *Malay Archip.*, June, rr. (t. 28,3; s. 33,06).

Pyrocystis lunula SCHÜTT. *Arabian Sea*, 9° N. 59° E. *Indian Ocean*, 3°—4° N. 86°—81° E., rr.

Pyrocystis pseudonoctiluca J. MURRAY. *Arabian Sea*, 13°—9° N. 52°—59° E. (t. 25,1; s. 36,20). *Indian Ocean*, 7°—2° N. 73°—94° E. and 23° S. 90° E. (t. 25,2 to 31,2; s. 35,22—33,81). *Malay Archip.*, June, July, + (t. 26,2, mean of 6 obs. max. 28,3, min. 25,8; s. 33,63, max. 33,80, min. 33,06).

Xanthidium paucispinosum CL. *Malay Archip.*, May to September r. (t. 25,2, mean of 8 obs. max. 28,7, min. 25,5; s. 32,59, max. 33,64, min. 31,62). *Indian Ocean*, January, at 23° S. 90° E., rr. (t. 25,2; s. 35,22).

Dinoflagellatæ.

Amphisolenia globifera STEIN. *Malay Archip.*, May, June, September, r. (t. 27,9, mean of 6 obs. max. 28,70, min. 25,30; s. 32,46, max. 33,06, min. 31,62).

Amphisolenia palmata STEIN. *Arabian Sea*, from 12° N. 47° E. to 9° N. 59° E. *Indian Ocean*, from 7° N. 73° E. to 3° N. 86° E. *Malay Archip.*, June, r. (t. 26,8 to 28,3; s. 33,06 to 33,71).

Amphisolenia thrinax SCHÜTT. *Arabian Sea*, 9° N. 59° E., rr.

Ceratium (tripos) arcuatum GOURRET. *Indian Ocean*, 32° S. 91° E. (t. 21; s. 35,75). *Malay Archip.*, July, rr. (t. 25,6; s. 33,70).

Ceratium (tripos) arietinum CL. *Arabian Sea*, 9° N. 59° E. *Indian Ocean* from 7° N. 73° E. to 3° N. 86° E. and at 40°—36° S. 82°—89° E. (t. 14—19; s. 35,08—35,32).

Ceratium (tripos) azoricum CL. *S. Indian Ocean* from 45° S. 29° E. to 41° S. 80° E. (t. 10,3, mean of 5 obs. max. 14, min. 7,8; s. 34,48, max. 35,25, min. 34,05).

Ceratium furca DUJ. *Arabian Sea*, 9° N. 59° E. *Indian Ocean*, 4°—3° N. 81°—86° E. and 0°—8° S. 92°—88° E. (t. 29,4; s. 34,22—33,69). *Malay Archip.*, June, July, September, r. (t. 27,4, mean of 4 obs. max. 29, min. 25,8; s. 33,10, max. 33,71, min. 31,98).

Ceratium fusus DUJ. *S. Indian Ocean*, December, January, from 45° S. 22° E. to 40° S. 82° E., as a rule *r.* (t. 9,2, mean of 6 obs. max. 14, min. 7; *s.* 34,80, max. 35,25, min. 34,16).

Ceratium (fusum) extensum GOURRET. *Arabian Sea*, 12° N. 46° E. (t. 24,8; *s.* 36,20). *Indian Ocean*, 11° S. 89° E. (t. 28,2; *s.* 34,22). *Malay Archip.*, *rr.* (t. 28,35; *s.* 33,06).

Ceratium gravidum GOURRET. *Arabian Sea*, 9° N. 59° E. *Indian Ocean*, 3° N. 86° E.

Ceratium limulus (POUCHET). *Malay Archip.*, July, *rr.* (Semau Sound, t. 25,6; *s.* 33,64).

Ceratium belone CL. *Indian Ocean*, 23° S. 90° E., *rr.* (t. 25,2; *s.* 35,22).

Ceratium (tripos) bucephalum CL. *S. Indian Ocean*, 32° S. 91° E. (t. 21; *s.* 35,75).

Ceratium candelabrum (EHB.). *Arabian Sea*, 11°—9° N, 51°—59° E. *Indian Ocean*, 7°—3° N. 73°—86° E. and 0° S. 93° E. *Malay Archip.*, June, July, *rr.* (t. 25,6—26,2; *s.* 33,80).

Ceratium contortum GOURRET. *Arabian Sea*, 13°—9° N. 52°—59° E. (t. 25,1; *s.* 36,20). *Indian Ocean*, 7° N. 73° E., 2° S. 91° E., 23° S. 90° E. (t. 28—25,2; *s.* 32,13—35,22).

Ceratium curvicone v. DAD. *Arabian Sea*, 11° N. 51° E., *rr.*

Ceratium (tripos) flagelliferum CL. *Arabian Sea*, 12° N. 46° E. (t. 24,8; *s.* 36,20). *Indian Ocean* 11° S. 89° E. (t. 28,2; *s.* 34,22). *Malay Archip.*, June to September, † (t. 28, mean of 10 obs. max. 29,3, min. 25,6; *s.* 32,45, max. 33,78, min. 30,84).

Ceratium lineatum EHB. (= *C. fusca* var. *baltica*, *C. debile* VANH.). *Arabian Sea*, 12°—9° N. 47°—59° E. *Indian Ocean*, 7°—3° N. 73°—86° E.; from 45° S. 29° E. to 40° S. 82° E.; 36° S. 89° E. to 6° S. 89° E. (t. 14,1, mean of 10 obs. max. 31,2, min. 6,4; *s.* 34,71, max. 35,75, min. 34,05). *Malay archip.*, September, *rr.* (t. 28,3; *s.* 31,62).

Ceratium macroceros EHB. *Arabian Sea*, 11°—9° N. 51°—59° E. *Indian Ocean*, 7°—4° N. 73°—81° E.; 40° S. 82° E., 2° S. 91° E. *Malay Archip.*, June, July, September (t. 25,6—29; *s.* 31,98—33,64).

Ceratium (ranipes CL. var.) *palmatum* SCHRÖDER. *Malay Archip.*, July, *rr.* t. 25,7; *s.* 33,82).

Ceratium reticulatum POUCHET (= *C. contortum* LEMMERM.). *Indian Ocean*, 3° N. 86° E., *rr.* *Malay Archip.*, June, July, *rr.* (t. 25,6—26,2; *s.* 33,64—33,80).

Ceratium (lineatum) robustum CL. *S. Indian Ocean* from 45° S. 29° E. to 43° S. 57° E., *r.* (t. 7,2, mean of 7 obs. max. 9,6, min. 6,4; *s.* 34,03, max. 34,28, min. 33,85).

Ceratium tripos NITZSCH. *Arabian Sea*, 12° N. 47° E. *Indian Ocean*, 7°—3° N. 73°—86° E.; 44° S. 45° E.; 39°—36° S. 85°—89° E.; 6° S. 89° E., as a rule, *r.* (t. 6,4—31,2; *s.* 34,12—35,32). *Malay Archip.*, June to September, *r.* (t. 27,9, mean of 5 obs. max. 28,5, min. 25,6; *s.* 32,51, max. 33,64, min. 32,22).

Ceratium volans CL. *Arabian Sea*, 11° N. 51° E., *r.* *Indian Ocean*, 8° N. 75° E. to 3° N. 86° E. (t. 28,2; *s.* 34,40). *Malay Archip.*, June to August, *rr.* (t. 25,8 to 28,3; *s.* 33,06 to 33,64).

- Ceratium vultur* CL. *Arabian Sea*, 9° N. 59° E. *Indian Ocean*, 7° N. 73° E. to 6° N. 95° E., r. (t. 28,1; s. 32,31). *Malay Archip.*, June, July, September, rr (t. 26,9, mean of 5 obs. max. 27,7, min. 25,6; s. 33,55, max. 33,80, min. 32,48).
- Ceratocorys horrida* STEIN. *Arabian Sea*, 9°—10° N. 59°—69° E. *Indian Ocean*, from 8° N. 72° E. to 3° N. 86° E. and from 23° S. 90° E. to 0° S. 92° E. (t. 28,2, mean of 8 obs. max. 31,2, min. 25,2; s. 34,65, max. 35,77, min. 33,67). *Malay Archip.*, June, July, r. (t. 26,4, mean of 6 obs. max. 28,35, min. 26,2; s. 33,63, max. 33,80, min. 33,06).
- Cladopyxis brachiolata* STEIN. *Indian Ocean*, 23° S. 90° E. and 8° S. 88° E., January, rr. (t. 25,2—29,2; s. 35,22—34,23).
- Dinophysis hastata* STEIN. *Arabian Sea*, 9° N. 59° E., rr. *Indian Ocean*, 2° S. 91° E. (t. 28; s. 32,13).
- Dinophysis homunculus* STEIN. *Indian Ocean*, 3° N. 86° E., rr.; 41° S. 80° E., rr. (t. 12,2; s. 34,69). *Malay Archip.*, June, rr. (t. 26,8; s. 33,71).
- Dinophysis miles* CL. *Arabian Sea*, 12° N. 47° E. *Malay Archip.*, June, July, September, rr. (t. 25,7 to 28,80; s. 31,81 to 33,78).
- Dinophysis truncata* CL. *Indian Ocean*, 45° S. 29°—32° E. (t. 8; s. 34,22); 11° S. 89° E. (t. 28,2; s. 34,22).
- Dinophysis Schuettii* MURR. & WHITT. *Indian Ocean*, 7°—3° N. 73°—86° E., rr.
- Dinophysis Vanhöffenii* OSTF. (?). *S. Indian Ocean*, 45°—43° S. 22°—71° E.; 39° S. 85° E.; 36° S. 89° E., December, January, sparingly (t. 9,6, mean of 10 obs. max. 19, min. 6,4).
- Diplopsalis lenticula* BERGH. *Arabian Sea*, 11°—9° N. 51°—59° E. *Indian Ocean*, 4° N. 81° E.; 43° S. 57° E. (t. 9,6; s. 34,05). *Malay Archip.*, June to September, rr. (t. 25,6 to 28,5; s. 31,62 to 33,80).
- Exuviella compressa* (BAIL) STEIN (*E. marina* SCHÜTT.). *Arabian Sea*, 11°—7° N. 51°—73° E. *Indian Ocean*, 4°—3° N. 81°—86° E.; 45° S. 29° E. (t. 8,2; s. 34,28); 8° S.—2° N. 88°—94° E. (not rare in some samples, t. 29,2—31,2; s. 34,22—33,81). *Malay Archip.*, September, r. (Gaspar Sound, t. 28,5; s. 32,22).
- Goniodoma acuminatum* (EHB.) STEIN. *Arabian Sea*, 12°—9° N. 47°—59° E. *Indian Ocean*, 7°—4° N. 73°—81° E. (var. *armata* SCHÜTT), 3° N. 86° E.; 11° S.—2° N. 89°—94° E. (t. 29,5, mean of 8 obs. max. 31,2, min. 28; s. 33,73, max. 32,31, min. 28). *Malay Archip.*, June, July, September, sparingly (t. 27,1, mean of 7 obs. max. 29, min. 25,6; s. 33,17, max. 33,80, min. 31,68).
- Gonyaulax Highleyi* MURR. & WHITT. *Indian Ocean*, January, rr. (19° S. 90° E., t. 26,2; s. 34,77).
- Gonyaulax polygramma* STEIN. *Arabian Sea*, 11°—9° N. 51°—59° E. *Indian Ocean*, 7°—3° N. 73°—86° E.; 41° S. 80° E. (t. 12,2; s. 34,69); 36° S. 89° E. (t. 19; s. 35,32); 0° S. 92° E. (t. 29,6; s. 33,69).
- Gymnaster pentasterias* (EHB.) SCHÜTT. *S. Indian Ocean*, 45°—44° S. 22°—41° E. (t. 7,4, mean of 4 obs. max. 8,2, min. 6,5; s. 34,13, max. 34,28, min. 33,92).

Histioneis crateriformis STEIN. *Indian Ocean*, 7° N. 73° E., rr.

Histioneis magnificus STEIN. *Arabian Sea*, 12° N. 47° E. to 11° N. 62° E. *Indian Ocean*, 7°—3° N. 73°—86° E.; 23° S. 90° E.; 2° S.—3° N. 91°—94° E. (t. 27,2, mean of 5 obs. max. 31,2, min. 25,2; s. 34,72, max. 36,20, min. 32,12). *Malay Archip.*, June, July, rr. (t. 25,5, mean of 5 obs. max. 28,3, min. 25,6; s. 33,59, max. 33,80, min. 33,06).

Histioneis remora STEIN. *Arabian Sea*, 11° N. 51° E. *Indian Ocean*, 7° N. 73° E., rr.

Oxytoxum sceptrum (STEIN). *Arabian Sea*, 11° N. 51° E. *Indian Ocean*, 3° N. 86° E.

Oxytoxum scolopax (STEIN). *Arabian Sea*, 11° N. 51° E. *Indian Ocean*, 7°—3° N. 73°—86° E.; 45° S. 29° E.; 43°—34° S. 73°—89° E. (t. 13,6, mean of 5 obs. max. 19,8, min. 8,2; s. 35,01, max. 35,71, min. 34,28).

Oxytoxum sphaeroideum STEIN. *Indian Ocean*, 3° N. 86° E., rr.

Oxytoxum tessellatum STEIN. *Arabian Sea*, 11° N. 51° E., rr.

Peridinium diabolus CL. *Arabian Sea*, 11° N. 51° E. *S. Indian Ocean*, 45° S. 26° E. to 39° S. 85° E. (t. 9,3, mean of 8 obs. max. 14,8, min. 6,4; s. 34,43, max. 35,20, min. 33,92). *Malay Archip.*, Timor, July (t. 25,7; s. 33,88).

Peridinium divergens EHB. *Arabian Sea*, 12° N. 47° E. to 9° N. 59° E. *Indian Ocean*, 7°—3° N. 73°—86° E.; 2° N.—8° S. 94°—86° E. (t. 29,9, max. 31,2, min. 24,7; s. 34,82, max. 36,21, min. 33,69).

Peridinium elegans CL. *Indian Ocean*, 9° N. 59° E. *Malay Archip.*, July, rr. (Sema Sound, t. 25,7; s. 33,79).

Peridinium globulus STEIN. *Arabian Sea*, 12° N. 47° E. *Indian Ocean*; 7° N. 73° E.; 40° S. 82° E. to 23° S. 90° E. (t. 14 to 25,2; s. 35,08 to 35,71). *Malay Archip.*, July, rr. (Sema Sound, t. 25,6; s. 33,64).

Peridinium Michaëlis (EHB.?) SCHÜTT. *Indian Ocean*, 42° S. 76° E. to 34° S. 89° E. (t. 16,5, mean of 4 obs. max. 19,8, min. 13,2; s. 35,32, max. 35,71, min. 35,08). *Malay Archip.*, July, September (t. 28,6, mean of 5 obs. max. 28,80, min. 28,4; s. 32,28, max. 32,48, min. 31,81).

Peridinium oceanicum VANHÖFFEN. *Arabian Sea*, 12°—9° N. 46°—59° E. (t. 24,8; s. 36,20). *Indian Ocean* from 45° S. 22° E. to 34° S. 89° E.; 11° S. 89° E.; 7° N. 73° E. (t. 15,7, mean of 10 obs. max. 28,2, min. 7; s. 34,58, max. 35,71, min. 33,64). *Malay Archip.*, June and July r., September † (t. 27,7, mean of 9 obs. max. 29, min. 25,9; s. 32,77, max. 33,80, min. 31,43).

Peridinium pedunculatum SCHÜTT. *Indian Ocean*, 36° S. 83° E. † (t. 19; s. 35,32). *Malay Archip.*, Sema Sound, July rr.

Peridinium pellucidum (BERGH) SCHÜTT. *S. Indian Ocean* 45°—43° S. 26°—43° E. (t. 7,5, mean of 5 obs. max. 9,8, min. 6,4; s. 34,13, max. 34,28, min. 34,05).

Phalacroma argus STEIN. *Arabian Sea*, 9° N. 59° E. *Indian Ocean*, 7° N. 73° E.

Phalacroma cuneus SCHÜTT. *Arabian Sea*, 9° N. 59° E. *Indian Ocean*, 4° N. 81° E.

Phalacroma dolichopterygium MURR. & WHITT. *Indian Ocean*, 36° S. 89° E. † (t. 19; s. 35,32).

Phalacroma doryphorum STEIN. *Arabian Sea*, 12°—9° N. 47°—59° E. *Indian Ocean*, 7°—3° N. 73°—86° E.; 19°—4° S. 90°—89° E. (t. 26,2—30,4; s. 34,77 to 34,69).

Phalacroma Jourdani (GOURRET) SCHÜTT. *Indian Ocean*, 23° S. 90° E., rr. (t. 25,2; s. 35,22).

Phalacroma operculatum STEIN. *Arabian Sea*, 12°—9° N. 47°—59° E. *Indian Ocean*, 7°—3° N. 73°—86° E.; 2° S. 91° E. (t. 28; s. 32,13).

Phalacroma rapa STEIN. *Indian Ocean*, 7°—3° N. 73°—86° E., rr.

Podolampas bipes STEIN. *Arabian Sea*, 12°—9° N. 47°—59° E. *Indian Ocean*, 4° N. 81° E.; 2° N.—2° S. 94°—91° E. (t. 28 to 31,2; s. 32,13 to 33,81). *Malay Archip.*, September rr. (t. 28,45; s. 32,22).

Podolampas palmipes STEIN. *Arabian Sea*, 11° N. 51° E. *Indian Ocean* from 3° N. 86° E. to 41° S. 80° E.; 43° S. 71° E.; 45° S. 32° E. (t. 18,1, mean of 9 obs. max. 30,4, min. 7,8; s. 34,87. max. 35,75, min. 34,16).

Pyrophacus horologium STEIN. *Arabian Sea*, 12°—9° N. 47°—64° E. *Indian Ocean*, 6° N. 92° E. to 10° S. 88° E. (t. 28,4 to 26,7; s. 33,34 to 35,77). *Malay Archip.*, June, September (t. 26,8 to 28,5; s. 32,43 to 33,71).

Diatomaceæ.

Asterionella japonica CL. *Malay Archip.*, May, Bali Sound, rr. (t. 25,3; s. 32,99); Semau Sound, July, rr.

Asterionella notata GRUN. *Malay Archip.*, May, July, September + (t. 27,3, mean of 9 obs. max. 29. min. 25,5; s. 32,79. max. 33,88, min. 31,62).

Asterolampra marylandica EHB. *Arabian Sea*, 11° N. 51° E. *Indian Ocean* 4°—3° N. 81°—86° E.; 11° S. 89° E. (t. 28,2; s. 34,22). *Malay Archip.*, May, Bali Sound, rr. (t. 25,4; s. 32,94).

Asterolampra rotula GREV. *Indian Ocean*, 3° N. 86° E., rr.

Asteromphalus elegans GREV. *Indian Ocean*, 23° S. 90° E., rr. (t. 25,2; s. 35,22).

Asteromphalus flabellatus (BRÉB.). *Arabian Sea*, 11° N. 51° E., rr. *Malay Archip.* Semau Sound, July, rr.

Asteromphalus Hookeri EHB. *S. Indian Ocean*, from 45° S. 22° E. to 43° S. 57° E. rare to common (t. 7,21, mean of 10 obs. max. 9,6, min. 6,2; s. 34,06, max. 34,28, min. 33,85); 33°—32° S. 90—91° E., rr. (t. 19,8—21; s. 35,63—35,75).

Asteromphalus reticulatus CL. *S. Indian Ocean*, from 43° S. 73° E. to 33° S. 90° E., January, + (t. 16,3, mean of 6 obs. max. 19,8, min. 12,2; s. 35,26, max. 35,71, min. 34,69).

Asteromphalus flabellatus var. *tergestina* GRUN. (V. H. SYN.). *Malay Archip.*, Semau Sound, July, rr.

Bacteriastrum delicatulum CL. *Arabian Sea*, 11° N. 51° E. *Malay Archip.*, July—September (t. 28,7; s. 32,48).

Bacteriastrum elongatum CL. *Malay Archip.*, June, July, September (t. 28,35—29; s. 31,98—33,06).

Bacteriastrum hyalinum LAUDER. *Malay Archip.*, July, September, common in some samples (t. 27,7, mean of 7 obs. max. 28,70, min. 25,6; s. 32,57, max. 33,76, min. 31,62).

Bacteriastrum varians LAUDER. *Malay Archip.*, May to September, c. (t. 28,1, mean of 6 obs. max. 29,35, min. 25,3; s. 32,28, max. 33,06, min. 31,98).

Bellerochea malleus (BRIGHTW.). *Malay Archip.*, September, Gaspar Sound. rr. (t. 28,35 to 28,50; s. 31,62 to 32,22).

Chaetoceros æquatorialis CL. *Malay Archip.*, Sema Sound, July, rr.

Chaetoceros atlanticus CL. *S. Indian Ocean*, 45°—43° S. 26°—73° E., more or less rare (t. 8,5, mean of 4 obs., max. 14, min. 6,4; s. 34,34, max. 35,25, min. 33,93).

Chaetoceros Aurivillii CL. n. sp. *Malay Archip.*, Sema Sound, July, rr. (t. 25,7; s. 33,76), Gaspar Sound, September rr. (t. 28,5; s. 32,43).

Chaetoceros borealis BRW. *S. Indian Ocean*, 44° S. 43° E., rr. (t. 6,4; s. 34,12).

Chaetoceros brevis SCHÜTT. (*C. didymus?* *hiemalis* CL., *C. hiemalis* CL.). *Malay Archip.*, Flores, June (t. 26,2; s. 33,80), Sema Sound, July.

Chaetoceros calvus CL., n. sp. *Malay Archip.*, May to September, not rare (t. 27.2, mean of 8 obs. max. 29, min. 25,3; s. 32,88, max. 33,88, min. 31,81).

Chaetoceros coarctatus LAUDER. *Arabian Sea*, 12° N. 47° E. *Indian Ocean* 4° N. 81° E. *Malay Archip.*, June to September, common (t. 29,9, mean of 7 obs. max. 28,43, min. 25,6; s. 33,12, max. 33,88, min. 31,62).

Chaetoceros compressus LAUDER. *Malay Archip.*, September, + (t. 28,50 to 29; s. 31,98 to 32,48).

Chaetoceros criophilus CASTR. *S. Indian Ocean*, 44° S. 48° E., r. (t. 6,8; s. 33,93).

Chaetoceros curvisetus CL. *Malay Archip.*, May to September, in some samples common (t. 25,3 to 28,5; s. 32,43 to 33,88).

Chaetoceros densus CL. *Malay Archip.*, June to September, r. (t. 26,2 to 29; s. 31,98, to 33,80).

Chaetoceros denticulatus LAUDER. *Malay Archip.*, June, July r. (t. 25,7 to 26,2; s. 33,76 to 33,80).

Chaetoceros dichæta EHB. *S. Indian Ocean*, 45° S. 34° E., + (t. 6,4; s. 34,07).

Chaetoceros distans CL. *Malay Archip.*, June, September, r. (t. 28,35 to 28,70; s. 32,43 to 33,06).

Chaetoceros diversus CL. *Malay Archip.*, June to September, + (t. 28,7, mean of 5 obs. max. 29,35, min. 28,35; s. 32,20, max. 33,06, min. 30,84).

Chaetoceros (*atlanticus* var.) *exiguus* CL. (*C. neapolitanus* SCHRÖDER). *S. Indian Ocean*, 45°—44° S. 29°—43° E. (t. 6,4—8,2; s. 34,12—34,28). *Malay Archip.*, June, July, r. (t. 25,7—26,2; s. 33,76 to 33,80).

Chaetoceros furca CL. *Arabian Sea*, 12°—11° N. 46°—51° E. *Malay Archip.*, May to July (t. 25,9, mean of 5 obs. max. 26,8, min. 25,3; s. 33,62, max. 33,88, min. 32,94).

