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On the Mammals collected during the "Skeat Expedition" to the Malay Peninsula, 1899–1900.

By J. LEWIS BONHOTE, B.A.

(Plate LVI.)

I have the pleasure of furnishing a report on the collection of Mammals made in the Malay Peninsula by Messrs. R. Evans and F. F. Laidlaw, who accompanied an expedition under Mr. W. W. Skeat. As might be expected, the collection, which includes specimens of 54 species, is of considerable interest, although only one, a rodent, appears to be new to science. A fine specimen of *Macacus rufescens* was procured, which has hitherto only been known by the type, a young example; the presence of *Trichys lipura*, a Bornean species about whose occurrence in this region considerable doubt had been expressed, is of great interest. The collection also contains a fine skull of *Hystrix yunnanensis*; a skin of *Mus cremoriventer*, a scarce species lately described from the Malay Peninsula by Mr. G. Miller, jun., of Washington; and several specimens of *Vesperugo tylopus*, originally described from Borneo.

As Capt. Stanley Flower has lately published a catalogue of the Mammals of Siam and the Malay Peninsula, I have not given the full synonymy but have referred to his paper, only adding the references to one or two subsequent papers to which he did not have access. Great praise is due to Messrs. Evans and Laidlaw for the careful way in which they collected: almost all the specimens having careful dates and measurements, which, apart from greatly adding to their value, has considerably lessened the work of identification. With regard to the position of the places

mentioned: Talé-sap is a large inland sea in the State of Patelung, which lies on the east coast of the Peninsula, where it begins to widen out in the north; Singora is the capital of the State and is situated near the entrance to the sea. Jering is a small State on the east coast considerably to the south, in a latitude slightly north of that of Penang. Patani, Kelantan, and Tringganu form the remaining States under Siamese protection along the coast from the north. Due south of Jering and Patani lies the State of Jalor with Biserat as its capital; Bukit Besar is a mountain (3000 ft.) on its western border. South of Jalor lie the small States of Raman and Legeh with its capital Belimbing. The State of Kelantan takes its name from a large river of that name, near the mouth of which is situated the town of Khota Bharu. The Lebeh is a tributary of this river and lies in the southern portion of the State, where it is joined by the Aring, another river. The prefixes Kwala and Ulu indicate the lower or upper waters of the river. Gunong Inas is a large mountain (5861 ft.) about 50 miles due east of the southern boundary of Province Wellesley, in the State of Perak; the head-waters of the river Selama rise there, and Ulu Selama practically indicates the foot of the mountain. This locality, which was visited by Messrs. Laidlaw and Yapp after the rest of the expedition had gone home, seems to be of great interest, several species, including the undescribed one and *Trichys lipura*, having been found there only. Mr. Laidlaw having given me some interesting notes on the Mammals of this mountain, dealing more especially with the species of which specimens were not procured, I have great pleasure in recording them here:—

"*Primates*.—A Gibbon, I believe the Siamang (*Hylobates syndactylus*), ranges well up to 4000 ft. on Gunong Inas. It has quite a different cry to the species common at Kwala Aring.

"A very large *Semnopithecus* with a long tail is also common at that height, as are one or two smaller species. I was unable to get a specimen of any of these.

"*Sciuromorpha*.—I saw a very fine pair of large Flying Squirrels at about 3000 ft.

"*Sciurus tenuis* is the common species. I only saw the one *S. erythræus* that I shot. There is another black species about the same size as *S. caniceps* that occurs, but is rare at that height (it is perhaps *S. atridorsalis*). A very small species with a yellow and black lateral stripe is common but very difficult to shoot; this species ranges well up to 5000 ft. There is another large Squirrel, of which I saw a single specimen; its head is shaped much like that of *S. bicolor*, but it is not so large and more plainly coloured, a dull grey: 4000 ft.

"*Carnivora*.—The Tiger does not occur high up in the mountain so far as we could discover, neither did we see any trace of Bears or Leopards, though I imagine the latter must occur.

"*Ungulata*.—The Elephant does not appear to get much above 2000 ft. The Tapir ranges right up to the summit-ridge of the

mountain, and the Rhinoceros to nearly 4000 ft. at any rate. Of *Nemorhœdus* we saw tracks on the summit-ridge. At the foot of the mountain was a hot sulphur spring, which the Malays assured us was much frequented just at sunset by many kinds of beasts. We were never so fortunate as to see any there, although it had evidently been frequented from time to time by Elephants."

1. Macacus rufescens Anders.

Macacus rufescens Anderson, P. Z. S. 1872, p. 204; Sclater, op. cit. p. 495; id. P. Z. S. 1873, p. 194; Anders. Zool. Res. (1879) p. 79; S. S. Flower, P. Z. S. 1900, p. 315.

a. ♀ sk. Patelung, 7th April, 1899.

