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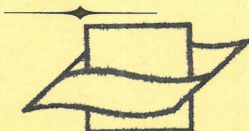
TIERRA DEL FUEGO AND PATAGONIA

BY

AXEL OHLIN.

I.

VALVIFERA.



Vlaams Instituut voor de Zee
Flanders Marine Institute

STOCKHOLM

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1901

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ISOPODA

FROM

TIERRA DEL FUEGO AND PATAGONIA

BY

AXEL OHLIN.

I.

VALVIFERA.

In this paper I am going to describe a number of Isopoda from Patagonia and Tierra del Fuego. The material which I have had at my disposal is rather large. It has been collected during the scientific journey which Dr. W. MICHAELSEN, of Hamburg, undertook to those desolate and unexplored regions in the years 1892—93, and during the Swedish Expedition to Tierra del Fuego in the years 1895—96. Dr. O. NORDENSKJÖLD, of the University of Upsala, was the leader of that expedition, and the author was the zoologist. After my return to Europe at the end of April 1896, my assistant, Mr. H. ÅKERMAN, performed some more dredgings and trawlings in the first months of the winter mainly at Ushuaia and at a few other stations in the Beagle Channel.¹

Besides the isopods collected during those two voyages, I had the opportunity of examining a number of crustaceans brought home to Hamburg from the same seas by Captains

¹ I refer the reader who wants more details about the zoological working in general to the following papers: W. MICHAELSEN, Reisebericht in »Hamburger Magalhaensische Sammelreise» I Lief. Hamburg, 1896, AXEL OHLIN, Kort berättelse öfver de zoologiska arbeten, som utförts under den svenska Eldslandsexpeditionen 1895—96 in Öfv. Kgl. Vet. Akad. Handl. 1896. n:o 6, idem, A Zoologist in Tierra del Fuego in Natural Science, Vol. IX, n:o 55, 1896, O. NORDENSKJÖLD, Uebersicht der zoologischen Arbeiten während der schwedischen Expedition nach den Magellansländern in this report, Vol. II. n:o 1. In the last paper, there is a complete list of all stations of dredging and trawling in the course of the Swedish Expedition.

KOPHAMEL and PAESSLER. Especially one trawling off the north coast of East Patagonia in lat. 43° 6' S., long. 60° W. afforded some very interesting forms. It was performed on June 3d, 1888, by KOPHAMEL at a depth of 55 fathoms.

It is not my intention here to give an historical review of what has been done in carcinological respect in these countries by other naturalists. I reserve that for a later occasion, when I have worked up the whole material of malacostracous crustaceans. By consulting the list of works which I have cited in this first paper, the reader may get some intelligence as to the literature about Isopoda from these regions.

As to the system and the nomenclature, I have followed, on the whole, that of SARS. It is only a matter of convenience that I begin by publishing *Valvifera* (*Arcturidæ* and *Idotheidæ*), but the work is much exceeding what I thought at first it would be, so that I did not think it proper further to delay what is already worked up. As soon as possible the other tribes (incl. *Chelifera*) will follow.

Generally I have dissected the oral parts and the legs of the left side, and I have figured them from the inner side. In some cases, however, this has proved to be impossible, especially when I had only one specimen at my disposal. As a rule I have drawn the oral parts on the same scale and the pereopods on another to exhibit the relative size of the resp. pairs of legs. The uropods are nearly always figured from the inner side.

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In this list I have enumerated mainly those papers in which references are made to species of *Arcturidæ* and *Idotheidæ* that occur in the Southern Seas. I freely admit that the list is not at all complete, as there are wanting certain papers treating especially of *Isopoda* from Australia and New Zealand, which I was not able to get, but I hope that the species which are here described as new, have not been previously treated of in those works.

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Valvifera.

Astacillidæ.

As far as I know, STEBBING¹ is the first who called attention to the fact that the first member of this family which has been described was called *Astacilla* by the Rev. CHARLES CORDINER in a work published as early as 1795. Thus this name is older than *Arcturus*, LATREILLE 1804, and *Leacia*, JOHNSTON 1825, and as SARS² has proposed, the name of the family should, therefore, be changed to *Astacillidæ* instead of *Arcturidæ*.

Astacilla CORDINER 1795.

(*Leacia* JOHNSTON 1825.)

This genus, the type of the family, comprises several species, most of which are found in the North Atlantic. From the Southern Seas have been recorded, as far as I could find out in the literature, the following species: *Astacilla corniger* (STEBBING), *Astacilla lineata* (STEBBING), both from Algoa Bay, South Africa, *Astacilla brevicornis* (HASWELL), from Port Stephens, Australia, *Astacilla marionensis* BEDDARD, from Marion Island and Kerguelen Island, and *Astacilla Diomedæ* BENEDICT, from the Straits of Magellan. Most of the species are inhabitants of shallow water all over the globe, but, even in this respect, there are exceptions. Thus *Astacilla granulata* (G. O. SARS) was obtained during the Norwegian North Atlantic expedition in depths ranging from 290 to 620 fathoms, and BENEDICT describes an *Astacilla coeca* dredged on the »Albatross» Expedition from a depth of no less than 1,825 fathoms.

In the collections which Dr. MICHAELSEN brought home from the sea round Cape Horn, I find two small *Astacilla*

¹ Hist. of Crustacea p. 371.

² Crust. of Norway, Isopoda, p. 88.

evidently belonging to different species. I am not quite satisfied in describing them as new; possibly they may prove to be identical with *Astacilla marionensis*. I cannot identify them with any of the other above-mentioned or with any of our European or North American species. It is very much to be regretted that their state of preservation was not of the best, and that each of them was represented only by one specimen, so that I had to renounce the dissection.

***Astacilla falclandica* n. sp.**

(Fig. 1.)

Diagnosis: Cephalon fused together with the first segment of pereion. Antennæ long, slender, reaching to the end of the sixth segment of pereion. Eyes large, cordiform. Fourth segment longer than cephalon and first three segments together. Body without tubercles or spines, all over covered with black, ramified and irregular spots. Length 5 mm.

Description: Body long, elongate, without any tubercles or spines. Cephalon and the first segment of the pereion are coalescent, so that no suture at all is to be seen between them. Second and third segments of same length, shorter than cephalon and first segment. Eyes black, very large, rounded triangular or cordiform, occupying half the height of the cephalon. Fourth segment elongate, longer than cephalon and the first three segments together. Fifth, sixth and seventh segments of nearly the same size, irregularly quadrate, of the same length as cephalon and three first segments together. Posterior margins somewhat upraised as to form low rounded ridges. Segments of pleon all fused together, as long as the three preceding segments of the pereion. Seen from the side, the dorsal margin of pleon gently slopes down at the middle.

Antennulæ reaching to the end of the second joint of the antennæ.

Antennæ long, slender, nearly as long as cephalon and whole pereion. Second and third joints of about the same length, fourth joint longest, fifth joint of same length as second and third together. Flagellum three-jointed, first joint longest, longer than the two following ones. All joints gradually diminishing in thickness.

Fifth, sixth and seventh pairs of *pereiopods* rather long and slender as compared with those of the following species.

Length: 5 mm.

Colour: Whitish, crowded with numerous small black spots of an irregular and ramified shape.

Locality: Falkland Island, Port Stanley, one fathom, amongst seaweed, 17. VII. 1893. (MICHAELSEN.)

***Astacilla magellanica* n. sp.**

(Fig. 2.)

Diagnosis: Cephalon fused together with the first segment of pereion, but a very narrow groove indicates the suture between both. Antennæ rather short and thick. Eyes small, rounded. Fourth segment about the same length as cephalon and first three segments together. Body without tubercles or spines, of a uniform yellowish colour. Length 4,5 mm.

Description: Body smooth, without spines or tubercles. Cephalon and the first segment of the pereion are fused together, but the suture is indicated by a furrow. Second and third segments of same length and shorter than cephalon alone. Eyes black, rather small, rounded. Fourth segment but a little longer than the preceding portion of the body. Fifth, sixth and seventh segments of the same length. Seen from the side, the fifth segment is, however, the largest, as its inferior margin projects into a great angle. Sixth and seventh segments rectangular with the postero-lateral corners rounded. Segments of pleon all coalesced, of same length as fifth, sixth and seventh segments together. There is a transverse furrow on the first third.

Antennule reaching to the end of the second joint of the antennæ.

Antennæ, although really of same length as in the preceding species, as they reach nearly to the end of the sixth segment, appear to be still shorter on account of their greater breadth. Second joint a little longer than third, fourth as long as the two preceding ones together, fifth as long as fourth. Flagellum a little longer than second joint, consisting of three joints, the first of which is as long as the two last ones.

Three last pairs of *pereiopods* relatively shorter and stouter than in *Astacilla falclandica*.

Length: 4,5 mm.

Colour: Uniform yellowish.

Locality: Strait of Magellan, Dungeness Point, 10 fathoms, 15. X. 1892 (MICHAELSEN).

Arcturus, LATREILLE, 1804.

The species first described of this genus was the Arctic *Arcturus Baffini* by SABINE in 1824. Later on, other species have been described by G. O. SARS, MIERS, STUDER, and HASWELL. BEDDARD, in the Challenger Report, added to this genus no less than thirteen new species, most of which were from deep water. Lately, BENEDICT¹ has described six other species collected mainly by the »Albatross». In this paper I am going to describe two new species, so that the number is thus raised to no less than twenty-six species.²

Of those the following have been met with in Southern temperate or Antarctic Seas: *Arcturus Coppingeri* MIERS, *Arcturus furcatus* STUDER, *Arcturus longicornis* HASWELL, *Arcturus glacialis* BEDDARD, *Arcturus spinosus* BEDDARD, *Arcturus anna* BEDDARD, *Arcturus brunneus* BEDDARD, *Arcturus myops* BEDDARD, *Arcturus Studeri* BEDDARD, *Arcturus oculatus* BEDDARD, *Arcturus americanus* BEDDARD, *Arcturus Stebbingi* BEDDARD. Of these the following belong to the »Magellan-region» (PFEFFER³):

Arcturus Coppingeri MIERS, from Trinidad Channel, Southern part of the Chilenian coast, *Arcturus anna* BEDDARD, from deep waters (600 fathoms) off Rio de la Plata, *Arcturus americanus* BEDDARD, Strait of Magellan. To these there are to be added those two described below.

Almost all the others belong to the Kerguelen region.

Most of the other species described by BEDDARD were from deep water ranging until 2,385 fathoms from the central parts of the Pacific. Those of BENEDICT were collected in the Behring Sea on moderate depths and off the Galapagos

¹ Arcturidæ in the U. S. Nat. Museum, l. c. p. 41.