Chaetoceros javanicus (C. Schüttii CL.). *S. Indian Ocean*, 45° S. 29° E., r. (t. 8,2; s. 34,28). *Malay Archip.*, May to September, common in some samples (t. 26,8 mean of 5 obs. max. 28,70, min. 25,3; s. 33,23, max. 33,88, min. 32,94).

Chaetoceros (didymus var.) *longicruris* CL. *Malay Archip.*, May, June, September (t. 25,3 to 29; s. 31,48 to 33,06).

Chaetoceros Lorenzianus GRUN. *Arabian Sea*, 12° N. 47° E. *Malay Archip.*, May to September, very common (t. 27,44, mean of 13 obs. max. 29, min. 25,3; s. 32,76, max. 33,80, min. 30,84).

Chaetoceros Ostenfeldii CL. *S. Indian Ocean*, from 45° S. 29° E. to 41° S. 80° E., r. (t. 11,9, mean of 4 obs. max. 14, min. 8,2; s. 34,85, max. 35,25, min. 34,28). *Malay Archip.*, June, July, rr.

Chaetoceros paradoxus CL. *Malay Archip.*, May to August, r. (t. 25,3 to 26,2; s. 32,94 to 33,80).

Chaetoceros peruvianus BTW. (inclusive *C. volans* SCHÜTT). *Arabian Sea*, 11° N. 52° E. *Indian Ocean*, 45°—44° S. 26°—45° E.; 43° S. 73° E. to 32° S. 91° E.; 11° S. 89° E.; 4° N, 81° E. (t. 14, mean of 14 obs. max. 28,2, min. 6,4; s. 34,80, max. 35,75, min. 34,07). *Malay Archip.*, May to September, not rare (t. 27,2, mean of 8 obs. max. 29, min. 25,3; s. 32,92, max. 33,88, min. 31,98).

Chaetoceros protuberans LAUDER. *Malay Archip.*, June, August, rr. (t. 28,35; s. 33,06).

Chaetoceros Ralfsii CL. *Malay Archip.*, May to September, + (t. 27, mean of 4 obs. max. 28,45, min. 25,3; s. 33, max. 33,80, min. 32,22).

Chaetoceros rostratus LAUDER. *Malay Archip.*, June, September, r. (t. 28,2, mean of 4 obs. max. 29, min. 26,2; s. 32,62, max. 33,80, min. 31,98).

Chaetoceros saltans CL. *Malay Archip.*, June, July, rr. (t. 28,35; s. 33,06).

Chaetoceros scolopendra CL. *S. Indian Ocean*, 45° S. 34° E., r. (t. 6,4; s. 34,07). *Malay Archip.*, Semau Sound, July, rr.

Chaetoceros skeleton SCHÜTT. *Arabian Sea*, 11° N. 51° E. *S. Indian Ocean*, 45° S. 26°—34° E., +; 41° S. 80° E., r. (t. 8,4, mean of 4 obs. max. 12,2, min. 6,4; s. 34,33, max. 34,69, min. 34,12). *Malay Archip.*, June, July, rr. (t. 28,35; s. 33,06).

Chaetoceros tetrastichon CL. *Malay Archip.*, May, June, rr. (t. 25,3 to 28,35; s. 32,99 to 33,06).

Chaetoceros Weissflogii SCHÜTT (sterile?). *Malay Archip.*, May, August, September (t. 28, mean of 5 obs. max. 29, min. 25,8; s. 32,16, max. 32,94, min. 31,61).

Climacodium biconcavum CL. *Malay Archip.*, June, July, September (t. 25,7 to 29; s. 31,98 to 33,89).

Climacodium Frauenfeldii GRUN. (*C. Jacobi* CL.). *Arabian Sea*, 13°—9° N. 52°—39° E. *Indian Ocean*, 3° N. 86° E. *Malay Archip.*, June to September, c. (t. 27,1, mean of 6 obs. max. 28,35, min. 25,6; s. 32,99, max. 33,88, min. 31,62).

Corethron eriophilum CASTR. *S. Indian Ocean*, from 45° S. 29° E. to 40° S. 82° E.; 32° S. 91° E. (t. 11, mean of 10 obs. max. 21, min. 6,4; s. 34,85, max. 35,75, min. 33,93). *Malay Archip.*, Semau Sound, July, rr.

Corethron hispidum CASTR. *S. Indian Ocean*, from 45° S. 22° E. to 43° S. 57° E. (t. 7,1, mean of 6 obs. max. 9,6, min. 6,4; s. 34,80, max. 34,16, min. 33,92).

Coscinodiscus anguste-lineatus A. SCHM. *Arabian Sea*, 12°—11° N. 47°—51° E., r.

Coscinodiscus bengalensis GRUN. *Malay Archip.*, June to September, † (t. 27,1, mean of 5 obs. max. 29, min. 25,7; s. 33,11, max. 33,88, min. 31,98).

Coscinodiscus curvatulus GRUN. *Arabian Sea*, 11° N. 51° E., rr. *S. Indian Ocean* from 45° S. 22° E. to 36° S. 89° E., as a rule not rare (t. 9, mean of 9 obs. max. 19, min. 6,4; s. 34,89, max. 35,32, min. 33,92). *Malay Archip.*, Bali Sound, May, rr. (t. 25,3; s. 32,94).

Coscinodiscus excentricus EHB. *S. Indian Ocean*, 45° S. 22° to 32° E., † (t. 7,4, mean of 4 obs., max. 8,2, min. 6,8; s. 34,18, max. 34,28, min. 34,12).

Coscinodiscus gigas EHB. *Malay Archip.*, Maj, June, September, r. (t. 28,6, mean of 5 obs. max. 29, min. 28,35; s. 32,14, max. 32,48, min. 31,62).

Coscinodiscus Janischii A. SCHM. *Indian Ocean*, 6° N. 89° E. (t. 28; s. 34,07). *Malay Archip.*, May to September, † (t. 26,5, mean of 6 obs. max. 28,6, min. 25,3; s. 33,28, max. 33,88, min. 32,43).

Coscinodiscus lentiginosus JAN. *S. Indian Ocean*, 45°—44° S. 22°—48° E.; 33°—32° S. 90°—91° E., common in several samples (t. 9,7, mean of 10 obs. max. 21, min. 6,4; s. 34,41, max. 35,75, min. 33,92).

Coscinodiscus lineatus EHB. *S. Indian Ocean*, 45°—44° S. 29°—48° E.; 42° S. 76° E.; 34° S. 89° E. (t. 10,3, mean of 6 obs. max. 19,8, min. 6,4; s. 34,56, max. 35,71, min. 33,93).

Coscinodiscus minor EHB. *S. Indian Ocean*, 45°—44° S. 29°—48° E.; 42° S. 76° E.; 39° S. 89° E. (t. 10,3, mean of 6 obs. max. 19,8, min. 6,4; s. 34,56, max. 35,71, min. 33,93).

Coscinodiscus nobilis GRUN. *Malay Archip.*, May to September, r. (t. 27,8, mean of 5 obs. max. 28,7, min. 25,3; s. 32,34, max. 32,94, min. 31,62).

Coscinodiscus nodulifer JAN. *Arabian Sea*, 11° N. 51° E. *Indian Ocean*, 7° N. 73° E. *Malay Archip.*, May, August September, rr. (t. 25,5 to 28,5; s. 32,22 to 32,94).

Coscinodiscus (Micropodiscus) Oliverianus (O' M.). *S. Indian Ocean*, from 45° S. 22° E. to 43° S. 57° E. (t. 7,3, mean of 9 obs. max. 9,6, min. 6,4; s. 34,09, max. 34,16, min. 33,92).

Coscinodiscus sol WALL. *Arabian Sea*, 12°—9° N. 46°—59° E. (t. 24,8; s. 36,20). *Indian Ocean*, from 43° S. 71° E. to 32° S. 91° E. (t. 16,4, mean of 8 obs. max. 21, min. 10,4; s. 35,27, max. 35,75, min. 34,24).

Coscinodiscus Trompii CL. *S. Indian Ocean*, 45° S. 26° E. to 44° S. 41° E. (t. 7,1, mean of 5 obs. max. 8,2, min. 6,4; s. 34,14, max. 34,28, min. 33,92).

Coscinodiscus tumidus JAN. *S. Indian Ocean*, 45°—44° S. 29°—48° E.; 42° S. 76° E., † (t. 7,9, mean of 6 obs. max. 13,2, min. 6,4; s. 34,28, max. 35,20, min. 33,92).

Cyclophora tennis CASTR. *Malay Archip.*, Timor, Semaun Sound, July, *rr.* (*t.* 25,7; *s.* 33,88).

Dactyliosolen antarcticus CASTR. *S. Indian Ocean*, 45°—44° S. 34°—48° E., + (*t.* 6,5, mean of 4 obs. max. 6,8, min. 6,4; *s.* 34,01, max. 34,12, min. 33,92).

Dactyliosolen hyalinus CL. *Malay Archip.*, June, July, September, *c.* (*t.* 27,4, mean of 10 obs. max. 28,8, min. 25,7; *s.* 32,78, max. 33,88, min. 31,61).

Dactyliosolen mediterraneus PERAG. *S. Indian Ocean*, 45° S. 26° to 34° E., + (*t.* 7,3, mean of 4 obs. max. 8,2, min. 6,4; *s.* 34,16, max. 34,28, min. 34,07). *Malay Archip.*, June, July, *r.* (*t.* 25,7 to 28,35; *s.* 33,08 to 33,80).

Ditylum sol. AUCT. *Malay Archip.*, July to September, *r.* (*t.* 28,1, mean of 4 obs. max. 29,3, min. 26,2; *s.* 32,53, max. 33,80, min. 30,84).

Ethmodiscus sp. CASTR. (Challenger Reports, Diatom. Pl. XIV, fig. 4). *Malay Archip.*, Sumba (the North coast), *rr.* (*t.* 26,8; *s.* 33,71).

Eucampia cornuta CL. *Malay Archip.*, June to September, + (*t.* 27,8, mean of 5 obs. max. 29, min. 25,7; *s.* 32,80, max. 33,88, min. 31,98).

Eucampia zodiacus EHB. *Malay Archip.*, June *c.*, July, September (*t.* 26,2 to 28,5; *s.* 32,43 to 33,80).

Euodia gibba BAIL. *S. Indian Ocean*, 45° S. 22°—34° E., *r.*; 34° S. 89° E., *r.* (*t.* 6,2, mean of 5 obs. max. 19,8, min. 6,4; *s.* 34,48, max. 35,71, min. 34,07).

Fragilaria Aurivillii CL., n. sp. *Malay Archip.*, June to September, + (*t.* 27,7, mean of 6 obs. max. 28,5, min. 25,7; *s.* 32,85, max. 33,88, min. 32,43).

Fragilaria hyalina (KÜTZ.), GRUN. *Malay Archip.*, Sumba.

Fragilaria kerguelensis (O' M.). *S. Indian Ocean*, 45° S. 22° E. to 44° S. 48° E., *c.*; 44°—43° S. 52°—71° E., *r.*; 39°—32° S. 85°—91° E., *r.* (*t.*, when common, 7,2, max. 8,2, min. 6,4; *s.* 34,15, max. 34,28, min. 33,92. Rare specimens occurred in water of *t.* 9,8 to 21 and *s.* 35,08 to 35,75).

Guinardia flaccida (CASTR.). *Malay Archip.*, August, September, *r.* (*t.* 28,50 to 28,80; *s.* 31,81 to 32,48).

Hemiaulus Hauckii GRUN. *Indian Ocean*, 11° S. 89° E., *rr.* (*t.* 28,2; *s.* 34,22). *Malay Archip.*, June, July, *r.* (*t.* 28,3; *s.* 33,08).

Hemiaulus Heibergii CL. *Malay Archip.*, May to September, + (*t.* 27,0 mean of 7 obs. max. 29, min. 25,7; *s.* 32,58, max. 33,80, min. 30,84).

Hemiaulus membranaceus CL. *Indian Ocean*, 3° N. 86° E., *rr.* *Malay Archip.*, September, *c.* (*t.* 28,8, mean of 10 obs. max. 29, min. 28,35; *s.* 32,14, max. 32,48, min. 31,62).

Hemidiscus cuneiformis WALL. *Arabian Sea*, 11° N. 51° E.

Lauderia annulata CL. *Malay Archip.*, June to September, *c.* (*t.* 26,7, mean of 7 obs. max. 28,5, min. 25,8; *s.* 33,47, max. 33,88, min. 32,43).

Leptocylindrus danicus CL. *Malay Archip.*, May, June, September, *rr.* (*t.* 27,7, mean of 4 obs. max. 29, min. 25,3; *s.* 32,60, max. 33,08, min. 31,98).

Navicula membranacea CL. *Malay Archip.*, May to September, r. (t. 26,3, mean of 5 obs. max. 28,5, min. 25,3; s. 33,36, max. 33,88, min. 32,43).

Nitzschia bicapitata CL. *S. Indian Ocean*, 45° S. 22°—34° E.; 42° S. 76° E.; 34° S. 89° E., always rare (t. 10,2, mean of 6 obs. max. 19,8, min. 6,4; s. 34,59, max. 35,71, min. 34,07).

Nitzschia delicatissima CL. *S. Indian Ocean*, 45° S. 26° E., + (t. 6,8; s. 34,12); 42° S. 76° E., + (t. 13,2; s. 35,20).

Nitzschia fraudulenta CL. *Malay Archip.*, July, September, rr. (t. 28,5; s. 32,43).

Nitzschia Kolaczekii GRUN. *S. Indian Ocean*, rr., 45° S. 22°—29° E.; 42° S. 76° E. (t. 8,8, mean of 4 obs. max. 13,2, min. 6,8; s. 34,44, max. 35,20, min. 34,12).

Nitzschia lineola CL. *S. Indian Ocean*, 45° S. 26°—34° E.; 43°—40° S. 73°—82° E., as a rule, not rare (t. 11,1, mean of 6 obs. max. 14, min. 6,4; s. 34,73, max. 35,25, min. 34,07). *Malay Archip.*, Semau Sound, July, rr.

Nitzschia migrans CL. *S. Indian Ocean*, 45° S. 26°—34° E., rr. (t. 6,4 to 6,8; s. 34,07 to 34,12).

Nitzschia pungens GRUN. *S. Indian Ocean*, 42° S. 76° E., r. (t. 13,2; s. 35,20). *Malay Archip.*, June, July, rr. (t. 26,2; s. 33,80).

Odontella antarctica (*Hemiaulus antarct.* EHB.) GRUN. *S. Indian Ocean*, 45° S. 34°—48° E., r.; 43° S. 73° E., r. (t. 6,4—14; s. 33,93 to 35,25).

Palmeria Hardmaniana H. L. SM. *Malay Archip.*, May to September, r. (t. 25,5 to 28,50; s. 31,82 to 32,94).

Pseudoeunotia doliolus (WALL.). *Arabian Sea*, 11° N. 51° E., c. *S. Indian Ocean*, from 45° S. 22° E. to 32° S. 91° E. (t. 13,4, mean of 12 obs. max. 21, min. 7; s. 34,89, max. 35,75, min. 34,05).

Rhizosolenia alata BTW. *Arabian Sea*, 13°—11° N. 49°—51° E. (t. 24,7; s. 36,21). *Indian Ocean*, 45° S. 26°—29° E.; 43° S. 57° E.; 42°—41° S. 76°—80° E.; 36°—33° S. 89°—90° E., always sparingly (t. 13,8, mean of 8 obs. max. 19,8, min. 6,8; s. 34,87, max. 35,71, min. 34,12). *Malay Archip.*, June to September, + (t. 26,9, mean of 8 obs. max. 29, min. 25,7; s. 32,80, max. 33,80, min. 31,82).

Rhizosolenia Bergonii PER. *S. Indian Ocean*, 45°—44° S. 26°—45° E., r.; 42° S. 76° E., r.; 33° S. 90° E., r. (t. 10,5, mean of 5 obs. max. 19,8, min. 6,4; s. 34,83, max. 35,63, min. 34,07). *Malay Archip.*, June, July, September, r. (t. 27,2, mean of 4 obs. max. 28,50, min. 25,7; s. 32,88, max. 33,88, min. 31,81).

Rhizosolenia calcar avis SCHULZE. *Malay Archip.*, May to September (t. 28,1, max. 28,8, min. 25,3; s. 32,37, max. 33,08, min. 31,84).

Rhizosolenia cochlea BRUN. *Malay Archip.*, June to September, c. (t. 27,8, mean of 11 obs. max. 29, min. 25,7; s. 32,85, max. 33,88, min. 31,82).

Rhizosolenia corpulenta CL. *Malay Archip.*, June to September, c. (t. 27,7, mean of 9 obs. max. 29, min. 25,8; s. 32,84, max. 33,80, min. 31,82).

Rhizosolenia formosa PER. *Malay Archip.*, June, July, + (t. 26,1, mean of 4 obs. max. 26,8, min. 25,7; s. 33,78, max. 33,88, min. 33,71).

Rhizosolenia (*alata* v.) *gracillima* CL. *Malay Archip.*, June, c., September, + (t. 28,7; s. 32,48).

Rhizosolenia imbricata BTW. *Malay Archip.*, June to September, c. (t. 27,7, mean of 7 obs. max. 29, min. 25,7; s. 32,62, max. 33,88, min. 31,62).

Rhizosolenia inermis CASTR. *S. Indian Ocean*, 45°—44° S. 34°—48° E., r. (t. 6,4—6,8; s. 33,93—34,12).

Rhizosolenia (*imbricata* forma) *pacifica* PERAG. *Indian Ocean*, 11°—2° S. 89°—91° E., r. (t. 28—28,4; s. 32,13 to 34,22). *Malay Archip.*, r. (t. 28,35; s. 31,62).

Rhizosolenia pellucida CL., n. sp. *Malay Archip.*, June to September, c. (t. 27,9, mean of 8 obs. max. 28,8, min. 25,7; s. 32,63, max. 33,88, min. 31,81).

Rhizosolenia recta CL., n. sp. *Malay Archip.*, May, August, September, + (t. 27,8, mean of 4 obs. max. 29, min. 25,3; s. 32,39, max. 32,94, min. 31,99).

Rhizosolenia robusta NORM. *Arabian Sea*, 13° N. 49° E. (t. 24,7; s. 36,21). *Malay Archip.*, June to September, c. (t. 27,5, mean of 11 obs. max. 29, min. 25,6; s. 32,85, max. 33,88, min. 31,62).

Rhizosolenia setigera BTW. *Malay Archip.*, June to September, + (t. 28,05, mean of 4 obs. max. 29, min. 26,2; s. 32,83, max. 33,80, min. 31,99).

Rhizosolenia (*imbricata* var.) *Shrubsolei* CL. *Malay Archip.*, June, July, r. (t. 26,2; s. 33,80).

Rhizosolenia Stolterfothii PERAG. *Malay Archip.*, June to September, cc. (t. 27,7, mean of 12 obs. max. 29, min. 25,7; s. 32,44, max. 33,88, min. 31,81).

Rhizosolenia styliformis BTW. *Arabian Sea*, 12° N. 46° E. (t. 24,8; s. 36,20). *S. Indian Ocean*, 45°—43° S. 29°—57° E., r. (t. 7,3, mean of 6 obs. max. 9,8, min. 6,4; s. 34,06, max. 34,28, min. 33,92); 43°—36° S. 71°—89° E., cc. (t. 13,9, max. 19, min. 10,4; s. 34,98); 33° S. 90° E., rr. (t. 19,8; s. 35,63). *Malay Archip.*, June to September, + (t. 27,7, mean of 6 obs. max. 28,8, min. 25,7; s. 32,76, max. 33,88, min. 31,81).

Rhizosolenia Temperei PERAG. *Malay Archip.*, June, July, r. (t. 25,7 to 26,8; s. 33,71 to 33,88).

Skeletonema costatum (GREV.). Off Sumatra, March, r. (t. 29,35; s. 30,84), Semau Sound, July, r.

Stephanophyxis turgida (GREV.) (*Cresswellia Palmeriana* GREV., *Steph. Kittoniana* CASTR.). *Malay Archip.*, June, July, r. (t. 26,1, mean of 4 obs. max. 26,8, min. 25,7; s. 33,79, max. 33,88, min. 33,71).

Streptotheca maxima CL., n. sp. *Malay Archip.*, June to August, r. (t. 26,1, mean of 4 obs. max. 26,8, min. 25,7; s. 33,79, max. 33,71, min. 33,88).

Striatella delicatula (KÖTZ.). *Arabian Sea*, 13° N. 52° E. (t. 25,1; s. 36,20). *Indian Ocean*, 8° N. 72° E. (t. 28,1; s. 34,47) probably derived from detached and drifting algæ.

Striatella Lindigiana GRUN. *Malay Archip.*, September, r. (t. 28,4; s. 32,02).

Thalassiosira antarctica COMBER. *S. Indian Ocean*, 45° S. 26°—34° E., r. (t. 6,4 to 6,8; s. 34,07 to 34,12).

Thalassiosira Aurivillii CL., n. sp. *Malay Archip.*, Semaun Sound, July, rr.

Thalassiothrix longissima CL. & GRUN. *S. Indian Ocean*, from 45° S. 22° E. to 41° S. 80° E., not rare and of ordinary size (t. 8,8, mean of 12 obs. max. 14, min. 6,4; s. 34,30, max. 35,25, min. 33,93); from 36° S. 89° E. to 32° S. 91° E., narrow forms not rare (t. 19,9 mean of 4 obs. max. 35,75, min. 35,32; s. 35,80, max. 35,75, min. 35,32). *Malay Archip.*, June, July, rr., but alive (t. 25,7 to 28,35; s. 33,08 to 33,80).

Tropidoneis antarctica CASTR. *S. Indian Ocean*, from 45° S. 22° E. to 43° S. 57° E. as a rule rare (t. 7,2, mean of 8 obs. max. 9,8, min. 6,4; s. 34,08, max. 34,28, min. 33,92).

Litoral diatoms from the Malay Archipelago.

In examining the numerous samples collected by Dr. C. AURIVILLIUS in the Malay Archipelago, I noted a number of litoral diatoms, which increased considerably when I examined a sample of shell-sand brought home from Java by the same scientist.

There are already two catalogues of the diatoms of the Malay Archipelago, viz. by Dr. LEUDUGER-FORTMOREL (*Diatomées de la Malaisie, Annales du Jard. Bot. de Buitenzorg* Vol. XI 1892) and by E. DE WILDEMAN (*Prodrome de la flore algologique des Indes Néerlandaises Batavia 1897*). The former is the result obtained by examining samples collected by J. DEBY, supplemented by notes from the literature, and contains a very large number of registered forms. The latter does not seem to be the result of any original researches. In looking over the lists of Dr. LEUDUGER-FORTMOREL one is surprised to find among the diatoms of the Malay Archipelago such species as *Campylo-discus angularis*, *Grammatophora islandica*, *Rhabdonema arcuatum*, *R. minutum*, *Biddulphia balæna* etc. Either the determinations may be erroneous or the samples and slides have been contaminated by materials of foreign origin. The same is the case with many catalogues of diatoms, so that the present literature is crowded with erroneous notes about the geographical distribution. Thus many forms have been set down at »cosmopolitan». According to my experience most diatoms have a limited distribution, and they seem to me to be in several respects very suitable for the study of the geographical distribution of the organisms. Nevertheless, no trustworthy generalisations can be derived from the actual literature in its present unreliable condition.

As the samples brought home by Dr. AURIVILLIUS are of certain origin, have been cleaned and mounted by myself, no other sources of errors in the following catalogue are possible than in the determinations. Therefore I consider this list to be of a certain importance for the knowledge of the geographical distribution of marine diatoms.

The frequency has been indicated in the following pages by the signs *rr.* very rare, *r.* rare, *+* not rare, *c.* common.

