

ART. XVII.—*Description of some New Victorian Fresh-water Amphipoda.*

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(With Plates XXXV.-XL.)

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Very little is known of the fresh-water and terrestrial Amphipoda of Australasia. The only fresh-water species hitherto recorded from any part of the continent is one from Victoria, *Niphargus pulchellus*, described by me in the last volume of this journal. From Tasmania, with which the southern Victorian fauna and flora are closely related, two species, *Niphargus montanus* and *N. mortoni*, have been described by Mr. G. M. Thomson.¹

Concerning the terrestrial Amphipoda, Professor Haswell originally formed two species, *Talitrus sylvaticus*, from New South Wales, and *T. assimilis*, from Tasmania; however, subsequently (1885) he made the latter a synonym of the former, but wrongly referred to it as *T. affinis*.² The mistake of quoting *affinis* for *assimilis* was previously made in his Australian Crustacea Catalogue, and also later by G. M. Thomson in his paper on Tasmanian Crustacea,³ where the Sydney and Tasmanian forms are compared and assigned to the original species, *T. sylvaticus*. This species also exists in great numbers in damp forest country throughout Southern and North-Eastern Victoria.

The New Zealand fresh-water and land Amphipoda, so far described, are as follows—from surface waters *Hyalella mihiwaka*, Chilton, *Pherusa caerulea*, G.M.T., *Calliopius fluviatilis*, G.M.T.; from subterranean waters, *Calliopius subterraneus*, Chilton, *Crangonyx compactus*, Chilton, and *Gammarus fragilis*, Chilton; and of terrestrial habit, *Orchestia sylvicola*, Dana.

¹ Proc. Royal Society Tasmania, 1892.

² Proc. Linnean Soc. N.S.W., vol. x., pt. i.

³ *Loc. cit.*, p. 15.

The present paper describes four new species, all Victorian fresh-water inhabitants, for one of which I have thought it necessary to form a new genus, which embraces also Thomson's *Niphargus montanus* from Tasmania.

I desire to acknowledge my indebtedness to Mr. G. M. Thomson, F.L.S., of Dunedin, for furnishing me with co-types of his Tasmanian species, to Professor Baldwin Spencer, F.R.S., for a few specimens that he had collected from Lake Petrach, Tasmania, and also to Messrs. J. Shephard, J. Gabriel and C. Barber for specimens collected from this colony.

Family ORCHESTIDAE.

Hyalella australis, sp. n.

(Plate XXXVI.).

Male.—Body smooth, back deeply arched. Cephalon longer than first segment of mesosome, lateral corners broadly rounded, and slightly projecting between the bases of the antennae. Eyes large, slightly oval, black. Side plates of first and second segments of mesosome deeper, those of third and fourth equal to their respective segments. Second and third segments of mesosome with infero-posterior angles acute, very slightly produced backward.

Upper antennae very long, measuring half the length of the body, flagellum of about ten articuli, longer than its peduncle. Lower antennae shorter than the upper, its peduncle reaching slightly beyond the peduncle of upper, flagellum of about seven articuli. First gnathopoda short, hind margin of carpus slightly lobed, with the margin evenly rounded, and fringed with about nine delicately feathered setae; propodus sub-trigonal, longer than the carpus, palm straight, oblique, defined by a small spine, margin setose. Second gnathopoda long, with the carpus small, not lobed, and free from setae, propodus large, almost as long as the basis, subovate, narrowing distally, palm very oblique, of even length to the joint's greatest width, slightly convex, and defined by a small rounded tubercle, margin spinose. Dactylus falciform, margin entire. Third and fourth pairs of peraeopoda with the bases expanded in a lesser degree than the fifth,

posterior margins of each minutely serrate. The third peraeopoda considerably shorter than the fourth, and the fourth slightly longer than the fifth, the coxal lobe of the fourth deeply produced, and its hind margin bearing five spinules. First uropoda reaching slightly beyond the end of the second, peduncle much longer than rami, with few spines; the second with peduncle of subequal length to its rami, inner ramus slightly longer than outer; the third short, peduncle stout, longer than its ramus, which is minute, conical, apically rounded, and tipped by a few long setae. Telson entire, thick at the base, convex above, the end wide, almost straight, and bearing four spinules, lateral margins convex.

Female.—Smaller in size but of similar form to the male except in the second gnathopoda, which are subequal in form to the first. The second is longer, the propodus slightly larger, and, compared with the first gnathopod of the male, the propodus is similar in armature, but longer, the palm narrower, transverse, and the margin slightly convex. The carpus also is longer and bears about thirteen finely feathered setae.

Colour.—When alive pale green.

Length.—Largest ♂ 8 mm. Largest ♀ 7.25 mm.

Occurrence.—Very common in the following lagoons along the valley of the River Yarra and its tributaries, Fernshaw, Christmas Hills (collected by C. Barber), Heidelberg, East Kew, Melbourne Botanical Gardens, and Elwood Swamp.

Distribution.—Lake Petrach, Tasmania. Altitude 2900 feet (collected by Professor Baldwin Spencer).

Remarks.—*Hyalella* appears to have no conspicuous characters at variance with *Hyale* except in respect of the telson which is entire, whereas in *Hyale* it is cleft to the base. The species of the latter genus are mostly marine inhabitants, and so far those of *Hyalella* have only been recorded from the fresh-waters of North and South America and New Zealand. The present species is undoubtedly congeneric with *H. mihiwaka*, Chilton, found in mountain streams in New Zealand, but is easily distinguished from it by the narrower side-plates, the shape of the hands, the longer segments of the urosome, and by the peduncle of the terminal uropoda being distinctly jointed to its segment, and not apparently coalescent, as in that species, also

in the upper antennae which are peculiar to the family character in being longer than the lower. In agreement with *H. mihiwaka* the first maxilla does not possess a rudimentary uniarticulate palp, but only a slight truncate projection without the vestige of a joint and differs in this respect from Professor S. I. Smith's generic description.

SUPPLEMENTARY DESCRIPTION.

The *Anterior Lip* is broad, deep and evenly rounded distally.