² For reasons which I put forth in 1895, Bidr. till kännedomen etc., l. c. p. 15, I consider *Arcturus tuberosus* SARS as a variety of *Arcturus Baffini*.

³ PFEFFER, Die niedere Thierwelt des antarktischen Ufergebietes, l. c. p. 460.

Islands and off the east coast of Brazil in depths ranging from 400 to 800 fathoms.

As far as I know, no species has as yet been obtained in the tropical seas in shallow water; thus, the genus seems to be restricted either to the Arctic and Antarctic seas in various depths or to the abyssal regions of the warmer seas.

Except *Arcturus Baffini* and *Arcturus hystrix* SARS, which have a rather large range in the »Atlantic» part of the Arctic Ocean, the species seem to have a very restricted distribution, which may be accounted for by their young ones living on the mother until they are nearly fullgrown and by their living very slowly at the bottom of the sea.

In the armature with spines and tubercles they are, in my opinion, subject to a good deal of variability owing to difference in age and sex. In my paper above cited I have shown this to be the case with regard to our Arctic *Arcturus Baffini*. In this paper I give another instance of this fact.

Arcturus americanus BEDDARD.

Fig. 3.

1886. *Arcturus americanus* BEDDARD, Rep. on the Isop. Voy. of Chall.
l. c. p. 104, pl. 23, figs. 5—8.
1898. » » BENEDICT, Arcturidæ in the U. S. Nat. Mus.,
l. c. p. 48.

Of this species I obtained two specimens, a male and a female. BEDDARD has described and figured the female, with which my specimen of the same sex agrees in all essential details. Flagellum of antennæ as long as the third peduncular joint and consisting of nine joints, the first of which is the longest and the last one very short.

The male is very unlike the female. As usual, it is of a smaller size, the length of the female being 23 mm., whereas the male does not attain more than 12,55 mm.

The spines constituting the double row along the back of the cephalon and pereion are much larger than in the female, as will appear by comparing my figure of the male with that given by BEDDARD of the female (l. c. pl. 23, fig. 6). Especially those on the cephalon and the four first thoracic segments are very stout. »Epimera» of these same segments with only small blunt processes. Flagellum of antennæ consists of seven joints.

My specimens exhibit traces of that purplish colour which BENEDICT has described as characteristic of this species.

As a mere matter of accident, and not as a character of specific value, I consider the fact that my specimens — the male as well as the female — have the right antennæ not fully developed, that of the female with the fifth peduncular joint very small, attaining only $\frac{1}{3}$ — $\frac{1}{4}$ of the length of that on the left side and with the flagellum consisting of three joints. The abnormal stage of development of the same antennæ of the male may be seen in the figure, the fourth and fifth peduncular joints and the flagellum being reduced to the length of the three first joints together.

Arcturus americanus has hitherto been obtained as far as the East of Patagonia near the Strait of Magellan. During the »Challenger» Expedition one specimen was dredged in lat. $52^{\circ} 20'$ S., long. $67^{\circ} 39'$ W., and four specimens were taken by the »Albatross» at two stations in the same region, viz. lat. $42^{\circ} 24'$ S., long. $61^{\circ} 38'$ W., and lat. $48^{\circ} 37'$ S., long. $65^{\circ} 46'$ W. My specimens were dredged at Martha's Bank, East part of the Strait of Magellan in lat. $52^{\circ} 50'$ S., long. $70^{\circ} 35'$ W.; depth 100 fathoms; pebbles; March 16, 1896 (OHLIN). It seems to live in moderate depths from 43—100 fathoms on sandy or stony bottom.

The occurrence of *A. americanus* at nearly the same locality, viz. East of the Strait of Magellan, seems to corroborate the view uttered by some authors that the different species of Arcturids have a very restricted area of distribution, which is to be explained by the fact that they dwell almost at the very bottom of the sea, and that the young ones, which are always few in number, live on the mother clinging to her antennæ, until they are rather large.

In the collections of the Hamburg Museum there are two specimens of Arcturids, both females with marsupium and eggs which I cannot identify with any species hitherto described. They were both collected by Mr. KOPHAMEL at the very same locality, S.W. of the mouth of La Plata. One of these I propose to call *A. patagonicus*, the other I dedicate to Mr. KOPHAMEL, who has made very valuable collections in the seas round Patagonia.

Arcturus patagonicus n. sp.

Fig. 4.

seems to me to come nearest to *A. Stebbingi* BEDDARD, but it is easily to be distinguished from that in some points.

Diagnosis: Body without spines except one pair on the cephalon and another at the end of the pleon. Second and third segments broadest, fourth constricted in the midst. Extremity of pleon subacute. Eyes rather large. Antennæ shorter than body. Length 9 mm.

Description: Body increasing in breadth until 4th segment, which is abruptly constricted, last segments of pereion and pleon of about the same breadth, narrower than cephalon. First segment broader than cephalon, second and third broadest. Cephalon small, deeply concave in front, the lateral parts of it nearly wholly occupied by the large, black, triangular eyes. Above each eye there is a spine not very high, rounded at the apex and turned somewhat forwards. Cephalon of about the same length as first or second segment; third segment a little longer than the former; fourth longest, as long as first and second together; fifth as long as third; sixth and seventh a little shorter than first. Pleon of same length as first four together. Each of the first four segments with a transversal groove, the anterior and posterior margins of each being vaulted. This groove is deepest and shortest on the first and second segments, increasing backwards in length and shallowness until the fourth, where it is longest. On the last three segments it is only the posterior margin that is vaulted.

The pleon is on the first half provided with three transversal walls of the same appearance as those on the pereion. In a lateral view there is a constriction on the upper surface at its midst. On each side at the apex there is a short blunt spine directed backwards and outwards. The »pleuræ» above the epimeral projections of the four first segments are provided with large rounded protuberances. The whole body is covered with small tubercles which, however, never attain the size of those of *A. Stebbingi* BEDDARD, as figured in Challenger Rep. Isopoda. II. pl. 24, figs. 1, 2.

Antennulæ reaching to the midst of third joint of *antennæ*. These are a little shorter than the body; the second

joint nearly as long as the third, the third nearly half the length of the fourth, fifth a little shorter than fourth. Flagellum of same length as third joint and consisting of 4 joints, the first of which is the longest. *Pereiopods* 2—7. long and spinkle. Seventh joint (dactylus) of 2—4 pairs of pereiopods unusually short, longest on the fourth pair, but even here only attaining a third of the length of the propodus. The valvular caudal appendages (*uropoda*) with a sharp ridge parallel with the interior margin.

Colour of specimens preserved in spirit straw-yellow with sparkled black spots on the back and first and second joints of pereiopods. Eggs rather few, longest diameter 0,6 mm., bright yellow.

Length: 9 mm.

Locality: lat. 38° S., long. 56° W.; depth 52 fathoms. (KOPHAMEL.)

From *A. Stebbingi* BEDDARD, *A. patagonicus* is easily distinguished by its want of large tubercles on the body, by the shortness of the dactylus of 2—4 pairs of pereiopods, by the different length of antennæ, and by another shape of pleon.

Arcturus Kophameli n. sp.

Fig. 5.

Diagnosis: Body altogether destitute of spines. Each segment upraised in two median and four lateral sharp longitudinal edges, so as to form on the back from cephalon to pleon one median and two lateral grooves on each side. Cephalon large. Extremity of pleon subacute. Antennæ much shorter than body. Length 11 mm.

Description: As seen from above, the body is broadest over 2., 3. and 4. segments of pereion. 5., 6. and 7. segments and pleon of about same breadth. Fourth segment longest.

Cephalon rather large, as long as 4th segment and sinuated a little in front. Antero-lateral corners rounded. Above each eye there is a low spiniform tubercle. In the middle line of cephalon there is a low ridge. From a side view cephalon is steep in front. Eyes are rather large, although smaller than in *A. patagonicus*, but the pigment does not occupy the whole of the eye, so that they seem to be smaller than they really are.

What, at the very first glance, does distinguish this species from all other *Arcturi*, is the want of spines, their place being occupied by six very sharp and pronounced longitudinal edges running along the whole back from cephalon to the end of pleon. By these one median and two lateral grooves on each side are formed. The lowest of these are determined by the epimeral processes which are horizontal and wedge-like. On the four first segments they are most developed, being smaller farther backwards, but their continuation may be followed until the extremity of pleon, where they end with a low spine-like tubercle. The upper boundary of the inferior lateral groove is formed by the supraepimeral projections, which assume a more wedge-like appearance. They are, however, not so pronounced as the epimeral and median rows culminating on every segment in a low tubercle. The superior median groove is broadest on the first four segments and does not attain half the breadth on the last segments or on the pleon. Extremity of pleon subacute.

Antennulæ reaching nearly to the end of third joint of *antennæ*. These are very short, only half as long as the body. On my single specimen, the right antenna is not fully developed, its fifth peduncular joint being very short, and flagellum consisting of three small joints. The third peduncular joint is half as long as the fourth, and, this, in the left antenna, a little shorter than the fifth. Flagellum consisting of three joints, the first of which is by far the longest. Dactylus of 2., 3., and 4. pairs of *pereiopods* is very long, longest on the second pair and longer than propodus. 3. last pairs of *pereiopods* as compared with those of the preceding species shorter and stouter. Dactylus near to the apex provided with a small clawlike spine, so that it appears to be biunguiculate.¹

Opercular valves with two sharp upraised longitudinal lines.

Whole body covered with very small hairs.

Colour of specimen preserved in spirit straw-yellow.

Length: 11 mm.

Locality: lat. 38° S., long. 56° W.; depth 52 fathoms.

(KOPHAMEL.)

¹ It is on account of this that I have some doubt about the correctness of the opinion of BEDDARD, who is inclined to regard the possession of one or two claws on dactylus of last three pairs of *pereiopods* as of generic importance in discriminating *Arcturus* and *Astacilla* (Chall. Rep. 1. c. p. 93). See also BENEDICT (*Arcturidæ* etc. 1. c. p. 41).

Pseudidotheidæ n. fam.

Besides the usual male appendix on the endopodite of the second pair of pleopods, also the first pair of pleopods is in the male transformed into a copulatory organ. Body elongate. Segments of pleon all coalesced. Antennulæ small. Flagellum consisting of one joint. Antennæ strong, half as long as body. Peduncle 4-jointed, first and second joint being coalesced, with the suture visible only from below, flagellum 2-jointed. Palpus of maxillipeds 5-jointed. Second—seventh pairs of pereopods of nearly the same size and structure, with prehensile dactylus. First pair much shorter, its propodus and dactylus strong and armed with stout, in part serrated spines. Uropods with two small lamellæ.

