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## STUDIES IN AUSTRALIAN ARANEIDÆ.

No. 5.

By W. J. RAINBOW, F.L.S., Entomologist.

(Figures 2—5).

### Family ARGIOPIDÆ.

Mr. W. Bullock, of the Parkville Public School, near Scone, New South Wales, has from time to time presented to the Trustees many interesting forms both of Spider and Insect life. Amongst his recent donations were two species of Araneidæ, and as these appear to be new, they are described hereunder. The first of these is an *Argiope*, Aud. *in Sav.*, for which I propose the name *A. bullockii*, and the second a species of *Celania*, Thor., for which the name *C. calotoides* is proposed. The first of these specific names is in honour of the collector, and the second is applied on account of the remarkable resemblance borne by the cocoons or ova-sacs to the fruiting heads of *Calotis*, R.Br., especially *C. lappulacea*, Benth. I am indebted to Mr. J. H. Maiden, Director of the Botanic Gardens, for his courtesy in examining the cocoons, and comparing them with the fruiting heads of the plants referred to above.

In reference to *C. calotoides*, I would like to point out that some time ago Mr. Bullock forwarded to the Museum a series of these peculiarly burr-like egg-bags, but without the spider. The egg-bags were new to me, but on examining them I concluded they were the work of a species of *Celania*. Accordingly I sent Mr. Bullock some sketches and notes of *C. distincta*, Cambr., asking him at the same time to keep a sharp look out, when collecting, for the maker of the cocoons. In this respect my correspondent was ultimately successful, securing three specimens, each of which had a series of cocoons. One of these Mr. Bullock retained for his own collection, but the other two are now in our cabinets.

Writing to me upon the subject of *C. calotoides* and its cocoons, Mr. Bullock observed:—"I had had a ramble in the bush, and had collected a number of spiders, and was on my way home

when I saw suspended from a little prickly (tree) shrub, what I supposed to be two egg-cases or cocoons of a *Celænia*, sp. As they looked rather fresh I pulled one off, and on turning it over in my hand I observed that it was not round. I then examined it with my lens, and, lo! and behold, it was a spider! I can assure you it was the biggest surprise I have received for many a day." In a further letter my correspondent tells me the cocoons are always suspended in a line, and that the spider in each instance he has observed was always clinging to the bottom one. Each cocoon is globose, dark brown, and armed, burr-like, with a number of sharp tubercles or spines, and these latter are each covered with yellow silk. This peculiarity is especially interesting in that the abdomen of the spider is also of a dark brown colour, and is armed with a number of tubercles, each of which is yellow at its apex. As the spiders were alive when they reached me, I put them in a box in which I had first of all suspended their cocoons. Each spider upon being introduced to its string of cocoons soon took up its position on the lower egg-sac, which position it maintained, as though on guard, until the preparation of this paper rendered it necessary for me to kill it. Each cocoon is hard and capable of bearing considerable pressure. Within, the walls are smooth, and the chamber is filled with loose flocculent silk, amidst the threads of which some thirty eggs repose in security. The number of ova enclosed in the cocoons varies somewhat. Without, the walls are coloured and armed as previously described. The cocoons, of which apparently there may be five, or six, or eight, are suspended one under the other, like a number of beads, and each is attached to its neighbour by fine, silken threads (fig. 2).

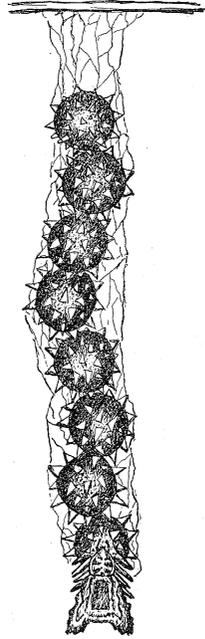


Fig. 2.—Cocoons with spider, *C. calotoides*, Rainb., attached.