This specimen is of considerable interest, for the species is apparently known only from two specimens; the first of which was sent by Dr. Anderson to this Society with no further particulars than that it had been "purchased at Singapore," and Dr. Anderson, not knowing to which species it should be referred, suggested the above name. This specimen is now in the British Museum, where I have examined it, and, except in its slightly smaller size, agrees in all respects with the present example.

Shortly afterwards Dr. Anderson procured a young female in the Calcutta market, which subsequently also found its way to this Society, through Mr. Jamrach, with the additional information that it was supposed to have been brought to Calcutta from Batavia. The present specimen therefore fixes the hitherto somewhat doubtful habitat of this species as being the Malay Peninsula, whence doubtless the second specimen also came, as it is not unlikely that a ship bound for Calcutta from Batavia would touch at Singapore. The present example is not quite adult, but being rather older than either of the other two specimens I append a full description:—Hair moderately long and wavy on the back, shorter and rather sparse on the underparts. Face and buttocks naked. General colour of a warm reddish brown, but many of the hairs, especially on the dorsal area, with a dark tip and one or more dark annulations. Tail very short, about an inch in length, and covered with hair. The hair of the crown, which is short and light in colour, radiates from a central point, while a few black bristles grow out from the edge of the forehead. The measurements and colour of the soft parts are not given, and those given below are from the dried skin.

The skull is considerably larger than the specimen in the British Museum, which I take to be the type, and is that of an individual a good deal older although not quite adult. Its chief points of difference from the skulls of other nearly allied species (e. g. *M. brunneus*) are the length of the snout, narrowness of the brain-case, and also the sharp and clearly defined supraorbital processes: in these points it completely agrees with Anderson's description.

Measurements [from skin]. Length, tip of muzzle to root of tail, 22 in.; tail $1\frac{1}{4}$ in.; hind foot $5\frac{1}{4}$ in.

Skull. Greatest length 124 mm.; zygomatic breadth 81; breadth of brain-case 64: length, occipital to back of nasals, 89; back of nasals to tip of præmaxillæ 47.

2. Macacus cynomolgus (Schreb.).

Macacus cynomolgus, Schreb. Säugeth. i. p. 91, pl. xiii. (fig. Buffon), nec Linn.; S. S. Flower, P. Z. S. 1900, p. 316.

a. ♂ ad. sk. Koh Nam Kam, Talé-sap, Nu Pau, 12th April, 1899.

b. ♂ ad. sk. Jering, 19th June, 1899.

3. Semnopithecus obscurus Reid.

Semnopithecus obscurus, Reid, P. Z. S. 1837, p. 14; Flower, op. cit. p. 317.

a. ♀ ad. sk. Koh Nam Kam, Talé-sap, 12th April, 1899.

4. Semnopithecus albocinereus Cantor.

Semnopithecus albocinereus, Cantor, J. A. S. B. xv. p. 174 (1846) (nec Desm.).

Semnopithecus mitratus (Eschs.), Flower, op. cit. p. 319.

a. ♂ ad. sk. Aring, Kelantan, 23rd Aug., 1899.

This Monkey, which is of a clear ashy grey on the back, white below, with dark hands, feet, and tail, agrees with the example from Klang referred to by Mr. Thomas (P. Z. S. 1896, p. 72) as being identical with Cantor's *S. albocinereus*, which in Dr. Anderson's opinion, is synonymous with *S. siamensis* of Müller and Schlegel. Under the name *siamensis* Dr. Anderson gives a description of the present species; but on reading Müller's original description I find *siamensis* to be a dark-coloured Monkey, and there are several specimens in the British Museum of a dark brown Monkey, rather smaller than the specimen under consideration, which agree fairly with Müller's description and are labelled *siamensis*. There is therefore no alternative but to allow Cantor's name to stand for the present.

Cantor's type was founded on a young specimen, but he remarks that when adult it is hardly to be distinguished from *S. obscurus*; this remark, however, hardly seems to hold good, the present specimen being fully adult and yet showing no such resemblance.

5. Semnopithecus sp. inc.

a. ♂ juv. sk. Biserat in Jalor, 26th May, 1899.

This specimen is very young and shows no distinctive features by which, with our present knowledge of the group, it could be identified. It shows no sign of a crest and the hair of the head radiates straight back from the facial limit, while the face and cheeks are surrounded by long black hairs. In colour it is of a light golden buff all over, with a tendency to a black tip on the tail.

6. NYCTICEBUS TARDIGRADUS (L.).

Lemur tardigradus, Linn. Syst. Nat. p. 44 (1766).
Nycticebus tardigradus, Flower, op. cit. p. 321.

a. ♀ sk. Komlom, opposite Singora, 17th April, 1899.
b. ♀ ad. sk. Tremangan, 15th July, 1899.
c. ♀ ad. sk. Bukit Blinja, 15th July, 1899.

