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ON SOME SIAMESE MAMMALS.

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The following notes deal with some of the material sent me for examination since my paper in the last number of this Journal was written; several undescribed or rare species from Messrs Williamson and Smith remain to be dealt with later.

The principal value of the present notes lies in the addition which they make to our knowledge of the range of certain forms, several of the animals obtained by Mr. Aagaard at Bangnara being of particular interest in this respect.

Patani is the southernmost state belonging to Siam on the east coast of the Malay Peninsula; most of the other localities are in Siam proper, and are either well-known places or have been described in my earlier report.

1. *Nycticebus cinereus*.

*Nycticebus cinereus*, M.-Edw., Nouv. Archiv. du Mus., Bull. III, p. 11, pl. III (1867); Anderson (partim), Anat. and Zool. Res., p. 103 (1878); Lyon, Proc. U. S. Nat. Mus., XXXI, p. 533 (1906); Gyldenstolpe, Arkiv. för Zoologi, Stockholm, 8, No. 23, p. 8 (1914). *Nycticebus tardigradus*, Blanford (partim), Faun. Brit. Ind., Mamm., p. 44 (1888); Flower, P. Z. S., 1900, p. 321.

1 adult, sex unknown. Koh Lak, S. W. Siam. [No. 2084].

This example of the Slow Lemur or Loris, of which I give a description below, closely resembles the Siamese animal described by

Flower, and both appear to be examples of *N. cinereus* stated by Milne-Edwards to extend from Siam to Cochin-China. The earliest form described, *N. coucang* (Boddaert), is said to have come from "Bengal", (though from the name one would deduce a more south-eastern provenance, as "konkang" is the Malay name for the slow lemur), but so little is known of it that the subspecific distinctness from it of *cinereus*, now generally maintained, may eventually be disproved.

Wroughton (Journ. Bombay Nat. Hist. Soc., XXIII, p. 702) has recently recorded a slow lemur from Mergui under Boddaert's name and, though the locality is quite close to Koh Lak, there is apparently a considerable difference in appearance between it and the more eastern specimens. This lies principally in the warmer colour of the Tenasserim individual, in which also the dorsal stripe extends from the base of the tail to the crown where it splits and branches to the ears and eyes. So far as I am aware, this last is a character of *N. c. malayanus*, Anderson, of the Malay Peninsula, rather than of *N. c. coucang*, in which the face markings are said to be indistinct. It is very desirable that further specimens from Indo-China should be studied in order to clear up the present uncertainty.

The appearance and characters of the Koh Lak example are as follows:—head, nape and back between shoulders, fore-limbs from below shoulders, greater part of hind-limbs, underside of body, greyish-white; the hind limbs very slightly tinged with brownish. From the crown to commencement of the rump extends a cinnamon-brown stripe, broadest behind the shoulders where many hairs are black-tipped, narrowest anteriorly where it is clearly defined and rather lighter in colour, while posteriorly it is indistinct and gradually fades into the colour of the rest of the body which is a sort of dull ochraceous-tawny, for the most part strongly frosted with white. The eyes are surrounded by rings of mummy-brown, and the ears are tawny-ochraceous situated in elongate patches of the same colour, but neither the eye nor ear patches are in any way connected with each other or with the dorsal stripe. The hairs of the pelage have grey bases throughout.

On the skull the temporal ridges are separated by a space of about 4 mm. Dimensions:—greatest length, 60; basal length, 50; zygomatic breadth, 41.7; width of braincase above zygomata,



30.5; maxillary tooth-row exclusive of incisors, 21.5; mandibular length, 39.3.

## 2. *Felis temmincki*.

*Felis temmincki*, Vig. and Horsf., Zool. Journ., III, p. 451 (1828); Blanford, Faun. Brit. Ind., Mamm., p. 75 (1888).

1 ♂. Neighbourhood of Chiangmai, North Siam. Obtained by Mr. H. C. St. J. Yates, Jan. 1916 [No. 2012].

The Golden Cat is represented by a flat skin, lacking skull, limbs or tail, but the latter is said to have had the terminal portion white beneath; it appears to be a very typical example. This is a handsome animal with its ferruginous unspotted coat, black-tipped ears and pale face-markings; it attains a total length of about four feet of which the tail is some 18 inches.

