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MISSOURI BOTANICAL GARDEN  
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*Genus Idotea, Fabr.**Idotea*, Miers' Cat. N. Z. Crust., p. 91.*Idotea lacustris*, nov. sp.

Body narrow-elliptical, little more than twice as long as broad. Front of head excavate, not toothed. First segment of thorax somewhat longer than those succeeding, which are subequal; epimeral pieces nearly square, the last three slightly produced posteriorly.

Abdomen 3-jointed, terminal joint (formed of three coalescent segments) hardly narrowing to the rounded extremity. Inner antennæ not half as long as base of the outer, 4-jointed, joints subequal. Outer antennæ one third as long as the body, flagellum 9-11-jointed, with a dense fringe of very short setæ on the outer margin. Colour dark gray, mottled with brown, with a darker median band extending from the head to near the extremity of the abdomen. Length .6 inch.

In numerous females, an incubatory pouch extended along the whole under surface of the thorax. The young animals, taken out of this sac, have their bodies somewhat elongated in shape, with all the segments developed, and appendages present, but having the outer antennæ furnished with a flagellum of only one joint and a few short setæ.

ART. XXI.—*On the New Zealand Entomostraca.* By GEORGE M. THOMSON.

[Read before the Otago Institute, 26th November, 1878.]

## Plate XI.

THE study of the lower orders of Crustaceans is, as a rule, confined to a few specialists, hence it is only now and then that they form the subject of communications to societies. In regard to this colony, the fact is that till the publication of Miers' Catalogue of the New Zealand Crustacea in the British Museum, our knowledge of the whole class was fragmentary and scattered throughout numerous works. Now, however, that all the information on the subject has been thus collected and published in a condensed form, it becomes more easy to fill up the existing gaps.

The Entomostraca are an interesting and but little studied division of Crustaceans, and from their abundance are of considerable importance. The species enumerated here have been collected chiefly within a few miles of Dunedin, and the marine forms only between tide marks; so that we are as yet only on the threshold of the subject.



Examination of other portions of the Islands, and particularly the use of the dredge at various depths of the ocean, will certainly reveal many other forms.

For subsequent reference, I have here tabulated the characters of the whole family.

*Sub-class Entomostraca.*

*Legion I. Lophyropoda.* Branchiæ attached to the organs of the mouth; legs few, not exceeding five pairs, serving for locomotion; articulations mostly more or less cylindrical; antennæ two pairs, one pair used as organs of motion.

*Order I. Ostracoda.* Shell consisting of 2 valves, entirely enclosing the body; feet 1-3 pairs, adapted for progression; no external ovary.

*Sect. I. Podocopa.* Inferior antennæ simple, subpediform, geniculate, clawed at the end.

*Fam. I. Cypridæ.* Superior antennæ mostly seven-jointed, with a dense brush of long setæ; eye single; feet two pairs, the last bent up between the valves; abdominal rami two, elongate, clawed at the end.

*Genus I. Cypris, Müller.*

Upper antennæ seven-jointed, with numerous long plumose setæ. Lower antennæ five-jointed, furnished with a brush of setæ, and terminated by four long, serrated claws. Second pair of jaws possessing a branchial plate, and a sub-conical obscurely-jointed palpus, ending in three long setæ. Post-abdominal rami long and slender, terminating in two strong, curved claws. Animals free-swimming, mostly found in fresh or slightly brackish water.

*1. Cypris novæ-zealandiæ, Baird.*

*Cypris novæ-zealandiæ*, Baird. Dieffenbach's N. Z., vol. ii, p. 268.

"Shell ovate, elongated, both extremities of the same size, somewhat turgid and slightly sinuated in the centre of anterior margin, white, smooth and shining, perfectly free from hairs."

This may be the species described next, as the valves bleach after the animal dies, and lose their hairs. The shape, however, is not quite the same, and the whole description is too meagre to found any identification upon.

The following three species belong to Brady's *Section a*, and agree in the following characters:—

"Setæ of lower antennæ plumose, subequal, reaching about as far as, or only slightly beyond, the apex of the terminal claws. Second foot terminating in a short, hooked claw, and one or more moderately long setæ."