In the collection of the Hamburg Museum I found two specimens of an Isopod, which, at the first glance, did not display anything remarkable. However, on closer examination, I detected, among other things, that in the male even the first pair of pleopods were transformed into a copulatory organ. This quite unexpected fact, which never occurs amongst Isopods, but only in some *Schizopoda* and *Decapoda*, seems, in my opinion, to entitle this crustacean to represent a separate family.

In the general appearance, in the size and structure of the antennæ and legs, my specimens resemble very much *Idothea Miersi* STUDER,¹ so that I am almost convinced that they are identical. Even the localities where they were dredged are nearly the same. STUDER'S specimens were obtained off the East coast of Patagonia, in lat. 47° 1' 6" S., long. 63° 29' 6" W., from a depth of 63 fathoms; Captain KOPHAMEL trawled my specimens in lat. 43° 6' S., long. 60° W. However, as STUDER — what is very much to be regretted — did not give any description at all of the oral parts or of the pleopods, I do not think it advisable to identify them with-

¹ Isopoden, gesammelt etc. l. c. p. 17, taf. 1, fig. 5 a—b.

out any closer examination of STUDER's type-specimens in regard to those important points.¹

Besides the very great resemblance between the species described below and STUDER's *Idothea Miersi* I must here express my suspicion that my specimens probably belong to the genus *Arcturides* which STUDER, in the paper cited above, instituted for an isopod dredged in lat. 47° 18' 5" S., long. 64° 51' 7" E. at Kerguelen from a depth of 115 fathoms. Later on, the same species, *Arcturides cornutus*, was mentioned by BEDDARD² as occurring off Marion Island (lat. 46° 41' S., long. 38° 10' E., in a depth of 310 fathoms). STUDER had at his disposal only one specimen of which he gives a good description and figures in respect to the general appearance and the structure of antennæ and pereopods. The Challenger Expedition got »a number of species» of this interesting form, but, as usual in most cases, BEDDARD does not at all enter on a description of the oral parts, but only refers to STUDER's description of which he says, that »it is so sufficient that I need not redescribe it». It is only to be expected that some one of those expeditions which returned from the far Southern Seas last years or which are starting next autumn may get more specimens as well of this species as of *Idothea Miersi* so that their relationship may be fully ascertained.

STUDER says of *Arcturides* that »diese Art vereinigt in eigenthümlicher Weise die *Arcturinen* mit den *Idotheinen*». Especially he points out the structure of the antennæ and the differentiation of the body in two divisions the anterior of which is provided with »Greiforganen» and the posterior one from the fifth segment with »Schreitbeinen» quite as in *Arcturus*. As to the first point I agree with him, but as to the second I cannot find out the resemblance with *Arcturus*. He figures and describes second—fourth pairs of pereopods as »nach innen einschlagbare Greifbeine, die mit einer schwach gebogenen Krallen endigen», but as a character of the family *Arcturidæ*, STEBBING³ points out that »the first four pairs of

¹ Having recently asked the director of the »Museum für Naturkunde» in Berlin, Geheimerath Prof. MÖBIUS, if I might borrow STUDER's type-specimens for some days, I got the reply that, as there were only two of them, it would be against the regulations to send them away from the Museum.

² Isopoda, II. Challenger Rep. 1. c. p. 108.

³ History of recent Crustacea, 1. c. p. 370.

limbs of the peræon are directed forwards, slender, ciliated, with the terminal joints minute».

In the detailed description given below of my specimen, more resemblances with the *Arcturidæ* are to be found, so that I also regard this form as an intermediate link between *Idotheidæ* and *Arcturidæ*, but, for some reasons which I put forwards above, I consider this form sufficiently entitled to be the representative of a separate family. Further researches will probably show that in this family both *Arcturides* and *Idothea Miersi*, if distinct from my specimen, must be included. If that proves to be the case, the name of the family and that of my species must be changed into *Arcturidoidæ* and *Arcturides Miersi* respectively.

Pseudidothea n. g.

With the characters of the family.

Pseudidothea Bonnierii n. sp.

Fig. 6.

Description: Body elongate with nearly parallel sides. Greatest breadth of the body at the second and third segments of pereion is nearly one fourth of the length. As in *Arcturides* cephalon without free articulation with first segment, a fine transverse line indicating the suture. The other segments separated by deep broad grooves. First segment short, second, third and fourth segments longest and of same length. Three posterior segments nearly of same length, as long as first. Cephalon as long as first and second together, its anterior margin sinuated. Upper surface convex, sloping abruptly in front. The small black globular eyes situated laterally in the midst of the sides. Epimers of all segments visible from above, being small slightly triangular tubercles. Segments of pleon all consolidated into one piece, as long as three posterior segments of pereion. Seen *en profile* it is sloping gently backwards, but the apex is somewhat upraised, broadly truncated. Integument of body is wrinkled and covered with very minute tubercles of irregular shape. Of *Idothea Miersi* STUDER says¹ that »die Segmente sind dorsal

¹ l. c.

mit höckerartig vorspringenden Schuppen bedeckt, die an den Seiten am meisten hervortreten und sich nach dem Rücken allmählich abflachen, bis sie in der Medianlinie fast verschwinden». In my specimens I cannot, however, regard the structures in question as distinct scales, but only as small tubercles.

Antennulæ small and slender reaching to the midst of third joint of antennæ. First joint large, irregularly quadrate, second joint smaller with a deep constriction at the base, third joint smallest, half as long as second, nearly quadrate. Flagellum of same length as second and third joints together with long olfactory filaments.

Antennæ half as long as body, very strong and stout. First and second joint of peduncle coalescent, so that there is no articulation between them, the suture being visible only from below or *en profile*. Seen from below the first joint is broadly triangular of same length as second joint which presents itself as the first joint, when seen from above. In his description of *Idothea Miersi* STUDER has not observed the first joint, as he says that »die äusseren Antennen sind lang, viergliederig». Seen from above the second joint is pentagonal with the antero-median angle pointed. Third, fourth and fifth joints of about the same length, but decreasing in thickness. Third joint with small tubercles along the lateral margin. Flagellum two-jointed, shorter than the preceding joints, the distal with a very minute spinule that, strictly, is to be regarded as the rudiment of a terminal joint.

Mandibles strong; outer cutting edge with three denticles, inner one with 5—6 smaller ones and three or four strong spines at the base. Molar tubercle very large with a few slender spines inside.

Inner masticatory lobe of *maxillulæ* with three strong curved ciliated spines.

Exterior lobules of *maxillæ* with a few (three and two resp.) strong ciliated spines. Basal lobe at the apex and also along the upper median margin with shorter, but very strong, ciliated spines, some of which are bifurcate.

Maxillipeds with the palpus slender, five-jointed. Masticatory lobe large, nearly reaching to the end of the third joint of the palpus, with only a few spines at the truncated apex. Stronger, partly ciliated bristles along the inner margin of

four last joints of palpus and a spine at the extremity of fourth joint on the outer side. Last joint very small. Epignath rather long with some spinules along the lateral margin.

Pereiopods of about the same length and structure except the first pair which is much smaller and of a different form, nearly acting as a »Beikiefer» as STUDER says of the same pair in *Arcturides cornutus*. As usual, four anterior pairs are directed forwards, three posterior ones backwards.

Except by its shortness, the first pair is different from the others by the greater broadness of the joints. Second joint a little longer than third, fourth shorter than third, rectangular and armed on the median (inferior) side with three or four spines. Fifth joint triangular, inner margin with six or seven strong, partly serrated spines. Propodus as long as second joint broadly ovate, with a rich armament of spines which are strongest along the inner margin and at the end. The largest ones are bi-serrated. Dactylus of same length as inner margin of propodus with two or three serrated spines along the exterior margin and two smaller ones at the base of the very strong, terminal spine (claw).

The following pairs of pereiopods are all nearly of the same size and structure, although, of course, there is some difference as to the relative length and shape of the joints, which may be seen best from the accompanying figures of second, fourth and seventh pairs. In all, the dactylus is rather large, longest in the first pairs, and the terminal claw distinct with two or three minute spines at the base, but the dactylus is hardly prehensile, so that the legs are only ambulatory. Especially in the four posterior pairs the lateral margin of the second joint is provided with tubercles of various size and form. All pereiopods are clothed with very minute hairs.

What is most remarkable in this animal, is the transformation also of the first pair of pleopods of the male into a copulatory organ. This structure is, as far as I know, quite unparalleled amongst the *Isopoda*,¹ occurring only in the highest orders of *Malacostraca*, viz. some *Schizopoda* and *Decapoda*.

¹ The singular and variously modified transformation of the first pair of pleopods in the male, in *Asellota* f. i., does not make any exception to this fact.

On opening the door-like valves of the uropoda, I was very much surprised at finding the first pair of pleopods transformed in an unusual way. The first joint of the peduncle is short, but the second is greatly elongate, as long as the endopodite. Seen from below it is broad, broader than the base of the exo- and endopodite together. On the median margin, there are six—seven strong spines curved inwards and downwards, the extremities of which are furnished medially with very minute recurved spinules or setæ. By these hooks the pleopods on both sides are kept together. Along the lateral side the joint is finely ciliated on the proximal half.

The endopodite is normally developed as a swimming plate with long ciliated bristles at the apex and much smaller ones along the margins. The exopodite is more deviating. It is transformed into a short and broad (dagger-like) piece flattened from side to side and with the very acute apex bent down. Thus, seen from below (when the uropods are folded out), it looks like a whitish polished joint narrower than the basal joints and nearly as long as those. The recurved point is not to be seen in this view, being bent up against the pleon. Seen *en profile* the appearance is as shown in the figure. Along the concave margin there are on the middle third sixteen—seventeen ciliated spines which gradually become shorter distally. On a closer examination with higher systems they prove to consist of a very short basal portion, rounded or bulbous, and the somewhat curved elongated spine itself. From the proximal fourth they are ciliated, and the very end seems to be broken up into very minute hairs. The bottom of the bulbous basal portion is perforated by a fine opening which is continuing in the whole length of the spine as a channel. How this ends, I could not clearly make out. Further researches must decide, if they are sensorial or whatever function they have.

The distal third is bent down nearly at a right angle and is very pointed. In the interior, a channel is clearly distinguishable and opening freely at the very pointed extremity. I was able to trace this channel¹ as far as until

¹ Whether this channel is free or closed, I cannot decide, as I had not material enough to make any transverse sections; but I am inclined to think the first alternative the right one, so that the exopodites on both sides together form a closed channel.

the proximal end of the joint, but its continuation into the basal joints of the pleopod I could not clear up. The chitinous integument is on the concave side of the channel along the proximal half of the curved point provided with very small curved denticles or hooks which, at a low magnification, make the impression as if the chitinous membrane were here transversally wrinkled or corrugated.

