AUSTRALIAN MUSEUM SCIENTIFIC PUBLICATIONS

Musgrave, Anthony, 1927. Some poisonous Australian spiders. *Records of the Australian Museum* 16(1): 33–46, plates ii–iii. [7 October 1927].

doi:10.3853/j.0067-1975.16.1927.777

ISSN 0067-1975

Published by the Australian Museum, Sydney

SOME POISONOUS AUSTRALIAN SPIDERS.

By

Anthony Musgrave, F.E.S., Entomologist, Australian Museum.

(Plates ii-iii.)

In the present contribution I describe and figure two species of spiders which hitherto have been unrecorded as harmful to man, and give a figure of and notes on the Red-spot Spider.

I desire to express my indebtedness to the artists who have prepared the illustrations, to my assistant, Mr. T. G. Campbell, for checking the counts of the teeth on the falx-sheaths, to Dr. I. Mackerras for help with references for the bibliography of Red-spot Spider bites, and to Mr. E. Osborne, of Collaroy, near Sydney, for assistance in securing material.

Family AVICULARIIDAE.

Sub-family Diplurinae.

Group Atraceae.

Genus Atrax *O. P. Cambridge.*

1877. *Atrax* O. P. Cambr., Ann. Mag. Nat. Hist., (4), xix, p. 26. Orthotype *Atrax robustus* O. P. Cambridge.

1891. *Atrax* Simon, Ann. Soc. Ent. Fr., p. 302.

1892. *Atrax* Simon, Hist. Nat. des Araign., i, p. 186.

1901. *Atrax* Hogg, Proc. Zool. Soc. Lond., p. 272.

1914. *Euctimena* Rainbow, Rec. Austr. Mus., x, 8, p. 248, fig. 58. Orthotype *Euctimena tibialis* Rainbow.

1914. *Atrax* Rainbow, *loc. cit.*, p. 252.

The genus *Atrax* includes eight species, *A. robustus* O. P. Cambridge, *A. modestus* Simon, *A. bicolor* Rainbow (originally placed in the genus *Aname*), *A. versuta* Rainbow, *A. valida* Rainbow and Pulleine, *A. formidabilis* Rainbow, *A. venenatus* Hickman, and *A. pulvinator* Hickman.

With the exception of *A. formidabilis,* which Rainbow placed tentatively in the genus, and *A. venenatus* Hickman, all the species have been described from female specimens and the males have been unknown. This probably accounts for Rainbow's action in placing a query before *A. formidabilis* in his description. This male

would have been the first of the genus to be recorded had he not described his *Euctimena tibialis,* which I propose to sink as a synonym of *A. robustus* O. P. Cambr., a few pages earlier. The males of *A. formidabilis* and *A. robustus* bear on the tibiæ of the second pair of legs an apophysis or spur covered with spines, while a smaller elevation is present on the metatarsi of the same pair of legs. As the metatarsi can be bent towards the tibiæ the smaller elevations come into juxtaposition with the larger ones, forming what are probably clasping organs. It is interesting to note that the tibial and metatarsal prominences of the second pair of legs occur also in the males of spiders of the American genus *Evagrus* Ausserer, group Macrotheleæ, which Simon,[1] places before *Atrax.* The male of *A. venenatus* Hickman[2] is apparently without these tibial and metatarsal prominences, groups of spines alone being present, judging by the figure of tibia ii.

Distribution.—Australia.

ATRAX ROBUSTUS *O. P. Cambridge.*

(Pl. ii, figs. 1-2, 4.)

1877. *Atrax robustus* O. P. Cambr., Ann. Mag. Nat. Hist., (4), xix, p. 26, Pl. vi, fig. 1, ♀, New Holland.

1891. *Atrax robustus* E. Simon, Ann. Soc. Ent. Fr., lx, p. 301.

1901. *Atrax robustus* Hogg, Proc. Zool. Soc. Lond., p. 273, text fig. 39; ♀ ♀ in British Museum from Queensland and New South Wales, and in Paris Museum from New South Wales.

1914. *Euctimena tibialis* Rainbow, Rec. Austr. Mus., x, No. 8, p. 249, text figs. 58-60; ♂ ♂ Turramurra and Mosman, Sydney.

Brief descriptions of the male and female figured are given below, otherwise they conform to Rainbow's (1914) and Hogg's (1901) diagnoses.

♂ Register number K56169 (Pl. ii, fig. 2). Cephalothorax 12·3 mm. long, 10·3 mm. broad; abdomen 11·2 mm. long, 9·8 mm. broad.

Cephalothorax.—Black, shining, smooth. *Abdomen.*—Dull brown, covered with long black spine-like hairs. Ventrally the body is reddish-brown except for the coxæ.

Eyes.—Conform to original description, except that the front median eyes are separated by a space slightly less than their individual diameter.

[1] Simon.—Histoire Naturelle des Araignées, 2nd ed., i, 1892, p. 185; and ii, Suppl., 1903, p. 968.

[2] Hickman.—Pap. Proc. Roy. Soc. Tasm., 1926 (1927), p. 65, text-fig. 9, and Pl. vi, fig. 5.

Legs.—Conform for the most part to the description of the allotype, except that patella ii is equipped with two strong spines on underside, not four as in the allotype. These numbers are subject to variation, specimen K56172 having eight-twelve on the right and left patella i, and six-five on patella ii. This would indicate that the number of spines can be of little specific value, though their presence or absence may be of importance. The apophyses on tibiæ ii are conical in shape; this character at once differentiates the male from *A. formidabilis* Rainbow, in which the apophyses are rounded (Pl. ii, fig. 4). In the drawing of the spider the second pair of legs are twisted to show the apophyses; normally they project downwards and are not visible from above.