Amphora dubia A. S. Bali Sound *r.*, Java *r.*

A. mexicana A. S. Billiton *r.*

A. gigantea, GRUN. Java *r.*, Billiton *r.*

A. oculus A. S. Java *rr.*

A. crassa GREG. Java *+*, Bali Sound *r.*

- A. egregia* (EHB.) A. S. Billiton r., Bali Sound r., Java r.
A. pecten BRUN. Bali Sound r., Java r.
A. inornata CL. Java rr.
A. polita CL. r.
A. Grundleri GRUN. Billiton r., Java r.
A. Græffii (GRUN.) CL. Billiton r., Java +.
A. proboscidea (GREG.) CL. Bali Sound r.
A. cuneata CL. Java r.
A. turgida GREG. Java c. (inclusive *A. exigua* GREG. CL.).
A. bigibba GRUN. Java r.
A. granulata GREG. Java +.
A. angularis GREG. Java r.
A. lineolata EHB. Billiton r.
A. mæandrina CL. Java rr.
A. aspera PETIT. Bali Sound rr.
A. lunula CL. Gaspar Sound rr.
A. decussata GRUN. Billiton rr.
A. arcuata A. S. Bali Sound rr., Java r.
A. ostrearia BRÉB. Billiton rr.
A. obtusa GREG. Bali Sound r., Billiton +, Java c.
A. spectabilis GREG. Billiton r., Java +.
A. limbata CL. & GROVE. Java rr.
A. formosa CL. Java r.
A. Reichardtiana GRUN. Java rr.
Mastogloia asperula GRUN. Java rr.
M. rhombus PETIT. Bali Sound rr.
M. decussata GRUN. Billiton rr.
M. angulata LEVIS. Billiton r.
M. lancettula CL. Java rr.
M. minuta GREV. Java r.
M. fallax CL. Java rr.
M. laminaris (EHB.) CL. Java rr.
M. pulchella CL. Java rr.
M. constricta CL. Java rr.
M. affirmata LEUD.-FORTM. Java r.
M. labuensis CL. Billiton rr.
M. Macdonaldi GREV. Billiton r., Java r.
M. javanica CL. Java r.
M. Jelineckii GRUN. Java +.
M. obesa CL. Java rr.
M. quinquecostata GRUN. Bali Sound r., Billiton r., Java +.
 var. *rhombica* CL. (L. 0,055, Br. 0,015 mm. Loculi 4 in 0,01 mm. Striæ 23 in 0,01 mm.) Billiton r.

- Orthoncis bipunctata* GRUN. Sumba rr.
O. fimbriata BTW. Bali Sound r.
O. Horvathiana GRUN. Bali Sound r.
O. ovata GRUN. Sumba rr., Java r.
Stigmaphora capitata BRUN. Billiton rr.
Amphiprora margine-punctata CL. Java rr.
Auricula insecta GRUN. Semau Sound, Gaspar Sound r. — L. 0,09, Br. 0,05 mm.
 Carinal puncta 10, longitudinal divisions of the zone 6 in 0,01 mm. Valve with some few scattered puncta. Striation exceedingly fine.
A. complexa GREG. Bali Sound, Timor, Gaspar Sound, Mendenao, Semau Sound, as a rule rare. — L. of the frustule 0,13, Br. 0,09 mm. Carinal puncta 5—6, striæ 12—14 in 0,01 mm.
A. punctata PANT. Billiton rr.
Tropidoneis maxima GREG. Java r.
Dictyoneis marginata LEWIS. Bali Sound, Java r. (form. *typica*, *Clevei*).
D. Thumii CL. Java rr.
Pleurosigma Peragalli BRUN. Bali Sound rr.
P. naviculaceum BRÉB. Bali Sound, Java c.
P. rigidum W. SM. Java c.
P. acutum NORM. Billiton rr.
P. rhombeum GRUN. Java rr.
P. formosum W. SM. Java r.
Caloneis blanda A. S. Billiton r.
C. eximia GRUN. Java rr.
C. Hardmaniana CL. Java rr.
C. liber W. SM. Billiton, Bali Sound, Java c.
C. madagascarensis CL. Java rr.
C. musca GREG. Bali Sound, Billiton, Java +.
C. ophiocephala CL. & GROVE. Bali Sound, Java r.
C. (Castrucanei v.) Petitiana GRUN. Bali Sound rr.
C. robusta GRUN. Java r.
C. samoensis GRUN. Billiton r.
C. Wardii CL. Billiton rr. (L. 0,065, B. 0,018 mm. Striæ 17 in 0,01 mm.).
Cymatoneis sulcata GREV. Bali Sound, Java r.
Diploneis suborbicularis GREG. Billiton, Bali Sound, Java +.
D. advena A. S. Java r.
D. splendida GREG. Bali Sound, Java +.
D. bombus EHB. Java c.
D. chersonensis GRUN. Bali Sound, Billiton, Java c.
D. Weissflogii A. S. Billiton, Bali Sound r.
D. notabilis GREV. Java c.
D. Grassi GRUN. Bali Sound, Java r.
D. fusca GREG. Billiton, Java r.

- D. aestiva* DONK. Java r.
D. Smithii BRÉB. (inclusive *D. major* CL.). Bali Sound, Java +.
D. platessa CL. & GROVE. Java rr.
D. vespa CL. Java rr.
D. nitescens GREG. Java c.
D. (dalmatica var.) vulpecula A. S. Java +.
D. gemmata GREV. (typical). Java rr.
D. Crabro EHB. Bali Sound, Java c. (var. *limitanea*, *pandura*, *suspecta*, *multicostata*, *dirhombus*, *coarctata*).
D. gemmatula GRUN. Billiton, Bali Sound, Java +.
Scolioleura elegans CL. Java rr.
Navicula O'Mearii GRUN. Billiton rr.
Gyrosigma Febigerii, GRUN. var.? Flores rr. (L. 0,15, B. 0,022 mm. Transverse striæ 17, longitudinal striæ 23 in 0,01 mm.).
G. Grovei CL. Billiton, Bali Sound rr.
G. (balticum var.) simile GRUN. Java rr.
G. lineare GRUN. Bali Sound rr.
G. compactum GREV. Java r.
G. mediterraneum CL. Java rr.
G. robustum CL. Java rr.
Cistula Lorenziana GRUN. Bali Sound rr,
Libellus biblos CL, Mendanao, Semaou Sound rr. (L. of the valve 0,12, breadth 0,04 mm. Striæ 28 in 0,01 mm. very finely punctate. Divisions of the zone 10 in 0,01 mm.).
L. hamuliferus GRUN. Java, Bali Sound rr.
Navicula plicatula GRUN. Java, Bali Sound rr.
Trachyneis aspera EHB. (form. *pulchella*, *vulgaris*). Billiton, Bali Sound, Java c.
T. Debyi LEUD.-FORM. (and forma *osculifera*). Java c.
T. antillarum CL. Java c.
Mastoneis biformis GRUN. Bali Sound, Java rr.
Navicula cancellata DONK. Billiton, Java r.
N. zostereti GRUN. Java r.
N. consors A. S. Java c.
N. jejuna A. S. Bali Sound, Java r.
N. rhapsoneis GRUN. Java rr.
N. humerosa BRÉB.
N. omicron CL. Billiton. (L. 0,04, B. 0,015 mm. Striæ 12 in 0,01 mm.).
N. brasiliensis GRUN. Java c.
N. epsilon CL. Java rr.
N. lunula CL. Java rr.
N. concilians CL. Bali Sound rr.
N. barbitos A. S. Java rr.
N. Henedyi W. SM. Java r.
N. spectabilis GREG. Java r.

- N. clavata* GREG. Bali Sound, Java c.
N. lyra EHB. Billiton, Bali Sound, Java c (formæ *Ehrenbergii*, *elliptica*, *subelliptica*, *subcarinata*, *signata*, *Robertsoniana*, *bullata*).
N. Reichardtii GRUN. Java rr.
N. forcipata GREV. Billiton, Bali Sound r.
 var. *suborbicularis* GREV. Java rr.
N. Durandii KITTON. Java rr.
N. Racana CASTR. Billiton, Java r.
Achnanthes javanica GRUN. Bali Sound, Java +.
A. mammalis CASTR. Bali Sound, Java rr.
Cocconeis heteroidea HANTZSCH. Bali Sound rr.
Epithemia musculus KÜTZ. Java r.
Synedra fulgens KÜTZ. var.? Bali Sound c. (L. 0,85, B. 0,024 mm. Striae 18 in 0,01 mm.)
S. baculus GREG. Semau Sound r.
S. robusta RALFS. Bali Sound, Java c.
S. Henedyana GREG. Semau Sound, Bali Sound +.
Fragilaria? rhombica CL. Bali Sound +.
Cymatosira Lorenziana GRUN. Java rr.
Rhaphoneis Castracanei GRUN. Billiton r.
R. (?) bilineatus CL. Java c.
R. amphicerus var. *cruciata* (*Triceratium cruciat.* RABH.) Java rr.
Sceptroneis Aurivillii CL. n. sp. Bali Sound r.
S. cuneata GRUN. (1867. *Synedra clava* WITT 1873). Java c.
S. intermedia CL. Java r.
Opephora Schwartzii GRUN. Bali Sound rr.
Plagiogramma stauraphorum (GREG.) HEIB. Java +.
P. tessellatum GREV. Java rr.
P. obesum GREV. Billiton rr.
P. constrictum GREV. Java, Billiton rr.
P. decussatum GREV. Billiton, Bali Sound, Java r.
P. costatum GREV. Billiton, Java rr.
P. polygibbum CL. & GROVE. Java rr.
P. attenuatum CL. Bali Sound rr.
Liemophora flabellata CARM. Semau Sound, Bali Sound +.
L. Lyngbyei (KÜTZ.) GRUN. Sumba r.
L. Aurivillii CL. n. sp. Gaspar Sound, Sumba, Timor, Semau Sound, Langküss. +
Climacosphenia moniligera EHB. Semau Sound, Billiton, Bali Sound +.
Grammatophora undulata (EHB.) GRUN. Bali Sound, Java (f. *genuina*).
G. oceanica EHB. v. *macilenta* W. SM. Java r.
G. caribæa CL. Java r.
Rhabdonema adriaticum KÜTZ. Java, Timor, Bali Sound c.
R. mirificum W. SM. Java, Bali Sound c.

- Striatella unipunctata* LYNGB. Semau Sound, Sumba r.
S. interrupta (EHB.). Semau Sound r.
Euphyllodium spathulatum SHADU. Bali Sound, Java r.
Surirella gemma EHB. Bali Sound rr. (a small form).
S. fastuosa EHB.
 var. *fluminensis* GRUN. Java r.
 var. *eximia* GREV. Java r.
 var. *typica* (A. S. ATLS. Pl. XIX fig. 12). Java, Bali Sound +.
 var. *incurvata* A. S. Java rr.
 var. *comis* A. S. Java r.
 var. *collare* A. S. Java +.
 var. *Kinkeri* A. S. Java rr.
 var. *Lorenziana*. Java rr.
Plagiodyscus Martensianus GRUN. Billiton, Java, Bali Sound r.
P. nervatus GRUN. Billiton, Java, Semau Sound r.
Campylodyscus ornatus GREV. (*C. mirabilis* LEUD.-FORTM.). Java r.
C. ecclesianus GREV. Java r.
 var. *pacifica* GRUN. (*C. radians* L. FORTM.) Java r.
 var. *Debyi* L. FORTM. Java rr.
 var. *adriaticus* GRUN. Bali Sound, Java +.
C. Robertianus GREV. (incl. *C. diplostictus* NORM.). Java, Billiton, Bali Sound r.
C. Dæmelianus GRUN. (*C. Hardmanianus* DEBY). Bali Sound, Java.
C. horologium WILLIAMS. (incl. *C. Pfitzeri* A. S., *C. mediterraneus* GRUN., *C. lepidus* CASTR., *C. orbicularis* CASTR., *C. challengerensis* DEBY, *C. Michaulti* L. FORTM.). Bali Sound r.
C. Thuretii W. SM. (= *C. sumatrensis* L. FORTM.?). Java rr (very small form).
C. latus SHADB. (*C. divisus* L. FORTM., *C. dubius* L. FORTM., *C. flammiger* L. FORTM., *C. linearis* L. FORTM., *C. contiguus* A. S., *C. signatus* L. FORTM., *C. ambiguus* GREV., *C. speculum* L. FORTM., *C. gibberosus* L. FORTM., *C. æmulus* A. S., *C. Clevei* L. FORTM., *C. Thumii* L. FORTM. are all, as far as may be judged from the figures, varieties of this species). Billiton, Bali Sound, Java r.
C. Kittoniana GREV. (variety of *C. latus*) Java r.
C. Browneanus GREV. Java rr.
C. Normannicus GREV. Java rr.
 var. *Wallichianus* GREV. Java rr.
C. samoensis GRUN. (*C. Bergonii* PONTOCZ. *C. ascensionis* L. FORTM.). Bali Sound, Java +.
C. australis GRUN. Java r.
C. biangulatus GREV. (*C. zebuanus* CASTR.). Bali Sound, Java +.
C. Brightwellii GRUN. (*C. striatus* BTW., *C. undulatus* GREV. pp., *C. humilis* CASTR., *C. Kinkeri* A. S.). Java +.
C. intermedius GRUN. Bali Sound rr.
C. exilis GRUN. (*C. Ralszii* W. SM.?). Bali Sound, Java rr.

C. crebrecostatus GREV. (*C. crebrestriatus* A. S., *C. singularis* A. S., *C. circumactus* A. S., *C. comptus* JANISCH.). Java, Bali Sound r. There is scarcely any specific difference between this form and *C. samoensis*.

- C. subangularis* GRUN. Bali Sound, Java r.
Nitzschia socialis GREG. Billiton (f. *seychellensis* GRUN.). Bali Sound r.
N. granulata GRUN. Sumba, Bali Sound, r.
N. tryblionella HANTZSCH. Java r.
N. panduriformis GREG. Bali Sound, Billiton, Java c.
N. marginulata GRUN. Billiton, Java +.
N. nicobarica GRUN. (*N. alata* LEUD. FORTM.). Java, Bali Sound +.
N. Jelineckii GRUN. (*N. acuta* CL.). Java +.
N. Græffii GRUN. Bali Sound, Billiton r.
N. fluminensis GRUN. Bali Sound, Billiton, Java +.
N. distans GREG. Bali Sound r.
N. angularis W. SM. Java +.
N. valida CL. Billiton, Java r.
N. lanceolata W. SM. Bali Sound r.
N. longissima BRÉB. Sumba, Billiton r.
N. ventricosa KITTON. Sumba, Bali Sound r.
N. closterium EHB. Semau Sound r.
N. Vidovichii GRUN. Java rr.
Rutilaria hexagona BRUN. Bali Sound rr.
Paralia sulcata EHB. Java r.
Cyclotella striata KÜTZ. Billiton, Bali Sound, Java c.
Hyalodiscus stelliger BAIL. Java c.
Isthmiella enervis EHB. Bali Sound r.
Hydrosora triquetra WALL. (*Triceratium javanicum* CL., *H. compressa* WALLICH, *H. whampoensis* SCHW., *H. boryana* PANT., *H. mauritiana* BERGON.). Bali Sound r. Batavia +.
Biddulphia pulchella GRAY. Bali Sound, Java c.
 var. *Grundleri* A. S. Bali Sound r.
B. Tuomeyi BAIL. Bali Sound, Java +.
Odontella affinis GRUN. Bali Sound r.
O. (Triceratium) favus EHB. (*Tric. muricatum* BTW., *T. comptum* EHB., *T. scitulum* BTW., *T. fimbriatum* WALLICH, *T. pulvinar* A. S., *T. Pantoczeki* A. S.). Bali Sound, Billiton, Java +.
O. (Triceratium) spinulosa GRUN. Java rr.
O. dubia BTW. (*Triceratium dub.* BTW., *Amphitetras bicornis* CL.). Billiton, Bali Sound, Java c.
O. (Biddulphia) reticulata ROPER. Bali Sound, Billiton, Java +.
O. (Biddulphia) Roperiana GREV. Java r.
O. (Triceratium) spinosa BAIL. (*Tric. armatum* ROPER). Java rr.
Zygoceros (Biddulphia) chinensis GREV. Billiton, Semau Sound, Gaspar Sound, Bali Sound, Timor c.

Lampriscus (Triceratium) orbiculatus SHADB. (*Tric. Shadboltianum* GREV.). Billiton, Semau Sound, Lombok Sound, Bali Sound, Sumba c.

Glyphogonium (Triceratium) sculptum SHADB. Java c.

Eugonium (Biddulphia) Titianum GRUN. (*Bidd. membranacea* CL.). Billiton, Lombok Sound, Semau Sound, Mendanao, Gaspar Sound c.

The chromatophores are very small and scattered in the peripheral parts of the cellula. Nucleus central.

E. (Triceratium) formosum BTW. Timor, Bali Sound, Lombok Sound, Semau Sound, Java c.

E. (Triceratium) Frauenfeldii GRUN. Java r.

E. (Triceratium) latum GREV. (probably a variety of the preceding). Java +.

E. (Triceratium) crux BTW. (*Tric. zonulatum* GREV., *Amphitetras parvula* JAN. & RABH., *Tric. celebense* A. S.). Java r.

E. (Triceratium) sculptum SHADB. Billiton, Bali Sound, Java r.

Huttonia (Cerataulus) labuensis CL. Billiton rr.

Cerataulus turgidus E. Bali Sound r.

Auliscus sculptus W. SM. Billiton, Bali Sound r.

Aulacodiscus orientalis GREV. Bali Sound r.

A. margaritaceus RALFS. Bali Sound r.

Roperia tessellata (ROP.) GRUN. Bali Sound rr. This species was also found in the Arabian Sea (11° N. 51° E.).

Actinocyclus appendiculatus (GRUN.) RATTR. Semau Sound, Bali Sound rr.

A. Ehrenbergii RALFS. Billiton, Bali Sound, Java +.

A. moniliformis RALFS. Billiton, Java r.

A. tenuissimus CL. Java r.

A. (Coscinodiscus) curvatulus GRUN. Java rr.

Coscinodiscus Rothii (EHB.) GRUN. Java c. This form scarcely differs from *C. denarius* A. S., the marginal small nodules not being always present. *C. Normani* GREG. probably also belongs to this species.

C. nitidus GREG. Bali Sound, Java r.

C. oculus iridis EHB. Java r.

C. nodulifer JANISCH. Java c.

Endletya oceanica EHB. Java r.

var. *minor* A. S. Java +.

Pyxidicula cruciata EHB. Java r.

Actinoptychus hexagonus GRUN. Bali Sound rr.

A. trilingulatus PRITCH. Bali Sound, Java +.

A. vulgaris (SCHUM.) GRUN. Bali Sound, Java r.

A. undulatus RALFS. Java +.

Systematical notes.

Copepoda.

Acrocalanus pediger Cl. n. sp.

(Pl. I, fig. 1—20).

Diagnosis. *The female.* Antennæ of the 1st pair 25- (or 23-)jointed. Dorsal margin regularly convex. Abdomen 4-jointed. Distal part of *Re* 3 of the 4th pair of natatory legs with coarsely denticulate exterior margin. Of the 5th pair of legs the left only developed and 4-jointed — L. 1,3 mm.

The male. Antennæ of the 1st pair similar, 19-jointed, the proximal 6 joints uniting into a thicker proximal part, less than $\frac{1}{3}$ of the distal. Abdomen 5-jointed. Distal part of *Re* 3 of the 2—4 pairs of natatory legs much shorter than the proximal and with entire (not saw-like) exterior margin. Fifth pair of legs asymmetrical, the left longer than the right — L. 1,2 mm.

Description of the female. *Body.* Length (anterior part 1, posterior part 0,3) 1,3 mm. Anterior part 4-jointed. *Ce* and *Th* 1 more or less indistinctly separate, twice as long as the three other joints together. *Th* 4 and 5 indistinctly separate. The dorsal outline (laterally) nearly as in *A. gracilis*. *Abdomen* 4-jointed; longitudinal proportion of the joints: 3:1:1:2. *Furca* as long as broad, shorter than the anal-segment. *St* 2 slightly longer than the abdomen and somewhat longer than *St* 1 and *St* 3, which are a little longer than *St* 4. *Si* very short and fine, geniculate. Interior margin of the furca hairy.

First pair of antennæ reach with 2 or 3 joints beyond the furca, 25-jointed (*Aa* 1~2 and 8~9 sometimes indistinctly articulate). Joints 3 to 11 short, scarcely longer than broad, 11~15 one and a half times longer than broad, the following about twice as long as broad. *S* 2 to 4 times longer than the joints, those of *Aa* 23 and 24 longer than the other. *S* of the ultimate short, the longest scarcely more than twice as long as the joint.

Second pair of antenna. *B* 1 broader than long, with 1 *Si* reaching to the distal margin of *B* 2, coarsely plumose. *B* 2 as long as broad with 2 distal, plumose *Si*. *Re* slightly shorter than *Ri*. *Re* 1 broader than long, *Re* 2 as long as broad, as *Re* 3—6 together and as *Re* 7. *Si* of the joints 2, 2, 1, 1, 1, 1, 3. There is besides, somewhat below the end of *Re* 7, a *Sp*, somewhat shorter than *Re*, while the other are at least $1\frac{1}{2}$ times longer than *Re*. *Ri* 1 twice as long as broad, distally with 2 *Si*, one longer and one shorter. *Ri* 2 half as long as *Ri* 1. *Li* with 8 *Si* increasing in length towards *Le*;

the 2 proximal short, the following 4 geniculated. The longest *S* $1\frac{1}{2}$ times longer than *Re*, finely plumose. *Le* with 6 *Sa* and 1 *Sp*, plumose $1\frac{1}{2}$ times longer than *Re*.

Mandible. *B* trapezoid with 4 *Si*, the proximal coarsely plumose. *Re* twice as long as broad, indistinctly (on the exterior side) articulate, with 6 plumose *S*, $1\frac{1}{2}$ times longer than the mandible. *Ri* twice as long as broad and less than $\frac{1}{2}$ as long as *B*, with 2, 2, 9 + 1 *S*. — *Masticatory apparatus:* the denticulated margin $\frac{5}{3}$ of the basal part, with a short *Si*. Exterior tooth strong, separated by a gap from the 4 broader and 3 more acute teeth.

Maxilla. *B* 1 as long as broad. *Le* 1 with 9 plumose *S*, the 2 proximal short, the other very long. *Le* 2 seems not to be developed. *Li* 1 rounded, with stiff *S*, some of which are spinulose. *Li* 2 oblong with 3 strongly plumose *S*. *Le* 3 with 4 strong *S*. *B* 2 distally with 3 *Sa* and 1 *Sp*. *Re* projecting, with rounded outer margin and 11 plumose *S*, reaches to the end of *Ri*. *Ri* not articulated, with 3 + 1, 3 + 1 and 6 *S*.

First maxillipeds twice as long as broad. Articulation indistinct. Lobes digitiform. *L* 1 with 5 + 1 *S*, *L* 2—4 each with 2 + 1 *S*. *L* 5 with 4 (?) *S*, *Ri* with 5 + 3 *S*. *Sp* somewhat shorter than *Sa*, all coarsely plumose, nearly straight.

Second pair of maxillipeds. *B* 1, *B* 2 and *Ri* of equal length. *B* 1 three times longer than broad. *L* 1~2 with 3 *S*, *L* 3 with 3 *S* and *L* 4 with 4 *S*. The *S* of each group of different length, the longer plumose. *B* 2 with 3 *S* between the middle and the distal end, where are 2 plumose *S*. *Ri* 5-jointed; joints of about equal length. *Ri* 1 with 3, *Ri* 2 with 4, *Ri* 3 and 4 each with 3, *Ri* 5 with 2 *Si*. *Ri* 4 with 1 and *Ri* 5 with 2 plumose *Se*.