Mandibles.—In the left-hand mandible the cutting-edge is broad and composed of three large and three smaller teeth, the secondary edge has six small teeth, and below this ridge are three or four plumose spinules. In the right-hand mandible the cutting-edge has six teeth and the secondary process is apically cleft into two ridges, the outer one being finely serrated, and ending laterally in a long pointed tooth, and the inner divided into three stout teeth. Between this process and the molar tubercle there are two long and a number of shorter plumose spinules. The molar tubercle of each is stout, the end covered with rows of very strong denticles, and on one side, near the crown, there is a very long plumose seta. There is no trace of a palp.

The *Posterior Lip* is broad, the lobes closely set and distally evenly rounded, and the inner margin and apex fringed with short fine setae.

First Maxillae.—The outer lobe is very long and apically furnished with about eight toothed spines. Medianly on its outer margin there is a slight projecting knob with truncated summit, which indicates the rudimentary palp, but, after carefully examining several specimens, I failed to find any articulating joint. The inner lobe is very narrow and short, being about half the length of the outer lobe, and tipped by two long and delicately plumed setae.

Second Maxillae.—The outer lobe is very narrow and tipped with numerous long simple setae. The inner lobe is normally broad, not reaching to the end of the outer lobe, its summit faces obliquely, and is furnished with a row of nine pectinated setae and a parallel row of simple setae, also at the distal inner angle there is a long plumose seta.

Maxillipedes.—These agree very closely with *H. mihiwaka*, but the inner lobe compared with that species is short, only reaching to the extremity of the inner distal angle of the first joint of the palp. The inner margin of this lobe is straight, the outer convex, the summit truncated and tipped with three short stout teeth, which successively increase in size from the inner to the outer sides; distally the inner margin has a row of plumose setae which extend across the end and continue for a short distance along the outer margin, also a few scattered ones near the base of the teeth on the side that faces dorsally. The outer lobe extends to half the length of the palp's second joint, its inner margin is slightly convex, and fringed with a row of fine simple setae, the outer margin is deeply curved and free from setae. The palp has the first joint tufted with a few short setae on the outer distal angle, the second gradually widens distally, due to the inner margin being laterally produced; this margin is fringed with long fine setae, and the outer angle has a tuft of setae; the distal margin is straight. The third joint has the inner distal angle slightly produced, evenly rounded, and setose, there is also a tuft of setae at the outer distal angle and also another medianly on the outer margin. The last joint, which is slightly embedded in the preceding joint, is short, broad at the base, bluntly pointed, and bearing one stout seta at the apex, and a few fine ones on the inner margin.

Gnathopoda.—The coxal plate of the first gradually widens distally, and the lateral angles are broadly rounded, that of the second becomes gradually narrow distally. The margins of each are entire and unclothed.

Peraeopoda.—The coxal plate of the second is very wide, and the hind margin is somewhat excavated. In the third pair the coxa is bilobed, and the front margin of the hind lobe bears about five rather long spines; in the fourth pair the single-coxal lobe is very deeply produced, and its posterior margin spinose, that of the fifth pair is small with margin unclothed.

The branchial lamellae are rather small and narrow at the base.

Uropods.—The first has the peduncle twice the length of the rami, and the upper margin has only a few spinules, the rami are short and subequal. The second has the inner ramus slightly longer than the outer, and the whole of the upper surface thickly

dotted over with short spinules; the outer ramus has a single row of spinules on the outer upper margin. The third has been sufficiently described.

Family CALLIOPIIDAE.

Atyloides gabrieli, sp. n.

(Plates XXXVII. and XXXVIII.).

Body robust, smooth, without dorsal projections. Cephalon deep, rostral projection minute, lateral corners evenly rounded, inferior edges deeply excavated, post-antennal corners slightly produced and narrowly rounded. Eyes small, spherical, black. Coxal plates of first four segments of mesosome of subequal depth to their respective segments, each broadly rounded below and unclothed, the first scarcely expanded distally, the fourth as broad as deep, and deeply excavated behind. Segments of metasome deep, their postero-lateral angles right angled.

Upper antennae a little longer than half the length of the body, secondary appendage minute, uniarticulate; peduncle one-third the length of the flagellum, its lower margin beset with numerous clusters of long setae, first joint stout, second slightly shorter, third half as long as the second; flagellum with first joint oblong, succeeding ones transverse. Lower antennae with peduncle almost reaching the extremity of peduncle of upper, its two last joints subequal, and clothed along their lower margins with long setae, flagellum somewhat longer than the peduncle. Gnathopoda small, subequal, the second longer and the hand slightly larger; carpus as long as the propodus, posteriorly bearing about seven transverse rows of long feathered setae, and expanded distally to a small rounded lobe; propodus oblong, widening slightly distally, palm oblique, almost straight, and minutely serrate, margin spinulose, limited by a long spine, outer face with an oblique row of five clusters of long setae; dactylus as long as the palm, entire and unclothed. First two pairs of pereopoda longer than gnathopods, succeeding ones slightly increasing in length, bases expanded. First uropoda with peduncle longer than rami, rami subequal, extending nearly to the

end of the third pair; second shorter, its outer ramus rather shorter than the inner; third with peduncle short, rami subequal, lanceolate, inner and outer margins fringed with spinules, from the axils of which spring long plumose setae. Telson long, cleft almost to the base, its outer lateral margins setose, and gradually curving to a pointed apex, its dorsal surface with a few fascicles of setae.

Length.—Largest specimen 11.5 mm.

Colour.—Very varied, sometimes almost free from colour, and semi-translucent, at other times more or less flecked with indefinite markings of brilliant pink over the cephalon, back, and sides, and also the anterior appendages.

Occurrence.—Streamlet at Thorpdale (Gippsland); Dandenong Creek, near Bayswater (collected by J. Gabriel); and from Mathinna Falls, Fernshaw. Altitude about 1,500 feet.

Remarks.—This species favours swift running mountain streamlets. It agrees with Stebbing's description in the "Challenger Report" of his genus *Atyloides*, except in the inner plate of the second maxillae being apically narrow, and bearing but three plumose setae and not "many." It is specially characterized, in contradistinction to other species of the genus, by the lobed carpus of the gnathopods, and also by the expanded second joints of both the mandibular and maxillary palpi. Three species hitherto have been described, and all of marine habit. They are recorded from the following localities:—Off Cape of Good Hope; near Cape Horn; Kerguelen Island; Port Jackson (New South Wales); Port Phillip Bay (Victoria).