2. *Cypris ciliata*, nov. sp. Fig. A.1 a–g.

Valves oval-elliptical, slightly narrowing anteriorly, high in the middle, very convex; greatest height less than two-thirds of the length. Margin finely denticulated on the inside, thickly fringed with fine hairs. Surface more or less hairy, minutely granular; when examined under a high power it appears closely reticulated. Colour very variable, ranging from whitish yellow to dark brown, more or less marked with brown, and sometimes with irregular black dots, varying chiefly with the nature of the mud of the pools in which the animals occur. Valves rather opaque, seldom semi-transparent. Setæ of second pair of legs about as long as terminal joint. Post-abdominal rami long and slender; their claws long and pectinately toothed; the uppermost seta nearly as long as the claw next it, terminal seta about half as long.

Length  $\frac{1}{18}$  inch; height  $\frac{1}{37}$  inch.

Very common in all stagnant fresh water near Dunedin. Wellington (T. W. Kirk). Probably the most abundant form in New Zealand. I have not found it in running streams. October to April or May.

3. *Cypris viridis*, nov. sp. Fig. A.2 a–g.

Valves broadly reniform, rounded at the extremities, slightly hollowed on the lower margin, elevated in the centre of the upper margin; greatest height about equal to three-fourths of the length. Viewed from above the valves are very convex posteriorly, broadly ovate in form, and tapering to the anterior extremity. Margins and surface clothed with hairs. Colour a dirty green, varying in intensity; substance of the valves quite opaque. Under a high power the surface appears to be minutely granular. Setæ of second pair of legs short. Post-abdominal rami very slender; the claws unequal, and also very slender. Length  $\frac{1}{20}$  inch; height  $\frac{1}{32}$  inch.

Not uncommon in pools about Dunedin and Taieri Plain.

To be found all the year round. I have taken it in blocks of ice, and found it quite lively as soon as its covering was thawed.

4. *Cypris littoralis*, nov. sp. Fig A.3 a–b, and B.1 a–d.

Valves narrow oblong, compressed; lower margin nearly straight, upper evenly and slightly arched, highest in the middle; greatest height equal to less than half the length. Surface and margins quite smooth. Colour yellowish-grey, dotted with irregular black or brown spots. Valves semi-transparent. Terminal setæ of second pair of legs very long and glumose. Post-abdominal rami long, slender and smooth; the two large terminal claws bearing three stout teeth near their apex.

Length  $\frac{1}{30}$  in.; breadth  $\frac{1}{75}$  in.

This minute and very distinct species was found in pools of brackish water at Blueskin, north of Dunedin. The specimen figured was a male;



owing to the transparency of the shell the mucus-gland (testis ?) could easily be seen.

*Fam. II. Cytheridæ.*

Superior antennæ five- to seven-jointed, armed with setæ or spines; inferior antennæ four- to five-jointed, without a brush of setæ. Three pairs of feet, all very much alike, adapted for walking. Post-abdomen rudimentary, consisting of two very small lobes.

*Genus I. Cythere, Müller.*

Shell usually thick and strong, with a more or less rough and uneven surface. Superior antennæ five- to six-jointed, spiniferous; inferior antennæ four-jointed. Mandibular palpus three- to four-jointed, and furnished with a tuft of from two to five setæ. Internal lobe of first maxillæ well developed.

1. *Cythere atra*, nov. sp. Figs. A.2 and C.1.

Valves subreniform, highest behind the middle, narrowing anteriorly, rounded posteriorly; when viewed from above, narrow-oblong, evenly convex, tapering to a subacute apex anteriorly, more obtuse posteriorly. Examined under a high power, the shell is seen to be sparsely covered with circular translucent spots, which appear black when the animal is within. Margin fringed with very short close cilia. Colour nearly black, opaque, except near the margins. Limbs yellowish. Superior antennæ 6-jointed, last joint small, three preceding subequal in length, setæ short; second joint fringed with minute hairs on lower margin. Inferior antennæ stout, with the last joint very short; terminal claws short and uneven; urticating seta bi-articulate, reaching to the extremity of the antenna. Limbs similar in shape, lengthening posteriorly. Length  $\frac{1}{40}$  inch; height  $\frac{1}{70}$  inch.