First pair of natatory legs scarcely more than half as long as the 2nd p. *B* 1 as long as broad, with straight exterior and slightly convex interior margin, the latter with 2 sets of hairs; no *Si*. *B* 2 as long as *B* 1, with 1 nearly straight *Si*, at the base of which is a group of small bristles and aculei. *Re* twice as long as *Ri*, 3-jointed. *Re* 1 and 2 of equal length with groups of hairs on the exterior margin. *Re* 3 twice as long as *Re* 2. *Se* 0, 0, 2 and *St* bristle-like. *Si* 1, 1, 4. *Ri* 2-jointed, the first joint as long as broad, the second twice as long. *Se* 0, 1; *Si* 1, 4.

Second to fourth pairs of natatory legs. *B* of the 2nd p. half as long as *Re*, of the 3d p. $\frac{2}{5}$ and of the 4th p. $\frac{1}{3}$ as long as *Re*. *Ri* $\frac{1}{2}$ as long as *Re* (or somewhat longer on the 4th p.). *B* 1 of all pairs slightly longer than broad, with 1 plumose *Si*, that reaches a little beyond the distal margin of *B* 2, and with 3 sets of spines, 1 distal and 1 proximal on the interior side, and 1 group near the basis of *Si*. *B* 2 broader than long; no *Si*, but on the 2nd and 3d p. there is a group of 3 small aculei below the insertion of *Ri*. Longitudinal proportion of *Re* 1, 2 and 3 on the 2nd p. = 1:1.5:3 on the 3d and 4th = 1:2:4. *Se* 1, 1, 2 on all pairs small, triangular, with smooth edges. The joints end below the *Se* in small apiculi. *St* knife-like, with entire exterior margin, on the 2nd pair slightly shorter than *Re* 3 on the other p. about half as long as *Re* 3. *Si* 1, 1, 5, plumose. Surface of *Re* 1 of the 2nd and 3d p. with a row of apiculi below the *Se*; surface of *Re* 2 of the 2nd and 3d p. also with a row of apiculi. *Re* 3 of the 2nd p. carries 1 and of the 3d p. 6 small apiculi. *Se* 1 of *Re* 3 divides the joints in a proximal and distal part of about equal length. The proximal part has on

all p. a saw-like exterior margin. The distal part of the 2nd p. carries a small number (5) of teeth, of the 3rd p. has smooth exterior margin and of the 4th p. about 8 teeth. *Ri* of all pairs 3-jointed. Longitudinal proportion of the joints on the 2nd p. 1:2:2, on the 3d p. 1:3:4 and on the 4th p. 1:4:6. *Se* on the 2nd p. 0:0:1, on the other 0:0:2; *Si* 1, 2, 5 on all pairs. Surface of *Ri* 2 with a curved row of apiculi. *Ri* 3 of the 3d and 4th p. with some apiculi.

Fifth pair of legs. The left leg only developed, scarcely longer than the *B* of the 4th leg, 4-jointed, the 3 proximal joints equal and as long as broad, naked. The 4th joint, slightly shorter than the 3 proximal together, with 2 small exterior apiculi and somewhat longer terminal *S*.

Description of the male. *Body.* Length (anterior part 0,₂, posterior 0,₃) 1,₂ mm. Dorsal outline (laterally) slightly convex, the front suddenly bent in a right angle. Joints 4; *Ce~Th* 1 twice as long as the 3 other joints together. *Abdomen* 5-jointed, the second joint somewhat longer than the other, which are of equal length and broader than long. *Furca* as long as broad. *Si* faint. Of the *St* 2 and 3 are of nearly equal length and shorter than abdomen, slightly longer than *St* 1 and 1½ times longer than *St* 4.

First pair of antennæ. The left and right similar and as in *Paracalanus parvus*, the 6 proximal joints uniting into a thicker division, which carries a number of sensorial appendages, and, centrally, a strong *S*. Also *Aa* 7 and 8 uniting.

Second pair of antennæ similar to those of *Paracalanus parvus*. *B* 2 with 2 *Si*. *Re* 1 and 2 uniting, naked, 3—6 each with a long plumose *Si*. *Re* 7 with 1 *Sp* at some distance from the naked apex. *Ri* 1 naked. *Li* of *Ri* 2 with 4 and *Le* with 6 *S* (the ultimate of the latter with stiff hairs near the base).

Mandible without masticatory apparatus. *B* with 1 distal *Si*. *Re* and *Ri* well developed, the former with 6, the latter with 1 + 8 *S*.

Maxillæ very reduced. *Le* 1 with 5 *S*. *Re* longer and broader than *Ri*, carries 6 *S*, and *Ri* one longer and one shorter *S*. Other lobes slight and naked gibbosity.

*Maxillipeds of the 2nd pair*¹ 3-jointed; joints of nearly equal length. *B* 1 twice as long as broad, naked. *B* 2 with 2 *Si* approximate to the distal end, one ⅓ as long as the joint and plumose, the other small. *Ri* not articulated, carries 5 groups of small *Si* (2, 3, 2, 2, 1) and 3 strong plumose *Se*, the proximal of which is twice, the median 1½, the distal as long as the joint.

First pair of natatory legs. *B* 1 with a plumose *Si* near the base and smooth interior margin. *B* 2 as long as *B* 1, with a sigmoid *Si*, unarmed. *Re* more than twice as long as *Ri*, which is shorter than *B*. *Re* 3-jointed, *Re* 1 and 2 of equal length, *Re* 3 1⅓ as long. *Se* 0, 0, 2. *Si* 1, 1, 4. *St* bristle-like, longer than the joint. Beneath *Se* 1 there are some small bristles. *Ri* 2-jointed. *Ri* 1 not half as long as *Ri* 2. *Se* 0, 1. *Si* 1, 4.

Natatory legs of the 2nd to 4th pair. *B* 1 twice as long as *B* 2 with nearly straight margins and a short *Si*, unarmed. *B* 2 broader than long, naked and unarmed. *Re* twice as long as *Ri*, 3-jointed. *Re* 1 short, or as broad as long, *Re* 2 more than twice as long

¹ I failed to discover the 1st pair.

and *Re* 3 longer than the other joints together. *Se* 1, 1, 2. *Si* 1, 1, 5. *St* knife-like with entire exterior margin. *Re* 1 of the 2nd and 3d pair with a row of small spines beneath the *Se*. The surface of *Re* 2 of the 2nd and 3d p. with a curved row of spines. *Re* 3 of the 2nd and 3rd p. with some few spines. The proximal part of *Re* 3 much (2, 3, 4 times) longer than the distal and saw-like, but the distal part has entire margin. *Ri* 3-jointed. *Ri* 1 shorter than broad. *Ri* 2 longer than broad and *Ri* 3 longer than the other joints together. *Se* 0, 0, 1 on the 2nd p. 0, 0, 2 on the other. *Si* 1, 2, 5. *Ri* 2 with several rows of spines. *Ri* 3 very spinulose.

Fifth pair of legs resembles that of *Calocalanus pavo*. Left leg 5-jointed; *Ri* (or the distal 3 joints) $1\frac{1}{2}$ times longer than *B* (or the 2 proximal joints). *B* 1 funnel-shaped. *Ri* 2 somewhat longer than *Ri* 1 and twice as long as *Ri* 3. *Ri* 2 with a small *Se*. *Ri* 3 with 2 small *S*. Right leg not half as long as the left, 3-jointed; joints of almost equal length. The ultimate with a terminal spine longer than the joint.

Acrocalanus gibber GIESBR.

(Pl. II, fig. 1—16).

Diagnosis. *The female.* Abdomen 4-jointed. Dorsal margin of *Ce* very strongly and irregularly convex. Distal exterior margin of *Re* 3 of the 4th pair of natatory legs coarsely denticulate. The 5th pair of legs not developed. *L.* 1,1 to 1,2 mm.

The male. Abdomen 5-jointed. Dorsal margin of *Ce* gently and regularly convex. Distal exterior margin of *Re* 3 of the 2nd—4th pairs of natatory legs coarsely denticulate. Of the 5th pair of legs the left only developed. *L.* 1,1—1,2 mm.

Description of the female. *Body* (anterior part 0,9, posterior part 0,3) 1,2 mm. Outline of *Ce* (dorsally) strongly and irregularly convex. Anterior part 4 jointed, *Ce* ~ *Th* 1 more than twice as long as the other joints together. Lateral angles of the last segment rounded. *Abdomen* 4-jointed; genital segment as long as broad and as long as the two following segments together; anal segment somewhat broader than long. *Furca* nearly twice as long as broad. *St* 2 slightly longer than *St* 3, which is somewhat longer than the nearly equal *St* 1 and 4. *Si* faint. *St* 2 as long as the abdomen.

Natatory legs of the 1st pair. *B* as long as *Ri* and half as long as *Re*. *B* 1 and *B* 2 of equal length. *B* 1 without *Si* but with some stiff hairs proximally and distally at the exterior margin. *B* 2 with a sigmoid *Si*, and distally with some spines and stiff hairs. *Re* 3-jointed; *Re* 1 and *Re* 2 equal, *Re* 3 shorter than *Re* 1 and 2 together. *Re* 1 with a row of small spines. *Se* 0, 0, 2. *St* bristle-like and nearly as long as *Re*. *Si* 1, 1, 4. *Ri* 2-jointed. *Ri* 2 slightly longer than *Ri* 1. *Se* 0, 1; *Si* 1, 4.

Natatory legs of the 2nd to 4th pair. *B* 1 with slightly convex margins, somewhat longer than broad, with 1 short, plumose *Si* and with several groups of stiff hairs and spines. *B* 2 broader than long, naked, but on the 2nd and 3rd p. with some spines beneath the insertion of *Ri*. *Re* 3-jointed; longitudinal proportion of the joints as 1:2:3. *Se* 1, 1, 2. *St* knife-like, on the 2nd p. as long as *Re* 3, on the 3d p. $\frac{3}{4}$ of *Re* 3, on the 4th p. less than $\frac{1}{2}$ as long as *Re* 3. *Si* 1, 1, 5. Surface of *Re* 1 of the 2nd and 3rd pair with some spines below *Se*; surface of *Re* 2 and 3 with numerous spines. *Ri*

3-jointed. *Ri* 1 shorter than broad. *Ri* 2 and 3 of nearly equal length. *Se* of the 2nd pair 0, 0, 1, of the other 0, 0, 2. *Si* 1, 2, 5. *Ri* 2 of all pairs and *Ri* 3 of the third and fourth p. armed with numerous spines.

Fifth pair of legs not developed.

Description of the male. *Body* 1,1 to 1,2 (anterior part 0,8—0,9, posterior part 0,3—0,35) mm. Dorsal margin gently convex, not hump-backed, 4 jointed. *Ce~Th* 1 twice as long as the other joints together. Lateral angles of the last segment rounded. *Abdomen* 5-jointed; longitudinal proportion of the joints 4:6:4:5:4,5. *Furca* as long as broad and shorter than the anal-segment, its longest *S* shorter than the abdomen.

Antennæ of the first pair. Left and right similar, 18-jointed, the proximal joints united into one division, $\frac{1}{3}$ as long as the distal part. The proximal part with 1 strong *S* and many sensorial appendages. The 7 proximal joints of the distal part of the antennæ as long as broad, the other $1\frac{1}{2}$ to 2 times longer than broad; their *S* faint. Terminal *S* of the last segment almost rudimentary.

Antennæ of the second pair. *B* 2 with 2 *Si*, one longer and one shorter. *Re* and *Ri* of equal length. *Re* 3—6 with long plumose *Si*; *Re* 7 with 1 *Sp* only, which is inserted at some distance from the end. *Ri* naked; its *Le* and *Li* each with 6 *S*; the most exterior of them with stiff hairs at the proximal part.

Mandible. *B* naked. *Re* and *Ri* of equal length; *Re* with 6 *S*; *Ri* with 1 short *Si* and 9 *St*. *Masticatory* apparatus not developed.

Maxilla very reduced; *Ri* larger than *Re* with 2 *S*; *Re* with 6 *S*; *Le* 1 with 5 (?) *S*.

Second maxilliped 3-jointed, joints almost equal in length. *B* 1 naked; *B* 2 at the distal end with 2 small and 1 longer plumose *S*. *Ri* not articulated, with 3 strongly plumose *Se*, the proximal of which is as large as the maxilliped; *Si* small, the proximals plumose.

First pair of natatory legs. *B* 1 naked and unarmed. *B* 2 with 1 *Si* and a row of 4 apiculi. *Re* and *Ri* unarmed, but the exterior margin of *Re* 3 beneath the *Se* 1 with some stiff hairs. *S* as in the preceding species.

Second and fourth pairs of natatory legs. *B* 1 as long as broad, with slightly convex margins, armed with several sets of spines, with 1 short plumose *Si*. *B* 2 shorter than *B* 1. *Ri* half as long as *Re* (or longer on the 4th p.). *Re* 3 as long as *Re* 1 and 2 together. *Se* 1, 1, 2. *Se* 1 of *Re* 3 divides the joint in a distal and proximal part of equal length (but on the 4th p. the distal part is $\frac{3}{5}$ as long as the proximal). *St* knife-like, shorter than *Re* 3. *Si* 1, 1, 5, plumose. Exterior margins of *Re* 2 and 4 (even the distal part of *Re* 3) saw-like. Teeth on the distal part of *Re* 3 of the 4th pair about 10.

Fifth pair of legs. The left leg only developed, see fig. 16.

Calanopia Aurivillii Cl., n. sp.

(Pl. II, fig. 17—23; Pl. III, fig. 1—10).

Diagnosis. *The female.* Abdomen 2-jointed. The first segment $\frac{3}{4}$ as long as the second. Fifth pair of legs symmetrical, 3-jointed; the third joint with 4 *S*, of which the 4th is the longest. *L.* 1,3 mm.

The male. Abdomen 5-jointed. Right antennæ prehensile, its distal part 5-jointed; *Aa* 18 not projecting into a spine. Left 5th leg longer than the right; its *B* 2 triangular and its *Re* with 1 *Se*. L. 1,2 mm.

Description of the female. *Body* L. (anterior part 0,9, posterior 0,4) 1,3 mm. The anterior part more than twice as long as broad, broadest at *Th* 1, gradually tapering towards the rounded front, 5-jointed; longitudinal proportion of the joints = 4 : 1¹/₂ : 1 : 1 : 1⁴/₅. Last segment symmetrical, its lateral angles acute. *Ce* ends in a bifid rostrum.

Abdomen 2-jointed; the genital-segment ³/₄ as long as the distal, nearly twice as long as broad.

Furca 2¹/₂ times as long as broad, ¹/₄ as long as *Ab* 3~5. *Se* near the end, as long as the furca. *Si* very faint. *St* 2 not exceeding the abdomen in length. *St* 3 somewhat shorter and slightly longer than *St* 1. *St* 4 half as long as *St* 2 and twice as long as *Se*; all plumose.

Antennæ of the 1st pair reach to the end of *Th* 5, 16-jointed. Length of the joints in 0,005 mm.

Aa 2~5, 6~8, 9~12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24~25.
14, 12, 18, 7,5, 5,2, 5,2, 10, 16, 20, 18, 10, 9, 9, 13, 13.

S as a rule short. Terminal joint with 6 *S*, the longest of which is 3 times longer than the joint.

Antennæ of the 2nd pair. *B* 1 broader than long, with 1 plumose *Si*; *B* 2 as long as broad, with 2 distal *Si*. *Re* and *Ri* of equal length. *Re* 4-jointed; *Re* 1 as long as broad, naked; *Re* 2 more than twice as long as broad. *R* 3~6 uniting into a very short joint carrying 4 plumose *Si*, twice as long as *Re*. *Re* 7 small, scarcely twice as long as broad, with 1 *Sp* near the proximal end and 3 *S* at the apex, all long and plumose. *Ri* 1 broader than long, with 2 distal *Si*. *Le* with 6 plumose *S*, the longest more than twice as long as *Ri*; the exterior, which is shorter, carries near the basis some stiff hairs (exterior margin of *Le* hairy). *Li* carries 8 *S*, decreasing in length towards the interior margin, the 3 innermost being very faint.

Mandible. *B* trapezoid, as long as broad, with 1, 1, 2 *Si*. *Re* and *Ri* short, of equal length. *Re* with 6 plumose *S*. *Ri* with 2, 2, 6 *S*. The *masticatory apparatus* well developed, with 1 short *Si*. The large exterior tooth claw-like and separated by a gap from the other 5 teeth.

Maxilla not distinctly articulate. *B* twice as long as broad. *Li* 1 with about 12 stiff bristles. *Li* 2 with 3 plumose *S*. *Li* 3 with 2 *S*. *B* 2 and *Ri* with 2, 2, 2, 5 *S*. *Re* with 9 plumose *S*. *Le* 1 with 9 plumose, long *S*. *B* 2 with *Re* and *Ri* reflexed.

First maxilliped twice as long as broad, lobes crowded; *L* 1—4 each with 2 stronger, spinulose *Sa* and 1 small *Sp*; *L* 1 besides with 3 small bristles. *L* 5 stronger and more projecting than the other, with 1 strong and 1 half as long spinulose *S*. *L* 6 and *Ri* 1 and 2 each with 1 strong, falciform spinulose *Sa*. *Ri* 3 with 2 strong *Sa* and 1 *Sp* ²/₃ as long.

Second maxilliped. *B* 1 somewhat longer than *B* 2, and *B* 2 longer than *Ri*. *B* 2 half as broad as *B* 1 and 4 times longer than broad. *L* 2 and 3 each with 2 strong

spinulose *Sa*, one longer and one shorter. *L* 4 with 1 strong (the longest of all) *Sa* and 1 shorter, plumose *Sp*. *B* 2 distally broader, with 2, distal plumose *Si*. *Ri* 1 with 2 distal *Si*. *Ri* 3—5 with 4 *S*, all plumose.

Natatory legs of the 1st to 4th pairs. *B* 1 with straight or slightly convex margins and 1 *Si*, of the 2nd and 3rd p. hairy on the exterior margin. *B* 2 as long as broad. *Re* and *Ri* inserted on the same level. *Re* 3-jointed, about twice as long as *Ri*, which has about the same length as *B*. *Se* of the 1st pair 1, 1, 2, of the 2nd—4th 1, 1, 3. *Se* triangular, with smooth or almost smooth edges. *Se* 1 and *Se* 2 of *Re* 3 smaller than the other. *St* as long as *Re* 3; their exterior margin finely serrated. Longitudinal proportion of the 3 joints and *St*.

Pairs	<i>Re</i> 1	<i>Re</i> 2	<i>Re</i> 3	<i>St</i>
1	10	10	15	22
2	13	13	24	30
3	13	13	28	40
4	12	12	30	30

Si of the 1st pair 1, 1, 4, of the other 1, 1, 5. *Ri* 2-jointed. *Si* on the 1st joint 3. *S* on the second joint 6 (1st p.), 8 (2nd and 3rd p.), 7 (4th p.).

Fifth pair of legs, symmetrical, 3-jointed. *B* 1 of both legs uniting. *B* 2 one and a half times as long as broad, with 1 short *Se*. *Re* 1~3 (the 3rd joint) with 3 exterior spines of equal length and a 4th terminal falcate as long as the joint.

Description of the male. *Body.* Length (anterior part 0,8, posterior part 0,4) 1,2 mm. Anterior part 5-jointed. Last joint acuminate. *Abdomen* 5-jointed; proportional length of the joints 1:1,4:1,4:1,2:1. *Furca* somewhat longer than *Ab* 5 and 3 times longer than broad. *St* 2 as long as abdomen.

Antennæ of the 1st pair. The left similar to that of the female, the right geniculate and prehensile. The distal part half as long as the proximal, composed of 5 joints. The distal anterior half of *Aa* 18 with close denticulation, but without projecting spine; *Aa* 12~16 broader than the other.

Antennæ of the 2nd pair, the *mandibles*, the *maxilles*, *maxillipeds* and *natatory legs* similar to those of the female.

Fifth pair of legs. The left 4-jointed, longer than the right, 3- (4-) jointed. *B* 1 of the left leg half as long as *B* 2; interior margin of *B* 2 with a strong gibbosity inside. *Re* 1 as long as *B* 2. *Re* 2~3 with subulate apex and 1 small *Se*. The right with short *B* 1; *B* 2 twice as long as *B* 1. *Re* with 1 *Si* and 2 *Se*, all small.

This species is very nearly akin to *Calanapia americana* DAHL as far as can be judged from the very fragmentary description (Ber. d. naturf. Ges. zu Freiberg in B. Vol. VIII, pag. 2, Pl. 1, fig. 23—26). The latter species, from the mouth of Tocantin, differs, as concerns the female, in the somewhat different 5th p. of legs, on which the 3rd *S* (not the 4th) is the longest. The male of *C. americana* differs both in the right antennæ and the 5th leg. The proximal part of the prehensile joint projects into a denticulate spine.

spinulose *Sa*, one longer and one shorter. *L* 4 with 1 strong (the longest of all) *Sa* and 1 shorter, plumose *Sp*. *B* 2 distally broader, with 2, distal plumose *Si*. *Ri* 1 with 2 distal *Si*. *Ri* 3—5 with 4 *S*, all plumose.

Natatory legs of the 1st to 4th pairs. *B* 1 with straight or slightly convex margins and 1 *Si*, of the 2nd and 3rd p. hairy on the exterior margin. *B* 2 as long as broad. *Re* and *Ri* inserted on the same level. *Re* 3-jointed, about twice as long as *Ri*, which has about the same length as *B*. *Se* of the 1st pair 1, 1, 2, of the 2nd—4th 1, 1, 3. *Se* triangular, with smooth or almost smooth edges. *Se* 1 and *Se* 2 of *Re* 3 smaller than the other. *St* as long as *Re* 3; their exterior margin finely serrated. Longitudinal proportion of the 3 joints and *St*.

Pairs	<i>Re</i> 1	<i>Re</i> 2	<i>Re</i> 3	<i>St</i>
1	10	10	15	22
2	13	13	24	30
3	13	13	28	40
4	12	12	30	30

Si of the 1st pair 1, 1, 4, of the other 1, 1, 5. *Ri* 2-jointed. *Si* on the 1st joint 3. *S* on the second joint 6 (1st p.), 8 (2nd and 3rd p.), 7 (4th p.).

Fifth pair of legs, symmetrical, 3-jointed. *B* 1 of both legs uniting. *B* 2 one a half times as long as broad, with 1 short *Se*. *Re* 1~3 (the 3rd joint) with 3 exterior spines of equal length and a 4th terminal falcate as long as the joint.

Description of the male. *Body.* Length (anterior part 0,8, posterior part 0,4) 1,2 mm. Anterior part 5-jointed. Last joint acuminate. *Abdomen* 5-jointed; proportional length of the joints 1:1,4:1,4:1,2:1. *Furca* somewhat longer than *Ab* 5 and 3 times longer than broad. *St* 2 as long as abdomen.

Antennæ of the 1st pair. The left similar to that of the female, the right geniculate and prehensile. The distal part half as long as the proximal, composed of 5 joints. The distal anterior half of *Aa* 18 with close denticulation, but without projecting spine; *Aa* 12~16 broader than the other.

Antennæ of the 2nd pair, the *mandibles*, the *maxilles*, *maxillipeds* and *natatory legs* similar to those of the female.

Fifth pair of legs. The left 4-jointed, longer than the right, 3-(4-)jointed. *B* 1 of the left leg half as long as *B* 2; interior margin of *B* 2 with a strong gibbosity inside. *Re* 1 as long as *B* 2. *Re* 2~3 with subulate apex and 1 small *Se*. The right with short *B* 1; *B* 2 twice as long as *B* 1. *Re* with 1 *Si* and 2 *Se*, all small.

This species is very nearly akin to *Calanapia americana* DAHL as far as can be judged from the very fragmentary description (Ber. d. naturf. Ges. zu Freiberg in B. Vol. VIII, pag. 2, Pl. 1, fig. 23—26). The latter species, from the mouth of Tocantin, differs, as concerns the female, in the somewhat different 5th p. of legs, on which the 3rd *S* (not the 4th) is the longest. The male of *C. americana* differs both in the right antennæ and the 5th leg. The proximal part of the prehensile joint projects into a denticulate spine.