Measurements of the legs are given below in millimetres:

Legs.	Coxa.	Trochanter and Femur.	Patella and Tibia.	Metatarsus and Tarsus.	Total
1	5·2	10·7	11·4	12	39·3
2	4·8	10·5	11	11·7	38
3	4·3	10·3	10	11·7	36·3
4	4·5	10·5	11·8	13	39·8
				Tarsus	
Palpi	4·4	6·9	6·9	2·2	20·4

Falces.—In Rainbow's description of the allotype he states, "the outer ridge of the furrow of each falx armed with ten strong teeth and the inner ridge with fifteen of varying lengths; in addition to these there is an intermediate row of six small teeth near the base;" upon examining the allotype I find that the rows of teeth are as follows:—

Right falx-sheath, outer row 13, intermediate row 18, inner row 7.
Left falx-sheath, outer row 14, intermediate row 18, inner row 16.

In the specimen under consideration the formula reads:—
Right falx-sheath, outer row 14, intermediate row 18, inner row 13.
Left falx-sheath, outer row 13, intermediate row 20, inner row 13.

♀ Register number K56197 (Pl. ii, fig. 1). Cephalothorax 14 mm. long, 10·6 mm. broad; abdomen 18·3 mm. long, 14·4 mm. broad.

Cephalothorax.—Above red-brown, smooth, shining. *Abdomen.*—above black-brown covered with hairs. Ventrally the body is light reddish-brown. Sternum redder than rest of undersurface.

Eyes.—Front median eyes separated by a space slightly more than their individual diameter.

Legs.—No spines on tibia ii, all other tibiæ bespined. Patellæ i-iv bespined. (Spines are present on tibia ii in other specimens of the series.)

Measurements of the legs are given below in millimetres:

Legs.	Coxa.	Trochanter and Femur.	Patella and Tibia.	Metatarsus and Tarsus.	Total.
1	6·4	11·4	12·2	9·7	39·7
2	4·7	8·3	8·3	7·5	28·8
3	4·6	9·3	9	9	31·9
4	4·8	10·8	11·2	11·4	38·2
				Tarsus	
Palpi	5·3	7·7	7·2	4·7	24·9

Falces.—Hogg (*supra*) has stated that "there are 13 large teeth on the outer margin of the falx-sheath, 11 on the inner, and 9 rather large in an intermediate row." In the specimen under consideration the numbers are as follows:—

Right falx-sheath, outer row 14, intermediate row 21, inner row 13.
Left falx-sheath, outer row 16, intermediate row 25, inner row 15.

The intermediate row usually consists of a number of small teeth at the end of the furrow underlying the point of the fang, and a row of larger ones extending in a line towards the fang and terminating before the fourth or fifth teeth of the inner and outer rows.

Variation.—The number of teeth in the rows in the falx-sheath of this species varies considerably, and below is given a table of the

	Left Falx-Sheath.			Right Falx-Sheath.		
♀	Outer Row.	Inter-mediate Row.	Inner Row.	Inner Row.	Inter-mediate Row.	Outer Row.
K14066	14	26	14	12	34	13
K36614	13	35	18	17	35	13
K46840	15	23	15	16	33	13
K49421	13	22	15	14	19	12
K49955	11	20	15	15	24	13
K55650	14	26	13	10	23	14
K56194	13	21	15	14	21	13
K56197	14	21	13	15	25	16
K56215	15	33	15	17	34	13
K56217	13	28	14	15	33	11
K56261	12	31	14	13	31	13
K56262	14	24	13	13	22	14
Average	13	25-26	14	14	27–28	13
♂						
K 2879	12	18	11	14	22	12
K 3363	13	18	7	16	18	14
K40241	13	14	13	13	16	14
K41669	12	22	16	13	23	11
K56151	13	17	16	13	17	13
K56152	12	24	13	13	22	14
K56169	14	18	13	13	20	13
K56172	13	27	13	16	23	13
Average	12–13	19	12–13	13	20	13

number of teeth in the rows of the falces of specimens in the Australian Museum collection. For convenience, the rows are placed in the table in the order they would appear if the specimen were viewed ventrally; the right falx is thus seen as the left, and the left as the right.

Hab.—New South Wales, Colo Vale, July, 1902, 1 ♀, K14066, collected by Mr. N. Etheridge.

Localities near Sydney: Willoughby, Jan., 1915, 1 ♀, K36614, collected by Mr. A. E. Ansell; Chatswood, May, 1924, 1 ♀, K49421, collected by Mr. P. E. B. Barnett; Artarmon, Nov., 1922, 1 ♀, K46840, collected by Mr. P. M. Longworth; Gordon, Feb., 1927, 1 ♀, K55650, collected by Mr. E. Mazlin; Belmore, Aug., 1924, 1 ♀, K49955, collected by Mrs. M. Codd; Artarmon, April, 1927, 1 ♀, K56194, collected by Miss Steward; Chatswood, May, 1927, 1 ♀, K 56197, collected by Mrs. J. E. Watson; Greenwich, May, 1927, 1 ♀, K56215, collected by Mr. H. Switzer; Collaroy, May, 1927, 1 ♀, K 56217, collected by Mrs. Mackney; Collaroy, May, 1927, 1 ♀, K56261, collected by Mr. E. Osborne; Collaroy, May, 1927, 1 ♀, K56262, collected by Mr. E. Osborne; Killara, May, 1927, 1 ♀, collected by Mr. W. H. Boekemann; Cremorne Heights, N. Sydney, June, 1927, 1 ♀, collected by Mr. F. L. Grutzmacher; Hornsby, June, 1927, 1 ♀, collected by Mrs. E. Wheatley; Pennant Hills, 1927, 1 ♀, collected by Mr. Spence; Manly, Sept., 1927, 1 ♀, collected by Mr. L. Bulmer. (The teeth on the falx-sheaths of the last five specimens have not been counted, and so do not appear in the list.)

