

XVII.—*The Mammals of the 1921 Mount Everest Expedition.*

By OLDFIELD THOMAS, F.R.S., and MARTIN A. C. HINTON.

(Published by permission of the Trustees of the British Museum.)

THE 1921 Expedition to Mount Everest, under the auspices of the Royal Geographical Society and the Alpine Club, was intended to make a reconnaissance of the mountain, and try to find a route by which, another year, an attempt might be made to ascend the summit. Mr. A. F. R. Wollaston was appointed naturalist to the Expedition, but, as his duties included both the medical care of the climbers and the collection of all classes of zoological and botanical objects, he was naturally not able to devote any very large portion of his time to mammals. Those that he was able to get, however, have been of very great interest to us, and are the first series of mammals that have ever been received by the Museum from any such heights as 16,000'–17,000'.

In all they number fifty-two specimens, belonging to ten species, of which we have described two species and one subspecies as new. In addition, six other species were seen at high altitudes by Mr. Wollaston, but it was not possible to obtain specimens. Mr. Wollaston's notes upon these forms are incorporated below.

Of the novelties, the most striking is the new Pika, which we have named after Mr. Wollaston, and which he found up to so great a height as 20,000'. It is distinguished by not acquiring a fulvous mantle in the late summer, as is done by its nearest ally *Ochotona roylei*, the best-known Pika of the Himalayas.

When further expeditions go for the conquest of Mount Everest, we would urge whoever is interested in natural history to pay especial regard to the following points connected with the mammals of that mighty mountain, so as to supplement Mr. Wollaston's observations.

Pikas.—How soon are any Pikas met with on the ascent, and what is the highest point to which they attain? Specimens of Pikas from all altitudes should be secured, with the view of finding out if intermediate forms between *roylei* and *wollastoni* occur at intermediate elevations. And sets should be obtained at dates as widely separated as possible, so as to show the very peculiar seasonal changes of pelage to which these animals are liable, and on which their systematic classification largely depends.

Voles.—This group of rodents is likely to produce quite a number of further interesting forms, from all elevations. They are commonly found in highland meadows, and wherever mouse-holes are seen traps should be set—or, better still, if possible, attempts should be made to dig some out. The object of this is that as many specimens as possible should be obtained with unbroken skulls, as the series of this year's collecting has been very unfortunate in the extent to which the skulls have been broken by the traps. No effort should be spared to avoid breaking the skulls of any specimens captured, while any dried-up derelict carcasses that might be found should always be brought, as these would probably possess unbroken skulls. This note applies equally to all other forms of mammalian life.

As voles are difficult animals to induce to enter traps, it may be noted that for them bulbs of all sorts, including onions, are commonly a very attractive bait.

Marmots.—Owing to an unlucky accident, Mr. Wollaston did not obtain any adult marmots, and these are likely to be of decided interest. Assertions have been made as to a difference between the marmots of the northern and southern slopes; but no specimens suitable for testing the question are as yet available. Quite a number of skins from all localities and altitudes would be acceptable.

Rats.—Rats or rat-like rodents are stated to have been seen at the very highest elevations, and to have come into the tents to steal food. Unfortunately none were captured, and it is certain that examples of whatever animal this was would be of the greatest interest. It may possibly have been some form of mountain-vole, but is, in any case, nearly certain to be new to science.

We would add that, while the attention of a mountain expedition is naturally fixed on the higher altitudes, our knowledge of the animals of the lower levels is very far from complete, so that specimens from all places at all levels, whether near Darjiling, in the Chumbi Valley, or on the elevated plains of Tibet, whether rats and mice, moles, shrews, bats, hares, weasels, or any other mammals, are all of the utmost interest to scientific workers, and are likely to include many forms new to our present list of Himalayan mammals.

Finally, we may note that the 1921 Expedition has just not surpassed in its collection of mammals the altitude (17,900') recorded for a Peruvian mouse by Thomas in 1900, and we shall look to future expeditions to repair this omission. Wollaston's Pika was seen and handled at 20,000', but no specimens from that altitude were brought home.