SUPPLEMENTARY DESCRIPTION.

Anterior Lip.—Broad, the end almost straight, and thickly furred with short stout setae.

Mandibles.—That of the left side has the outer plate divided into six teeth, the two end ones being large and subequal, and the four preceding ones smaller; the inner plate is formed of five teeth, the end one being conspicuously longer than the others; the spine row is furnished with twelve stout curved pectinated spines.

The mandible of the right-hand side has six teeth in the outer plate; the inner cutting process is cleft into two ridges, the outer ridge is minutely serrate and the end acuminate, the inner ridge bears two or three small denticles, and ends in two long closely set teeth. The spine row is formed of nine pectinated spines.

The molar tubercle of each is broad at the end, and there is a row of long setae on one side.

The palp is very broad, the first joint short, the second with the inner margin expanded and thickly clothed with long setae, the outer margin somewhat concave, and except at its distal angle is unclothed. The third joint is rather broad, very slightly longer than the second, the inner margin almost straight and densely fringed with short setae, with also a submarginal row of long delicately feathered setae; the outer margin is deeply convex, and bears two bunches of long feathered setae.

Posterior Lip.—The outer lobes are broadly rounded, and thickly ciliated, the inner lobes prominent and apically narrow.

First Maxillae.—The inner lobe is narrow, twice as long as broad, the sides converge to a rounded apex which is furnished with three long stout plumose setae. The outer lobe is broad, and apically bears about nine strongly pectinated spines. The palp has the second joint twice as long as the first, the end rounded and furnished with many feebly pectinated spinules and simple setae; that of the right-hand side is similar to the left.

Second Maxillae.—The inner lobe is almost as broad as the outer, and extends nearly to its extremity, its summit is obliquely rounded, and bears many fine delicately pectinated spinules; these descend for a short distance along the inner margin, and merge into a marginal row of plumose setae that extend to near the base of the lobe. The outer lobe is rounded distally and bears many pectinated spinules.

Maxillipedes.—The inner plate reaches slightly beyond the palps first joint, its truncated end bears three very large triangular teeth, also numerous plumose setae, and two slightly pectinated long blunt spines, and along the inner margin distally there is a short row of plumose setae. The outer plate is narrow-ovoidal, and extends to slightly beyond half the length of the second joint of the palp; the inner margin is minutely serrate,

and fringed with a row of long spine-teeth, which gradually increase in length, and become more slender distally; there is also a parallel row of slender spinules, some of which are minutely pectinated, which extend a very little beyond the apex on the outer margin.

The first joint of the palp is short and has a bunch of setae on the inner and outer distal angles, the second is very broad, sub-ovoidal, almost as broad as long, with the inner surface covered with fine setae, and the outer margin having a bunch of setae medianly, and at the distal angle. The third joint is strongly incurved, only half the width, and rather more than half the length of the preceding joint, the inner surface is unclothed, while the outer bears on the distal half three transverse rows of pectinated setae, the last row of which fringes the whole of the distal margin and almost hides the last joint. The last joint terminates in a pointed unguis, the outer face is unclothed, and the inner is setose. The ultimate and penultimate joints together curve inward and form a half-circle, the nail pointing almost directly hindwards.

Family GAMMARIDAE.

1.—*Gammarus australis*, sp. n.

(Plate XXXIX.).

Body slender and compressed, back evenly rounded, segments of urosome and last segment of metasome dorsally possessing many long fine spinules. Cephalon as long as the first two segments of mesosome combined, lateral corners rounded, projecting somewhat at the bases of the lower antennae, deeply incised below. Eyes very small, subspherical, black. Coxal plates of anterior four segments of mesosome, deeper than their respective segments, their inferior margins fringed with long spiniform setae, and their posterior margins distally bearing a few short stout spines. Segments of metasome deep, the second with antero-lateral angles rounded, and possessing three submarginal spines, postero-lateral angles right angled, and margins above fringed for a short distance with setae; third segment similar, except that the postero-lateral angles are acute.

Upper antennae somewhat longer than two-thirds the length of the body; peduncle short, extending to the extremity of the penultimate peduncular joint of the lower; flagellum long and slender; secondary appendage with about six articuli. Lower antennae half as long as the upper, clothed with numerous fascicles of very long setae; flagellum of subequal length to the peduncle, and possessing very long setae. Gnathopoda long, subequal in form, clothed with fascicles of long setae, the second slightly longer and the hand rather more swollen; palm slightly oblique, margin straight, entire, setose, defined by two spines, one smaller than the other. Anterior two pairs of peraeopoda short, succeeding three pairs long, the penultimate slightly the longest. Terminal uropoda not long, peduncle short, inner ramus lanceolate, and a very little shorter than the outer, its inner margin fringed with long plumose setae, outer margin with six fascicles of simple setae, and the extremity spinose and setose; outer ramus parallel sided, fringed on the inner margin with plumose setae, and bearing a spine near the extremity, outer margin bearing fascicles of stout spines in four equidistant places, and several long simple setae springing from their bases, the extremity tipped with one very stout spine or rudimentary joint, which is apically setose, and below its base are several spines and setae. Telson cleft to the base, apices rounded, its outer and distal margins and dorsal surface with fascicles of stiff setae.

Colour.—Spirit specimens uniformly yellowish.

Length.—13 mm.

Occurrence.—Dandenong Creek, near Bayswater (collected by Mr. J. Gabriel).

Remarks.—I have only a few specimens of this interesting form, and am not able to certainly define the sexual characters, but of those received there is no apparent relative difference of size in the second pair of hands. I think it may safely be considered a Gammarus.

SUPPLEMENTARY DESCRIPTION.

Upper Antennae.—The first joint of peduncle is stout, with only a few setae at the distal extremity, the second slightly longer and narrower, with a few setae medianly and at the distal

extremity; the third short and narrow, and only half the length of the second. The secondary appendage in the largest specimen is formed of eight articuli.

Lower Antennae.—These are densely clothed on the upper and under surfaces with bunches of setae, those on the lower margin being very long. The last two peduncular joints are long and subequal.

Anterior Lip.—Very small, stout, distally evenly rounded and setose.

