

Wednesday, October 20th, 1926.

Professor E. B. POULTON, F.R.S., President, in the Chair.

Election of Fellows.

The following were elected Fellows of the Society:—Mrs. OLIVE GREY, 90, Charing Cross Road, London, W.C.2; MELVILLE H. HATCH, Department of Zoology, University of Michigan, Ann Arbor, Michigan, U.S.A.; C. G. MAURICE DE WORMS, Milton Park, Egham, Surrey.

Exhibits.

MYRMECOPHILOUS BEETLES.—Mr. DONISTHORPE exhibited a series of two myrmecophilous beetles—*Tachyusida gracilis*, Er., and *Euconnus (Napochus) claviger*, Müll., both new to Britain, and guests of the ant *Acanthomyops (Donisthorpea) brunneus*, Latr., which he had taken with that ant in an old oak tree in Windsor Forest on October 12th and 16th. He gave some account of the habits of these beetles and their distribution, etc.

LYCAENIDS FROM SWITZERLAND AND FRANCE.—Brig.-General B. H. COOKE again exhibited and made further remarks on the Lycaenids shown at the previous meeting. In connection with this exhibit:—

The Rev. G. WHEELER exhibited specimens of *Polyommatus polonus*, the supposed hybrid between *P. corydon* and *P. thetis*. Five of the specimens were taken at Assisi in the summer of 1910, three of them among *P. thetis* before *P. corydon* had emerged, and the other two among *P. corydon* after *P. thetis* was over; of the other two specimens one was taken at Oberbozen in the Tyrol in June 1923 and the other at Pugny, above Aix-les-Bains in June 1925. *P. thetis* occurred in both these localities, but the date was too early for *P. corydon*. In view of the circumstances under which the Assisi specimens were taken, the theory of hybridism appeared the most probable.

He also exhibited specimens of both broods of the species long confused with *P. corydon*, both from Italy and the French Riviera.

Mr. E. B. ASHBY exhibited specimens of *Lycaena "arragonensis"* from Digne, Basses Alpes, and Arquata, S. Piedmont; also specimens of *L. corydon* from the same localities and from Lardy, S.E. of Paris, from Veyrier (near Geneva), La Ste Baume (Var.), and Amberley, Sussex. He pointed out that although the "*arragonensis*" taken in July and August differed markedly from the ordinary *corydon* exhibited, those taken in the spring bore a much closer resemblance to them. He called attention to the suggestion, already made elsewhere, that "*arragonensis*" and *corydon* are distinct species, the former double-brooded, the latter throughout its range single-brooded.

BUTTERFLIES FROM SPAIN AND RUSSIA.—Lord ROTHSCHILD exhibited a series of LYCAENIDAE from Spain and Italy of the *corydon-hispanus* group and also black and yellow varieties of *Pieris brassicae* from Russia.

EUPLOEA SPP. FREQUENTING DEAD TWIGS OF *TOURNEFORTIA ARGENTEA* IN SAMOA AND TONGA.—Mr. G. H. E. HOPKINS exhibited a photograph and specimens of *Euploea schmeltzi*, H.S., and *Euploea helcita mathewi*, Poulton, the males of which

frequent *Tournefortia argentea* trees in Samoa and Tonga. It is very noticeable that males alone are attracted and that the attraction appears to be almost confined to species of *Euploea*, the only exception being on one or two occasions when males of *Danais melissa melittula*, H.S., were observed in company with the *Euploea*s. It seems to be invariably in dead or withered twigs that the attraction lies; the flowers are apparently unattractive, but the butterflies are to be seen in swarms of many hundreds on withered fruit-clusters and broken branches. On one occasion another observer, Dr. Armstrong, saw about 150 on one broken branch, all males. Nothing in the nature of an attractive exudation was observed, and it is difficult to account for the phenomenon. The attraction is evidently selective for the male sex, since both sexes frequent various flowers, and it is almost impossible to avoid the assumption that it is some way related to sex. A tentative, but rather unsatisfactory explanation is that the scent given off by withering twigs of this tree to some degree resembles that of a virgin female *Euploea* and that the volume of the scent is so great as to mask slight differences and thus render it attractive, not to one species of *Euploea* only, but to many. It is difficult to think of any other explanation which will account for the fact that the attraction is practically confined to the genus *Euploea* and to the male sex only even in that genus.