De Poursargues (Mission Pavie, Indo-Chine, Etudes Diverses III., p. 546) states that this cat inhabits Siam and Laos, but I have been unable to find any exact record for these localities<sup>1</sup>

## 3. *Ailurin planiceps*.

*Felis planiceps*, Vig. and Horsf., Zool. Journ., III, p. 450, pl. XII (1828); Cantor, Journ. Asiat. Soc. Bengal, XV, p. 245 (1846)

A flat skin with skull from Bangnara, Patani, Peninsular Siam. Collected by Mr. C. J. Aagaard. [No. 2115].

The discovery of the Flat-headed Cat in Patani considerably extends the known range of the species in the Peninsula, as apparently it has only been recorded previously from as far north as Selangor (Flower, P. Z. S., 1900, p. 326).

The specimen is rich dark brown above, the hairs annulated with whitish which causes a frosted appearance except on the median dorsal line where the annulations are fewer and tawny. The head is markedly tawny and the shoulders are suffused with the same colour. Throat, chest and under side of body are whitish and there are obsolete dark bars on the limbs, and spots on the sides and belly. The forehead and cheeks are striped with white.

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1. Since the above was written, this cat has been recorded from Bangkok (Journ. Bombay Nat. Hist. Soc., XXIV, 1916, p. 618). I take the opportunity to correct this statement, as the example was in reality obtained near Raheng, Central Siam, by Mr. G. F. W. Elwes.

The head and body are about 18 inches long, the tail 6 inches only.

Skull of the present example:—greatest length, 100; basal length, 87; palatal length, 38; rostral breadth, 23; least interorbital breadth, 12.5; greatest cranial breadth, 39; zygomatic breadth, 58;  $pm^1 - m^1$  (alveolar), 23.2;  $pm_1 - m_1$  (alveolar) 23.4; least alveolar breadth of palate between  $m^1 - m^1$ , 22 mm.

The genus *Ailurin* is distinguished from *Felis* by the large size of the anterior premolars and by the two distinct roots to each of the upper pair of these teeth. The cheek teeth are unusually long and are remarkable on account of the height of their cusps. The canines are also markedly long.

Amongst other local cats the skull is most nearly resembled in form by those of *Felis temmincki* and *F. bengalensis*, but it is more elongate than either, with a more pronounced muzzle, while the orbits are surrounded by complete bony rings, the posterior portions of which are broad.

#### 4. *Pteropus vampyrus malaccensis*.

*Pteropus vampyrus malaccensis*. Andersen, Ann. and Mag. Nat. Hist. (8) II, p. 368 (1908); id. in Kloss, P.Z.S., 1916, p. 39.

*Pteropus vampyrus*, Bonhote, Fasciculi Malayenses, Zool., Pt. I, p. 14 (1903).

1 ♂ imm. Bangnara, Patani, Peninsular Siam. Collected by Mr. C. J. Aagaard [No. 2116].

This is the largest of all the fruit-bats or "flying foxes" and has not been recorded with certainty farther north in the Peninsula, though it occurs again in S. E. Siam. Elsewhere in Siam and in Tenasserim its place is taken by a smaller species known as *P. intermedius*, Andersen.

#### 5. *Hipposideros bicolor*.

*Hipposideros bicolor*, Temm., Mon. Mamm., II, p. 18 (1835-41); Blanford, Faun. Brit. Ind., Mamm., p. 289 (1891).

1 ♂ adult in alcohol. Bangnara, Patani, Peninsular Siam. Collected by Mr. C. J. Aagaard [No. 2088].

This example of the bicoloured leaf-nosed Bat is rather small, the forearm measuring 34 millimetres.



6. *Petaurista annamensis barroni*.

*Petaurista annamensis barroni*, Kloss, *antea*, p. 23.

1 ♀ ad., Pu Khao Sammün, Pitsanulok, Central Siam, 2000 ft. ; 12th Feb., 1916. Obtained by Mr. W. J. F. Williamson's collector [No. 2020].

Whereas the type of this race of Flying-squirrel was in rather faded and abraded pelage, the fur of this example is quite fresh and unworn, and therefore presents the following slight differences from the Sriracha example. Brown of the upper parts rather deeper, grizzling more copious, white shoulder-patches very marked, edges of parachute pale grey, under side of body rather more white: the colour of the interfemoral membrane extends slightly on to the tail which is then grey for a short distance instead of drabby; as in the type, the drab colour extends along the under surface almost to the tip.