7. FELIS BENGALENSIS Kerr.

Felis bengalensis, Kerr, Animal Kingdom, p. 151 (1792); Flower, op. cit. p. 325.

a. Ad. sk. Khota Bharu, Kelantan, 17th Oct., 1899.
b, *c*. ♀ juv. sk. Patelung, Nu Pau, April 1899.

8. VIVERRA ZIBETHA L.

Viverra zibetha, Linn. Syst. Nat. i. p. 65 (1766); Flower, op. cit. p. 327.

a. ♂ juv. sk. Biserat in Jalor, 13th May, 1899.

This specimen, which is very young, may be easily recognized as belonging to this species by the markings on the back and neck; the hairs along the centre of the back are longer and stiffer than those elsewhere, although there is no noticeable crest, the white subdorsal lines start from the middle of the back and run to the root of the tail, and the markings on the neck are very clear and distinct. The sides of the body, which are dark brownish, are flecked with dull white spots, which show a tendency to arrange themselves into transverse lines.

9. PARADOXURUS HERMAPHRODITUS (Pall.).

Viverra hermaphrodita, Pallas, Schreber, Säugeth. iii. p. 426 (1778).
Paradoxurus hermaphroditus, Flower, op. cit. p. 329.

a, *b*. ♂ imm. sk. Patelung, Nu Pau, April 1899.
c. ♀ imm. sk. Biserat, Jalor, 10th May, 1899.
d. ♀ ad sk. Kota Bharu, Kelantan, 15th Oct., 1899.

10. HEMIGALEA HARDWICKEI Gray.

Hemigalea hardwickei, Gray, Spicil. Zool. 1830, p. 9, pl. i. (nec Lesson, 1827); Flower, op. cit. p. 330.

a. ♀ ad. sk. Kwala Selama, 10th January, 1899.

11. HERPESTES JAVANICUS (Geoffr.).

Ichneumon javanicus, Geoffr. Descript. de l'Egypte, 1813, Hist. Nat. vol. ii. p. 138. no. 5.
Herpestes javanicus (Desm.), Flower, op. cit. p. 332

a. ♀ ad. sk. Biserat in Jalor, 18th May, 1899.
b. Skull. Patani, May 1899.

12. Canis familiaris L.

Canis familiaris, Linn., Flower, op. cit. p. 333.

The collection contains three skulls of the native domestic or semi-domestic Dog; they are fairly large, measuring some 6 inches in length, and are chiefly noticeable from the fact that in two of them the dentition is asymmetrical.

No particulars are given.

Dentition :—

(*a*) i. $\frac{3-3}{3-3}$, c. $\frac{1-1}{1-1}$, pm. $\frac{4-4}{4-4}$, m. $\frac{2-2}{2-2}$.

(*b*) i. $\frac{3-3}{3-3}$, c. $\frac{1-1}{1-1}$, pm. $\frac{2-2}{1-3}$, m. $\frac{2-2}{2-2}$.

(*c*) i. $\frac{3-3}{3-3}$, c. $\frac{1-1}{1-1}$, pm. $\frac{3-4}{4-3}$, m. $\frac{2-2}{3-3}$.

13. Lutra sp. inc.

a. Juv. Bankok, Patelung, 5th April, 1899.

I have been unable to satisfactorily identify this specimen, which is very young; it is apparently referable to either *L. vulgaris* or *L. macrodus*, probably to the latter; but owing to the confusion that seems to exist between the species I have thought it best to leave it doubtful.

14. Lutra cinerea Illiger.

Lutra cinerea, Illiger, Abh. Akad. Berl. 1811, p. 99; Flower, op. cit. p. 334.

a, *b*. ♂ ♀ imm. sk. Patelung, 8th April, 1899.

15. Tupaia ferruginea Raffles.

Tupaia ferruginea, Raffles, Trans. Linn. Soc. xiii. p. 256 (1822); Flower, op. cit. p. 336.

a. ♀ ad. sk. Belimbing, Legeh, 27th July, 1899.
b. ♀ ad. sk. Aring, Kelantan, 3rd Sept., 1899.
c. ♀ ad. sk. Gunong Inas (2700 ft.), 16th December, 1899.
d. One spec. in al. Kota Bharu, June 1899.

16. Crocidura murina (Linn.).

Sorex murinus, Linn. Syst. Nat. ed. 12, i. p. 74 (1766).
Crocidura murina, Flower, op. cit. p. 337.

a. Sk. Kota Bharu, Kelantan, 16th Oct., 1899.

17. Soriculus nigrescens (Gray).

Corsira nigrescens, Gray, A. M. N. H. x. p. 261 (1842).

a. ♀ ad. sk. Biserat, June 1899.

