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guished from the true *Casuarus uniappendiculatus* by its rounded greenish casque (lately described by Mr. Walter Rothschild as *C. u. aurantiacus*).

The *Phasianidæ* include examples of *Phasianus scemmerringi* and a fine pair of *Gallus varius*. A singular hybrid may also be mentioned; it is stated to be the produce of a female *Platalea minor* from Japan and a male *Ibis melanocephala*. This curious bird somewhat exceeds in size both its parents; the head is feathered as in the Spoonbill, whilst the bill, in general form, nearly resembles the bill of the Ibis, having only the point somewhat flattened. The colour of this bird is white.

Amongst the Pigeons a fine specimen of the Double-crested Pigeon (*Lopholæmus antarcticus*) was remarkable.

But I could go on much longer if I wished to give an account of all the interesting animals seen in this best of all the Continental Zoological Gardens, and I will therefore end here, and only add that if everything is carried out as it has been planned many more improvements will be shortly accomplished, and the whole of the old inconvenient buildings will disappear and be replaced by new ones well adapted for their purposes. How this has been accomplished in so comparatively short a time is Dr. Heck's secret.

April 3, 1900.

Prof. G. B. HOWES, LL.D., F.R.S., V.P., in the Chair.

The Secretary read the following report on the additions to the Society's Menagerie during the month of March 1900:—

The total number of registered additions to the Society's Menagerie during the month of March was 44, of which 29 were by presentation, 6 by purchase, and 9 were received on deposit. The total number of departures during the same period, by death and removals, was 128.

The following papers were read:—

1. On the Mammalia of Siam and the Malay Peninsula.

By STANLEY SMYTH FLOWER, F.Z.S., 5th Fusiliers.

[Received March 5, 1900.]

In order to write a complete account of the mammals of a country it seems necessary on the one hand to be able to examine the magnificent collection in the British Museum and to look up all the literature on the subject, which can only be done in a large library, and on the other hand to be able to see what specimens are represented in the local museums (where such exist) and

to have a certain knowledge, the more the better, of the animals alive in their own native wilds. The first of these things I have been unable to do, but having fortunately had opportunities of examining the mammals contained in the three museums which exist in the Malay Peninsula and the one in Siam, and having seen many alive, it may be useful to put these notes on record (as some account of the species occurring in these countries is much needed), hoping that they may help some more competent writer hereafter to compose a full catalogue.

The chief paper on the Mammals of the Malay Peninsula is Dr. Theodore Cantor's Catalogue, published in 1846, in the Journal of the Asiatic Society of Bengal (vol. xv. nos. 171 and 172), in which 93 species found wild in the Peninsula are enumerated. In the P. Z. S. 1886 Mr. Oldfield Thomas gave an account of the Mammals presented by Mr. A. O. Hume to the British Museum (Natural History); in this paper (pp. 72-79) 28 species are recorded from the Malay Peninsula, mostly from specimens collected by the late Mr. Davison.

Mr. H. J. Kelsall, R.A., in the Journal of the Straits Branch of the Royal Asiatic Society, no. 26, pp. 16 and 17, Jan. 1894, has recorded 13 species of mammals collected or observed during a journey from Kuala Indau to Batu Pahat, in Johore. And Mr. H. N. Ridley has published three papers on this subject:—(i.) "On the Dispersal of Seeds by Mammals," J. S. B. R. A. S. no. 25, 1894, pp. 11-32. (ii.) "List of Mammals recorded from Pahang," J. S. B. R. A. S. no. 25, 1894, pp. 57 to 60, in which 35 species are recorded. (iii.) "The Mammals of the Malay Peninsula," Nat. Science, vol. vi., nos. 35, 36, and 37, Jan., Feb., and March, 1895, in which about 46 species are mentioned by name.

