

ART. XXXVII.—On a new Species of Trapdoor Spider from New Zealand.

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Plate X.

[Read before the Otago Institute, 9th October, 1877.]

IN the year 1874 I received from Capt. Hutton an adult female example of* *Nemesia* (found at Oamaru), but upon which, owing to its damaged condition, no reliable opinion could be formed. In the following year Capt. Hutton again forwarded me several females of the same species, from the same locality, with some particulars respecting their habits and nests observed by Mr. R. Gillies, and the welcome information that that gentleman purposed to record his numerous observations in a paper to be read before the Otago Institute. These specimens were also much damaged before they reached me, but, so far as they afforded means of determination, I was at first inclined to think that they comprised two very nearly allied, but probably distinct, species. In another bottle of various spiders, received at the same time and from the same locality, there was an *adult male* example (in excellent condition) of a *Nemesia*, which I have but little doubt is the male sex of the species to which the females that accompanied it belong. More recently still, Capt. Hutton has kindly sent me eight or nine adult females and numerous immature ones (mostly in good condition), upon the several nests of which Mr. Gillies' long and interesting paper has been published.† I have come to the conclusion, after long and repeated examinations and comparisons with each other, that, in spite of a considerable difference in size, all these examples (received at the various times mentioned above) belong to one and the same species, upon which I beg to confer the name of its discoverer, and to call it *Nemesia gilliesii*.

From Mr. Gillies' paper (l.c., p. 225) I understand that the nest—No. 1, pl. viii. (l.c.)—is supposed to have belonged to one of the female examples first sent to me by Capt. Hutton. This nest is of a decidedly different type from all the rest, having a branch issuing from near the middle, and furnished not only with a door to the main tube, but with an inner door or valve at the entrance to the branch. All the other nests are, although slightly varied in some characters, of *one type*, consisting of a

* The spiders referred to in this paper are very nearly allied to, and perhaps identical with, the genus *Pholeuon* (L. Koch. Die Arachniden Australiens, p. 471, pl. xxxvi., fig. 3, changed to *Arbanitis*, l. c., p. 491). The distinction, however, from *Nemesia* consists chiefly, if not wholly, in the denticulation of the tarsal claws, and seems scarcely important enough to require the formation of a distinct genus; especially as in the present species (which is quite a different one from that described by Dr. Koch) the denticulation of the tarsal claws of the female differs from that of the male.

† "Trans. N.Z. Inst.," VIII., pp. 222–262, pl. vi.-viii.

single tube with an outer door (of the wafer kind). One nest (fig. 6, pl. viii.), indeed, has a branch, but there is no inner door connected with it; and from its position and character I feel little doubt that, at first, it formed part of the main tube, but owing to some cause or other—perhaps from filling or choking up—it became useless, and then the spider continued its nest in another direction. I have had an instance of this, not long since, in a tube of *Atypus sulzeri*, Bl., found in the Isle of Wight, and, more recently still, in several found at Bloxworth, and also others from Hampstead near London.

It appears that the only example of the *double-door branched type* of nest observed in New Zealand was not found by Mr. Gillies himself,* but by one of his servants. I am, therefore, inclined to believe that there has been a mistake in regard to its having been the nest belonging to one of the female spiders sent to me by Captain Hutton; for all of these spiders are certainly identical with those found in nests of the other type identified by Mr. Gillies himself, and received since from Captain Hutton. In absence of the clearest proof to the contrary, I take it that the different types of nest furnish decided characters of conclusive specific value. This, at least, is the result of the long and careful observations made in the south of France by the late Mr. Moggridge, all of whose materials, both spiders and nests, are in my possession, and have been the subject of repeated consideration and examination.

From Mr. Gillies' remarks (l.c., p. 226), he does not appear to have seen any nest with a true *cork-door*. All those found in New Zealand, as yet, are evidently of the *wafer-lid* kind; lids of this kind vary a good deal in their thickness, but cannot be mistaken for a moment for the true cork-lid, which fits *into* the opening of the tube as into a socket; while the wafer-lid shuts upon or *over* the opening; although in some species there is a portion of the middle of the lid which may enter slightly into the orifice.