The chitinous membrane on the convex side of the incurvation is very thick and smooth. The interior of the joint is filled with the same plasma which is to be found in the other pleopods. A strong *musculus flexor* runs to the base of the exopodite.

The *second pair of pleopods* is also deviating from that in other species. The male stylet is a little longer than the endopodite, nearly straight, and gradually decreasing in thickness, so that its extremity is a very acute point. Its base is large, rounded, and lying close to the endopodite, and its interior is to the middle third to a great deal filled by the same great plasmatic cells which occur in the swimming- and respiratory plates of the pleopods. This stylet is, except in the deviating form, also unlike those of others *Isopoda* that it seems to be a closed duct and not an open channel. First at the beginning of the distal third I can see an indication of a fine slit, so that this part of the stylet is, perhaps, to be considered as open. The middle third where there is no plasma and which reaches to the distal split is transversally wrinkled or corrugated slightly reminding of the tracheal tubes of the insects.

As to the function of these appendices, it is obvious that they are copulatory organs, but I have no opinion how they perform that, whether they are both seminiferous or only the one pair. I tried in vain to get some information by tinging with boraxkarmin; the only result was that the channel of the exopodite of the first pair became more distinguishable from the surrounding plasma.

Uropods with the terminal plates very small; the inner lamella (*stricte* the exopodite) is lanceolate and terminating with a strong spine. A shorter spine is also placed at the tip of the greater triangular outer plate (*stricte* endopodite). Margins of uropods all along ciliated.

Length 9,5 mm.

Colour: Whitish-yellow.

Locality: lat. 43° 6' S., long. 60° W., 3. VI. 1888. (KOPHAMEL.) Two specimens (males).

Idotheidæ.

This large family includes numerous species the classification of which into different genera is as yet very uncertain.

The best guide to the knowledge of this interesting group is, no doubt, OSCAR HARGER's important work: »Report on the Marine Isopoda of New England and adjacent waters», published in »the Report of the United States Commissioner of Fish and Fisheries» Part VI, for 1878.

Another important contribution was published in 1883 by MIERS in his »Revision of the *Idoteidæ*, a Family of Sessile-eyed Crustacea». In this monograph, the eminent carcinologist gives a critical enumeration of all the species described up to that date. He divides the family into two subfamilies, viz. *Glyptonotinæ* and *Idoteinæ*. The first includes only one genus, *Glyptonotus*, and the second only three, viz. *Idotea*, *Edotia*, and *Cleantis*.

In my opinion, most of the genera established by DANA and HARGER are to be maintained as representing very natural groups, and in the following I have, on the whole, adopted HARGER's classification.

As the type of the family must be regarded the great genus *Idotea* FABRICIUS, 1798, to which MIERS refers no less than 28 species, a number which has been greatly increased since that time.

The differentiation has gone two different ways. In the subfamily *Glyptonotinæ* the sides of the cephalon is emarginate or cleft, and laterally produced beyond the eyes, so that these thus are situated upon the dorsal surface. The three anterior pairs of pereopods are provided with prehensile hands. To this subfamily MIERS refers the following species: *Glyptonotus antarcticus* EIGHTS, *G. entomon* (LINNÉ), *G. Sabini* (KRÖYER), *G. coecus* (SAY), and *G. Tuftsii* (STIMPSON). For *G. coecus*, HARGER instituted in 1878¹ a separate

¹ Description of new Genera and Species of Isopoda from New England and Adjacent Regions I. c. p. 374.

genus, *Chiridotea*, to which belong the above mentioned, except *G. antarcticus*, and also *G. megalurus* G. O. SARS, and *G. sibiricus* BIRULA. To these species I am able here to add two new ones, the relationship of which to *Chiridotea* is obvious, but which are deviating in some other points, so that I think it necessary to institute for them a new genus, *Macrochiridothea*, the derivation of which name reminds us of its most striking characters.

In many points, this genus seems to me to be an intermediate link between *Glyptonotinæ* and *Chætiliidæ* DANA. This last family was founded by the great American naturalist to receive a curious isopod from Rio Negro, Patagonia, named by him *Chætilia ovata*. As to the systematic position of this species, it is very difficult to express any opinion, as DANA does not give any description or figures of the buccal organs or of the five anterior pairs of pereopods. MIERS is very dubious as to the true systematic place, but, practically, he excludes this form from *Idoteidæ*, although »the relationship to *Glyptonotus* is obvious». The great carcinologist, the Rev. STEBBING, in his very interesting book, »A History of recent Crustacea,» seems to be in the right way, when including *Chætilia* in the *Idotheidæ* and placing it immediately after *Glyptonotus*.

As the most important characters of *Chætilia* DANA¹ points out »that the sixth pair of legs, in the only species of this family discovered, terminates in a very long, bristle-like extremity, which consists of numerous joints; it is twice as long as the body. The seventh pair is similar in being without the usual claw, and has a multiarticulate extremity, but is quite short. The antennæ of the first pair are situated over (and not inside of) those of the second pair». Besides that, the first pair of antennæ is longest, four-jointed. Inferior (second) pair ends in a multiarticulate flagellum. Outer abdominal plates have an inner lamella at the articulation.

Now, in most points, I find the similarity between *Chætilia* and the new genus, *Macrochiridothea*, very striking. Especially, I must point out the great resemblance with regard to the structure of the last joint of the sixth and seventh

¹ DANA, Crustacea, l. c. p. 711.

pairs of pereopods. There seems in this subfamily to exist a tendency to transform the dactylus of the four posterior pairs of pereopods into a long spine or bristle which is most pronounced in the sixth and seventh pairs of pereopods in *Chætilia* where they become excessively long and multiarticulate. Also, in other points, the characters of *Chætilia* seem to indicate a closer relationship with *Macrochiridothea*, and, thus, with *Chiridotea* and *Glyptonotus*. However, it is, of course, impossible to have a sure evidence of that without a minute examination of all the most important structural details of *Chætilia*.

Another group of *Idotheidæ* is represented by *Edotia* GUÉRIN-MÉNEVILLE. To this genus MIERS refers no less than eight species. Already 1878, HARGER instituted for one of these, viz. the Arctic *Idothea nodulosa* KRÖYER, a new genus, *Synidotea*, which seems at present to have been approved by most carcinologists. To this section also belong *Edotia bicuspidata* (OWEN), from the Arctic Ocean, and *Edotia hirtipes* (MILNE-EDWARDS) from South Africa.¹ The main characters of *Synidotea* are to be found in the structure of antennæ which are well developed, with the flagellum composed of several joints. In his »Report on the Marine Isopoda of New England and adjacent Waters», HARGER referred to DANA's genus *Epelys* two species from the East coast of North America, viz. *Idotea triloba* SAY and *Idotea montosa* STIMPSON. The type species is *Epelys annulatus* DANA from Chile. As to the last species which MIERS regards as the young of *Desmarestia chilensis* NICOLET, it is very difficult to form a sure opinion of its true position. However, I think it very hard to restrain on reasons which I am going to explain further down, my suspicions that both *Epelys annulatus* DANA and *Desmarestia chilensis* NICOLET are only the young of *Edotia tuberculata* GUÉRIN-MÉNEVILLE. If that is the case, *Epelys* must disappear.

To these species I am able here to add two new species, the one of which, viz. *Edotia oculata*, comes very near to *Epelys montosus* (STIMPSON, HARGER), the other one, viz. *Edotia Lilljeborgi*, is very allied with *Edotia tuberculata*.

¹ BENEDICT has added several new species mainly from the North Pacific Ocean and Behring Sea (see his »Revision of the genus *Synidotea*» l. c.). See also RICHARDSON l. c. (It was not until the above was printed, that I became acquainted with this paper.)

The third genus of the subfamily *Idotheinæ* MIERS is *Cleantis* DANA, the type of which is *Cleantis linearis* DANA, from Rio Negro, North Patagonia. As also belonging to this genus, MIERS enumerates *C. isopus* GRUBE MS., and *C. granulosa* HELLER from St. Paul and Tierra del Fuego, but, besides those species about which there is no doubt as to their relation to *Cleantis*, he also includes in that genus the following species: *Erichsonia angulata* DANA, from Rio Janeiro, *Stenosoma filiformis* SAY (= *Erichsonia filiformis* HARGER) from the Atlantic coast of North America, and *Erichsonia attenuata* HARGER, also from the same coast. To these species I am enabled to add a new species, *Erichsonia Nordenskjöldi*, from Patagonia, and it is by the careful examination of this species and by comparison with DANA's and HARGER's descriptions, that I was confirmed in thinking that DANA's genus *Erichsonia* is to be maintained.

On the whole, the family is very much in want of a renewed critical revision.

Idothea FABRICIUS, 1798.

This cosmopolitan genus the numerous species of which have been arranged by some carcinologists in several genera, which MIERS did not attribute generic value, is represented in my collections only by the following species.

Idothea brevicauda DANA.

Fig. 7.

1849. *Idotæa brevicauda* DANA, Am. Journ. Sc. and Arts. Ser. 2. Vol. VIII, p. 426.
 1853. » » idem, U. S. Expl. Exp. Crustacea. Vol. 2, p. 702, pl. 46, figs. 4 a—b.

Locality: East Patagonia, Puerto Madryn, lat. 42° 45' S., long. 64° 59' W. on the beach, sandy clay, Nov. 11, 1895, one spec. (OHLIN).

Length: 17 mm., breadth 6 mm.

Colour: whitish with cephalon, greatest part of the back, antennæ, and legs olive-coloured.

There is a female *Idothea* from the locality mentioned above belonging to that group of this very variable genus

which MIERS, in his monograph, has identified with *Oniscus marinus* of LINNÆUS. As to the last identification, SARS has some doubt, believing that LINNÆUS has described, under that name, *Jaera marina*, and that the type of the genus must be named *Idothea baltica* PALLAS, which name undoubtedly refers to the present species. Few, if any crustaceans have got so many names as this, and as many opinions have been uttered by the authors as to the identity of all those Idotheids. MIERS, in his monograph, regards as varieties of same species the following: *Idothea marina* LINNÆUS, *I. baltica* (PALLAS), *I. pelagica* LEACH, *I. irrorata* SAY, *I. tricuspidata* DESMAREST, *I. Basteri* AUDOUIN, and *I. brevicauda* DANA with a sign of interrogation. DOLLFUS¹ considers the following as specifically distinct: *Idothea tricuspidata* DESMAREST, *I. Basteri* AUDOUIN, *I. salinarum* DOLLFUS, *I. marina* PENNANT (nec LINNÆUS), and *I. pelagica* LEACH, all of which have telson (pleotelson DOLLFUS) more or less tricuspitate. In his splendid work, »Crustacea of Norway», SARS considers that most of the forms described under all those names ought to be regarded as different species. In addition to the old *Idothea baltica* (PALLAS), *I. pelagica* LEACH, and *I. granulosa* RATHKE, he adds to the Norwegian fauna two new species belonging to the *tricuspidata* section, viz. *Idothea angusta* and *I. neglecta*.

