

NOTES ON SOME PRIMATES, CARNIVORA, AND THE BABIRUSA
FROM THE INDO-MALAYAN AND INDO-AUSTRALIAN REGIONS

(with descriptions of 10 new species and subspecies) ¹⁾

by

H. J. V. SODY
(Amsterdam)

CONTENTS

- I. Notes on Indo-Malayan gibbons (*Hylobatidae*) (1 new subspecies).
- II. The geographic races of *Macaca irus* (2 new subspecies).
- III. A new monkey from the Celebes group of islands (genus *Cynopithecus*) (1 new species).
- IV. Indo-Malayan and Indo-Australian half-apes (*Tarsidae*, *Lorisiidae*) (2 new subspecies).
- V. Notes on Indo-Malayan Carnivora (*Ursidae*, *Mustelidae*, *Canidae*, *Viverridae*, *Felidae*) (3 new subspecies).
- VI. A new race of the Babirusa (*Babirusa babyrussa*) from Togean island (1 new subspecies).

I. NOTES ON INDO-MALAYAN GIBBONS (*HYLOBATIDAE*)

In total the Buitenzorg Museum possesses over 100 specimens of gibbon, distributed over 4 species: *Hylobates lar*, *H. agilis*, *H. klossi*, and *Symphalangus syndactylus*. We have not studied this material exhaustively, but wish to offer a few notes.

Hylobates lar (L.)

Hylobates lar moloch (AUDEBERT).

Material: W. J a v a : 2♂, 2♀, Tjianten, Mt Salak, ca 1100 m, leg. SCHATTENKERK, 14.V-4.VIII.1932; 1♂, Purwakarta, leg. J. J. R. ENGEL, 21.IX.1939; 19 specimens of unknown origin.

¹⁾ The present article is the last of a series of two reports based on the material in the Zoologisch Museum at Buitenzorg and was prepared by Mr SODY as a result of his studies at the Museum during the Japanese occupation.

Contrary to the procedure followed with respect to Mr SODY's previous paper (this Volume, pt 1: 57-120, 1949), and in compliance with the author's strict demands, no changes whatsoever have been made in the present paper, it being a verbatim and literatim transcription of the author's manuscript.

Since only a condensed and in most instances incomplete enumeration has been given of the material studied by the author, it was deemed advisable for completeness' sake to add in every instance a full reference list of all specimens, with their localities and other items, which at that time were available for study in the Museum collection. These lists are printed in diamond type and have been inserted by members of the Museum's staff under the heading of each species discussed by the author.

-- Ed.

This is not the first time that the Javanese gibbon is inserted into the polytypic species *lar*. The same has been done by POCOCK (P.Z.S., 1927, p. 727). He calls it *H. lar leuciscus*. But he also inserts into *lar* the Sumatran *H. agilis*! KLOSS (P.Z.S., 1929, p. 119) rejects POCOCK's joining together of *lar*, *agilis* and *moloch*, and calls the Javanese *H. cinereus cinereus*. He wishes to unite the Javanese form with the Bornean ones only. FRECHKOP (Med. Kon. Natuurh. Mus. België, 10, 14, 1934, p. 21) even does not wish to do the latter. CHASEN (Bull. Raffl. Mus., 15, 1940, p. 43) felt a similar want as we, but says: "Which of the mainland species (*agilis* and *lar*) *moloch* represents is a moot point." In our opinion this is certainly *lar* and not *agilis*. The grounds for our uniting *lar* and *moloch* lie in the smallness of the differences in the skulls and other characters between them (in both no preputal tuft in the males), and in their geographic distribution: *lar* occurring only on the continent and in Sumatra, *moloch* only in Borneo and Java. Certainly CHASEN was right when suggesting (vide the above quoted sentence) that the geographic argument applies as well to *agilis*, which species also occurs only on the continent and in Sumatra. In *agilis*, however, the males possess the preputal tuft, and, moreover, the skull of *agilis* shows an "index", which deviates rather far from that of *lar* and *moloch*. The latter named forms between them do not give any important difference in this respect. Hereunder we give a list of all skull indices we were able to calculate. (We understand by it: the zygomatic breadth expressed in percentage of the greatest length). Very unfortunately we have not measured the series of Sumatra *lar* and the specimens of Borneo *moloch* in the Museum. As well as possible we filled up this hiatus by using for further calculating of skull-indices some measurements taken from literature. Of *lar* we used the Siam measurements given by GYLDENSTOLPE, Ark. f. Zool., 8, 1914, p. 8, and Kungl. Svenska Vet. Ak. Handl., 57, 1916, p. 4; KLOSS, P.Z.S., 1916, p. 67; CHASEN, Journ. Siam Soc., N. H. Suppl., 10, 1935, p. 33. Of Borneo *moloch* those from KLOSS, P.Z.S., 1929, pp. 115, 119; and the measurements from Bettotan and Rayoh, given by CHASEN & KLOSS, Bull. Raffl. Mus., 6, 1931, p. 50.

