

first pair well curved, outer 1 tooth; inner claw 18 close teeth, terminal tooth strongest.

*Palpi* yellow-brown, clouded; *pars humeralis* incrassated forwards, about one-third longer than two following articles together; cubital joint gradually dilated, nearly twice as long as penultimate article; radial joint, viewed laterally, of even breadth, nearly as broad as long above; projects from a somewhat circular enlargement—outer side—a strong, lake-brown, down-curved tooth-like process; digital joint rather shorter than two former articles together; lamina olive-brown, elongate-ovate; hairs somewhat sparse, except on inner margin, which is furnished with a thick fringe; genital bulb yellowish-brown; globosely-conical, fore-end depressed; lying close to lamina is a reddish-brown elongated lobe of somewhat even width, sharply recurved at anterior end.

*Abdomen* elongate-ovate; tolerably well clothed with straw-coloured and orange-red hairs, former predominate; ground-colour light burnt-umber, mottled with a dark shade; deeper tone prevails on lateral margins; ventral region marked with three dark stripes, converging to spinners; latter organs long, superior pair stone-colour, inferior approximating to olive-green.

Taken in the forest near Stratford. A. T. U.

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ART. XVII.—*On New Zealand Araneæ.*

By P. GOYEN, F.L.S.

[Read before the Otago Institute, 10th November, 1891.]

Plate XIX.

Fam. ATTOIDÆ.

Gen. MARPTUSA, Thor.

*Marptusa marina*, sp. nov. Plate XIX., fig. 1.

*Femina*.—Length of cephalothorax about 3mm., of abdomen about 5mm.

Cephalothorax dark-brown at and near the margin and the posterior slope, with a triangular central area of a red-brown colour, and covered, except the posterior slope, with silky greyish and reddish-brown hair; legs brown, with pale- and reddish-brown annulations, and hairy; falces, lip, and maxillæ brown; sternum pale-brown; abdomen above brownish-yellow interspersed with flecks of brown, but without a well-defined pat-

tern, covered with greyish appressed hair, and having two pairs of small reddish-brown spots, the hind-pair being situated about half-way between the extremities, and the fore-pair, which are nearer together, about half-way between the hind-pair and the anterior extremity; ventral surface of a much lighter hue than the dorsal and lateral surface; near the base are two pale oval areas, one on each side, and in mature examples there are two darkish lines beginning behind the genital aperture and converging towards the spinners. Young examples are of a much lighter hue throughout than old ones.

Cephalothorax about a third as long again as broad, and slightly narrower in front than behind; quadrangulus oculorum flattish, and much broader than long; eyes of the third row near the edge of the quadrangle, and as distant from each other as are the laterals of the front row; eyes of the second row very minute, and placed almost in the middle between those of the third row and the front laterals, and in line with them; centrals of the front row very large, projecting over the clypeus and completely concealing the falces; the laterals of this row do not differ much in size from the eyes of the third row; under this row there is a very dense fringe of hair.

Falces nearly of the same width throughout their length, sparingly hairy, and having two teeth on one side of the groove, and one on the other; fang rather slender, and not much longer than its falx is wide.

Maxillæ narrowest at the base and widening towards the extremities, where they are rounded on the outer and obliquely truncated on the inner side, not divergent.

Labium not quite half as long as the maxillæ, oval in outline, and almost truncated in front.

Sternum oval in outline, truncated in front and somewhat bluntly pointed behind.

Abdomen oblong-ovate; spinners of nearly equal length and compactly grouped, the inferior pair being the strongest.

The legs are strong, hairy, armed with spines, and furnished with a dense hair-tuft under the claws.

The genital aperture has a dark-brown horny process on each side placed thus— $\sphericalangle$ ; the convergence being towards the posterior of the orifice.

In general appearance the male resembles the female.