Mandibles.—The left has the outer cutting edge broad, and formed of five, and the inner of three teeth, and the spine-row composed of about nine curved spines which are feathered on their sides that face distally. The right mandible has four teeth in the cutting edge, and a transversely cleft secondary process, so as to form two ridges, each with denticulated edges; the ridge nearest the cutting edge contains seven small teeth, and is limited on one side by a stout pointed prolongation; the inner ridge has about three little denticles, and a similar lateral prolongation to the other. Between this process and the molar tubercle there is a spine-row of three or four feathered spines. The molar tubercles are rather small, and bear a fringe of short setae on one side of the distal margin.

The palp is rather long, the first joint short, the second almost of equal length to the third, and its under surface fringed by bunches of long setae, the third is of normal form and armature.

Posterior Lip.—Principal lobes broad, mandibular processes short and poorly developed.

First Maxillae.—The inner lobe extends to half the length, and the outer lobe to the extremity of the palp's second joint. The inner one is narrow and bears on the inner half of its summit three strong teeth and near their bases are two or three long stiff setae; also, commencing at the distal outer limit is a row of plumose setae which run across to the opposite or inner angle, and descend the margin for a short distance.

The outer lobe is subovoidal, and its inner margin bordered with a fringe of about sixteen spine-teeth, which gradually increase in length to the apex and merge into a row of serrated spinules that descend for a short distance along the outer margin.

The palp is rather long, the third joint as long as the second,

and both are fringed on the inner and outer margins by very many long setae, those of the outer margin being very long; the terminal joint is long, unguiculate, and setose.

Gnathopoda.—The second compared with the first, has the carpus and propodus longer, and also the hind margin of the propodus is convex, and not concave as in the first pair; the carpus of each is of equal length to the propodus, the anterior margin bears five bunches of long stout setae, and the hind margin has very many closely set transverse rows of long setae, some of which in each row are finely pectinated on their edges that face distally. The propodus is oblong, with the palm straight, slightly oblique, and the margin setose; it is defined by two spines, one larger than the other, on each of the inner and outer sides, those on the outer side being almost obscured by overlying setae; like the carpus, the anterior margin bears bunches of fine long setae, the posterior margin is free from setae, but across the outside face, there is set obliquely several transverse rows of long setae, and in addition two or three scattered fascicles. The dactylus seems invariably to bear one stout seta on the outer margin, and with this exception is unclothed.

Peraeopoda.—The first and second pairs are subequal, and are a little shorter than the gnathopods. The basos is as long as the following three joints combined, and has numerous fascicles of rather long setae, as have also all the succeeding joints except the dactylus. The carpus is shorter than the merus, and, in addition to bunches of setae, it has four spines (one long and three shorter) at the postero- and one at the antero-distal angle; its anterior margin with this exception is bare. The propodus is of similar length to the carpus, its anterior margin is bare except at the distal angle, and the posterior margin has a row of four equidistant spines, and also bunches of long setae. The dactylus has a stout spine on the posterior or inner face, near the base of the unguis.

The third, fourth, and fifth pairs are long and subequal in form to each other, the third is a little, and the fifth a very little shorter than the fourth. Their armature is, in general, similar to the first and second pairs, but are more spinose; like the others the dactyli bear a single spine on the inner face near the base of the nail.

Uropoda.—The first reaches beyond the second, and almost to the end of the third; the peduncle is long, extending as far as the end of the peduncle of the second, and its inner and outer upper margins bear about four spines; the rami are subequal, much shorter than the peduncle, and their upper margins and apices are very spinulose. The second pair has the peduncle short and of equal length to the rami; in other respects they are subequal to the first. The third pair and the telson have already been described.

Gen. 2.—*Unimelita*, gen. nov.

Body much compressed, without any dorsal projections. Coxal plates wide and deep, first pair not conspicuously widening distally, fourth the largest, and deeply emarginated posteriorly. Segments of metasome deep. Cephalon without any distinct rostrum, lateral corners obtusely rounded. Eyes rather large. Upper antennae longer than the lower, with small secondary appendage.

Oral parts normal. Inner plate of first maxillae very narrow, and apically bearing only about three plumose setae. Outer plate of maxillipedes with stout spine-teeth. Mandible palp having the ultimate joint not longer than the penultimate one. Gnathopoda subequal, hands small, subchelate, the second scarcely larger than the first, with no conspicuous sexual specialization. Peraeopoda normal, the three posterior pairs with the basal joint laminae expanded. Branchial lamellae simple. Incubatory lamellae rather narrow. The two anterior pairs of uropoda with rami, subequal, the last pair projecting beyond the others, and having the inner ramus minute and scale-like, the outer one spinulose, and terminating in a rudimentary joint. Telson cleft about half way to the base, end of lobes spinulose.

Remarks.—This new genus is introduced to receive a new species described below, as well as G. M. Thomson's *Niphargus montanus* from Tasmanian fresh-waters, which I have been enabled to carefully examine through Mr. Thomson kindly sending me co-types. In his original description of it¹, he pointed out divergencies from that genus. The present genus

¹ *Loc. cit.*, p. 26.

has many features in common with *Melita* but in that genus the second pair of hands is conspicuously larger than the first, and also in the males it is always larger, and frequently greatly larger than in the females. In the two species mentioned above the two pairs of hands are small, the second scarcely larger than the first, and there is no apparent sexual specialization. The coxal plates are relatively much larger and the metasome deeper; there are also some differences in the mouth parts, particularly the first maxilla, which has a very narrow inner lobe bearing not more than three plumose setae. Because of the likeness to that genus, and for the uniformity in the size of the hands, the name *Unimelita* is introduced.

***Unimelita spenceri*, sp. n.**

Back considerably vaulted. Cephalon deep and as long as the two succeeding segments combined. Eyes large, oblong. Coxal plates of the anterior four segments of mesosome much deeper than their respective segments, the first with lateral margins narrowing distally, the second parallel, the fourth nearly twice as wide as the third, and deeper than broad; the first three pairs with the inferior margins fringed with long setae, the fourth unclothed. Second and third segments of metasome with infero-lateral angles acute, margins entire.