Among *Algæ* in shallow water. Otago Harbour.

2. *Cythere truncata*, nov. sp. Fig. C.2 a-c.

Valves sub-quadrilateral, highest in front, lower margin slightly hollowed in the middle, anterior extremity very wide and rounded, middle of upper margin falling slightly away; posterior extremity with its upper half hollowed out into a deep oblique notch. When viewed from above, the valves are elongate-quadrilateral in outline, obtuse in front, sides nearly straight, and about even in width to the posterior angle, where they suddenly fall away to the margin. Whole anterior margin fringed with broad, curved, and flat teeth, the rest all smooth. Surface irregularly pitted and grooved, marked with circular dots. Greatest height barely equal to half the length. The limbs of the animal are brownish-yellow in colour. Last joint of upper antennæ only half as long as preceding; terminal setæ stout. Urticating seta of lower antenna short, only reaching to middle of third joint, uniarticulate. Mandibular palp bearing three curved and pectinately



fringed setæ. Terminal claws of the legs long and curved, those of last pair pectinately toothed. Abdominal lobes terminating in two short, unequal, fringed setæ.

Length  $\frac{1}{36}$  inch; height  $\frac{1}{65}$  inch.

In *Algæ* along with preceding species. Otago Harbour.

*Genus 2. Loxoconcha, G. O. Sars.*

Valves sub-rhomboidal in shape, surface usually marked with fine concentric pittings and circular papillæ; ventral margins forming a thin and more or less prominent keel behind the middle; posterior dorsal margin obliquely truncate. Limbs of the animal slender and colourless. Upper antennæ very slender, six-jointed, last joint very long, linear and bearing long, simple setæ; lower antennæ four-jointed, third joint long and narrow; flagellum long and bi-articulate. Mandibular palp three-jointed, bearing a distinct branchial appendage. Lowest seta of the branchial plate of first pair of jaws deflexed. Abdomen terminated by a hairy, conical process; postabdominal lobes bearing two moderately long, subequal setæ.

“The genus is well characterised by the oblique ‘peach-stone’ outline of the carapace, and by the very slender setose, but non-spinous limbs of the animal.”

1. *Loxoconcha punctata*, nov. sp. Fig. B.3 a-k.

Valves of the male sub-rhomboidal; greatest height less than two-thirds the length; extremities obliquely rounded, whole lower margin more or less flattened and keeled, minutely ciliate. Viewed from above, evenly convex, widest in the middle, and tapering to both ends. Surface marked with dark spots and numerous translucent punctations. Colour greyish, shining and somewhat translucent. Valves of the female rather longer, more reniform in outline and usually much more opaque; keel not so prominently flattened. Hinge processes well marked; intervening portion of margin crenulated. Eyes distinct and separate. Superior antennæ very sparingly setose: setæ long. Third joint of inferior antennæ with two setæ above the middle of the posterior margin, and pectinately toothed towards the extremity. Urticating setæ reaching to extremity of antennæ; glands large. Terminal claws of all the feet long and curved. Length  $\frac{1}{30}$  inch; height  $\frac{1}{48}$  inch.

Among seaweed, along with the two preceding species of *Cythere*, in Otago Harbour.

This appears to be a very variable species, particularly in the texture of the shell. In some the valves are nearly translucent, while gradations can be traced up to complete opacity.

*Sect. II. Myodocopa.*

Inferior antennæ two-branched; one branch rudimentary, the other powerful, many-jointed, with long natatory setæ; mandibular palp very



large, sub-pediform, geniculate, not branchial. Post-abdomen with two broad plates, clawed.

*Fam. I. Cypridinidæ.*

Superior antennæ large, many-jointed, setiferous at the extremity. Inferior antennæ with the natatory branch nine-jointed, and furnished with ciliated setæ. Mandibles rudimentary; palp large, pediform, four-jointed. Second pair of jaws with a large branchial plate. One pair of feet, vermiform, annulated and armed with prickly spines at the apex, oviferous. Two compound eyes, and one large simple eye.