In Dr. Jean Gerard Koenig's journal of his voyage to Siam (translation, J. S. B. R. A. S. no. 26, 1894) there are very few references to the mammals of the country; they are as follows:—

(P. 126) 8th Nov. 1778, at mouth of Bangkok River: "A squirrel was shot, whereupon the whole wood was filled with the screaming of the monkeys. The back, sides, and tail of this *Sciurus* were dark grey, and towards the surface of the hair yellow; the mouth and the round ears were black, the stomach rust-coloured brown; it was twice as big as the *Sciurus palmarum*."

(P. 145) 8th Dec. 1778, at Ayuthia: "In a bush I saw an Indian hare, with his half-naked neck, only covered with short, soft, black hair. The *Sciuri* are much rarer here than on the Coromandel Coast, and the Palm-Squirrel, which is generally so common, I have not seen at all here."

(P. 161) 4th Jan. 1779: "As I have mentioned the place where they found the gold (on the land-route from Mergui to Bangkok), I will add the tale of some Christians, who made this journey, concerning a class of creatures which are probably the *Homo lar*. This animal is said to walk erect, and to live principally on honey; and as the Siamese consider its skin and flesh to have some medical virtues, they kill it in the following manner:—Those

who go out for this purpose take two bamboo sticks, of about an arm's length, which they hold close to their arms. As soon as the animal sees the man it comes up to him and seizes one of his arms with signs of joy and as if it wanted to caress him. The man drops one of the bamboo sticks, which the animal keeps in his paws, and which it contemplates with joy and admiration; meanwhile the man seizes the other bamboo, and hits the animal over the head, until it is dead. The animal is said to be good-natured, but it only lives in the densest forests."

H.B.M. Vice-Consul, Mr. T. H. Lyle, has lately made an interesting collection of Siamese mammals: unfortunately I have had no chance of seeing these.

I have to acknowledge my sense of obligation to Mr. Oldfield Thomas, for his kindness in identifying specimens which I have sent home from time to time; also to the Curators of the local Museums, Dr. R. Hanitsch of Singapore, Mr. A. L. Butler of Kuala Lumpur, and Mr. L. Wray, junior, of Taiping; and also to Mr. H. N. Ridley, Director of the Singapore Gardens.

The classification and nomenclature in this paper are according to Mr. Blanford's volume on Mammals in the 'Fauna of British India'—an invaluable work which I carried everywhere with me and found a most interesting and charming companion. But in the division of *Sciurus* into several genera I have followed Mr. O. Thomas (A. M. N. H. ser. 7, vol. ii. no. 9, Sept. 1898, p. 249).

The following table shows the number of species of the ten Orders of Mammals represented in the Siamese and Malayan Fauna:—

Order.	No. of Species.	
Primates	15	(p. 312.)
Carnivora	37	(p. 322.)
Insectivora	7	(p. 336.)
Chiroptera	42	(p. 338.)
Rodentia	36	(p. 351.)
Proboscidea	1	(p. 365.)
Ungulata	15	(p. 366.)
Cetacea	5	(p. 376.)
Sirenia	1	(p. 377.)
Edentata	1	(p. 378.)

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Alphabetical List of Localities in the Malay Peninsula and Siam mentioned in this Paper.

Alma, a planter's estate in Province Wellesley.

Alor Star, the capital of Kedah, about 6° 8' N., called "Muang Seiburee" by the Siamese.

Anghin, a village near the head of the Gulf of Siam, anchorage for ships during N.W. monsoon.

Ayuthia, the former capital of Siam, about 60 miles (in a straight line) from the mouth of the Menam.

Jan. 1894, p. 17) says: "The elephant appears to be common throughout Johore. Tracks were seen in many places on the Indau, and also on the Sembrong, near P'ngkalan Repoh especially." Ridley (J. S. B. R. A. S. no. 25, Jan. 1894, p. 59) says: "The elephant, though common all through Pahang, is never caught and tamed. Abundant in the Tahan woods;" and (Nat. Science, vol. vi. 1895, p. 162) remarks that "it is not excessively abundant, but is plentiful in many parts of the Peninsula."