This little spider is found along the coast of Otago, on cliffs and rocks just above, at, or just below high-water mark. On these rocks and cliffs are found in great abundance two or three species of Diptera, which the spider resembles in colour and mode of progression. So striking is this resemblance that for some time I mistook the spider for a fly. In moving along the face of the rocks it runs very briskly for an inch or two,

then stops, rubs its palpi just as a fly rubs its fore-legs, examines the surface of the rock within its view, then again runs briskly for an inch or two, again stops, rubs its palpi, and "spies out the land;" and so on till it comes within view of its prey—or what it takes to be such, for it seems to have some difficulty in distinguishing members of its own species from the flies on which it lives. It now advances exactly like a cat approaching a bird, stealing forward at a pace so slow that one can scarcely see it advancing, until within about an inch of its prey, when it springs swiftly upon the unsuspecting fly, and pinions it with its falces and palpi. Within springing-distance its aim is so sure and its bound so swift that the fly has no chance of escape. Having captured its prey it generally carries it to a depression in the rock, and there, if undisturbed, sucks its juices at leisure. Half the spiders one sees are thus in hiding with a fly in their jaws. Very often the fly is much larger than the spider; but the latter, if discovered by another spider, makes off with the captured fly with the greatest ease. It will even leap across a crevice an inch or so wide, and if its covetous brother is persistent in his pursuit, to escape him it will spring into space and hang, head downwards, suspended by a strand of web, but never parting with its prey. In every case I observed the pursued was successful in eluding the pursuing spider.

This little spider is exceedingly interesting as affording, in a class of animals in which it has not, I believe, been before observed, a striking example of aggressive mimicry.

#### Fam. THERAPHOSOIDÆ.

##### Gen. ARBANITIS, Koch.

*Arbanitis huttonii*, Cambr. Plate XIX., figs. 2 and 3.

*Femina*.—Length of cephalothorax from  $4\frac{1}{2}$ mm. to 6mm., of abdomen from  $8\frac{1}{2}$ mm. to 10mm.

Cephalothorax with its appendages brown, the falces being of a very dark colour; abdomen above of a somewhat paler hue than the cephalothorax, and below of a much lighter hue than above. The dorsal surface is marked with dark more or less continuous bands, running somewhat obliquely from the median line down the sides, and the ventral surface is also marked with dark spots that in some examples form a fairly distinct pattern, consisting of two transverse bands, greatly enlarged in the middle on the basal side, one in line with the posterior pair of pulmonary orifices, and the other about halfway between these and the spinners. It is only in mature examples that these ventral markings are very distinct.

Cephalothorax elliptical in outline, truncated in front and

behind, nearly half as long again as broad, prominent and convex between the back of the eyes and the fovea, which is transverse and deep, and low on the posterior side of the fovea; lateral indentations very distinct.

Ocular area prominent, eyes compactly grouped, the front row curved backwards, and the hind row very slightly forwards.

Falces prominent, knee-shaped, stout, furnished with parallel longitudinal bands of stout hairs, and on the upper side of the fore extremity armed with numerous tooth-like spines; groove on the inner side furnished with strong teeth, and on the outer side with a dense fringe of reddish hair; fang long and strong. Maxillæ nearly parallel at the sides, somewhat pointed at the outer side of the basal extremity, and furnished with short spines on the inner side of the basal half.

Labium wider than long, triangular in outline, convex, truncated in front, where it is furnished with a band of bristly hairs.

Sternum cordate, slightly emarginate in front, and bluntly pointed behind.