The skull of this animal not having been preserved, I am unable to identify it with certainty. Outwardly, however, it only differs from the type of *S. nigrescens* in its slightly darker colour; under this species I therefore place it.

18. Galeoptihecus volans (Linn.).

Lemur volans, Linn. Syst. Nat. i. p. 45 (1776).
Galeopithecus volans, Flower, op. cit. p. 338.
a. Skeleton. Bau Kong, Patelung, April 1899.
b. Fœtus in al.

19. Pteropus vampyrus (Linn.).

Vespertilio vampyrus, Linn. Syst. Nat. i. p. 31 (1758).
Pteropus edulis, Geoff., Flower, op. cit. p. 339.
a, *b*. ♂ ad. sk. Biserat, Jalor, 27th May, 1899.

20. Pteropus nicobaricus Fitzinger.

Pteropus nicobaricus, Fitzinger, Sitzungsber. Wien. Akad. p. 389 (1860).
a. ♀ in al. Gt. Redang, off the E. coast of Peninsula.

21. Kiodotus minimus (Geoffr.).

Pteropus minimus, Geoffr. Ann. Mus. xv. p. 97 (1810).
Carponycteris minima (Geoffr.), Flower, op. cit. p. 341.
a. ♂ in al. Ulu Selama.

22. Cynopterus sphinx Vahl.

Vespertilio sphinx, Vahl, Scrivter af Naturhistorie-Selskabet, 4te Bind, 1ste Hefte, p. 123 (1797).
Cynopterus marginatus (Geoffr.), Flower, op. cit. p. 341.
a. ♂ sk. Kikalin, Raman, 20th June, 1899.
b, *c*. in al. Biserat, Jalor.

23. Cynopterus lucasi Dobs.

Cynopterus lucasi, Dobs. Ann. & Mag. Nat. Hist., Aug. 1880; Flower, op. cit. p. 341.
a, *b*. in al. Ulu Selama.

24. Rhinolophus luctus Temm.

Rhinolophus luctus, Temm. Mon. Mamm. ii. p. 24, pl. 30 (1835); Flower, op. cit. p. 341.
a. ♀ in al. Ulu Selama.

25. Hipposiderus armiger (Hodgs.).

Rhinolophus armiger, Hodgson, J. A. S. B. iv. p. 699 (1835).
Hipposiderus armiger, Flower, op. cit. p. 342.
a. ♀ ad. sk. Jalor Caves, June 1899.

26. Hipposiderus diadema (Geoffr.).

Rhinolophus diadema, Geoffroy, Ann. Mus. Hist. Nat. xx. p. 263 (1813).
Hipposiderus diadema, Flower, op. cit. p. 342.
a–f. ♂ sk. Biserat, Jalor, 12th, 16th, 21st, 25th May, 1899.
g. ♀ sk. Biserat, Jalor, 25th May, 1899.
h. Sk. No particulars.

27. PIPISTRELLUS ABRAMUS (Temm.).

Vespertilio abramus, Temm. Mon. Mamm. ii. p. 232 (1835-41).
Vesperugo abramus (Temm.), Flower, op. cit. p. 345.
Pipistrellus abramus (Temm.), Bonhote, P. Z. S. 1900, p. 191.
a. Ad. sk. Biserat, Jalor, 11th May, 1899.

28. VESPERUGO TYLOPUS Dobs.

Vesperugo tylopus, Dobson, P. Z. S. 1875, p. 473; Blanf. Faun. Br. Ind., Mamm. p. 602.
15 specs. in alc. Biserat, Jalor.

29. SCOTOPHILUS KUHLI Leach.

Scotophilus kuhlii, Leach, Tr. L. S. xii. p. 72 (1822); G. Miller, jun., Proc. Acad. Nat. Sci. Phil. p. 321 (1898); Bonhote, P. Z. S. 1900, p. 191.
Nycticejus kuhlii, Flower, op. cit. p. 346.
4 specs. in alc. from Biserat, Jalor.

30. VESPERTILIO EMARGINATUS.

Vespertilio emarginatus, Geoffr. Ann. Mus. vol. viii. p. 198 (1806).
a. spec. in alc. Biserat, Jalor.

31. VESPERTILIO MURICOLA Gray.

Vespertilio muricola, Gray, Cat. Mamm. Nepal & Thibet, p. 4 (1846); Flower, op. cit. p. 347.
9 specs. in alc. from Biserat, Jalor.

32. SCIUROPTERUS PHAYREI Blyth.

Sciuropterus phayrei, Blyth, J. A. S. B. xxviii. p. 278 (1859); Bonhote, P. Z. S. 1900, p. 193.
Sciuropterus sagitta, Flower, op. cit. p. 353.
a [1], *b*. ♂ ad. sk. Biserat, Jalor, 29th May, 1899.
c. ♀ ad. sk. Bukit Besar, Jalor, June 1899.
d. ♂ in alc. Bukit Besar, Jalor, May 1899.
The female is slightly smaller and distinctly lighter in colour. The male in spirit was dropped by a Monitor lizard.