Unfortunately no dimensions have been recorded and the base of the skull has been cut away. Greatest nasal length, 24.5; greatest breadth of combined nasals, 13.8;  $p^4-m^3$  (alveolar), 17.2; breadth between tips of post-orbital processes, 32.2. For other measurements see table p. 87.

7. *Ratufa phaeopepla*.

*Ratufa phaeopepla*, Miller, Smithsonian Miscellaneous Collections, Vol. 61, p. 25 (1913).

*Ratufa melanopepla*, Wroughton, Journ. Bombay Nat. Hist. Soc. XXIII, p. 712 (1915).

1 ♂ ad. Muang Pra, North Siam, 16th April 1916. Obtained by Messrs Williamson and Smith's collectors. [No. 2093].

This form of Giant-squirrel was described from specimens taken in the extreme south of Tenasserim (Sungei Balik), and has since been received from Moulmein<sup>1</sup>; the present example therefore considerably extends its range. It differs from *R. melanopepla* and the various forms of the latter, in not being black on the back. Colour of upper parts deep chestnut-brown, limbs and tail darker; top of head, ears, hands and feet, black; an irregular Sudan-brown patch on the occiput. Under surface of body and limbs about antimony yellow,

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<sup>1</sup> Thomas and Wroughton, Journ. Bombay Nat. Hist. Soc., XXIV, p. 228 (1916).

paler on the throat and flanks. Sides of face and neck and inner sides of fore-limbs thence extending slightly over their upper surfaces, cream colour.

( For measurements, see table p. 87 )

### 8. *Ratufa aureiventer*.

*Ratufa affinis aureiventer*, Bonhote, Ann. and Mag. Nat. Hist. (7), V, p.495 (1900).

*Ratufa aureiventer*, Kloss, Journ. Fed. Malay States Mus., IV, p.147 (1911).

1 ♀ ad. Bangnara, Patani, Peninsular Siam. Collected by Mr. C. J. Aagaard [No. 2117].

Though this specimen is in very worn pelage I have no hesitation in recording it as an example of *R. aureiventer*. I can find no trace of the annulations on the back which are one of the principal characters of *R. pyrrsonota* and it has the café-au-lait tail which is so frequent in the former, whereas in the latter the tail is chocolate coloured.

The presence of an *aureiventer* squirrel in Patani is most unexpected and considerably extends the range of that form hitherto found only to the south of North Perak and North Pahang, beyond which *R. pyrrsonota* was the only yellow giant-squirrel met with previously.<sup>1</sup> It differs from the latter in having the upper parts not, or only faintly, annulated, and in having the tail often practically concolourous with the the back.

### 9. *Sciurus prevosti prevosti*.

*Sciurus prevostii*, Desmarest, Mamm., p. 335 (1822).

1♂ ad. Bangnara, Patani, Peninsular Siam [No. 2118]. Collected by Mr. C. J. Aagaard.

Top of head, back and entire tail, shining black, but the distal half of the latter sometimes bleached to brownish; chin and sides of face, and sometimes sides of neck, greyish white; a broad white stripe along the sides from neck or shoulders continued over the thigh to the ankle. Under surface of body and limbs, hind feet, hands and forearms burnt sienna, the red of the abdomen frequently separated from the white of flanks by an indistinct black stripe.

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<sup>1</sup> Antea. p. 15.



In many animals there is an extension of the white, which in its fullest degree covers the upper sides of the forearms to the wrists, and partly covers the hands and also the hind feet, while sometimes the latter and the elbows are partially blackened: but as the different colour patterns are not confined to separate areas they are not subspecific.

The Patani specimen illustrates the increase of white to a full degree. Mr. Aagaard assures me that it was a truly wild squirrel shot near Bangnara, and therefore it forms a very interesting extension of the range of this race which we have hitherto known only from Johore, Negri Sembilan and South Pahang and have regarded as confined to the southern extremity of the Malay Peninsula.

I have already noted the apparent fact that some southern races of animals are slower to change on the east side of the Peninsula than on the west<sup>1</sup> but this is the most pronounced instance I have met with.

#### 10. *Sciurus finlaysoni*.

*Sciurus finlaysoni*, Horsf., Zool. Res. Java, 1824; Kloss, *antea*, p. 16.

1 ♀ ad., Pak Jong, E. Siam, 31 May 1916. Obtained by Mr. W. J. F. Williamson's collector. [No. 2017].

