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MDCCCLV.



## DESCRIPTION OF CERTAIN CRUSTACEA, BROUGHT HOME BY THE U. S. N. ASTRONOMICAL EXPEDITION.

BY CHARLES GIRARD.

The Crustacea collected are but few, and of the Decapod division: some Brachyura, an Anomura, and a Macroura, constitute the entire list.

The latter two, *Æglea* and *Rhynchocinetes*, constitute, each in itself, a natural group; both their structural peculiarities, and the deep interest which their history consequently involves, have suggested the following detailed descriptions of these two types.

### DECAPODA ANOMOURA.

#### CENOBITIDÆ ÆGLEIDÆ.

Genus ÆGLEA, Leach.

GEN. CHAR. Carapax depressed, longer than broad, anteriorly tapering, dilated upon the branchial region, diminishing in width posteriorly, and biarticulated. Frontal region armed with an acute rostrum. External antennæ about the length of the carapax. External maxillaries pediform. Posterior segment of the thorax movable. Legs of moderate size. Abdominal region shorter than the thoracic; broad, reflexed inferiorly and anteriorly, composed of six or seven segments, five of them bearing oviferic legs.

SYN. *Æglea*, LEACH. Dict. Sc. Nat. XVIII, 1850, 29.

OBS. At the time this genus was instituted, there was but one species known, *A. lævis*, an inhabitant of the coast of Chile. Recent investigations have brought to light a second, from the same litoral, and to-day we add a third to the list, inhabiting the fresh waters of the mountainous regions of the Chilean republic, not knowing, however, whether it is altogether peculiar to that geographic range.

A great deal remains to be done in order to ascertain whether these species are really distinct from one another. In the want of authentic specimens of both *A. lævis* and *A. denticulata*, I was not prepared to remove all the doubts I had entertained in regard to their zoölogical similarities and dissemblances. With upwards of twenty-five specimens, including both sexes, of *A. intermedia*, before me, I have been compelled to avail myself, for their determination, of the writings of my predecessors in the field; and this has been done with the most earnest desire to arrive at the truth on this subject. I candidly confess that had I had but one specimen and but one sex, I would have hesitated describing it as a new species. But since my materials were ample, and the specific characters hence drawn were found not to vary throughout the whole range of the specimens examined, I felt much less justified in calling them either *A. lævis* or *A. denticulata*, than ascribing to them a new name.

The description given below, it may be trusted, will enable my followers in the field, with the assistance of similar materials from the coast of Chile, to determine the true zoölogical



relations which may exist between the marine and fresh water representatives of this interesting genus.

To facilitate their researches, I subjoin the references I have gathered touching the history of the two species described by different authors.

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ÆGLEA LÆVIS, Leach.

SYN. *Galathea lævis*, LATR. Encycl. Méth. Crust. Pl. cccviii, fig. 2.

*Æglea lævis*, LEACH, Dict. Sc. Nat. XVIII, 1820, 49.

DESM. Consid. Gén. Crust. 1825, 186, Pl. xxxiii, fig. 2.

LATR. in Cuv. Règn. Anim. IV, (2d edit.) 1829, 84.

GRIFF. Cuv. Anim. Kingd. XIII, 1833, 184, Pl. vii, fig. 2.

MILN. EDW. Hist. Nat. Cr. II, 1837, 258; Atlas du Règn. Anim. de Cuvier, Pl. xlvii, fig. 3.

EDW. et LUC. in D'Orb. Voy. Amér. Mérid. VI, I. Crust. 1843, 34.

NIC. in Gay, Hist. de Chile, Zool. III, 1849, 199.

DANA, U. S. Expl. Exped. Crust. XIII, I, 1852, 476, Pl. xxx, fig. 6.

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ÆGLEA DENTICULATA, Nic.

SYN. *Æglea denticulata*, NIC. in Gay, Hist. de Chile, Zool. III, 1849, 200, Lam. ii, fig 1.

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ÆGLEA INTERMEDIA, Girard.