33. RATUFA [2] BICOLOR [3] (Sparrm.).

Sciurus bicolor, Sparrm. Götheb. Vet. Svensk. Handl. i. p. 70 (1778).
Ratufa bicolor, Flower, op. cit. p. 354; Bonhote, Ann. & Mag. Nat. Hist. ser. 7, vol. v. 1900, p. 493.

[1] One specimen labelled in parenthesis "(from Bukit Besar)"; probably they all came from there.
[2] For use of generic term *Ratufa* and other terms in the former genus *Sciurus* see Thomas, P. Z. S. 1897, p. 938.
[3] Since this paper was read, Mr. G. Miller, jun. (Proc. Wash. Acad. Sci. 1900, ii. p. 71), has described this species under the name *Ratufa melanopepla*.

a, *b*. ♂ ♀ ad. sk. Koh Nam Kam, Talé-sap, 12th April, 1899.
c. ♂ ad. sk. Biserat, Jalor, 15th May, 1899.
d–*g*. ♀ ad. sk. Biserat, Jalor, 15th, 24th, & 25th May, 1899.
h. ♂ ad. sk. Kota Bahru, Kelantan, June 1899.

These eight specimens are the true *R. bicolor* and are identical with the southern race from Java, but differ in size and one or two minor points from the large form of the Himalayas, which also occurs in the Malay Peninsula. I have measured the skulls of all the specimens, which entirely bear out my former observations on this race. The average measurements of the eight specimens are:—Greatest length 71·2 mm.; basal length 56·4; zygomatic breadth 43·7; length of nasals 21·1; length of palate to henselion 26·5.

All these specimens show a tendency to bleaching, although this has taken place to a far less degree than in most of the specimens I have examined; one or two of the specimens from Biserat, moreover, show a tendency to erythrism, having reddish tips to many of the dorsal hairs, most noticeable on the hind-quarters and tail.

34. SCIURUS ERYTHRÆUS Pall.

Sciurus erythræus, Pall. Glires, p. 337 (1778); Flower, op. cit. p. 356.

a. Ad. sk. Gunong Iuas, 4000 ft., N. Perak.

35. SCIURUS CANICEPS, Gray.

Sciurus caniceps, Gray, A. M. N. H. x. p. 263 (1842); Flower, op. cit. p. 356; Bonhote, P. Z. S. 1900, p. 194.

♂ ♀ ad. sk. Bankok, Patelung, 6th April, 1899.
♀ ad. sk. Lambom, Singora, 17th April, 1899.
♀ ad. sk. Komlom opp. Singora, 17th April, 1899.
♀ ad. sk. Bukit Besar, Jalor, 7th May, 1899.
♂ ad. sk. Biserat, Jalor, 17th May, 1899.
3 ♀ ad. sk. Biserat, Jalor, 10th & 25th May, 1899.
♀ imm. sk. Biserat, Jalor, 11th May, 1899.
4 specs. very young in al. Biserat, Jalor (no date).
♂ ad. sk. Tremangan, 12th July, 1899.
2 ♂ & 2 ♀ ad. sk. Belimbing, Legeh, 29th July, 1899.
♀ ad. sk. Sungei Labeh, Angadik, 5th August, 1899.
♂ ad. sk. Aring, Kelantan, 17th & 29th August, 1899.
♂ ad. sk. Aring, Kelantan, 2nd Sept., 1899.
2 ♂ ad. sk. Aring, Kelantan, 5th Sept., 1899.
♂ ad. sk. Aring, Kelantan, 6th & 7th Sept., 1899.
♂ imm. sk. Aring, Kelantan, 5th Sept., 1899.
4 ♀ ad. sk. Aring, Kelantan, 16th, 25th, 30th, & 31st Aug., 1899.
♀ ad. sk. Aring, Kelantan, 6th Sept., 1899.
♀ imm. sk. Aring, Kelantan, 18th August, 1899.
3 ♀ ad. sk. Kota Bharu, Kelantan, 4th, 5th, & 8th Oct., 1899.
♂ ad. sk. Tringganu, 22nd, 30th, & 31st October, 1899.
♀ ad. sk. Tringganu, 26th October, 1899.

This large series shows hardly any variation throughout; the April specimens from Bankok and Singora are somewhat greyer in their general tone, and young individuals appear to be browner on the back and to have the tail more distinctly annulated. None of the specimens have the bright yellow back, the majority having only a warm tinge of brown.