Distribution. India, Burma, Siam, Malay Peninsula, Sumatra, and Borneo.

Order UNGULATA.

Family RHINOCEROTIDÆ.

Malay name for Rhinoceros, "Badak" (the final "k" not pronounced in most parts of the Peninsula).

Siamese name for Rhinoceros, "Rat."

A good deal of uncertainty exists as to how many species of Rhinoceros inhabit this region, and which they are, and it is difficult to obtain information; they are poorly represented in the local Museums—partly because almost all parts of the rhinoceros are highly prized by various natives of Asia; and I have been told that it is more profitable for a Malay, if he happens to catch one of these animals in a pitfall, to kill it and sell the remains to the Chinese, than to sell the whole animal to a European.

The only specimens of Rhinoceros in the Perak Museum (May 1898) were three hornless skulls without localities labelled *R. lasiotis*, *R. sumatrensis*, and *R. sondaicus* respectively. In the Selangor Museum (July 1898) there was a single unlabelled skull. The Raffles Museum (1898) had only a skeleton, labelled *R. sumatrensis* without locality. In the Siamese Museum we had a splendid series of over sixty separate, detached horns of Rhinoceros, some of remarkable shapes, but unfortunately their localities are not known. In February 1897 we acquired a specimen of *R. sondaicus*, which we skinned and stuffed. As an instance of how rhinoceros products are valued, I may mention that to skin this animal we had any number of eager volunteers, mostly Siamese women, who in return for the work of removing the skin only wanted to have some of the blood. The rhinoceros was skinned in an old Palace Garden in Bangkok under my directions; it was an extraordinary sight as we hurried to get it done before dark—a crowd of women, mostly clad only in a "panung" (Siamese loin-cloth), smeared with blood from head to foot, working away at the carcass with knives and fingers, little children collecting the blood in cocoanut-shells and running off with it to their homes, and Siamese men hanging round trying to get any of the flesh they could; it was very difficult to save the skeleton, several of the bones being snatched up and nearly carried off by these loafers.

Cantor (p. 54) says that *Rhinoceros unicornis* and *R. sondaicus* "appear to be numerous on the Malayan Peninsula;" and adds

(p. 55) "a *two-horned* Rhinoceros is stated by the Malays to inhabit, but rarely to leave, the densest jungle," which he expects to be *R. sumatrensis*. Unfortunately he does not mention seeing any local specimens, or give any details of why he includes *R. unicornis* in his list.

Personally I have never seen even the tracks of a wild rhinoceros. At Alor Star, Kedah, the Malays told me no rhinoceros was known in that district, which is mostly flat; they looked on it as an animal only inhabiting the mountains. An Englishman once told me he had seen tracks of rhinoceros on Gunong Jerai (Kedah Peak) at several thousand feet above the sea. In Perak, English friends have told me, rhinoceroses were not uncommon till three or four years ago in the Larut Hills *above* four thousand feet. In the south of Perak, however, a friend told me he had once seen a rhinoceros in a swamp, it was reddish in colour. The 'Bangkok Times' for 11th Nov., 1897, mentions a rhinoceros being shot by Mr. C. Ephraums: unfortunately this account, as usual, does not say to what species the animal belonged and gives but few details—the rhinoceros was "seen at a sulphur spring within six miles of Ipoh," Perak: it "was an old male, stood 6 feet high at the shoulder and about 8 feet in length; his 'Sumbu,' or horn, measured 13 inches and weighed 3 lbs."

Mr. Ridley told me that in 1896 he saw a rhinoceros in the Dindings; and (J. S. B. R. A. S. no. 25, Jan. 1894, p. 59) he mentions having seen tracks of some species of rhinoceros in the Tahan River woods, Pahang, where he also heard the animal at night.