With regard to the *enlargements* in the nest, I do not think this of specific

* There seems to be some little confusion, however, here in Mr. Gillies' paper. Compare p. 225, lines 3-9, from top of page, with p. 227, lines 4-7, and p. 260, lines 5-10.

From a letter received from Mr. Gillies since this paper was printed, I understand that the confusion alluded to was occasioned by the misprint (p. 227, line 6 from the top) of a figure 1 instead of 6. This does not, however, remove my conviction that I have not yet seen the spider by which the nest delineated in fig. 1, pl. viii, was constructed. Mr. Gillies tells me that some of the spiders captured by him were sent to Paris and others to Dr. Filhol; it is therefore possible that among these may have been the maker of the nest alluded to, as well as the example with a "peculiarly large and broad cephalo-thorax." See Mr. Gillies' paper, p. 225, and my observation on it, *postea* p. 283.

value; the same peculiarity is observable in nests of *Atypus*. Mr. Gillies has probably found out their true significance—that is, as receptacles for the egg cocoons. Perhaps the swelling of the egg cocoon, as the eggs advanced towards maturity, may, in some instances, have tended to increase the enlargement.

In making these observations on the nests of New Zealand trapdoor spiders, I have not had any examples of the nests before me; but from Mr. Gillies' paper, I conclude that he has had evidence of one nest only (pl. viii., fig. 1) of the *double-door branched* wafer-lid type, all the rest being *single-door unbranched* wafer-lid nests; the latter, however, presenting some small variations in curvature, and in the enlargement of a portion to receive the egg cocoon. All the spiders received by myself, I conclude, from their structural and special characters, to be, as before observed, of one species only, which varies chiefly in size; the varieties of depth, continuity, and confluence of markings not being of specific value. The real maker of the nest (fig. 1, pl. viii.) I conclude, therefore, to be yet undetermined. This is a point for future research, and upon which I think Mr. Gillies may be able to find further evidence.

Should Mr. Gillies kindly honour me with any more materials, I would ask for the nests, and the spiders found in them, to be in every instance carefully labelled and kept separate from all others.* It is most probable that there are several species of trapdoor spiders in New Zealand. Mr. Gillies speaks of one with a "peculiarly large and broad cephalo-thorax" (l. c., p. 225). No such example was contained among those sent to me; but this character (unless produced by an accidental crush) would certainly be of specific value, in spite of the most exact similarity of the nest to that of others; for at present I take it, that although a *different type of nest* is conclusively specific in its value, yet all nests of exactly the same type are not necessarily so, since spiders of even different genera (*Cteniza* and *Nemesia*) form nests of the same type—viz., *unbranched single-door cork-lid*, and to these, I believe, I may add a species of another genus *Idiops* (*I. syriacus*, Cambr.) as also a fabricator of a nest of this type.

The strongest differential specific characters among the *Araneidea* are usually shown in the adult male; this sex should, therefore, be carefully sought. So far as I am aware, the males of trapdoor spiders are not

* The spiders last sent to me by Capt. Hutton were indeed carefully separated and labelled, with notes on the labels, referring to the numbers of the nests in Mr. Gillies' paper; but owing to the fracture of several of the larger bottles, the whole package was so soaked in spirit, that some of the labels had come off, and the writing on others was quite illegible. A single *number* written on a small piece of parchment, and placed *inside the tube* with the specimen, is the best mode of distinction; any notes can then be made by letter, and should be numbered to correspond with the parchment number in the tube.

always found in a tubular nest, but frequently in holes, crevices of banks, walls, mounds of rubbish and stones, as well as under logs of wood, and beneath loose bark, sometimes also in dark out-buildings, and often wandering about at night.