SPEC. CHAR. Carapax finely punctate; rostrum moderate, acute, depressed (incurved) upon its middle, with its point slightly turned upwards. Edges of carapax subdenticulated; denticulations more conspicuous on the stomacal region than on the branchial region. Anterior legs larger in the male than in the female; in both sexes the arm has a prismatic shape, and is denticulated upon its upper and its lower and inner edges; the external lower edge being nearly smooth. Carpus provided with two rows of subconical tubercles (teeth) upon its upper and inner portion. Hand exhibiting internally a flattened processus, often denticulated. Inner edge of claws tuberculous or subtuberculous. Abdominal segments divided into three lobes, by an undulating line forming a subaneate triangle upon each segment.

DESC. The body is very much depressed, longer than broad; anteriorly about half the width of the posterior margin. The depth upon the middle region is about equal to the width of the anterior region immediately behind the orbits. The margin of the carapax is sharp and slightly indentated; the outline is slightly incurvated upon the suture which separates the thoracic from the cephalic region. The latter, convex upon its middle, is terminated anteriorly by a subtriangular, acerated, and carinated *rostrum*, slightly raised upwards upon its tip. On each side of the rostrum a semi-elliptical notch, at the external angle of which a small spine exists, constitutes the orbit. The suture, between the cephalic and thoracic regions, is very convex posteriorly upon the middle region, then slightly concave laterally and anteriorly, then again oblique towards the edge of the carapax.

The *thoracic region* is divided by two longitudinally shallow and smooth furrows into three regions—a medial or cardial, and two lateral or branchial regions. Again, it divides transversally into three regions also—an anterior, a medial, and a posterior; the last embracing a very narrow space upon the posterior extremity of the carapax, and extending but very slightly upon the branchial regions. The central portion of the cardial region is slightly convex, and limited by a sinuating depression or groove. The last segment of the thoracic region is move-



able, very small, posteriorly rounded and convex, laterally acute, giving points of attachment to two inferior, transverse, and very slender pieces, situated close to the posterior margin of the sternal shield, to which system the anterior piece undoubtedly belongs. The fifth pair of legs is likewise articulated upon that segment. Upon the extremity of the posterior transverse piece just alluded to, is articulated a rudimentary caudal appendage, or so called oviferic leg.

The *sternal shield* is subtriangular; its summit, which is directed forwards, being truncated. It is composed of four transverse pieces, soldered together, and corresponding to the anterior four pairs of legs. It is a little longer than the cardinal region above.

The *eyes*, semiglobular in shape, are inserted upon a very short peduncle immediately beneath the base of the rostrum, and directed forwards.

The *inner antennæ* have a peduncle composed of three articles. The basal is globular, inserted immediately beneath the peduncle of the eye. The second article is the longest, very slender, subcompressed, slightly curved, implanted upon the inner edge of the first or basal, and provided upon its inner margin with a row of setæ. The third article is shaped like the second, more slender, and one third shorter: the antenna proper is about the length of the second article of the peduncle, compressed, tapering, consisting of eleven narrow articles, the inferior edge being provided with a double series of very short setæ. A filiform, eight-jointed appendage, may be observed inserted at the upper and anterior margin of the third article of the peduncle, and shorter than the anterior proper.

The *external antennæ*, inserted upon the same transverse line as the inner, are slender, elongated, cylindrical, and tapering to a point, composed of narrow and somewhat irregular articles, upon a length of nearly one inch and a quarter. Their peduncle, about a quarter of an inch long, is composed of four articles, two of which might almost be considered as forming but an irregular odd basal, at the upper and anterior margin of which a rudimentary processus may be observed. The two remaining articles are subcylindrical: the fourth is the longest.

The *inferior labia*, or else anterior abdominal segment, on the sides of which the external jaw-legs articulate, is very small and bidentate.

The *external jaw-legs* are pediform, provided internally with setæ, and composed of six articles besides the basal. Upon this, and exteriorly, is inserted the *palpa*, the first article of which is exceedingly small; the second slender, subcompressed, and elongated; the third, small and cylindrical, is followed by a lanceolated, thin blade surrounded with setæ. When stretched out, the tip of the palpa extends to the base of the terminal article of the jaw-leg properly so called. The first article of the jaw-leg proper is the smallest of the six composing it; the second and third, subprismatic in shape, are the largest; the fourth, fifth, and sixth, are subdepressed, the latter conical, and the three together equal in length to the second and third combined.