Upper antennae half the length of the body, flagellum not much longer than peduncle, secondary appendage minute. Lower antennae a little shorter than the upper, peduncle long, flagellum short, of about twelve articuli. Gnathopoda of similar form, the second somewhat longer, and the propodus slightly larger; basis, ischium, and merus with postero-distal angle of each furred; carpus trigonal, equal in width to its greatest length, scarcely so long as the propodus, postero-distal margin laterally expanded, furred, and bearing four transverse rows of long simple setae; propodus subquadrate, widening distally, postero-distal half expanded by a furred hyaline border, distal angle rounded, palm transverse, longer than dactylus, insinuate at the place where the end of dactylus closes, margin fringed with about twelve short apically cleft spines, and a parallel row of simple setae, and near the end one very long and two or three shorter

cleft spines; dactylus acute, inner surface with scattered spinules. Peraeopoda long and slender, first two pairs longer than the gnathopods, dactylus of each with three stout spines along the inner face. First pair of uropods of subequal length to the second, third with peduncle short and stout, outer ramus very long, equal in length to peduncle of first pair, inner side with four, and the outer side with six transverse rows of spines, and the distal margin bearing a circlet of apically cleft spines, which almost hide a very short conical rudimentary joint, the apex of which bears three setae and a minute furred spur; inner ramus squamiform, with the apex bearing a few setae. Telson long, deeply cleft, apex of each piece obliquely truncated, and bearing three small spines, and also a few on the dorsal surface.

Colour.—Spirit specimens, yellowish without markings.

Length.—10·5 m.m.

Occurrence.—From amongst spongy moss at the source of a spring running into Wallaby Creek, Plenty Ranges, Victoria. Altitude about 2000 feet. (Collected by J. Shephard).

Distribution.—Lake Petrach, Tasmania. Altitude 2900 feet. (Collected by W. B. Spencer).

Remarks.—This species is named in compliment to Professor Baldwin Spencer, F.R.S., etc. It rather closely resembles *Unimelita montanus* (Thomson) but is easily identified by deeper coxal plates and by both the terminal uropoda and antennae being much longer. In respect to general features they are in close agreement.

SUPPLEMENTARY DESCRIPTION.

Upper Antennae.—These are rather slender and do not bear many setae; the first and second joints of the peduncle are of subequal length, the third, one-third shorter, and the secondary appendage is two-jointed and not longer than the first joint of the flagellum. The flagellum has about twenty articulations.

Lower Antennae.—The peduncle is rather longer than the peduncle of the upper, its third joint is short, the fourth three times longer, and the fifth is of equal length to the third. The flagellum is formed of about twelve articulations.

Anterior Lip.—This is rather short and broad, with the distal margin evenly rounded and finely ciliated.

Mandibles.—The left has the outer cutting edge divided into four teeth, the inner or secondary edge into four smaller teeth, and the spine row has seven densely plumose spines. The right mandible has the cutting edge of four teeth, the secondary plate cleft into two serrated edges, and the spine row consists of about five spines; on one side of the molar tubercle there is a single very long plumose setae. The palp is long, the first joint short, the second more than twice the length of the first, and the third broad, and slightly less in length than the second.

Posterior Lip.—The outer lobes are widely gaping, the ends almost truncated and bearing a row of twelve stout, blunt incurved spinules, and more proximally many setae; the inner lobes are very short and broad.

First Maxillae.—The inner lobe of each is short, conical, apically tipped with two long plumose setae, and the inner surface clothed with fine simple setae. The outer lobe bears nine denticulated spines. The palp of the left side is divided at the end into five teeth, the outermost one being longer than the rest and it springs from below the base line of the others, also close to the end on the outer side there is a long spinule. The right palp is apically beset with eight simple spinules.

Second Maxillae.—The inner lobe is of equal width to the outer, its inner margin is freely setose, and the summit has very many long fine apparently simple spines and two stouter plumose ones at the inner angle. The outer lobe is apically crowded with very many long curved spines, most of which are simple, but some show slight pectinations under high magnification; the outer margin has one short spinule near the end, and more proximally there is a number of short setae.

Maxillipedes.—The inner plate is rather broad and extends to somewhat beyond the first joint of the palp, and the end is slightly rounded; this has on its inner half three long teeth, and not more than three plumose setae, and on the outer half there are three very long simple spines; along the distal inner margin there is the usual row of plumose setae. The outer lobe is of normal shape and reaches slightly beyond the middle of the second joint of the palp; along its inner margin there is a row of strong teeth which become gradually longer distally, and merge beyond the apex into long slightly pectinated spines.

The palp is rather narrow, the first joint short, and tufted with setae at the outer distal angle, the second narrows slightly distally, its inner margin is thickly setose, the outer margin distally tufted, and at half its length there are a few setae; the third joint is only very slightly shorter than the preceding ones, the distal margin is produced to a conspicuous apically-rounded hyaline plate, the surface of which is thickly furred; along the whole length of the inner margin, also at the apex, the outer distal margin, and at a few places on the upper surface there are long setae. The terminal joint is long and unguiculate, and its inner margin has three stiff setae, and in this respect is similar to the dactylus of each of the pereopoda.

Gnathopoda.—The first pair of coxal plates have the anterior and posterior margins narrowing distally and merging into the evenly rounded inferior margin which is fringed with numerous long setae and one or two little spines. The coxal plates of the second pair have the anterior and posterior margin straight and parallel, the corners broadly rounded, and the inferior margin straight and setose, and on the posterior rounded corner there are a few short spines.

First Peraeopoda.—These are longer than the gnathopods. The coxal plate is twice as deep as broad the front and hind margins parallel, the inferior margin broadly rounded, and the posterior half fringed with long setae. The merus has a few spinules at three equidistant places along the anterior margin, and the posterior margin has four fascicles of spinules. The carpus has five fascicles of spinules along the posterior margin, and the anterior margin is unclothed except at its distal angle. The propodus has short spines at eight equidistant places along the posterior margin, and the anterior margin has a bunch of long ones medianly and also at the distal angle. The dactylus has three stout spines on its posterior or inner margin, and this is characteristic of each of the succeeding peraeopods.

Second Peraeopoda.—The coxal plate is very large, almost as wide as deep, the anterior margin widening slightly distally, the posterior margin deeply excavated, and the inferior margin very slightly curved and free from setae. In other respects they are similar to the first pair.