Calanopia elliptica BRADY.

(Pl. III, fig. 11—19; Pl. IV, fig. 1—2).

(Report on the copepoda obtained by H. M. S. Challenger during the years 1873—76, pag. 85; Pl. XXXIV, 1883. Giesbrecht Zool. Jahresb. 1896, Systematik. Vol. IX, pag. 325).

Diagnosis. *The female.* Abdomen 2-jointed. The 1st segment slightly shorter than the second. Fifth pair of legs slightly asymmetrical, 4-jointed. L. 1,8 mm.

The male. Abdomen 5-jointed. Distal part of the prehensile antenna 4-jointed, $\frac{3}{5}$ as long as the proximal, *Aa* 18 without projecting spine. Left 5th leg shorter than the right. Its *B* 2 with parallel margins. *Re* with 3 spines (*Se*). L. 1,85.

Description of the female. *Body* in length (anterior part 1,2 posterior part 0,6) 1,8 mm. *Anterior part* elongated, more than twice as long as broad, with the greatest breadth at *Th* 1, gradually tapering towards the (dorsally) rounded front, 5-jointed. Longitudinal proportion of the joints $4\frac{1}{2} : 1\frac{1}{2} : 1 : 1 : 1\frac{4}{5}$. *Ce* without eyes; rostrum bifid, with 2 strong and acute lobes. Last segment (*Th* 4~5) symmetrical, its lateral angles acute.

Abdomen 2-jointed, joints of nearly equal length; genital segment $1\frac{1}{2}$ times longer than broad.

Furca $2\frac{1}{2}$ times longer than broad, $\frac{3}{4}$ as long as *Ab* 3~5. *Se* near the end, somewhat longer than the furca. *Si* very faint, arising at the end of the interior margin. *St* 2 as long as the posterior part of the body, *St* 1 and 3 slightly shorter. *St* 4 more than half as long as *St* 2 and $1\frac{1}{2}$ times longer than *Se*. All *St* plumose.

Antennæ of the 1st pair gently S-shaped, reach to the second joint of the abdomen, 17-jointed. Length of the joints in 0,005 mm.

Aa 2~4, 5, 6~8, 9~11, 12, 13, 14, 15~16, 17, 18, 19, 20, 21, 22, 23, 24~25.
15, 4, 16, 16, 7, 7, 7, 26, 26, 30, 30, 18, 16, 17, 17, 20.

Strongest *S* on *Aa* 9~11, 14, 15~16. The ultimate joint with 2 longer and 4 shorter *S*; the longest $1\frac{1}{2}$ times longer than the joint.

Antennæ of the 2nd pair. *B* 1 broader than long, with 1 plumose *Si*. *B* 2 as long as broad, with 2 distal *Si*. *Re* slightly shorter than *Ri*. *Re* 1 broader than long, naked. *Re* 2 three and a half times longer than broad. *Re* 3~6 uniting into a short joint carrying 4 *Si*. *Re* 7 short with 1 + 3 plumose *S*. *Ri* 1 twice as long as broad, with 2 distal *Si*. *Le* with 6 long plumose *S* and *Li* with 2 long, 4 mediumsized and 2 faint *S*.

Mandible. *B* as long as broad, with 1, 1, 2 *Si*. *Re* and *Ri* as long as broad and of equal length. *Re* 3-jointed, with 6 long, plumose *S*. *Ri* with 2, 2, 6 *S*. The *masticatory apparatus* has a median constriction on the basal part; the end is as broad as the mandible and carries 5 teeth. The ventral tooth is strong and curved inwards, separated by a gap from the straight triangular second tooth. The third and fourth tooth with bifid tops. The 3rd—5th teeth proximally hairy. *Si* small.

Maxilla not jointed. Basal part large. *Li* 1 with about 12 stiff, in part hairy, *S*, the distal of which is the longest. *Li* 2 with 2 stronger plumose and 1 shorter *S*; *Li* 3

with 2 plumose *S*. *B* 2 and *Ri* with 2, 2, 2, 6 *S*. *Re* with 9 plumose *S*. *Le* 1 with 9 plumose long *S*. *Le* 2 very small with 1 strong *S*.

First maxilliped distinctly jointed, $2\frac{1}{2}$ times as long as broad, with crowded lobes. *L* 1 with 2 strong and 3 small *S* and 1 very small bristle. *L* 2—5 each with 2 *Sa* and 1 *Sp*, the former falcate, strong, the latter much finer. *L* 6 and *Ri* 1 and 2 each with 1 strong, falciform *Sa*; *Ri* 3 with 2 strong *Sa* and 1 half as long *Sp*. All *Sa* are spinulose, the spines becoming coarser and more distal, the more distal the *S* are, so also the length of *Sa*, the ultimate being twice as long as the body of the maxilliped. Of the lobes *L* 5 is the strongest.

Second maxilliped. *B* 1, *B* 2 and *Ri* of equal length. *B* 2 half as broad as *B* 1 and 3 times longer than broad. *L* 2 and 3 each with 1 longer and 1 shorter *Sa*. *L* 4 with 1 strong (the largest of all) spinulose *Sa*, 1 short, plumose *Sp* and a small naked bristle. *B* 2 with 2 distal *S*. *Ri* 4-jointed. *Ri* 1 as long as the other joints together, with 2 distal plumose *S*. *Ri* 2 and 3 each with 1 and *Ri* 4~5 with 3 *S*, all plumose.

Natatory legs of the 1st—4th pairs. *B* 1 as long as broad, with nearly straight margins and 1 plumose short *Si*. *B* 2 as long as broad, naked. *Re* and *Ri* inserted on the same level, the former 3- the latter 2-jointed, the former twice as long as the latter, which equals *B* in length. *Se* of the 1st p. 1, 1, 2, of the 2nd—4th 1, 1, 3, triangular with entire margins; the largest are 1, 1, 3, of the 3rd p., the smallest are 1 and 2 of *Re* 3. *St* knife-like on all pairs, with finely serrate exterior margin (5 teeth in 0.01 mm. on the 4th p.). The exterior margin of *Re* hairy. Longitudinal proportion of the 3 joints and *St*:

Pairs.	<i>Re</i> 1.	<i>Re</i> 2.	<i>Re</i> 3.	<i>St</i> .
1	10	6	13	} 20
2	10	10	20	
3	10	10	20	
4	10	10	18	

Si of the 1st p. 1, 1, 4, of the other 1, 1, 5. *Ri* reach a little beyond the distal margin of *Re* 2. The 1st joint with 3 *Si*. The *S* of the 2nd joint 6 (1st p.), 8 (2nd and 3rd p.), 7 (4th p.).

Fifth pair of legs somewhat asymmetrical, 4-jointed. *B* 1 of both legs uniting; *B* 2 one and a half times as long as broad, with 1 median *Se*. The third joint (*Re* 1~2) one and a half times longer than *B* 2, with 1 median and 1 distal *Se*. *Re* 3 acute, with 2 *Se*. All *Se* with more or less distinctly serrate margins.

Corycæus gibbulus GIESBR. *Male*.

(Pl. IV, fig. 3—10).

Diagnosis. Abdomen not jointed, twice as long as the furca, the branches of the latter being about 7 times longer than broad. *Posterior antenna*: *B* with a distal, plumose *Si* as long as *B* 2, which carries at the proximal end a spinulose *S* not reaching beyond the distal margin of the joint. The interior margin of *B* 2 entire. Terminal claw of equal breadth throughout. *L*. 0.9 mm.

Description of the male. Body. Length (anterior part 0,6, posterior 0,35) 0,9 mm. Anterior part 2-jointed; *Ce* ~ *Th* 1 being twice as long as *Th* 3 and one and a half times as long as broad. *Abdomen* not jointed, twice as long as broad. *Furca* half as long as *Ab*, its branches about 7 times longer than broad, parallel and of equal thickness. *Se* near the distal end and very small. *Si* longer than the short and stiff two *St*.

Antennæ of the 1st pair 6-jointed, the 2nd joint longest.

Antennæ of the 2nd pair nearly as in *C. rostratus*, its interior margin entire.

Posterior maxilliped. *B* 2 with a *Si* somewhat approximate to the distal end. Terminal claw reaches to the distal part of *B* 1.

Natatory legs of the 1st—4th pairs. *Re* 3-jointed.

Longitudinal proportion of the joints:

	<i>Re</i> 1.	<i>Re</i> 2.	<i>Re</i> 3.	<i>St</i> .
1st pair	7	4	13	29
2nd pair	7	6	12	22
3rd pair	7	7	10	25
4th pair	3	2	7	10

Se of *Re* 0, 0, 1. *St* of the 1st—3rd p. knife-like, longer than *Re* 3, with coarsely serrate margin; *St* of the 4th p. bristle-like. *Si* of *Re* 0, 1, 4 on the 1st p., 0, 1, 5 on the 2nd—4th p. *Ri* 3-jointed, half as long as *Re*, not developed on the 4th p. *Si* 1, 1, 5 (1st pair), 1, 2, 4 (2nd pair) or 1, 2, 2 (3rd pair).

This species is akin to *C. rostratus* and still more to *C. longicaudis*. The resemblance of the males of *C. gibbulus* and *C. longicaudis* is so close, that they may be easily mistaken.

Corycæus gracilicaudatus GIESBR. *Male.*

(Pl. IV, fig. 11—15).

Diagnosis. *Abdomen* 2-jointed. The genital segment in front with a ventrally curved spine, $\frac{2}{3}$ as long as the anal-segment and the furca together. L. 0,75 mm.

Description of the male. Body. Length (anterior part 0,4, posterior 0,35) 0,75 mm. *Th* 3 acute, not reaching to the middle of the genital segment. *Th* 4 short, acute. *Abdomen* 2-jointed; genital segment with a ventral spine. *Furca* with parallel branches of equal breadth throughout; branches at least 10 times longer than broad. Of the two *St* the longest is somewhat shorter than the furca and twice as long as the second, which is somewhat shorter than *Si*. Longitudinal proportion of the abdominal-segments and the furca, compared with that of the nearly related *C. anglicus*, *C. venustus* and *C. obtusus*.

	Genital-segm.	Anal-segm.	Furca.
<i>C. gracilicaudatus</i>	5	3	5
<i>C. anglicus</i>	5	2	2 $\frac{1}{2}$
<i>C. obtusus</i>	5	1 $\frac{3}{4}$	2 $\frac{1}{2}$
<i>C. venustus</i>	5	3	3 $\frac{1}{2}$

Antennæ of the 1st pair 6-jointed, the 4th joint the longest, the 6th the shortest.

Antennæ of the 2nd pair. B 1 with a naked *Si* reaching to the distal margin of B 2. B 2 with a plumose *S* reaching to the distal margin of the joint; the interior margin of the joint ends in a triangular acute tooth.

Second maxillipeds similar to those of *C. obtusus*, but B 2 somewhat longer.

Natatory legs of the 1st—4th pairs. *Re* of the 1st—3rd p. twice as long as *Ri*. Longitudinal proportion of the 3 joints:

	<i>Re</i> 1.	<i>Re</i> 2.	<i>Re</i> 3.	<i>St</i> .
1st pair	10	10	25	25
2nd pair	10	10	35	30
3rd pair	10	10	30	27
4th pair	7	5	10	30

Se 1, 1, 3 on the 1st to 3rd p. (1, 0, 1 on the 4th p.) triangular with serrate margins. *St* knife-like with coarsely serrate margins (*teeth* about 6 in 0,01 mm. on the 1st p.) on the 1st—3rd p., bristle-like on the 4th p. *Si* 0, 1, 4 (1st p.), 0, 1, 5 (2nd—4th p.). *Ri* 1 and *Ri* 2 of nearly equal length, both together as long as *Ri* 3 on the 1st p., but twice as long on the 3d p. The exterior margin of *Ri* 2 and 3 of the 1st p. ends in a small apiculus, so also *Ri* 1 of the 3rd p. *Si* 1, 1, 5 (1st p.), 1, 2, 2 (3rd p.). *Ri* of the 4th p. rudimentary, with 2 plumose *S*.

Metacalanus N. Gen.

Re and *Ri* of the natatory legs 3-jointed. Anterior part of the body with 5 pairs of legs. *Th* 1 without lateral eye. *Ri* of the 2nd pair of legs as on the other pairs. *Re* 3 of 2nd—4th pairs of natatory legs with 3 well-developed *Se*. Their *St* knife-like with finely serrated edges. Furca symmetrical. Anterior antennæ short (or do not reach to the end of *Th*).

Female. First p. of antennæ 17- (or 18-) jointed. Abdomen 4-jointed, with ventral genital opening. Fifth p. of legs 2-jointed (no *Ri*; *Re* not jointed).

Male. Left anterior antennæ not prehensile. Abdomen 5-jointed. Fifth p. of legs 3-jointed (no *Ri*; *Re* 2-jointed with a terminal claw).

Metacalanus Aurivillii n. sp.

(Pl. IV, fig. 16—25; Pl. V, fig. 1—6).

Description of the female. *Body.* Length (anterior part 0,45, posterior part 0,18) 0,63 mm. Anterior part 1½ times longer than broad, with the greatest breadth at the posterior part of *Ce*, tapering from *Th* 1 to the rounded front, 5-jointed. Lateral angle of the last segment rounded. The front ends (laterally) in a cylindrical truncate rostrum, carrying at its end 2 strong filaments. *Posterior part.* Abdomen 4-jointed. Longitudinal proportion of the joints as 3:2:4:1. The third segment slightly longer than broad. Furca symmetrical, slightly longer than broad. *Se* not developed; *Si* fine, genuflexed; *St* 1—3 of nearly equal length, plumose, slightly longer than the abdomen. *St* 4 short.

First pair of antennæ reach to *Th* 3, proximally incrassate, 17- (or 18) -jointed. The 9 distal joints twice or more as long as broad. The first (proximal) joint as long as broad; the following 6 (or 7) joints very short, much broader than long. *S* as a rule short, but longer on the short proximal part.

Second pair of antennæ. *B* 2 with 2 fine *S*. *Ri* $1\frac{1}{2}$ times longer than *Re*. *Ri* four times longer than broad, *Ri* 1 without *S*. *Ri* 2 cylindrical, its *Li* rudimentary, with 2 *Se*. *Le* with 5 plumose *S*. Longitudinal proportion of the joints of *Re* 1:2:3~6:7, as 1:3:1:1 $\frac{1}{2}$. *Re* 1 and 2 naked, *Re* 3~4 with 4 *S*. *Re* 7 with 2 *S*.

Mandibles. *B* 2 twice as long as broad, naked. *Ri* not developed. *Re* half as long as *B* 2, with 6 *S*, the longest at least 3 times longer than the mandible.

Masticatory apparatus well developed, with 4 strong, acute teeth, the exterior of which is the largest and separated by a deep gap from the other. *Si* very small.

Maxilla rudimentary. *B* 1, *B* 2 and *Ri* of equal length. *Le* 1 with 5 delicate *S*. *Li* 1 with 3 faint *S*. *Ri* without articulation, with 3 soft *S*, as long as the maxilla. *Re* naked. *Le* 2 and *Li* 2 from small gibbosities (*Le* 2 perhaps with 1 fine *S*).

First pair of maxillipeds 4 times longer than broad. (*L* 1 and *L* 2 not developed). *L* 3 with 1 *S*. *L* 4 with 2 *S*. *L* 5 twice as long as broad, with a central, stout spine. *L* 6 with 2 *Se*. *Ri* with 4 falciform *Sa* and 2 half as long *Sp*. The setæ of *L* 3—6 are not half as long as the *Sa* of *Ri*. The *S* of *Ri* are covered with short hairs or scales.

Second pair of maxillipeds protracted, 7-jointed, *B* 1, *B* 2 and *Ri* being of equal length. *B* 1 with 3 small *S*, the proximal short and spinulose, and 2 distal, one of them as long as the joint is broad and spinulose, the other very small and naked. *B* 2 proximally with 2 very faint *S*, centrally with 2 longer *S*, one of which is plumose on the anterior side, distally with 1 strong short-haired and 1 very faint *S*. *Ri* 1 and *Ri* 2 each with 1 falciform, distally short-haired *S* as long as *Ri*, and centrally with a group of 3 naked *S*, half as long as the former. *Ri* 3 and 4 each with 1 short and 1 long *S*, the latter similar to the longer *S* on the preceding joints. *Ri* 5 with 3 *S*, 1 similar to the longer *S* on the preceding joints, 1 half as long and 1 very fine, naked.

Natatory legs, 1st—4th pairs. *B* 1 short, with 1 *Si* (not seen on the 4th p.), not hairy. *B* 2 broader than long; its interior margin convex, naked, but on the 1st p. with a *Si*. *Re* and *Ri* of all pairs 3-jointed. *Ri* of the 2nd—4th p. reach somewhat beyond *Re* 2. *Re* of the 1st p. inserted on *B* 2 more proximally than *Ri*, of the other pairs on about the same level. *Re* 1 and 2 of the 1st—3rd pairs of almost equal length; *Re* 2 of the 4th p. somewhat longer. *Re* 3 of the 1st p. not half as long, but of the 2nd—4th p. $\frac{2}{3}$ as long as *Re* 1 and 2 together. *Re* 3 about 3 times longer than broad. *Se* of the 1st p. 1, 1, 1, of the other 1, 1, 3. *Se* of the 1st p. bristle-like, of *Re* 1 long, reaching beyond the distal margin of *Re* 2. *Se* of the other pairs triangular, with not distinctly serrated edges (on the 3rd p. serrated on the inside). The *Se* of *Re* 1 and 2 are the largest, especially on the 3rd pair. The exterior margin of the joints goes at each *Se* out in a small apex. On the proximal part of *Re* 3 of 2nd—4th pairs the *Se* divide the joint in three almost equal parts. *St* of the 1st p. bristle-like, of the other knife-like, with very finely serrate exterior margin. *St* of the 1st p. longer than *Re* 3, of the other pairs somewhat shorter than *Re* 3. Between *St* and *Se* 3 a small spine. *Si* of the 1st p.

1, 1, 4, of the other 1, 1, 5, plumose. The 3 joints of *Ri* of the 1st and 2nd p. of equal length; on the other pairs *Ri* 3 has of about the length of *Ri* 1 and 2 together. *Se* of *Ri* of the 1st p. 0, 0, 1, of the other 0, 0, 2. *Si* of the 1st p. 1, 2, 4, of the 2nd and 3rd 1, 2, 6 of the 4th 1, 2, 5.

Fifth pair of legs symmetrical, 2-jointed. *B* as long as broad; *Re* not jointed, 3 times longer than *B*, with 2 distal *S*.

Description of the male. *Body.* Length (anterior part 0,4, posterior 0,15) 0,55 mm. *Ce* less than half as long as the 4 other joints together. Abdomen 5-jointed; longitudinal proportion of the joints 10:5:5:10:3.

First pair of antennæ. Left and right slightly dissimilar. Left antenna 15-jointed; its proximal part thick. First joint as long as broad, the following 2—5 very short; the 6th and 7th as long as broad, the 8th to 14th twice as long as broad; the terminal joint proximally with a slight concavity (rudimentary prehensile apparatus?). The *S* thin; sensorial appendages long and numerous. The right antenna has 17 joints.

The 2nd pair of antennæ, the mandible and its masticatory apparatus, the maxillæ and maxillipeds as well as the natatory legs almost as on the female.

The fifth pair of legs symmetrical *B* somewhat longer than broad, naked. *Ri* not developed. *Re* of 2 almost equal joints and a terminal *S* with broad basal part (*Ri* 3?). *Re* 2 with a short distal *Se*.

Systematical position. The almost similar left and right antennæ of the male and their numerous sensorial appendages point to a relation to the *Calanidæ*, but, on the other hand, most characteristics place this genus near *Augaptilus Arietellus* and especially *Paramisophria*, the latter genus recently formed by TH. SCOTT (Fifteenth Ann. Rep. of the Fishery Board for Scotland, pag. 149) for a small species of Loch Fyne. The named genera have all been classified as belonging to the *Centropagidæ*.

Occurrence. This small species evidently belongs to the litoral or neritic fauna and has been found, not very sparingly, in a collection from the island Langkøss, N. W. of Billiton, in the Malay Archipelago, September 1899.

Oithona rigida GIESBR.

(Zool. Jahrb. 1896, Systematik, Vol. IX, p. 324.)

(Pl. V, fig. 7—18).

Diagnosis. *Female.* Front dorsally truncate, laterally curved in a right angle, blunt. Anterior antennæ reach to the posterior margin of *Th* 2. Furca as long as the anal-segment, $2\frac{1}{2}$ times longer than broad. Anterior part of the body longer than the posterior. L. 0,75 to 0,85 mm.

Male. Posterior margin of *Th* 1 a straight line. *Se* of the *Re* 3 of the 1st—3rd pair of legs 3. The four posterior abdominal joints of equal length. L. 0,7 mm.

Habitat. Dr. GIESBRECHT found this species sparingly in a sample from the Red Sea. I found it rather common in some samples from the Malay Archipelago.

Description of the female. *Body.* Length (anterior part 0,5, posterior part 0,35) 0,75 to 0,85 mm. Anterior part twice as long as broad, $3\frac{1}{2}$ times broader than the

posterior part; its greatest breadth near the posterior margin of the *Ce*; 5-jointed. *Ce* as long as the other 4 nearly equal joints together. Front truncate (dorsally), bent (laterally) in a right angle, not protracted, blunt. *Abdomen* (incl. *Th* 5) 5-jointed, the proportion in length of the joints being 0,33 : 1 : 0,5 : 0,5 : 0,5; *Ab* 4 slightly shorter than broad. The lateral genital openings of the 2nd joint (genital-segment) in front of the middle, so that the distance of the openings to the anterior and posterior margins of the segment is as 1 : 2. *Furca* 2½ times longer than broad; *Se* somewhat behind the middle, not reaching to the end of the furca; *Si* arising near the distal margin of the furca, as long as *St* 4; *St* 2 the longest of the 4 terminal setæ and ⅔ as long as the abdomen, twice as long as *St* 4, 1⅓ as long as *St* 3 and 4 times longer than *St* 1; *St* 2 and 3 jointed near their bases; all *St* coarsely plumate.

Anterior antennæ reach to the posterior margin of *Th* 2, 12 (13) jointed; longest joints: 13~14, 15~16, 17~18 and 20~22; joints 7, 10, 14, 18, 22, 23 and 24 with long setæ; *St* 5.

Posterior antennæ 3-jointed, the longitudinal proportion of the joints 4 : 1 : 2. The *Si* of *B* in the middle of the margin and proximally directed; *Se*, 2, dividing the margin in three equal parts. The 2nd joint with 1 proximal and 4 distal *S*, of which latter 2 are coarser and 2 finer. Terminal joint with 5 stronger, in the middle slightly geniculated *S*, the longest of which is 5 times longer than the joint, and 1 fine *S*.

Mandible. *B* 2 short and broad; its interior margin with 1 falcate and plumose *S*, nearer to the end than the basis of the joint, and 2 falcate spinulose *S* at the end. *Ri* small rectangular with 5 *S*. *Re* ⅔ as long as the *B* 2 is broad, with 5 plumose *S*.

Masticatory apparatus with about 8 teeth and a short *Si*.

Maxilla. *Li* 1 with 9 stiff *S*, the proximal of which is plumose, longer and stronger than the other. *Li* 3 with 3 strong *S*, one of which is spinulose. Between *Li* 3 and *Ri* 1 *S*. *Ri* very small, rectangular, with 4 very faint *S*. *Re* with 4 *S*. No *Le* 1.

Anterior maxilliped 5-jointed. *L* 1 with 1 naked and 2 spinulose *S*. *L* 2 with 1 spinulose and straight *S*. *L* 3 and 4 each with 3 spinulose *S*. *L* 5 more elevate than the other, with 3 strong *S*, one of which is the largest of all, curved, spinulose and twice as long as the two other, naked. — *Ri*: *L* 6 proximally with one spinulose and, distally, with 3 half as long *S*. Terminal joint with 3 strong spinulose, and 2 finer naked *S*.