The *second pair of jaw-legs* consists of the same number of parts as the first or external pair, viz: of a palpa and a mandible; both being composed of the same number of articles; its differences consisting in a smaller and more slender form, and in the palpa being more elongated than the mandible, with its first article almost as long as the second. Setæ occupy the same edges and surfaces.

The *first mandible*, or *third pair of jaws*, is composed of a triple foliaceous cochloid piece, subcrenated upon its margin, each expansion being provided upon its base with a rudimentary palpa, and the external having in addition an elongated membranous expansion which extends towards the gills.

Finally, the *second* or *inner mandible* (*fourth pair of jaws*) is an elongated and rigid piece, composed of three articles intimately soldered together; the third article being the most developed of the three, and terminated by a subcircular and interiorly concave head, giving to the whole the form of a small dipper, at the upper and anterior part of which a small rudimentary palpa may be seen, inclined inwardly.



The *anterior* or *upper labia* is small and tuberculiform, situated in a concavity of the epistoma concealed by a slight ridge.

The anterior—pincers or claws-bearing—pair of legs is the stoutest and longest of the ambulatory appendages. The second, third, and fourth pairs are flattened; the second a little longer than the third, and the third a little longer than the fourth. The fifth pair is very exiguous, folded inwardly, and not used at all as an ambulatory organ.

The first (basal) article in the anterior four pairs of legs is similar in shape and structure in all; preserving, however, their due proportions.

In the first pair of legs the second article is subprismatic, short and stout, larger than the first article, angular anteriorly and inwardly, provided with a few rudimentary spines along its inner edge. The third article (arm) is prismatic, tapering, posteriorly provided with a row of small spines upon its edges, and subtubercular upon its anterior margin. The fourth article (carpus) is short, subtriangular and stout, provided upon its inner edge with a double series of tubercular spines. The fifth article (hand) is subelliptically rounded exteriorly, flattened inwardly, and provided upon its inner margin with a flattened processus, subcrenated upon its edge. The inferior claw, slightly curved inwardly, is concave upon its middle, and margined with a series of transversally elongated and depressed tubercles disposed upon a double row towards its base. The upper claw is elongated, subcylindrical, tapering, curved downwards, thus forming an arch above the inferior one; being similarly provided upon its margin with a series of flattened, transversally-elongated tubercles, largest posteriorly.

The second, third, and fourth pairs of legs are composed of six articles, including the basal, already alluded to. The second article is the second also in size; then the fourth (carpal), which is slightly bent downwards; then the fifth; the third is the longest of all; the sixth (tarsal), about equal to the fifth in length, is very slender, cylindrical, tapering, and terminated by a minute spine.

The fifth and exiguous pair of legs, inserted, as stated above, upon the post-thoracic and moveable segment, is composed first of a very small subglobose article, followed by four others more elongated and slender, subequal, slightly diminishing in length from the base towards the tip, which consists in a rudimentary claw concealed under a tuft of setæ and moveable upon the fifth article.

The caudal region is shorter than the carapax; bent upon its middle, and brought forward beneath in close contact with the inferior surface of the body, the extreme margins of the caudal paddle covering the posterior half of the sternal shield. It is composed of five segments, divided into three lobes by a lateral undulating groove. The posterior four segments are angular, and acute externally, while the anterior one is rounded; all being margined with a series of setæ. Inwardly and laterally they are provided in the female with rudimentary three-jointed, egg-bearing legs. A subpentagonal thin piece, as sixth segment, terminates that region, having on either side caudal paddles composed of a basal subtriangular piece inserted partly upon the fifth segment, and directed forwards; whilst on the latter are inserted, towards its external extremity, two subelliptical plates, margined with setæ as well as the central piece, and directed backwards and inwards.

The main surface is minutely punctured; the second, third, and fourth pairs of legs are provided with short and scattered setæ, more thickly set, and more developed upon the tarsal article.

The body and tail are bluish yellow above, yellowish beneath. The legs are reddish and bluish, and the antennæ reddish.

Specimens were collected in the upper affluents of the Rio de Maypu, 2,000 feet above the level of the sea, near Santiago.