Third Peraeopoda.—The posterior coxal lobe is much deeper than the anterior one, and its inferior margin near the apex is serrated and set with six stout spines. The basos is expanded, its width equalling three-quarters of its length, the posterior margin is irregularly and minutely serrated, and the anterior margin is spinulose. The merus has spines at three places along the front and hind margins. The carpus equals in length the merus and ischium combined, and has spines at six places along the anterior, and at three places along the posterior margin. The propodus is of equal length to the carpus, and has spines at seven places along the anterior, and at four places along the posterior margin. The dactylus has already been described.

Fourth and Fifth Peraeopoda.—These are partly broken in my specimens. The coxal lobe of the fourth pair is deeply produced and bears about six acute spines; that of the fifth pair is normally narrow, broadly rounded behind and spinose.

EXPLANATION OF PLATES.

PLATE XXXVI.

Hyaella australis, n. sp.

PLATES XXXVII. AND XXXVIII.

Atyloides gabrieli, n. sp.

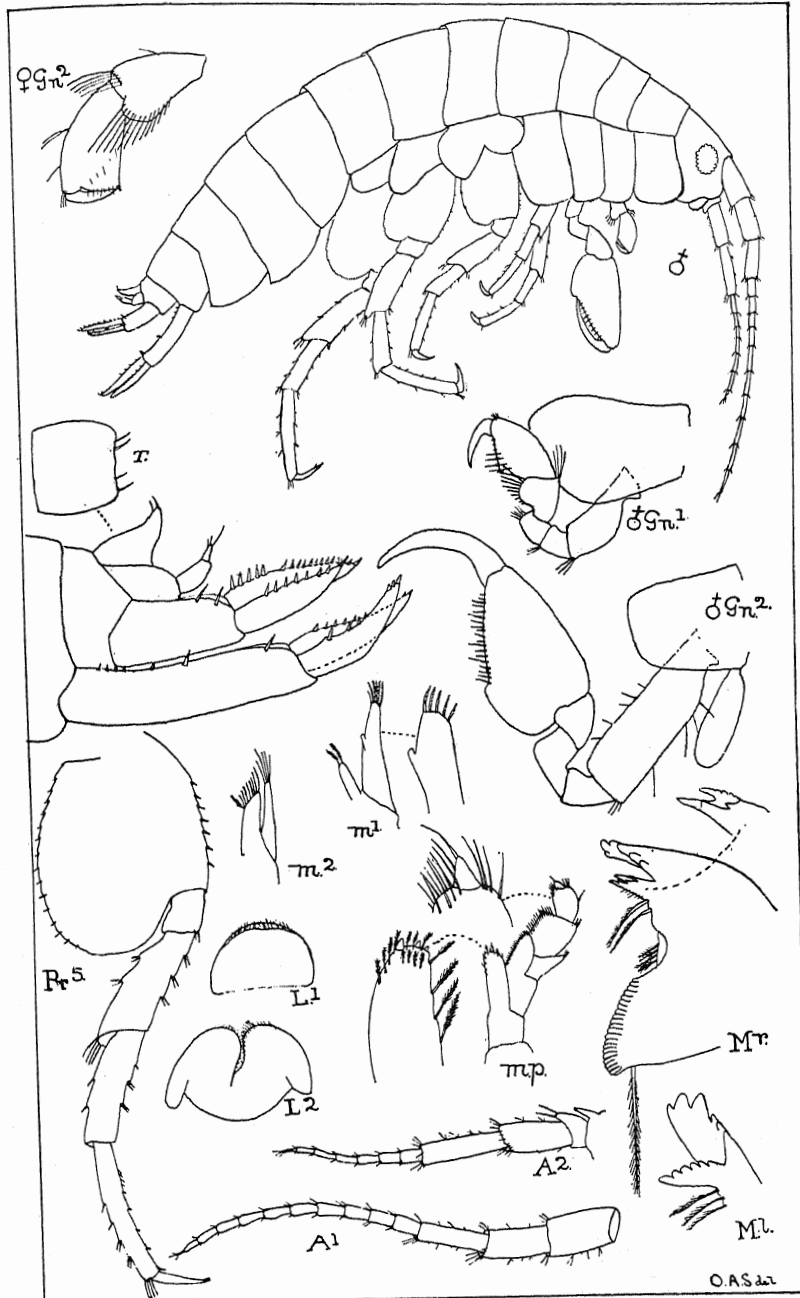
PLATE XXXIX.

Gammarus australis, n. sp.

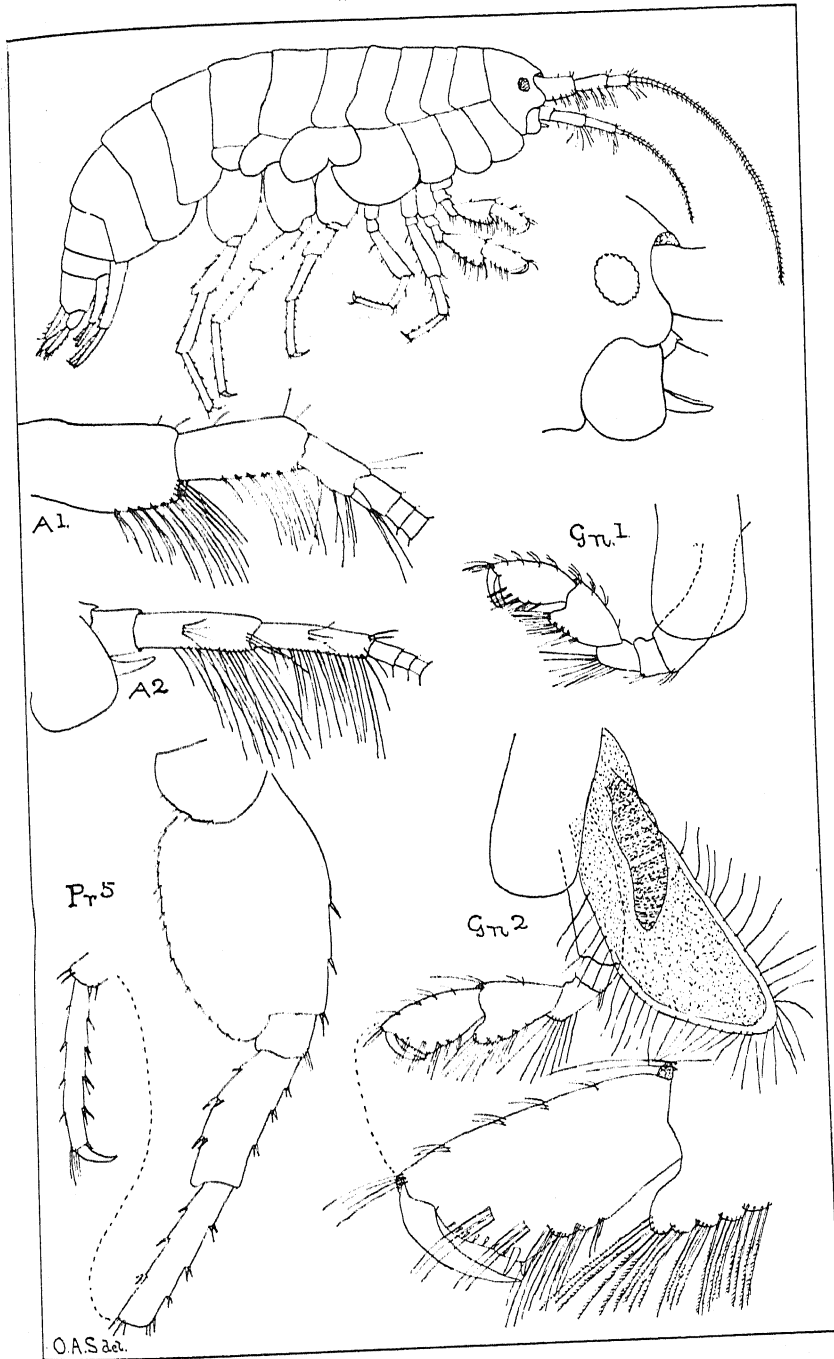
PLATE XL.