NOTE.—In the Zoological Society Proc. for 1850, at p. 255, Mr. Baird has described, from the dried and bleached valves, a species of *Cypridina* (?) Not having seen his drawings, I am unable to say whether it is the same as the species described by me, as *Philomedes agilis*. The following is Baird's description:—

“*Cypridina zealanica*, Baird.

Carapace valves of an oval form, somewhat flattened, but convex in the centre and striated; the striæ are numerous, close-set, and of a waved appearance. Surface of valves covered with minute punctations, which probably give origin in the fresh state to short hairs, though they are not visible in the dried specimens. The anterior extremity is slightly narrower than the posterior. The whole carapace is of a uniform white colour. Natural size one-fourth of an inch long, and one-fifth of an inch broad.

Hab.—New Zealand. Two specimens were sent to the British Museum by the Rey. R. Taylor of Waimate in New Zealand, along with a collection of marine and freshwater shells, but without any history attached to them.”

At p. 102 of the same volume this species is described as *C. zealandica*.

*Genus I. Philomedes, Lilljeborg.*

*Cypridina*, Baird. Brit. Entom., p. 176.

*Philomedes*, Lilljeborg; G. O. Sars; Norman; Brady, Zool. Soc., Proc. 1871, p. 291.

Shell of moderate strength and density. Superior antennæ six-jointed; in the female short and thick, and bearing several subequal terminal setæ of moderate length; in the male more elongated, two of the terminal setæ of excessive length, the antepenultimate joint bearing a stout and densely setose auditory filament. Natatory branch of lower antennæ nine-jointed; in the female having the first joint very long, the rest short and subequal; in the male the first and third joints long, the second much shorter, the rest short and subequal; secondary branch in female indistinctly jointed, setose; in the male long, three-jointed, cheliform. Mandibular feet nearly alike in both sexes; in the female armed with mandibuliform processes and spines, in the male bearing on the basal joint a small tubercle with two short hairs; second pair of jaws in the female armed with mandibuliform processes. Eyes of the female small and pale-coloured; of the male large, deep-red, and multilenticular.



1. *Philomedes agilis*, nov. sp. Fig. C.3 a-e, and D.1 a-g.

*Male*.—Valves, when viewed from the side, oblong; greatest height about two-thirds of the length, obtusely rounded posteriorly, beak not greatly produced anteriorly; superior and inferior margins evenly and slightly arched; oral notch wide, margins more or less setose. When viewed from above the valves are narrow, sides nearly parallel, almost truncate posteriorly, tapering to an obtuse point in front. Surface marked with numerous circular pits, and several translucent spots in the centre of each valve. Behind each prominent eye-spot, is a more or less deep transverse sinus or depression, extending nearly across the whole valve. Colour of shell yellowish-brown. Terminal setæ of upper antennæ nearly half as long as the antennæ itself. Natatory branch of inferior antennæ (exclusive of setæ) exceeding in length the basal portion, second joint very short, bearing a straight plumose seta, equal in length to the third joint, which again is longer than the next six joints; terminal setæ about as long as the branch itself. Secondary branch with the basal joint short and stout, bearing short plumose setæ; second and third joints subequal, former with two setæ in the middle of external margin, latter curved, external margin denticulate and with a single seta on its inner margin near the base. Last joint of mandibular foot slender, twice as long as preceding, terminal claw subequal to it; all the joints bearing several plumose setæ. "Oviferous feet" terminating in a vermiform toothed extremity, bearing a pair of long spinose setæ above and three beneath; about five pairs of shorter spinose setæ on the annulated portion near the extremity. Post-abdominal laminæ terminated by three large jointed and doubly-serrated claws,—the first very long, second only half as long, and third about half as long as second,—and about five smaller spines. Eyes large black.