Both the spider and its cocoons form admirable examples of protective formation and colouration. The former, when resting upon a twig, has the appearance of a woody, wart-like excrescence, which must serve it not only in shielding it from predatory foes, but also aid it in the capture of unsuspecting prey. The *Celænieæ*, although included in the family *Argiopidæ*, do not fab-

ricate snares for the capture of prey. *C. excavata*, L. Koch, which simulates, in form and colour, the excreta of a bird, usually rests upon the upper surface of a leaf; other species, such as the one collected by Mr. Bullock, take up their position, when at rest, upon the stems and branches of shrubs, and in such positions simulate wart-like excrescences or irregularities of bark. Such examples as these can only be regarded in the light of (1) *protective*, (2) *attractive*, (3) *aggressive* formation and colouration: Firstly, because by it the animal is more or less shielded from natural enemies; secondly, because by its appearance insects upon which it preys are attracted; and, thirdly, in this respect it is aggressive.

*Argiope bullockii* calls for little comment. The genus *Argiope* is, of course, remarkable for the beauty of its species, and the one hereunder described is no exception. Together with the spider, Mr. Bullock forwarded its cocoon. This consists of a mass of loose, flocculent silk, which enveloped two rather closely fabricated cushion-like ova-sacs. The loose material had a number of small green silken pellets attached to it, and wrought in amongst its threads; the eggs within the sacs were of a translucent reddish colour, and from these a day or two after arrival, hundreds of spiderlings hatched out, and, as is their wont, soon commenced to fabricate a dense sheet of web in common.

*Sub-family* ARGIOPINÆ.

*Group* ARGIOPEÆ.

*Genus* Argiope, Aud. in Sav.

ARGIOPE BULLOCKII, *sp. nov.*

(Fig. 3).

♀ Cephalothorax 3.5 mm. long, 3.4 mm. broad; abdomen 6.7 mm. long, 4.4 mm. broad.

*Cephalothorax*.—Broadly ovate, yellow, densely clothed with silvery pubescence. *Pars cephalica* arched, narrow in front. *Pars thoracica* broad, arched; segmental and radial grooves distinct; median groove or depression deep; marginal band narrow.

*Eyes*.—Eight, in three groups of 4, 2, 2. The four comprising median group form a trapezium; of these the median pair are much the largest, and are separated from each other by a space

equal to about one-half their individual diameter; the pair constituting the front row are individually about half the size of one of the rear eyes, and are separated from each other by about once their individual diameter, and the two rows are again separated from each other by a space equal to fully the diameter of one of the posterior eyes; lateral eyes somewhat remote, arranged in pairs; the two forming each lateral pair are contiguous; of these the rear eye is smaller than its posterior neighbour of the median group, but larger than the anterior; each lateral front eye is minute.

*Legs.*—Long, tapering, yellow, armed with long, slender, black spines; trochanters and femurs sparingly clothed with fine, pale yellowish hairs; metatarsi and tarsi rather thickly clothed with long black hairs. Measurements (in millimetres):—

Leg.	Coxa.	Trochanter and Femur.	Patella and Tibia.	Metatarsus and Tarsus.	Total.
1	1.0	5.8	5.5	6.6	18.9
2	1.0	5.8	5.5	6.6	18.9
3	0.7	3.1	3.1	4.1	11.0
4	0.9	5.7	4.9	5.6	17.1

*Palpi.*—Concolorous with legs, short, pubescent, and furnished with a few long, coarse bristles.

*Falces.*—Concolorous also; apices divergent, dark brown; upper margin of the furrow of each falx armed with four teeth and the lower with three.

*Maxilla and labium.*—Normal, pale yellowish; the former have a few coarse hairs over their surface.

*Sternum.*—Shield-shaped, longer than broad, densely hairy, pale yellow, lateral margins dark, with a small yellowish tubercle opposite each coxa of the first, second and third pairs of legs.

*Abdomen.*—Ovate, overhanging base of cephalothorax, somewhat truncated in front, arched, yellow, finely reticulated with yellowish-brown, has a broad brownish leaf-like design on the upper surface, and a delicate scheme of tracery running down the centre; laterally there are a few dark brown markings and spots; on the underside there is a broad dark brown patch

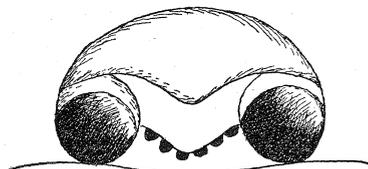


Fig. 3.—*A. bullockii*, Rainb., epigyne.

running from the epigastric fold to the spinnerets; the patch is relieved by a series of eight yellow spots arranged in pairs.