Turramurra, March, 1897, 1 ♂, K3363, collected by Mr. C. F. Richmond (allotype); Mosman, Dec., 1896, 1 ♂, K2879, collected by Mr. E. R. Waite and described with allotype; Neutral Bay, June, 1917, 1 ♂, K40241, collected by Mr. A. Musgrave; Greenwich, April, 1927, 1 ♂, K56151, collected by Mrs. H. Willoughby; Wahroonga, March, 1919, 1 ♂, K41669, collected by Miss Scrutton; Hornsby, April, 1927, 1 ♂, K56169, collected by Mr. A. S. Wheatley; Wahroonga, April, 1927, 1 ♂, K56152, collected by Mr. F. W. Brennan; Collaroy, April, 1927, 1 ♂, K56172, collected by Mr. E. Osborne; Collaroy, June, 1927, 2 ♂, collected by Mr. E. Osborne; Clifton Gardens, N. Sydney, June, 1927, 1 ♂, collected by Dr. C. A. Monticone; Thornleigh, Feb., 1927,, 1 ♂, collected by Mr. W. Thompson; Manly, Sept., 1927, 1 ♂, collected by Mr. L. Bulmer. (The teeth on the falx-sheaths of the last five specimens have not been counted, and so do not appear in the list.)

Remarks.—The recent death of a baby boy at Thornleigh, near Sydney, following on the bite of a trap-door spider[3], has caused great public interest in spiders and many have been sent to the Australian Museum for determination. Through the courtesy of the Thornleigh police the spider actually responsible for the child's

[3] The term "trap-door" spider is used here to embrace broadly all the members of the family Avicularidæ. The members of the sub-family Diplurinæ do not construct trap-doors to their burrows, which they place under stones, logs, and in tree stumps.

death was brought to the Museum, and I found that it agreed with the holotype of *Euctimena tibialis* Rainbow, a species originally recorded from Turramurra and Mosman, near Sydney, and of which only the male had been described. Since the death of the child seven male specimens have been forwarded to the Museum from localities near Sydney. The fact that males alone were known of this apparently not uncommon species, led to the conclusion that the female would probably be known under some other name. Upon receipt of another trap-door spider, *Atrax robustus* O. P. Cambr., from Artarmon, near Sydney, I was at once struck by the similarity of the maxillæ, labium, eye-structure, and dentition of the falces to those of *Euctimena tibialis*. Reference to the literature upon *A. robustus* showed that the male was unknown. Upon *a priori* evidence, as well as upon that of structure, it would appear that *Euctimena tibialis* Rainbow should fall as a synonym of *Atrax robustus* O. P. Cambridge.

The discovery by Mr. E. Osborne of two females and two males on the same small block of land at Collaroy seems to confirm beyond all reasonable doubt the views propounded above. A female has also been received from Mrs. J. Harmer, taken at Mr. Spence's residence at Pennant Hills, which is situated about a mile from Thornleigh, where the child was bitten. Mr. L. Bulmer has since collected a male, female and egg-sac from the same nest, at the residence of Mr. T. C. Campbell at North Harbour, Manly, while excavating the foundations of a retaining wall.

An analysis of the localities of the specimens in the Australian Museum listed above, shows that all the males and fifteen of the seventeen females have been taken on the northern side of Port Jackson.

A female taken by Mr. Osborne at Collaroy, near Sydney, was dug out of its nest in a cavity in a gum-tree stump about eighteen inches below the surface of the ground. Portion of the silken lining of the burrow contained remains of beetles, which had evidently formed the food supply of the spider. This spider was alive when brought to the Museum; the fangs were bright red in colour, the undersurface of all the leg joints and base of the falces light-green, and the upper parts a dark-green.

Atrax robustus is undoubtedly of a pugnacious disposition, all those brought alive to the Museum showing fight, a characteristic which appeared to have impressed itself on the minds of those who presented the specimens. Most of the spiders were taken in gardens, but four of the males were taken inside houses, one taken by Mr. Osborne, springing at him.

Rainbow and Pulleine have stated[4] in regard to *A. valida*, "Like others of the genus *Atrax*, this species is of a vicious disposition, and puts up a strong fight before it can be induced to enter a collecting

[4] Rainbow and Pulleine.—Rec. Austr. Mus., xii, 7, 1918, p. 86.

tube." Mr. Hickman corroborates this statement in respect of his *A. venenatus* from Tasmania[5].

On Monday, 20th June, 1927, a male specimen was submitted to me for identification on behalf of Mr. C. A. Monticone, LL.D., of Clifton Gardens, Sydney. The spider had bitten him on the ball of the left foot while he was exercising in his room that morning. Later in the day Dr. Monticone informed me by telephone that, after being bitten, he took no notice of the bite and treated it as if it were a mosquito bite. He had not seen a doctor, though he was suffering great pain at the time. I advised him, therefore, to get medical advice without delay, and asked him to let me have all particulars of his case. I saw him at the Museum five days later, and he handed me a typed account of his case, set out with commendable thoroughness. This is given below. Dr. Monticone further expressed the opinion that a child under the age of fifteen years would have little hope of recovering from the effects of a bite.