The following is a detailed description of one of the spiders last received from Captain Hutton, and belonging to one (though, from the cause mentioned in a note to p. 283, it is uncertain to which) of the nests figured by Mr. Gillies. I have selected it out of the eight or nine examples received as a type of the species, from its medium size, as well as because in its colours and markings it is intermediate between the darkest and most confluent marked, and the lightest and least confluent specimens. To this description I have also added one of the male spider, which (as before observed) I consider to be that sex of the species to which the female spider described belongs; and I beg to return my best thanks both to Mr. Gillies and Capt. Hutton for their kindness in sending me the materials for these observations and descriptions.

[P.S.—A point is mentioned in Mr. Gillies's paper (pp. 251–253) upon which I have, as yet, made no remark, chiefly because it is at present to me, as it is also to him, quite inexplicable—I allude to the nests which have been found covered and hermetically sealed up on the outside with clay or soil, and yet with the spider alive inside. Subsequent observations made by Mr. Gillies confirm the fact of this extraordinary sealing-up, which he attributes to the male spider. But for Mr. Gillies having suspected and searched in vain for a second tube with another external opening, I should have suggested this as a solution of the mystery.]

Family THERAPHOSIDES.

Genus *Nemesia*, Latr.

Nemesia gilliesii, sp. nov.

Adult Female.—Length, from 7 to 16 lines, exclusive of the falces. The length of the example described below is intermediate between these two extremes—12 lines. The cephalo-thorax is of an oblong oval form, truncated at each end, the fore extremity being rather broader than the hinder one. The thoracic portion is rather depressed, but the caput is elevated and tolerably well rounded above. The normal grooves and indentations are strong, especially the one which marks the junction of the caput and thorax. The ocular area is of a transverse oval form, slightly elevated and rounded; there are a few erect black bristles on this part, a single line of the same along the middle of the caput, and some stronger curved ones on the clypeus immediately in front of the ocular area; one in particular being much longer than the rest, more tapering, and somewhat sinuous.

The colour of the cephalo-thorax is dark yellow-brown, thickly clothed

Fig. 2.