The species has a nearly cosmopolitan range, so that I am myself more inclined to agree with MIERS in regarding all these forms as mere subspecies or races of one and the same very variable species which might, by almost imperceptible gradations, pass into one another. However, as I have no material at my disposal to compare the different forms, I consider them here, provisionally, as distinct species following the great authority of SARS. On the whole, it seems to me a matter of subordinate importance, whether we regard them as »species», »subspecies», »races», or »varieties». In any case the differences are very small and — what must be confessed by all — of a very variable nature.

Thus, I identify the specimen picked up by me on the »playa» at Puerto Madryn as identical with *Idothea brevicauda* DANA. It agrees perfectly well with his figure and description, except in his remark: »Like the front, the centre

¹ Les Idotheidæ des côtes de France, l. c. p. 7.

of the caudal margin is apiculate». ¹ As MIERS ² already has pointed out, this must depend on a *lapsus calami* as DANA, in the diagnosis, says: »*Fronte truncato*,» and also figures it so. DANA's specimens were abundant in the harbour of Rio Janeiro from which locality I have seen some specimens in the Museum of Copenhagen closely resembling my Patagonian specimen.

Otherwise, this form comes nearest to *Idothea Basteri* AUDOUIN from the Mediterranean, the only difference being, as far as I could ascertain, when comparing both forms, that *Idothea Basteri* has a broader telson.

Macrochiridothea n. g.

First pair of pereopods strongest; carpus small, propodus attaining an unusual size, dactylus strong. Second and third pairs much less developed, propodus and dactylus small, last one with a tendency fully to become rudimentary. Fourth—seventh pairs of pereopods with the dactylus quite rudimentary, style-like, and incapable of flexion on the propodus. Palpus of maxillipeds three-jointed, the two proximal joints much the largest. The inner masticatory lobe of the first pair of maxillæ with two strong ciliated spines. Antennulæ longer than antennæ, first joint short and broad, second longest. Flagellum of antennæ consisting of 9—10 joints. Uropods with two ovate or triangular terminal lamellæ.

In the collections there are two new species which exhibit, in my opinion, many important differences, so that it seems appropriate to institute a new genus to receive them. They are most nearly allied to *Chiridotea* of HARGER and, among the species belonging to that genus, they resemble most *Ch. coeca* (SAY) and *Ch. Tuftsii* (STIMPSON). In their general appearance they are very like those species from the East coast of the United States, but differ in a good deal of important points as shown in the diagnosis of the genus. I have named the new genus after the most striking character, viz. the great development of the propodus and dactylus of the first pair of pereopods.

Their probable affinity with DANA's *Chatilia ovata* was pointed out above.

¹ l. c. p. 703.

² l. c. p. 31.

Macrochiridothea Michaelseni n. sp.

Fig. 8.

Diagnosis: No tubercles on the back. Postero-lateral angle of epimera pointed only on 5th, 6th and 7th segments. Prehensile hand of first pair of pereopods much larger than that of second and third pairs, but not as large as that in the following species. 2nd joint of antennulæ largest, 3rd half as long as 2nd, flagellum shorter than last joint of the peduncle. Apex of pleon terminating with an acute point. Stylet of 2nd pair of pleopods in male sabre-shaped. Eyes wanting. Length 11,5 mm.

Description: This species resembles very much *Ch. coeca* from the coast of New England, but may be distinguished from that species at once in several points. Body half as broad as long. Cephalon and pereion together forming an ovoid, broadest above 2nd segment.

Cephalon as long as first two segments together, sinuated in front, but, in the middle line, terminating with a short triangular point. As usually the sides with a notch.

Pereion shorter than pleon. 1st segment longest and its anterior margin deeply sinuated. Epimera of first four segments invisible from above, the postero-lateral angles rounded. That of 5th segment also rounded, but terminating in an inconspicuous spine; that of 6th much the largest, triangular, pointed; that of 7th very small, subacute.

Pleon forming an equilateral triangle, with a distinct median longitudinal line terminating at the extremity with a spine-like point. Seen *en profile*, its upper margin is nearly in the same level as the pereion until the last third where it slopes down very gently to the apex. Three segments and traces of a fourth are distinct except the great last one. 1st and 2nd are separated by complete sutures which reach to the lateral margin. The suture separating the 3rd does not extend to the sides of pleon, and 4th is indicated only by a transverse suture on each side which, however, do not unite in the middle line. The margins of cephalon and pereion are beset with short hairs, most abundantly on cephalon. At the extremity of pleon there are also some bristles. No traces of eyes are to be observed.

Antennulæ a little longer than antennæ, not reaching the posterior margin of 1st segment. Antennulæ are very stout compared with those in *Ch. coeca* and *Ch. Tuftsii* and of a very different structure. 1st joint very short, as seen from above, triangular, with the upper border deeply insinuated to receive second joint. This is by far the longest, longer than 3rd joint and flagellum together. Distal end terminating in a median process, half as long as 3rd joint. This is a little longer than flagellum, which, at its interior margin, is sinuated at 3 or 4 places.

Antennæ are more slender than those in *Ch. coeca*. 1st joint short, 2nd as long as 5th, 3rd nearly of same length as 2nd, 4th shorter than 3rd, flagellum a little longer than 5th, consisting of 9 joints.

Mandibles with the cutting edge divided into four strong, blunt, triangular lobes. Molar tubercle finely crenulated at the base of which there are on the inner side 14—15 long spines.

Inner lobe of *maxillulæ* with two ciliated spines at the apex and with two minute spinules at the base of the outer spine.

The end of the basal or median lobe of *maxillæ* provided with 11—12 ciliated spines, the innermost of which is the strongest.

Maxillipeds with the palp consisting of 3 joints the relative size of which may be seen in the figure. The last one is very small. Masticatory lobe with three terminal spines and a ciliated spine inside of these. Epignath broad, triangular. The margins of the palp beset with hairs and spines which are strongest along the median line.

The first 3 pairs of *pereiopods* are provided with prehensile hands, but, contrary to the case in *Ch. coeca*, the hand of the first pair is here by far the largest. Fourth and fifth joints small, nearly of same size, subquadrate. Propodus very large, subovate, dactylus strong. 2nd and 3rd pairs of about the same size and appearance. Fourth joint broad, subrectangular, with a sinuated distal margin. Fifth joint by far the smallest, half as broad as the preceding one. Sixth as large as fourth, oblong-ovate, dactylus distinct and capable of flexion on propodus, although not at all as strong as in first pair. In the figure I have drawn first and second pairs of legs at the same scale to show the relative difference in size between both. 4th

and 5th pairs stouter and shorter than 6th and 7th on account of their 4th and 5th joints being very short and broad especially in 5th pair. 6th pair is the longest, its 6th joint being very long, of same length as 4th and 5th together. 7th pair is shorter and more slender. The 2nd joint slender and longer than in the preceding pairs. In four last pairs the exceptionally short and rudimentary seventh joint (dactylus) is very remarkable. In the 4th pair it is smallest, hardly distinguishable, and nearly covered by the long bristles which arise from the distal end of the 6th joint. It is a little larger in the following pairs, but always rudimentary, style-like.

Antennæ and pereiopods are all provided with long, strong bristles.

2nd pair of pleopods in male with a long, broad, thin appendix curved like a scimitar. Last pair with two rami articulated near the tip which are rather large.

Colour of specimens preserved in alcohol dark grayish with numerous black starformed spots.

Length of male: 11,5 mm.; breadth 5,5 mm. Female smaller.

Locality: Magellan Strait, Punta Arenas; in brackish pools, lagoon-like rests of a branch in the delta of Rio de las Minas March 16. 1893. 14 specimens (MICHAELSEN). Magellan Strait, Punta Arenas, 12 fathoms, 25. X. 1893. One spec. (PAESSLER).

Macrochiridothea Stebbingi n. sp.

Fig. 9.

Diagnosis: A median row of low tubercles running from cephalon to the first third of pleon. On each side of this there are two other rows going from the first segment of pereion and converging on the sixth segment. Postero-lateral angles of epimera pointed on 4th—7th segments. Prehensile hand of first pair of pereiopods of an unusual size, far exceeding that of second and third pairs which are very small, nearly rudimentary, and apparently not acting as prehensile. Second joint of antennulæ largest, third more than half the length of second, flagellum of same length as last joint of peduncle. Apex of pleon acute. Eyes small, black. Length 7 mm.

Description: This species of which I dredged only a single specimen, is at once distinguishable by its small size, the five longitudinal rows of tubercles on the back, its small, nearly rudimentary eyes, but, in the first hand, by the excessive

development of the propodus and dactylus of the first pair of pereopods.

The greatest breadth of the body which is over the first segment is a little less than half the length. *Cephalon* nearly as long as the three first segments of mesosom, sinuated in front and terminating with a small point between the first joints of the peduncles of the antennulæ. On each side there is a notch at the end of which the very small black eyes are situated.

The segments of the *perceion* of about the same length. Postero-lateral corners of the epimera of fourth—seventh segments projecting into a backwards and upwards directed point. Epimera of the first three segments rounded.

Pleon as long as cephalon and four first segments of mesosome and of the shape of an isosceles triangle. Four segments are free, except the great last one. The sutures between the first three reach to the lateral margins, but those between the fourth and the end segment is indicated only by a transverse line, not attaining the sides of the pleon. Apex of pleon pointed, minutely serrated and provided with some bristles.

From the midst of the cephalon until the fourth segment of the pleon there runs on the back a median row of rounded, not very high tubercles. This continues as a median keel to the extremity of pleon. Outside of this there is on each side on the first four segments of mesosome another row of low tubercles which, on the fifth and sixth segments, continues more laterally nearly to be confluent with the marginal row. This begins on the first segment with two low, nearly coalescent tubercles and continues until the sixth segment with one rather high tubercle on every segment near its lateral margin.

Margins of cephalon and mesosom bordered all round with hairs.

Antennulæ longer than antennæ.

First joint as long as broad with the antero-lateral corner a little sinuated. Second joint longest, nearly of same length as third joint and flagellum, which are of about same length. Flagellum at the end with a very minute rudiment of a joint and with four notches along the median margin.

First joint of *antennæ* short, of same length as fourth, second joint longest, third a little shorter, as long as fifth, flagellum of same length as second, consisting of ten joints.