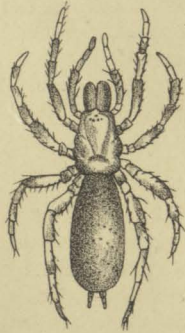
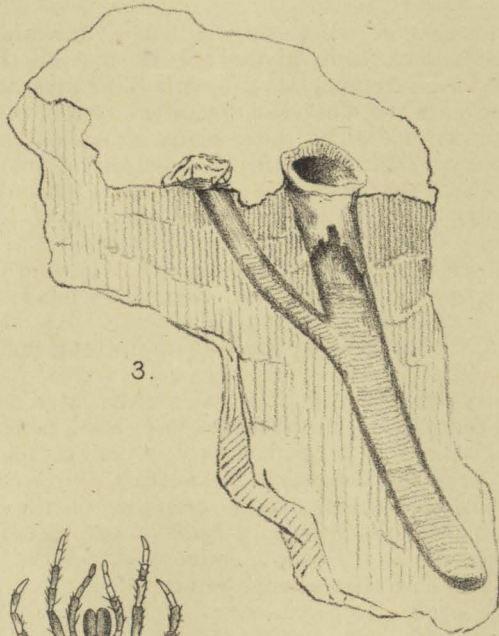
Legs hairy, armed on the under-side with a large number of spines, and terminated with three hooked claws, each superior claw having at its base a tooth nearly as long as the inferior claw; the tarsi and metatarsi of the first and second pair furnished with a scopula. The armature of the palpi is similar to that of the legs, and each is terminated with a strong claw, which, like the superior claws of the tarsi, is furnished at its base with a long tooth.

Abdomen ovate; superior pair of spinners many times as large as the inferior pair; genital aperture a simple transverse slit.

*Hab.* Dunedin. *P. G.*

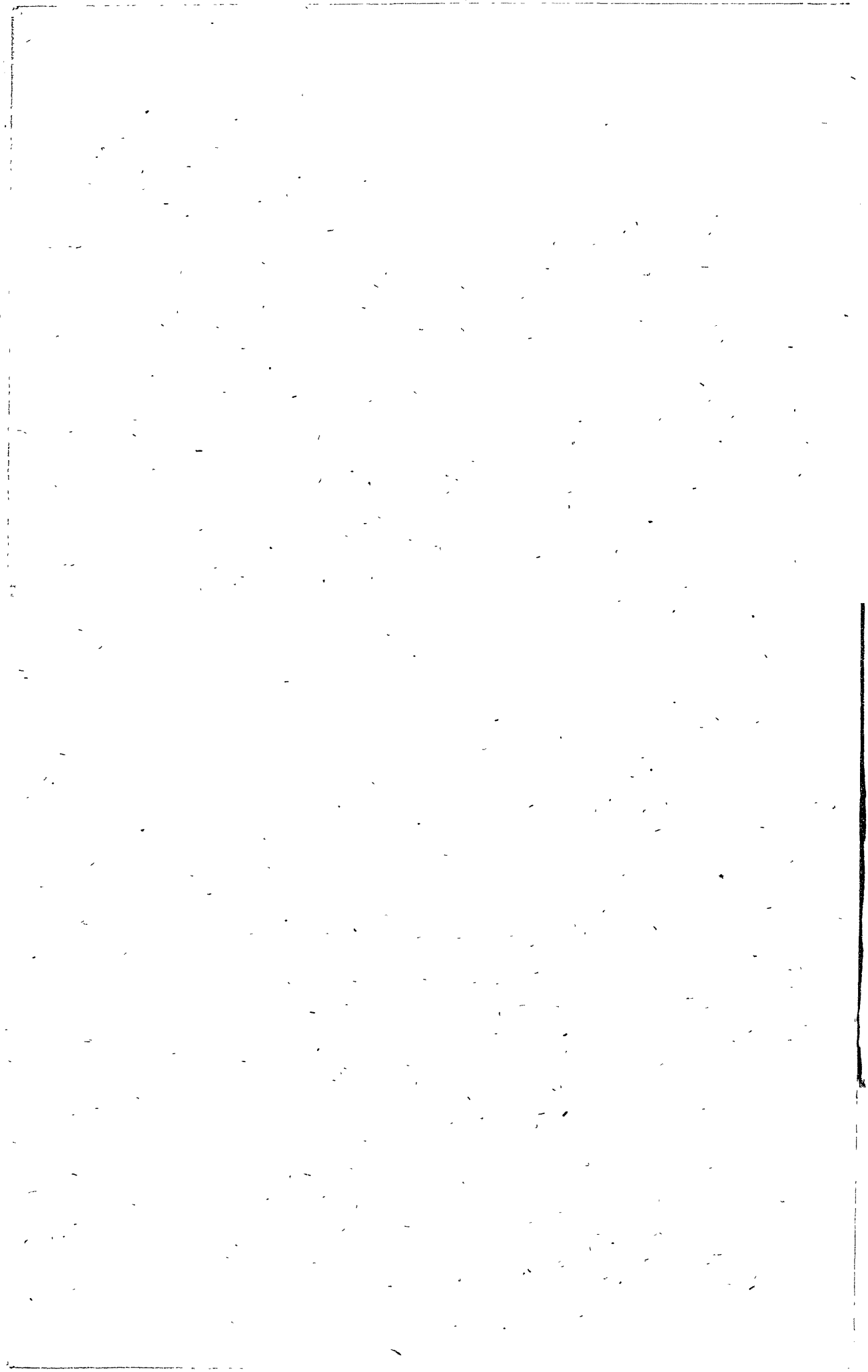
This spider strongly resembles *Nemesia gilliesii*, Cambr., differing from the latter chiefly in its habits and more slender build. The male was figured and described by the Rev. O. Pickard-Cambridge in 1879 from a specimen sent from Dunedin by Captain Hutton (see Proc. Zool. Soc., 1879, p. 682, and pl. lii., fig. 1), but no information as to its habits was sent to Mr. Cambridge. It is chiefly owing to this defect that I have described the female.