[Wolf (*Canis laniger*, Hodg.).

"Seen at 19,000'. Tracks in snow above 21,000'."—*A. F. R. W.*]

[Fox (probably *Vulpes montana*, Pearson).

"Seen at 18,500'."—*A. F. R. W.*]

1. *Mustela temon*, Hodg.

♂ . 40. Sunja La, 15,200', 29th Aug., 1921.

♀ . 42. Kharta, Tibet, 12,000', 1st Sept., 1921.

2. *Mustela longstaffi*, Wrought.

♀ . 24 (young). Tingri, Tibet, 14,000', 8th July, 1921.

3. *Marmota himalayana*, Hodg.

♂ . 32 (young). Thung La, Tibet, 16,000', 14th July.

Mr. Wollaston had the misfortune to have two fine adult marmot skins, with their skulls, stolen from his tent by prowling dogs, so that this young specimen is the only one brought home.

Himalayan marmots, especially those of the southern side of the dividing-line, are peculiar desiderata, as there has been great confusion in regard to their determination, owing to the majority of the available specimens having been kept in confinement. Blanford believed that those of the Tibetan side were different from those of Nepal, while Wroughton has placed them all under one heading.

4. *Cricetulus alticola tibetanus*, subsp. n.

♂ . 30. Tingri, Tibet, 14,000', 7th July.

Distinguished from the typical subspecies by its longer tail and larger feet.

Size about as in *alticola*, but tail and hind feet longer, their measurements being 37 and 17 mm. respectively, instead of about 31 and 15.5. Tail with narrow median dusky streak along upper surface, instead of being wholly white. Colour and other characters as in true *alticola*.

Dimensions of type (measured in flesh):—

Head and body 103 mm.; tail 37; hind foot 17; ear 15.

Skull: condylo-incisive length 23.8; occipito-nasal length

26.5; nasals 10.7×3 ; interorbital breadth 4.4; breadth of brain-case 11.7; palatal foramina 5.2×1.6 ; dental length 12.6; cheek-teeth (crowns) 4.1.

Hab. Tibet. Only known from Tingri, 14,000'.

Type. Adult male. Original number 30. Collected by Mr. A. F. R. Wollaston, July 7, 1921.

Thomas described *C. alticola* from Shushal on the Pang-Kong Lake, Ladak, where it is found at an altitude of 13,500'; and it also occurs in the valley of the Upper Sutlej at Teza.

5. *Phaiomys leucurus*, Blyth.

1863. *Phaiomys leucurus*, Blyth, J. A. S. B. xxxii. p. 89.

1879. *Arvicola blythi*, Blanford, Sci. Res. Second Yarkand Miss., Mammals, p. 39 [*Microtus* (*Phaiomys*) *blythi* of subsequent writers].

♂. 1. Tinki Dzong, Tibet, 13,500', 17th June.

♂. 3, 10, 12, 20, 23, 27, 28, 29, & 31 in adult pelage, and 4, 5, 6, 7, 8, & 9 juv.; ♀. 2, 11 both adult. Tingri, Tibet, 14,000', 25th June to 10th July.

Blyth based his genus *Phaiomys* upon the present species. Blanford regarded *Phaiomys* as a synonym of "*Arvicola*" (= *Microtus* in current nomenclature), while subsequent writers have given it no more than subgeneric rank. In the genus *Arvicola* the specific name "*leucurus*" is preoccupied by *A. leucurus*, Gerbe, 1852; and therefore Blanford substituted the name "*blythi*" for that originally bestowed upon the present species by Blyth. But, in our opinion, *Phaiomys* is entitled to full generic rank; and, if this be the case, the specific name *leucurus*, given to the genotype by Blyth, is valid and must be restored.

