

Some species of fish are very local in their habitat, as shown by the fact that species are found in certain places round some of the Mokohinou Islands, whilst, so far as I have been able to discover, absent from others; the nature of the bottom, whether it affords suitable food and hiding-places, being no doubt a great factor in the distribution of species. One species, for instance, known to the Barrier Natives by the name of *koro-koro punamu*, is only found in two of the islands, in places where overlapping boulders abound, or rocky overhanging reefs occur; the depth, however, is of no importance, for though this fish reaches a considerable size (upwards of 2 feet), I have in such places seen as many as thirty or forty in a hole, cut off from access to the sea at low water. It feeds upon the small green Algæ so common between tide-marks. It is a very shy fish, and will very rarely bite in the open water—that is, where it can be seen. As a food fish it ranks far before the *maomao* (*Ditrema violacea*), a fact which is quite recognised by the Natives, who inform me that they have never seen it elsewhere, excepting on one occasion when one was found at the Great Barrier Island. Although not a fish, it may not be out of place if I mention that crayfish (*Palinurus edwardsii*) are very abundant here. During the spawning season (from middle of May to the end of July) large numbers visit shallow water in rocky sheltered places, and the males (which do not cast their shell at the same time as the females) may be easily caught or speared. It is perhaps unnecessary to say that the casting of the shell, in the case of the females, immediately precedes the spawning.

ART. XX.—*Descriptions of new Species of New Zealand Araneæ.*

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§ CITIGRADÆ.

Fam. LYCOSOMÆ.

Genus *Dolomedes*, Latr.

Dolomedes aquaticus, sp. nov.

Female.—Length, 18 mm.; length of cephalothorax, 8 mm. Legs 4, 2, 1, 3 (1 and 2 being almost equal) = 26, 22, 22 (about), 21 mm.

Cephalothorax chocolate brown, with a supra-marginal band of yellow extending from the posterior slope to the anterior angle of the pars cephalica: falces, maxillæ, labium, and sternum,

chocolate-brown; legs and palpi, brown; abdomen above greenish-brown with two longitudinal rows of brown-margined yellow spots, at the sides greyish, and below dusky-brown with four more or less continuous longitudinal whitish stripes converging towards the anus. At the base of the dorsal surface there is a short median spatulate band of paler hue than the rest of that surface, and on each side of this band a short grey fleck. The cephalothorax and abdomen are densely covered with grey, yellow, and brown pubescence.

Cephalothorax about 1 mm. longer than broad at the broadest part, between the 2nd and 3rd pair of legs about twice as broad as at the anterior part of the caput, rounded at the sides, posterior slope very, and lateral slope moderately, steep; fovea very long, extending from half-way down the posterior declivity to the pars cephalica. Seen in profile, the pars thoracica is almost straight above, highest between the posterior row of eyes; ocular area very hairy and sloping gently from the posterior to the middle row of eyes, and thence very steeply to the anterior row; clypeus vertical and furnished with longish white hair in the middle.

Front row of eyes slightly curved downwards, the centrals larger than the laterals, and more distant from each other than from the laterals, the latter on small blackish tubercles; the eyes of the other rows are furnished with eyebrows, and do not differ much in size; those of the posterior row look outwards and backwards, and are placed under large black tubercles.

Falces hairy, somewhat convex near the base, and slightly diverging towards the extremities; on the posterior side of the groove 4 sub-equal rather blunt teeth, and on the anterior side at the base 2 teeth, the lower of which is large and the upper minute; claw short, and not much bent.

Maxilla convex, narrowest at the base, and greatly increasing in breadth towards the extremities, rounded on the outside, and truncated on the inside in front, where there is a dense reddish fringe. *Labium* slightly convex, rather more than half as long as the maxillæ, sub-quadrate in outline, constricted at the base, widest near the middle, and truncated in front, where it is of a pale hue, and furnished with a fringe of coarse hair.

Sternum cordate, convex, the lateral and posterior margins wavy and densely woolly.