36. Sciurus tenuis Horsf.

Sciurus tenuis, Horsf. Zool. Res. (1824); Flower, op. cit. p. 357

a–f. ♂ ad. sk. Aring, Kelantan, 26th & 29th Aug., 1st, 9th, 11th, & 14th Sept., 1899.

g. ♀ ad. sk. Bukit Besar, Jalor, 1st May, 1899.

h, j. ♀ ad. sk. Aring, Kelantan, 31st Aug. & 3rd Sept.

k, l. ♂ ad. sk. Gunong Inas (4000 ft.), 14th & 17th Dec., 1899.

m. ♀ ad. sk. Gunong Inas (4000 ft.), 16th Dec., 1899.

37. Sciurus notatus, Bodd.

Sciurus notatus, Bodd. Elench. Anim. (1785) p. 119; Flower, op. cit. p. 358.

A. Variety with bright red underparts.

a. ♂ ad. sk. Ko Nam Kam, 12th April, 1899.

b, c. ♂ ad. sk. Aring, Kelantan, 25th & 26th Aug., 1899.

d. ♀ ad. sk. Aring, Kelantan, 31st Aug., 1899.

e–h. ♀ ad. sk. Aring, Kelantan, 2nd Sept., 1899.

j–k. ♀ ad. sk. Aring, Kelantan, 14th Sept., 1899.

l. ♀ ad. sk. Ulu Selama, 5th Jan., 1900.

B. Variety with blue underparts.

m. ♂ ad. sk. Aring, Kelantan, 26th Aug., 1899.

n. ♀ ad. sk. Aring, Kelantan, 13th Sept., 1899.

38. Funambulus insignis, Cuvier.

Sciurus insignis, F. Cuvier, Mamm. 1821, p. 233.

Funambulus insignis, Flower, op. cit. p. 360.

a. ♀ ad. sk. Aring, Kelantan, 26th Aug., 1899.

This solitary specimen is rather a dark variety and shows no trace of the rufous on the flanks.

39. Mus rufescens, Gray.

Mus rufescens, Gray, Charlesw. Mag. Nat. Hist. i. p. 585 (1837).

Mus alexandrinus var. *rufescens*, Thos. P. Z. S. 1881, p. 534.

Mus rattus, Flower, op. cit. p. 361.

a. ♀ ad. sk. Aring, Kelantan, 25th Sept., 1899.

This specimen agrees with Mr. Thomas's description of var. *rufescens*, viz., body small, tail longer than head and body; fur coarse, intermixed with many spines; colour rufous above, much paler below.

40. Mus concolor Blyth.

Mus concolor, Blyth, J. A. S. B. xxviii. 1859, p. 295; Flower, op. cit. p. 361; Bonhote, P. Z. S. 1900, p. 195.

a. ♂ ad. sk. Aring, Kelantan, 25th Sept., 1899.
b. ♂ imm. sk. Aring, Kelantan, 28th Aug., 1899.
c–e. ♀ ad. sk. Biserat, Jalor, June 1899.
f–g. ♀ ad. sk. Aring, Kelantan, 23rd Aug. & 25th Sept., 1899.

41. Mus decumanus Pallas.

Mus decumanus, Pallas, Glires, p. 91 (1779); Flower, op. cit. p. 362.

a–c. ♂ ad. sk. Kota Bharu, Kelantan, 1st Oct., 1899.

42. Mus cremoriventer Miller.

Mus cremoriventer, G. Miller, jun., Proc. Biol. Soc. Wash. xiii. p. 144 (1900).

a. No particulars (probably Jalor.—J. L. B.)

I have no hesitation in referring this specimen to the species which has lately been described by Mr. Gerritt S. Miller, jun. It is allied to *Mus jerdoni*, but is easily recognizable by its slightly larger size, slender form, and long tail with a whitish tip. Mr. R. Evans, who procured the specimen, states that it was taken in an absolutely dark cave, but when found was in too decomposed a condition for satisfactory measurements to be taken.

43. Mus ciliata, sp. n. (Plate LVI.)

General colour above dark brown; many of the hairs having fawn tips, which, especially on the sides, give the animal a lighter appearance. Underparts yellowish white, sharply marked off from the colour of the back. The fur is of three kinds—(1) a light grey underfur; (2) fine soft hairs light at their bases with a fawn or dark tip, the former colour being most abundant at the sides and the latter on the back; (3) long stiff spines, also light at their bases but with a very dark tip. Ears moderately long, naked, and uniformly rounded. Hands and feet uniform dark sepia-brown above, sometimes with an irregular longitudinal whitish stripe. Tail long, unicolour, and covered with very short stiff bristles. Whiskers very long and numerous; the two supraorbital bristles especially are longer than those in any other species except *Mus edwardsi*, while there is also a long cheek-bristle on either side starting from midway between the eye and the ear.