Lateral cutting edge of *mandible* divided into five, and the median one into four strong lobes. Inside of the finely crenulated molar tubercle there are some 12—15 long, curved spines.

Outer lobe of *maxillulæ* with distinctly serrated strong spines; inner lobe with two spines, the exterior of which is half as long as the interior and non-ciliated. At the base of this there are as in *Macrochiridothea Michaelseni* two very minute spinules.

The outer lobules of *maxillæ* with very few spines, three and two resp.; basal or inner lobe with 4—5. No spine is ciliated.

Maxillipeds of same structure as in preceding species. Last joint of the palpus is perhaps a little longer.

First pair of *pereiopods* very strong. Second and third joint of same length, fourth nearly quadrate, fifth triangular. Propodus of an unusual size with very strong muscles convergent towards the articulation of the dactylus. Second and third pairs much smaller, of about the same size and structure. Propodus is much smaller than in the foregoing species, and the dactylus nearly rudimentary, hardly movable on the propodus.

Of the four last pairs of *pereiopods* the sixth is the longest. The proportions of the joints may be seen in the accompanying figures. In all the seventh joint or dactylus is altogether rudimentary and not acting as a claw. In the fourth it is hardly visible, representing only a very minute spinule which is covered by the long and stout bristles encircling the end of the cylindrical propodus. Gradually it increases in length backwards, so that it attains in the seventh pair the same length as propodus and forms a long straight spine far exceeding in length the surrounding bristles.

The terminal lamellæ of the *uropods* of about the same shape as in *Chiridothea coeca*, *Ch. Tufsvii*, and *Macrochiridothea Michaelseni*.

My specimen was a female, so that I cannot say anything about the male appendix on the second pair of pleopods.

Colour: Whitish, with some small irregular black spots on the back.

Length: 7 mm.

Locality: Between Isla Nueva and Navarino, 30 fathoms. Dead shells. 1. II. 1896 (OHLIN).

Edotia GUÉRIN-MÉNEVILLE 1829—44.

This genus was instituted by GUÉRIN-MÉNEVILLE to receive an *Idotheid* from the Falkland Islands, viz. *Edotia tuberculata*. MIERS, in his monograph, referred no less than eight species to this genus, but I think that he is mistaken when including those described by HARGER as *Synidotea*, in GUÉRIN-MÉNEVILLE's old genus. In his diagnosis of *Edotia*, the French scientist especially pointed out the structure of the antennæ with its rudimentary flagellum, and this character seems to me to be subjected to no variations. Also, in other points, the remaining species, viz. *E. triloba* (SAY), *E. montosa* (STIMPSON), *E. magellanica* CUNNINGHAM, *E. tuberculata* GUÉRIN-MÉNEVILLE, and the two new species described in this paper exhibit a great resemblance, so that the genus as thus limited proves to form a very natural group. Its main centre of distribution seems to be the seas round Patagonia and Tierra del Fuego where no less than four species have been recorded.

The body is of an ovate form with a tendency to be quite depressed. This is especially to be observed in *E. triloba* and *E. montosa*, and assumes its *maximum* in *E. oculata* which is nearly flattened.

Edotia tuberculata GUÉRIN-MÉNEVILLE.

Fig. 10.

- 1829—1844. *Edotia tuberculata* GUÉRIN-MÉNEVILLE, Iconographie du Règne Animal de G. CUVIER, Tome III, Crustacées, p. 34.
1847. *Anisotus falklandicus*, WHITE, List of the Specimens of Crustacea in the Collection of the British Museum, p. 97 (according to MIERS, one specimen from the Falkland Islands is in the collections of the British Museum and designated by WHITE *Anisotus falklandicus*).
- ? 1849. *Desmarestia chilensis* NICOLET, GAY, Historia física y política de Chile, l. c. p. 287, pl. IV, fig. 1.
- ? 1853. *Epelys annulatus* DANA, U. S. Exploring Expedition, Crustacea, l. c. p. 706, pl. 46, fig. 8.
1883. *Edotia tuberculata* MIERS, Revision of the Idoteidæ etc., l. c. p. 72.
» *Edotia? chilensis* idem, ibm, p. 74.
1891. *Edotia tuberculata* DOLLFUS, Mission scientifique du Cap Horn etc., l. c., p. 69, pl. VIII a, fig. 12, 12 a.

This species which was first described by GUÉRIN-MÉNEVILLE has since that time been mentioned several times.

By a careful examination of many specimens of different ages, I have arrived at the conclusion that this species, especially the young, are subject to no small variations with regard to the more or less pronounced configuration of the cephalon and to the form of the pleon.

Thus I have examined specimens of 7 mm. length from deeper water (10—20 fathoms) than where they are usually living which exhibit so great a resemblance with NICOLET'S *Desmarestia chilensis* that, at the first glance, I suspected their identity. Thus the median portion of the anterior border of the cephalon is as described by NICOLET; also the form of the pleon is different from that of most young ones of *Edotia tuberculata*. The epimers have the borders not rounded, but nearly straight. The eyes are relatively a little larger. On examining a single specimen of about the same size from Martha's Bank, Strait of Magellan, and from a depth of 100 fathoms, I found the anterior margin terminating with a point as in the former specimens and not with a broader process, but the pleon was of the form typical for *Edotia tuberculata*. The eyes seem to become smaller in older stages of this species as NICOLET has pointed out also for *Desmarestia chilensis*.

As to DANA'S *Epelys annulatus* I fully agree with MIERS that it is the young of another Idotheid. He considers it to be the young of *Desmarestia chilensis* and, in want as well of DANA'S as NICOLET'S type specimens, it is impossible to form an exact opinion of that, especially as NICOLET does not give any description or figures of oral parts. The figures of those parts which DANA has published of *Epelys annulatus* proves evidently that it is an *Edotia*, but I am not able to decide to what species it belongs.

Thus, until further researches have proved the contrary, I consider both *Desmarestia chilensis* NICOLET and *Epelys annulatus* DANA as young stages of *Edotia tuberculata*.

As no figures hitherto have been published of the oral parts and some other details of this species, I have thought it useful here to give some.

The three peduncular joints of *antennule* of nearly the same length, first joint much the thickest. The clavate flagellar joint a little shorter than the preceding joint.

First joint of *antennæ* twice as long as second, third and fourth of same length, fifth longest, as long as the three-

jointed flagellum. First joint of this is nearly six times as long as second, third very small.

Mandibles of the usual structure; outer cutting edge with three strong denticles, inner one with five ones. Molar tubercle very large, at a right angle with the cutting part. Its surface covered with a thick yellowish chitinous membrane and encircled by many recurved triangular spines. The bristles arranged as usual.

Inner lobe of *maxillulæ* with two strong ciliated spines and a short hair at the base of the exterior of these. Both lobes richly ciliated.

Basal lobe of *maxillæ* with smaller spines and two stronger, richly ciliated ones at the inner corner, the exterior of which is bifurcated. Outer lobes with long and strong spines, very distinctly serrated along its distal half and ciliated along the proximal half.

The palp of the *maxillipeds* as usual three-jointed, the first joint of which is the smallest and the third the largest. The palp and the large epignath ciliated all round. Masticatory lobe with a few ciliated bristles at the top and one very strong coupling-hook on the median side.

Distal plate of *uropods* rather small, triangular, secondary one (exopodite) wanting.

Male stylet curved, longer than the exopodite.

Length of largest specimen: 29 mm.

breadth of » » 11 mm.

Colour of fullgrown specimens: dark olivaceous on the back; under surface of body and legs grayish. Younger specimens much lighter until nearly white.

Localities and distribution: Among all Isopods I found this species to be one of the most common in the Strait of Magellan and adjacent seas. It was obtained at the following stations:

Santa Cruz, South-Eastern Patagonia, lat. 50° S., long. 68° 45' W.

On the »playa«, sandy clay, rather common under stones. 14. XI. 1895. Many, mainly young specimens (OHLIN).

Puerto Gallegos, South-Eastern Patagonia, lat. 51° 38' S., long. 69° 10' W. On the »playa«, sandy clay, rare. 16. XI. 1895. One specimen (OHLIN).

Pàramo, East coast of Tierra del Fuego, lat. 53° 5' S., long. 68° 15' W. On the »playa«, sandy clay, I. 1896. Two small specimens (OHLIN).

Martha's Bank, Strait of Magellan, Eastern part, lat. $52^{\circ} 50' S.$, long. $70^{\circ} 35' W.$, depth 100 fathoms, pebbles and sand. 16. III. 1896. One small specimen (OHLIN).

Punta Arenas, Strait of Magellan, lat. $53^{\circ} 10' S.$, long. $70^{\circ} 54' W.$; on the beach, IX. 1892, many specimens of different ages (MICHAELSEN).

Ibidem; on the sandy playa, 22. XI. 1895, numerous specimens of different ages (OHLIN).

Stewart Harbour, Southern Fuegian Archipelago, lat. $54^{\circ} 54' S.$, long. $71^{\circ} 29' W.$, depth 20 fathoms, rocky bottom with floridés, 2. II. 1896, one small specimen (OHLIN).

Lennox Cove, Southern Fuegian Archipelago, lat. $55^{\circ} 17' S.$, long. $66^{\circ} 53' W.$, depth 10—20 fathoms, rocky bottom with floridés, 5. II. 1896, one small specimen (OHLIN).

Other specimens have been obtained at the Falkland Islands (GUÉRIN-MÉNEVILLE, MIERS), from the Strait of Magellan (CUNNINGHAM), from near Cap Horn (DOLLFUS). If *Desmarestia chilensis* and *Epelys annulatus* are identical, it ranges farther north along the Chilenian coast, until Valparaiso (DANA). From other places in the South temperate or the Subantarctic seas it is, as far as I know, not yet obtained.

Very often I saw it in company with *Sphaeroma gigas*, although the last Isopod generally surpassed in number the Idotheid. It seems to live most abundantly on the sandy beach between the high and low water, under stones and among pebbles. Its breeding season is in the southern spring, as I got a number of new-born young in November.

Although it is most likely to be found on the beach, it lives, however, on greater depths, until 100 fathoms, and on other bottom as rocks with algae. I is a remarkable thing that I only found small specimens of a lighter, nearly whitish colour in these depths. As to their identity I have, however, no doubt.

Edotia magellanica CUNNINGHAM.

Fig. 11.

1871. *Edotia magellanica* CUNNINGHAM, Notes on the Reptiles etc., l. c. p. 499, pl. 59, fig. 6, 6 a.

1883. » » MIERS, Revision of the Idoteidæ etc., l. c. p. 74.

It is only with some hesitation that I refer to this species a single specimen of an Idotheid in the collection of the Museum of Hamburg. It was collected in

Smyth Channel, Puerto Bueno, Western Patagonia, 9. VII. 1893
(MICHAELSEN).