Phaiomys, though still imperfectly known, is one of the most interesting microtine genera. By the peculiar combination presented by its external, dental, and cranial characters it is sharply distinguished from all its allies—although, taken singly, each of its characters can be found in other groups. Thus, as regards externals, the curious lemming-like form of these voles and their lengthened fore-claws can be matched among that little group of Central-Asiatic species of which *M. brandti* is a good example; the latter, however, differs widely in skull and teeth from the present genus. In certain, though not in all, respects, the cranial and dental characters of *Phaiomys*, as here understood, find their match in the North-American *Pedomys* and in the Eurasian *Arvicola*, genera of wholly dissimilar external appearance. Although detailed discussion of this interesting matter must be reserved

for another place, it may be mentioned that the features common to the three genera just named suggest, for each of them, descent—in directions more or less divergent—from the remarkable late Pliocene European genus *Mimomys*; and no character in any one of the other three living genera seems to be incompatible with such a view of their origin.

Voies of the genus *Phaiomys* are confined to the highlands of Central Asia, where they are widely distributed, occurring always at high altitudes and most frequently in close association with the banks of streams. The species show two well-marked types of coloration—some, like *P. leucurus*, being pallid and sandy, others, like *P. waltoni*, darker and greyer.

With regard to the material collected by the Expedition, we are, at present, unable to find any reliable character which will serve to distinguish the specimens from Tinki Dzong and Tingri from *P. leucurus*, which was originally described from the mountains above Tso-Moriri, Ladak. It is, however, quite possible that the Tibetan animal will prove to be distinct from true *leucurus*. The series from Tingri, long as it is, is insufficient for the purpose, owing to the fact that so many of the skulls collected have been smashed by the traps.

It may be recorded that the mammary formula in the two females is $2-2=8$, and that the pelage of the young approaches that of the adults of the next species in colour, being far darker and less sandy than in adult *leucurus*.

“Found in colonies in sand.”—A. F. R. W.

6. *Phaiomys everesti*, sp. n.

♂. 61; ♀. 49. East Everest, 17,000', 9th and 18th September.

A “grey” species, closely related to *P. waltoni*, but considerably smaller.

Size small (hind foot to 18, condylo-basal length not much exceeding 27 mm.).

External characters and colour as in *P. waltoni*, but tail light above and below, instead of being more or less bicolored; upper parts of a rather dark earthy grey, very different from the sandy tints of *P. leucurus*. Mammary $2-2=8$.

Skull and teeth essentially as in other species of the genus. Skull rather lightly and delicately built with small flattened bullæ; the latter rather smaller than in *waltoni*, and differing conspicuously from the large and inflated bullæ of *leucurus*.

Dimensions of the type (measured in the flesh) :—

Head and body 101 mm.; tail 30; hind foot (without claws) 18; ear 11.

Skull: condylo-basal length 26·8; interorbital constriction 3·9; breadth of brain-case 12·1; occipital breadth 12·4; occipital height (median) 6·6; least distance across temporal ridges, (a) at interparietal 7·3, (b) in interorbital region 0·3; nasals 6·6 × 3·2; dental length 16·9; molars (at grinding-surface) 6·3.

Hab. East Everest, at high altitudes (17,000').

Type. Adult male. Original number 61. Collected Sept. 18, 1921, by Mr. A. F. R. Wollaston.

In fully adult or old skulls of this genus the temporal ridges fuse anteriorly to form a sharp but low median interorbital crest; and those portions of the brain-case which are under the influence of the temporal muscles suffer a transformation in the passage from youth to age exactly similar to what occurs in the Orkney voles*. In the skull of the type of *everesti* the temporal ridges are nearly fused, and the specimen has attained a stage of development which in *P. leucurus* is only reached when the condylo-basal length has risen to about 29 mm. The skulls of the types of *P. waltoni* (Lhasa, Tibet) and *w. petulans* (Upper Sutlej Valley) are the only specimens of those forms sufficiently perfect to be used for comparison; in that of *waltoni* the condylo-basal length is 27·5, while in *w. petulans* it is 26·4 mm. In both skulls the temporal ridges are still very feeble and widely separated (by 1·5 and 1 mm. respectively), so that these specimens, in a craniological sense, are still far from being adult. One may conclude from these facts that *P. waltoni* attains a considerably greater size than that attained by *everesti*, and that in this respect *w. petulans* is intermediate.

