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Walker, F.

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ZOOLOGY, BOTANY, AND GEOLOGY.

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

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which was partly covered with *Hydractinia echinata*. Its generic and specific characters are embraced in the following diagnosis:—

DICORYNE.

*Char.*—Cœnosarc branched, clothed with a polypary and adhering by a tubular network. Polypes claviform, of two kinds, one sterile, the other prolific, both borne upon the common cœnosarc, and issuing from the extremities of the branches. Sterile polypes with a verticil of filiform tentacula situated behind the mouth; prolific polypes destitute of tentacula (and mouth?), and having the gonophores clustered round their base.

*D. stricta.* Stem rising to the height of about  $\frac{1}{2}$  an inch, irregularly branched; branches ascending at a very acute angle from the stem. Polypary slightly dilated at the extremities of the branches, somewhat corrugated near the base, but without distinct annulations. Tentacula about 16, in a slightly alternating verticil.

The only specimen of *Dicoryne stricta* I obtained was male. The polypary possessed but little transparency, and, as well as the polypes, was of a light brown colour. From the basal tubular network, besides the branched colonies, there also sprang unbranched stems which ascended vertically to the length of about a line, and bore each a terminal polype. These are apparently young zooids not yet complicated by branching, though many of the polypes seemed to have attained maturity, and presented the same difference of form as in the branched colony,—being in some cases tentaculiferous and sterile polypes; in others, polypes destitute of tentacles, and loaded with gonophores.

The habitat of *D. stricta* seems to be entirely similar to that of *Hydractinia echinata*\*.

XXXIX.—*Characters of some apparently undescribed Ceylon Insects.* By F. WALKER.

[Continued from vol. iii. p. 265.]

Order HYMENOPTERA.

Fam. Formicidæ.

**FORMICA EXERCITA.** *Fœm.* Nigra, densissime et scitissime punctata, antennis subfiliformibus, scapo flagelloque apice rufescentibus,

\* In Professor Huxley's beautiful and philosophic memoir on the Oceanic Hydrozoa, just published by the Ray Society, he has proposed a terminology, partly special for the particular groups which form the subject of his memoir, and partly intended to apply to the Hydrozoa in general. I would gladly have adopted several of Professor Huxley's terms in the present paper, if I could have done so without accompanying them with definitions which would have inconveniently increased the length of these notes.

clypeo subcarinato incisuris duabus anticis, coxis femoribusque rufis, his apice nigris, alis fuscis, venis nigricantibus, stigmatate nigro. *Mas.* Gracilis, antennis apice rufis, pedibus piceis.

*Female.* Black, very thickly and finely punctured. Antennæ subfiliform; tips of the scape and of the flagellum reddish. Clypeus slightly keeled, with a notch on each side in front. Legs moderately stout; coxæ and femora red, the latter with black tips. Wings brown; veins blackish, in structure much like those of *Polyrhachis militaris*; stigma black. Length of the body 4 lines; of the wings 8 lines. *Male.* More slender. Antennæ slender, red towards the tips. Legs slender, piccous. Length of the body  $3\frac{1}{2}$  lines; of the wings 7 lines.

**FORMICA EXUNDANS.** *Mas.* Nigra, elongata, scitissime punctata, antennis piceis filiformibus corpore vix brevioribus, abdomine longi-fusiformi, segmentorum marginibus pedibusque pallide piceis, alis cinereis, venis nigricantibus, stigmatate nigro.

*Male.* Black, elongate, very finely punctured. Antennæ piceous, filiform, nearly as long as the body. Abdomen elongate fusiform; hind borders of the segments and legs pale piceous; scale of the peduncle large. Wings cinereous; veins much like those of the preceding species; stigma black. Length of the body 4 lines of the wings 6 lines.

**FORMICA MERITANS.** *Mas.* Nigra, elongata, nitens, pubescens capite impresso, ore fulvo, antennis piceis filiformibus corpore paullo brevioribus, metathorace elongato transverse impresso, segmentorum abdominalium marginibus posticis rufis, pedibus piceis longiusculis, alis nigro-fuscis, venis stigmatateque nigris.