Skull-indices:

<i>Hylobates (lar) pileatus</i> , Siam	62.7 — 67.66 — 71.1% (18)
" " <i>funereus + abbotti</i> , Borneo	64.2 — 67.77 — 73.7% (7)
" " <i>funereus</i> , Bettotan & Rayoh	61.4 — 67.95 — 74.5% (8)
" " <i>moloch</i> , W. Java	64.1 — 68.10 — 72.5% (9)
" " <i>pongoalsoni</i> , C. Java	68.5 — 70.50 — 72.5% (2)
" <i>agilis</i> , Sumatra	59.2 — 63.55 — 67.8% (12)

Though admitting that these figures are not altogether sufficient to solve all difficulties, we think, they show that the *lar* and *moloch*

forms do not differ considerably, whilst *agilis* is clearly more dolichocephal. Readily we bring the point under the notice of other investigators. ¹⁾

The Buitenzorg Museum possesses in the study collection ca. 24 Javan specimens. For the greater part, however, they originate from Zoological Gardens and have no quite reliable and precise locality. Satisfying *all* demands are 9 specimens: 5 from W. Java, and 4 from C. Java. Increasing this number with one C. Java specimen in my own collection, we may say that these 10 specimens are absolutely sufficient to establish: that C. Java possesses a different race than W. Java. The difference is so clear, conspicuous and constant, that no doubt can exist. It is not difficult to locate 2 more skins in the collection to C. Java. All our other Javanese skins must belong to the W. Java race. By lack of sufficient Borneo specimens of the grey type, we are not able to give certain differences between W. Java and Borneo animals of that type. One or two specimens, in which even the origin from "Java" was not sure, we had to leave undetermined as to subspecies. The well labeled specimens belonging to the West Javanese form are: 4, Tjianten, Mount Salak, 1100 m; 1 Purwakarta; all W. Java.

In AUDEBERT's original description (figure) the locality is only given as "Java". We propose to restrict it to W. Java and consider our Salak animals as typical. The same prevails for SCHREBER's *leucisca*, LATREILLE's *cinereus* and MATSCHIE's *javanicus*.

All these specimens have a very *dark* upper head (large, about triangular, blot or cap). We are fortunate enough to possess amongst the Salak series one very young baby (probably not older than 2 months) and also this specimen *shows the same dark upper head as the adult ones!*

Hylobates lar pongolsoni subsp. n.

Material: C. J a v a : 1 ♂, 2 ♀, Mt Slamet, leg. J. VAN BALGOOY, 10.III.1932; 1 ♂, Karanggondang, Pekalongan, 450 m, leg. Regent of Batang, from captivity, died 9.IX.1930; 1 ♂, 1 ♀, Java, leg. HALEWIJN and purchased, 17.V.1934-23.VII.1936.

Type: ♀ ad., Kali Kidang, Mount Slamet, C. Java, 800 m, coll. H. J. V. SODY, 18.X.1929, No.C. 132.

Moreover examined: 3, Mount Slamet in Museum collection and 1, Karanggondang, Pekalongan 450 m, all C. Java. Furthermore 2 "Java" specimens, with practical certainty the same race.