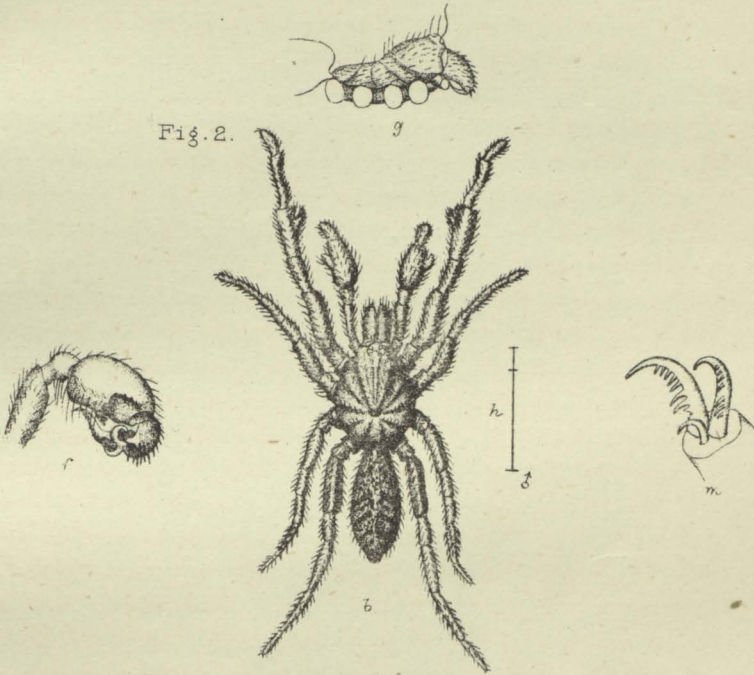
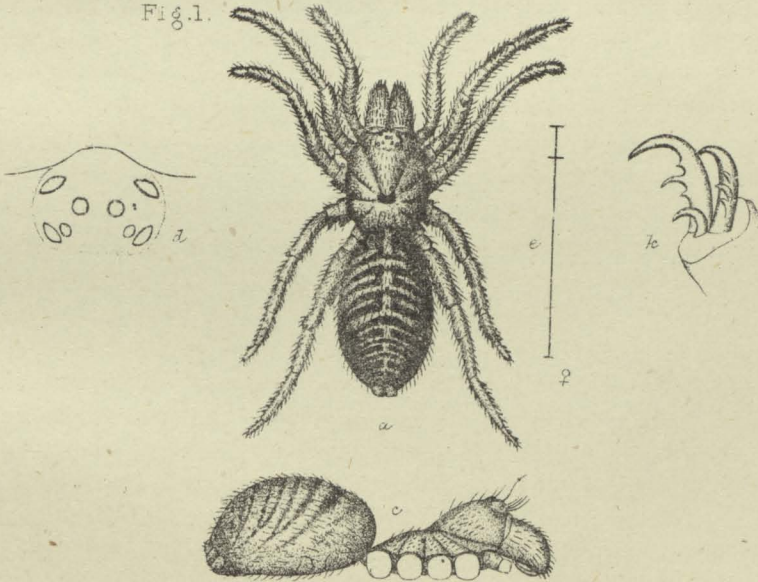
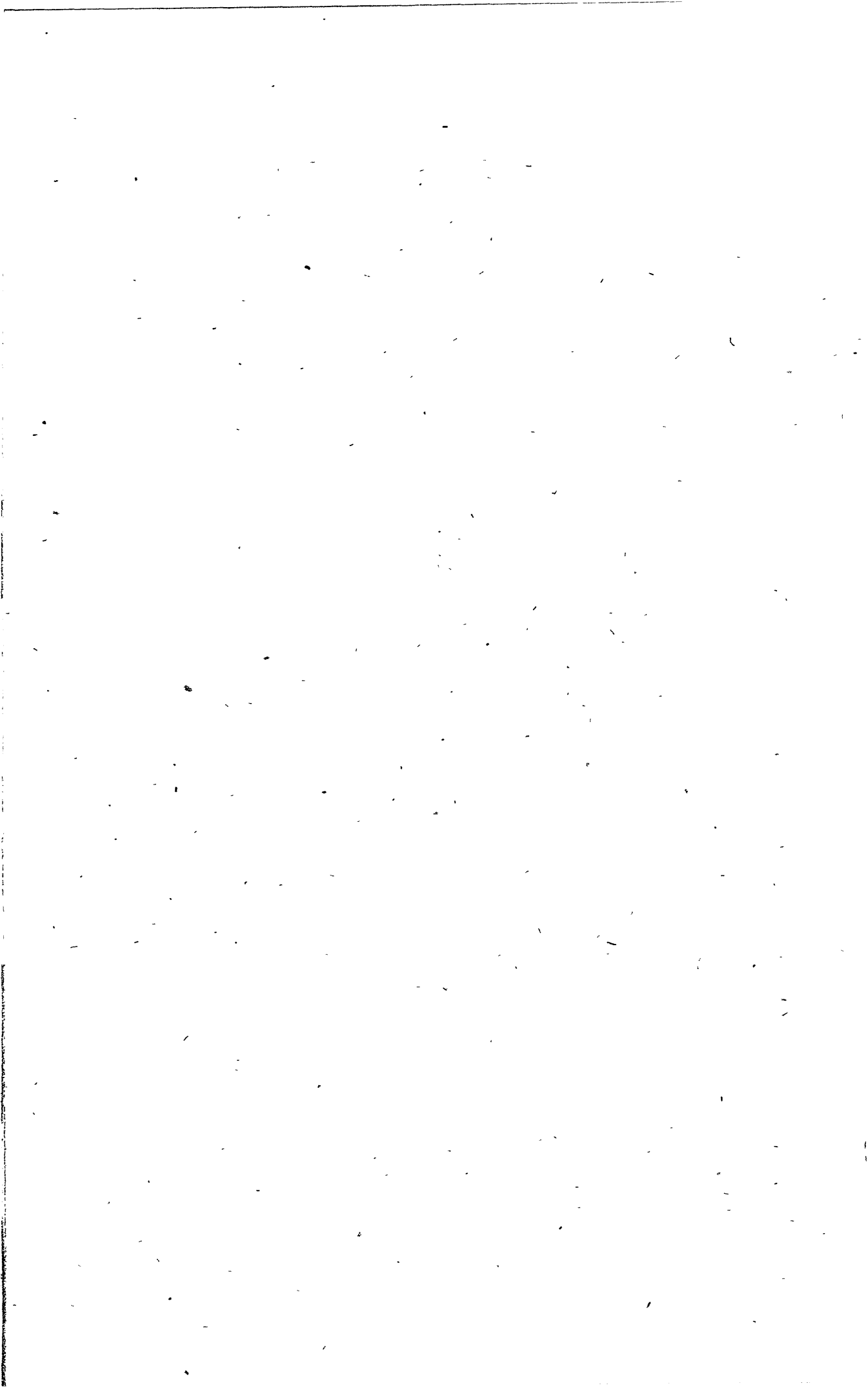