Effects of Bite.—An account of the fatal results from a bite of a male of this spider, and the circumstances surrounding it, is here given as it appeared in *The Sun,* Wednesday, 23rd February, 1927.

The story of how a spider bite proved fatal was told at the Hornsby Coroner's Court to-day, when the District Coroner (Mr. H. Richardson Clark) held an inquiry into the death of a baby boy, Clyde William Thompson, of Thornleigh. Constable Harmer, of Thornleigh, said that on February 15 the little boy was sitting on the laundry steps, with his parents close by, at their home in Clifford-avenue, Thornleigh. Suddenly with an agonising scream the child jumped up. Mrs. Thompson picked him up and hurried him into the kitchen.

On examining him she found a spot of blood in the little finger of the left hand. Then her husband found a big black spider, partly crushed, near where the child had been playing.

A ligature was bound around the left hand, and the wound bathed with permanganate of potash, but the child became ill and died a few hours later.

Constable Harmer produced the spider—a big black one. He said that the museum authorities had told him that it was a trap-door spider, Euctimena tibialis Rainbow. This was the first case on record of a person dying from the bite of a trap-door spider. He was of the opinion that the child was crushing the spider in his hand when it bit him.

Wm. Chas. Thompson (father) and Laura Thompson (mother) both said that they did what they could for their child and took it to the doctor when they saw that it was in a bad way.

Dr. Neville Davis, of Beecroft, said that when he saw the child, which was at 8.20 on the evening of February 15, it was unconscious, deeply cyanosed, and in a state of chronic [*sic*] convulsive spasm. He instituted a vigorous treatment for an hour and a quarter, but although the child rallied occasionally, he was unable to save it. "I realise," he said, "that death from a spider bite is an extremely rare occurrence, but in this case it was due to the following reasons:—The ligature was not applied soon enough or kept on long enough to prevent the poison reaching the central nervous system by way of the blood stream; also, through want of knowledge, the wound was not scarified."

The Coroner found that the child had died from the effects of the spider bite.

---

[5] Hickman.—Pap. Proc. Roy. Soc. Tasm., 1926 (1927), p. 70.

In setting forth Dr. Monticone's case I have been assisted by Dr. Ian Mackerras, of the Board of Health, in revising the Doctor's notes. (The light way in which Dr. Monticone treated the matter, though suffering considerable pain at the time, would indicate that fear in no way aggravated his condition.)

Age 42, weight about 10 stone. Normal strength, and good health and constitution. No organic troubles of any kind.

Monday, 20th June, 1927, 6.10 a.m. While doing physical culture exercises in pyjamas and bare feet in a room opening on to a garden about three feet away, I felt something under my left foot. It was dark at the time and I rubbed my foot on the carpet, thinking it was a button or other small object. Suddenly I felt a severe prick as from a pin. I looked and saw something dark and wrenched it off with some effort, and noticed then it was something moving. I turned on the light and killed a spider. I then went into the bathroom, where I squeezed some liquid out from the bitten foot. Two small punctures were visible, similar to thorn holes, though hardly noticeable. I applied iodine and had a cold bath, though a stinging pain was in the foot all the time similar to that of a bee-sting, and gradually extending to the toe and the rest of the foot.

6.45 a.m. A peculiar numbness of tongue and loss of taste was noticed, and a twinging pain in the tonque and lips similar to that of a strong electric current running through the throat, or the sensation left on the hands after carrying ice or snow for a long while. I then had breakfast of strong coffee (large quantity) and toast.

7.30 a.m. About this time the pain extended to both hands and feet, with a strange sensation as though something cold was touching the skin. I felt very sensitive to cold air or water.

8 a.m. (approx.). I felt pains in both arms and legs and had annoying and excessive salivation, necessitating continuous spitting. I had also a discharge of mucous matter from my nose, very clear and identical to that of a person with a cold, though I had no cold at the time. The most troublesome symptoms were the twitching of all facial muscles, especially the lips, which kept on moving involuntarily, and the muscles at the base of the nose and those of the cheeks. My face felt as though the whole surface were a boil ready to burst, and with a sensation similar to that of a limb which has "gone asleep."

10 a.m. About this time I felt considerable depression, my eyes lachrymating, and I was able to control the eyelids with difficulty. I had a strong feeling of nausea, a choking feeling in the throat and obstruction of the nasal passages. A good dose of coffee taken had no effect. About 10.30 my vision became very blurred so that several images appeared partially covering and mixing into one another, and I had a certain amount of difficulty in controlling my limbs, hands, and feet, all being very numb and extremely sensitive to cold. Heat afforded partial relief, only to cause greater pain afterwards.

11.30 a.m. My symptoms became more and more severe, until about this time I found it impossible to write a word on the typewriter owing to distorted vision, weakness, numbness, and feeling of pains and depression.

12 noon. About this time I visited Sydney Hospital and obtained a prescription from Dr. A. R. H. Duggan to counteract alkaloid poison. The prescription contained the following:—Ammonium bromide gr. x, pot. citrate gr. xxv, sodium salicylate gr. xxv.

1.30 p.m. I returned home, had a small lunch, and went to bed. During the afternoon the feeling of "tingling" extended to my hips, shoulders and back. All symptoms continued until late in the night with tendencies to nausea, while in addition to spitting and sneezing, which were most pronounced and uncomfortable, was a "tingling" of all muscles.