A very typical example of the white Siamese squirrel.

(For measurements see table p. 87.)

#### 11. *Sciurus caniceps*.

*Sciurus caniceps*, Gray, Ann. and Mag. Nat. Hist., X, p. 236 (1842); Kloss, *antea* p. 17

*Sciurus chrysnotus*, Blyth, Journ. Asiat. Soc. Bengal, XVI, p. 873, pl. XXXVII, fig 1 (1847).

*Sciurus epomophorus fluminalis*, Robinson and Wroughton, Journ. Fed. Malay States Mus., IV, p. 233 (1911).

1 ♀ ad., Me Song forest, Muang Pre, N. Siam, 20 April 1916. Obtained by Messrs. Williamson and Smith's collectors. [No. 2095].

1 ♀ ad., Pak Jong, E. Siam, 2 June 1916. Obtained by Mr. W. J. F. Williamson's collector. [No. 2106].

Both the squirrels still retain in part the golden dorsal coat of the winter pelage. In the Me Song example it extends from the neck on to the base of the tail, but the golden hairs are much abraded

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<sup>1</sup> Journ. Fed. Malay States Mus., IV, p. 137; V, p. 113.

and on the anterior half of the body are largely replaced by patches of the new grizzled grey summer pelage.

In the Pak Jong animal, taken later in the year, the clear yellow area is confined to the rump and the base of the tail, but the grizzled pelage which clothes the back and sides between the rump and the occiput is suffused with yellow which is brightest behind the ears.

( For measurements see table p. 87 ).

## 12. *Tamiops barbei kongensis*.

*Sciurus maccelellandi kongensis*, Bonhote, P. Z. S., 1901, p. 54.

1 ♀ ad., Muang Pre, North Siam, 28 April 1916. Obtained by Messrs. Williamson and Smith's collectors [No. 2097.]

This race of pygmy striped squirrel differs from *Tamiops barbei barbei* (Blyth) of Tenasserim in being considerably paler in colour, and links that form with *Tamiops rodolphi* (M.-Edw.) of French Indo-China, etc., which, though agreeing in the colour of the undersurface, is elsewhere paler still.

*T. b. kongensis* was described from a Raheng specimen and with it were identified examples from Nan.

The present individual has the upper ground-colour pale grey, variably suffused with buff. There are four pale stripes on the back, the outer pair (broader than the others) running from the nose to the rump, they are pale yellow-orange on the body and cream on the neck and head; the inner pair, starting from the shoulders, are ochreous-buff. The median dark dorsal stripe is clear black, the outer pair are black grizzled with ochraceous-buff. The ears are edged with black posteriorly, and there are small black patches behind them; the outer surfaces are black, and at the tips are tufts of white hair having black bases. The tail is annulated black and ochraceous-buff, the hairs with whitish tips except at the extremity. The under-surface of the body is pale orange-yellow.

( For measurements see table p. 87 ).

## 13. *Menetes berdmorei mouhoti*.

*Sciurus mouhoti*, Gray, P. Z. S., 1861, p. 13.

*Menetes berdmorei mouhoti*, Kloss, P. Z. S., 1916, p. 48.

1 ♀ ad. Khao Seabab, S. E. Siam, 2,000 ft. March, 1916. [No. 2112].



Though an unusually pale example, this squirrel is yet evidently a member of the above race. The upper parts have a faded, washed-out appearance but can be almost matched by the dullest of a series obtained by me in S. E. Siam in January 1915. The brown on the middle back is very dull and pale, and the black stripes there are obsolete, while in the areas between the buff stripes and the sides, brown predominates over the black. The under surface of body and limbs is white suffused with buffy, the latter deepest on the hind limbs.

(For measurements see table p. 87).

#### 14. *Menetes berdmorei consularis*.

*Menetes berdmorei consularis*, Thomas, Journ. Bombay Nat. Hist. Soc., XXIII, p. 24 (1914).

1♂ subad., 1♂, Muang Pre, North Siam, 12th and 13th May 1916. Obtained by Messrs. Williamson and Smith's collectors. [No. 2102, 2103].

The type of this race was collected at Nan in October. The present examples, which are practically topotypes, exhibit a slight difference, which is probably seasonal, for the under surface of body and limbs is pure white instead of yellowish white. There are no dark stripes on the back; those on the sides, below the outer buff stripes, are pure black in one example, but slightly grizzled with rufous in the other. The upper buffy side stripe is most distinct, the lower blends with a short indistinct grey-black stripe which separates it from the white of the under surface. The back, which is the brightest portion of the pelage, is amber-brown speckled with black.