Fig. 1.



NEMESIA GILLIESII. (Cambr.)



with coarse adpressed dull sandy-grey pubescence, the ocular area being almost all black. The *eyes* are eight in number, seated on a slight oval eminence close to the fore extremity of the caput, and forming a transverse rectangular figure, whose longitudinal is rather less than half its transverse diameter. They are rather unequal in size. The four largest form the four corners of the quadrangle, those at its anterior corners being the larger; the two next in size are seated in a transverse line in the centre of the quadrangle; and close to the inner side of each posterior eye, but not quite contiguous to it, is another of a yellowish-white colour and flattened form, contrasting strongly with the dark hue of the rest.

The *legs* are strong, rather short, of a brownish-yellow colour, and furnished with hairs, bristles, and spines. The latter are most numerous, though shortest and most robust, on the metatarsi and tarsi of the third and fourth pairs—those on the third pair being on the upper and lower sides, while they are underneath only on the fourth pair; the spines on the first and second pairs are beneath the tibiæ and metatarsi, and are longer and less strong than those of the two hinder pairs. The genual joints of the third pair are furnished with short strong spines, but the number does not appear to be constant—varying from three to (in one example) eight, and sometimes differing, by one or so, on the opposite sides of the same spider; no example, however, out of twelve adults examined, is entirely without spines on this joint; the tibiæ also of the third pair have a single short strong spine on the outer sides. In one specimen, however, (that of which the genual joint had *eight* spines) the tibiæ had *two*, in another with seven on the genua, the tibiæ had *three*; and in another there were *three* on the genua with *two* on the tibiæ. The *tarsi* terminate with three strong, curved claws, those of the superior pair are the strongest, and are furnished, so far as I could ascertain, with three teeth on the under side of the hinder portion, near the middle; the central tooth being much longer and stronger than the one above and below it, but the denticulation of these claws seems to vary a little on the different legs. The *tarsi* and *metatarsi* of the first and second pairs are furnished beneath with a broad and compact scopula. The relative length of the legs is 4, 1, 2, 3. The *palpi* are short and strong, similar in colour to the legs, furnished with hairs and bristles, and a few long tapering spines beneath the radial joint; the digital joint has a broad compact scopula beneath its whole length, and terminates with a single strong curved denticulate claw.

The *falces* are strong and prominent, of a dark reddish yellow-brown deepening almost to black at the fore extremity; they are furnished with sandy-grey hairs mixed with strong dark hairs and bristles, and with a group of short strong spines on the upper side of their fore extremity.

The *maxillæ* are strong, slightly curved, divergent, and cylindrical in form, furnished with bristles and hairs, and a group of very short deep red-brown tooth-like spines at their hinder extremity, just above the labium.

The *labium* is short, convex in front, of an oval form, broadly truncated at its apex; it is of a red-brown colour, the apex being of a yellow hue.

The *sternum* is somewhat oblong, broader behind than in front; the fore extremity being deeply indented for the reception of the labium, and the hinder extremity obtusely pointed, the surface is strongly convex, hairy, and covered with very minute tubercular granulations.

