

TILLÆG
TIL
GEPHYREERNE.

Omtrent et halvt Aar efterat vor Afhandling over Gephyreerne var afsluttet og overgivet til Trykken,¹⁾ have vi modtaget 3 Arbejder over samme Dyrklasse, to af Hjalmar Théel²⁾ og et af Dr. Teuscher³⁾.

Da der i disse Afhandlinger findes enkelte Afvigelser fra vore Observationer, have vi troet at burde gjøre nogle Bemærkninger i den Anledning.

Dr. Théel har dannet en ny Slægt af Phascolosoma Strombi, hvilken han kalder Phascolion, og angiver som Grund derfor, at den „i flere vigtige Punkter adskiller sig fra Slægterne Sipunculus og Phascolosoma.“

Allerede Keferstein har fremhævet disse Punkter, men dog ikke trøstet sig til derpaa at grunde en ny Slægt, idet han formener, at først naar andre nærstaaende Arter ere nøiagtig kjendte, naar Exemplarer fra mange forskellige Localiteter ere undersøgte, først da er Tiden kommen til at afgjøre, hvorvidt Ph. Strombi bør danne en ny Slægt eller ikke. Under vore Undersøgelser over Gephyreerne have vi havt til Raadighed en stor Mangfoldighed af Exemplarer af Ph. Strombi fra de forskjelligste Localiteter, lige fra Vadsø (Finmarken) til Christiania. Vi vare ingeniunde fremmede for de Forskjelligheder, Ph. Strombi frembød ved at sammenligne den med andre Phascolosoma-Arter, hvilket forresten klart nok var fremhævet af Keferstein; men jo flere Exemplarer vi undersøgte, jo tydeligere viste det sig, at den var underkastet mange Variationer baade i det Ydre og Indre, — saa vi enten af disse Varieteter maatte danne mange Arter — ja endog enkelte Slægter, dersom vi betragtede hver Afændring for sig uden at sammenholde den med andre, eller da maatte vi, som flere andre Forfattere have gjort, blive staaende ved den gamle, gode Art, — og forsaavidt Afvigelserne bleve altfor store, da danne særskilte Afarter. I denne vor Opfatning bleve vi end

¹⁾ Indsendt til Magazin for Naturvidenskaberne i Midten af Januar, 1875.

²⁾ Recherches sur le Phascolion (Phascolosoma) Strombi, Mont. par Hjalmar Théel. Communiqué à l'académie des sciences de Suède le 10 Février 1875. — Etudes sur les Géphyriens inermes des mers de la Scandinavie, du Spitsberg et du Groenland par Hjalmar Théel. Communiqué à l'académie des sciences de Suède le 10 Mars 1875.

³⁾ Notiz über Sipunculus und Phascolosoma von Dr. R. Teuscher. Jenaische Zeitschrift für Naturwissenschaft, 8 Bd., 4 Heft, Pag. 488.

APPENDIX
TO
THE GEPHYREÆ.

About half a year after our treatise on the Gephyreæ was terminated and delivered to the printer¹⁾ we received 3 works on the same class of animals: 2 by Hjalmar Théel²⁾, and 1 by Dr. Teuscher³⁾.

As in these treatises there are found a few differences from our observations, we have thought it right to make some remarks on the occasion.

Dr. Théel has formed a new genus of Phascolosoma Strombi, which he calls Phascolion, and gives as his reason that „it differs in many important points from the genera Sipunculus and Phascolosoma.“

Keferstein had already noticed these points, but had not ventured on the strength of them to establish a new genus; being of opinion that only when other nearly related species are more accurately known; when specimens from many different localities shall have been examined, only then will the time be come to decide how far Ph. Strombi should form a new genus or not. In the course of our examinations of the Gephyreæ, we have had at our disposal a great variety of specimens of Ph. Strombi from the most various localities, even from Vadsö (Finmark) to Christiania; we were by no means unaware of the differences which Ph. Strombi exhibited, when compared with other species of Phascolosoma, which moreover had been very distinctly noticed by Keferstein; but the more specimens we examined, the more evident it became that it was subject to many variations both external and internal; so that from these varieties we must either have formed many species, nay even a few genera, if we had considered each variation for itself without comparing it with others, or else we must have kept to the good old species, as many other authors have done, and, for as much as the differences became too great, formed separate variations. In this our conception, we were

¹⁾ Sent to the Magazin for Naturvidenskaberne in the middle of January, 1875.

²⁾ Recherches sur le Phascolion (Phascolosoma) Strombi, Mont. par Hjalmar Théel. Communiqué à l'académie des sciences de Suède le 10 Février 1875. — Etudes sur les Géphyriens inermes des mers de la Scandinavie, du Spitsberg et du Groenland par Hjalmar Théel. Communiqué à l'académie des sciences de Suède le 10 Mars 1875.

³⁾ Notiz über Sipunculus und Phascolosoma von Dr. R. Teuscher. Jenaische Zeitschrift für Naturwissenschaft, 8 Bd., 4 Heft, Pag. 488.

yderligere bestyrkede ved at undersøge andre Arter, der frembøde ligesaa store Afvigelser fra Slægten Phascolosoma som Ph. Strombi, uden at vi derfor saa nogen Grund til at danne nye Slægter, da Forskjellighederne ligesaa lidt hos denne som hos hine vare saa væsentlige, at de kunde begrunde Dannelsen af nye Slægter.

De før nævnte vigtige Punkter, der efter Hr. Théel udgjøre det Eiendommelige for Slægten Phascolion, og hvorved den adskiller sig fra Slægterne Sipunculus og Phascolosoma ere Følgende:

Tentaklerne ere trekantede; Snabelen kan indtrækkes lige til Analaabningen, og i den bagerste Kropsende findes ingen Aabning i Form af en stor Pore. Kun to Retractorer, hvoraf den ventrale, der er den mindste, deler sig ved Basis i to Rødder. Digestionsapparatet danner to Circumvolutioner, der ere mere eller mindre spiralformige, og som ere fæstede til Kropshulheden ved mange radiære Muskler.

Hertil skulle vi bemærke, at Tentaklerne hos Phascolosoma-Arterne variere overmaade meget saavel i Antal som Form, og have hidtil ikke engang kunnet tjene til paalidelige Artsmærker. At Snabelen trækkes ind til Analaabningen, finder temmelig hyppig Sted hos flere Arter, og kan ligesaa lidt som Tentaklernes Form være noget sikkert Bestemmende for Arten og endnu mindre for Slægten. At Phascolion mangler en Aabning i den bagerste Kropsende, kan dog vanskeligt være noget Eiendommeligt for den, da saavel de Arter af Slægten Phascolosoma og Sipunculus, vi have undersøgt, som af vore nye Slægter lider af den samme Mangel. Og saavidt os bekjendt har endnu ingen Forsker paavist med Sikkerhed den heromtalte Aabning, om hvis Tilværelse, som bekjendt, har været stridt adskilligt. — Retractorerne have vi fundet meget forskjellige med Hensyn til Udspring, Form og Antal ikke alene hos Slægten Phascolosoma, men ogsaa hos enkelte af vore nye Slægter; men Forskjelligheden hos den enkelte Art, hvor stor den end har været, har dog altid været af en saadan Natur, at vi have kunnet finde Overgange hos nærstaaende Arter, saa at vi vel i en saadan Variieren af Retractorerne have fundet et Hjælpe-middel til yderligere at characterisere Arten, men ingenlunde noget saa stærkt Eiendommeligt, at vi deraf vovede at grunde en ny Slægt. Og vi tro heller ikke, at Retractorernes Antal er noget saa væsentligt, at, naar ikke andre vigtigere Særegenheder optræde, man da ved Hjælp af dem skulde kunne udsondre af Arter nye Slægter. Vi have saaledes seet Phascolosoma-Arter med 4, 2 og 1 Retractor, ligesom vi hos vore nye Slægter have dels 1 Retractor uden Rødder (*Onchnesoma Steenstrupii*), dels 1 Retractor med lange Rødder (*Tylosoma Lütkenii*), der ere fæstede paa Dorsal- og Ventralfladen. Dersom vi skulde have ladet os nøie med Skjelnemærker som de af Dr. Théel angivne til Dannelsen af nye Slægter, havde vi visseligen af Ph. squamatum grundet en ny Slægt; thi det staar ikke til at nægte, at denne Art frembyder større Afvigelser end Ph. Strombi; men for os stille Fordringerne til en Slægts Dannelse sig større, idet vi formene,

further confirmed by examining other species, which exhibited quite as great deviations from the genus Phascolosoma as Ph. Strombi, without finding any reason to form new genera; as the differences were, neither in one case nor in the other, so essential as to warrant the formation of new genera.