*Female*.—Valves somewhat larger, and much more circular in outline, with the beak small and very slightly produced; oral notch nearly rectangular; height about three-fourths of the length; easily distinguished externally from the male by the small size of the eye-spot. Superior antennæ with the setæ at the extremity of the antepenultimate joint beautifully plumose. Natatory branch of the inferior antennæ with the first joint very long; all the rest short and subequal; no setæ on the first three joints, those on the fourth, fifth, and sixth joints about as long as the basal joint and bluntly toothed; the remainder (seven in number) very long and densely plumose; secondary branch rudimentary, with a few small setæ. Eyes reddish.

Length  $\frac{1}{12}$  inch; height  $\frac{1}{21}$  inch.

Swimming actively in rock pools on the Taieri Beach.

## Order II. Copepoda.

Shell jointed, forming a buckler enclosing the head and thorax; legs five pairs, mostly adapted for swimming; ovary external.



*Fam. I. Cyclopidae.*

Head consolidated with thorax; foot-jaws two pairs, generally small; fifth pair of legs rudimentary; eye single; both of the superior antennæ in the male furnished with a swollen hinge-joint.

*Genus I. Cyclops, Müller. Fig. D.2 a-l.*

Foot-jaws large and strong, branched; inferior antennæ simple; external ovaries two.

*1. Cyclops novæ-zealandiæ, nov. sp.*

*Female*.—Cephalothorax greatly exceeding in length the three following segments, produced downwards in front into an obtuse beak. All the body segments rounded on their postero-lateral margins; segments of the abdomen slightly produced posteriorly above and below, last segment with the whole posterior margin finely serrated. Superior antennæ fourteen-jointed; last five articulations long and slender. Each joint furnished with one or more setæ, which are most abundant on the basal joints; terminal joint with one long and four shorter setæ. Inferior antennæ four-jointed; first joint bearing at its extremity a long plumose seta, which exceeds the rest of the antenna in length; second nearly smooth; third with the inferior margin sinuously curved and bearing about eight setæ; last joint terminated by seven unequal setæ. Mouth organs as in *C. quadricornis*. Last pair of legs two-jointed; basal joint very short; second sub-triangular in shape and bearing three setæ, the longest of which is plumose. Caudal lamellæ about four times as long as broad, with a line of serrations down the outer margins. Setæ sparingly ciliated near the base, but becoming beautifully plumose towards the middle and extremities; inner seta longer than the abdomen, about eight times as long as the lamellæ; outer seta about five times as long as lamellæ; a short-toothed seta on the outer margin at the extremity; two more on the inner margin. Ovaries usually of a slate blue colour, broadly oval, only about half as long as the abdomen, and diverging somewhat widely from it.

*Male*.—Smaller than the female and more active, similar in shape, but readily distinguished by the shape of the superior antennæ. These have the joints much more crowded together, and very flexible. Antepenultimate joint not setiferous; ultimate joint having about eight setæ on one side, the last (and longest) being somewhat removed from the smooth extremity. These last two joints have an extremely flexible hinge, and can be bent completely back so as to lie against the preceding joints. Fifth pair of legs as in the female.

Colour usually yellowish and semi-transparent, with numerous red or brown oil globules; sometimes so encrusted with diatoms and confervoid



growths as to be bright green. Eye usually red, sometimes brown or nearly black. Length, exclusive of caudal setæ, about  $\frac{1}{20}$  inch. Occurs all the year round.

This is a very common species, occurring in every little pool, and even in brackish water affected by the tide. It is extremely lively in its movements, and avoids danger with much more alacrity than the majority of the Entomostraca, darting away on the approach of a dipping-tube or other large object.

From the figure in Dana's Atlas of Crustacea (U.S. Explor. Exped.), this species appears to be very near *C. vitiensis*, Dana. I have not seen any description however.

*Genus II. Arpacticus, Baird.*

Foot-jaws forming strong cheliform hands; inferior antennæ simple. Ovary single.

1. *Arpacticus bairdii*, nov. sp. Fig. D.3, and Fig. E.1.