Tuesday 21st June, 1927. The sneezing, spitting and belching subsided, but the tingling remained, becoming sharper here and there at irregular intervals. A cold sponge bath caused an unpleasant reaction, which was partly counteracted by large doses of boiling coffee. My feet, hands, and facial muscles are still affected. My general condition is similar to that of a patient after influenza, that is, tired, depressed, numb.

Wednesday, 22nd June, 1927. Only my hands and feet are still tingling at intervals, and the bitten foot is still slightly sore.

Thursday, 23rd June, 1927. No further symptoms except a drowsy and tired feeling.

Notes: No alcohol was taken at any time, only large doses of coffee, which did not seem to check the trouble, but certainly helped to keep the body a little warmer. It is remarkable that only the front part of the head was affected (of course, also the respiratory passages), and especially the muscles of lips, tongue, mouth, and jaws. (I forgot to mention above that right through the severest period my teeth and jaws ached as with severe neuralgia). No disagreeable sensation, however, was felt at the top or back of the head, or about the ears. On the other hand, no sensation was experienced at all in the front part of chest or abdomen, but only on the back of the shoulders and right down to the legs. My taste was completely lost for thirty-six hours. The prescription was certainly very effective, as proved by the fact that while it was in the mouth the tongue ceased paining at once, but when the medicine was swallowed the tongue commenced to ache again. After the first two doses the trouble began to decrease. I noticed, also, that my temperature and pulse remained rather regular, though my pulse was a little weak at intervals. I noticed, too, that the local pain was, after the first hour, not more pronounced than anywhere else; the right foot (not bitten) ached as much as the left (bitten). I noticed no trouble at all internally.

ATRAX FORMIDABILIS *Rainbow.*

(Pl. ii, figs. 3 and 5.)

1914. ? *Atrax formidabilis* Rainbow, Rec. Austr. Mus., x, 8, p. 255, figs. 63-66. ♂ Richmond River, N.S. Wales.

The specimen figured is from Wauchope, N.S. Wales, and is much larger than the holotype. The following notes on it may prove of value.

♂ Cephalothorax 14·7 mm. long, 10·4 mm. broad; abdomen 13·8 mm. long, 9 mm. broad.

Falces.—Outer ridge of each falx armed with twelve teeth and the inner ridge with eleven, the intermediate row consisting of eighteen minute teeth. In the description of the holotype, fourteen is stated to be the number for the intermediate row, but examination of the type shows that eighteen are present.

Legs.—All tibiæ bespined, very heavily on tibiæ i, ii, iii. The patellæ are also furnished with spines. Tibia and metatarsus ii on the underside are each produced towards the middle into a spur or apophysis (Pl. ii, fig. 3). In the plate these protuberances are seen from the side, the limb being twisted into an unnatural position to show these important characters, but normally they project downwards. Each spur is densely covered with spines (Pl. ii, fig. 5) and hairs.

Measurements of the legs are given below in millimetres:—

Legs.	Coxa.	Trochanter and Femur.	Patella and Tibia.	Metatarsus and Tarsus.	Total.
1	6·4	13·4	13·4	12·7	45·9
2	5·3	12	12	13·2	42·5
3	4·7	11	10·5	12·8	39
4	5·2	13·3	13·3	13·9	45·7
				Tarsus	
Palpi	5·3	8	8	2·6	23·9

Hab.—New South Wales, Wauchope, January, 1926, 1 ♂, forwarded by Dr. Wm. Begg to Health Department, Sydney.

Remarks.—In January, 1926, I received from the Department of Public Health, Sydney, for identification a trap-door spider, which I was informed had bitten a man residing at Wauchope, N.S. Wales. A copy of the letter which was sent with the specimen to the Department by Dr. W. Begg, of Wauchope, is given below, and shows what painful results may be attendant on a bite of this spider. Upon examination, the spider proved to be identical with the type of *Atrax formidabilis* Rainbow, of which at present only males are known. It is a large spider, with a body length of 27·5 mm. in the holotype and 36 mm. in the Wauchope specimen. It may easily be identified by the large rounded process on each tibia of the second pair of legs and the smaller process on each adjoining metatarsus.

Effects of Bite.—Dr. W. Begg's letter is given below. I subsequently learnt that the patient recovered.

Wauchope, 21/1/26.

Secretary,
Bacteriological Bureau,
Public Health Dept.,
Sydney.

Dear Sir,

Under separate cover please find specimen of spider. I would be obliged if you would identify same and let me know any particulars you may have at hand about same.

The specimen in question bit an adult man on the buttock when in the act of dressing, the spider evidently getting on the trousers in the night. He knocked it off and it fastened on his finger. Pain in the region of the bites was intense from the first and then the parts became numb. The bites were not scarified, and when I saw him three hours later he had had intense vomiting, profuse perspiration, violent cramps in the limbs and abdominal muscles, and the regions of the punctures were still so numb he did not mind incisions into them. He was more or less delirious, thinking somebody was spraying him with something. He had a frightened, anxious look, slow, weak pulse, 60 per m. Respirations laboured, and coughing up quantities of mucous, saliva trickling from the mouth, and pupils contracted.

I am,
Yours faithfully,
(Sgd.) WM. BEGG.

Family THERIDIIDAE.

Genus LATRODECTUS *Walck.*

1805. *Latrodectus* Walck., Tabl. Ar., p. 81. "Haplotype" *Aranea tredecim-guttata,* Rossi.

Distribution.—Tropical and subtropical regions of the world.

LATRODECTUS HASSELTII, *Thorell.*

(Pl. iii.)