Posterior maxilliped 4-jointed. Longitudinal proportion of the joints 18 : 10 : 7 : 1. *B* 1 with 3 + 2 spinulose *S*. *B* 2 with about 4 stiff hairs on the proximal part and 2 stronger spinulose *S* at the distal end. *Ri* with 3 *S*, the distal of which is spinulose and stronger than the 2 naked proximal. *Ri* 2 with 4 *S*, two of which are stronger and spinulose, one half as long and naked, one very faint.

Natatory legs 1—4. *B* 2-jointed, *Re* and *Ri* 3-jointed. *B* 1 broader than long, with one short *Si*, which on the 1st p. is plumose and longer than on the other. *B* 2 shorter than *B* 1 with very convex interior margin. *B* 2 of the 1st p. with a straight *Se* and a shorter *Si*. Margin between *Re* and *Ri* of the 1st p. with a small apiculus. *Re* of all pairs about twice as long as *Ri* (still somewhat shorter of the 1st p.). *Re* 2 of all pairs the shortest joint and *Re* 3 the longest. *Re* 3 of the 1st p. twice as long as *Re* 2, of the 2nd and 3rd p. 3 times longer than *Re* 2, of the 4th p. 4 times longer.

Se of 1—3 p. 1:1:3, of the 4th p. 1:1:2, all triangular, of nearly equal size and with serrate edges. *St* equalling *Re* 3 in length (or somewhat shorter on the 2nd and 3rd p.); its exterior margin serrated (4 teeth in 0,01 mm.). *Si* 1:1:4 on the 1st p., 1:1:5 on the other p. Space between the distal and the next *Si* longer than between the other. Exterior margin of *Re* hairy, especially on the 1st and 2nd p. *Ri* 3 of all pairs longer than *Ri* 1, *Ri* 2 being the shortest. *Ri* 3 of the 1st p. longer than *Ri* 1 + 2. *Se* of all pairs plumose, 0, 0, 1. *Si* of the 1st p. 1, 1, 5, of the 2nd and 3rd 1, 2, 5, of the 4th 1, 2, 4.

5th pair of legs rudimentary, with 2 *S*, not reaching to the genital opening.

Description of the male. *Body*. Length (anterior part 0,4, posterior 0,3 mm.) 0,7 mm. *Anterior part* twice as long as broad; its greatest breadth at the posterior margin of *Ce*; 5-jointed. *Ce* nearly as long as the four other joints together, in front truncate, its posterior margin gently convex. Posterior margin of *Th* 1 straight, of *Th* 3 and 4 convex towards the front. Abdomen (incl. *Th* 5) 6-jointed; proportional length of the joints 5:10:7:7:7:7. Anal-segment as long as broad. Furca as long as the anal-segment, at least twice as long as broad. Its *Se* in the middle of the exterior margin, not reaching beyond the furca. *St* 2 the longest, $\frac{2}{5}$ as long as the abdomen. *St* 2 and 3 jointed at their bases. All *St* coarsely plumose.

Anterior antennæ bigenicated, with at least 10 distinct joints. The middle division with 4 and the distal with 2 joints. Small *S* of the 1st and 2nd joints of the median division spinulose. First joint of the distal division of equal breadth throughout. Terminal joint with a large sensorial appendage, longer than the distal division.

Posterior antennæ as in the female, but smaller. The two *Se* of *B* more approximate.

Paracalanus aculeatus GIESBR. *Male*.

(Pl. VI, fig. 1—10).

Description of the male. *Body*. Length (anterior part 0,8—0,9, posterior part 0,25) 1,1 mm. *Anterior part* 4-jointed; longitudinal proportion of the joints: 23:5:5:4. *Abdomen* 4-jointed; longitudinal proportion of the joints 1:1:1:2. Anal-segment as long as broad. Furca slightly longer than broad.

Anterior antennæ. The left and right similar and resembling those of the female, reach to the end of the furca, 23-jointed; *Aa* 1 and 2 and *Aa* 8 and 9 uniting, but *Aa* 3 to *Aa* 6 separate.

Posterior antennæ. *B* 1 with 1 *Si*; *B* 2 with 2 distal *Si*; *Re* and *Ri* of equal length. *Re* 1 shorter than *Re* 2, which is as long as *Re* 7 and as *Re* 3, 4, 5, 6 together. *S*: 2, 2, 1, 1, 1, 1, 1 + 3. *Ri* 1 twice as long as *Ri* 2; the distal part half as long as the proximal. *Ri* 2 with 14 *S*, those of *Li* genuflexed.

Mandible. *B* 2 longer than broad, with 4 *Si*. *Re* more proximal than *Ri*. *Re* and *Ri* of the same length and half as long as *B* 2. Articulation of *Re* incomplete. *S* of *Re* 6. *Ri* with a proximal lobus carrying 2 longer and 2 shorter *S*. Its distal end with 8 + 1 *S* decreasing in length from the exterior margin.

Masticatory apparatus of the mandible well developed, with 1 small *Si* and a row of teeth, which are more acute towards the interior margin. Exterior tooth large, separated by a gap from the others.

Maxilla. *B 1* as long as broad and as *B 2* and *Ri* together. *Li* $1\frac{2}{3}$ as long as *B 1*, convex, with about 10 strong bristles, some of which are plumose. The proximal has the same length as the lobus. *L 2* and *L 3* small, each with 3 *S*. *B 2* longer than broad, with 4 *S* at the distal interior end. *Ri* half as long as *B 2* and as *Re*, with rudimentary articulation; its *S*: 4 + 4 + 7. *Re* not articulating with *B 2*. Its distal end reaches beyond *B 2* or nearly to the end of *Ri*; its *S* 10.

First maxillipeds well developed, 3 times longer than broad. Lobes digitiform, crowded. *L 1* with 4 (5?) longer and 1 short *S*, *L 2*—*L 4* with 2 long and 1 short *S*. *L 5* with 2 long and 1 short *S*(?). *Ri* with 5 stronger and 2 finer *S*(?).

Second maxilliped. *B 1*, *B 2* and *Ri* of about equal length. *B 1* and *B 2* somewhat more than twice as long as broad. *S* of *B 1*: 2, 3, 4. *B 2* with 3 central and 2 distal *S*. *Ri 1* and 2 with 3, *Ri 3* and 4 with 2 *Si*. *Ri 5* with 3 *Si*. *Ri 4* and 5 end with 1 plumose *Se*.

Natatory legs 1—4. *B* 2-jointed; *Re* 3-jointed; *Ri* of the 1st p. 2-jointed, of the other 3-jointed. Proportional length of *B* and *Re* 5:6 on the 1st p., about 1:2 on the other. *Ri* of the 1st p. about half as long as *Re*; of the other from $\frac{3}{5}$ to $\frac{1}{2}$ as long. *B 1* with straight margin and 1 plumose *Si* reaching to the distal margin of *B 2*. *B 1* and *B 2* naked, but *B 2* of the 1st p. with a curved *Si*. *Re 1* of the 1st p. as long as *Re 2*, and *Re 3* as long as *Re 1* and 2 together. *Re 1* of 2nd—4th p. shorter than *Re 2*. *Re 3* about as long as *Re 1* and 2 together. *Re 1* of the 3rd p. and *Re 2* of the 2nd and 3rd p. with some spines on the flat surfaces. *Se* of the 1st p. 0, 0, 2, of the other 1, 1, 2. *St* of the 1st p. bristle-like, of the other somewhat shorter than *Re 3*, knife-like, with entire exterior margin. *Si* of the 1st p. 1, 1, 4, of the other 1, 1, 5. *Se 3* of the 2nd—4th p. divides *Re 3* in a distal and a proximal part, the latter being $1\frac{1}{2}$, 2, 4 times longer than the former and on the exterior margin, saw-like. *Ri 1* of the first pair somewhat shorter than *Ri 2*, of the other pairs very short. *Ri 1* of all pairs with 1 *Si*; *Ri 2* of the 1st p. with 5 *S*. *Ri 2* of the 2—4 p. with 2 *Si* and *Ri 3* with 7 *S*. Surface of *Ri 2* of the 2nd to 4th p. with several sets of spines.

Fifth pair of legs asymmetrical, the left being longer and 4-jointed, the right half as long and 3-jointed.

It is apparent from the above description, that the sexual differences are far from being as marked in *P. aculeatus* as in *P. parvus*.

***Pseudodiaptomus Aurivillii* Cl., n. sp.**

(Pl. VI, fig. 11—22; Pl. VII, fig. 1—2).

Diagnosis of the female. *Th 1* and *Th 2* uniting; last segment of the thorax ending (laterally) in a spine; posterior margin of the thoracic segments smooth. Abdomen 4-jointed. Posterior margin of the 3 first abdominal segments with a row of small triangular scales. Antennæ of the 1st pair 20-jointed. *St* of the furca of equal thickness.

Fifth pair of legs 4-jointed; the ultimate joint without denticulate lamella; its *Si* longer than the joint. L. 1,2 mm.

Description of the female. *Body.* Length (anterior part 0,75, posterior part 0,45) 1,2 mm. *Anterior part* somewhat more than twice as long as broad, broadly rounded in front, 4-jointed; longitudinal proportion of the joints 52 : 8 : 7 : 8; last segment symmetrical, ending on each side in a strong spine. *Rostrum* bifid, with long protracted, narrow filaments. No eye. *Abdomen* 4-jointed; the longitudinal proportion of the joints: 19:12:11:10. Genital-segment slightly longer than broad, with ventral genital-opening, in front of which is on each side a backwards curved styliiform appendage. Posterior margin of the 1—3 joints with a row of small triangular scales. Anal-segment somewhat shorter than the other. *Furca* symmetrical, 2½ times longer than the anal-segment; its branches 7 times longer than broad, inside hairy. *Se* near the end, half as long as the furca, plumose on the posterior margin. *Si* short, finely plumose, inserted at the basis of *St* 2. *St* 2 the longest of the four *St*, 1½ as long as the furca, slightly longer than *St* 3, which is somewhat longer than *St* 4. The *St* 4 is about half as long as *St* 2. *St* with a joint, dividing the *S* in one proximal and one twice as long distal part, the latter being more strongly plumose than the former.

First pair of antennæ reach to the posterior margin of the genital-segment, 20-jointed; the distal part almost straight. The 11 distal joints of almost equal length; the two preceding somewhat shorter and about as long as the two first joints. The 3rd to 6th joints are as long as broad and half as long as the distal joints. The ultimate joints (24—25) uniting. All bristles, hairs and sensorial appendages are short, none scarcely longer than 2 joints.

Second pair of antennæ. *B* 1 with a short *Si*; *B* 2 uniting with *Ri* (no joint); one distal pair of *Si*. *Ri* 1 with one distal pair of *S*. *Ri* 2 as long as *Ri* 1. *Li* with 8 *S*; *Le* with 6 coarser and 1 finer *S*. *Re* 5/3 as long as *Ri*; *Re* 1 with 1 *S*; *Re* 2 with 2 *S*; *Re* 3—6 each with 1 *S*; *Re* 7 with 1 proximal and 3 long, plumose distal *S*.

Mandible. *B* 1 trapezoidal, its interior part being protracted; with 3 *Si*. *Re* as long as broad, incompletely jointed, with 6 plumose *S*. *Ri* nearly twice as long as *Re*, with 1, 2 basal and 8 terminal *S*, strongly outwards reflexed.

Masticatory apparatus. Anterior margin with 3 indentations. Interior margin with 10 teeth and 1 short *Si*. The teeth are conical. The largest exterior tooth separated by a gap from the other, which become narrower towards the interior side.

Maxille. *L* 1 prominent, with slightly rounded margin, carries 10 strong, plumose spines and some filiform *S*. *L* 2 with 4 strong, plumose *S*. *L* 3 small, cylindrical, with 2 (3?) *S*. *B* 2 with 5 *S*. *Ri* as long as *B* 2 is broad; separation of *Ri* 1 and *Ri* 2~3 incomplete; *S* 2, 2, 2, 7. *Re* reaches to the distal end of *B* 2 and carries 10 *S*. *Le* 1 with 9 plumose *S*. Between *Le* 1 and *Re* one *S*.

Anterior maxilliped 2½ times longer than broad. Lobes, especially the 5th, prominent, digitiform, crowded. *L* 1 with 4 coarse *Sa* of nearly equal length and 1 faint *Sp*. *L* 2—5 each with 2 strong *Sa* and 1 half as long *Sp*. *Ri* with 5 *Sa* and 1 shorter *Sp*. All *Sa* of nearly equal length and coarsely plumose.

Posterior maxilliped. *B* 1 $\frac{3}{4}$ as broad as long; *B* 2 as long as *B* 1 and $1\frac{1}{2}$ as long as broad; *Ri* 4-jointed. Lobes of *B* 1 not prominent. *L* 1 and 2 each with 2 strong, spinulose *Sa* and 1 small filiform *Sp*. *L* 3 with 1 strong and spinulose, 1 naked (on the anterior margin only hairy) *Sa* and 2 faint *Sp*. *B* 2 with 3 stronger *S* in the central and 2 finer, long *S* in the distal part; margin of *B* 2 with short stiff and, besides, longer, exceedingly delicate hairs. *Ri* 1 somewhat longer than the other, which are of equal length and breadth. *Ri* 1 with 3 distal *S*; *Ri* 2 with 3 distal *S*; *Ri* 3 with 2 (?) distal *S*; *Ri* 4-5 with 7 *S*.

Natatory legs of the 1st pair. *B* 1 with 1 plumose, short *Si*. *B* 2 as long as broad, in the exterior part with an oblique row of short bristles. *Ri* reaches somewhat beyond the distal margin of *Re* 2. *Re* 3-jointed; *Re* 1 and 2 of about the same length, together $3\frac{1}{2}$ longer than *Re* 3. *Se* 1, 0, 2, narrow, not saw-like. *St* somewhat longer than *Re* 3, with scarcely denticulate exterior margin. *Si* 1, 1, 3; *Si* 3 close behind the *St*. All *Si* by a joint separated in a proximal and a somewhat longer distal part, the latter of which is plumose or more densely plumose than the proximal part. *Ri* 3-jointed; *Ri* 1 and 2 somewhat longer than broad; *Ri* 3 longer than *Ri* 1 + 2, ends in a very small apiculus. *Se* 0, 0, 1. *Si* 1, 1, 5, jointed, plumose in the distal part.

Natatory legs 2-4. *B* 1 as long as broad with a short plumose *Si*; *B* 2 also as long as broad, naked. *Re* 3-jointed; *Re* 1 and 2 together somewhat longer than *Re* 3. *Se* triangular, with coarsely denticulate margins, *Se* 2 of *Re* 3 being the smallest and closely pressed to the margin of the joint. *St* of the usual knife-like form, with saw-like exterior margins (teeth 5 in 0,01 on the 4th pair). *Si* 1, 1, 5, by a joint divided in a proximal, scarcely plumose, and a somewhat longer distal, plumose part. *Ri* 3-jointed. *Se* 0, 0, 2; *Si* 1, 2, 6 on the 2nd and 3rd pair, but 1, 2, 5 on the 4th pair, all plumose. Margins of *Re* and *Ri* hairy.

The 5th pair of legs, symmetrical. *B* 1 as long as broad, centrally on the exterior margin with a small nodule. *B* 2 proximally broader, $1\frac{1}{2}$ times longer than *B* 1; its exterior margin hairy. *Re* 1 one and a half times longer than *B* 2, with a short distal *Se*, hairy on the exterior margin. *Ri* 2-3 short, as long as broad, with 3 *S*, the largest plumose, as long as $\frac{1}{3}$ of the leg; the median half as long only, and the third very short. There are, besides, at the interior margin some few bristles.

Reticulina Aurivillii N. G., n. sp.

(Pl. VII, fig. 3-10).

By this name I mean a very strange copepod, of which I have found one specimen only. The thick carapace prevented the close examination of all organs, still, it will, no doubt, be easily recognized, for which reason I do not hesitate to describe it, however incomplete and perhaps in some details erroneous the description may be.

The body is broad and flat as in *Sapphirina*, in length 1 mm., in breadth 0.8 mm. The anterior part is 6-jointed. Longitudinal proportion of the joints as 4:1:1:1:1:2. Cephalis and the thoracic joints are covered with a coarse net-work of chitinous ribs, both on the dorsal and ventral side. There are no eyes, and the front is truncate. The

posterior part is small, soft and enclosed between the lobes of the last segment of the anterior part. There is no distinct articulation of the posterior part, with exception of the furca. The branches of the furca are twice as long as broad. Each branch of the furca carries, on the exterior margin, a not plumose bristle, $\frac{2}{3}$ as long as the body and at its basis 3 short small *S*.

Antennæ of the first pair are short, similar to those of *Sapphirina* and 5-jointed.

Antennæ of the second pair were only obscurely seen through the thick carapace. They seem to resemble those of *Lubbockia*.

Of the *mandible* the masticatory apparatus only was visible through the carapace. I counted 7 well developed teeth.

Anterior (?) maxilliped (as seen through the carapace) was remarkable for the hairy lobe on the distal end of the basal part.

Posterior (?) maxilliped was of the same type as in *Corycæus*, *Oncoæa*, *Sapphirina*.

Legs of the 1st pair are very dissimilar to the other. They are robust and strengthened by strings of chitine both on the basal part and on the proximal joint of *Re* and *Ri*. The outer and inner branch are 2-jointed; the exterior is inserted more proximally on the *B* and besides shorter. There is some distant resemblance to the first pair of *Idya*, *Machairopus* and *Scutellidium*.

The natatory legs of the 2nd to 4th pairs are adapted for swimming. The interior branch of at least the 3rd and 4th pairs are 3-jointed. *Re* is 3-jointed; *Se* 1, 1, 3, narrow, spine-like, but with denticulate edges; *Si* plumose, on the second pair 1, 1, 3, on the 3rd and 4th 1, 1, 4. *Ri* is only a little shorter than *Re*, its *Se* 0, 0, 1 (the 2nd pair not examined) and *Si* 1, 2, 4.

The fifth pair of legs are not articulated and firmly fastened to the marginal chitinous strings of the joint. Each leg carries 7 *S*.

This most remarkable form was found in a sample from Gaspar Sound, Malay Archipelago, the 16th of September 1901. In spite of long searching I could not find more than a single specimen.

Tortanus gracilis (BRADY) GIESBR.

(Pl. VII, fig. 11—14).

(*Corynura gracilis* BRADY. Report of the voyage of Challenger, Vol. VIII, Copepoda, pag. 71, Pl. XXXIII. 1883. *Tortanus gr.* GIESBR. D. Thierreich, Copepoda, Gymnoplea, pag. 158. 1898).

Description of the female. *Body.* Length (anterior part 0,9, posterior part 0,7) 1,6 mm. Anterior part 6-jointed, (dorsally) $2\frac{1}{2}$ times longer than broad. Proportional length of the joints 14:4:3:3 $\frac{1}{2}$:1:1. *Ce* (dorsally) truncate with slightly prominent front, constricted behind the front, with a transverse depression in the middle of the joint. No eyes. The frontal organs delicate. Upper lip semicircular with a row of fine hairs. Last segment, laterally, somewhat angular. *Abdomen* 3-jointed; the genital-segment slightly longer than the next; the anal-segment uniting with the furca, twice as long as *Ab* 1 + 2. *Furca* somewhat asymmetrical, uniting with the anal-segment, the right branch

slightly shorter than the left. *Se* short, somewhat behind the middle of the furca. *Si* issues from the interior corner of the furca, as long as the distal part of the furca. There is a small apiculus at the basis. *St* plumose, the *St* 2 the longest, $1\frac{1}{2}$ times as long as the furca and as *St* 1 and 3 (both of almost equal length), 4 times longer than *St* 4.

Antennæ of the 1st pair reach to the furca, 15-jointed. *Aa* 1~7, 9~10, 11~12, 13~14 and 24~25. Length of the distal joints in 0,005 mm.

Aa 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24~25.
13, 12, 18, 14, 18, 25, 18, 14, 25, 25, 12.

Longest setæ on *Aa* 1~7, 9~10, 14, 16, 18, 21, 23 and on the terminal joint. The *Sp* of *Aa* 23 and *Aa* 24~25 are plumose and a third as long as the antennæ. The *Si* of *Aa* 24~25 is delicate, but as long as the 2 last joints.

Antennæ of the 2nd pair as in the *T. (Corynura) denticulata* (Conf. GIESBR. *Syst. u. Faun. d. pelog. Cop.*, Pl. XXXI, fig. 6).

The *mandible* as in *C. forcipata* (GIESBR., l. c. fig. 3 and 5). *Ri* 2 carries 5 *S*.

The *maxilla* exactly as in *T. forcipata* (GIESBR., l. c. fig. 9).

The *maxillipeds of the 1st pair* as in *T. forcipata* (GIESBR., l. c. fig. 10).

The *maxillipeds of the 2nd pair* as in *T. forcipata* (GIESBR., l. c. fig. 7).

Natatory legs of the 1st—4th pairs. *B* 2 of the 1st pair as long as broad. Leg of the 1st pair as in *T. denticulata* (GIESBR., l. c. fig. 13). *Se* 3 on *R* 3 larger than *Se* 1 and 2. *Si* of the second joint of *Ri* on the 1st and 4th pairs 5 and of the 2nd and 3rd pairs 6.

Fifth pair of legs nearly symmetrical, still, the left leg slightly longer than the right. The teeth on the exterior margin more distal than in *T. forcipatus* but otherwise similar.

Description of the male. *Body.* Length (anterior part 0,8, posterior 0,7) 1,5 mm. Anterior part 5-jointed, *Th* 4~5 uniting. *Abdomen* 5-jointed; joints of nearly equal length and somewhat broader than long.

Antennæ of the 1st pair. Right antenna geniculated. The distal part half as long as the proximal, two-jointed, *Aa* 22~25 nearly twice as long as *Aa* 19~21. Exterior margin of *Aa* 19~21 finely denticulate, with 2 faint median *S* and 1 stronger distal. *Aa* 18 as long as *Aa* 17 and half as long as *Aa* 19~21. *Aa* 17 with finely denticulate margin. *Aa* 15 with a small distal spine.

Fifth pair of legs. *B* 1 of the left and right leg and *B* 2 of the right uniting. The left leg longer than the right, *B* 2 more than twice as long as broad, naked. *Re* 2-jointed. *Re* 1 with 1 rudimentary *Se*. *Re* 2~3 inside and proximally hairy, distally with 3 *S*. The right leg two-jointed.

From the above description of the female it is apparent that the only difference between *T. gracilis* and *T. forcipatus* consists (besides small differences in the length of the joints of the first antennæ) in the 5th p. of legs, being more asymmetrical in the latter than in the former. It therefore seems to me questionable, whether they are to be considered as distinct species.

Ciliata.**Codonella fenestrata** n. sp.(Pl. VII, fig. 15).¹

Posterior part rounded, slightly longer than broad, covered with numerous small particles of sand. The anterior part as long as the posterior but somewhat narrower, cylindrical, hyaline, perforated by a number of large circular openings, arranged in spirals. Length 0,1, diameter 0,04 mm.

Cyttarocyliis Markusovszkyi v. DAD.?

The form which with some hesitation I have classified under the above name was very large, 0,4 mm. in length and 0,11 in diameter. The alveoli of the house were much smaller than on the fig. of v. DADAY. Probably a variety of *C. Ehrenbergii*.²

Radiolaria.**Myelastrum Aurivillii** CL. n. sp.

(Pl. VIII, fig. 1).

Four-armed; one arm being undivided and the three others 3-fid. Distance between the arms 1,1 mm.

Pteroscenium Aurivillii CL. n. sp.

(Pl. VIII, fig. 2).

Shell as long as broad, campanulate, with irregular rounded pores. Columella with some few verticills. Horn $\frac{1}{3}$ as long as the shell. Feet short. Distance between the feet 0,15 mm.