As usual in CUNNINGHAM's paper cited above, his descriptions and figures are rather brief and unsatisfactory. His new species, *Edotia magellanica*, is turned off with the following passage:

»Body much smaller than that of *E. tuberculata*, and broader proportionally. No dorsal tubercles. Length 7 lines.

Taken off Cape Espiritu Santo, at the eastern entrance of the Strait of Magellan.»

A rude sketch of the crustacean seen from the dorsal side and a figure of »one of the anterior legs» complete the text.

Fortunately, MIERS has examined his type specimens in the British Museum, and it is after his description of the general appearance of the animal that I venture the identification of my specimen with *Edotia magellanica*.

It is also very much to be regretted that my specimen is in a very bad condition. Evidently it has been found dead as it is very much shrivelled, and, perhaps, it has been thrown a long time on the beach as three or four small bivalves have been able to attach themselves to the cephalon. Considering these circumstances I have not thought it worth while to give a figure of the animal *in toto* as probably presenting a false view of the natural form. I content myself with the following remarks.

Body relatively broader than that of *Edotia tuberculata*. Greatest breadth over the fourth segment of pereion. Cephalon as long as first and second segments together, without the two median dorsal tubercles which are always to be found on the upper surface of the cephalon of *E. tuberculata*. Fourth segment longest and broadest. Epimera somewhat unlike those in that species. Those of second—fourth segments with the antero-lateral corner more prominent, but not pointed, those of fifth—seventh segments with the lateral margin more rounded and not so straight as in *E. tuberculata*. As MIERS has pointed out, also in my specimen the dorsal inequalities are less marked, and there is no median dorsal line of tubercles.

But the pleon exhibits the most striking difference. It is proportionally longer and not so much narrowed at its extremity. There is no trace of the median dorsal tubercle

which is at the base of the pleon in *E. tuberculata* as the continuation of the median dorsal pereiopod line of tubercles. Seen *en profile* the highest point of the pleon is much nearer to the apex than in *E. tuberculata*. Two transverse distinct lines indicate the sutures between the first two coalesced segments of pleon. Apex is not so pointed as in that species and not at all truncate.

Antennæ, oral parts and pereopods resemble in nearly all details those of *Edotia tuberculata*. Thus, the three proximal joints of the peduncle of the *antennæ* short, of about the same length. Fifth longest, as long as the flagellum which is composed of the very strong proximal joint and three very minute rudimentary joints. Outer lobe of *maxillula* densely ciliated all round, inner lobe without ciliation, but, as usual, with two strong ciliated distal spines. Basal lobe of *maxillæ* along the inner margin ciliated, provided at the tip with two strong ciliated *setæ* and a few serrated spines. *Maxillipeds* as in *Edotia tuberculata*. *Uropods* proportionally broader than in last species, distal plate equilateral.

My specimen was a female with eggs and new-hatched young ones, so that the form of the male appendix could not be ascertained.

Length: 17,5 mm., breadth 7,5 mm.

Colour: Brown-yellowish, with darker shadows.

Edotia Lilljeborgi n. sp.

Fig. 12.

Diagnosis: Body elongate, without dorsal tubercles. Segments of pereion of nearly same length, third and fourth broadest. Pleon as long as last six segments of pereion and of same breadth until last third, where the sides converge to the insinuated extremity. Male stylet much longer than the endopodite. Two black quadrate spots on each side of the base of pleon. Length 4—5 mm.

Description: This species of which I have examined three specimens is at once distinguishable from *Edotia tuberculata* by its more elongate body without any sculpture or tubercles and by its longer pleon with its insinuated apex.

Body elongate with nearly parallel sides; its greatest breadth over third segment of pereion is about one third of

the total length. There are no dorsal tubercles at all. Cephalon small, a little longer than first segment, but not so broad. Eyes small, black, situated in the midst of the lateral margins. Segments of pereion of about the same length, first as broad as seventh. Pleon much longer than in *Edotia tuberculata*, with a notch on each side of the base as an indication of the first coalesced segment. If a transverse suture is going across the back, I could not fully ascertain. The form of the pleon is that of an elongate pentagon, the proximal lateral sides being parallel. Apex is insinuated by a notch.

Antennulæ shorter than antennæ, with the basal joint large, triangular. *Antennæ* with the three proximal joints of about the same length, fourth joint a little shorter than fifth, which is of same length as proximal joint of flagellum. This is three-jointed, its distal joint being very minute, rudimentary.

Oral parts differ but slightly from those of *Edotia tuberculata*, as it may be seen in the accompanying figures. The inner lobe of the *maxillulæ* as usual with two ciliated setæ, but the lobe itself without ciliation.

Palp of *maxillipeds* three-jointed; basal joints as well as first joint of the palp comparatively shorter and broader than in *Edotia tuberculata*.

Male appendix of the endopodite of second pair of pleopods straighter and much longer than that of *Edotia tuberculata*.

Length: until 5 mm.

Colour: Gray-yellowish with shadows of brownish-violet. Especially the cephalon and two large rectangular spots on each side of the base of pleon are coloured so.

Locality: Smyth Channel, Puerto Bueno, Western Patagonia, 9. VII. 1893 (MICHAELSEN).

Edotia oculata n. sp.

Fig. 13.

Diagnosis: Body very broad, flattened. Lateral corners of the segments of the pereion very distinct, large, rectangular or triangular. Lateral sides of the cephalon produced into two large, rounded stalks nearly as long as the peduncle of

the antennulæ, at the top of which the small eyes are placed. Antennulæ longer than antennæ. Length 7 mm.

Description: At the first glance this isopod resembles very much a big Munnid on account of the broad flattened body and the long inarticulate stalks on which the eyes are situated. However, on a closer examination, it proves to be an Idoteid, belonging to DANA's genus *Epelys* and nearest allied with HARGER's (STIMPSON's) *E. montosus*, as I have persuaded myself by examining specimens of that species in the Museum of Copenhagen. In all important points it agrees with the generic description which HARGER¹ has given for *Epelys*. The genus *Epelys* was first instituted by DANA in 1849 to receive a small Idoteid found on an *Asterias* off Valparaiso, Chile, and, later on, described and figured by him as *Epelys annulatus* in the U. S. Exploring Expedition. Afterwards, two other species, viz. *Idotea triloba* SAY and *Idotea montosa* STIMPSON from the East coast of the United States have been added by SMITH and HARGER to this genus.

Although *Epelys* seems to have some characters of generic value, I have some doubts as to the importance of these, and, therefore, I follow MIERS in placing provisionally these forms into the old genus *Edotia* GUÉRIN-MÉNEVILLE, until a new critical revision of the whole family has been given. The type species of *Epelys*, viz. *E. annulatus* DANA, has been identified by MIERS with the young of *Desmarestia chilensis* NICOLET,² a view the correctness of which it is, in want of the type specimens, very difficult to have a sure opinion of.

Body of *Edotia oculata* is broadly ovate, its greatest breadth surpassing half the length. It is very depressed and flattened. Length of first segment half as long as cephalon, second and third longest, the posterior of about same length, but the seventh shortest. Lateral parts of the segments are very distinctly separated one from another and form large lappets. That of the first is rounded, those of the second and third somewhat rectangular, that of fourth triangular, those of last three segments also rectangular as in second and third, although the prominent angle is here directed obliquely backwards. Fourth segment is the broadest one. Along each side, just where the free lappets of the segments

¹ Mar. Isop. of New England, l. c. p. 357.

² in GAY, Historia de Chile, Zoologia, III., p. 284, pl. 4, fig. 1.

begin, nearer to the end of these than to the median line, a depressed line runs from the posterior margin of the cephalon to the pleon. By another transversal groove, each free lappet of the segments is divided into two prominent protuberances. Pleon is consolidated into one piece, although two transversal lines, the first most distinct, go across the base of it, indicating the coalescence of the segments. Its form is oblong ovate with the sides nearly parallel until the last third, where they begin to converge into the triangular rounded apex. The first third is marked by a concave transversal broad groove, and the lateral parts of it by another, so that the pleon is divided, besides by those two lines which indicate its first segments, into one median anterior and, at each side of this, two small lateral protuberances and a large posterior one occupying the last two thirds of the pleon.

Cephalon is nearly quadrangular with rounded corners. Its lateral sides are produced into two large subconical inarticulated stalks at the top of which the very small black-pigmented eyes are placed. The length of these processes is nearly the same as that of the cephalon, and they are directed obliquely outwards and upwards.

The whole body is slightly roughened and hirsute by scarce hairs which are especially to be found along the margins of the free segments, of the segments of the pereion, and of the pleon.

Antennulæ longer than the antennæ, first and third joints of the peduncle of the same length, second a little shorter, flagellum nearly as long as third joint. Basal joint not enlarged.

Antennæ consisting of a five-jointed peduncle, the joints of which are nearly of the same length, except the fifth, which is a little longer and, at the same time, more slender. Flagellum forms a minute pointed piece, setose at the tip.

Mandibles of the usual structure; the molar tubercle rather large and provided with large triangular spines along its margin. The outer cutting lamella a little longer than the inner one; both trilobate, and between the inner one and the molar tubercle there are a few short stout spines.

Maxillæ of first pair rather large; the outer masticatory lobe at the end with 8—9 strong spines and its margins bordered by dense fine hairs; the inner lobe much narrower and shorter with two strong ciliated setæ at the tip.

Basal lobe of *maxillæ* of second pair at the apex with about 12 strong spines, the innermost three of which are ciliated.

The palp of the *maxilliped* consisting of three joints, the first of which is the smallest. The median margin of the palp is relatively poorly armed with spines. Masticatory lobe at the top with a few (5—6) ciliated bristles.

Legs rather long and slender, of a uniform structure. First pair shortest, fourth and fifth longest, all terminating in a prehensile hand, of which the dactylus in the posterior pairs gradually becomes slender, nearly acicular. The claw at its base with a much smaller one. Propodal joint of first pair oblong oval, on the inner side furnished with a row of strong spines. All legs with scattered bristles.

Operculum (or uropoda) is vaulted with a deep groove running along the lateral margin. The distal plate is small, elongate triangular, ciliated. Secondary lamella wanting.

As the specimen was a female, the form of the male appendage on the second pair of pleopods could not be ascertained.

Colour: Gray-whitish.

Length: 7 mm., breadth 4 mm.

Locality: lat. 38° S., long. 56° W., 52 fathoms (KOPHAMEL).

Erichsonia DANA 1849.

