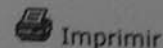


FORMULÁRIO DE ENCAMINHAMENTO - PERIÓDICO



Nº PEDIDO PE000418450/2009

IDENTIFICAÇÃO DO PEDIDO

TÍTULO DO PERIÓDICO: ANNALS AND MAGAZINE OF NATURAL HISTORY

ANO: 1924

VOLUME: 9

FASCÍCULO/MÊS: 14

SUPLEMENTO:

ISSN:

AUTOR DO ARTIGO: EDWARDS, F. W.

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PÁGINA INICIAL: 175

PÁGINA FINAL: 179

TOTAL DE PÁGINAS: 5

BÔNUS UTILIZADOS: 0

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SITUAÇÃO DO PEDIDO: ☒ Atendido ☐ Repassado ☐ Cancelado

FORMA DO DOC.ORIGINAL:

TOTAL DE PÁG.CONFIRMAÇÃO:

MOTIVO:

OBSERVAÇÃO:

FORMULÁRIO DE ENCAMINHAMENTO - PERIÓDICO

BIBLIOTECA-BASE

NOME: USP/MZ/BT - BIBLIOTECA

ENDEREÇO: AVENIDA NAZARETH, 481

CEP: 04263000

CIDADE-UF: SAO PAULO-SP

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TOTAL DE PÁG.CONFIRMAÇÃO:

DESTINATÁRIO

NOME: USP/BCRP/SBD - BIBLIOTECA

ENDEREÇO: AVENIDA DOS BANDEIRANTES, 3900

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Recebi o pedido Nº

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THE ANNALS
AND
MAGAZINE OF NATURAL HISTORY.

INCLUDING
ZOOLOGY, BOTANY, AND GEOLOGY.

(BEING A CONTINUATION OF THE 'ANNALS' COMBINED WITH LOUDON AND
CHARLESWORTH'S 'MAGAZINE OF NATURAL HISTORY.')

CONDUCTED BY
SIR ARTHUR E. SHIPLEY, G.B.E., M.A., Sc.D., F.R.S., F.Z.S.,
SIR A. SMITH WOODWARD, LL.D., F.R.S., F.G.S.,
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AND
RICHARD T. FRANCIS, F.Z.S., M.B.O.U.

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1924.

XIV.—A Note on the "New Zealand Glow-worm" (Diptera, Mycetophilidæ). By F. W. EDWARDS.

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ONE of the most remarkable insects in the New Zealand fauna is a luminous Dipterous larva which occurs in many parts of the colony in caves, mining tunnels, and dark crevices in rocky ravines. This larva was first described and figured by G. V. Hudson*, who also succeeded in rearing two or three specimens of the adult and thereby proving that the insect was a member of the family Mycetophilidæ; the adults were described by Skuse† as *Bolitophila luminosa*. According to Norris‡, who gave some further account of the insect, the larvæ form a sort of web of slimy threads in dark damp corners, in the centre of the web being a slender tube of mucilage, inside which they can glide rapidly backwards and forwards; one or more threads hang down from the webs on which beads of mucilage are placed. Pupation takes place in the web. Hudson could not state the nature of the food of the larvæ, but thought it might possibly consist of fungi. Norris, on the other hand, definitely stated that the larvæ fed on the remains of small insects which were caught in the web.

These habits are utterly at variance with those of the European species of *Bolitophila*, which feed on the interior of fungi, form no web, and pupate in the ground. The form of the larvæ is also quite different. On the other hand, both the form and habits of the New Zealand larva are in most respects similar to those of species of the genus *Ceroplatus*, and it is noteworthy also that the larvæ of several species of this genus, both in Europe and in Australia, have been recorded as being luminous§. On this account it was suggested to me by the late Dr. D. Sharp that some confusion had arisen and that the luminous larvæ of New Zealand were really those of *Ceroplatus*. When I recently reported this suggestion to Mr. Hudson, he replied that it had already been made long ago by Osten-Sacken, and that in order to

* Trans. N.Z. Inst. xxiii. p. 43 (1891).

† Proc. Linn. Soc. N.S.W. (2) v. p. 678 (1890).

‡ Ent. Mo. Mag. (2) v. p. 202 (1894).

§ This has been stated by Wahlberg for *C. sesioides*, by Skuse for *C. mastersi*, and by Sharp (in conversation) for *C. testaceus*. On the other hand, I have on several occasions reared the larvæ of *C. lineatus*, and have never observed them to be luminous.

satisfy himself that no error had occurred he had repeated his rearing experiments and obtained the same fly.