Unimelita spenceri, n. g. *et* n. sp.

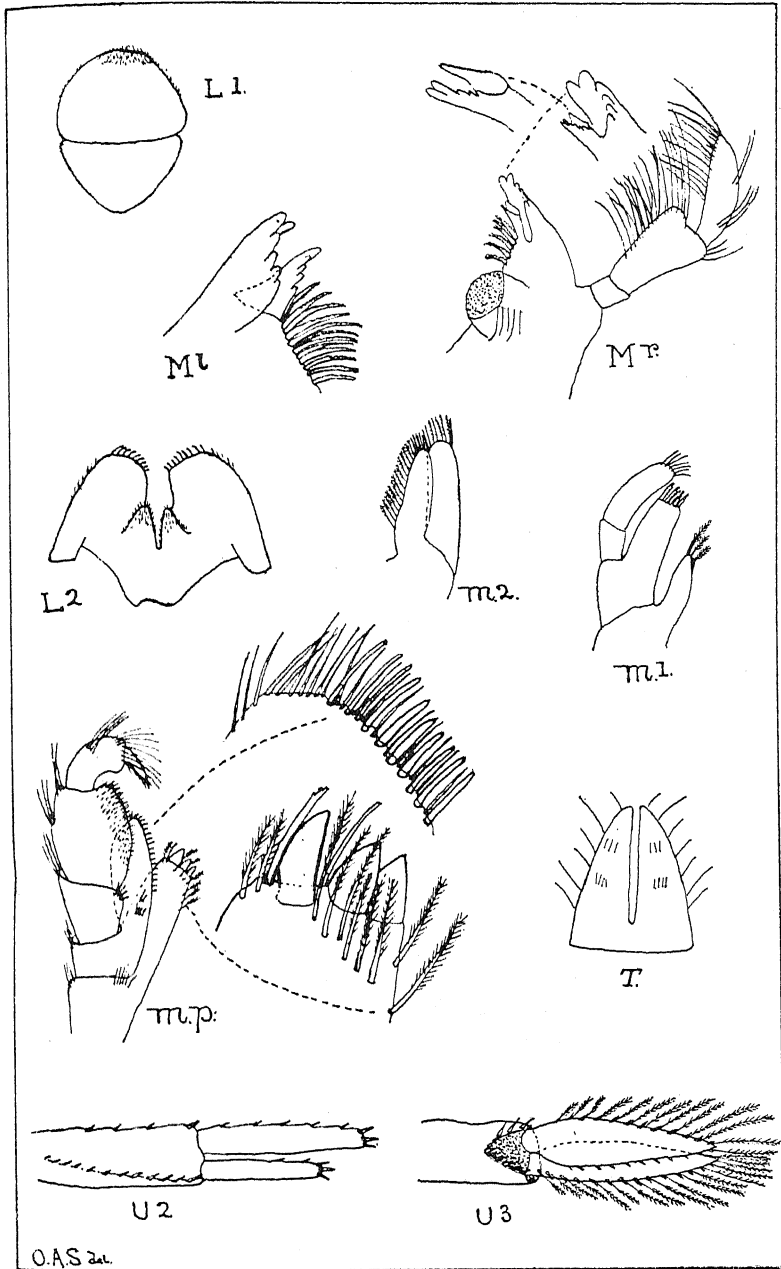
The following lettering is used in each of the plates to designate the corresponding parts:—**C.** cephalon; **Ms.** mesosome; **Mts.** metasome; **Ur.** urosome; **A¹.** superior antennae; **A².** inferior antennae; **L¹.** anterior lip; **L².** posterior lip; **m¹.** first maxillae; **m².** second maxillae; **mp.** maxillipeds; **Gn¹.** and **Gn².** gnathopods, first and second pairs; **Pr¹.**–**Pr⁵.** peraeopods, first to fifth pairs; **U¹.**–**U³.** uropods, first to third pairs; **T.** telson.