“In colonies on turf-slopes.”—A. F. R. W.

7. *Microtus (Alticola)* sp.

♂. 55 juv. East Everest, 17,300', 13th September.
Too young for precise determination.

[Hare (probably *Lepus oiostolus*, Hodgs.).

“Common at 14,000'–15,000' in dry country. One seen at 18,500' N.E. of Everest.”—A. F. R. W.]

* Ann. & Mag. Nat. Hist. (8) xii. p. 452.

8. *Ochotona roylei nepalensis*, Hodgs.

♀. 38, 39. Kama Valley, 12,000'–13,000', 24th August.

On laying out all the available Himalayan specimens of this group—some sixty in number,—from localities ranging from Kashmir on the west through Kumaon to Nepal, we have come to the conclusion that three subspecies may be recognized of *O. roylei*. Its type-form would be that of Kumaon, where Strachey obtained specimens exactly matching Ogilby's type from the "Choor Mountains" (presumably Chaur Peak, near Simla). And a synonym of it would be *O. hodgsoni*, Blyth, two of whose three originally mentioned localities are in the range of *O. roylei roylei*.

Then on the west the somewhat greyer, but not materially different *O. wardi* of Kashmir and Hazara should be termed *O. roylei wardi*, while eastwards in Nepal Hodgson's *nepalensis*, in turn darker than *roylei*, would be a third subspecies, found in a more saturate region. The relation to these three of *O. r. chinensis*, Thos., described from still further east at Ta-chien-Lu, we are at present unable to be certain about, owing to the absence of specimens showing the seasonal phases. The type of that form was killed in May, so that there is no evidence as to whether or no it takes on a rufous mantle in the later summer.

"Only seen at the altitudes above recorded. Found in wet valleys."—A. F. R. W.

9. *Ochotona wollastoni*, sp. n.

♂. 34; ♀. 35. Puse La, 16,500', 28th July.

♂. 36. E. Mt. Everest, 17,500', 6th August.

♂. 41. Kama Valley, 15,800', 29th August.

♂. 48; ♀. 37. Kharta Valley, 14,500', 15,000', 6th September, 23rd August.

♂. 51, 52, 53; ♀. 50, 54, 59, 60. E. Everest, 17,000', 17,500', 9th–16th September.

A grey Pika of the size of *O. roylei*, without contrasted rufous at any season.

Size about as in *O. roylei*, of which the subspecies *nepalensis* was also obtained by the Expedition. General colour above light grey with a slight drabby tinge, the tips of the hairs blackened. No conspicuous seasonal changes, the new summer fur coming up of practically the same colour as the warm winter fur. Head and shoulders without strong rufous, the species contrasting in this respect with all the subspecies of *roylei*, in which these parts turn a more or less

brilliant red by August. Under surface the usual mixed greyish colour, the bases of the hairs blackish slaty, their tips whitish. Middle area of face more or less fulvous, succeeded behind on the crown by grey, about like that of the back, but when in worn pelage this part often looks nearly black. Sides of face grey. Ears large, their hairs white internally, blackish externally, a narrow line along the edge white. A large area behind each ear greyish white, sometimes with a buffy suffusion, extending up more or less on to the nape, and so forming a prominent greyish collar. A little buffy commonly present, running along the boundary between the upper and lower colours from the muzzle to the level of the elbows. Rump grey like the rest of the back, not of a warmer tone as it generally is in *roylei*. Anal area inconspicuously white. Hands and feet greyish white without tendency to buffy, a little darker grey on the middle of the metapodials.