Body indistinctly ten-jointed. Cephalothorax produced downwards into a beak. Eye usually crimson. Superior antennæ stout, composed of ten articulations, the last seven subequal in length, but greatly narrowing, bearing numerous setæ, which are particularly abundant on the third, fourth, fifth, and sixth joints; one very long and stout seta from the fourth joint; last joint terminated by about five setæ of different lengths. Lower antennæ two-jointed; basal joint with a two-jointed, setiferous appendage; ultimate joint with about nine long setæ. Mandibles strong. Posterior foot-jaws three-jointed; second joint ovate, with a broad, flat margin furnished with two rows of small teeth; third joint in form of a strong hook. First pair of feet with both branches three-jointed, external branch having the first joint short, bearing one strong seta, second much longer, with seta on each side, last joint very short and terminated by about five somewhat curved setæ, the largest of them being somewhat serrated on its inner margin; internal branch with first joint very long, second short, and third in the form of a long, slender hook. Second, third, and fourth pairs of legs somewhat similar in shape, with the external branch in each longer than the internal, and all furnished with numerous setæ, the longer of which are beautifully plumose. Fifth pair with both branches formed of a single, nearly circular joint, bearing five setæ at the extremity. All the legs more or less serrated on the margins. Abdomen cylindrical, tapering posteriorly; posterior margins of segments minutely serrate. Bilobed extremity bearing on each side one seta, which exceeds the abdomen in length, one about a third as long, and four short ones. Ovisac large, usually exceeding the abdomen in diameter, and reaching to about the penultimate segment.

Length  $\frac{1}{30}$  of an inch.

Occurs abundantly among shore-algæ in Otago Harbour.



*Legion II. Branchiopoda.*

Branchiæ attached to the legs; legs from four to sixty pairs.

*Order I. Phyllopoda.*

Legs from eleven to sixty pairs in number; joints foliaceous and branchiiform, chiefly adapted for respiration and not motion; eyes two or three, sometimes pedunculated; antennæ one or two pairs, neither adapted for swimming.

*Fam. I. Apodidæ.*

Feet sixty pairs. Antennæ—only one pair—short, styliform. Eyes two, sessile. Body multi-articulate, the greater part covered by a shield-like carapace.

*Genus I. Lepidurus, Leach.*

Last segment of the body produced into a lamina, which projects to some distance between the caudal filaments. First pair of legs short.

1. *Lepidurus kirkii*, nov. sp. Fig. E.4.

Carapace very broadly oval, covering nearly the whole abdomen, very membranous. Keel visible along the whole back, becoming more prominent at its posterior extremity. Posterior notch with from eleven to thirteen acute teeth, inter-dental portions smooth. Edges of the carapace very slightly serrated towards its posterior angles. Appendages of the first pair of feet more developed than is usual in the species of this genus, external branch being about one-fourth as long as the carapace. Segments of the abdomen studded with a row of numerous, stout, curved spines. Caudal lamella oval, evenly rounded at the extremity, margins finely and acutely serrate; dorsal row of spines extending about two-thirds of its length. Caudal setæ more than half as long as the body, densely hirsute. Colour pale olive green. Length, including caudal lamella, 1.25 inch; breadth of carapace (about) .75 inch.

Wellington, T. W. Kirk, junr.

2. *Lepidurus compressus*, nov. sp. Fig. E.5.

Carapace oval, not spreading, but somewhat arched, hardly covering the abdomen, keeled only at the extremity. Posterior notch very deep, with about twelve very small teeth, and minute serrations between. Lower margin of carapace smooth. Appendages of first pair of feet short, hardly extending beyond edge of carapace. Segments of abdomen with a row of small, straight spines. Caudal lamella as in the previous species, but with the keel extending to its extremity, and sparingly toothed. Caudal setæ densely hirsute, not half as long as the body. Colour dark olive green. Length .8 inch; breadth only about .3 inch.

Collected by Prof. Hutton in pools at Waikouaiti, and at Queenstown (Lake Wakatipu.)

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It is with considerable hesitation that I advance the above as distinct species. As Sir John Lubbock states (Linn. Soc. Trans. Vol. XXIV., p. 206), the relative length of the carapace and the form of the caudal lamella vary so much in different individuals, even when taken from the same pool, that they do not constitute good characters on which to found new species. Though the specimens examined by me were sufficiently distinct to be readily recognised and separated into two lots without any close investigation, yet I am inclined to think that both constitute only varieties of a wide-spread species. In fact, I should be inclined to include under one species, *L. productus*, Bosc., from Europe, *L. viridis*, Baird, from Tasmania, *L. angasii*, Baird, from South Australia, and perhaps even *L. glacialis*, Kroyer, from North America.