It would seem therefore that we have here another interesting case of apparently similar larvæ producing quite dissimilar adults, though exactly how close the structural resemblance is between the larvæ of *Ceroplatus* and *B. luminosa* can only be ascertained after a more detailed examination of the latter. The question has often been raised as to whether larval or adult characters are of greater value for classification, in those cases where their use would indicate quite different results. In some cases (as with the Culicidæ and with *Mycetobia*) it has been shown that the larval characters are undoubtedly more important, and that the apparent discrepancy has merely been due to the use in the first place of characters of quite secondary importance for the classification of the adults. In other instances, however (*e. g.*, that of *Trichocera* and *Rhyphus*), no such explanation can be offered, and it does not appear to be applicable to the present case.

In response to my request, Mr. T. R. Harris, of Ohakune, has kindly sent me a specimen of the "glow-worm" found in his district. This larva, however, is unquestionably a *Ceroplatus**, five or six species of which are known to occur in New Zealand. It therefore seems probable that there are in that country at least two species of luminous Mycetophilid larvæ, which may perhaps have been confused by Hudson, and this may possibly account for the differing views of Hudson and Norris as to the nature of the larval food. But assuming, as appears justifiable, that one of these luminous larvæ is really that of Skuse's *B. luminosa*, it is obvious that the species cannot be congeneric with the European species of *Bolitophila*, though without a re-examination of the adult no final conclusion could be arrived at.

The opportunity for making this examination has now been provided by my father, Mr. C. L. Edwards, who, on a recent visit to New Zealand, was fortunate enough to obtain a fine male specimen of the fly in the Waitomo Caves, North Island. This capture was of especial interest, as it was the first example of the species to be received in this country, and perhaps the first to be obtained on the wing in the wild state†,

* Dr. D. Keilin has confirmed my determination of this larva.

† During the last three years I have received several thousands of Mycetophilidæ from various correspondents in New Zealand, representing nearly 200 species, but not a single example of *B. luminosa* apart from the one here recorded.

which is somewhat surprising in view of the abundance of the larva. Mr. G. V. Hudson also kindly lent me his original example, now unfortunately much damaged.

Examination of these two specimens shows that *B. luminosa* resembles the European *Bolitophila*, and differs from all the Ceroplatinæ in the very little swollen pleurotergites and in possessing a well-marked *r-m* cross-vein. Like *Bolitophila* also, it has no combs on the hind tibiæ, while in all Ceroplatinæ except *Macrocera* there are two such combs, one on the outer side and one on the inner. On the other hand, it differs from *Bolitophila* and resembles the Ceroplatinæ (exclusive of *Macrocera*) in having no empodium or pulvilli. I therefore conclude that, although it is probably justifiable to refer the species to the subfamily Bolitophilinæ, it possesses sufficient distinctive characters to warrant the establishment of a new genus, which may be named and defined as follows:—

ARACHNOCAMPA, gen. nov.

Structure of head, thorax, hypopygium, legs, and wings as in *Bolitophila*, except that (1) empodia and pulvilli are both absent instead of well-developed; (2) the radial sector originates far before the middle of the wing, and far before the tip of the long subcosta; (3) the short vein R_4 is absent; (4) the *m-cu* cross-vein is placed slightly beyond instead of much before the base of R_s , and is much nearer to *r-m* than it is in *Bolitophila* (as, indeed, would be the case in Ceroplatinæ if the radio-median fusion had not taken place).

Type and only known species, *Bolitophila luminosa*, Skuse.

The name has been chosen to indicate one of the most remarkable characters of the genus—that is, the spider-like habit of the larva, forming webs and using them for the capture of insect-prey. In this respect the insect differs not only from all other Mycetophilidæ but from all other known dipterous larvæ. In the case of *Ceroplatus* and other Mycetophilidæ which form webs, the function of these seems to be either to form a protective covering for the larvæ or by hygroscopic action to assist in forming a moisture-saturated atmosphere, required by some of these larvæ for cutaneous respiration. Moreover, the food of these other larvæ certainly does not consist of insects but of fungus-spores. The web of *Arachnocampa* differs from that of *Ceroplatus* in the presence of the pendent threads, and it has been suggested that these act as "fishing lines"; they are

illuminated by the light of the larva, and small insects being attracted to them adhere to the droplets of mucilage and are captured. Dr. G. A. K. Marshall, who has observed the larvæ at Waitomo, states that when touched the threads are drawn up suddenly into the web.

The locality and circumstances of the capture of the male specimen now in the British Museum are of much interest, and I therefore quote my father's account:—

"9th May, 1923.

"Waitomo, the 'glow-worm,' Caves.

"Our guided wanderings (all the while deep underground) brought us at last to the edge of a pool. Here the guide made a speech about the glow-worms which adorned the roof over the water, pointing out the long glistening threads of a cobwebby texture let down singly by each tiny worm apparently to catch minutæ on the wing. At an engrossing part of the description one of the tourists suddenly produced from under his coat a net, with which he made a sweep at a passing fly, but which caught the guide's acetylene lamp instead and became ablaze.