Skull essentially as in *roylei*. Frontals in all the specimens fenestrated, but this is a variable character in other species. Bullæ as in *roylei*, not as in *macrotis*.

Dimensions of the type (measured in flesh):—

Head and body 184 mm.; hind foot 30; ear 36.

Skull: greatest length 45; condylo-incisive length 41.5; zygomatic breadth 22.5; nasals 16×5.5 ; interorbital breadth 5.5; breadth across brain-case above meatus 18.5; palatal foramina 13.3; width of palatal bridge 1.5; antero-posterior length of bullæ 10. Upper tooth-series (alveoli) 8.2.

Hab. Mt. Everest, at altitudes from 14,500' to 20,100'. Type from 17,500'.

Type. Adult female. Original number 54. Collected 12th September, 1921. Thirteen specimens.

This species, while no doubt by its general characters and size of skull nearly allied to *O. roylei*, is yet clearly distinct by the complete absence of the brilliantly contrasted rufous mantle on the head and fore-quarters which comes on in that species during the late summer. And even in the early summer, before the rufous has begun to appear, *O. roylei* has a warmer tone on the rump than on the middle back, which is not the case here, and the feet have always some tone of yellowish or brownish as compared with the white feet of *O. wollastoni*. It is, however, possible that forms connecting it with *roylei* on the west, or *chinensis* on the east, will yet be found, in which case a trinomial will have to be used for it.

This Pika, on whose discovery Mr. Wollaston is to be congratulated, appears to be the mammal which has its

habitual home at the highest altitude of any in the world. Although he did not bring any specimens from higher than 17,500', Mr. Wollaston killed some at 20,100'—a height probably only rarely surpassed by wandering wolves, or, perhaps, *Pantholops*,—but as a habitual home this is probably the highest in existence.

Incidentally we may note that a mouse (*Phyllotis sublimis*) was described by Thomas in 1900 from an altitude of 17,900' in Peru.

It will be of interest, on the one hand, actually to have specimens from 20,000', and, on the other, to find out how low it ranges, and whether it intergrades at all with the Nepalese form of *O. roylei*, which was obtained by the Expedition at 12,000'–13,000' in the Kama Valley.

"We found this Pika from 14,500' to the snow-line; the highest seen were at 20,100', only in mountainous and rocky country."—*A. F. R. W.*

10. *Ochotona curzoniae*, Hodgs.

♂. 14, 16, 21; ♀. 15, 17, 18, 19, 22, 25, 23. Tingri, Tibet, 14,000', 2nd–7th July.

As very few examples of this Pika were in the Museum collection, the present series forms a valuable addition to the material for the study of the group. The majority of the specimens are in changing pelage, and three of them are young.

"Between 14,000' and 15,000' on dry plains, where they burrow in soft ground."—*A. F. R. W.*

[Chiru (*Pantholops hodgsoni*, Abel).

"Horns seen in possession of natives, supposed to have come from about 20 miles north of Tingri Dzong."—*A. F. R. W.*]

11. *Procapra picticaudata*, Hodgs.

♂. Skull and mask. Near Kamba Dzong, at about 16,000'. Presented to British Museum by Lt.-Col. C. Howard Bury.

"On plains at 15,000'. Kamba Dzong."—*A. F. R. W.*

[Burrhel (*Pseudois nayaur*, Hodgs.).

"16,000' and above. Tracks and droppings found at 20,000'. Kamba Dzong."—*A. F. R. W.*]



Thomas, Oldfield and Hinton, Martin A. C. 1922. "The mammals of the 1921 Mount Everest expedition." *The Annals and magazine of natural history; zoology, botany, and geology* 9, 178–186.

View This Item Online: <https://www.biodiversitylibrary.org/item/53480>

Permalink: <https://www.biodiversitylibrary.org/partpdf/52315>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Smithsonian

Copyright & Reuse

Copyright Status: Public domain. The BHL considers that this work is no longer under copyright protection.

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.