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Order II. Cladocera.

Legs four to six pairs, chiefly branchial; eye single and very large; antennæ two pairs, inferior large, branched, and adapted for swimming.

Fam. I. Daphniadæ.

Superior antennæ small; inferior large, two-branched; legs five (or six) pairs, all enclosed within the carapace.

Genus I. *Daphnia*, Müller.

Head produced downwards into a more or less prominent beak. Superior antennæ exceedingly small, one-jointed, and situated under the beak; inferior large and powerful.

1. *Daphnia obtusata*, nov. sp. Fig. E.2 a-e.

Carapace (viewed laterally) oval, broadest below the middle, obtusely pointed below, infero-anterior margin oblique; anterior margin rounded, finely ciliated. When viewed dorsally, the valves are narrow-obovate in shape, tapering downwards. Head small, produced into a very obtuse beak. Inferior antennæ comparatively small as compared with European species, not more than one-fourth the length of the carapace. Superior antennæ very minute, thick and slightly curved, with a few very delicate cilia at the extremity. Eye moderately large. Abdominal segment bearing two slender filaments. Caudal claws long, slender and curved, serrated below. Lower edge of abdomen with numerous curved teeth.

The whole carapace is semi-transparent and closely striated.

Length  $\frac{1}{12}$  inch. Occurs in great abundance in still water in neighbourhood of Dunedin from October to May.

The young are very abundantly produced, over thirty sometimes occurring within the valves of the parent. Before leaving this shelter they are remarkably well-developed and able to swim about freely. At this early stage the carapace is subquadrate in shape, and both pairs of antennæ are relatively large, the inferior being nearly as long as the animal.



This species is very distinct in general shape from any European form, which are all more or less acutely produced inferiorly, and it also has the antennæ very much shorter than is usual in the genus.

*Fam. II. Lynceidæ.*

Superior antennæ very short; inferior of moderate size, branched, each branch three-jointed; legs five pairs; eye single, with a black spot in front; intestine convoluted, having one complete turn and a half.

*Genus I. Chydorus, Leach.*

Nearly spherical in shape; beak very long and sharp, curved downwards; inferior antennæ very short.

1. *Chydorus minutus*, nov. sp. Fig. E.3 a.

Carapace broadly oblong in young specimens, becoming more spherical in adults, dorsally rounded; antero-inferior margin oblique, fringed with rather long cilia. Beak long, very acute. Eye rather small; eye-spot not half as large. Superior antennæ very small, blunt, with a few very delicate setæ. Inferior antennæ short; lower branch with two setæ from extremity of last joint; upper branch with one seta from the penultimate joint, and three from the last joint. Abdomen strongly serrated on the inferior margin, with the terminal claws short and curved. The postero-dorsal border of the abdomen furnished with two filaments. Length about  $\frac{1}{50}$  of an inch.

Very common in ditches, ponds &c., near Dunedin, from October to May.

In the larger specimen figured, a solitary young one was inside the carapace of the parent. This was well-developed, having the eye and eye-spot prominent, and apparently all the limbs perfect.

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DESCRIPTION OF PLATE XI.

(The small numbers represent the linear magnifying power.\*)

Fig. A.1. *Cypris ciliata*: (a) superior antennæ; (b) inferior antennæ; (c) portion of mandible; (d) first pair of feet; (e) second pair of feet; (f) post-abdominal ramus; (g) portion of valve.

2. *Cypris viridis*: (a) superior antennæ; (b) inferior antennæ; (c) portion of mandible; (d) first pair of feet; (e) second pair of feet; (f) post-abdominal ramus; (g) portion of valve.

3. *Cypris littoralis*: (a) mucus-gland (of Brady); (b) post-abdominal ramus.

\* These numbers should be reduced by one-half, as the original plates have been reduced to that extent.—ED.





ENTOMOSTRACA