

in the cell, is a dash of purplish iridescence. Under surface: both wings pure white: primaries markless: secondaries with a trace of a very fine subterminal dark line more distinct at the tornus; a bright red terminal spot between veins 2 and 3; the lobe-spot (which on the upperside is black with bright green metallic scales) is small, on the inner margin brilliantly metallic-blue, green, and mauve, edged above with a red lunule, from which is a short, fine, dark line to the inner margin; three tails edged and tipped with white, the upper one on vein 3 being a long tooth.

Expanse 37-38 mm.

This species, though not the brightest, is yet one of the loveliest of a lovely genus: it is quite impossible to describe the blue, and I have not attempted to do so; it shades from every tone of blue that can be imagined into greenish, becoming almost bronze in certain lights, and is brilliantly lustrous in most positions.

XXXV.—On Three new Species of *Arhopala*.
By GEORGE T. BETHUNE-BAKER, F.L.S., F.Z.S.

Arhopala halmaheira, sp. n.

♂. Both wings lustrous pale silvery blue, bluer towards the termen. Primaries with a fine black costa, increasing very slightly near the apex; apex rather broadly black for a very limited area, termen narrowly black, fringes blackish: secondaries with costa broadly brown; termen narrowly black; inner margin whitish grey to vein 1*b*, deepening to dark grey at the tornus; tail black, tipped with white. Under surface: both wings brown, slightly tinged with purple, with darker spots finely encircled with white. Primaries with three increasing cell-spots, that closing the cell large and irregular, below which is a large spot in the angle of vein 2; catenulated band consisting of six spots increasing in size from the costa to the fifth spot, the upper three nearly round, the lower ones irregular; a broad definite submarginal band of uniform width, edged on the interior with whitish; a dark linear termen; area below vein 2 pale up to the submarginal band; fringes grey, darkly tipped. Secondaries with four basal spots, the third shifted outwards and the fourth inwards; three large spots below each other, the middle spot being in the centre of the cell, a large spot closing the

cell, with a smaller one below it in the angle of vein 2; catenulated band consisting of eight spots, the seventh and eighth forming the angled spot and being quite confluent; spots 1 and 2 are shifted inwards, the latter's outer margin barely touching the inner margin of spot 3; spot 1 is smaller than 2 (which latter is large and quadrangular) and is placed on about its centre; spot 3 is shifted right out from 2, 4 slightly further out, 5 and 6 inwards, 7 slightly inwards, confluent with 8, and extending nearly up to the fourth spot of the basal series; a broad submarginal band as in the primaries, but edged on each side with pale greyish white, the slight lobe with a large deep black spot slightly encircled with pale metallic-blue scales; a similar black spot with metallic-blue scales between veins 2 and 3, the marginal space between the two being blackish, more or less covered with pale blue metallic scales.

Expanse 56-57 mm.

The type from Halmaheira is in my collection; it is a marked and very beautiful species, and will come between *A. padus*, Feld., and *elfeta*, Hew.; its much larger size will separate it from the latter, whilst the lustrous silvery pale blue will separate it at once from the violaceous blue of the former, besides which the under-surface pattern is different.

Arhopala sublustri, sp. n.

♀. Both wings sublustrous violaceous blue. Primaries with costa brown, of moderate width, apex broadly brown; termen brown, rapidly decreasing in width to vein 3, whence to the tornus it is quite narrow; an isolated dark spot at the upper angle of the cell somewhat reniform in shape, beyond which four somewhat ovate blackish spots, the second from the costa being the longest, terminate the blue in that area. Secondaries with very broad brown costa; termen less broad and decreasing to the tornus; tail tipped with white. Under surface: both wings clear brown, with darker markings palely encircled. Primaries with three increasing cell-spots, with another small spot above the third on the costa and one below in the angle of vein 2; a postmedial catenulated band of seven confluent spots of nearly even width, the upper four slightly curved, the lower three slightly shifted inwards; a subterminal band palely edged on each side. Secondaries with four very small basal spots, the first shifted outwards, and the third also but to a less extent, followed by three small spots below each other, the second in the cell shifted inwards, the third the largest and irregular; a quadrate spot

closing the cell, below which is a small spot in the angle of vein 2; catenulated band irregular, the first and second spots shifted right inwards, touching the quadrate spot and only just reaching the inner margin of the third spot; third spot shifted right out, fourth further out, fifth inwards, sixth well out, seventh and eighth confluent and shifted right inwards; a submarginal band as in the primaries, with a brown spotted termen; lobe-spot black, edged above with pale metallic-blue scales; a dark spot on each side the tail almost covered with pale metallic-blue scales.