This genus was first instituted by DANA to receive a small *Idotheid* found in the Harbour of Rio de Janeiro among seaweed. It was described and figured in the U. S. Exploring Expedition as *Erichsonia angulata*. Later on, HARGER added to this genus two other species, viz. *Erichsonia filiformis* already described in 1818 by SAY as *Stenosoma filiformis*, and *Erichsonia attenuata*. In his monograph of the *Idotheida*, MIERS does not maintain that genus, but he regards it as a subgenus of *Cleantis*. However, *Erichsonia* has, in my opinion, so many good characters as fully to corroborate its range as a separate genus. In this view I have been confirmed by examining *Erichsonia Nordenskjöldi* which in all important points closely agrees with the description and figures of the above mentioned species which HARGER has given in his important memoir »On marine Isopoda of New England and adjacent waters».

The diagnosis of the genus may be summarised as follows:

Body elongate, cephalon nearly quadrate, pleon consolidated into one piece. Antennæ long, six-jointed, geniculate, flagellum consisting of one clavate joint. Palpus of the maxillipeds four-jointed. Legs all nearly alike, prehensile, dactylus biunguiculate. Stylet on the second pair of pleopods in the male long, minutely denticulated at the distal end. Terminal plate of uropods triangular, with a plumose bristle at the joint with the basal plate.

Erichsonia Nordenskjöldi n. sp.

Fig. 14.

Diagnosis: Body elongate, with nearly parallel sides. Antennæ long, with a clavate flagellum, reaching to the last segment of pereion. The sides of the body as seen from above strongly serrated. A bifid tubercle on the cephalon and a tubercle in the middle line at the posterior margin of each segment. Pleon coalesced into one piece, elongate pentagonal, with the postero-lateral corners produced into a broad, pointed tooth. Length until 14 mm.

Description: This species is very allied to *Erichsonia attenuata* HARGER from the coasts of New England and combines characters common to that species and to *Erichsonia filiformis* (SAY) from the same seas. The body is elongate, the sides of the male nearly parallel; the female, at least when the marsupium is developed, with the third and fourth segments broadest and, then, decreasing in breadth forwards and backwards. Breadth of the body (in male) a little more than one sixth of the length.

Cephalon nearly quadrate, the length being scarcely greater than the breadth. The anterior margin somewhat concave. A median bifid tubercle on the front. Eyes hemispherical, prominent, without pigment (in my specimens preserved in spiritus). First segment shortest, third and fourth longest, nearly quadrate, seventh a little longer than first. A median tubercle is placed near to the posterior margin of every segment, not so high as that on the cephalon. The »epimers» are hardly visible from above. Each segment is laterally produced into a triangular process, so that the form of the seg-

ments is, strictly speaking, hexagonal. The unsegmented pleon is elongate pentagonal with the lateral sides dilating posteriorly where they end with a more or less pronounced triangular tooth. Each of the posterior sides of the pleon as long as the anterior one. At the anterior margin there is only a slight indication of a tubercle, but the middle line is somewhat upraised.

Antennulæ surpassing the end of the second joint of antennæ. First joint nearly as broad as long, second shorter than third, which is about of the same length as the flagellum.

Antennæ very long, in male reaching to the end of the pereion, in female somewhat shorter. First or basal joint of the peduncle very short, second about three times as long as first, third longer than second, fourth and fifth longest, of about the same length. The slightly clavate flagellum as long as third and fourth joints of the peduncle and with some short hairs at the end.

Mandibles strongly developed, the outer cutting lamella divided into four, the inner one into three blunt lobes. Molar tubercle nearly quadrate with some (10–12) long bristles along its exterior margin, and, besides those, with half the circumference ciliated. Between the inner cutting lamella and the molar tubercle there are eight—nine very strong serrated spines.

The outer masticatory lobe of the *maxillæ* broad, armed with 12–15 very strong spines. The inner lobe shorter and very narrow with three long ciliated spines.

Basal lobe of the *maxillulæ* at the apex with 10–12 spines, most of which are ciliated. The outer and inner lobules are short and broad, armed at the tips with about seven strong and curved spines.

Maxillipeds with the palp four-jointed, distal joint oblong, as large as the three proximal joints together. Median margin of the basal joints and the masticatory lobe without hairs or spines. The tip of the masticatory lobe with about 10 ciliated bristles.

Pereiopods of nearly the same length, except the first pair which is the shortest. All of about the same structure with the propodus and dactylus strong, the latter biunguiculate. First and second pairs arise near the anterior margin of the resp. segments, third, fourth and fifth are attached

in the midst of the segments, and the last two pairs at the posterior margin of the sixth and seventh segments.

Male stylet on the second pair of pleopods longer than the swimming plates, the outer half of it armed with very small oblong denticles or spinules arranged in longitudinal series or rows.

Basal joint of the *uropoda* rectangular with the lateral margins at its posterior end somewhat dilated. Terminal plate small, triangular. On the lateral margin at the joint between both, there is a plumose bristle reaching to the end of the terminal plate.

Colour: Brownish.

Length: 14 mm.; breadth 1,8 mm. (greatest spec.).

Locality: Patagonia, five specimens (Hamburg Collection).

Cleantis DANA 1849.

Cleantis, s. str., comprises, according to MIERS, three species to which I have already referred. To these THOMSON has added one, viz. *Cleantis tubicola*, from New Zealand. In the collections from Patagonia and Tierra del Fuego the genus is represented by the following species, the occurrence of which in these seas is somewhat surprising.

Cleantis granulosa HELLER.

Fig. 15.

1861. *Cleantis granulosa* HELLER, Verhandl. zool. bot. Vereins, Wien. Bd. XI. p. 497 (*in fine* MIERS).
- 1868 (65). » » HELLER, Reise d. Novara, Crust., p. 132, tab. 12, fig. 2.
1883. » » MIERS, Revision of the Idotheidæ etc., l. c. p. 82.

Of this species instituted by HELLER on specimens from St. Paul and described and figured in the Crustacea of Novara Expedition there is in the collection of the Hamburg Museum a specimen labelled: »Lennox Cove, Lennox Island, Kelp, 24/XII/1892. (MICHAELSEN).»

On the whole, this specimen (a male) agrees in all important points with HELLER's concise description.¹ As he has

¹ There is a *contradictio* in HELLER's description and figure. He says very correctly that »die äusseren Antennen — — — bestehen aus sechs Glic-

given no detailed figures of the antennæ and oral parts, I have thought it proper to deal with them here.

The structure of *antennulæ* and *antennæ* as described by HELLER. The last clavate joint (flagellum) of the antennulæ is, however, nearly as long as the two last of the peduncle.

Mandibles very strong, as usual with the cutting edge divided into two superposed lamellæ, each of which is tridentate. Molar expansion large, along the edge finely crenulated. On the inside of the inner cutting lamina there are a few strong curved dentated spines, and on the inside of the molar tubercle there are some others longer and slender.

Both pairs of the *maxillæ* of the usual structure.

Maxillipeds with the palp 5-articulate, the two first joints of which are short, the third and fourth the largest and the fifth small. The masticatory lobe not reaching the end of the third joint of the palp.

First pair of *legs* short, but strong, second and third strongest of all, fourth smallest, fifth, sixth and seventh increasing in length, but more slender than second and third. Dactylus strong, unguiform, with a great claw and a shorter one at the base of this.

Uropoda with the terminal joint subtriangular, with rounded apex, secondary lamella rather large, broad, truncated at the end, ciliated along the median margin and the end.

Male appendix of the second pair of pleopods of about the same length as the swimming plates, rather broad and very little curved, apex non pointed.

Length: 25 mm.

Colour: Brownish, marbled with darker spots and stripes.

This species is closely related to *Cleantis linearis* DANA from North Patagonia, so that I was at first inclined to identify them. However, on a closer examination of the oral parts and the terminal joints of the uropoda, my specimen proved to exhibit some differences, if the figures in DANA's Crustacea in the U. S. Exploring Expedition are fully to be relied on. *Idothea angustata* NICOLET (GAY, Historia de Chile, Zoologia, III, p. 258, pl. 3, fig. 4) is, according to the opinion of MIERS, another very allied, if not identical species.

dern», and, a little before, »die inneren Antennen — — — reichen bis zum Ende des zweiten Gliedes der äusseren». But in the figure the antennulæ reach to the end of the third joint. Must be a *lapsus* of the drawer.

My specimen differs, however, from that species even more than from *Cleantis linearis*.

Cleantis granulosa is another proof of the tendency of Idotheids to attain a wider geographical range than usual amongst the Isopods. It has been as yet obtained at St. Paul and in the archipelago of Tierra del Fuego, i. e. at two points nearly diametrically opposite to each other, but both situated in the area of the permanent west winds and of the kelp. But as the Idotheids are as a rule inhabitants of shallow water and live for the most part on floating sea-weed, the occurrence of *Cleantis granulosa* at two places so far distant may be easily explained.

Explanation of the plates.

Abbreviations common to all figures.

- a¹ = antennulæ (first pair of antennæ).
 a² = antennæ (second » » »).
 M = mandibles.
 m₁ = maxillulæ (first pair of maxillæ).
 m₂ = maxillæ (second » » »).
 mxp = maxillipeds.
 p₁—p₇ = first—seventh pairs of pereopods.
 pl₁—pl₅ = first—fifth pairs of pleopods.
 u = uropods.

- Fig. 1. *Astacilla falclandica* n. sp.
 » 2. » *magellanica* n. sp.
 » 3. *Arcturus americanus* BEDDARD.
 » 4. » *patagonicus* n. sp.
 » 5. » *Kophameli* n. sp.
 » 6. *Pseudidothea Bonnierii* n. sp.
 » 6 pl_{1x}. » » , one of the coupling-hooks.
 » 6 pl_{1y}. » » , two of the *setæ* of the exopodite.
 » 6 pl_{1z}. » » , part of the distal end of the exopodite.
 » 6 ux. » » , distal lamelle.
 » 7. *Idothea brevicauda* DANA.
 » 8. *Macrochiridothea Michaelsoni* n. sp.
 » 9. » *Stebbingi* n. sp.
 » 10. *Edotia tuberculata* GUÉRIN-MENEVILLE.
 » 10 A. » » , cephalon from above.
 » 10 B. » » , pleon *en profile*.
 » 10 C. » » , young individual.
 » 11. » *magellanica* CUNNINGHAM, pleon from above.
 » 11 A. » » , pleon *en profile*.
 » 12. » *Lilljeborgi* n. sp.
 » 13. » *oculata* n. sp.
 » 13 p_{1x}. » » , hand of first pair of pereopod.
 » 14. *Erichsonia Nordenskjöldi* n. sp.
 » 14 A. » » , female from below.
 » 14 M_x. » » , distal end of mandible.
 » 15. *Cleantis granulata* HELLER.