Its nest (Pl. XIX., fig. 3) is of the branched type, but without a door or any sort of cover to the entrance of the main tube. The branch is smaller than the main tube, makes with the latter a more or less acute angle, and extends to the surface of the ground, where it is completely covered with particles of soil and other material, bound loosely together with web, and attached to the lining of the tube in such a way as



1.

2.



to form a rude sort of lid, which, both as to form and colour, is on its exterior side so absolutely perfect an imitation of its surroundings that it is impossible to discover the mouth of the tube without disturbing the surface of the ground. The mouth of the main tube is very conspicuous, and seems designed to invite the entrance of the animals upon which its fabricator preys. The spider, though strong, is yet very sluggish, and in the open wholly incapable either of escaping its enemies by flight or of capturing by pursuing its prey. It needs some special contrivance to protect it from the former, and to enable it to capture the latter, and its nest seems to me to be admirably adapted for both these purposes.

When the entrance of the main tube is disturbed, the spider, regarding this as the signal for the entrance of its prey (beetles) or an enemy, immediately betakes itself to the branch tube, and from this vantage-ground attacks its prey or its enemy, as the case may be, in flank while it is passing, or in rear when it has passed, the branch. In such a position its advantage over an intruding animal is obviously very great; and, as I take it, very few animals capable of entering the tube could be successful against an enemy so advantageously posted. Should, however, the intruder prove more than a match for the occupant, the latter would still enjoy a position of comparative security. The intruder could not attack it without turning in the nest—a matter of some difficulty. The branch tube is always narrower than the main tube, and therefore more difficult to enter; and, finally, the spider is able to back up the branch, and, if hard pressed, to push aside the loose cover, and thus effect its escape. From the behaviour of the spiders I have captured, I have no doubt that this is the correct interpretation of the design of the nest. The whole contrivance is most ingenious, and affords another striking example among the lower animals of what strongly resembles man's reasoned adaptations of means to ends.

The plate was kindly prepared for me by Mr. A. Hamilton, Registrar of the Otago University.

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EXPLANATION OF PLATE XIX.

Fig. 1. *Marptusa marina*, sp. nov.

Fig. 2. *Arbanitis huttonii*, Camb.

Fig. 3. " " " nest.