*Male.* Black, elongate, shining, pubescent. Head with an impression between the ocelli and the base of the antennæ. Mouth tawny. Antennæ piceous, filiform, a little shorter than the body. Metathorax elongate, slightly impressed across the middle. Peduncle of the abdomen conical. Hind borders of the abdominal segments red. Legs piccous, rather long. Wings blackish brown; veins and stigma black, the former like those of *F. exercita* in structure. Length of the body 5 lines, of the wings 6 lines.

**FORMICA LATEROSA.** *Mas.* Testacea, annis gracillimis, scapo longissimo, metathorace lævi, abdomine nigro, petiolo testaceo, pedibus longis debilibus, alis albis, venis stigmatateque testaceis.

*Male.* Testaceous. Antennæ very slender; scape very long, slightly increasing in thickness from the base to the tip, much more than half the length of the flagellum. Metathorax smooth. Abdomen black; peduncle and its node testaceous. Legs long, slender. Wings white; veins and stigma testaceous, the former in structure like those of *F. exercita*. Length of the body 4 lines; of the wings 7 lines.

**FORMICA PANGENS.** *Mas.* Testacea, scitissime punctata, capite supra picco, antennis filiformibus corpore valde brevioribus, scapo

brevissimo, abdomine elliptico, antice piceo, pedibus breviusculis, alis cinereis, venis testaceis, stigmatē nigro.

*Male.* Testaceous, slightly shining, very finely and minutely punctured. Head piceous above. Antennæ filiform, much shorter than the body; scape very short. Abdomen elliptical, very little longer than the thorax; fore-half piceous. Legs rather short. Wings cinereous; veins testaceous, in structure like those of *Tapinoma erraticā*; stigma black. Length of the body  $2\frac{1}{2}$  lines; of the wings 4 lines.

**FORMICA INGRUENS.** *Fœm.* Nigra, scitissime punctata, capite magno, mandibulis tarsisque testaceis, antennis corporis dimidio non longioribus, scapo longo subclavato, flagello rufescente subclavato, abdomine lato brevi-elliptico, pedibus robustis breviusculis, alis cinereis parvis, venis piceis, stigmatē nigro.

*Female.* Black, shining, very finely punctured. Head large; mandibles testaceous. Antennæ about half the length of the body; scape subclavate, much more than half the length of the flagellum; the latter reddish, subclavate. Abdomen short-elliptical, very much broader than the thorax. Legs short, stout; tarsi testaceous. Wings cinereous, narrow, short; veins piceous, in structure like those of *F. pangens*; stigma black. Length of the body  $2\frac{1}{2}$  lines, of the wings 4 lines.

**FORMICA DETORQUENS.** *Fœm.* Nigra, scitissime punctata, capite parvo, antennis subfiliformibus corporis dimidio paullo longioribus, scapo longo, abdomine elliptico, pedibus breviusculis, tarsis testaceis, alis pallide cinereis, venis stigmatēque testaceis.

*Female.* Black, shining, very finely punctured. Head small, a little more than half the length of the body. Antennæ nearly filiform; scape much more than half the length of the flagellum. Abdomen elliptical, hardly longer or broader than the thorax. Legs short; tarsi testaceous. Wings pale cinereous; veins and stigma testaceous; the former in structure much like those of *Tapinoma erraticā*, but the discal areolet is open on the exterior side. Length of the body  $1\frac{3}{4}$  line; of the wings 3 lines.

**FORMICA DIFFIDENS.** *Fœm.* Fulva, gracilis, aptera, capite nigro elongato, mandibulis magnis fulvis, antennis fulvis subfiliformibus, metathorace petioloque longis, abdomine nigro elliptico, pedibus posticis piceis, tarsis posticis testaceis.