## DECAPODA MACROURA.

## PALÆMONIDÆ ALPHEINÆ.

Genus RHYNCHOCINETES, Edw.

GEN. CHAR. Body moderately compressed; carapax exhibiting a spinous processus towards the middle of the region of the stomach. Fronto-interocular margin provided with three spines; two more spines may be observed laterally upon the same anterior margin. Rostrum very large, sword-shaped (ensiform) attached to the front by a gynglymic articulation in a vertical plane, allowing a free motion downwards between the antennæ, and upwards to a vertical position of its axis. Its length equals, or exceeds a little, that of the carapax. It is toothed, or else denticulated upon its edges. Eyes conspicuous, and, when brought forward, find a resting place in an excavation of the peduncle of the superior antennæ, the basal article of which is large, and armed exteriorly with a spiniform blade. The terminal threads of these appendages are two in number, and constructed as in *Hippolytus*. External jaw-legs pediform and elongated; their terminal article is slender, cylindrical, and spiny upon its apex. A rudimentary palpiform appendage may be seen exteriorly at the base of each leg. Tarsus of second pair of legs not multiarticulated. First pair of legs larger than the others, and stretching beyond the peduncle of external antennæ; pincers short and spoon-shaped; finger moveable and toothed. Second pair of legs very slender, terminated by a small chela, and shorter than the third; the tarsus of the latter and the following pairs being short and toothed as in *Hippolytus*. Abdomen not different from the latter-mentioned genus. Several pairs of small spines upon the median blade between the caudal paddles. Gills, nine on either side of the thorax, disposed upon a double row.

SYN. *Rhynchochinetes*, EDW. Ann. Sc. Nat. Deux Sér. Zool. VII, 1837, 165.—Hist. Nat. Crust. II, 1837, 383.

EDW. et LUC. in *D'Orb. Voy. Amér. Mérid.* VI, I, Crust. 1843, 35.

NIC. in *Gay, Hist. de Chile*, Zool. III, 1849, 215.

OBS. There is one point in the history of this genus which cannot be looked upon with indifference by naturalists—the fact that the only species on record, when first described, was given for fatherland the Indian ocean. Specimens thus labelled had been deposited in the museum of the Garden of Plants in Paris, and these became the originals from which Milne Edwards's first description was drawn. As such it was produced in the *Histoire naturelle des Crustacés*.

Subsequently, Alcide d'Orbigny brought to the same establishment specimens collected at Valparaiso, which, on being submitted to Milne Edwards, were pronounced identical with those previously described, and Valparaiso given as locality for the species, without any further remark upon the subject. Nicolet, in Claude Gay's *Historia de Chile*, follows Milne Edwards's determination; adding, however, that the sole species hitherto known of this genus was indigenous both to the Indian ocean and to Chile. Dana, in his *Report on the Crustacea of the United States Exploring Expedition*, adopts the views of his predecessors in regard to the identity of the species, ascribing to it, in his tables of geographic distribution, a still wider range, since it is stated to occur in the northern zone of the western coast of the Pacific ocean.

The question now occurs as to whether the specimens labelled "Indian ocean," in the Paris Museum, do really belong to that district, or else got a wrong label; no mention being made by any one as to the channel through which they have been obtained. The figure published



at the time in the *Annales des Sciences naturelles* is a female, answering altogether to the specific features in the specimens of the same sex now before us.

There can be also no doubt as to the specific identity of both d'Orbigny's and Gay's figures, the originals of which were procured at Valparaiso. They both represent the female.

Specimens of both sexes were brought home by Lieutenant Gilliss. In the female the external maxillipes are equal in length to the distance between the apex of the rostrum and the articulation of the caudal region upon the thorax. The first pair of legs extends to nearly the serrated portion of the rostrum; the apex of their chela, therefore, does not reach as far as the extremity of the latter organ. The tip of the second pair of legs is even with that of the first pair, though inserted behind it. The third pair of legs is the longest, projecting beyond the second and first pairs, and extending to nearly the apex of the rostrum. The tip of the fourth pair is nearly even with the second and the first. Finally, the extremity of the fifth pair reaches the base of the last article of the third pair; its tip, therefore, remaining behind that of all the others. The rostrum is equal in length to the middle line of the cephalo-thoracic region. Now there can be no doubt as to the identity of these specimens with those figured by d'Orbigny and Gay.