Mr. T. ff. Carlisle, H.B.M. Consular Service, writing to me from Baw Yakar, Pailin, Battambang Province of Siam, 4th Feb., 1899, says "I have met an old Shan hunter here who has shot both the one-horned and the two-horned rhinoceros."

139. RHINOCEROS SONDAICUS Cuv. The Smaller One-horned Rhinoceros.

Rhinoceros sondaicus, Blanf. Faun. Ind., Mamm. p. 474, fig. 155 (p. 475).

A young female, just dead, was brought to the Siamese Museum on the 10th Feb., 1897, which I was told had been brought from the Laos Country, and had died on reaching Bangkok. There was no horn. Colour uniform dusky grey. Only one pair of incisors showed through the gums in the lower jaw, they were tusk-like; none showed in the upper jaw, the gum forming a hard pad in the place where the incisors of a horse would be.

Ridley (Nat. Science, vi. 1895, p. 161) says *R. sondaicus* appears to be the common rhinoceros of the Malay Peninsula. "It frequents the hill-jungles, ascending to 4000 feet altitude, and seems usually to move about at night, though one may come upon it by day. It has a habit of constantly using the same track, and dropping its dung in the same place daily, a habit common also to the tapir. As the jungle gets cleared, it wanders often into the

low, open country, apparently losing its way. It is a quiet, inoffensive beast."

Distribution. Sundarbans, parts of Eastern Bengal, Sikhim Terai, Assam, Burma, Siam, Malay Peninsula, Sumatra, Java, Borneo.

140. RHINOCEROS SUMATRENSIS Cuv. The Asiatic Two-horned Rhinoceros.

Rhinoceros sumatrensis, Blauf. Faun. Ind., Mamm. p. 476.

The "Bada Api" or "Fire Rhinoceros" of the Malays is probably a red variety of this species.

Sclater (Tr. Z. S. ix. p. 651, 1875) mentions a rhinoceros of this species "captured in the Sunghi-njong (presumably Sungei-Ujong) district of Malacca," and says other specimens "from the same district or the neighbouring territory of Johore were imported into Europe."

W. L. Sclater (Cat. Mamm. Ind. Mus. ii. 1891, p. 205) records specimens from Malacca.

Mr. A. L. Butler in a letter to me, from Kuala Lumpor, dated 25th Oct., 1898, says:—"I went to see a big rhinoceros in a pitfall the other day at Rantan Panjang. A fine big female *R. sumatrensis*, a dark reddish-brown beast, 4 feet 3 inches at shoulder (measured with a standard) and about 8 feet to 9 feet in length (guessed). The great thing that struck me was her extraordinary tameness. She had only been caught three days, but fed readily from one's hand, and seemed to enjoy being scratched."

Distribution. Assam, Tenasserim, Siam, Malay Peninsula, Sumatra, Borneo.

Family TAPIRIDÆ.

141. TAPIRUS INDICUS Cuv. The Malay Tapir.

Tapirus malayanus, Cantor, p. 55.

Tapirus indicus, Blauf. Faun. Ind., Mamm. p. 478.

"Badak tampong" (*i. e.* Piebald Rhinoceros) of the Malays in Kedah and Perak.

Bádak," "Kúda Ayer," and "Tennú" of the Malays of the Peninsula, *apud* Cantor.

"Tenok" of the Malays, *apud* Ridley.

Cantor mentions specimens from Province Wellesley and Kedah. W. L. Sclater (Cat. Mamm. Ind. Mus. ii. 1891, p. 198) records two specimens from Malacca, obtained in 1820 and 1848.

Ridley (J. S. B. R. A. S. no. 25, p. 59) says tracks of the Tapir were seen near Temerloh, Pahang, and (Nat. Science, vi. 1895 pp. 161, 162) mentions the supposed protective coloration of the young.

There are specimens from Larut in the Museum at Taiping, and from Malacca in the Raffles Museum.

H.H. the Rajah Mudah of Kedah told me (June 1898) that the Tapir is not uncommon in the swamps of Kedah, within a day's