Expanse 37 mm.

The type from Kina Balu (Borneo) is in my collection.

I have received only females of this species at present, but it is a well-marked species and will come next to *sandakani*, B.-B., but can be easily distinguished from it by the much greater area of blue and by the spots at the end of the cell in the primaries, whilst the underside pattern is different also.

Arhopala baluensis, sp. n.

♂. Both wings dark sublustrous blue, with termen black, of moderately narrow width. Under surface darkish brown: primaries paler along the inner margin, with three increasing cell-spots, that closing the cell irregular; below it another in the angle of vein 2, below which is a third shifted inwards on the other side of vein 2; the catenulated postmedial stripe composed of six distinct spots touching one another, that on the costa being quite small and shifted inwards, fifth shifted very slightly inwards, more perceptibly so as to its inner margin, sixth with an outward inclination; the subterminal row is rather obscure. Secondaries with four small basal spots below each other, followed by three larger ones below each other; a quadrate spot closing the cell, with a small elongate one below in the angle of vein 2; the catenulated stripe consisting of six distinct spots, the seventh reniform and the eighth elongate, all touching one another except 1 and 2, each of which is isolated; the fifth spot is shifted very slightly inwards and the seventh reniform spot is also shifted inwards; subterminal row distinct; an anal dark spot covered with dull submetallic blue scales, and a slight trace of them between veins 2 and 3.

♀. Both wings brown: primaries with a paler purplish-blue patch extending just over the upper end and upper part of the cell, but far beyond in the medial area: secondaries with the pale purplish-blue patch extending well into the

median area and having a perfectly even margin all round. Underside like the male, only paler.

Expanse, ♂ ♀, 43 mm.

Hab. Kina Balu (Borneo).

I have two males and one female in my collection. It will follow *agelastus*, but the colour is quite different and also the black termen much narrower, whilst below the distinct spots of the catenulated stripe are a marked character.

XXXVI.—*On Shrews from British East Africa.*

By OLDFIELD THOMAS.

THE British Museum contains a number of skins and spirit-specimens of shrews from East Africa which have not hitherto been determined, and which prove nearly all to require description as new. The greater part of them have been presented to the National Collection by Dr. J. W. Gregory, Mr. F. J. Jackson, and Dr. and Mrs. Hinde, while isolated specimens have been contributed by Mr. Betton, Prof. Mackinder, Sir H. H. Johnston, Mr. R. J. Cuninghame, and Mr. R. Meinertzhagen, and to all these collectors our thanks are due for the help they have rendered towards an understanding of this most difficult and intricate group.

The species now dealt with are all true *Crociduræ*, for the *Pachyuræ* in the Museum are too few in number for any opinion to be expressed as to their determination and relationships. Of described species of *Pachyura* the only East-African one is *P. leucura*, Matsch.

The following is a provisional key to the species of *Crocidura* that I recognize in our collection:—

- A. Very large. Skull* above 27 mm. *nyansæ*.
- B. Smaller. Skull below 25 mm.
 - a. Larger. Skull above 20 mm.
 - a¹. Tail with numerous long bristles.
 - a². Tail thick basally, tapering. Colour fawn or brown.
 - a³. Fawn. Fur about 5 mm. in length on back. Skull 23–24 mm. *Hindei*.
 - b³. Brown. Fur very short, about 2·5 mm. on the back *velutina*.
 - b². Tail more or less cylindrical. Colour grey or smoky.
 - a³. Larger, skull 22–23 mm. Underside of body and tail little lighter than upper *fumosa*.

* From back of condyle to front face of incisors.



Bethune-Baker, George Thomas. 1904. "XXXV.—On Three new Species of Arhopala." *The Annals and magazine of natural history; zoology, botany, and geology* 14, 233–236. <https://doi.org/10.1080/03745480409443000>.

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DOI: <https://doi.org/10.1080/03745480409443000>

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