1869. "Katipo" Wright, Tr. N.Z. Inst., ii, pp. 81-84.

1870. *Lathrodectus Hasseltii,* Thorell, Oefv. af Kongl. Vetensk. Akad. Forh., p. 369. New Holland.

1870. *Lathrodectus scelio* Thorell, *loc. cit.* p. 370. New Holland.

1870. *Latrodectus katipo* Powell, Trans. N.Z. Inst., iii, p. 56, Pl. v.

1872. *Latrodectus Hasseltii* L. Koch, Die Arach. Austr., i, p. 276, tab. xxiii, figs. 2, 3, 3*a*. Rockhampton and Bowen.

1872. *Latrodectus scelio* L. Koch, *loc. cit.,* p. 279, tab. xxiii, fig. 4. Rockhampton and Bowen.

1905. *Latrodectus hasseltii* Rainbow, Rec. Austr. Mus., vi, 1, p. 28.

1914. *Latrodectus hasselltti* Pulleine, Trans. Roy. Soc. S. Austr., xxxviii, p. 448. Finke River, Central Australia.

Distribution.—Throughout Australia, New Zealand, S. Pacific Islands, India, Malaysia, Papua, and Eastern Arabia.

Remarks.—The above species, popularly known in Australia as the Red-back, Red-spot, Red-striped, or Jockey spider, was hitherto the only Australian spider known to cause injury to man by its bite. The habits of the spiders of the genus *Atrax* (Avicularіidæ) and those of the genus *Latrodectus* (Theridiidæ) are very different, those of the former bringing them but rarely into the sphere of man's activity. We need not expect, therefore, to hear of many persons being bitten by trap-door spiders, the three cases cited in this paper being the only ones of which I have been able to obtain any record. The prevalence of Red-spot spider bites, on the other hand, may be gauged by reference to the appended bibliography. While it is perhaps significant that two species of *Atrax* are here recorded for the first time as harmful to man, it is well to bear in mind that the other one hundred and forty-six species of Australian Avicularіids are potentially capable of inflicting suffering to man from their bites. Trap-door spiders live in the ground or under logs, occurring usually in the bush and gardens, and but seldom invading houses. The Red-spot spider, as Rainbow (*supra*) points out, builds

its web "in all sorts of dark corners, in old and empty cans, or amongst any loose rubbish; they also occcur under stones and rock shelters." Dr. Lethbridge and Dr. Vance have indicated that its favourite haunt is under the seats in closets in country districts where the earth closet is in vogue. Dr. Bogan[6], of Los Angeles, points out that *L. mactans,* which occurs in California and the southern states of America, has similar habits, and the majority of the patients bitten by this spider were bitten "while sitting in an out-door privy."

Effects of Bite.—The nature and effects of the Red-Spot spider toxin have been frequently touched upon by doctors, and attention is drawn to the bibliography of references to Red-spot spider bite which have appeared from time to time in medical publications. It will be seen that the consensus of medical opinion is strongly against the spider. Only one fatal case of a child having been bitten is definitely recorded (by Dr. Jackson), and Dr. Lethbridge writes that he knows of three fatalities[7], and there are no records of death at the Department of Public Health, Sydney, but the painful results from the bite and frequency of the cases lead to the conclusion that the "Red-spot" is our most poisonous spider.

BIBLIOGRAPHY OF REFERENCES TO RED-SPOT SPIDER BITES.

Balfour, A.—Letter, *Med. Journ. Austr.,* 11th June, 1927, p. 873. Refers to Dr. Miles's letter of 5th March, 1927, in which he states that he can "find no reference to the condition in text-books." Gives references to books and papers treating with spider bites.

Cleland, J. B.—Sixth Report of the Government Bureau of Microbiology. Injuries and Diseases of Man in Australia attributable to Animals, except those due to Snakes and Insects. (b). No. 2. In *Report of the Director, Public Health, N.S.W.,* for the year ended 31st December, 1915 (1916), pp. 271-275. Lists cases up to 1916.

Jackson, E. S.—Letter, *Med. Journ. Austr.,* 2nd April, 1927, p. 525. Records fatal case of little boy of three or four years.

Lethbridge, H. O.—Letter, *Med. Journ. Austr.,* 28th Jan., 1922, p. 113. Writes from Narrandera, and states that the spider is called the Jockey spider in the Riverina, where "it inhabits wooden box seats of cess-pits. Eighty per cent. of the cases treated have been bitten round the genitals."

Letter, *Med. Journ. Austr.,* 30th April, 1927, p. 664. States that he knows of three fatalities. Has treated thirty cases. "All

[6] Dr. E. Bogan.—Arachnidism: A Study in Spider Poisoning. Journ. Amer. Med. Assoc., lxxxvi, 1926, p. 1894.

[7] One of these cases is shown by Dr. F. A. Rodway (see Bibliography) to be that of the child bitten by *Euctimena tibialis* = *Atrax robustus.*

of them have been extremely ill." (See Dr. Rodway's letter of 21st May, 1927).

McKay, S.—Letter, *Med. Journ. Austr.,* 23rd April, 1927, p. 626. Discusses treatment and nature of toxin.

Miles, E. H.—Letter, *Med. Journ. Austr.,* 5th March, 1927, p. 353. Notes that in the last four years he has had "the opportunity of studying the effects of bites in nine cases, none of which proved fatal." Describes the result of bite and treatment, and states that "I can find no reference to the condition in text-books, etc."