In the male the external maxillipes are nearly as long as the absolute length of the animal, since they equal the distance between the apex of the rostrum and the middle of the length of the caudal paddles. The first pair of legs is stouter, the hand more elongated, and extending beyond the apex of the rostrum for the whole length of the finger. The second pair is very slender, hardly reaching with its extremity the middle of the hand, and not quite as far as the denticulated portion of the upper edge of the rostrum. The third pair extends to the base of the moveable finger or upper portion of the big claw, and consequently a little beyond the apex of the rostrum. The tip of the fourth pair is nearly even with, mayhap slightly longer than the second. Finally, the fifth pair slightly projects beyond the base of the last article of the third pair. The rostrum is somewhat longer than the middle line of the cephalo-thoracic region. The antennæ are longer than in the preceding instance. In every other particular both sets of specimens appear to agree perfectly. Those from which our description is drawn belong to the latter group.

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#### RHYNCHOCINETES TYPUS, Edw.

SPEC. CHAR. Dull greenish, variegated with yellowish red. Locomotory appendages and jaws transversally barred or annulated with pinkish. Patches of the latter hue are also observed upon the convexity of the caudal region.

SYN. *Rhynchocinetes typus*, EDW. Ann. Sc. Nat. 2de Série VII, Zool. 1837, 165, Pl. iv, C.—Hist. Nat. Crust. II, 1837, 383.

EDW. et LUCAS, in *D'Orb. Voy. Amér. Mérid.* VI, 1; Crust. 1843, 36, Pl. xvii, fig. 1.

NIC. in *Gay, Hist. de Chile*, Zool. III, 1849, 216; Crust. Lam. I, fig. 7.

*Rhynchocinetes typicus*, DANA, U. S. Expl. Exped. Crust. XIII, I, 1852, 568, Pl. xxxvi, fig. 7.

DESCR. The following description is based upon the male: The entire length, from the tip of the rostrum to the extremity of the caudal paddles, is four inches and a quarter; the rostrum measures one inch and an eighth; the middle line of the cephalothorax one inch and a sixteenth.

The cephalothoracic region is rounded above, compressed, deeper than broad, smooth, with the exception of the anterior extremity, which is provided with eight acerated points; two of which being situated upon the middle line, and one immediately above the base of the rostrum:



the other is behind it, at a distance of about an eighth of an inch. One pair of spines may be seen—one on each side of the postrostral—immediately above the orbit. Another pair occupies the externo-inferior angle of the orbit. Finally, a third and very small pair may be observed at the inferior and anterior angle of the carapax.

There are nine gills on each side, disposed in a double series, in the following manner: The external series, composed of five of these appendages, are much the smallest; the anterior one rests upon the base of the external jaw-leg; the four remaining ones are situated immediately above the insertion of the anterior four pairs of ambulatory legs. The gills of the inner series, four in number, are disposed obliquely opposite the insertion of the ambulatory legs; they increase gradually in size from forwards backwards.

The *jaw-leg* (external or sixth pair of mandibles) is three inches and a quarter long, stretching beyond the apex of the rostrum for about the half of their length, and composed of five articles. The basal is a circular ring, bearing a very small palpiform appendage, placed transversally, and directed backwards. The second article is subtriangular, very small, developed only upon the outer or inferior aspect of that organ, and upon its inner edge is a slender, palpi-form, subarticulated appendage, nearly two thirds the length of the third article, tapering, flattened, and provided upon its inferior edge with a series of closely-set hairs or setæ. The third article itself is three quarters of an inch long, anteriorly subcylindrical, posteriorly concave immediately beneath the mandibles, for whose benefit this concavity exists; its antero-superior edge is provided with two small spines. The fourth article is small, about a quarter of an inch long, subcylindrical, and spineless. The fifth article measures two inches and three sixteenths; it is slender, cylindrical, and tapering towards its extremity, which is provided with five or six minute spines.