Mr. P. A. BUXTON, in continuation of Mr. HOPKINS' exhibit, stated that male *Euploea* apparently frequent the tree *Tournefortia argentea* (N. O. Boraginaceae), in many islands in the South Pacific. Photographs were shown of a tree of this species growing on the beach at Whitesands, Tanna, New Hebrides; on the trunk of this tree (not shown in the photograph), there was a dead twig about six inches long, from which Mr. Buxton netted males of all the four species of *Euploea* known from Tanna. It was only the males that frequented this twig, and they fluttered about it and clung to it and to one another; at least fifteen were observed on it at one time. It was most difficult to use a net under the tree, but in spite of the difficulty, he took at one sweep with the net seven male *Euploea*, which contained representatives of all the species which occur on Tanna. None of these species was at all abundant on Tanna at the time of his visit. Collections were made at the twig, on three successive days, and the following numbers of males were taken:—

Date in 1925.	<i>Eupl. iphianassa</i> , f. <i>iphianassa</i> .	<i>E. iphianassa</i> , f. <i>consanguinea</i> .	<i>E. tulliolus</i> .	<i>E. torvina</i> .	<i>E. helcita lilybaea</i> .
22 Sept.	1	0	5	3	0
23 Sept.	1	2	1	2	1
24 Sept.	2	5	4	3	0
Total	4	7	10	8	1

In all, five visits were made on the three days, and some dozens of males of *E. iphianassa* (forms), and *E. torvina*, and a considerable number of *E. tulliolus* were seen. The *E. h. lilybaea* was the only one of its kind seen. Though males of *Hypolimnas bolina* were common, flying up and down the beach and under the *Tournefortia* tree, neither they nor any other butterfly were ever observed to join the association of male *Euploea*.

The explanation of this habit is not known. As the individuals which swarm

are invariably males, the swarming cannot depend on a sexual odour, or other attraction, unless indeed we are to charge the butterflies with homosexual lusts. It seems certain that the twig itself is the essential centre of attraction, because males of *Euploea* were never observed to swarm on other parts of the tree, or on the dead twigs of other sorts of tree. *Tournefortia* is a common tree on the strand of Pacific islands, and it is only an occasional tree which bears an attractive twig: other twigs and other trees of the same species are not even a little attractive, and one does not see a single butterfly playing round them. No trace of honey-dew, or any other foreign substance, can be detected on the attractive twigs.

Larvae of several of the species of *Euploea* of the S. Pacific are known to eat *Ficus*, and there are no grounds for supposing that *Tournefortia* is the food-plant of any member of the genus. Various butterflies, including *Euploea*, occasionally visit the flowers of *Tournefortia*, which are not specially attractive to butterflies.

The species of *Euploea*, the males of which were found associated in this remarkable manner on Tanna, could not, in Mr. Buxton's opinion, be regarded as a mimetic group. He had experienced no difficulty in recognising all the species on the wing; before he went to Tanna he had spent three months in other parts of the New Hebrides, and had never seen *E. tulliolus*; he recognised it as new to him as soon as he saw it on Tanna. Moreover, except that males congregate on *Tournefortia* twigs, the different species do not generally fly together, either on Tanna or on other islands in the New Hebrides.

Euploea iphianassa is definitely gregarious; a number of individuals of both sexes may often be found sitting, perhaps a score of them within a few square yards, nearly always in dense shade; when they are thus collected they tend to fly idly from leaf to leaf, not moving more than a few feet, and they will continue to do this even in rain. One may walk perhaps a mile before one finds another of these flocks.