Abdomen ovate, slightly broader than the cephalothorax; the superior spinners the longest, and the central the shortest; the superior slender, and somewhat curved inwards; the inferior stout and of the shape of an obliquely truncated cone. In front of the latter is a small process that resembles a seventh spinner.

Legs strong; tarsi armed with a scopula, but destitute of spines; metatarsi spinous above and below; tibix of the 3rd and 4th pairs spinous above and below, those of the 1st and 2nd

pairs below and at sides only; patellæ of 1st and 2nd pairs without spines, those of the 3rd and 4th pairs spinous above; femora spinous above only; tarsal claws 3, superior toothed and much bent, inferior toothless and bent down vertically, and completely concealed by a tuft of hair.

Palpi armed with spines above and at the sides, cubital joint with one or none, and a long bristle at the fore extremity, humeral joint with 1, 1, 1, 4. Digital joint shorter than humeral, which equals cubital and radial, the latter longer than the former; digital joint thicker at the extremities than in the middle, and bent; humeral joint turgid at the fore extremity, palpal claw much bent and furnished with 4 teeth.

Vulva brown, ovate in outline, narrowest anteriorly where it is much depressed, the depression being deeper at the sides than in the middle, and of a pale hue; the central and posterior part high, convex, and somewhat resembling a thick lip. In young mature examples there is a median band of yellow reaching from the posterior slope to the middle row of eyes, and also a yellow fleck behind each posterior eye. On each side of the abdomen and in line with the lateral bands of the cephalothorax there is a yellow band reaching from the base to about the middle.

Mas.—Legs as long as those of the female; body much shorter and slenderer; cephalothorax powerful and slightly shorter than the abdomen, the latter oblong-ovate and narrower than the former. The colours are of a paler hue and the markings more distinct than those of the female. In young examples the central area of the dorsal surface of the abdomen is bordered by a pale yellow band, extending from the base almost to the spinners. The armature of the legs is the same as that of the female's, except that all the patellæ are furnished with spines.

Palpi armed with spines above only, on the humeral joint 1, 1, 1, 4; on the cubital a slender one on the inner side and a bristle-like one at the anterior extremity, on the cubital several; humeral joint longer than cubital + radial, digital joint beak-like, convex and hairy without and concave within, and shorter than the cubital and radial joints together, the two latter not differing much in length. On the outer side of the anterior extremity of the radial joint there are 3 short blunt teeth, the middle one of which is the longest. *Bulbus genitalis* situated in the concavity of the beak, brown, moderately complex; a deep groove running from the base towards the front on the outer side, and a long slender spine springing from the inner side and bent round the front where there are three leaf-like processes, in one of which is concealed the extremity of the bent spine.

Hab. Otago, *P. G.*

This fine spider has been long known to the residents of the Otago goldfields, where it is plentiful in the water-races constructed for mining purposes, and on that account it has been

named by the miners "the Water Spider." It is generally found on plants, stones, or pieces of wood at or near the surface of the water; and on the least alarm it runs quickly down the surface of the object to the bottom of the water, taking with it, entangled in its pubescence, large globules of air. It is able to both swim and run very rapidly on the surface of the water, but appears to be unable to get below the surface without some solid support for its feet. I have tried in vain to make it dive. When teased it makes for the nearest object, down which it runs to the bottom of the water, where it remains till all danger seems to have disappeared. Seen there in bright sunshine, its body gemmed with beautiful globules of air, it is a most handsome object. While incubating, the female retires some little distance from the water, and takes up her abode under a large stone or a piece of wood. Here she seems to remain till the young are hatched. During incubation she shows considerable aversion to water. The cocoon is globular, and is carried under the sternum, to which it is so firmly held by the palpi and strands of web from the spinners that the owner can be dispossessed of it only with great difficulty. When deprived of it she shows great concern, but is quite unable to distinguish it from that of another spider. She then runs about in the most excited manner, and seizes as many cocoons as she can "lay legs on."

Genus *Lycosa*, Latr.

Lycosa uliginosa, sp. nov.

Female.—Length, 11 mm.; length of cephalothorax, 5 mm.; Legs, 4, 1, 2, 3 (1 and 2 almost equal) = (about) 17, 13, 12 mm.