The *mandibles of the fifth pair* (proceeding from the innermost or first) are composed of five articles, the fifth and largest of which is flattened and bent downwards upon the fourth, which is the smallest. Exteriorly to the first or basal article arises a processus, bearing a membranous palpa and a subcircular flap, above which, and from the external edge of the second article, may be seen, stretching forwards, a palpiform appendage about half an inch long, and exhibiting distinct traces of transverse articulations, most numerous towards its extremity. The third article is of moderate development.

The *fourth pair of mandibles* consist of but one article each, thin, foliaceous, subtriangular, cochloid, provided upon the posterior portion of its base with a double, subelliptical, membranous expansion, and directed forwards; a crustaceous expansion, terminating in two small, filiform pseudopalpæ, one larger than the other.

The *third mandible* is composed of a few very thin, foliaceous, and rounded pieces, broadest towards the mouth, and provided upon their external margins with a crustaceous expansion, directed forwards, besides a tapering and hairy one extending backwards across the gills.

The *second mandible* consists of three small plates, two inferior, subcrustaceous, and flexible, whilst the third is rigid, cochloid, and provided upon its margin with a double and close series of very small, conical, and slender black spines. At the base and upper portion of this pair of mandibles may be observed a rudimentary palpa.

The *first or innermost mandible* consists of one piece only, subcylindrical upon its base, terminating anteriorly in processi, the inner of which is stout and blunt upon its apex, whilst the other is cochloid, and margined with a series of small, conical, black spines.

The *upper labia* is short and stoutish, flattened and rounded upon its margin.

The *external antennæ* are more than five inches in total length. The first article is short and stout; provided upon its anterior margin with a small spine, and upon its inner edge is inserted an elongated, sword-shaped, subtriangular appendage, anteriorly tapering to a point, and apparently composed of two elongated pieces soldered together, judging of this by the presence of a groove upon its external or upper surface. It is provided upon its inferior and crenated edge with a series of closely-set hairs or bristles. Beneath, and towards the inferior surface of the



first article, arise the antennæ proper: three articles (second, third, and fourth of the series) follow one another within a distance of about half an inch, the first two being small and irregular, the next is subtriangular or rather compressed; to the latter is appended the remaining portion of these organs, composed of narrow and circular articles, increasing in length up to the middle of their extent, hence diminishing again gradually towards their filiform apex.

The *superior antennæ*, two inches and three quarters in total length, are composed of a basal, rather large and subtriangular piece, anteriorly tapering into several points, followed by two small articles, upon the latter of which, the smallest of the series, are inserted: first, a filiform, transversally and minutely articulated antenna; and, second, a flattened, much shorter antenna (about half an inch long), provided inferiorly or interiorly with a series of closely-set hairs or setæ.

The eyes, inserted upon a short peduncle immediately above the superior antennæ, are large and conspicuous, and when inflexed they are lodged in a concavity of the basal article or segment of the organs just alluded to.

The *rostrum*, one inch and an eighth in total length, is very much compressed, and thin, tapering off towards its extremity, which is slightly curved downwards, and provided upon said curvature with ten acerated spines, directed forwards, the anterior one being the largest, and constituting the very extremity of that piece. Two more spines, similarly directed forwards, exist upon the upper margin, one near the base, the other a quarter of an inch anteriorly. The inferior edge is provided upon its whole extent with eighteen spines, similar to the anterior upper ones, but much larger and broader posteriorly. On the posterior edge of each of the latter spines exists a series of minute and closely-set hairs.

The anterior—pincers-bearing leg—is the stoutest and longest of the five pairs; the second pair is the most slender and the shortest; the third, fourth, and fifth pairs are equal as far as stoutness is concerned, but the third pair is a little longer than the fourth, and the fourth a little longer than the fifth pair, which is somewhat longer than the second.

The first (basal) and second articles in the five pairs of legs are similar and proportional in their development; the first is an annular ring, bearing a rudimentary palpiform appendage, similar to that observed upon the basal article of the jaw-leg; the second is subtriangular and acute exteriorly:

In the first pair of legs the third article is a little larger and more acute exteriorly than the second. The fourth article is long, compressed towards its base, and subcylindrical anteriorly, where it is provided with a small spine. The fifth article is short, subprismatic, bearing a large spine upon its anterior margin, and several small ones beneath and exteriorly. The sixth, which forms the claw, is the stoutest and longest, bearing upon its extremity three small, black spines; the upper piece of the claw is slightly arched, bearing upon its convexity a well-developed tuft of hairs; its anterior extremity is provided with a series of about a dozen small, black spines, largest near the apex.