"However, this glow-worm lecture was only explanatory and preparatory to the great event next coming, to which we were to be introduced under an injunction to perfect silence. Vibrations of air caused by talking or any other sound affected the larvæ, which thereupon put out their lights. This was clearly illustrated by the episode of the net and the commotion it caused. And it might here be said that that tourist afterwards detached himself from the party and stole back alone and unlighted to the unfathomed pool and redeemed his first folly by securing a cave-fly and a number of midges, which no doubt will come under the lens in South Kensington*.

"And now, after due admonitions, and obeying the order to leave all lamps behind, we stepped cautiously in single file down, down to a still lower level. Collecting ourselves at an unseen bottom we held each one his breath, and listened. To each in turn a whisper floated, "Get into the boat." . . . Then gradually we became aware that a vision was silently breaking on us. Either we were moving (though without oars) or a panorama was passing before us. I recollect just noticing the glint of a wire which might have

* [These midges belong to an undescribed species of *Tanypterus*. No doubt, they breed in the bed of the river which runs through the cave, and it seems probable they form the main food-supply of the glow-worms.—F. W. E.]

XV.—Descriptions and
By T. D. A. COCKRELL

Andrena amara

♂.—Length about 7 mm., and
Black, including antennæ a
speckly; the very broad elytra
black and laticular lateral fac
next to elytra creamy-white; b
and metathorax long, thin, and
face; hair of vertex dark fusco
slightly brownish. Legs with m
on inner side of tarsi. Head
obtusely reddish; process
long orange; hairs spir
whitish, mandibles

illuminated by the light of the larva, and small insects being attracted to them adhere to the droplets of mucilage and are captured. Dr. G. A. K. Marshall, who has observed the larvæ at Waitomo, states that when touched the threads are drawn up suddenly into the web.

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"However, this glow-worm lecture was only explanatory and preparatory to the great event next coming, to which we were to be introduced under an injunction to perfect silence. Vibrations of air caused by talking or any other sound affected the larvæ, which thereupon put out their lights. This was clearly illustrated by the episode of the net and the commotion it caused. And it might here be said that that tourist afterwards detached himself from the party and stole back alone and unlighted to the unfathomed pool and redeemed his first folly by securing a cave-fly and a number of midges, which no doubt will come under the lens in South Kensington*.

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XV.—Description and Plate
By T. D. A. COCKRELL, U.

Andrena amagosa

♂.—Length about 7 mm., ant.
Black, including antennæ and
epinotus; the very broad elytra
(basal) and ventral lateral face
next to elytra creamy-white; h.
and metathorax long, thin, and
face; hair of vertex dark brown
slightly brownish. Legs with
on inner side of tarsi. Head
filiform, crossing with an
obscure reddish; process of
long orange hairs springing
obsolete, mandibles with no

been fastened along the wall of the cave, and on which our dumb boatman might be pulling. But, at any rate, a radiance became manifest which absorbed the whole faculty of observation—the radiance of such a massed body of glow-worms as cannot be found anywhere else in the world, utterly incalculable as to numbers and merging their individual lights in a nirvana of pure sheen.

“And now as to the disposition of this mystic light, which produced itself all unaided in innumerable points. The cave was evidently similar in structure to all the others, giving an endless variety of outline; but whatever was there became dotted over with points of golden light as closely studded as the letters on a printed page, a truer parallel than the glibly quoted starry sky. It did strike me, however, that the higher reaches of the cave resembled the Milky Way. But from those heavens stretched down wondrous stalactites all clothed in living light, and appearing like arms ready to lift one right up to those far-away stars; and not only above the main silent river, along which our noiseless way was truly a gliding, but in branching fjords surprise burst on us again and again revealing fascinating vistas of the same glowing and shapely splendour. To bow the head in adoration of Beauty was but to meet its whole shimmer reflected, unwrinkled, in the quiet river below.”

XV.—*Descriptions and Records of Bees.*—CI.
By T. D. A. COCKERELL, University of Colorado.

Andrena amaguensis, sp. n.

♂.—Length about 7 mm., anterior wing nearly 6.5 mm.

Black, including antennæ and tegulæ; tarsi rufescent apically; the very broad clypeus (with shape of an inverted basin) and lenticular lateral face-marks placed transversely next to clypeus creamy-white; hair of face, cheeks, pleura, and metathorax long, thin, and white, not at all dense on face; hair of vertex dark fuscous, of thorax above sparse and slightly brownish. Legs with mainly white hair, pale yellow on inner side of tarsi. Head broad, quadrate; mandibles falciform, crossing, with an inner tooth, apical part very obscurely reddish; process of labrum narrow, truncate, with long orange hairs springing from beneath it; malar space obsolete, mandibles with no basal tooth beneath; clypeus