

yellowish brown, sparingly covered with minute black hairs. Nose rather sharp, hairs of moustaches long (2·25 in.), all black. Teeth yellow. Legs and feet covered with short brownish grey hairs, whitish on the toes, forming, just above each nail, small tufts, which equal the nail in length.

*Colours.*—Top of the head and back bluish black, mingled on the back with many white hairs, giving it a somewhat grizzled appearance. On the sides the black passes gradually into blackish grey, which is the colour of the whole under parts. Hairs of the body white or grey at the base; fur blackish grey. Hairs on the back long (1·25 in.) and soft, but not silky. The upper incisors yellowish orange, the lower ones yellowish white.

Length from snout to root of tail, 6·5 in.; of tail, 8·5 in.; of head, 2 in.; breadth of head between the ears, ·75 in.; length of ear, ·87 in.; breadth, ·62 in.; length from nose to ear, 1·44 in.; hind foot, 1·3 in.; fore foot, ·75 in. Weight a little more than two ounces.

This specimen is a female, and was caught by a dog in the Tinakori Road, Wellington, on the 24th August, 1871.

Mr. J. A. Allen, in his "Mammalia of Massachusetts," remarks that "this species changes from black to grey, very old individuals becoming very light coloured."

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ART. XXV.—*On the Bats of New Zealand.* By Capt. F. W. HUTTON, F.G.S.

[Read before the Wellington Philosophical Society, 26th August, 1871.]

ONLY two species of bat are at present known to inhabit New Zealand, and neither of these are found anywhere else. The commoner kind, or the Short-eared Bat, belongs to a large genus widely spread over the old world, and containing four species from Australia; it is, therefore, probable that other species of this genus will be found in New Zealand. The rarer kind, or the Long-eared Bat, is so different from any other known species, that Dr. J. E. Gray has placed it in a separate genus. Its nearest allies inhabit South America, so that in New Zealand representatives of the bats of both the old and new worlds meet.

In the following descriptions the characters of the families have been taken from Dr. J. E. Gray's arrangement of the bats in the "Ann. and Mag. Nat. Hist.," Vol. XVII., pp. 89-93, as quoted in the "Zoological Record" for 1866 :—

Family *Vespertilionidæ*.

Face simple; nostrils simple, on the front of the nose; the cutting teeth separated in the middle by a space, and placed near the canines; grinders

acutely tubercular, three on each side in each jaw, the hinder ones short and broad, with one, two, or three false grinders in front of them; inter-maxillaries separate from one another in the front of the palate, leaving a notch between the cutting teeth.

Genus *Scotophilus*. Leach.

Face short and broad, nearly bald; a short groove behind the nostrils; forehead flat; ears separated, of medium size; only two incisors in the upper jaw, and none in the lower one; tail long, extending to the end of the inter-femoral membrane, and enclosed the whole way.

SCOTOPHILUS TUBERCULATUS. Forst.

Short-eared Bat.

Fur long; above reddish brown, darker on the head, neck, and shoulders; below yellowish-brown, darker on the throat and breast; membrane brown; a few short bristles on the muzzle; ears rounded; tragus short, thick, and rounded at the tip. Length, from the snout to the root of tail, 2 inches; of tail, 1.5 inches; extent of wings, 11 inches; length of head, .6 inch; of ear, .4 inch; of tragus, .2 inch.

Spread over both islands.

Family *Noctilionidae*.

Nostrils on the sides of the nose; the cutting teeth in the middle of the inter-space between the canines; canines wide apart in front; grinders acutely tubercular, three on each side in each jaw, the hinder upper short and broad, with one or two small false grinders in front of them; forehead flat; inter-maxillaries small, close in front.

Genus *Mystacina*. Gray.

Muzzle elongated; face simple; ears separated; two incisors above and two below, the upper ones large; tail short, the tip protruding from the upper surface of the inter-femoral membrane; claw of the thumb divided.

MYSTACINA VELUTINA.

Long-eared Bat.

*Mystacina tuberculata*. Gray.

Fur short, erect; greyish-brown, lighter on the under-surface; membrane greyish-brown, transversely grooved near the body; a row of short bristles round the muzzle; ears oval, tragus long, subulate; inter-femoral membrane truncated; length from snout to the root of the tail, 2.35 inches; of tail,

·5 inch ; extent of wings, 11·5 inches ; length of head ·7 inch ; of ear, ·7 inch ; of tragus, ·36 inch.

Of the two specimens in the Colonial Museum, one was obtained in the Hutt Valley, near Wellington, and the other in Milford Sound, on the south-west coast of the South Island.

Dr. Gray named this bat *tuberculata*, under the impression that he was describing the *Vespertilio tuberculatus* of Forster ; but it is evident from Forster's description that his bat was the short-eared kind. As, therefore, Dr. Gray's name was given in error, and as confusion is likely to arise if both our bats have the same specific name, I propose to call this species *velutina*, from the velvet like nature of its fur.

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ART. XXVI.—*Observations on the New Zealand Bats.*

By F. J. KNOX, L.R.C.S.E.

[Read before the Wellington Philosophical Society, 16th September, 1871].

BATS take a high place among the Mammalia, and are chiefly distinguished from the other orders of this great family, by an extension of the common integuments on the pectoral and pelvic extremities, in or on which hair is not developed. Even in the Bimana the inter-space between the fingers is more or less palmated, and in the aquatic Mammalia, as in the seal, the integumentary envelope extends to the roots of the nails. In the *Cheiroptera*, however, although the human type of the skeleton has been strictly adhered to, the skeleton of the pectoral extremities is so developed by elongation, more especially of the bones of the hand, that the bat can soar in the free expanse of the heavens, and thus look down upon his less-favoured brethren. This, however, must be only taken figuratively, for it is a question whether he regulates his aerial movements by means of sight or touch, the eyes being extremely minute, defying even microscopic inspection, and it is supposed that the sense of touch is rendered exceedingly acute by the extent of the tegumentary tissues with nerves and blood-vessels, and thus supplies the want of sight.

An equally interesting modification may be observed in the construction of the pelvic extremities, and more especially in that of the foot. Had the whole Bat family ceased to exist during any of the sweeping changes which have taken place on the earth's surface, and bats become extinct—in other words fossil—and a footprint, or even the bones of the foot, been discovered in some cave, even a Cuvier would have been greatly puzzled to reconstruct the animal. The foot of the bat resembles the quadrumanous or monkey type. The toes are all of equal length, the first or great toe on a line with the others, all furnished with sharp claws, and consequently not fitted to move on *terra firma*, or