Rodway, F. A.—Letter, *Med. Journ. Austr.,* 14th January, 1922, p. 54. Refers to Dr. Sutherland's letter, 31st December, 1921, and states that spiders "were very common in Barraba, but for five years neither my colleagues nor myself ever treated a bite, nor did I ever get direct evidence of any person being bitten by one."

Letter, *Med. Journ Austr.,* 21st May, 1927, p. 770. Refers to Dr. Lethbridge's letter, 30th April, 1927, in which he stated that "the recorded death of a child to-day makes the third fatality I know of," and points out that this last death was due to *Euctimena tibialis,* vide *The Sun,* 23rd February, 1927, and not to the Red-spot spider as Dr. Lethbridge had supposed. "I have handled these spiders on many occasions for years past and have not yet succeeded in making one bite me."

Sutherland, J. W.—Letter, *Med. Journ. Austr.,* 31st December, 1921, p. 632. Writes from Narromine and says that common Red-back spider (*Latrodectus hasselti*) is found everywhere here, and cases of Red-back spider "bite" are very numerous. "Such a bite usually means a week of continuous aching and pain, accompanied by drenching sweats."

Letter, *Med. Journ. Austr.,* 21st Jan., 1922, p. 84. Refers to Dr. Rodway's letter of 14th Jan., 1922. States that he was bitten by spider which was identified by Mr. W. W. Froggatt, Govt. Entomologist, as *Latrodectus hasseltii,* and has seen five cases of red-back spider bite in the past three weeks; the patients all saw the spiders.

Tidswell, F.—Researches on Australian Venoms. The Poison of the Red-Spotted Spider, pp. 77-79. Gives records of experiments with spiders, and states that "The results may, however, be taken as indicating the improbability of a fatal issue from poisoning by *Latrodectus Hasselti.*"

Vance, E. B. M.—Letter, *Med. Journ. Austr.,* 28th Jan., 1922, p. 113. Writes from Leeton and comments on Dr. Rodway's letter. "Every year, principally in the summer, I am called upon to treat at least half a dozen cases of 'red back' spider bite,

and this experience has convinced me that *Latrodectus hasselti* is both vicious and venomous. Its favourite haunt is under the seat of a closet, across the opening of which it spins its web, and this accounts for the fact that in the majority of cases human beings are bitten on the genitals." Gives effects of bite and references to subject.

Watkins, A.—Letter, *Med. Journ. Austr.*, 11th June, 1927, p. 873. Refers to Dr. Rodway's letter, 21st May, 1927, of the failure of the Red-spot spider to bite him. Suggests that "if Dr. Rodway placed the spider under his shirt, I fancy he would be accommodated."

EXPLANATION OF PLATE II.

Atrax robustus O. P. Cambr.

Fig. 1. Dorsal view of female.

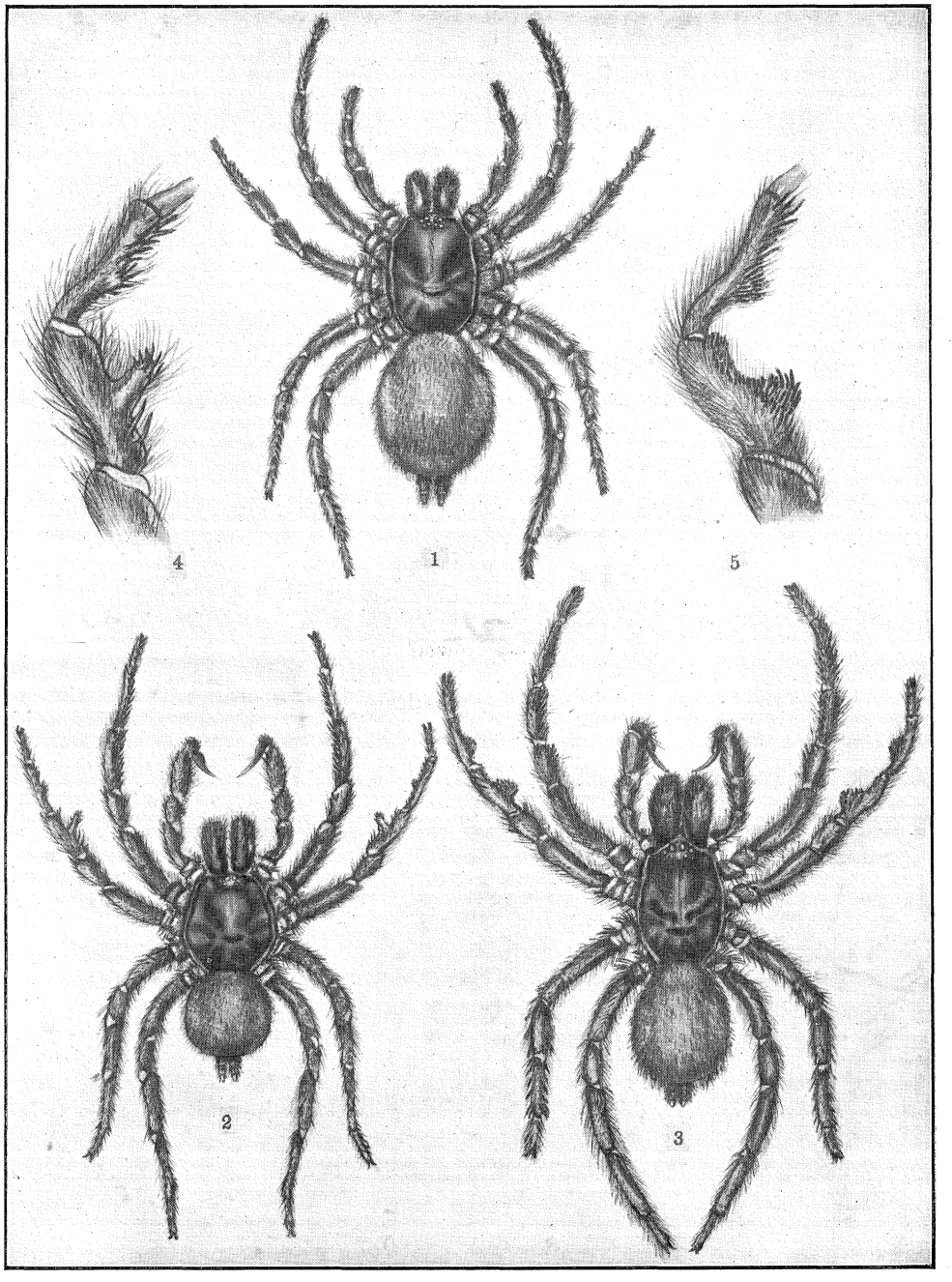
Fig. 2. Dorsal view of male.