The *abdomen* is large, hairy (the colour of the hairs being sandy-grey, mixed with others of a darker hue), of an oval form, very convex above, of a dull yellow colour, marked on the upper side with transverse curved black, more or less broken stripes, which run down over each side. These stripes are composed of more or less confluent black spots, and are, some of them, broken off in the middle, leaving an indistinct longitudinal central dull yellow band. On the fore half of the abdomen the stripes are more confluent than on the hinder half; the under side has an irregular strongly dentated black marking along the middle, but strongest and most distinct at its fore extremity. The spinners are four in number, short and strong; those of the superior pair are three-jointed and upturned; the basal joint being much the longest and strongest. The genital aperture consists merely of two strong transverse contiguous labia. In one or two examples, the under side of the abdomen is pretty thickly spotted with black, and there is some small variety in the extent and clearness of the transverse stripes in different examples. In very young specimens the stripes are simply rows of spots. Notwithstanding the great difference of size, I cannot find any other reliable specific variation in either of the twelve adults, and numerous immature examples, examined.

Adult male.—Length (exclusive of the falces) $6\frac{1}{2}$ lines; the only example examined of this sex is of a generally lighter and clearer yellow ground colour than the female, and the fore part of the caput is narrower, giving the cephalo-thorax a more regularly oval form; the normal grooves and furrows (especially those which mark the union of the caput and thorax) are strongly marked with reddish-brown; the caput also has two longitudinal, nearly parallel, brown lines, running from the eyes to the thoracic junction, where the other markings also converge, and give the cephalo-thorax a radiated appearance. The cephalo-thorax is clothed with dull, sandy-grey adpressed hairs, and there are some erect bristles on the caput similar to those of the female.

The relative size and position of the *eyes* is the same as in the female, although rather more closely grouped together.

The *legs* are longer, but their general armature is similar. The tarsal claws, however, are quite differently denticulated, four small teeth on the under side of the anterior half being followed by two much longer curved ones and another small one. The tibiae of the first pair are also proportionately longer and stronger, and have near their fore extremity, on the inner side, two nearly black protuberances, of which the hinder one is much the largest and rather of a curved form; the extremities of these protuberances are slightly denticulated, and the metatarsi of the same pair of legs are curved in a sinuous form. The *palpi* are rather long, and the radial joint is abnormally large and tumid, being of a nearly oval form; rather underneath on the outer side is a strong ridge-like protuberance, armed with numerous short tooth-like black spines; and immediately in front of this is a corresponding depression, of which the upper edge is furnished with some very minute black denticular spines; the digital joint is not very large; its margins are dark red-brown and somewhat corneous, and its fore extremity is strongly emarginate, with a largish lobe on the inner side and some strongish spines and bristles. The palpal organs consist of a nearly globular but rather flattened corneous lobe prolonged into a long curved tapering process, whose extreme point is rather twisted but not very sharp. When at rest, this process extends backwards, reaching to about two-thirds of the length of the radial joint, the point however having a strong outward direction. The *abdomen* is small, of a narrow oval form, but strongly convex above; its markings are similar to those of the female, though the spots forming them are far less confluent, and therefore the abdomen has a more spotty appearance.

A single example of the male was received (with two females) from Captain Hutton, in 1875, in some bottles of various other spiders, labelled "Oamaru," and I feel no doubt but that it is of the same species as the two females mentioned.

DESCRIPTION OF PLATE X.

Fig. 1. Nemesia gilliesii (female): *a*, spider a little enlarged; *c*, ditto in profile; *d*, eyes from behind; *k*, extremity of tarsus of right leg of fourth pair of legs from outer side, showing tarsal claws; *l*, natural length of spider.

Fig. 2. Nemesia gilliesii (male): *b*, spider enlarged; *g*, cephalo-thorax and falces in profile; *f*, right palpus from outer side; *m*, extremity of tarsus of right leg of fourth pair of legs from outer side, showing the tarsal claws; *h*, natural length of spider.