The *skull* closely resembles that of *M. vociferans*, Miller, and in a less degree that of *M. sabanus*. It differs from the former in being slightly longer and of greater depth over the brain-case, while the nasals are somewhat straighter. From the latter it differs in the supraorbital ridges being much less prominent and in the shape of the anteorbital foramen, which is narrower, especially at its upper end, caused by the maxillary plate being flatter, *i. e.* less concave and nearer the rostrum at its upper end. The skull

may also be distinguished from that of *Mus edwardsi* by its smaller size, less prominent supraorbital ridges, and the much smaller auditory bullæ, which in this respect agree with those of the *sabanus* group.

Teeth similar to those of *M. vociferans*, but the anterior crescent of the first molar has a deep constriction at its inner side, so that when the tooth is worn it becomes split into a narrow crescent and a round tubercle.

Dimensions of the type (approx., see below). Head and body 290 mm.; tail 315; hind foot 47.

Skull. Greatest length 57 mm.; basilar length 44; palatal length to henselion 23; length of nasals 21·5; breadth of brain-case above zygoma-roots 21; interorbital breadth 9.

Hab. Gunong Inas, Malay Peninsula (4000 ft.).

Type. Adult ♀, Gunong Inas, 4000 ft., 23rd Dec., 1899.

I have no hesitation in describing this species as new, although it bears a certain likeness to 3 species, viz.: *Mus sabanus* Thos., from Borneo; *Mus vociferans* Miller jr., from the west side of the Malay Peninsula; *Mus edwardsi* Thos., from W. Fokien, China. From the first two it may be at once distinguished by the great length of the supraorbital bristle, which in the type measures 71 mm., and in the ♂ specimen 78 mm., as compared with 40 mm. in the type of *sabanus*. The tail is also much shorter, being hardly longer than the body. From *Mus edwardsi*, which it more closely resembles, it may be at once distinguished by its unicolor tail, darker colour, smaller size, and the impure colour of the underparts.

For this species I propose the name *ciliata*, from the long bristles, which form so distinctive a character. Mr. F. F. Laidlaw, who collected these specimens, has brought home examples of both sexes and three skulls, all from the same locality; but owing to the imperfect condition of the skull of the male, I have been obliged to make the female the type. With regard to the measurements which were taken on the spot, there appears to have been some slight oversight. Those given for the ♂, namely, head and body 285 mm., tail 300, hind foot 49, are probably correct; but I am unable to understand those given for the type, which are "snout to tail 12·3 mm., tail 11·4, hind foot 2·9." The tail of the type is 15 mm. longer than that of the ♂, and the hind foot approximately the same size, while the skulls are also practically identical; but if the measurements of the type, which are presumably taken in inches, be transposed to millimetres, they would not at all fit in either with the measurements of the other specimen, or with the measurements of the type taken by myself from the skin and given in the description.

44. Mus whiteheadi Thos.

Mus whiteheadi, Thos. Ann. & Mag. Nat. Hist. ser. 6, xiv. pp. 452 & 457 (1894).

a. ♀ ad. sk. Gunong Inas, about 4000 ft.

b. ♀ imm. sk. Gunong Inas, about 4000 ft.
c. Gunong Inas.

The adult ♀ is typical and very spiny; the immature specimens, which are about ¾ grown, are much darker, showing hardly any fawn-colour, and, except on the underparts, where the mature pelage has commenced to show itself, are entirely spineless.

45. Mus mettada (Gray).

Golunda mettada, Gray, Charlesworth's Mag. Nat. Hist. i. p. 586 (1837).

a. ♀ in al. Bukit nr. Biserat, Jalor, 12th June, 1899.

This is, so far as I am aware, quite a new locality for this species, which is, however, a fairly typical specimen.

46. Rhizomys sumatrensis (Raffles).

Mus sumatrensis, Raffles, Tr. Linn. Soc. xiii. p. 258 (1822).

a. ♀ ad sk. Biserat, Jalor, 18th May, 1899.
b. ♀ ad sk. Aring, Kelantan, 8th Sept., 1899.

47. Hystrix yunnanensis Anders.

Hystrix yunnanensis, Anders. Zool. Res. p. 332 (1880).

a. Skull, ad. ♀. Biserat.
b, *c*. 2 fœtuses in al., taken from the above ♀.
d. Imm. in al. 24th Jan., 1900.

I have compared the skull with other *Hystrix* skulls in the Museums of Cambridge and London, and, although there did not appear to be a skull of this species among them, I had little difficulty in determining it.

The characteristic points, which are well brought forward in the original description, are:—

(i) The posterior border of the nasals being in a line with the posterior edge of the 1st molar.

(ii) The posterior margin of the premaxillary is anterior to the 1st molar.

(iii) The nearly equal breadth of the nasals throughout their length.

(iv) The greatest length of the frontals being nearly equal to that of the nasals.