Fig. 4. Tibia and metatarsus ii viewed laterally.

Atrax formidabilis Rainbow.

Fig. 3. Dorsal view of male.

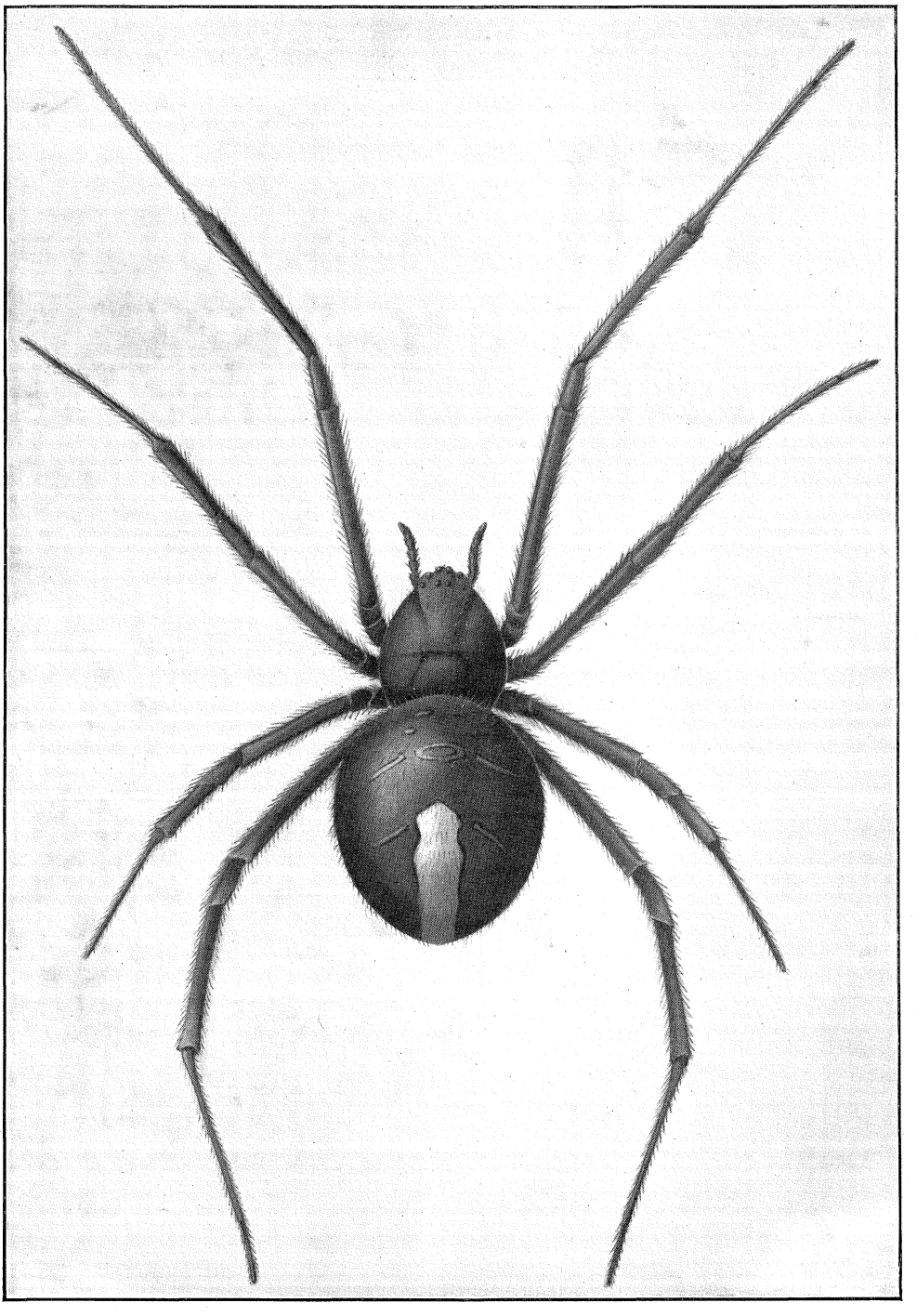
Fig. 5. Tibia and metatarsus ii viewed laterally.



JOYCE K. ALLAN, del.

EXPLANATION OF PLATE III.

Latrodectus hasseltii Thorell. Female. Dorsal view.



PHYLLIS F. CLARKE, del.

CORRIGENDA.

Page 44, line 5 and footnote [6]. *For* Bogan *read* Bogen.

Page 95, fourth line from bottom. For *walesius* read *rubriventris.*