*Epigyne*.—A small tubercular eminence with an overhanging lip and deep lateral pits (fig. 3).

*Loc.*—Parkville, near Scone, New South Wales.

Group CELÆNIÆ.

*Genus* Celænia, Thor.

CELÆNIA CALOTOIDES, *sp. nov.*

(Fig. 4 and 5.)

Cephalothorax 2.5 mm. long, 2.3 mm. broad; abdomen 5 mm. long, 6.2 mm. broad, 7.3 mm. high (fig. 4).

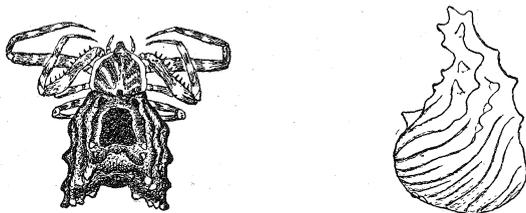


Fig. 4.—*C. calotoides*, Rainb., with abdomen in profile.

♀ *Cephalothorax*.—Broadly obovate, dark brown, ornamented with yellow markings and lines. *Pars cephalica* narrow, ascending, ridged laterally and down the centre, ridges fringed with short yellowish hairs, head acuminate in front. *Clypeus* broad, steep, sloping. *Pars thoracica* broad, strongly arched at centre, posterior portion declivous, a deep lateral depression on each side, seated low down towards the marginal band; lateral and radial ridges and margin fringed with yellow hairs. *Marginal band* pale yellowish.

*Eyes.*—Distributed in three series of 2, 4, 2. Of these those comprising the median group of four are much the largest, and are arranged in a somewhat trapezoidal form, the anterior pair being separated from each other by a space equal to about twice their individual diameter, and the posterior pair by about two-and-a-half diameters; each lateral pair of eyes is seated upon a small tubercle, and occupies about the same general line as the median group; they are not contiguous.

*Legs.*—Laterigrade, granulated, mottled with yellow and dark brown; femora of first and second pairs have each a groove on their underside for the reception of the lower joints wherein they rest when folded, like the blade of a pocket-knife; the edges of the grooves are armed with numerous short, sharp, strong tooth-like spines; the femora of the first pair are modified in form and outline to accommodate those of the second pair when the legs are folded and bunched up when the animal is at rest; the femora of the third pair is also grooved and has its ridges armed with spine-like teeth, but the groove is not so deep, nor are the spines so long as those of the first and second pairs; each patella, tibia, tarsus, and metatarsus are attenuated. Measurements (in millimetres):—

Leg.	Coxa.	Trochanter and Femur.	Patella and Tibia.	Metatarsus and Tarsus.	Total.
1	0·7	4·2	3·4	1·8	9·9
2	0·7	4·2	3·4	1·8	9·9
3	0·5	2·0	1·7	1·6	5·8
4	0·5	2·7	1·9	1·7	6·8

*Palpi.*—Short, concolorous with the legs.

*Falces.*—Normal.

*Maxillæ.*—Short, broad, arched, apices divergent.

*Labium.*—Short, broad, arched.

*Sternum.*—Elongate, somewhat shield-shaped, truncated in front, mottled dark brown and yellow.

*Abdomen.*—Overhanging base of cephalothorax, yellowish-brown with patches of blue-black, and furnished with a few

short scale-like yellowish hairs ; it is short, broad, high, and deeply excavated at its apex ; the surface in front has numerous round shallow pits, and numerous lateral and apical tubercles ; apices of the latter yellowish and hairy ; laterally, and at the rear, there are more pits and tubercles ; at rather more than half the distance from the apex towards the spinnerets there are two large and prominent pale yellowish tubercles, one of which is seated on each side ; apex closely set with tubercles.

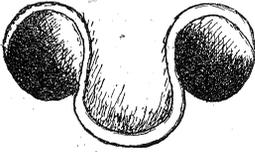


Fig. 5.—*C. calotooides*,  
Rainb., epigyne.

*Epigyne*.—As in figure (fig. 5).

*Loc.*—Parkville, near Scone, New South Wales.