The measurements of the skull are:—

Greatest length 131 mm.; henselion to lower edge of occipital foramen 113 mm.; zygomatic breadth 68 mm.; length of nasals 53 mm.; greatest length of frontals 57 mm.; breadth of conjoint nasals at posterior margin of premaxillæ 29 mm.; ditto at tip 22 mm.

48. Trichys lipura Günth.

Trichys lipura, Günth. P. Z. S. 1876, p. 739.

a. ♀ ad. sk. Ulu Selama, 12th Jan., 1899.

This specimen, which is young, is of chief interest as confirming the fact that this animal occurs in the Malay region, and consequently renders it possible that the species described by Buffon

as "le porc épic de Malacca," and called *Hystrix fasciculata* by Shaw, might be referred to the animal in question, as stated by Dr. Jentink [1].

I have been carefully through Buffon and Shaw's descriptions, comparing them with the present specimen, which differs in the following points :—

(i) The tail is much longer, measuring about half the length of the body.

(ii) Muzzle and legs are brown *not* black.

(iii) The fifth digit on the fore feet has a small nail and is not merely a tubercle.

(iv) The spines have a brown tip with a white base, instead of having a white tip and base and centre brown.

This specimen agrees precisely in all these details with some six specimens of *T. lipura* from Borneo, and undoubtedly belongs to that species, which is, moreover, quite distinct from *Hystrix fasciculata* Shaw.

Judging from the length of the tail and the white tips to the spines, Buffon's description appears to me to refer to *Atherura macrura* (Linn.); at the same time Dr. Jentink's generic differentiations [2] between *Atherura* and *Trichys* appear to hold good, so that the specimens in the Leyden Museum from Malacca may probably be referred to *T. lipura*.

Mr. Thomas gave the name *guentheri* on the assumption that *lipura* meaning tailless could not apply to an animal with a long tail, an assumption which in these days does not hold good.

49. Tapirus indicus Cuv.

Tapirus indicus, Cuv., Desm. Nouv. Dict. d'Hist. Nat. xxxii. p. 459 (1819); Flower, op. cit. p. 368.

a. Imm. sk. & skel. Aring, Kelantan, Sept. 1899.

50. Nemorhœdus sumatrensis (Shaw) [3].

Antilope sumatrensis, Shaw, Gen. Zool. ii. pt. 2, p. 354 (1801).
Nemorhœdus sumatrensis, Flower, op. cit. p. 370.

Two pairs of horns, the one without any data and the other from near Biserat, Jalor, presented by Mr. D. T. Gwynne Vaughan, are referable to this genus and probably to *N. sumatrensis*, but the material does not admit of a complete identification.

51. Cervus unicolor Bechstein.

Cervus unicolor, Bechstein, Allgem. Uebers. d. vierfüss. Thiere, i. p. 112 (1799); Flower, op. cit. p. 372.

a. ♀ skull. Biserat, Jalor, May 1899.

This is a skull marked "Rusa Deer," which, according to Mr. Flower, is the local name for the species.

[1] Notes from the Leyden Museum, vol. xvi., Dec. 1894, p. 235.
[2] Tom. cit.
[3] The *Nemorhœdus* from the Peninsula has, since this paper was read, been separated under the name *N. swettenhami* by Mr. Butler (P. Z. S. 1900, p. 675), and is said to be distinguished by its jet-black legs.

52. CERVUS PORCINUS Zimm.

Cervus porcinus, Zimm. Spec. Zool. Geogr. Quad. p. 532 (1777); Flower, op. cit. p. 374.

The collection contains a pair of horns belonging to this species, but with no data.

53. TRAGULUS JAVANICUS (Gmel.).

Moschus javanicus, Gmelin, Syst. Nat. i. p. 174 (1788).
Tragulus javanicus, Flower, op. cit. p. 374.

a. ♂ ad. sk. Tale Nowy, Lacoon, 3rd April, 1899.
b. ♂ juv. sk. Tale Nowy, Lacoon, 3rd April, 1899.
c. ♀ ad. sk. Tale Nowy, Lacoon, 4th March, 1899.
d. ♂ ad. sk. Aring, Kelantan, 11th Sept., 1899.
e. ♀ ad. sk. Biserat, Jalor, 14th May, 1899.
f, *g*. ♂ ♀ skeletons. Bukit Besar, 8th May, 1899.
h. Skull (no particulars).
Native name: "Kanchil, Pelandoc."

54. MANIS JAVANICA Desm.

Manis javanica, Desm. Mamm. p. 377 (1822); Bonhote, P. Z. S. 1900, p. 195; Flower, op. cit. p. 378.

a. Ad. sk. Biserat, Jalor, May 1899.
b, *c*. Ad. sk. (Recd. 18th Sept., 1899.)

J.Smit del.et lith.

MUS CILIATA.

Mintern Bros. imp.