Triastrum N. G.

Porodiscida with three spongy, not branched and not chambered arms.

This genus differs from *Euchitonia* in the arms not being chambered. It is nearly allied to HÆCKEL's genera *Dicranastrum*, *Pentopliastrum* and *Myelastrum*, which I should like to group with *Triastrum* in one genus, were it not that this would disarrange HÆCKEL's system. I therefore prefer to form a new genus.

Triastrum Aurivillii CL. n. sp.

(Pl. VII, fig. 16, 17).

Distance between the paired arms somewhat shorter than between the paired and the odd arm. Ends of the arms with some few silicious needles. Central disc small, with about 4 rings. Distance between the paired and the odd arm 0,8 to 1,1 mm.

¹ Since the above was written this species has been described by SCHMIDT (Videnskabl. Meddel. fra den Naturh. Forening i Kbhvn 1901, p. 187) under the name *C. Ostensfeldii*, which name thus has priority.

² *Undella campanula* SCHMIDT l. c. pag. 190 seems to represent the same form.

Diatomaceæ.

Bacteriastrum hyalinum LAUDER.

The form I consider to be LAUDER'S *B. hyalinum* is remarkable for its short, closely connected cellules, the awns of which are very delicate, furcate and close. The chains occur surrounded by slime. The cell-contents have numerous small chromatophores and a central nucleus. Diameter 0,02 to 0,025 mm.

Chætoceros æquatorialis CL.

This species has several small chromatophores, which pass into the awns. It thus belongs to GRAN'S group *Phæoceros*. Also *C. rostratus* LAUDER belongs to the same section.

Chætoceros Aurivillii CL. n. sp.

(Pl. VIII, fig. 10).

Chains rigid, composed of elongated cylindrical cellules. Foramina small, rounded hexagonal. Cellules three times longer than broad, convex and silicious. Valves broadly oval, as long as the zone. Awns very long and stiff, arising at some distance from the margin, firmly united at their bases, with spirally arranged small spines. Of the awns two are shorter and nearly straight, two longer and curved in the same direction as the former. Cell-contents with numerous chromatophores, which pass into the awns. Length of the perivalval axis 0,045 mm., of the sagittal 0,015 and of the transverse 0,011 mm. Awns attain a length of 0,2 mm.

I found this species is a sample, collected in January 1898 north of S. America (7° N. 53° W.), later in samples from the Malay Archipelago. It seems to be a very rare tropical species.

Chætoceros calvus CL. n. sp.

(Pl. VIII, fig. 11).

Chains long, twisted, of closely connected, slightly silicious cellules. No foramina. Cellules short, the sagittal axis being 3 times longer than the perivalval axis. The transverse axis half as long as the sagittal axis. The narrower sides of the valves are convex, so there is a small sinus between two cellules, and the awns arise from the interior of these sinuses. The awns are very faint and easily lost, joined to two cellules by a fine thread (as in *C. anastomosans*). The cell-contents with numerous, rounded, not very small chromatophores. Length of the longitudinal axis 0,01, of the sagittal 0,03, of the transverse 0,014 mm.

Chætoceros coarctatus LAUDER.

This is a very common tropical species, which occurs both in the Indian and the Atlantic Oceans. The awns are somewhat dissimilar in the same chain, and one may

find, in the same specimen, all transitions from the curved spinulose awns of LAUDER'S species to the less spinulose and less curved awns of my *C. rudis*, which thus must be considered identical with *C. coarctatus*. It is remarkable that this species always is accompanied by a small *Zooxanthella*.

Chætoceros compressus LAUDER.

There seems not to be any specific difference between this form and *C. contortus* SCHÜTT.

Chætoceros curvisetus CL.

This species seems me now not to differ specifically from *C. secundus* CL., the latter being somewhat coarser and less curved. Specimens from the Malay Archipelago scarcely differ from those of the North Sea. Both are thus to be united under the name of *C. secundus*, but the name *C. curvisetus* is of so frequent use that I prefer the latter.

Chætoceros distans CL.

This form has a single chromatophore, parallel to the pervalval and sagittal axes. It seems to be very nearly related to *C. Ostenfeldii* CL., from which it differs in shorter cellules. It is, besides, considerably larger, but if these differences are sufficient for specific distinction must be left to future researches.

Chætoceros furca CL.

This species has a single chromatophore-plate extended in the direction of the sagittal and pervalval axes.

Chætoceros paradoxus CL.

The chromatophore is single and extended along the zone. The width of the foramina is somewhat variable.

Chætoceros Ralfsii CL.

This species has a single chromatophore-plate extended in pervalval and sagittal direction and is nearly akin to *C. javanicus* CL. (= *C. Schüttii* CL.).

Chætoceros Weissflogii SCHÜTT.

I have above classified as *Chætoceros Weissflogii* a diatom, which was found in several samples from the Malay Archipelago. The determination is doubtful, as no spores

were found, and it is almost impossible to distinguish *C. teres* CL. and *C. Weissflogii*, when sterile, but the former belongs to arctic currents, for which reason I believe that the specimens from the Malay Archipelago belong to *C. Weissflogii*.

Fragilaria Aurivillii CL. n. sp.

(Pl. VIII, fig. 13).

Frustules uniting into long bands. Their sagittal axis about 5—6 times longer than the pervalval axis. Zone with close, parallel lines. Valve obtuse, with one to three constrictions. No structure could be discovered. Cell-contents with numerous small chromatophores. Sagittal axis 0,03 to 0,08 mm.; transverse axis 0,006 to 0,008 mm.

Fragilaria hyalina (KÜTZ) GRUN.

Fig. 1.

The diatom, which I consider to be this species, occurred on gelatinous stalks in *Diatoma*-like chains, fastened on the furca of a copepode (*Candace*). The chromatophores were in each cellula 4. The frustules did not show any perceptible structure with exception of the zone, which was very closely longitudinally striate (about 20 lines in 0,01 mm.).

Palmeria Hardmaniana H. L. SM.

This large and beautiful diatom seems to me to be an asymmetrical form of *Coscinodiscus nobilis* GRUN., the structure being identical. The *Cosc. papuanus* CASTR. seems, to judge from the figure, not to differ from *C. nobilis*.

Fig. 1. *Fragilaria hyalina*. 450 t. m.



Rhizosolenia cochlea BRUN.

(Pl. VIII, fig. 12).

The chromatophores are very small and numerous, elongated and grouped in a number of oblique or spirally twisted bands.

Rhizosolenia pellucida CL. n. sp.¹

(Pl. VIII, fig. 4).

Frustule cylindrical, hyaline and slightly silicious. Valve very oblique, ends in a short slightly curved spine and has on the shorter end a small furrow for the reception of the spine of other frustules. The zone has very delicate fulcral lines, which cross each other, thus forming rhombic figures, 2 of which are to be seen on each half of the circumference of the zone. The chromatophores are very small, rounded and scattered without order. Pervalval axis 0,2 to 0,3 mm.; transverse and sagittal axis 0,036 to 0,04 mm.

¹ Since the above was written, this species has been described by OSTENFELD (Vidensk. Meddel. fra den Naturh. Forening i Kbhvn 1901, p. 161) as *R. hyalina*, which name has priority.

Rhizosolenia (Guinardia?) recta CL. ¹

(Pl. VIII, fig. 7 a, b).

Cellules cylindrical straight. Valve flat, more silicious than the zone, with a short spine and a furrow for the reception of the spine of another frustule. Zone with numerous parallel fulcral ribs, which meet in a line parallel with the pervalval axis. Chromatophores elongated, numerous. Nucleus parietal. Pervalval axis 0,08 to 0,16; transverse and sagittal axis 0,022 mm.

Streptotheca maxima CL. n. sp.

(Pl. VIII, fig. 5).

There were found in some samples a very large form, which seems to be akin to *Streptotheca thamesis*. The frustules are scarcely twisted, exceedingly thin-walled and their membrane becomes strongly dyed by methyle-green. The membrane persists after ignition and shows very faint parallel division-lines.

The chromatophores are numerous and rounded. The nucleus is central. Length of the sagittal and pervalval axes 0,2 mm.

Thalassiosira Aurivillii CL. n. sp.

(Pl. VIII, fig. 3).

Valve with about 12 peripheral small nodules. The alveoli are arranged in radiate lines (about 26 in 0,01 mm.) which are grouped in a fasciculate manner. There are about 12 fasciculi, each with about 8 rows of alveoli. The part of the valve, which is parallel with the pervalval axis, carries close, but sharp, striæ parallel to the said axis, and about 27 in 0,01 mm.

The frustules are coherent in long chains probably by means of slime-threads, but I did not succeed in seeing them. To judge from a carbonized specimen there seem to be several marginal threads, issuing from the marginal small nodules, but this requires further examination.

Pervalval axis 0,017, sagittal and transverse axis 0,027 mm.

Litoral diatoms.**Auricula punctata** (PANTOCZ.).

(Pl. VIII, fig. 6).

It is with much hesitation I refer to this species, found in a fossil state in Hungaria (*Amphiprora punctata* PANTOCZ., Foss. Bacill. Ungarns Part. III, 1892, Pl. XXXIX, fig. 547), a valve met with in a sample from Billiton. The sagittal axis measured in length 0,15 mm. The valve was centrally strongly constricted and covered with a number of inordinate puncta, towards the median line arranged in rows parallel to the said line.

¹ This species has been described by OSTENFELD under the name of *Cerataulina compacta* (Videnskabl. Meddel. fra den Naturh. Forening Kbhvn 1901, p. 163). OSTENFELDS name therefore has priority.



Fragilaria (?) rhombica n. sp.

(Pl. VIII, fig. 8).

Valve elongated rhombic; sagittal axis 0,06, transverse axis 0,009 mm. Striæ pervious, parallel, obscurely punctate, 15 in 0,01 mm. They are fainter in the middle of the valve where are some silicious concretions.

Malay Archipelago, Bali Sound.

Licmophora Aurivillii Cl. n. sp.

Fig. 2.

Frustules very slender, their sagittal axis 0,8 mm., thin-walled. The distal part of the valve (transverse axis 0,02 mm.) three times broader than the very narrow proximal part. The valve has a distinct median line and very fine and close, but sharp striæ (at least 28 in 0,01 mm.). Zone is narrow, occupies a third of the frustule (in zonal view.), has no septa, but close longitudinal division-lines (12 in 0,01 mm.). Chromatophores numerous, small, rounded and scattered without order.

Malay Archipelago, Semau Sound, July.

Sceptroneis Aurivillii Cl. n. sp.

(Pl. VIII, fig. 9).

Valve slender, gibbous in the middle and with broad truncate end. Sagittal axis 0,4 mm., transverse axis 0,012 mm., where the valve is broadest. Striæ distinctly punctate, 8 to 9 in 0,01 mm., not pervious, the valve having a central narrow axial area. Striæ in the distal end radiate and fainter.

Malay Archipelago, Bali Sound.

Striatella Lindigiana GRUN.

The chromatophores of this species are elongated and crowded around the central nucleus.

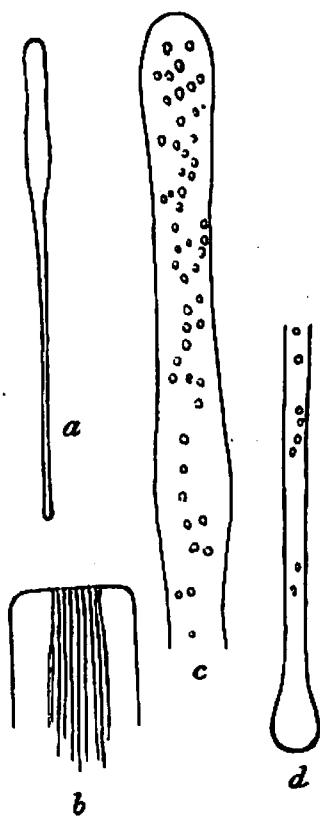


Fig. 2. *Licmophora Aurivillii*.

a. Valve 80 t. m. — b. End of the frustule in zonal view. 1000 t. m.

— c, d. Upper and lower end of the frustule, 450 t. m.

Plate I.

Fig.		Enlarge- ment.
Fig. 1—14. Acrocalanus pediger Cl., female.		
›	1, 2. Outline, lateral and dorsal	40.
›	3. Right anterior antenna	80.
›	4. Antenna of the 2nd pair	150.
›	5. Mandible	150.
›	6. Masticatory apparatus of the mandible	270.
›	7. Maxilla	270.
›	8. Maxilliped of the 1st pair	270.
›	9. › › › 2nd pair	150.
›	10. Leg of the 1st pair	150.
›	11. › › › 2nd pair	150.
›	12. › › › 3d pair	150.
›	13. › › › 4th pair	150.
›	14. Fifth pair of legs	270.
›	15—20. Acrocalanus pediger Cl., male.	
›	15. Outline	40.
›	16. Fifth pair of legs	270.
›	17. Leg of the 1st pair	150.
›	18. › › › 2nd pair	150.
›	19. › › › 3d pair	150.
›	20. › › › 4th pair	150.

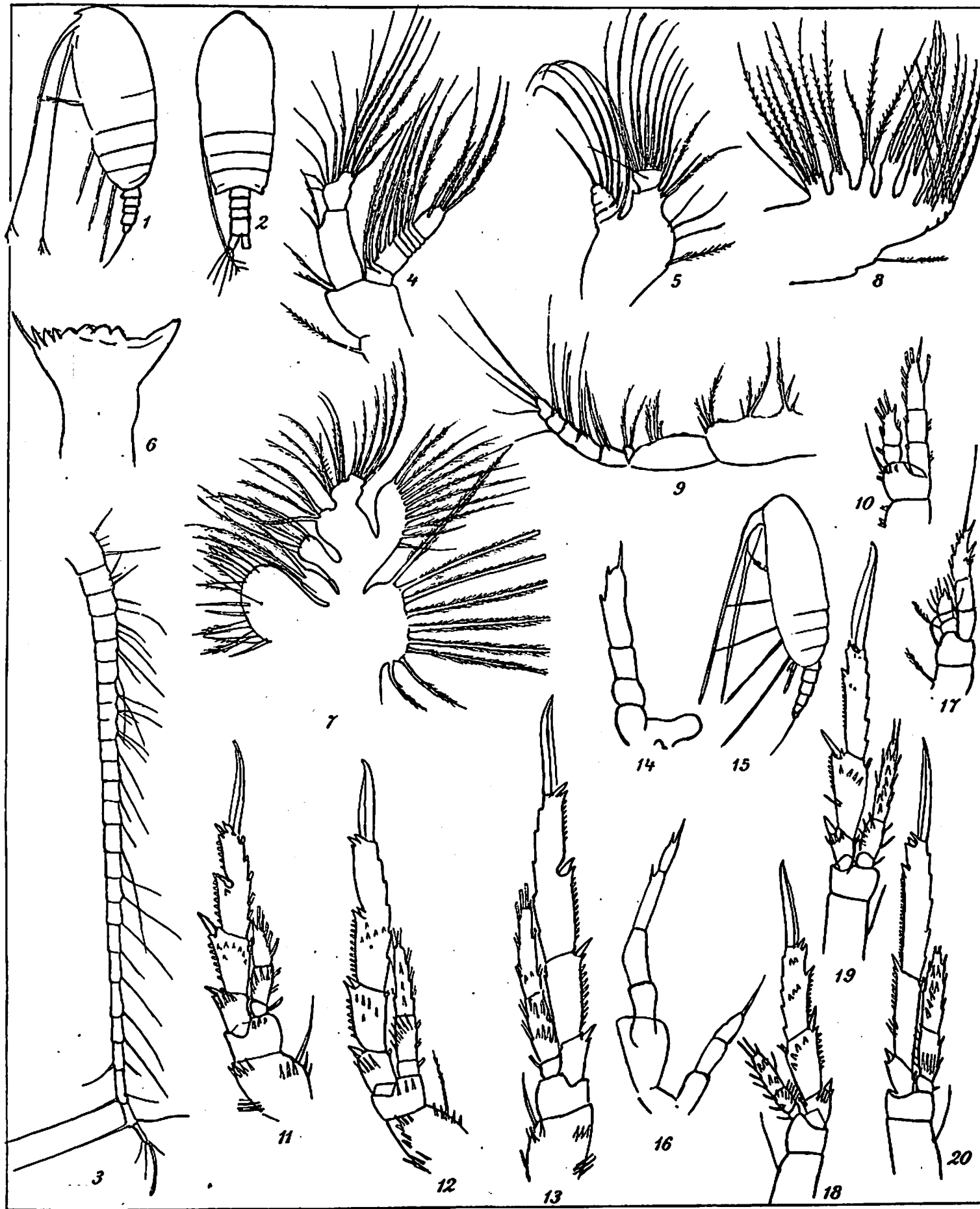


Plate II.

Fig.		Enlarge- ment.
1—5. Acrocalanus gibber GIESBR., female.		
›	1. Outline (lateral)	40.
›	2. Natatory leg of the 1st pair	150.
›	3. › › › › 2nd pair	150.
›	4. › › › › 3d pair	150.
›	5. › › › › 4th pair	150.
6—16. Acrocalanus gibber GIESBR., male.		
›	6. Outline (lateral)	40.
›	7. Right antenna of the 1st pair	150.
›	8. Antenna of the 2nd pair	270.
›	9. Mandible	270.
›	10. Maxilla	500.
›	11. Maxilliped of the 2nd pair	270.
›	12. Natatory leg of the 1st pair	270.
›	13. › › › › 2nd pair	270.
›	14. › › › › 3d pair	270.
›	15. › › › › 4th pair	270.
›	16. Fifth pair of legs	500.
17—23. Calanopia Aurivillii CL., female.		
›	17. Outline (lateral)	40.
›	18. Right antenna of the first pair	150.
›	19. Antenna of the 2nd pair	150.
›	20. Masticatory apparatus of the mandible	500.
›	21. Mandible	150.
›	22. Maxilliped of the 2nd pair	270.
›	23. Maxilla	270.

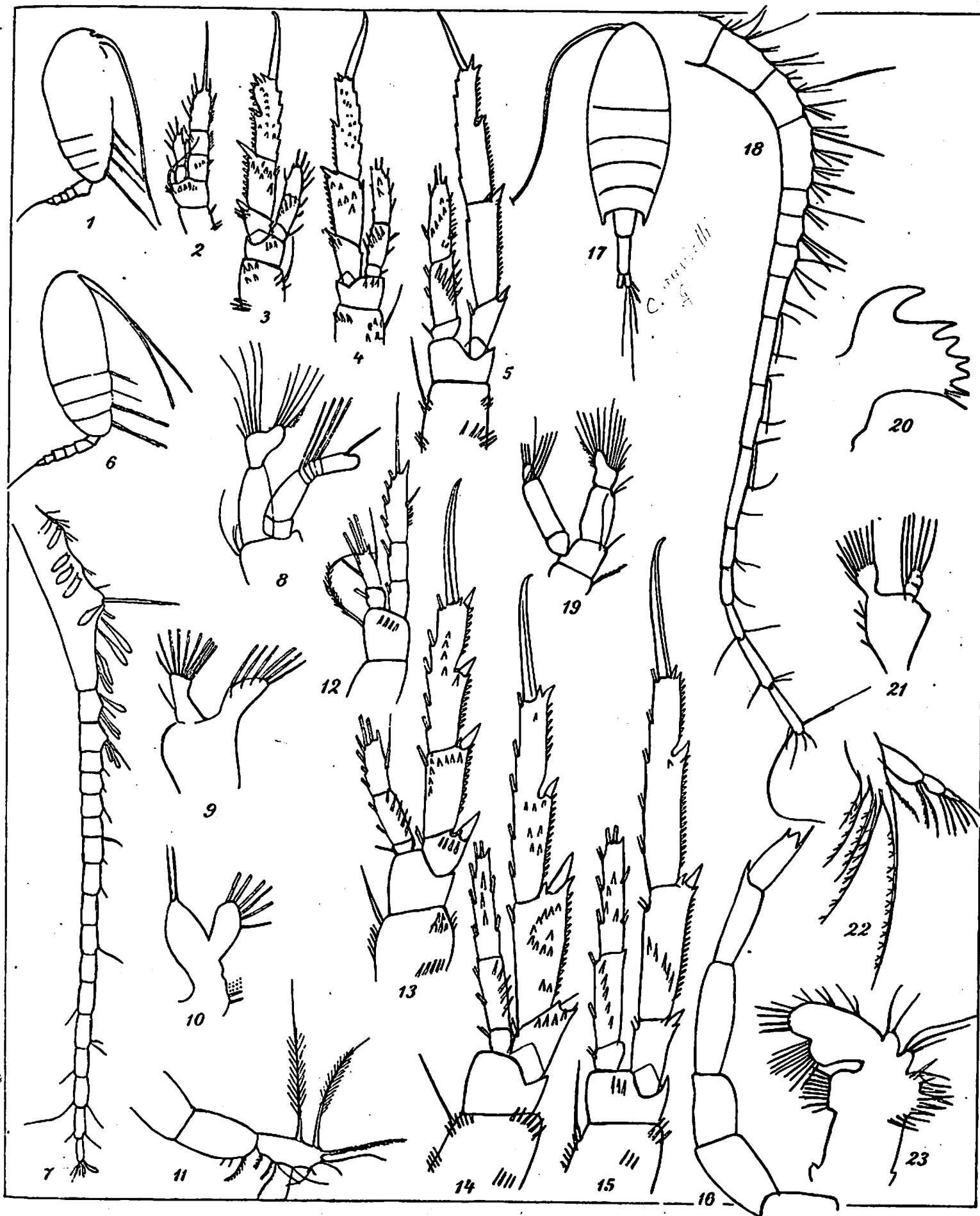


Plate III.

Fig. 1—6. <i>Calanopia Aurivillii</i> Cl., female.	Enlarge- ment.
› 1. Maxilliped of the 1st pair	150.
› 2. Natatory leg of the 1st pair	150.
› 3. › › › 2nd pair	150.
› 4. › › › 3d pair	150.
› 5. › › › 4th pair	150.
› 6. Fifth pair of legs	150.
› 7—10. <i>Calanopia Aurivillii</i> Cl., male.	
› 7. Outline (lateral)	40.
› 8. › (dorsal)	40.
› 9. Right antenna of the 1st pair	150.
› 10. Fifth pair of legs	270.
› 11—19. <i>Calanopia elliptica</i> BRADY, female.	
› 11. Outline lateral	40.
› 12. Maxilliped of the 1st pair	150.
› 13. Maxilla	270.
› 14. Antenna of the 2nd pair	150.
› 15. Mandible	150.
› 16. Maxilliped of the 2nd pair	150.
› 17. Natatory leg of the 1st pair	150.
› 18. Terminal seta of the 4th pair of legs	500.
› 19. Fifth pair of legs	150.