¹⁾ It may be usefull to point out expressly that the breadth:length skull-index as used here by me, is *not* the same as the breadth:length skull-index so generally used in anthropology. I used the length of the *whole* skull, inclusive the facial portion. As J. H. F. KOHLBRUGGE's numbers (*Zeitschr. Morph. u. Anthrop.*, 4, 1901, p. 318-344) for *Hylobates agilis*, *H. leuciscus*, *H. syndactylus*, *Cercobebus cynomolgus*, *Macacus niger*, *Nycticebus* and *Tarsius*, are based on the anthropological system, we did not use them here. Yet we wish to state that KOHLBRUGGE contends that he "nach (seinen) vergleichenden Untersuchungen in *Hylobatidae* überzeugt (ist), dass man alle *Hylobatesschädel* (ausser denen des *H. syndactylus*) ruhig zusammenaddieren kann, ohne einen Fehler zu begehen. Hier kann man also *H. agilis* zu *H. leuciscus* fügen". In this case, however, the material, on which this conclusion was based, was perhaps insufficient. For the rest he finds as averages for *his* skull-indices in *his* material: in 5 *H. agilis* 81.1, in 8 *H. leuciscus* 82.2. *If* this is a difference, it is one pointing in the same direction as ours!

The Central Java form is slightly lighter on the back (and in the Slamats specimens the hands and feet are still a trifle lighter). The principal point, however, by which the race can be recognized at once, lies in the triangular dark cap on the head. In the Western specimens this is very dark, sometimes even blackish or black, in the C. Java series it is *much* lighter, so much that every living specimen (in a Zoological Garden) can at once be brought to the dark- or to the light-capped variety. Already for a long time I possessed the light-capped Slamats specimen in my private collection and could I recognize similar animals among the (about 100) living specimens I saw in captivity. But I never dared to conclude to a subspecific status, 1) because I had no certainty about any geographic separation of both "forms", whilst 2) I had to keep open the possibility that age might play a part here. Possibly the dark cap might appear only in a higher age. At present both questions may be considered as solved. Of each of both races we possess a baby. The Salak baby (ca. 2 months) has a dark cap, nearly as dark as the adult ones and much darker than any C. Javan. The *pongoalsoni* baby from Mount Slamats (ca. 4 months) has quite the same light upper head as the adult Slamats specimens.

For these reasons I now consider the new race as absolutely certain, and I also wish to conclude that, among specimens from one locality, individual variation is not at all so large as a glance on a troop of these apes in a Zoological Garden might suggest. Most certainly such a troop is a hotch-potch from many localities and probably represents more than one subspecies from Java. I consider it possible that (at least) a third race (with dark breast) may occur in Java, though I must admit that, exactly in this respect, both our Java races show some variation. In both one adult specimen occurs in which the anterior part of the breast shows a clear black blot. In the Slamats specimen Nr 3322, this continues backward as a narrow straight line up to about the anal region. In the W. Javan series without exact locality, about 4 specimens occur with such a dark blot on the breast, together with dark upper head. In one case the blot on the breast continues backward into two dark strips, between which a very light central-breast and -belly zone. But, of course, our material was quite insufficient to study this phenomenon with any chance of result, and the possibility that the dark breast might be a question of age may not be excluded. My impression of rather large uniformity *in the dorsal side* in one locality, seems worth of notice. (I got the same impression in our series of 6 from S. W. Borneo and in a series of 6 from N. E. Borneo). Perhaps in this respect we need not be afraid of large *individual* variation, and it may be that the colour of the back is an important character for distinguishing *racial* variation. (The same may prevail for *Macaca irus*).

Some measurements of the type specimen are: Head and body 500; hind foot 140; ear 35 mm.

As regards our *Borneo* material (16 specimens from 5 localities) we are not able to make comments of any importance. A large difficulty is formed here by the fact that already 4 names have been given (including *funereus* from "Sulu"), whilst of none of these forms we possess topotypical specimens. Taken Borneo as a whole, the variation is certainly very large. Above we explained why we suppose that this may be largely subspecific variation.