BUTTERFLY AND BIRD.—MR. P. A. BUXTON also showed a male *Hypolimnas bolina* (a very familiar black butterfly with a strong violet sheen, and a large round white blotch in the middle of each wing), and a specimen of the bird *Collocalia uropygialis*. This bird is a Swift, related to the species which makes the nests which are esteemed edible in China; it is black with a blue sheen, and a white rump; it is not a great deal larger than the butterfly, though bird and butterfly are quite dissimilar in shape, and in flight. It might therefore be said that bird and butterfly resemble one another a little in size, as they certainly do in colour and marking. During four months spent in the New Hebrides, where bird and butterfly are both common, he thrice saw the male *Hypolimnas* pursuing the bird, and he once saw the pursuit continued for 150 yards. He never saw this species of butterfly pursue any other bird. It is not known whether the butterfly's behaviour is determined by mere curiosity, or myopia, or what other factor.

NOTES ON SOME MIMETIC INSECTS FROM THE MALAY PENINSULA BY CAPT. H. M. PENDLEBURY.—[In the absence of the author the PRESIDENT communicated the following paper and exhibited the specimens referred to in it. He had shown the Diptera to Maj. E. E. AUSTEN, D.S.O., who confirmed the author's determinations, while the *Ropalidia* had been confirmed by Mr. B. UVAROV. Dr. Perkins' interesting notes on the *Cerceris* and *Polybia* were printed as a separate communication on p. 41.]

A. Dipterous mimics of the wasp *Ropalidia (Icaria) speciosa*.

During a short collecting trip to Bukit Kutu, Selangor, in April 1926, I found a remarkable Syrphid fly which bears a close resemblance to the wasp *Ropalidia (Icaria) speciosa*, Sauss. Both the wasp and the fly were taken in exactly the same locality and at the same time of day. It may be regarded as a hypothesis that the larva of the fly lives in the nest of the wasp—a feature that has already been noted in other species of SYRPHIDAE.

The fly belongs to the genus *Paramixogaster*, Brunetti (*Fauna of British India*, Diptera, vol. iii, p. 319, 1923), and is apparently a new species.

Paramixogaster icariiformis, sp. n.

♀. Head black, frons more than half the width of the head, wrinkled, punctured, and covered with short yellowish-white pile, which is longer at the back of the head, and longest at the oral margin. Eyes black, bare, not reaching to the upper or lower margins of the head; ocelli clustered, forming a prominence on the vertex. Antennae black (except the extreme base of the third joint which is narrowly testaceous), covered with microscopic yellowish pubescence; the third joint is long, about three and a half times the length of the first joint, thickened beyond the middle and then tapering to a blunt point. Arista bare, golden brown, arising near the base of the third antennal joint.

Thorax black, closely punctured, a transverse lateral incision bordered with whitish hairs in front of the wing base. Pro- and mesopleurae punctured, covered with whitish hair; metapleura longitudinally striated.

First abdominal segment black, shining, and sparsely punctured; at the base there is a short lateral process covered with longish black hair. Second abdominal segment ferruginous red, the same width as the first segment at the base, but widening apically; on each side of the median line a subhyaline, shining, yellowish patch, which in nature gives the abdomen the appearance of being petiolate. The abdomen is widest (4 mm.) at the junction of the third and fourth segment. Third and following segments black, closely punctured, covered with black pubescence mixed with a few scattered yellowish hairs which predominate from the apical margin of the fourth segment to the apex of the abdomen. The fourth segment is nearly twice as long as the third and has a deep V-shaped emargination at its apex; apical segment of abdomen testaceous. Abdomen beneath with a deep, wide, parallel-sided groove extending from the apex of the second to the base of apical segment.

Fore-legs piceous, punctured, covered with short silvery hairs; coxae and trochanters have short ferruginous pile on the inner side; apex of tibiae and tarsi lighter, also clothed with ferruginous pile. Intermediate legs similar, but the femora have some rather long black hairs along the posterior border. Hind-legs black, punctured, covered with short silvery hairs. There is a spiral groove near the apex of the tibiae. Basal tarsal joint very long, almost as long as the four apical joints combined; tarsi covered with ferruginous pile on the inner side. Claws black.

Wings light fusco-hyaline with a broad dark fuscous stripe spreading over the third longitudinal vein and ending in an apical cloud; costal area yellowish. Halteres light yellow.

Length of body, 12 mm.; wing, 11 mm.

Malay Peninsula: Selangor, Bukit Kutu, 3500 ft., 17th April, 1926 (*H. M. Pendlebury*).

This species is allied to *P. vespiiformis* (Brunetti, *tom. cit.* p. 320). It differs, however, from that species by its larger size, absence of any reddish colour on the head or thorax, comparatively shorter third joint of the antennae, and by the wing-markings.

De Meijere's *Microdon odyneroides* is also closely allied to this species. I have not seen his description, but it is figured in Von Sack's recent paper on the "Syrphiden von den Philippinen und Malaya" (*Philippine Journal of Science*, vol. 29, No. 4, p. 595, Taf. 2, figure 16, April 1926). Judging by the figure, this species should be brought into the genus *Paramixogaster*, Brunetti.

Another Dipteran, bearing a remarkable resemblance to *Ropalidia speciosa*, and belonging to the family TACHINIDÆ* was also taken on the same day and within a radius of fifty yards of the locality of the wasp and *P. icariiformis*.

The basal abdominal segment is black, and the second and base of the third segment, ferruginous-red. The basal two-thirds of the second sternite has a subhyaline yellow patch, and this colour is continued laterally on to the tergite, which causes the abdomen to appear petiolate. The remainder of the abdomen is black, but the apical segments are covered with a short golden pile similar to that on the wasp (*R. speciosa*) and the fly (*P. icariiformis*). The wings are fuscous along the costal margin, and the apical cloud is represented by a fuscous stripe spreading over M1. The antennae, moreover, are held porrect in nature, in an attitude similar to that of the wasp.

I also take this opportunity of recording the occurrence of the Syrphid fly, *Milesia vespoidea*, Wlk., from the Malay Peninsula. This admirable mimic of our commonest wasp (*Vespa cincta*, F.) was taken at light in Malacca on 8.xii.1925 by Mohammed Yusop of the Agricultural Department, S.S. and F.M.S. (Ref. G., No. 25).

The species has previously been recorded from Borneo, and it is figured in "Observations on some mimetic insects and spiders from Borneo and Singapore" (*P.Z.S.*, Nov. 1902, p. 262, pl. xxii, fig. 14), a paper by the late Mr. R. Shelford, who took a specimen at Kuching.

B. Cerceris polybioides, sp. n., a mimic of *Polybia*.

Amongst an interesting collection of insects recently obtained from Bukit Kutu, Selangor, was a *Cerceris* (SPHEGIDÆ) which bore such a remarkably close resemblance to a species of *Polybia* (VESPIDÆ), caught in the same locality and on the same day, that it was only after a careful study of the structural characters that these two wasps could be differentiated.

As the *Cerceris* apparently represents a new species, I append herewith a description of it. The *Polybia* wasp is also a new species, and is described by Mr. CEDRIC DOVER, who has been studying the collection of VESPIDÆ in the F.M.S. Museums.

Family SPHEGIDÆ.

Cerceris polybioides, sp. n.

♂. Black; with yellow markings as follows: basal two-thirds of the mandibles, clypeus except the narrow apical margin, interocular space to just above the insertion of the antennae, the inter-antennal carina, an oblong mark above the insertion of the antennae and in front of the ocelli, an oval mark on either side of and behind the ocelli, the cheeks except for an emargination of the inner side; the pronotum except a small wedge-shaped mark in the centre, the tegulae except for two small spots at extreme base; the metanotum with a suboval mark divided medially and constricted laterally, the scutellum, the sides of the median segment, the

* Maj. Austen considers that this Tachinid probably belongs to a new genus, near *Ocyptera*.—E.B.P.

prosterna, pleurae, sternite of the first abdominal segment (this colour is continued and shows laterally at the base of the tergite and the sternite of second abdominal segment), and a subquadrate spot at the base of the tergite, and an interrupted line on the apical margin; a broad line on the dorsal surface at the apical margin of the third abdominal segment; a thinner line on the fourth and fifth segments; a wider band on the sixth segment, and the pygidial area as far as the apical third; sternites of abdominal segments three to six.

Fore-legs, except for marks on the outer side of femora; intermediate legs, except for a small mark at the base of the coxae, and more extensive markings on the outer side of the femora; hind-legs, except apex of coxae, inner sides of trochanters and femora, apex of tibiae, first and apical tarsal joint, yellow.

Tip of the apical segment of antennae ferruginous.

Lamellae free from base; clypeus about twice as broad as long, truncate at apex, with shallow, small punctures, and covered with silvery pile. Head coarsely punctured, with yellowish hair arising from each puncture, some longer hair between the ocelli.

Thorax, abdomen, and legs covered with short sparse yellowish hair, hind tibiae spinose above.

Pronotum smooth and shining; mesonotum longitudinally striated; metanotum sparsely punctured. Median segment smooth, shining; enclosed area shining, with a few scattered punctures; some transverse striae at the sides and apex.

First abdominal segment petiolate, as long as the second and third combined, shining, and with a few scattered punctures; second and following segments closely and minutely punctured.

Pygidial area coarsely punctured, ovate, and truncate at apex.

Wings slightly iridescent, hyaline, smoky, radial cell and apex rather darker; stigma and nervures dark brown.

Length, 10 mm.; fore-wing, 9 mm.

Malay Peninsula: Selangor, Bukit Kutu, 3500 ft., 19th April, 1926 (*H. M. Pendlebury*). Holotype ♂.

The new *Polybia* mimicked by *Cerceris polybioides*, sp. n., is described below by Mr. CEDRIC DOVER.

Polybia pendleburyi, sp. n.

This species is very closely allied to *Polybia sumatrensis*, Sauss., but is constantly smaller, more slender and darker, and shows other differences also by which it may be readily separated. These are as follows:—

Polybia sumatrensis.

Length about 13 mm.

Wings hyaline, stigma ferruginous, costal margin yellowish.

Inter-antennal space prominently raised.

Prosternum entirely yellow.

Mesosternum entirely yellow.

Mesonotum unmarked.

Postscutellum entirely yellow.

Polybia pendleburyi.

Length about 10 mm.

Wings hyaline, stigma dark fuscous, costal margin and apex dark, not yellowish.

Inter-antennal space only slightly raised.

Prosternum black, except for a very narrow bracket-shaped yellow marking on the inner margin of each piece.

Mesosternum entirely black.

Mesonotum with a minute elongate yellow spot in the middle posteriorly.

Postscutellum with two more or less rectangular markings (rounded posteriorly) anteriorly, which are distinctly separated from each other in the middle.

Polybia sumatrensis.

Petiole and abdomen above brownish; underside in all specimens uniformly pale yellowish.

Basal abdominal segment with a transverse yellow marking apically.

Anterior and intermediate legs, except intermediate tarsi, more or less uniformly yellow.

Posterior coxae entirely yellow.

Posterior tibiae entirely yellow, except for a very narrow black band at base and apex.

In other respects *P. pendleburyi* agrees very well with *P. sumatrensis* * in the markings on the face, puncturation, etc., but the differences mentioned give the former species such a characteristic facies that it may be readily separated even at a glance. The *Cerceris* mimic, moreover, has little general resemblance in the cabinet to *P. sumatrensis*, though it might easily be mistaken for *P. pendleburyi*.

P. pendleburyi is represented in the collection of the F.M.S. Museums by six specimens from the following localities:—Bukit Kutu, Selangor, 3500 ft. (*H. M. Pendlebury*: 14 and 19.4.26); Jor Camp, Batang Padang, Perak, 1500 ft. (*H. M. Pendlebury*: 28.5.23); Gunong Benom, Pahang, 3000 ft. (*I. H. N. Evans*: 23.7.25); Bukit Cherakah, Kuala Lumpur (*H. M. Pendlebury*: 27.7.21); Gombak Valley, Selangor, 1200 ft. (*H. M. Pendlebury*: 5.8.22). Holotype ♀ from Bukit Kutu, 19.4.26.

NOTES ON THE RESEMBLANCE OF *CERCERIS* (FOSSORES) TO A TRUE WASP (VESPIDAE), BY DR. R. C. L. PERKINS, F.R.S.—The PRESIDENT said that he had sent the Hymenoptera Aculeata received from Capt. Pendlebury to Dr. Perkins, who had written the following interesting notes on the resemblance between the *Cerceris* and the *Polybia* :—

“ 6 October, 1926.—Of course it is not usual for a *Cerceris* to have a long thin petiole like the *Polybia*. It is a very remarkable species. I have noticed that in Malaya and elsewhere the *Cerceris* tend to resemble true wasps, whether solitary (i.e. EUMENIDAE) or social (VESPIDAE), in colour-patterns. So far as I know our British *Cerceris* do not sting at all. I have handled hundreds of females of our large *C. arenaria*, L., but I have never been stung, while of course all the real wasps sting hard—even some of the very small social species.

“ 12 October, 1926.—It is very curious about those big formidable-looking

* Cf. Bingham, *Fauna Brit. Ind. Hym.*, I, p. 385, 1897.

Polybia pendleburyi.

Petiole and abdomen above intense black; ground-colour of the underside in all specimens similar. The underside of the petiole has two narrow yellow lines (which are a continuation of the transverse yellow apical dorsal band) reaching from the apex to a little beyond the middle. The underside of the abdomen has indefinite greenish-yellow markings on the middle of sternites 1–4.

Basal abdominal segment with a similar marking, but the colour in all specimens is olive-green.

Anterior and intermediate legs conspicuously variegated with black, a stripe along the outside of the femora being especially prominent.

Posterior coxae with black markings at base, both in front and behind.

Posterior tibiae yellow only in the middle with a conspicuous black band at base, and apical third black.

wasp-like species of Fossors, *Cerceris*, the big Crabros, and I believe *Philanthus* and many others (some even of huge size). *Cerceris* can prey on stinging bees of good size, as well as stinging also the hardest weevils, while *Philanthus* goes for the hive-bee and *Crabro* will knock out a large Syrphid or a Sarcophagid fly instantaneously with its sting. Yet when one handles them they apparently never sting, and of course it cannot be because the weapon lacks the power of penetration, for even some species of quite small bees such as *Halictus* or *Hylaenus* can easily make themselves felt on the softer parts of the hand. Unlike bees or social wasps or EUMENIDAE, these Fossors seem unwilling to use the sting at all for defence, as though their colour was so effective as to be all-sufficient for protection. Yet Shuckard recorded that on Hampstead Heath *every autumn* a flock of wagtails came and finished off all the members of colonies of the big *Cerceris arenaria* that were still on the wing.

“ I have never myself seen any bird eating this Fossor, though at times every thistle and bramble-blossom has one or more individuals settled upon them, here on the S. Devon coast—but negative evidence in such a case is of little value.

“ 14 October, 1926.—Referring again to those big *Cerceris*, etc., which do not sting, is it possible that they really have very little poison and therefore never use their sting except on their prey? Perhaps Mr. O. W. Richards has examined the stings and poison-glands of some of these Fossors. A tiny social wasp (*Icaria* sp.) I got mixed up with in Queensland laid me up after about half a dozen stings! It was probably not half the size of a ♀ *Vespa vulgaris*.”

Dr. R. J. TILLYARD, F.R.S., gave a lecture on Fossil Insects, illustrating his remarks with many striking lantern slides. He directed attention principally to the numerous discoveries made in recent years, and throwing light upon insect evolution and phylogeny during the geological periods immediately following the Carboniferous.

Wednesday, November 3rd, 1926.

Professor E. B. POULTON, F.R.S., President, in the Chair.

Election of an Honorary Fellow.

Dr. GEZA HORVATH, of Budapest, Hungary, was elected an Honorary Fellow of the Society.

Election of Fellows.

The following were elected Fellows of the Society :—Colonel G. H. EVANS, C.I.E., C.B.E., c/o National Bank of India, Ltd., 26, Bishopsgate, E.C. 2.; Dr. I. M. PURI, Central Research Institute, Kasauli, Punjab, India; Mr. J. C. ROBBINS, The Rosery, Limpsfield, Surrey.

Exhibits.

DRAGONFLIES FROM SAMOA.—Mr. P. A. BUXTON exhibited a number of Samoan dragonflies and said :—

“ Twenty-seven Odonata are known from Samoa, and collections have been recently determined by Major F. C. Fraser. Of the fifteen Anisoptera, twelve are species of wide distribution, and presumably immigrants to Samoa and to many other