Cephalothorax of a dusky-brown ground-colour, somewhat darker at the lateral margins than elsewhere, palest along the middle of the back; thoracic indentations marked by dark lines resembling veins: falces and sternum dark brown; labium and maxillæ brown; legs and palpi palish-brown with dusky-brown flecks and annulations; abdomen above and below of the same general hue as the cephalothorax. Cephalothorax and abdomen both without any distinct pattern, and covered (the latter much more densely than the former) with a fine greyish-yellow and brownish pubescence.

Cephalothorax more than 1 mm. longer than broad at the broadest part, rounded at the sides, much constricted at the caput, the sides of which are nearly vertical, lateral slope moderately and posterior slope very steep; seen in profile the back is almost level. The junction of the pars cephalica with the pars thoracica is marked by dark vein-like bands, one on each side, which converge at the anterior extremity of the thoracic fovea, the latter narrow, shallow, and brown, and extending just beyond the upper margin of the posterior

declivity; ocular area very hairy, and between the middle and front row of eyes in the same plane with the clypeus.

Front row of *eyes* slightly curved upwards, and about as wide as the middle row, the eyes of nearly equal size, and posited at almost equal distances from one another; the eyes of the middle row the largest, more distant from each other than from the fore-laterals and nearer to each other than to those of the posterior row; the latter are posited behind black tubercles.

Falces convex towards the base and sloping backwards towards the extremities; on the posterior side of the groove 3 teeth with a fleshy prominence between the lowermost tooth and the base of the claw, on the anterior side 2 teeth; the teeth nearest the claw are the largest, and those furthest from it the shortest; claw stout at the base, and moderately bent.

Maxilla convex, narrowest at the base, gradually increasing in width towards the fore extremity, more or less hollowed within to accommodate the lip, rounded on the outside, and slightly truncate on the inside in front, where there is the usual fringe. *Labium* convex, constricted at the base, widest towards the middle, and truncate in front.

Sternum slightly convex, oblong-cordate, strongly pointed posteriorly, glossy, and hairy.

Abdomen somewhat oblong, narrowest at the base, not so wide as the cephalothorax; spinners inconspicuous.

The *tarsi* of all the legs are without spines; the metatarsi and tibiæ of 3 and 4 have spines above and below, those of 1 and 2 below and at the sides only, (tibiæ of 1 and 2 with 2, 2, 2 below); the patellæ of 1 and 2 have no spines, and those of 3 and 4 have them above only. The spines at the fore extremity of the metatarsi of 3 and 4 are arranged in a ring round the joint. On the anterior side at the base the coxal joint is dark-brown, testaceous, and jagged. Tarsal claws 3, the two superior toothed at the basal half, the inferior one without teeth and strongly bent down, and concealed by a tuft of hair.

Humeral joint of palpi about as long as cubital + radial, stronger at the fore extremity than elsewhere, and longer than digital joint; radial joint longer than cubital; all the joints sparsely spinous above and at the sides; on the humeral joint 1, 1, 1, 4, or 1, 1, 4 spines; claw toothed and moderately bent from the teeth forward.

Vulva brown, forming in outline a narrow transverse ellipse, posterior margin highest in the middle and more rounded than the anterior margin, the latter consisting of two ear-shaped costæ with a wide and deep depression between them; the vulvular concavity divided into two foveæ, one on each side, separated by a very low gently sloping septum.

Mas.—Colour and pubescence-like those of the female; body as long as and legs longer than the female's; cephalothorax

longer and broader than the abdomen; humeral joint of palpi longer than cubital + radial, the former slightly longer than but not quite so strong as the latter; armature of humeral joint 1, 1, 1, 4 spines; digital joint beak-like and hollow at the base of the inferior surface; bulbus genitalis situated in this concavity; well developed, globular in outline, hollow in front, deeply cloven in the middle, and having, about half way between the base and the anterior margin, a transverse sinuous brown costa; from under the side of the inner lobe of the bulbus springs a long stout hollow corneous process which bends outwards and downwards, and from under the fore extremity of the outer lobe projects a small tooth-like process. The stout spines at the end of the digital joint somewhat resemble unpectinated claws.