(For measurements see table p. 87).

#### 15. *Epimys surifer finis*.

*Epimys surifer finis*, Kloss, P. Z. S., 1916, p. 51; id, Journ. Nat. Hist. Soc. Siam, II, p. 26, 1916.

1 ♀ adult. Khao Sebab, 2000 feet, Chantabun, S. E. Siam, March 1916. [No. 2111].

#### 16. *Epimys rattus*, subsp.

*Epimys rattus* subsp., Kloss, antea p. 26.

1 ♀ subad., Pak Jong, E. Siam, 3 June 1916. Obtained by Mr. W. J. F. Williamson's collector [No. 2019].

17. *Acanthion brachyurus*.

*Hystrix brachyura*, Linn., Syst. Nat. I, Ed. 10, p. 57 (1758).

*Hystrix grotei*, Bonhote, Fasciculi Malayenses, Zool., Pt. 1, p. 39, pl. III (1903).

*Acanthion brachyurus*, Thomas, Ann. and Mag. Nat. Hist. (8), XVII, p. 137 (1916).

The short-tailed Porcupine, the largest local species of the family, is represented by an immature skull from Bangnara, Patani, collected by Mr. C. J. Aagaard [No. 2121]. Greatest length, 126 ; greatest breadth, 66 ; greatest length of nasals, 52 ; greatest breadth of nasals, 25 ; length of frontal suture, 32 mm.

18. *Tragulus kanchil affinis*.

*Tragulus affinis*, Gray, P. Z. S., 1861, p. 138 ; Kloss, op. cit., 1916, p. 63.

1 ♂ juv. Chantabun, S. E. Siam, March 1916 [No. 2110].  
Hind foot 114 mm.

1 ♂ juv. Muak Lek, (near Saraburi) E. Siam, May 1916  
[No. 2104]. Mr. W. J. F. Williamson's collector.

Hind foot, 113 mm.



## Measurements of Siamese Squirrels in Millimetres.

			Sex	Head and Body	Tail	Hind foot	SKULL.								No.	Remarks
							Greatest length	Condylor-basilar length	Palatilar length	Diastema	Upper Molar row	Median nasal length	Inter-orbital breadth	Zygomate breadth		
<i>Petaurista annamensis barroni</i>																
Pitsanulok	...	...	♀	...	550*	81*	...	...	35.0	16.0	...	18.0	47.0	47.0	2020	teeth moderately worn
<i>Ratufa phaeopepla</i>																
Muang Pre, N. Siam	...	♂	♂	398	509	82	73.7	61.0	27.0	15.0	14.7	23.0	29.2	43.0	2093	"
<i>Sciurus finlaysoni</i>																
Pak Jong, E. Siam	...	♀	♀	...	...	...	55.7	47.1	23.0	13.0	10.2	17.5	21.2	33.7	2107	"
<i>Sciurus caniceps</i>																
Meh Lem, Muang Pre, N. Siam	...	♀	♀	248	261	55	58.4	50.0	25.0	14.0	11.3	18.0	19.2	33.0	2095	teeth scarcely worn
Pak Jong, E. Siam	...	♀	♀	...	...	...	58.2	49.3	24.3	13.2	11.0	16.3	20.0	33.2	2106	"
<i>Tamias barbei kongensis</i>																
Muang Pre, N. Siam	...	♀	♀	129	117	30	32.0	26.6	12.4	6.9	5.6	8.2	12.2	19.6	2097	teeth moderately worn
<i>Menetes berdmorei mouhoti</i>																
Khao Seba, S. E. Siam, 2000 ft.	...	♀	♀	190	140	45	51.2	43.9	24.0	13.7	10.3	16.2	14.0	28.0	2112	teeth slightly worn
<i>Menetes berdmorei consularis</i>																
Muang Pre, N. Siam	...	♂	♂	195	137	41	48.1	41.6	22.3	12.1	10.1	13.2	12.0	25.6	2102	teeth scarcely worn
"	"	...	♂	194	139	43	49.5	43.3	23.1	13.0	9.3	15.0	12.0	27.0	2103	teeth exceedingly worn

\* Approximate measurements from dried skin.