Of our 17 Borneo animals one lacks further locality. Therefore, when studying the series, it will be necessary to eliminate this specimen wholly, though it is a very remarkable and unique one in colour: (wholly very light brownish white, lighter than any other gibbon in our whole collection, including Sumatran *lar* and *agilis*). Also the nails are very light. The dried skin of face, hands, and feet, however, is dark, though not as dark as (somewhat more brownish than) in "normal" specimens. Possibly it may be an "albino", though in Sumatra *lar* and *agilis* specimens occur which are but slightly darker and which certainly cannot be regarded as regular (individual) albinos, but must provisionally be indicated as belonging to light "forma's."

Hylobates agilis CUV.

Hylobates agilis agilis CUV.

Material: E. Sumatra, Palembang: 2♂, Muara Enim, leg. v. BARGEN, 21.XII.1922, P. K. PRUSWERK, 9.IX.1937; 2♀, Kluang, leg. SOEKARNO, 6-7.XI.1933; 2♂, 1♀, Babat, leg. SOEKARNO, 3-5.XI.1933; 1♀, Sekaju, leg. SOEKARNO, 21.IV.1933; 1♂, 1♀, Kajutanam, leg. P. OUWENS, 1911; E. Sumatra: unsexed, Tebingtinggi, leg. J. A. COENRAAD, XI.1932; S. Sumatra: 1♂, 1♀, Muara Bliti plain, leg. J. J. MENDEN, 25-27.XI.1933; 1♂, Lampongs, leg. KEMERLING, undated; W. Sumatra; Benkulen: 2♂, 3♀, Sanggul, ± 500 m, leg. J. J. MENDEN, 4-26.VIII.1936; W. Sumatra, Padang: 1♂, 1♀, purchased, 19.II, 4.IV.1937; W. Sumatra: 1♀, no exact locality, J. A. COENRAAD, 1939; 1♀, Sumatra, Zool. Garden, Bandung, 21.VIII. 1941.

Our collection contains 25 Sumatra specimens, 3 of which without exact locality within Sumatra.

If we only relied upon this our own material, we would be inclined to believe in a geographically separated occurrence of the light and the dark individuals. But literature and field-observations provide us with so many warnings that regularly both colour types occur together and mixed, that we prefer to maintain unity. The skull measurements do not give reliable differences, neither between light and dark, nor between North and South. The very large measurements for head and body of our Palembang series we may ascribe to the method of measuring of the collector! Of the 15 pale specimens 6 or 7 have already lighter eyebrows and beard. Of the 10 dark ones 5 or 6 have eyebrows and beard clearly whitish. All others show only a trace of white on the forehead.

Some tooth-measurements are:

c-m ³ :	31.5 — 32.84 — 34.5 mm	(13 ♂)
	28.5 — 30.28 — 33.4 mm	(10 ♀)
p ¹ -m ³ :	21.3 — 24.30 — 25.9 mm	(5 ♂)
	22.0 — 22.87 — 24.1 mm	(7 ♀)

Maximal greatest length of skull: 108.6 mm (♂), 105.1 mm (♀).

Symphalangus syndactylus (RAFFL.)

Symphalangus syndactylus syndactylus (RAFFL.)

Material: N. Sumatra, Atjeh: 1 ♂, Blang Kedjeren, 800 m, leg. A. HOOGERWERF, 27.I.1937; 2 ♂, 1 ♀, Pendeng, leg. A. HOOGERWERF, 3-25.III.1937 1 ♂, Alur Purba, leg. MADZOED, 2.X.1930; W. Sumatra, Padang: 2 ♂, 3 ♀, Zool. Gardens of Batavia and Bandung, 1936-1937; S. W. Sumatra: 1 ♂, Lubuk Linggau, leg. J. J. MENDEN, 23.XI.1933; 1 ♀, Muara Bliti, leg. J. J. MENDEN, 19.XI.1933; 1 ♀, 1 unsexed, Mt Dempo, leg. J. J. MENDEN, 15.VII.1936; 1 ♂, Sanggul, Benkulen, 500 m, leg. J. J. MENDEN, 22.VIII.1936; S. Sumatra, Lampongs: 1 ♀, Sukadono, leg. J. J. MENDEN, 29.VII.1934; 1 ♂, Kalianda, leg. J. J. MENDEN, 16.VIII.1934; 1 ♂, 1 ♀, no exact locality, Zool. Garden Bandung, 16.X.1936; 1 ♀, Mt Sugih Ketjil, Telok Betong, leg. JANS, 19.X.1929; Sumatra, no exact locality: 4 ♀, Zool. Garden, Batavia 1936, 1938, 1940.