Hab. Lake Wanaka, P.G.

The habit of this spider is similar to that of *Dolomedes aquaticus*. Both spiders are to be met with in the same wet situations on the shores of Lake Wanaka.

Lycosa bellicosa, sp. nov.

Female.—Length 11 mm.; length of cephalothorax, 5 mm. Legs 4, 1, 2, 3 = $14\frac{1}{2}$, $11\frac{1}{2}$, 11, 10 mm.

Cephalothorax brown, with a marginal band of pale yellow (or pale brown) extending from the posterior declivity to the caput, and a pale brown triangular fleck behind the posterior angle of the caput; falces dark brown; lip brown, palest anteriorly; maxillæ rusty brown; sternum of a bright bronze colour; legs and palpi brownish-yellow flecked with brown; abdomen above of a lighter general hue than the cephalothorax, and abundantly flecked with yellow (pale or brown); on the basal half a median longitudinal lanceolate stripe of yellow, and at the sides of this, and united with it, four flecks of the same hue, one on each side near the base, and one on each side at or near the posterior extremity of it. The pattern formed by the distribution of the colours resembles a double cross. The ventral surface is pale drab, except on each side near the base where it is brownish.

Cephalothorax more than 1 mm. longer than broad at the broadest part, only slightly rounded at the sides, not much constricted at the caput, the sides of which are nearly vertical, lateral and posterior slope steep; caput somewhat convex, large and prominent, and reaching backwards almost to the upper margin of the posterior declivity; face very prominent in the middle.

Front row of *eyes* slightly curved downwards, centrals somewhat larger than the laterals and nearer to each other than to them; laterals nearer to the eyes of the middle than to the centrals of their own row; front row wider than the middle; eyes of middle and posterior row not differing much in size,

those of the latter posited behind black tubercles, and, like those of the middle row, furnished with eyebrows.

Falces very powerful, at the base projecting considerably beyond the clypeus, on the posterior side of the groove 3 teeth rather close together, on the anterior side 2 teeth, at a considerable distance from each other; claw short and moderately bent.

Maxilla convex, smallest at the base, widest towards the extremities, slightly hollowed within to accommodate the lip, slightly rounded on the outside and truncate on the inside in front. *Labium* convex in front, about half as long as the maxilla, constricted and depressed at the base, widest near the middle and truncate in front.

Sternum somewhat convex, oblong-cordate, pointed posteriorly, very glossy, and very sparingly furnished with hairs.

Abdomen very convex, and in well-grown examples not differing much in width from the base to near the posterior extremity; spinners rather conspicuous, the superior pair the longest and the central the shortest.

All the joints except the tarsi armed with spines, femora and patellæ above only, tibiæ and metatarsi above and below; tibiæ of 1 and 2 with 1, 2, 2 spines below, and metatarsi of 1 and 2 with 2, 2, 3; tarsal claws 3, the two superior toothed at the basal half, the inferior very small, without teeth, bent down vertically, and completely concealed by a tuft of hair.

Palpi slender, joints all armed with spines, humeral joint with 1, 1, 3; this joint considerably bent and stouter at the anterior extremity than elsewhere and about as long as cubital + radial, the latter somewhat longer than the former but not so strong, the digital joint longer than either of these two joints and armed with a pectinated claw.

Vulva brown, consisting of two rather narrow depressions, one on each side, each bounded anteriorly and laterally by a corneous costa, slightly depressed between the costæ, and here produced posteriorly into a short broad truncated lip-like process.

I have only an immature example of the male. The colours and markings are the same as those of the female.

Hab. Clutha Valley, Central Otago.

A very handsome little spider, and as pugnacious as it is handsome. When put into a bottle with other spiders it attacks them most savagely, and never ceases its attacks until it has either killed its antagonists or is itself killed. It digs a nest 2 to 3 inches deep, and lines it with a very thin coating of web, but does not make a door. Its nest resembles that of *Migas distinctus*, except that it is without a lid.