In the second pair of legs the third article is nearly as long as the fourth, and similar to the latter in shape, in a reverse position. The fifth article is the longest, and subcylindrical. The sixth article, which bears a small claw, is likewise subcylindrical, or slightly compressed and elongated. The moveable upper piece is provided anteriorly with four small, black spines, whilst there are but two below.

In the third, fourth, and fifth pairs of legs the third article is a little larger than the second, and also more acute. The fourth article, the longest of all, is compressed, and provided along its external edge with three or four small spines. The fifth article, one-third shorter than the sixth, is likewise compressed, and provided externally with a few minute spines. The sixth is slender, a little shorter than the fourth, provided with exceedingly minute spines beneath, and terminated by a subconical and slightly-curved spine, moveable upon the latter, representing a seventh article.

The caudal region, composed of six segments, is rather stout, compressed, higher than broad



upon the extend of the first segment, the third being considerably developed upon its upper region, which is prominently convex. The remaining portion of the tail is very much reduced, tapering posteriorly, bent downwards and forwards under the body. The lateral and free expansions of the anterior three caudal segments are rounded off; that of the second segment is the largest, subcircular in shape, external, and covering partly the expansions of the first and the third segments. In the fourth and fifth segments that expansion is subtriangular, posteriorly acute. The sixth ring has no such lamellar expansions, but is provided upon its posterior and inferior angle with a slight ridge, at the inner margin of which a row of setæ is observed similar to that which exists upon the external margin of the lamellæ of the other segments. The central caudal appendage, subconical in shape, elongated and tapering, is convex above, concave beneath, and terminated by three pairs of spines; a very minute external pair, and two median, the upper one very slender, and two thirds the length of the lower pair, which is the most conspicuous. Along the upper and convex surface there are three pairs of rather short, stoutish, though small spines. On each side of this central appendage, and inserted in a concavity of the lateral and posterior edge of the sixth segment, with one spiny process above and below, is another appendage composed of a short basal piece, upon which are inserted two moveable very thin lanceolated lamellæ, provided upon their edges with well developed setæ disposed upon one close series. The inner lamella is made of a solitary piece; the external one is composed of two pieces, the undulated and transversal articulation of which may be seen across the posterior third of said lamella, exteriorly marked by two small spines belonging to the largest piece.

The *caudal* or *oviferic* legs, five in number (one pair for each anterior five caudal segments), are of moderate development, the second and third pair being the largest. The posterior four pairs are similarly constructed. They consist of a flattened article, terminated by two narrow, elongated, thin blades, margined with setæ. The anterior pair is distinguished from the others in the structure of the terminal pieces, the inner of which is short and rather broad, and deprived of setæ upon its edge, whilst the outer one is similar to those of the other legs, being, however, considerably smaller.

The surface of the carapax is almost entirely smooth; a minute, prickly granulation becomes visible under a magnifying glass and to the touch also. This granulation is more apparent upon the locomotory and other appendages than elsewhere. The upper margin of the large claw is provided with an elongated tuft of setæ extending from the anterior portion of the hand (so called) along the convexity of the finger to near its apex. An elongated cushion of short setæ may also be observed along the convexity of the finger to near its apex. An elongated cushion of short setæ may also be observed along the inner surface of the third, fourth, and the base of the fifth article of the jaw-legs. Scattered bristles or setæ exist along the inner surface of most of the articles constituting the legs, and principally upon the mandibles.

The ground-color is yellowish; the sides of the cephalothorax and tail are variegated with irregularly meandric, fuliginous red maculæ. The appendages are annulated with purplish red. The third caudal ring is purplish upon its convexity, exhibiting two parallel light vittæ along the upper surface of the anterior three rings, uniting at an acute angle upon the posterior portion of the third ring. The caudal legs are spotted with fuliginous red.

The specimens were caught in Caldera bay.