The before named important points, which, according to Mr. Théel, constitute the peculiarities of the genus Phascolion, and whereby it is distinguishable from the genera Sipunculus and Phascolosoma, are the following:

The tentacles are 3 sided; the proboscis can be retracted even to the anal aperture, and in the posterior extremity of the body there is no opening in the form of a large pore. Only two retractors, of which the ventral one, which is the smallest, is divided at the base into two roots. The apparatus of digestion forms two circumvolutions which are more or less spiral, and which are attached to the perivisceral cavity by many radiary muscles.

We must here remark that the tentacles in the species of Phascolosoma vary in an extraordinary degree, as well in number as in form, and have hitherto not even been able to serve as trustworthy specific marks. That the proboscis is drawn in to the anal aperture, is something which occurs rather frequently in several species, and can just as little as the form of the tentacles, be any certain criterion of the species, still less of the genus. That the Phascolion has no opening in the posterior end of the body, can scarcely be anything peculiar to it; because the species of the genera Phascolosoma and Sipunculus, which we have examined, as well as those of our new genera, have the same deficiency. And so far as we know, there has been yet no naturalist, who has demonstrated with certainty the existence of this opening, about which, as is well known, there has been a good deal of controversy. We have found the retractors differing with respect to their issue, form and number, not only in the genus Phascolosoma, but also in some of our new genera; but the differences in the single species, however great it may have been, has still always been of such a nature as to enable us to find transitions in species closely related; so that such a variation in the retractors has furnished us with auxiliary means of characterising the species more particularly; but we have been far from finding therein anything so strongly peculiar, as to warrant our venturing to base a new genus thereon. Neither do we think that the number of the retractors is anything so essential, that, when no other more important peculiarities appear, we should be able thereby to select new genera out of a number of species. We have thus seen species of Phascolosoma with 4, 2 and 1 retractor; just as we have, in our new genera, sometimes 1 retractor without roots (*Onchnesoma Steenstrupii*) sometimes 1 retractor with long roots (*Tylosoma Lütkenii*), attached to the dorsal and ventral surface. If we had been satisfied with the characteristics indicated by Dr. Théel for the establishing of new genera, we should certainly have made a new genus of Ph. squamatum; for it

at de Forskjelligheder, som skulle begrunde en ny Slægt, maa ikke være enkelte ydre eller indre Afvigelser fra Grundtypen; men maa være af en Organismen mere gennemtrængende Natur.

Hvad nu de nye Arter under Slægten Phascolion betræffer, saa have vi Grund til at antage, at de kun ere Varieteter af Ph. Strombi. Vi have opstillet en Varietet under Navnet Ph. Strombi var. verrucosum, som upaatvivlelig falder sammen med Ph. tuberculosum, Théel, — og Grunden, hvorfor vi ikke af den dannede en ny Art, var simpelthen den, at vi traf flere Overgangsexemplarer, der mere og mere nærmede sig Hovedformen.

Phascolion spitsbergense, Th., har saameget tilfælles med Exemplarer, vi have fra Vadsø, og som aabenbart ikke ere nye Arter, men vel Varieteter af Strombi, at vi ogsaa med Hensyn til den nære Tvivl om dens Bestaaen som selvstændig Art. Vi kunne imidlertid ikke gaa videre end at fremsætte vore Tvivl og begrunde disse saa godt som muligt; thi vi have ikke været i Besiddelse af Hr. Théels Original-exemplarer.

Nu skulle vi omtale de nye Arter af Slægten Phascolosoma, som Hr. Théel har opstillet.

Phascolosoma luteum, Th., er sikkerlig, som Dr. Théel selv antager, Kefersteins margaritaceum, der jo er ganske forskjellig fra Sars's margaritaceum; forsaavidt er det i sin Orden, at Théel har givet Arten et nyt Navn. Men da Ph. luteum, Th., og margaritaceum, Keferst., falde sammen med Forbes's Ph. (Syrinx) Harveii, saa formene vi, at Ph. luteum maa ned i Synonymiens Rækker.

Phascolosoma dubium, Th., har Dr. Théel fundet at være usikker — hvilket ogsaa Navnet tyder hen paa — idet han siger, at den nærmer sig Kefersteins elongatum og Blainville's vulgare. Fra disse skal den dog adskille sig ved et lidet større Antal Tentakler, samt ved Mangelen af to Pigmentpunkter (Øienpunkter). Tentaklernes Antal varierer jo særdeles meget, og Pigmentet forsvinder i Regelen temmelig hurtigt ved Opbevaring i Spiritus; ligesom det er meget sandsynligt, at der hos denne Art forekommer Exemplarer, hvor disse Pigmentpunkter mangle, — saaledes er idetmindste Tilfældet med Ph. margaritaceum, Sars. Vi antage derfor, at Ph. dubium falder sammen med Ph. elongatum, Keferst. og Ph. vulgare, Blainv.

Phascolosoma albidum, Th., er vel neppe andet end unge Exemplarer af Ph. margaritaceum, Sars; thi jo yngre Individuerne af denne Art ere, desto færre ere Tentaklerne, og desto mere gjennemsigtig er Huden. Théel siger ogsaa selv, at dersom ikke Danielssen havde angivet indtil 50 Tentakler for Ph. margaritaceum, vilde han ikke have betænkt sig paa at slaa albidum sammen med denne. Og hvad nu Phascolosoma fulgens, Th., betræffer, saa adskiller den sig saa lidet fra albidum, at vi have vanskeligt for at se en særskilt Art i den. Vi ere tilbøielige til at tro, at

is undeniable that this species exhibits greater variations than Ph. Strombi; but for us the requisites for the formation of a new genus appear to be greater; as we are of opinion that the differences, which should sanction a new genus, must not be a few external or internal deviations from the main type, but must be of a nature to enter more deeply into the organism.

Now as regards the new species of the genus Phascolion, we have reason to assume that they are only varieties of Ph. Strombi. We have established a variety under the name Ph. Strombi var. verrucosum, which undoubtedly coincides with Ph. tuberculosum Théel; and the reason why we did not form a new species of it, was simply that we met with several transition-specimens approaching more or less nearly to the main form.

Phascolion spitsbergense Th. has so much in common with specimens that we have from Vadsø, and which are manifestly not new species, but only varieties of Strombi, that we also entertain doubts as to its being maintained as an independent species. We can however not go further than expressing our doubt and justifying it as well as possible; for we have not been in possession of Mr. Théel's original specimens.

Now we shall notice the new species of the genus Phascolosoma, which Mr. Théel has established.