*Female.* Tawny, slender, apterous. Head black, elongate. Mandibles large, tawny. Antennæ tawny, nearly filiform; scape moderately long. Metathorax and peduncle long. Abdomen black, elliptical, shorter than the thorax. Hind legs piceous; hind tarsi testaceous, long, slender. Length of the body 2 lines.

The description is taken from an injured specimen.

**FORMICA OBSCURANS.** *Fœm.* Nigra, sat gracilis, scitissime punctata, capite longi-quadrato, mandibulis magnis fulvis, antennis corporis dimidio vix brevioribus, scapo longo subclavato, flagello fulvo sub-

clavato, mesothorace sublineato, abdomine latiusculo, pedibus picis, alis albidis, venis stigmatæque testaceis.

*Female.* Black, rather slender, slightly shining, very finely punctured. Head elongate-quadrata; mandibles large, tawny. Antennæ nearly half the length of the body; scape subclavate, about two-thirds of the length of the flagellum; the latter tawny, subclavate. Prothorax and metathorax well developed; mesothorax with a slight middle line. Abdomen broader than the thorax. Legs picceous. Wings whitish; veins and stigma testaceous; the former in structure like those of *Tapinoma erraticum*. Length of the body 4 lines; of the wings 6 lines.

**FORMICA INDEFLEXA.** *Fœm.* Picea, gracilis, aptera, scitissime punctata, capite sat magno, mandibulis parvis, antennis subfiliformibus corporis dimidio non longioribus, flagello basi scapoque testaceis, thorace subcompresso, pedibus fulvis, tibiis nigris basi fulvis, tarsis testaceis.

*Female.* Piceous, slender, apterous, very finely punctured. Head rather large; mandibles small. Antennæ slender, not more than half the length of the body, nearly filiform; scape tawny, much shorter than the flagellum, the latter tawny towards the base. Thorax somewhat compressed; metathorax, peduncle and its node well developed. Abdomen mutilated. Legs tawny; tibiæ black, tawny at the base; tarsi testaceous. Length of the body 4 lines.

**FORMICA CONSULTANS.** *Mas.* Nigra, elongata, scitissime punctata, capite parvo antice fulvo, mandibulis minimis, antennis piceis filiformibus corpore valde brevioribus, scapo brevissimo, abdomine rufescente elliptico fascia media nigra, pedibus testaceis, alis cinereis, latiusculis, venis testaceis, stigmatæ piceo.

*Male.* Black, elongate, slightly shining, very finely punctured. Head rather small, tawny in front; mandibles very small. Antennæ piceous, slender, filiform, much shorter than the body; scape very short. Abdomen reddish, elliptical, a little broader than the thorax, with a black middle band. Legs testaceous, slender. Wings cinereous, rather broad; veins testaceous, in structure much like those of *Formica exercita*; stigma piceous. Length of the body 3 lines; of the wings 5 lines.

**POLYRHACHIS ILLAUDATUS.** *Mas.* Niger, subaurato-tomentosus, clypeo subsulcato lateribus elevatis, antennis filiformibus corpore paullo brevioribus, scuto bispinoso, scutello emarginato, metathorace lateribus elevatis incisibus postice bispinoso, abdomine lato brevissime elliptico, pedibus robustis.

*Male.* Black, apterous, with slightly gilded tomentum. Clypeus with a very slight middle furrow, and with a ridge along each side. Antennæ filiform, a little shorter than the body; scape very long, but shorter than the flagellum. Scutum with two long sharp spines, which are directed obliquely forward; scutellum shield-shaped, truncated at the tip, emarginate on each side. Metathorax with a notched ridge on each side. Peduncle

thick, widening hindward; two posterior spines, which are directed hindward. Abdomen very short, elliptical, much broader than the thorax. Legs robust. Length of the body  $4\frac{1}{2}$  lines.

**MYRMICA CONSTERNENS.** *Mas.* Testacea, gracilis, nitens, capite parvo supra nigro, antennis filiformibus thorace non longioribus, abdomine subfusiformi, pedibus parvis, alis albidis, venis stigmatæque testaceis. *Neut.?* Nigra, capite magno elongato, antennis testaceis subclavatis, thorace testaceo compresso, abdomine breviovato, pedibus testaceis.

*Male.* Testaceous, slender, shining. Head small, vertex black. Antennæ filiform, paler than the body, not longer than the thorax. Peduncle with two small nodes. Abdomen nearly fusiform, a little longer than the thorax. Legs short, slender. Wings whitish; veins and stigma testaceous, the former in structure much like those of *Polyrhachis militaris*. Length of the body  $2\frac{1}{2}$  lines; of the wings 5 lines.

*Worker?* Black. Head large, elongate. Antennæ short, testaceous, subclavate. Thorax testaceous, compressed, narrower than the head, attenuated and partly black hindward. Abdomen short-oval, broader than the head. Legs testaceous; femora mostly piceous. Length of the body  $\frac{3}{4}$  line.

**CREMATOGASTER PELLENS.** *Fœm.* Fulvus, gracilis, pubescens, capite subrotundo, mandibulis latis trigonis, antennis testaceis clavatis, metathorace bidentato, abdomine longi-elliptico, pedibus testaceis breviusculis, alis albidis amplis, venis stigmatæque testaceis.

*Female.* Tawny, shining, minutely pubescent. Head nearly round; mandibles short, broad, triangular. Antennæ testaceous, clavate, shorter than the thorax. Metathorax with two short stout spines. First node of the peduncle much longer than the second. Abdomen long-elliptical, very convex beneath, longer and broader than the thorax. Legs short, testaceous; femora sometimes darker. Wings whitish, ample; veins and stigma testaceous, the former in structure like those of *Crematogaster castaneus*. Length of the body 4 lines; of the wings 8 lines.

**CREMATOGASTER DEPONENS.** *Fœm.* Niger, nitens, punctatus, capite elongato subsulcato, mandibulis piceis latis trigonis, antennis breviusculis rufescentibus subclavatis, thorace fusiformi subcompresso, metathorace bidentulato, petioli nodis conicis, abdomine rufo fusiformi, pedibus rufis breviusculis, alis fusciscentibus, venis stigmatæque nigris.

*Female.* Black, shining, punctured. Head elongate, with a slight longitudinal furrow; mandibles piceous, short, broad, triangular, with minute teeth. Antennæ short, reddish, subclavate. Thorax fusiform, slightly compressed; metathorax with two minute teeth. Peduncle with two conical nodes. Abdomen red, fusiform, longer and broader than the thorax. Legs red, short. Wings brownish; veins and stigma black, the former very strongly marked, extending to the border, in structure somewhat like those

of *Formica rufa* and of *CreMATOGASTER castaneus*, but differing slightly from both. Length of the body  $3\frac{1}{2}$  lines; of the wings 6 lines.

**CREMATOGASTER FORTICULUS.** *Neut.* Niger, sat angustus, scitissime punctatus, capite subquadrato, mandibulis parvis piceis, antennis subclavatis thorace non longioribus, abdomine longi-elliptico latiusculo, pedibus breviusculis, tarsis pallide testaceis.

*Worker.* Black, rather narrow, slightly shining, very finely punctured. Head subquadrate, a little broader than the thorax; mandibles small, piceous. Antennæ subclavate, as long as the thorax. Abdomen long-elliptical, longer and broader than the thorax. Legs rather short; tarsi pale testaceous. Length of the body  $1\frac{1}{2}$  line.

**PSEUDOMYRMA? ALLABORANS.** *Mas.* Nigra, gracilis, brevis, nitens, capite antice fulvo, antennis subclavatis pallide luteis, petioli nodis magnis globosis, abdomine fusiformi suturis pallidis, pedibus fulvis breviusculis robustis, alis albidis, venis stigmatæque nigris. *Fæm.* Antennis clavatis, femoribus posticis nigris. *Neut.* Capite lato, thoracis segmentis bene determinatis; abdomine longi-elliptico.

*Male.* Black, slender, smooth, shining. Head tawny in front. Antennæ pale luteous, subclavate. Peduncle with large globose nodes. Abdomen fusiform, longer than the thorax; sutures pale. Legs tawny, short, stout. Wings whitish; veins and stigma black. Length of the body 2 lines; of the wings 3 lines. *Female.* Antennæ clavate. Hind femora black. Length of the body  $3\frac{1}{2}$  lines. *Worker.* Head broader than the thorax. Segments of the thorax much developed. Abdomen long-elliptical, not longer than the thorax. Length of the body 3 lines.

**ATTA DIDITA.** *Neut.* Picea, pubescens, scitissime scabrosa, capite maximo quadrato scite striato bituberculato, scuto gibbosulo, scutello minimo, metathorace valde declivi, petioli nodo 2<sup>o</sup> globoso lato, abdomine brevi-elliptico, pedibus fulvis.

*Worker major.* Piceous, pubescent, very finely scabrous. Head quadrate, very large, twice the breadth of the thorax, finely striated longitudinally, with two protuberances above. Antennæ reddish, subclavate. Scutum somewhat gibbous; scutellum very small. Metathorax very slanting. First node of the peduncle rather narrow, minutely quadridentate; second globose, much broader. Abdomen short-elliptical. Legs tawny. Length of the body 3 lines.

*Worker minor?* Head much smaller. Thorax less developed. Second node of the peduncle narrower. Abdomen black, round. Legs short, stout. Length of the body 2 lines.

This is probably a distinct species.

**MERANOPLUS DIMICANS.** *Neut.* Rufescens, convexus, brevis, latus, scabrosus, pilosus, capite subquadrato, antennis clavatis, scutello bi-

spinoso, metathorace bispinuloso, abdomine latiore nigro brevelliptico, pedibus breviusculis.

*Worker.* Reddish, convex, short, broad, scabrous, pilose. Head subquadrate, a little broader than the thorax. Antennæ clavate. Scutellum with two long acute spines, which are directed obliquely hindward. Metathorax with two small spines. Abdomen black, short-elliptical, broader than the thorax. Legs short. Length of the body 2 lines.

Fam. Mutillidæ.

*TIPHIA DECRESCENS.* *Fæm.* Nigra, nitens, scitissime punctata, antennis subtus rufis, prothoracis margine postico rufescente, abdomine fusiformi subtus apice rufescente, pedibus rufis, coxis femoribusque nigris, his apice rufis, alis cinereis, venis stigmatæque nigris.

*Female.* Black, shining, very finely punctured. Head a little broader than the thorax; clypeus somewhat truncated, with a transverse furrow at its base. Antennæ red beneath. Hind border of the prothorax reddish. Metathorax with two striæ, which converge hindward. Abdomen fusiform, reddish beneath at the tip. Legs red, short, thick; coxæ and femora black, the latter with red tips. Wings cinereous; veins and stigma black; third submarginal areolet extending almost as far as the marginal areolet, about half the length of the third discoidal areolet. Length of the body 3 lines; of the wings 5 lines.

[To be continued.]

BIBLIOGRAPHICAL NOTICE.

*An Illustrated Index of British Shells, with Coloured Figures of all the Species.* By G. B. SOWERBY, F.L.S. Simpkin and Co. 1859.

We are glad to find collectors of British shells supplied with a useful and beautiful manual of species at a comparatively small price. Hitherto they have been unable to procure any work containing the whole or any large portion of the species, without incurring an expense of many pounds. Mr. Sowerby now gives them the whole six hundred species, well figured, and arranged in such a manner that the reader can turn to a given plate and its opposite page, and learn at a glance what he wishes to know of the localities, habits, and relative characters of all the species of a given genus. The author claims to introduce about fifty new species. Some of these have been figured in other books as mere varieties, others are figured for the first time from specimens described by Mr. Jeffreys and others in the 'Annals.' We are by no means inclined to decide on the specific value of the distinctions asserted; but the author has left us in no doubt as to what they are. We wish success to this well-conceived and well-executed endeavour to supply a public want.