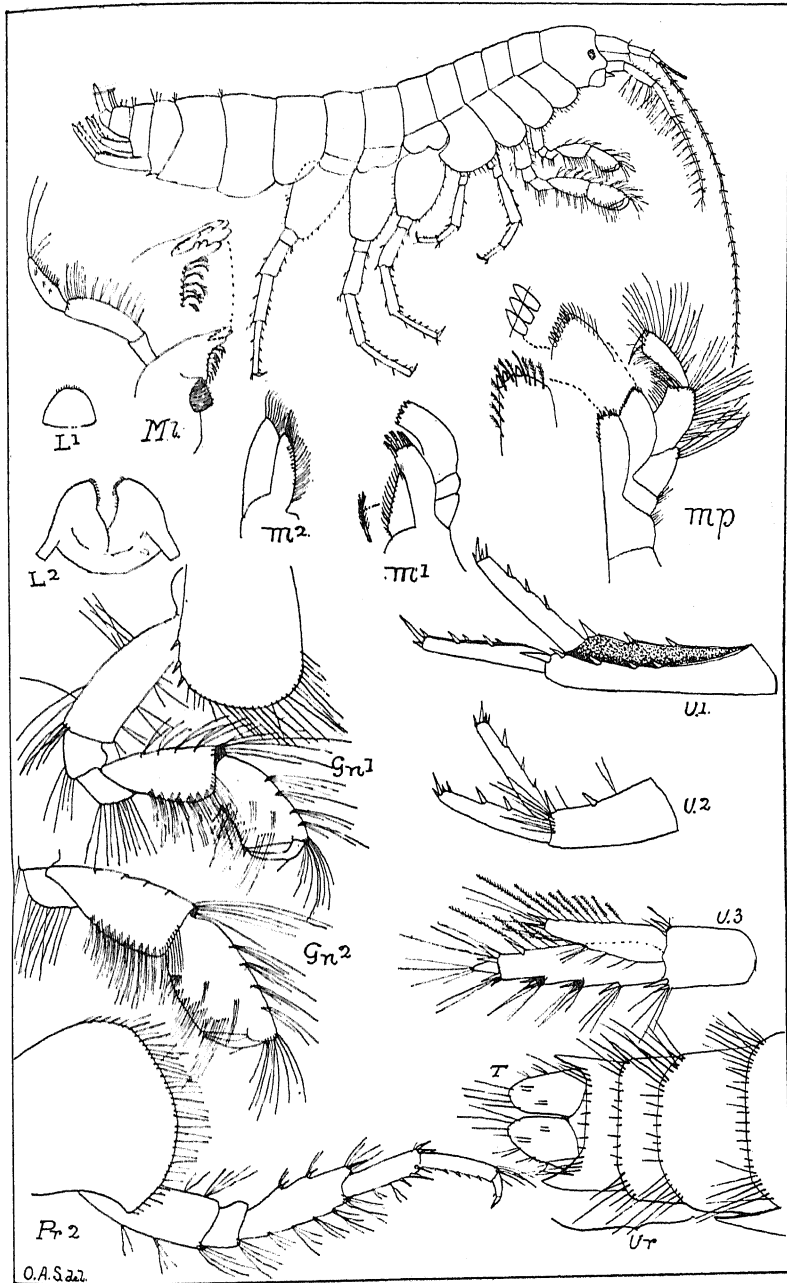
Hyalella australis, sp. n.



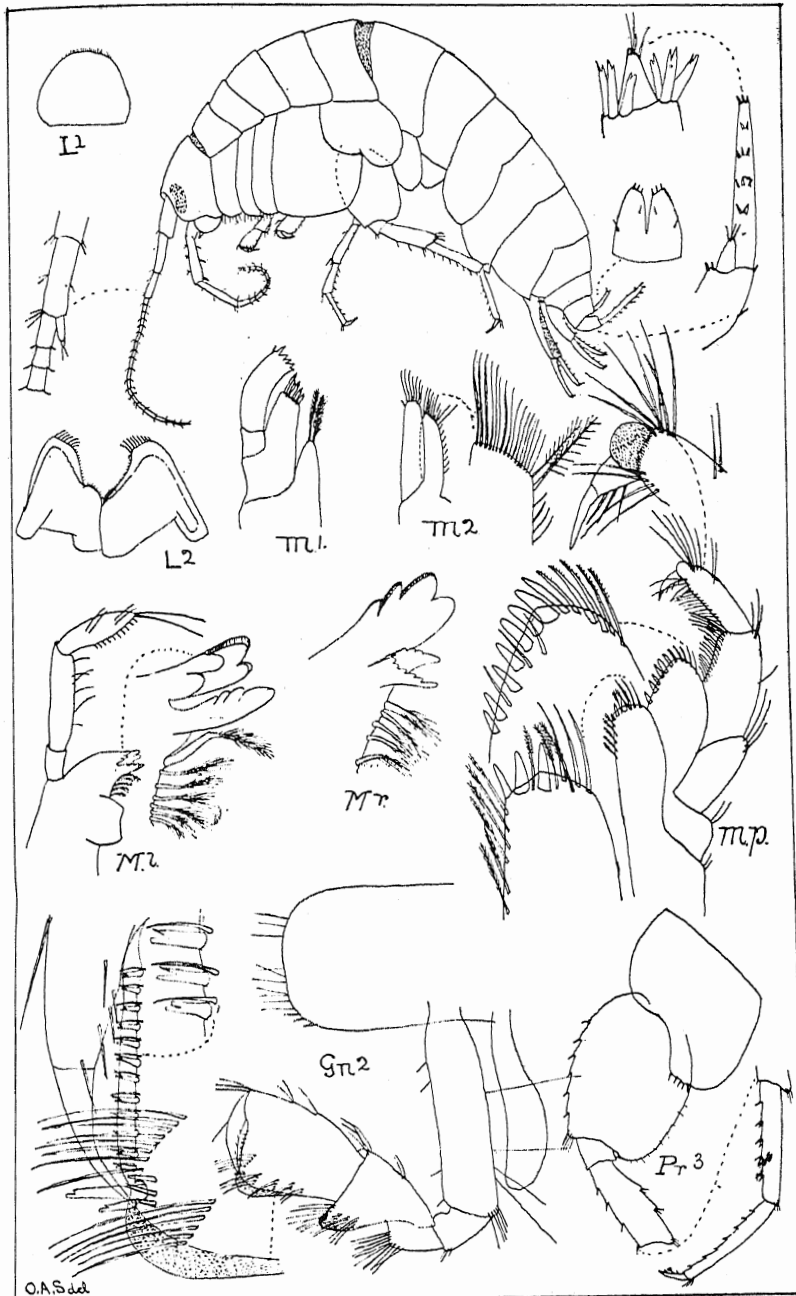
Atyloides gabrieli, sp. n.



Atyloides gabrieli, sp. n.



Gammarus australis, sp. n.



Unimelita spenceri, n. g. and sp.