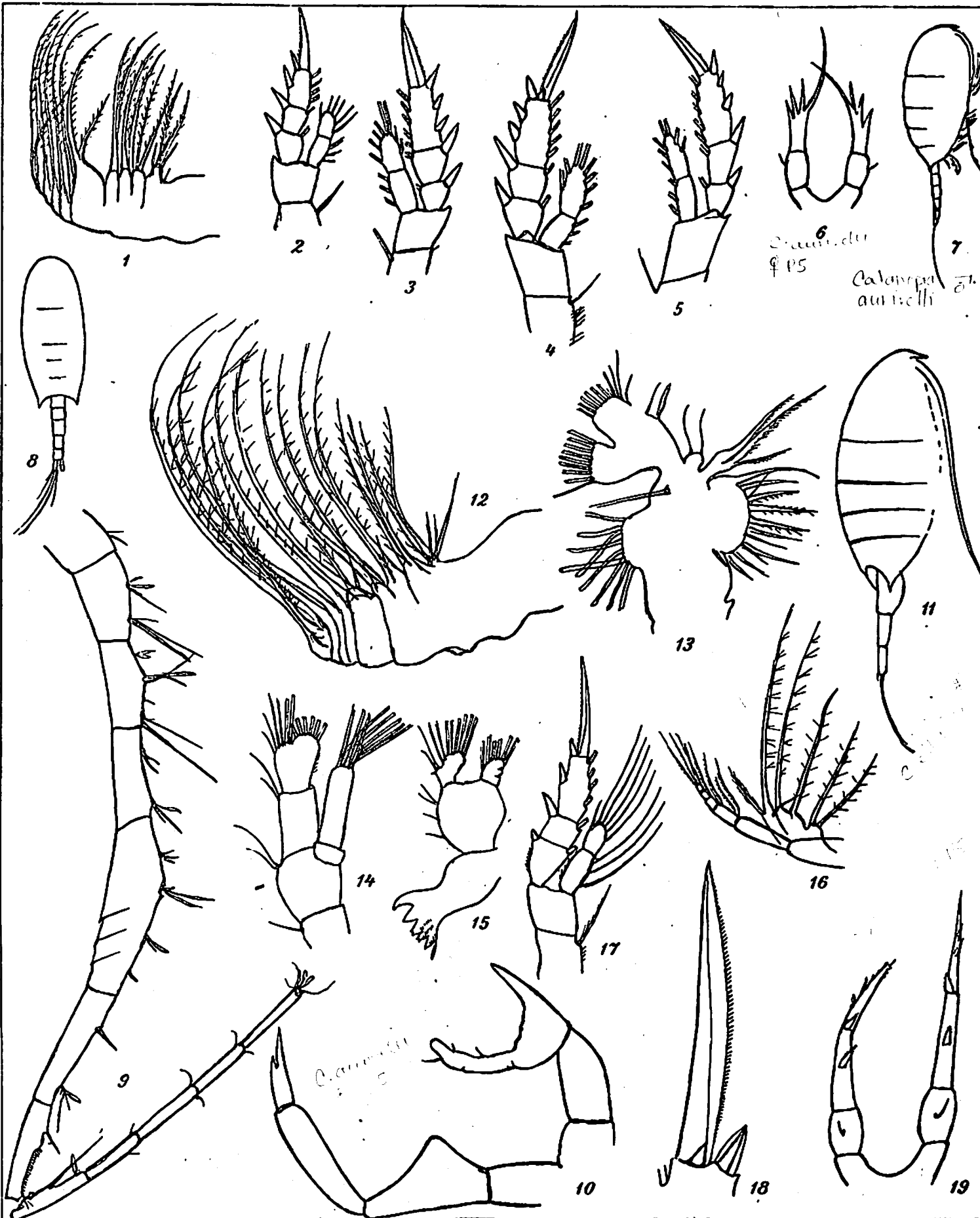


Plate IV.

Fig. 1, 2. <i>Calanopia elliptica</i> BRADY, female.	Enlarge- ment.
› 1. Natatory leg of the 2nd pair	150.
› 2. › › › 3d pair	150.
› 3—10. <i>Corycæus gibbulus</i> GIESBR., male.	
› 3. Outline (dorsal)	80.
› 4. › (lateral)	80.
› 5. Antenna of the 2nd pair	270.
› 6. Maxilliped of the 2nd pair	270.
› 7. Natatory leg of the 1st pair	270.
› 8. › › › 2nd pair	270.
› 9. › › › 3d pair	270.
› 10. › › › 4th pair	270.
› 11—15. <i>Corycæus gracillicaudatus</i> GIESBR., male.	
› 11. Outline	80.
› 12. Antenna of the 2nd pair	500.
› 13. Natatory leg of the 1st pair	500.
› 14. › › › 3d pair	500.
› 15. › › › 4th	500.
› 16—25. <i>Metacalanus Aurivillii</i> CL., female.	
› 16, 17. Outline (dorsal and lateral)	80.
› 18. Maxilla	500.
› 19. Mandible	500.
› 20. Masticatory apparatus of the mandible	500.
› 21. Maxilliped of the 2nd pair	500.
› 22. › › › 1st pair	500.
› 23. Rostrum	500.
› 24. Left antenna of the 1st pair	270.
› 25. Antenna of the 2nd pair	500.

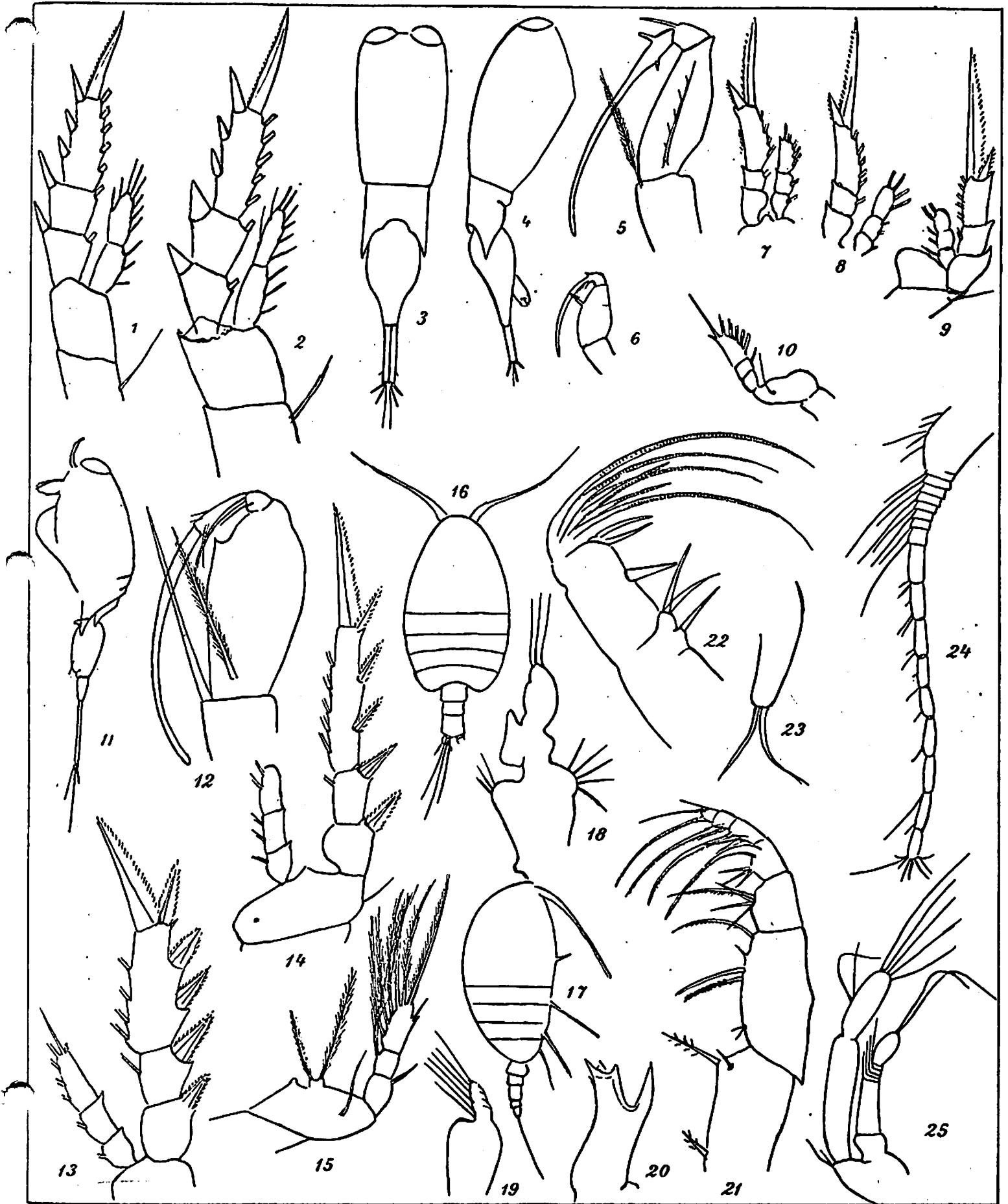


Plate V.

Fig. 1—4. <i>Metacalanus Aurivillii</i> Cl., female.	Enlarge- ment.
› 1. Natatory leg of the 1st pair	500.
› 2. › › › 3d pair	500.
› 3. Fifth pair of legs	500.
› 4. Abdomen and furca	150.
› 5, 6. <i>Metacalanus Aurivillii</i> Cl., male.	
› 5. Fifth pair of legs	500.
› 6. Left antenna of the 1st pair	270.
› 7—18. <i>Oithona rigida</i> GRÆSB., female.	
› 7, 8. Outline, dorsal and lateral	80.
› 9. Antenna of the 2nd pair	270.
› 10. › › 1st pair	270.
› 11. Masticatory apparatus of the mandible	500.
› 12. Mandible	500.
› 13. Maxilliped of the 1st pair	500.
› 14. › › 2nd pair	500.
› 15. Maxilla	500.
› 16. Furca	270.
› 17. Natatory leg of the 1st pair	270.
› 18. <i>Re 3</i> of the 3d pair of natatory legs	500.
› 19, 20. <i>Oithona rigida</i> GRÆSB., male.	
› 19. Outline (dorsal)	80.
› 20. Right antenna of the 1st pair	270.

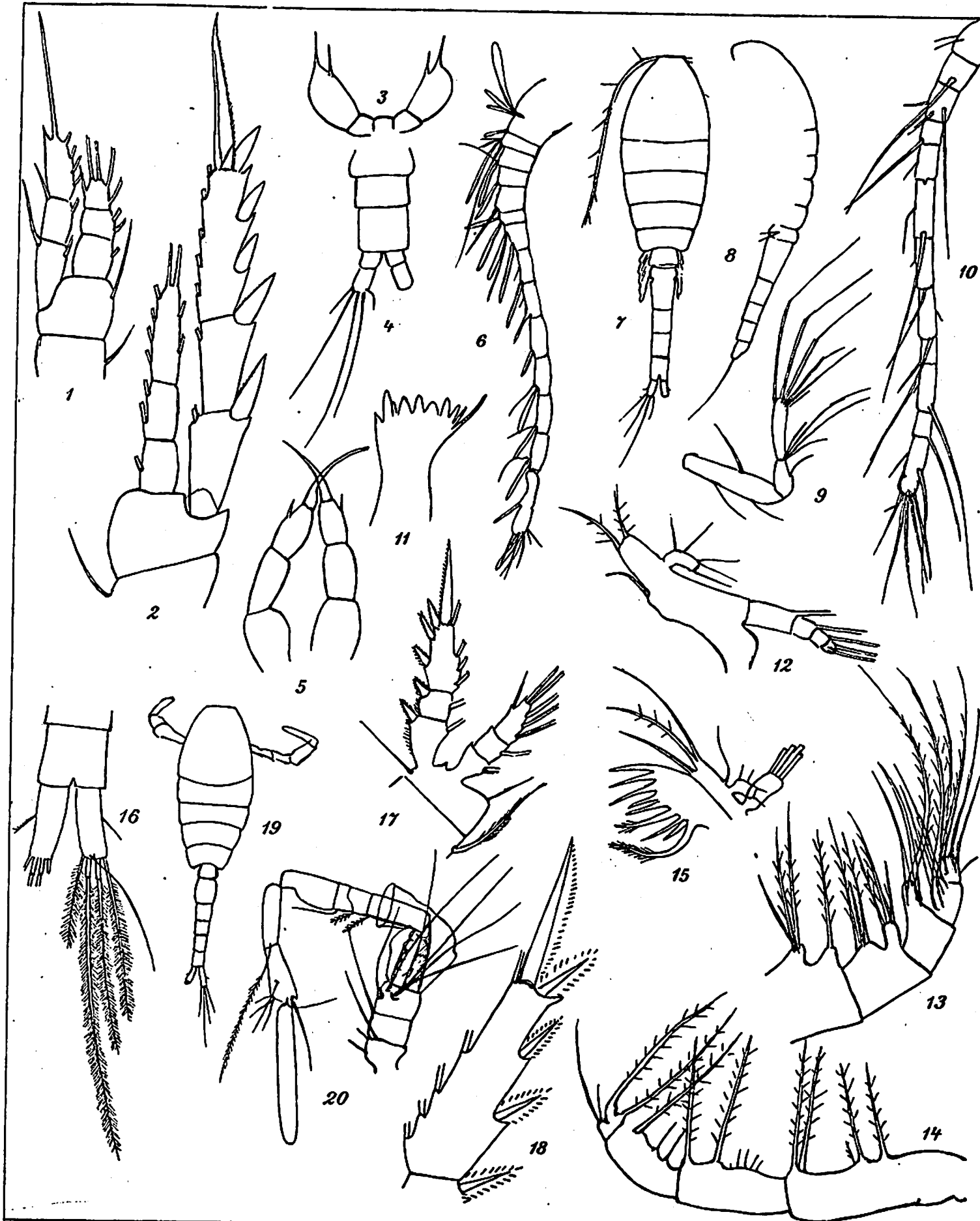


Plate VI.

Fig. 1—10. <i>Paracalanus aculeatus</i> GIESBR., male.	Enlarge- ment.
› 1. Outline (lateral)	40.
› 2. Right antenna of the 1st pair	150.
› 3. Antenna of the 2nd pair	270.
› 4. Mandible	270.
› 5. Masticatory apparatus of the mandible	270.
› 6. Natatory leg of the 1st pair	270.
› 7. › › › › 4th pair	270.
› 8. Fifth pair of legs	270.
› 9. Maxilla	270.
› 10. Maxilliped of the 2nd pair	150.
› 11—22. <i>Pseudodiaptomus Aurivillii</i> CL., female.	
› 11, 12. Outline (lateral and dorsal)	40.
› 13. Mandible	150.
› 14. Terminal seta of the 4th pair of legs	500.
› 15. Right antenna of the 1st pair	150.
› 16. Masticatory apparatus of the mandible	270.
› 17. Maxilla	500.
› 18. Natatory leg of the 1st pair	270.
› 19. Antenna of the 2nd pair	150.
› 20. Natatory leg of the 3d pair	150.
› 21. Leg of the 5th pair	500.
› 22. Furca	150.

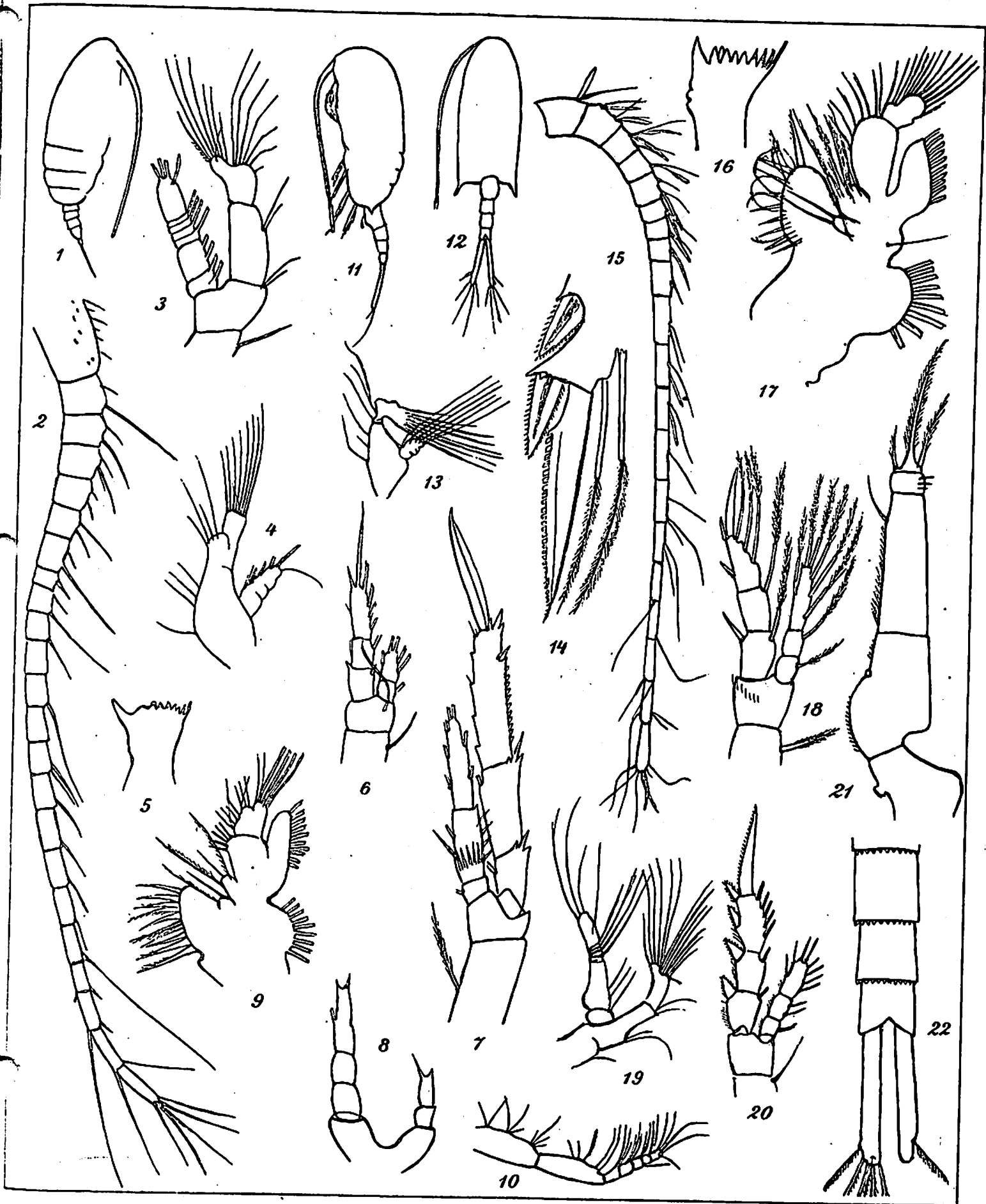


Plate VII.

	Enlarge- ment.
Fig. 1, 2. Pseudodiaptomus Aurivillii CL.	
› 1. Maxilliped of the 1th pair	500.
› 2. › › › 2nd pair	270.
› 3—10. <i>Reticulina Aurivillii</i> CL.	
› 3. Outline (dorsal)	80.
› 4. Antenna of the 1st pair	270.
› 5. Leg of the 1st pair	270.
› 6. › › › 3d pair	270.
› 7. Last thoracic segment and abdomen	150.
› 7a. Masticatory apparatus of the mandible (as seen through the carapace)	500.
› 8. Antenna of the 2nd pair (as seen through the carapace)	500.
› 9. Maxilliped of the 2nd(?) pair	270.
› 10. › › › 1st(?) pair (as seen through the carapace)	500.
› 11—14. <i>Tortanus gracilis</i> BRADY.	
› 11. Front and lip (lateral) ♀	270.
› 12. Terminal seta of <i>Re</i> 3 of the 3d pair of legs ♀	500.
› 13. Fifth pair of legs ♂	150.
› 14. › › › ♀	150.
› 15. <i>Codonella fenestrata</i> CL.	450.
› 16. <i>Triastrum Aurivillii</i> CL.	40.
› 17. › › › central part	270.



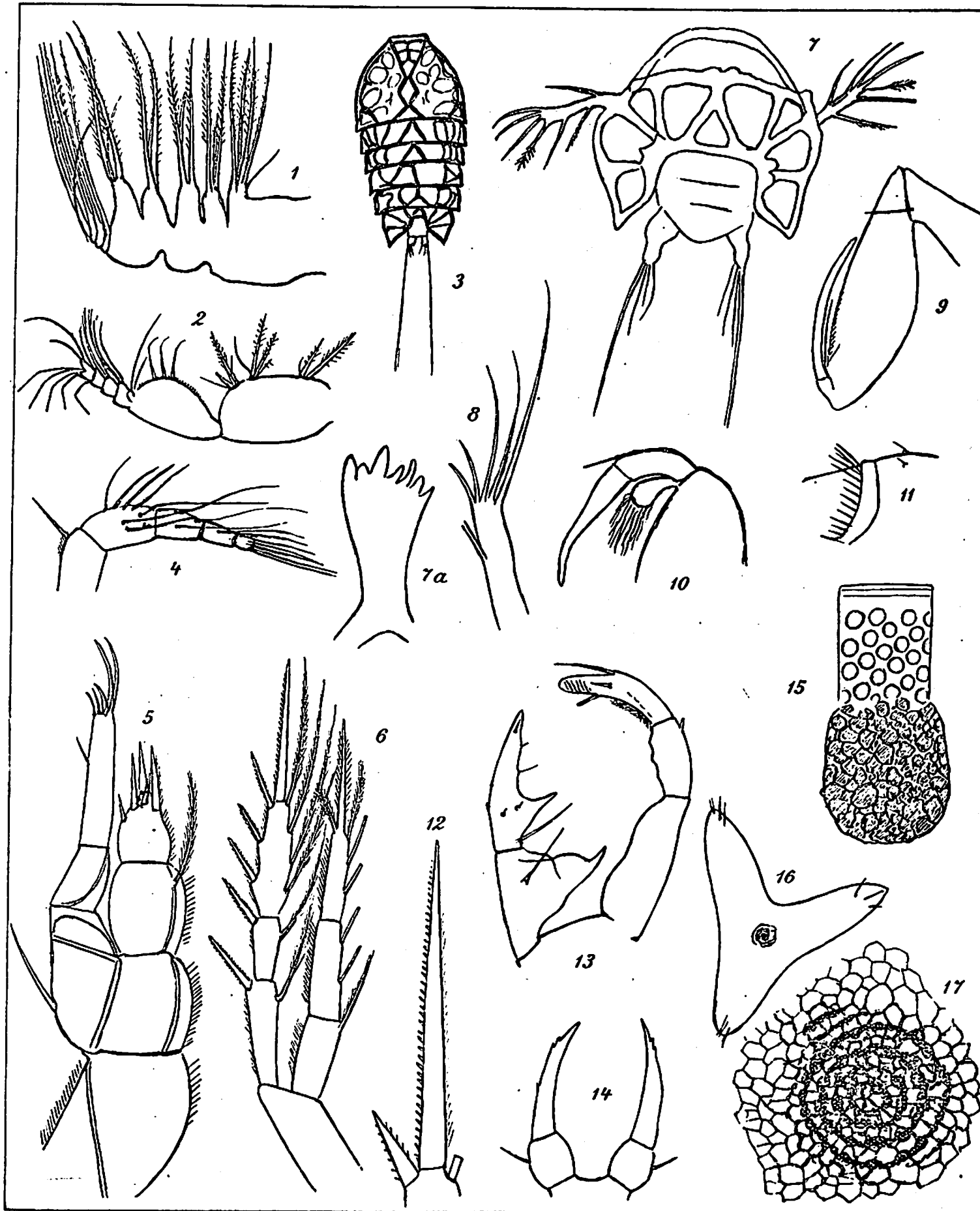


Plate VIII.

	Enlargement.
Fig. 1. <i>Myelastrum Aurivillii</i> CL.	40.
› 2. <i>Pteroscenum Aurivillii</i> CL.	450.
› 3. <i>Thalassiosira Aurivillii</i> CL., <i>a, b</i>	1000.
› 4. <i>Rhizosolenia pellucida</i> CL.	450.
› 5. <i>Streptotheca maxima</i> CL.	150.
› 6. <i>Auricula punctata</i> PANT.	1000.
› 7. <i>Rhizosolenia (Guinardia) recta</i> CL., <i>a, b</i>	450.
› 8. <i>Fragilaria(?) rhombica</i> CL.	1000.
› 9. <i>Sceptroneis Aurivillii</i> CL., <i>a</i>	270.
<i>b, c, d, parts of the valve</i>	1000.
› 10. <i>Chaetoceros Aurivillii</i> CL., <i>a, b</i>	170.
<i>c</i> finstale, <i>d</i> valve	1000.
<i>e</i> part of the awn	2000.
› 11. <i>Chaetoceros calvus</i> CL.	450.
› 12. <i>Rhizosolenia cochlea</i> BRUN	270.
› 13. <i>Fragilaria Aurivillii</i> CL., <i>a</i>	450.
<i>b, c, d</i>	1000.