The Museum possesses 25 skulls (4 of which without more exact locality) from many parts of Sumatra.

We cannot find differences between local groups. Some measurements for the whole of Sumatra are the following:

Greatest length of skull:	116.0 — 137.8 mm	(15 ad. ♂)
	115.9 — 128.9 mm	(14 ad. ♀).

A larger measurement is given by ELLIOT, *Rev. Prim.*, 3, 1912, p. 177, viz. 139 mm, for a ♂, probably from Aru Bay. A ♂ in our collection with a measurement of 109.8 mm, and a ♀ with 105.3 mm, have the last molars not yet erupted.

Skull index:	63.5 — 67.96 — 70.4%	(16 ♂)
	62.9 — 66.59 — 69.8%	(11 ♀)
c-m ³ :	39.8 — 42.90 — 45.4 mm	(16 ♂)
	37.7 — 41.39 — 44.0 mm	(14 ♀)
p ¹ -m ³ :	30.3 — 32.97 — 35.3 mm	(11 ♀)
	29.3 — 31.95 — 34.2 mm	(6 ♂)

II. THE GEOGRAPHICAL RACES OF *MACACA IRUS*

TABLE I. List of literature.

(For Table see end of paper)

1. MILLER, *Proc. U. S. Nat. Mus.*, 24, 1902, p. 789. ELLIOT, *Rev. Prim.*, 2, 1912, p. 229.
2. POCOCK, *Fauna Br. Ind. Mamm.*, 1, 1939, p. 80. (This author gives external measurements of 5 specimens — see also No. 10 Lower Burma — in all of which the tail is shorter than head and body!)
3. ELLIOT, *Proc. U. S. Nat. Mus.*, 38, 1910, p. 346.

4. ELLIOT, A.M.N.H., 8-IV, 1909, p. 252. The total measurement of 1030 mm was accepted, but the tail measurement of 365 mm was supposed to be a printing error and left out.
5. KLOSS, Journ. N. H. Soc. Siam, 4, 1920, p. 75.
6. GYLDENSTOLPE, Ark. f. Zool., 8, 1914, p. 4.
7. KLOSS, Journ. N. H. Soc. Siam, 2, 1917, p. 289.
8. ELLIOT, Proc. U. S. Nat. Mus., 38, 1910, p. 350; MILLER, Proc. Wash. Ac. Sci., 2, 1900, p. 241.
9. ELLIOT, Rev. Prim., 2, 1912, p. 231 (type).
10. POCOCK, Fauna Br. Ind., Mamm. 1, 1939, p. 80.
11. GYLDENSTOLPE, Ark. f. Zool. 10, 1917, p. 25 (In the second measurement an error with the toothmeasurements must be assumed. They have not been taken over); GYLDENSTOLPE, Kungl. Svenska Vet. Ak. Handl., 60, 1919, p. 14.
12. KLOSS, P. Z. S., 1916, p. 67.
13. KLOSS, Journ. N. H. Soc. Siam, 3, 1919, p. 349.
14. ROBINSON & KLOSS, Journ. F. M. S. Mus., 5, 1914, p. 131.
15. ROBINSON & KLOSS, Journ. F. M. S. Mus., 5, 1914, p. 131.
16. KLOSS, A. M. N. H. 8-VII, 1911, p. 116; Ditto, Journ. F. M. S. Mus., 4, 1911, p. 183.
17. ELLIOT, A. M. N. H., 8-IV, 1909, p. 255.
18. MILLER, Proc. Wash. Ac. Sci., 2, 1900, p. 241; CHASEN & KLOSS, Journ. Mal. