

the median pair of teeth are slender and unicuspid, the next pair have a minute basal cusp, which becomes well-developed and pointed on the next 3 or 4 on each side. In the smaller fish (*H. corinus*) the lower median tooth has 2 or 3 cusps on each side and none on the upper edge, whilst each lateral tooth has only 6 cusps; the second pair of teeth in the upper jaw are unicuspid, and the next 3 have only a very small and obtuse basal cusp.

In the larger shark the fins are relatively less developed and consequently they are more widely separated from each other. The anal begins below the last $\frac{1}{4}$ of the dorsal and the length of its base is less than its distance from the caudal, which fin is $\frac{2}{7}$ the total length of the fish, whereas in the smaller example the origin of the anal is only a little behind the middle of the dorsal, the length of its base is equal to its distance from the caudal, which is more than $\frac{1}{3}$ the length of the fish.

Examination of a series of examples from the Mediterranean and the Atlantic shows conclusively that these differences are due to the size of the fish and are not specific. The British Museum has large specimens agreeing in dentition and the position of the fins with the Japanese example, and smaller ones which resemble the Californian fish in these respects. Moreover, after a careful comparison, I am unable to find any reason for referring the Pacific and Atlantic specimens to different species, and I am forced to conclude that there is but one living species of *Hexanchus*, viz. *H. griseus*, L., which has a wide distribution.

LXV.—*A new Genus and Two new Species of Bats.*

By OLDFIELD THOMAS.

Eomops, gen. nov.

In 1900 * Dr. Scharff described a bat from Benin under the name of *Mormopterus Whitleyi* and was good enough to transfer the typical specimen to the British Museum.

Later on Dr. W. J. Ansorge obtained on the Lower Niger two examples of the same bat, and in examining these I find that a mistake has inadvertently been made in the dental formula given, and that, instead of being a *Mormopterus*, this

* Ann. & Mag. Nat. Hist. (7) vi. p. 569.

bat belongs to quite a different group, hitherto unknown in the Old World.

For it proves to have the characteristic incisors of *Molossus*, the upper pair being large, nearly filling up the space between the canines, and touching each other in the middle line. The lower ones are only two in number, not four as originally stated, and while appearing from the front to be of the normal shape—*i. e.*, narrow, broadening upward, each with a deep central notch dividing it into two cusps, of which the inner is the higher—they are curiously deep antero-posteriorly, deeper than broad, their hinder part running back between the canines.

The premaxillary region of the palate is very completely ossified, in great contrast to all the members of the *Nyctinomus* group, the only remnant of the premaxillary notch being two minute foramina on each side of the middle line, between and opposite the centre of the canines.

The skull is smooth and rounded, not broadened and flattened across the muzzle as it is in *Myopterus*, nor specially crested as in *Molossus*. The base of the skull has a narrow median ridge between two well-defined sphenoid pits.

Under these circumstances it is clear that this bat cannot be referred to *Nyctinomus* or *Mormopterus*, but is more nearly allied to *Molossus*, *Myopterus*, and their allies. The peculiar shape of its lower incisors, however, and the detailed structure of its skull prevent its being referred to any one of the existing American genera, and I would therefore propose to erect for its reception a special genus, which might bear the name of *Eomops*.

It is also to be noted that, owing to the bad condition of his specimens, Dr. Scharff described the underside of *Eomops Whitleyi* as "of a light reddish-yellow colour"; but Dr. Ansorge's fresh examples show that this is pure white, as are also the wing-membranes above and below, the digits, and the underside of the interfemoral; the upper surface of the forearms, tibiæ, and interfemoral are pale whitish brown.

Vespertilio Matschiei, sp. n.

A small sandy-coloured species, in general external appearance very like *Scotophilus Schlieffeni*.

Size small. Fur of medium length, hairs of back about 4 mm. long; strictly confined to the body, not extending on to the limbs or membranes, except slightly at the base of the

tail. General colour of fur uniform sandy buff above, rather paler below, strongly contrasting with the blackish ears and wings; the hairs unicolor throughout. Ears rather short; inner margin strongly convex at base, almost straight above to the rounded tip; outer margin flattened mesially, convex below and ending in a long low antitragal lobe. Tragus short, its inner margin slightly concave, tip rounded, outer margin convex with a well-marked rounded basal lobule. Wings to the metacarpus. Extreme tip of tail projecting.

Skull slender, with a small brain-case, but widely expanded zygomata. Muzzle remarkably flattened, the space between the orbits quite flat or even concave, the strong supraorbital ridges rising up higher than its central line; as a result the upper profile-line of the skull is decidedly concave in its anterior half, only becoming gradually convex over the brain-case. Nasal notch sharply angular behind.

Inner upper incisor conical, unicuspid in the type, but a supplementary cusp may have been worn off; outer incisor similar in shape, about one fourth the size of the inner. Lower incisors crowded, overlapping, tricuspid, the outer notch on each deeper than the inner one.

Dimensions of the type (measured on the skin):—

Forearm 35 mm.

Head and body (c.) 41; tail (c.) 32; third finger, metacarpus 35, 1st phalanx 11, 2nd phalanx 13; tibia 14.

Skull: greatest length 12.3; basal length in middle line 10; front of canine to back of m^3 4.5; front of lower canine to back of m_3 4.7.

Hab. Jimel, near Aden. Alt. 850 m.

Type. Male. B. M. no. 99. 11. 6. 19. Collected 16th August, 1899, by W. Dodson. One specimen.

This little bat has so remarkable a resemblance to *Scotophilus Schlieffeni* that it was included among the specimens of that species recorded in my paper on the Dodson mammals from Aden*. Now, however, that its skull has been looked at it proves to be a *Vespertilio*, in which genus its peculiar colour distinguishes it from all described species except *V. Floweri*†, from which its smooth forearms and unusually flattened muzzle readily separate it.

I have named this interesting species in honour of my friend Dr. Paul Matschie, of the Berlin Museum, whose notes ‡

* P. Z. S. 1900, p. 99.

† *Glauconycteris Floweri*, de Wint. Ann. & Mag. Nat. Hist. (7) vii. p. 45 (1901).

‡ SB. Ges. nat. Fr. Berl. 1893, p. 26.

on *Scotophilus Schlieffeni* and other mammals from Aden formed the first contribution to the mammalogy of that region.

Hesperoptenus Tomesi, sp. n.

A large species allied to *H. Tickelli*, but wholly dark brown, like a Noctule.

Size about as in *H. Tickelli*, the skull rather larger but the wing-bones shorter. Fur close and fine, the hairs of the back about 4–5 mm. in length, but those of the nape much longer, attaining 8–10 mm. Base of interfemoral slightly haired above and below, rest of the membranes naked. General colour above uniform dark brown ("burnt umber," but darker), the hairs darkest at their bases, rather lighter mesially, and with dark tips, but the difference is scarcely perceptible. Under surface similarly uniform brown (about matching Ridgway's burnt umber) throughout. Wing-membranes everywhere dark brown.

Ears short, rounded above, with a small rounded basal lobule at the base of their inner margin; outer margin ending in a long low antitragal lobule. Tragus very broad, its inner margin faintly concave, tip pointed; outer margin very convex, strongly bowed opposite the base of the inner margin; outer basal lobule rounded; a narrow band of fine hair passing across the front face of the tragus at its broadest point. Wings to the end of the metatarsus. Postcalcarea lobule narrow. Penis long, with a very long bone, similarly Y-shaped to that of *H. Tickelli*, but twice as long (10 mm. in length in the type) and much thicker; whether the glands and prepuce are similar to those of *H. Tickelli* cannot be determined on the dried type.

Skull rather larger than that of *H. Tickelli*, the sagittal crest rather lower, but the posterior "helmet" more projected backward.

Teeth larger and heavier than those of *H. Tickelli*. I^1 large in section, its postero-external side almost touching the canine outside i^2 , which is also very large, placed quite behind i^1 , opposite the middle of the canine, and is separated from the inner corner of the premolar by a distance only equal to its own diameter. Premolar much extended transversely. Below, the incisors are all heavier than in *H. Tickelli*, i_3 being particularly large.

Dimensions of the type (measured in skin):—

Forearm 51 mm.

Head and body 74; tail (vertebræ in place) 44; ear 14;

tragus, inner edge 5, breadth 3; third finger, metacarpus 45, 1st phalanx 22, 2nd phalanx 22; fifth finger 58; lower leg and foot (c. u.) 32.

Skull: greatest length 20·5; zygomatic breadth 15·5; occiput to nasal notch 17; front of canine to back of m^3 8·3.

Hab. Malacca.

Type. Adult male. Original number 190 A. From the collection of the late Mr. R. F. Tomes.

This fine bat, which is distinguishable at the first glance from its only near ally, *H. Tickelli*, by its uniform dark colour, was recognized by Mr. Tomes as a new species, and marked by him with a name which I would have adopted did it go euphoniously with the long generic name *Hesperoptenus*. But as it does not I am glad to commemorate Mr. Tomes's great interest in bats, and the work he did on them, by naming this species in his honour.

BIBLIOGRAPHICAL NOTICE.

Coloration in Polistes. By WILHELMINE M. ENTEMAN. Published by the Carnegie Institution of Washington, November 1904. Sm. 4to. Pp. 88, col. pls. vi., and 27 figures in the text.

POLISTES is a handsome and widely-distributed genus of wasps allied to *Vespa*; it is, however, unrepresented in Britain, and only one species (*P. gallicus*, L.) is found in Europe, though this has been met with as far north as Lapland. After a general account of the genus the present essay records the results of a careful investigation into individual variation in the colour-pattern of *Polistes*; ontogenesis of the colour-pattern; physical and chemical nature of the pigment; geographical distribution of the types of colour-marking; laws governing colour-differentiation; and considerations with respect to various theories of evolution. Two of the plates are devoted to colour-patterns, two to figures of various species of the genus, and two to maps showing distribution. The parallel drawn between Eurasian and American variation in the genus is specially interesting.

We also meet with occasional references to colour-patterns in other Vespidae, as well as in butterflies &c. The authoress's conclusions are finally summed up under fourteen heads, too long to quote here, and we must confine ourselves to calling attention to a work which should not be overlooked by biologists (whether specially hymenopterists or not) who are interested in coloration, geographical distribution, and the other factors bearing on evolution which are here discussed.



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