Phascolosoma luteum Th. is certainly, as Dr. Théel himself supposes, Kefersteins margaritaceum, which is entirely different from Sars' margaritaceum — so far it is quite in order that Théel has given a new name to the species. But as Ph. luteum Th. and margaritaceum Keferst. coincide with Forbes' Ph. (Syrinx) Harveii, we are of opinion that Ph. luteum must fall into the ranks of the synonyms.

Phascolosoma dubium Th. has been found by Dr. Théel to be uncertain — as also implied by the name — Mr. Théel says it resembles Kefersteins elongatum and Blainville's vulgare, differing from these however by a slightly greater number of tentacles, and by the absence of two pigmentary spots (ocellæ). Now the number of tentacles varies very much; and the pigment usually disappears rather rapidly, when specimens are kept in spirit; as likewise there is great probability that specimens of this species may be found in which the pigmentary spots are wanting, — such is at least the case with Ph. margaritaceum Sars. We presume therefore that Ph. dubium coincides with Ph. elongatum Keferst. and Ph. vulgare Blainville.

Phascolosoma albidum Th. is probably nothing else than young specimens of Ph. margaritaceum Sars; for the younger the individuals of this species are, the fewer are the tentacles and the more transparent is the skin. Théel says also himself that if Danielssen had not indicated up to 50 tentacles for Ph. margaritaceum, he would not have hesitated to place albidum together with it. And as regards Phascolosoma fulgens Th., it differs so slightly from albidum, that it is difficult to see in it a distinct species. We are inclined to think that both these species are

begge disse Arter ere yngre Individuer af *Ph. margaritaceum*, S., eller i det høieste Localitets-Varieteter af denne.

Under Navnet *Ph. pyriforme*, Danielss., har Hr. Théel givet en Beskrivelse af en *Phascolosoma*-Art, der ikke er Danielssens *pyriforme*; thi denne afviger saa væsentlig fra *Phascolosoma*, at vi for den have dannet en ny Slægt, nemlig *Onchnesoma*. Derimod have vi Grund til at antage, at Hr. Théels *Ph. pyriforme* falder sammen med den af Professor Möbius beskrevne og afbildede *Ph. procerum*.¹⁾

Endelig skulle vi omtale de af Dr. Théel beskrevne Generationsorganer, der fuldkommen svare til de af os beskrevne traadformige, bugtede Legemer, et ved hver Bugretractors Basaldel, og hvori vi stundom have fundet Æg i forskjellige Udviklingsstadier.

Ogsaa Semper har gjort opmærksom paa disse Organer og fremsat den Formodning, at de muligens vare Genitalkjertler. At disse Legemer ikke ere Æggestokke eller Testikler, ere vi overbeviste om. Vi have paavist hos mange *Phascolosoma*-Arter Generationsorganerne og henvise forøvrigt dertil; kun skulle vi bemærke, at de traadformige, bugtede Legemer, som Hr. Théel angiver for Kjønorganer, ofte mangle. Saaledes findes de ikke hos *Ph. squamatum*, *Onchnesoma Steenstrupii* og *Sarsii*, og heller ikke hos *Tylosoma*. Derimod have vi hos *Ph. squamatum* fundet Kjønorganet fæstet til Spiserøret paa samme Maade, som vi have angivet for flere andre *Phascolosoma*-Arter.

Dr. Teuschers Iagttagelser over *Sipunculiderne* stemme i de fleste Punkter overens med vore, — kun i et Par ere de temmelig afvigende, nemlig med Hensyn til Hudlegemerne og Generationsorganerne. Dr. Teuscher antager Hudlegemerne for at være Sandseorganer; heri kunne vi ikke være enige, idet vi have paavist, at de ere slimafsondrende Organer. Kjønorganerne angiver han for *Sipunculus*'s Vedkommende at være de Længdekanaler, som findes i Huden, og som dannes derved, at i den midterste Del af Kropsvæggen er Hudens Bindevævslag sammenvoxet med Ringmuskulaturen kun paa de Steder, hvor Længdemusklerne løbe under Ringmusklerne. I disse Længdekanaler har han fundet Æg i forskellige Udviklingsstadier og mener derfor, at de udvikles der. For *Phascolosoma*'s Vedkommende antager han det for sandsynligt, at Æggene fremstaa af det Epithel, der beklæder Kroppshulheden. Saa vel med Hensyn til Længdekanalerne som Generationsorganerne have vi tidligere udførligt udtalt os.

¹⁾ Die Expedition zur physikalisch-chemischen und biologischen Untersuchungen der Nordsee im Sommer 1872. Pag. 175, Taf. 3, Fig. 1—5.

young individuals of *Ph. margaritaceum* S. or at most local varieties of the same.

Under the name *Ph. pyriforme* Danielss., Mr. Théel has given a description of a sort of *Phascolosoma* which is not Danielssens *pyriforme*; for this differs so essentially from the genus *Phascolosoma*, that we have formed for it a new genus *Onchnesoma*. But we have reason to suppose, that Mr. Théel's *Ph. pyriforme* coincides with the *Ph. procerum*¹⁾ described and delineated by professor Möbius.

Finally we must notice the organs of generation described by Dr. Théel, which correspond perfectly to those filiform and sinuous bodies described by us, one at the basal part of each ventral retractor, and wherein we have sometimes found ova in different stages of development.

Also Semper has drawn attention to these organs, and emitted the opinion that they were possibly genital glands. That these bodies are not ovaries nor testicles, we are convinced. We have pointed out the organs of generation in many species of *Phascolosoma*, and refer thereto; — we shall only remark that the filiform, sinuous bodies, indicated by Mr. Théel as sexual organs, are often wanting. Thus they are not found in *Ph. squamatum*, *Onchnesoma Steenstrupii* and *Sarsii*, nor in *Tylosoma*. On the other hand we have found in the *Ph. squamatum* the sexual organ attached to the oesophagus, in the same manner as we have indicated for several other species of *Phascolosoma*.

The observations of Dr. Teuscher on the *Sipunculidæ* agree in most points with ours — only in a few points they are rather different, namely with respect to the cuticular bodies and the organs of generation. Dr. Teuscher supposes the cuticular bodies to be organs of sense. To this we cannot agree; as we have shewn that they are organs, which secrete mucus. The organs of generation are stated by him, in reference to the *Sipunculus*, to be the longitudinal canals, which are found in the skin, and which are formed by the layer of connecting tissue of the skin in the central part of the wall of the body, being only connate with the annular muscular system at the places, where the longitudinal muscles run under the annular muscles. In these longitudinal canals he has found ova in various stages of development, and is therefore of opinion that the ova are here developed. As regards the *Phascolosoma*, he considers it probable that the ova are produced from the epithelium, which lines the perivisceral cavity. We have previously given our opinion explicitly concerning the longitudinal canals, as well as concerning the organs of generation.

¹⁾ Die Expedition zur physikalisch-chemischen und biologischen Untersuchungen der Nordsee im Sommer 1872. Pag. 175, Taf. 3, fig. 1—5.

Til Slutning skulle vi gjøre opmærksom paa, at vi i „Nature“¹⁾ have fundet en Notits fra Challenger-Expeditionen, hvori en Gephyré ganske kortelig omtales, og som Dr. von Willemoes-Suhm har kaldt Leioderma. Beskrivelsen er saa lidet fuldstændig, at vi ikke kunne gjøre os nogen Forestilling om, hvormeget denne Slægt nærmer sig vor Tylosoma, og vi have derfor ikke kunnet gjøre nogen udtømmende Sammenligning; men det forekommer os dog, at de komme til at staa hinanden nær.

¹⁾ Nature, 1873, Vol. VIII p. 28 & 29.

Finally we must remark that we have found in „Nature“¹⁾ a notice from the Challenger Expedition, wherein there is a very short mention of a Gephyreæ which Dr. von Willemoes-Suhm has called Leioderma. The description is so far from complete, that we have not been able to form any idea how far this genus resembles our Tylosoma, and we have therefore not been able to make any exhaustive comparison; but it appears to us that they will prove to be nearly connected.

¹⁾ Nature, 1873, Vol. VIII, p. 28 & 29.

EN NY ART
AF
SLÆGTEN PENNELLA.
AF
J. KOREN & D. C. DANIELSSEN.

PENNELLA BALÆNOPTERÆ, NOB.
(Tab. 16, Fig. 1—9).

I lange Tider henstod i Bergens Museum en Stump af en Pennella, der ifølge Korens Meddelelser var funden paa et varmblodigt Dyr, nemlig Balænoptera rostrata, Fabr. Ved Naturforskermødet i Christiania 1844 foreviste Korens Medarbejder og Ven, Baron M. W. v. Düben, et lignende Stykke, som ogsaa var uden Hovedpartiet, — og knyttede nogle Bemærkninger dertil. Nogle Aar senere fik vi et helt Exemplar, som vi da undersøgte, lod tegne og kaldte det Pennella Balænoptera. Med dette Navn har det staaet i Museets Samlinger mindst i 20 Aar. Efterhaanden ere flere komne til.

I Steenstrups og Lützens Skrift over det aabne Havs Snyltekrebs og Lernæer have disse Forfattere beskrevet og afbildet en Pennella, der findes paa Døglingen (Hyperoodon rostratus, Chem.), hvilken de have benævnt Pennella crassicornis. Dette er altsaa den anden Snyltekrebs, som er funden paa varmblodige Dyr. Den har nogen Lighed med vor Art; men efterat vi have kunnet ved Hjælp af Original-exemplarer anstille Sammenligninger, viser P. crassicornis sig dog at være forskjellig fra P. Balænoptera, som vi nu skulle beskrive.

Den forreste Del, det egentlige Hovedparti, er noget bredere end langt, men nærmer sig forresten Kugleformen. Paa Hovedets øverste Del, der er plan-convex, iagttages en Mængde faste, glatte, næsten coniske Papiller, som ere størst til Siderne og blive mindre, jo nærmere de komme Centrum (Tab. 16, Fig. 7 a). Dette, som er lidt fordybet, er forsynet med en liden, rund Aabning (Mundaabningen). Papillerne strække sig mere henimod Bug- end Rygfladen, hvorved denne bliver noget længere end hin. Hvor Papillerne støde til Rygfladen, findes i Almindelighed et Par af dem at være meget fremragende, og danne ligesom Grændsen bagtil, eller, om man vil, en bage Rand. Under denne er en temmelig dyb Grube, paa hvis nederste Rand sidde to meget korte Antenner, hvis yderste Led ere forsynede med en liden Klo (Tab. 16, Fig. 9 a); forøvrigt er den bagerste Flade glat, plan i Midten, men lidt hvælvet til Siderne. Den for-

A NEW SPECIES
OF
THE GENUS PENNELLA.
BY
J. KOREN & D. C. DANIELSSEN.

PENNELLA BALÆNOPTERÆ, NOB.
(Tab. 16, fig. 1—9).

For a long time there was in the Museum of Bergen a fragment of a Pennella, which, according to Koren's communication, was found on a warm-blooded animal, namely Balænoptera rostrata, Fabr. At the meeting of the Naturalists in Christiania in 1844, Koren's collaborator and friend, Baron M. W. von Düben, exhibited a similar fragment, which was likewise without the head-part, and presented some remarks in connexion with the same. Some years afterwards we obtained an entire specimen, which we then examined, delineated, and named Pennella Balænoptera. Under this name it has stood in the collection of the museum for at least 20 years. Other specimens have gradually been added.

In Steenstrups and Lützens work on the parasitical crustacea and Lernæe of the open sea, these authors have described and delineated a Pennella which is found on the Hyperoodon rostratus, Chem., and which they have named Pennella crassicornis. This is therefore the second Lernæe which has been found on warm-blooded animals. It has a great resemblance to our species; but after having been enabled by help of original specimens to institute comparisons, we find that P. crassicornis is nevertheless different from P. Balænoptera, which we shall now proceed to describe.

The anterior part, the proper head-part, is somewhat broader than it is long, otherwise approaching to the globular form. On the upper part of the head, which is plano-convex, there appear a number of firm, smooth, nearly conical papillæ, which are largest at the sides, and become smaller the nearer they approach to the centre (Tab. 16, fig. 7 a). In the centre, which is slightly concave, there is a small circular aperture (the oral aperture). These papillæ extend more towards the ventral than towards the dorsal surface, whereby the latter becomes rather longer than the former. Where the papillæ join the dorsal surface, a pair of them usually are found to be very prominent, forming, as it were, the posterior limit, or, so to say, a posterior margin. Under the latter, there is a rather deep excavation, on the lower margin of which there are two very short antennæ, whose extreme joint is furnished with a little claw, (Tab. 16,

reste Flade er temmelig kort, noget convex, stundom lidt skulpteret (Tab. 16, Fig. 6 a), og her sees paa den øverste og midterste Del ligesom en Fure, der fremkommer derved, at de førnævnte Papiller her ere meget smaa i Forhold til dem, som findes paa Siderne (Tab. 16, Fig. 7 b). Fra Hovedets Grund, der altid er noget smalere end den øvrige Del, udgaar næsten horisontalt tre lange, temmelig tynde Horn, hvis frie Ende er afrundet (Fig. 1, 6, 7, 9). Af disse Horn, der ere Dyrets Fæsteapparat, udgaa to fra Siderne og et fra Ryggen.

Den forlængede Del, som er bleven kaldt Brystregionen (Thoraxregion), har en ganske overordentlig Længde, og tager sin Begyndelse fra Hornene, hvor den er meget tyk, noget fladtrykt forfra og bagtil, hvorved fremkommer en tydelig Bug- og Rygflade (Fig. 1, 6 c). Paa Bugfladens Midtparti findes 4 Par Fødder, af hvilke de to øverste Par staa tættere sammen end de underste (Fig. 1, 6 d). Omtrent 8—10 Mm. nedenfor Hornene bliver Brystdelen meget smal, er ganske rund og antager Formen af et Rør i en Længde af omtrent 180 Mm. (Fig. 1 e), hvor den atter bliver tykkere og indtager nu en betydelig Tykkelse ligetil den saakaldte Abdominaldel, (Fig. 1 f), det Sted nemlig, hvor Æggetraadene tage deres Udspring. Ogsaa denne tykkere Del er lidt fladtrykt forfra bagtil, og paa Bugfladen, langt nede, sees to runde Papiller, paa hvis Midte findes en fin, rund Aabning (Fig. 2 a, Heftepunkterne for Spermatophorerne?). Strax under tage Æggetraadene deres Udspring, (Fig. 2 b); de ere meget længere end hele Dyret. Nedenfor Genitalporene er da den Del, der er bleven benævnt Abdomen; den er temmelig kort i Forhold til Brystpartiet, er mindre tyk end dettes nederste Del og bliver smalere ned imod den afstumpede Ende (Fig. 1 g), hvor der til hver Side findes en fremragende Papille (Furcalglieder, Claus, Fig. 5 b). Imellem disse Papiller iagttages en Fure, i hvis Midte er en temmelig fin Aabning, forsynet med en Ringmuskel (Analaabningen). Paa hver Side af Abdominaldelen findes en Række hornagtige Appendices, mindst 24 i Tal. Ethvert saadant Tilhæng, der udgaar fra en rund, gjennemboret Knude (Fig. 5 a), har en kort Stamme, hvorfra udspringe jævnlig 3 korte Hovedgrene, som dele sig i 3 eller flere lange udelte Grene (Fig. 8); denne Del faar saaledes nogen Lighed med Fjæren paa en Skriverspen. Dyret er omgivet af en tyk, fast, halvgjennemsigtig Chitinhud, hvis ydre Flade overalt er glat, naar undtages paa Rygsiden af den tykkere, nederste Del af Brystpartiet samt Abdominaldelen, hvor den er ligesom rynket paatvers. Den indre Flade beklædes af en Cuticula, der er hyalin, meget finstribet, men forøvrigt uden nogen anden Structur. Indenfor denne findes en temmelig tyk, næsten sortfarvet Hud, der indeslutter alle de indre Organer, forlænger sig ind i Hornene, beklæder den indre Væg af Hovedet og gaar i Abdominaldelen igjennem fine Aabnin-

fig. 9 a); otherwise the posterior surface is smooth, plane in the middle, but a little convex at the sides. The anterior surface is rather short, somewhat convex, occasionally a little sculptured (Tab. 16, fig. 6 a); and here, on the upper and central part, we see, as it were, a furrow, occasioned by the before-mentioned papillæ being at this place very small in proportion to those on the sides (Tab. 16, fig. 7 b). From the base of the head, which is always somewhat smaller than the remaining part, there proceed nearly horisontally three long, rather thin horns, the free extremities of which are rounded off (fig. 1, 6, 7, 9). Of these horns, which form the animal's apparatus of attachment, two proceed from the sides, and one from the back.

The elongated part, which has been called the thoracic region, has quite an extraordinary length, and takes its beginning from the horns; being at first very thick, somewhat flattened from in front backward, thus producing distinct ventral and dorsal surfaces (fig. 1, 6 c). In the middle part of the ventral surface, there are 4 pairs of feet, of which the two upper pairs stand closer together than the two lower (fig. 1, 6 d). About 8—10 Mm. below the horns, the thoracic part becomes very slender; it is quite round, and takes the form of a tube for a length of about 180 Mm. (fig. 1 e), when it again becomes thicker, and occupies now a considerable thickness as far as to the so-called abdominal part (fig. 1 f), namely to the place whence the ovisacs take their origine. Also this thicker part is a little flattened from in front backward; and on the ventral surface, far down, there appear two round papillæ, in the middle of which there is a minute circular aperture (fig. 2 a, the points of attachment for the Spermatophores?). Immediately below, the ovisacs take their origine (fig. 2 b); they are much longer than the whole animal. Below the genital pores, there comes then that part which has been called the abdomen; it is rather short in proportion to the thoracic region, less thick than the lower part of the latter, and becomes smaller down towards the rounded extremity (fig. 1 g), where on each side there is a projecting papilla (Furcalglieder, Claus) (fig. 5 g). Between these papillæ, there is observed a furrow, in the middle of which there is a rather minute aperture provided with an annular muscle (the anal aperture). On each side of the abdominal part, there is a row of horny appendices, at least 24 in number. Each of these, proceeding from a round, perforated tubercle (fig. 5 a), has a short stem, whence there issue regularly 3 short main branches, which divide themselves into 3 or more long, undivided branches (fig. 8). This part acquires thus some resemblance to the feather on a quill pen. The animal is enveloped in a thick, solid, semi-transparent, chitinous integument, the exterior surface of which is everywhere smooth, except only on the dorsal side of the thicker, lower part of the thoracic region, and the abdominal part, where it is, so to say, corrugated transversely. The interior surface is covered with a cuticle, which is hyaline, very finely striped, but otherwise without

ger ind i de hornagtige Appendices. Denne Hud dannes af flere Lag eller Membraner, der ere temmelig fast hæftede til hverandre og vanskelig lade sig adskille. Den ydre Membran (Hypodermis, Claus) er temmelig tynd, har en cellet Structur og er optaget af en stor Masse Pigmentklumper. Dette Pigment, der har en smuk dyb violet Farve, er især rigt og tæt afsat paa den nederste og tykkere Brystdel samt Abdominaldelen, hvor det ligesom ringformigt afleirer sig, svarende til de i Chitinhuden tidligere omtalte Rynker. Paa den smalere Brystdel bliver Pigmentet tyndere og findes kun sparsomt paa Hovedet og i Hornene, medens det derimod er rigere i Abdominaltilhængen. Den indre Membran, der er endnu tyndere end den ydre, er næsten gjennemsigtig, har en fibrillær Bindevævsstruktur, hvori sparsomt kjerneholdige Celler ere indleirede. Denne Membran fæster sig til Tarmens Sider og beklæder dens hele bagerste Flade, hvorved der fremkommer et næsten trekantet Rum, der indtager Dyrets hele Rygflade, og som i levende Live er fyldt med rødt, tyndtflydende Blod. Det er ogsaa en Forlængelse af denne indre Membran, der beklæder som et Peritoneum ikke alene den forreste Flade af Tarmen, men ogsaa de øvrige indre Organer og bidrager derved til at befæste disse. Imellem disse to Membraner eller Lag er da det egentlige Hudparenchym, der bestaar af et temmelig stærkt Bindevæv, hvori findes et udbredt Kanalsystem¹⁾ og større og mindre Fedtlag.

Den førømtalte Rygkanal er paa den tykkere og nederste Brystdel meget vid, indtager hele Tarmens Bredde, medens den opad bliver yderst smal, og har paa den lange, smale Brystdel et saa ringe Lumen, at et Hestehaar vanskeligen kan indbringes deri. I Abdominaldelen bliver Kanalen ogsaa meget smalere, men dog ikke saa smal som i Brystdelen. I denne lange Rygkanals Sidevægge sees en Mængde yderst fine Spalter, der føre ind til det ovennævnte sarcodelignende Bindevæv, hvis fine forgrenede Kanaler sandsynligvis tjene som Circulationsgange for Blodet.

Det omtalte Fedtlag er paa de fleste Steder ikke meget tykt, omend det kan danne enkelte Fedthobe; men paa den øverste Brystdel, ligesom i Hovedet og Hornene, danner det et tykt Polster, der udfylder disse Dele. Fedtlaget er sammensat af Fedtceller, der tildels ere forgrenede, det vil sige, der findes en eller flere Udløbere paa Cellen.

Tarmkanalen begynder fra den tidligere omtalte

¹⁾ Claus omtaler et lignende Kanalsystem hos *Lernaeocera esocina* Pag. 9, Tab. 1, Fig. 8. Beobachtungen über *Lernaeocera*, *Peniculus* und *Lernaea* von Professor B. Claus. Marburg 1868.

any other structure. Inside of this there is a rather thick, nearly black-colored cutis, enclosing all the interior organs, extending into the horns, lining the interior wall of the head, and going, in the abdominal part, through minute apertures into the plumose filaments. The cutis is formed of several layers or membranes, which are rather firmly attached to one another, and are difficult to separate. The exterior membrane (Hypodermis, Claus?) is rather thin, has a cellular structure, and contains a great quantity of pigment in lumps. This pigment, which has a beautiful, deep violet color, is richly and densely deposited, especially on the lowest and thicker thoracic region; as also in the abdominal part, where it appears to lie in rings answering to the corrugation in the chitinous integument previously noticed. On the narrower thoracic part, the pigment becomes thinner, and appears only sparsely in the head and horns; while, on the contrary, it is more abundant in the plumose filaments. The interior membrane, which is still thinner than the exterior, is nearly transparent, has a fibrillous structure of connecting tissue, wherein are imbedded cells containing nuclei. This membrane is attached to the sides of the intestine, covering the whole of the latter's posterior surface, whereby there is produced a nearly triangular space, which occupies the whole of the animal's dorsal surface, and which during life is full of red, thinly flowing blood. It is also a continuation of this interior membrane which covers, like a peritoneum, not only the anterior surface of the intestine, but also the other internal organs, and contributes thereby to attach them. Between these two membranes or layers, is the proper cuticular parenchym consisting of a rather strong connecting tissue, in which there is found an extensive vascular system¹⁾, and larger and smaller layers of adipose.

The dorsal canal previously noticed, is, in the thicker and lowest thoracic part, very wide, occupying the whole breadth of the intestine, while upwards it becomes extremely narrow, and has on the long, narrow, thoracic part so minute a lumen, that it would be difficult to insert a horse-hair. In the abdominal part, the canal becomes also much narrower, but still not so narrow as in the thoracic part. In the lateral walls of this long dorsal canal, there appear a number of extremely fine fissures leading into the sarcode-like connecting tissue; the minute ramified canals of which serve probably as passages for the circulation of the blood.

The layer of adipose matter noticed, is in most places not very thick, although it can form isolated fatty agglomerations; but in the upper thoracic part, as also in the head and horns, it forms a thick stuffing filling these parts. The adipose layer is composed of cells of fat, which are partly ramified, that is to say, we find one or more ramifications on the cell.

The intestinal canal begins from the oral aperture

¹⁾ Claus notices a similar system of vessels in the *Lernaeocera esocina*, pag. 9, Tab. 1, fig. 8. Beobachtungen über *Lernaeocera*, *Peniculus* und *Lernaea*, von Professor B. Claus. Marburg 1868.

Mundaabning, paa Midtpartiet af Hovedet, med en sækformig Udvidning (Svælget), der er omtrent 4 Mm. lang og 3 Mm. bred, bliver derefter meget smal, omtr. 1 Mm., igjennem den lange smale Brystdel, indtil den kommer ned imod dennes tykkere Parti, hvor den atter udvider sig meget betydeligt (Maven); saa at den her i en Længde af 46 Mm. har en Tykkelse af omtrent 3 Mm. Fra Abdominaldelens Begyndelse bliver den igjen smal, omtr. 1,5 Mm. (Tarm) og aftager nu i Tykkelse, til den aabner sig i Anus. Tarmrøret bestaar af en yderst tynd Membran, som er den før beskrevne Peritonealhinde, en Muskelhud, der dannes af to Lag stærke Muskler, nemlig Ringmusklerne, det ydre, og Længdemusklerne, det indre Lag. Disse Lag ere saaledes ordnede, at Tarmrøret under en svag Forstørrelse i Mikroskopet har et gittret Udseende. Saavel fra Ring- som Længdemusklerne udgaa enkelte Fibre, der anastomosere med Sidebundterne. Indenfor Muskelhuden findes især paa Tarmrørets tykkere Del et Lag, der indeholder en Mængde aflange, forgrenede Legemer, som have et temmelig mørkegult, kornet Indhold. Paa Spiserøret ere disse Legemer yderst sparsomme, hvorimod her iagttages andre rundagtige Legemer, ganske svarende til de af Claus benævnte Tarmceller, der ere fyldte med fine, glindsende Korn. Tarmrørets indre Flade er overalt forsynet med et kjernerigt Celle-Epithel. Hele Tarmrøret har et lige Løb efter Dyrets Længde, er fæstet ved en Mængde tynde Muskelfibre til den af os tidligere beskrevne indre Membran af Huden, — dets bagerste Flade bidrager til at danne Bunden af den lange Rygkanal.

Generationsorganerne bestaa af Æggestokke med deres Udførselskanal, Cementkjertlerne med deres Udførselsgang, Æggetraadene og endelig to korte Kanaler.

Æggestokkene, der have sit Leie en paa hver Side af Tarmrøret, just der hvor dette udvider sig i Brystdelen, dog nærmere Rygfladen, — have en flad og langstrakt Figur, ere 8 Mm. lange, 2,5 Mm. brede. De bestaa af et temmelig smalt Rør, der begynder med en blind Ende og danner en Mængde paa hinanden liggende Slyngninger, som ere forenede ved et temmelig fast Bindevæv. Dette Rør er paa hele den indre Flade beklædt med et kjernerigt Celle-Epithel og fyldt med Æggeceller. Paa den øverste Ende af Æggestokkene sees Røret at antage en Korktrækkerform, idet det her gaar over i Oviducten. Denne er næsten cylinder-rund, har en Længde af 45 Mm. og en Tykkelse af 1 Mm., og ender lige ved Abdominaldelens Begyndelse, hvor den fortsætter sig i Æggetraadene.

Saavel Æggestokkene som Oviducten ere beklædte af Peritonealhinden. Ifølge vore Observationer ere vi tilbøjelige til at samstemme med Professor Claus deri, at

previously noticed, in the middle part of the head, with a sack-like enlargement (the gullet) which is about 4 Mm. long and 3 Mm. broad, becoming then very narrow, about 1 Mm. through the long narrow thoracic part, until it comes down towards the thicker part of the thoracic region, where it again widens very considerably (the stomach); so that it has here, for a length of 46 Mm., a thickness of about 3 Mm. From the commencement of the abdominal part, it becomes again narrow, about 1,5 Mm. (intestine), and diminishes now in thickness, until it opens into the anus. The intestinal canal consists of an extremely thin membrane, which is the peritoneal membrane previously described, a muscular skin formed of two layers of strong muscles, namely the annular muscles forming the exterior layer, and the longitudinal muscles the interior. These layers are so arranged as to give to the intestinal canal a latticed appearance, when it is seen, slightly magnified, through a microscope. From the longitudinal muscles, as well as from the annular muscles, there proceed single fibres, which anastomose with the lateral fascicles. Within the muscular skin, there is found, especially on the thicker part of the intestinal canal, a layer containing a number of oblong ramified bodies, which have a rather darkish yellow content. On the oesophagus these bodies are extremely sparse; while here we observe other roundish bodies corresponding entirely to those called by Claus intestinal cells, which are filled with minute shining granules. The inner surface of the intestinal canal is everywhere provided with a nucleus-like cell-epithelium. The whole intestinal canal has a straight course along the length of the animal; it is attached by a number of thin muscular fibres to the inner membrane of the skin previously described by us; its posterior surface contributes to form the bottom of the long dorsal canal.

The organs of generation consist of ovaries with their excretion-canal; cement-glands with their excretions-canals, ovisacs; and finally two short canals.

The ovaries, which have their situation, one on each side of the intestinal canal, precisely where the latter expands itself in the thoracic part, and nearer to the dorsal surface, have a flat and elongated figure; they are 8 Mm. long, and 2,5 Mm. broad. They consist of a rather narrow tube, which commences with a closed extremity, and forms a number of superincumbent circumvolutions united by a rather solid connecting tissue. This tube is, on the whole of its interior surface, lined with a cell-epithelium abounding in nuclei and filled with egg-cells. On the upper extremity of the ovaries, the tube is seen to assume a cork-screw form, going over here into the oviduct. The latter is nearly cylindrical; it has a length of 45 Mm. and a thickness of 1 Mm., and terminates just at the commencement of the abdominal part, where it is continued in the ovisacs.

The ovaries, as well as the oviduct, are covered by the peritoneal membrane. According to our observations, we are inclined to agree with Professor Claus, that the

Æggene dannes i det ovenbeskrevne Rørs Epithel, da vi iagttog, at i en sammenhængende Gruppe af disse Epithelceller vare nogle af dem næsten omformede til Ægceller, imedens de andre vare uforandrede. Æggetraadene manglede hos de fleste af de Exemplarer, vi have undersøgt, kun hos et Par vare de hele, og her viste de sig at være tynde som en nogenlunde fin Sytraad. — Cementkjerterne (Kitkjerterne) ligge tæt ved Siden af den udvidede Del af Tarmrøret (Maven), saaledes at dette ligger imellem dem. De ere noget dækkede af Oviducterne, nærme sig mere Bugfladen end disse, ere 42 Mm. lange, 1,5 Mm. brede, have en meget fladtrykt Form, ere glatte og af en melkevid Farve. Fra deres øverste Ende tager Udførselsgangen, der er rund og fyldt af Cement, sin Begyndelse, og løber da slyngformigt ned imod det Sted, hvor Oviducten gaar over i Æggetraaden; her udmunder Udførselsgangen for Cementorganet i Oviducten. Baade Cementkjerterne og deres Udførselskanal ligge omgivne af Peritoneum.

Paa flere af de Exemplarer, vi undersøgte, har der vist sig flere Uregelmæssigheder med Hensyn til Cementorganerne. Saaledes var paa et Exemplar begge Cementkjerternes øverste Ender sammenvoxne, og derfra udgik kun en Udførselsgang, som var meget tyk (Fig. 4 a); men nogle Millimeter længere nede delte denne sig i to Grene, hvoraf hver indtog sit sædvanlige Leie (Fig. 4 b, b). Den ene af disse Grene deler sig atter i to Grene (Fig. 4 c, c), hvilke, efter i en Længde af omtrent 40 Mm. at være adskilte, smelte sammen til en Kanal (Fig. 4 d), der da paa almindelig Vis udmunder i Oviducten. Denne sidste Deling af Udførselsgangen fandt vi at være tilstede paa 4 af de 6 Exemplarer, vi undersøgte, saa det tør maaske hælde, at denne Ordning er den almindeligste.

Paa Oviductens nederste Del, lidt ovenfor det Sted, hvor Cementkjerterens Udførselsgang udmunder, sees paa hver Side en temmelig tynd og kort Kanal, der gaar ud i de paa Bugfladen tidligere beskrevne Papiller. Foruden de førnævnte Muskler findes der i Hovedet et temmelig sammensat Muskelapparat. Paa hver Side af Svælget iagttoges en stor Mængde stærke Muskler. Hver Muskel tager sit Udspring med en tydelig Tendo, fæstet i den indvendige Hulhed af en Knude, og gaar saa paatvers vifteformigt henimod den indvendige Væg af Hovedets Chitinhud. Disse Muskler ere, i saa stor Mængde tilstede, at de ganske udfylde Hovedets Side- og Bag-Partier. Nærmest Svælget sees paa begge Sider flere længere Muskler, der fæste sig paa Spiserøret og have et fast Punkt ligeledes i de Knuders Hulhed, der nærmest omgive Mundaabningen. Fibrillerne i disse Muskler ere sribede paatvers.

Nervesystemet udgaar fra to store aflange Ganglier, der have deres Sæde paa Bugsiden af Svælget og ere sammensmeltede i Midten. Fra disse Ganglier udløber en temmelig tyk Hovedstamme, der følger Spiserøret til

ova are formed in the epithelium of the tube above described; as we remarked that in a continuous group of these epithelial cells, some of them were nearly transformed into egg-cells, while the others were unchanged. The ovisacs were wanting in most of the specimens we examined: only in a few, they were entire; and here they proved to be as thin as a rather fine sewing-thread. The cement-glands lie close to the side of the enlarged part of the alimentary canal (the stomach), so that the latter lies between them. They are to some extent covered by the oviducts, and are nearer to the ventral surface than the oviducts are; they are 42 Mm. long, 1,5 Mm. broad; their form is much flattened; they are smooth and of a milk-white color. From their upper extremity, the excretion-canal, which is round and full of cement, takes its beginning, and then runs sinuously down towards the place where the oviduct goes over into the ovisac; here is the disembogement of the excretion-canal for the cement-organ in the oviduct. The cement-glands and their excretion-canal are surrounded by the peritoneum.

In several of the specimens which we examined, there appeared many irregularities with respect to the cement-organs. Thus in one specimen, the upper extremities of both the cement-glands were connate; and there issued from the same only one excretion canal, which was very thick (fig. 4 a); but some millimeters lower down, it divided itself into two branches, each of which occupied its usual bed (fig. 4 b, b). One of these branches separates again into two branches (fig. 4 c, c), which, after having been separate for a length of about 40 Mm., coalesce in a canal (fig. 4 d) which then, in the usual manner, has its issue in the oviduct. This last division of the excretion-canal was found to exist in 4 of the 6 specimens we examined; so that it may be that such is the more ordinary arrangement.

On the lowest part of the oviduct, a little above the place where the excretion-canal of the cement-glands has its orifice, there is on each side a rather slender and short canal going out into the papillæ, previously described, on the ventral surface. Besides the muscles before noticed, there is in the head a rather complex muscular apparatus. On each side of the gullet, there appear a great number of strong muscles. Each muscle takes its beginning with a distinct tendon, attached in the interior cavity of a tubercle, and then goes transversely fan-like towards the interior wall of the chitinous integument of the head. The muscles are present in such great numbers, that they entirely occupy the lateral and posterior parts of the head. Nearest to the gullet, there appear on both sides several longer muscles attached to the oesophagus and having likewise a fixed point in the cavity of the tubercles which most closely surround the oral aperture. The fibrillæ in the muscles are striped transversely.

The nervous system proceeds from two large oblong Ganglia situated on the ventral side of the gullet and coalescing in the middle. From these ganglia, there issues a rather thick main trunk, which accompanies the

nedimod dettes udvidede Del (Maven), hvor den deler sig i to stærke Grene, en til hver Side, hvilke igjen forene sig i et temmelig stort Ganglion, strax nedenfor det Sted, hvor den egentlige Tarm tager sit Udløb. Fra dette Ganglion udgaar foruden Hovedstammen, der langs Tarmen fortsætter sit Løb til dennes Ende, en Mængde mindre Grene til de omkringliggende Dele. Paa de Grene, der løbe ved Siden af den udvidede Tarmdel, findes flere mindre Ganglier. Saavel fra disse, som fra selve Grenene, udgaa en stor Mængde mindre Grene dels til Maven, dels til Huden (ikke Chitinhylstret) og dels til Generationsorganerne. Ogsaa paa disse Smaagrener ere Ganglier, der ved deres Grene anastomosere med hinanden og danne udbredte Nerveplexuser. Paa den øverste Del af Bugstrengen saae vi ingen Ganglier, men mange Sidegrener, som gik til Spiserøret og den dette omgivende Hud. Bugstrengen tilligemed dens Grene have en yderst finstribet Structur, imedens der i Ganglierne findes mange Ganglioceller med deres Udløbere.

Hanner af Dyret have vi ikke iagttaget.

Pennella Balænopteræ findes paa Vaagehvalen (*Balænoptera rostrata*, Fabr.), i Nærheden af Kjønnsorganet. Stundom forekomme flere paa et Dyr; men i det Hele taget er dens Forekomst sjelden. Den borer sig fra 1—3 Tommer ind i Spækket — kommer aldrig ind til Kjødet — og danner derved tildels bugtede Gange. Hvor Hovedet og Hornene findes, der er Spækket ramolleret til en tyk Vællings Consistentse og i et Omfang af en lille Valnøds.

Paa denne vor *Pennella* snylter en Cirripede (*Conchoderma virgata*, Spengl.) meget hyppigt (Fig. 1 h), og det er ikke alene et enkelt Dyr; men ofte ser man paa den tynde Brystdel indtil 7 fuldvoxne Exemplarer, hvoraf enkelte indtage en Længde af 40 Mm.; hyppigst sidde de dog nede ved Æggetraadenes Begyndelse, hvor de ligeledes kunne danne en Klynge af 5—6 Exemplarer.

Vi have taget forskellige Maal af to fuldvoxne Exemplarer.

	A.	B.
Dyrets hele Længde	320 Mm.	300 Mm.
Den smalere Brystdels Længde	195 —	190 —
” — — Tykkelse	2 —	2 —
Den bredere Brystdels Længde	75 —	62 —
” — — Tykkelse	6 —	6 —
Abdominaldelens Længde	45 —	42 —
Hovedets Længde	7 —	6 —
— Bredde	8 —	7 —
Hornenes Længde	15 —	14 —
— Tykkelse	2 —	2 —

Pennella Balænopteræ adskiller sig fra *P. crassicornis*, Steenstr. & Lütken, derved, at den er en halv Gang saa lang, har et mere fremtrædende Hoved, der er baade

oesophagus until down towards the enlarged part of the latter (the stomach), where it divides itself into two strong branches, one on each side, which again unite in a rather large ganglion immediately below the place where the proper intestine takes its issue. From this ganglion — besides the main trunk, which continues its course along the intestine to the extremity of the latter — proceed a number of smaller branches to the circumjacent parts. On the branches which run by the side of the enlarged part of the intestine, there are several smaller ganglia. As well from these as from the branches themselves, there issue a great number of smaller branches, partly to the stomach, partly to the skin (not the chitinous envelope), and partly to the organs of generation. Also on these small branches there are ganglia, which, by their branches, anastomose with each other, and form extended plexuses of nerves. On the upper part of the ventral cord, we did not perceive any ganglia, but many lateral branches going to the oesophagus and to the skin surrounding it. The ventral cord together with its branches, have an extremely fine-striped structure; while in the ganglia, there are many ganglionic cells with their ramifications.

We have not observed any males of this species.

Pennella Balænopteræ is found on the Vaage Whale (*Balænoptera rostrata*, Fabr.), in the vicinity of the organ of generation. Occasionally there are several on one animal; but, on the whole, its occurrence is rare. It bores itself from 1—3 inches deep in the blubber — never comes into the flesh — and sometimes, in so doing, forms sinuous passages. Where the head and the horns are found, there the blubber is softened to the consistence of a thick gruel, and to the extent of the circumference of a small walnut.

On this our *Pennella*, there very often subsists a parasite Cirripede (*Conchoderma virgata*, Spengl fig. 1 h), and it is not only a single animal, but we often find, on the thin thoracic part, as many as 7 full grown specimens, of which some have a length of up to 40 Mm.; they most frequently, however, are situated down at the commencement of the ovisacs, where they likewise can form a cluster of 5—6 individuals.

We have taken various measures of two full grown specimens.

	A.	B.
Whole length of the animal	320 Mm.	300 Mm.
Length of the narrower thoracic part	195 —	190 —
Thickness	2 —	2 —
Length of the broader thoracic part	75 —	62 —
Thickness	6 —	6 —
Length of the abdominal part	45 —	42 —
Length of head	7 —	6 —
Breadth —	8 —	7 —
Length of horns	15 —	14 —
Thickness —	2 —	2 —

Pennella Balænopteræ differs from *P. crassicornis*, Steenstr. & Lütken, by being half as long again, and having a more advancing head, which is both broader

bredere og længere, samt derved at Hornene have en næsten horisontal Retning og ere meget tynde. (Paa *P. crassicornis* staar Ryghornet meget skraa nedad, næsten perpendiculært). — At Dyrets Indre ogsaa frembyder Forskjelligheder fra *P. crassicornis*, tør vi antage.

FORKLARING OVER FIGURERNE.

- Tab. 16, Fig. 1. *Penella Balænoptera* i naturlig Størrelse. *a* Hovedet; *b, b* Hornene; *c* Brystregionens bredere Del; *d* rudimentære Fødder; *e* den smale, forlængede Brystdel; *f* den nederste, udvidede Del af Brystregionen; *g* Abdominaldelen; *h* en snyltende Cirripede (*Conchoderma virgata*).
- Fig. 2. Den nederste, udvidede Del af Brystregionen, forstørret. *a* Heftestedet for Spermatophorerne? *b* Æggetraaden.
- Fig. 3. Den nederste, udvidede Del af Brystregionen, noget forstørret og aabnet.
- Fig. 4. Samme Del, ligeledes aabnet. *a* Udførselsgangen for de sammenvoxede Cementkjertler; *b, b* de tvende Grene, hvori Udførselsgangen deler sig; *c, c* de tvende Grene, hvori den ene af disse Grene (*b, b*) deler sig; *d* Sammensmeltningen den sidste Deling til en Stamme.
- Fig. 5. Abdominaldelen, noget forstørret; paa den ene Side blottet for de hornagtige Appendices. *a* gjennemboret Knude for et Tilhæng; *b* Furcalglieder (Claus).
- Fig. 6. Hovedet og den øverste Del af Brystregionen, seet fra Bugsiden, forstørret. *a* Sculpteringer; *c* Bugfladen; *d* Fødderne.
- Fig. 7. Hovedet med en Del af Brystregionen, seet fra oven, forstørret. *a* Knuder; *b* Furen.
- Fig. 8. Hornagtige Appendices, forstørret.
- Fig. 9. Hovedet med en Del af Brystregionen, seet fra Rygsiden, lidt forstørret. *a* Antenner.

and longer; also by the horns having a nearly horizontal direction and being very slender. (In *P. crassicornis*, the dorsal horn stands very much inclined downwards, nearly perpendicularly). We may assume that the interior of the animal also exhibits differences from *P. crassicornis*.

EXPLANATION OF THE FIGURES.

- Tab. 16, fig. 1. *Penella Balænoptera*, natural size. *a* the head; *b, b* the horns; *c* the broader part of thoracic region; *d* the rudimentary feet; *e* the slender, prolonged thoracic region; *f* the lower, enlarged part of thoracic region; *g* abdominal region; *h* Cirripede (*Conchoderma virgata*).
- Fig. 2. The lower, enlarged part of thoracic region, magnified. *a* the points of attachment for the Spermatophores? *b* the ovisacs.
- Fig. 3. The lower, enlarged part of thoracic region, opened, and somewhat magnified.
- Fig. 4. The same part, likewise opened. *a* the excretion-canal for the connate Cement-glands; *b, b* the two branches of the excretion-canal; *c, c* the two branches into which one of the branches (*b, b*) divides itself; *d* the coalescence of the latter division in a canal.
- Fig. 5. Abdominal region, magnified; one side being without the horny appendices. *a* round, perforated tubercle; *b* Furcal glieder (Claus).
- Fig. 6. The head and the upper part of thoracic region, ventral aspect, magnified. *a* sculptured part; *c* ventral surface; *d* feet.
- Fig. 7. The head, with a part of thoracic region, frontal aspect, magnified. *a* papillæ; *b* furrow.
- Fig. 8. Plumose filaments, magnified.
- Fig. 9. The head, with a part of thoracic region, dorsal aspect, magnified. *a* antennæ.

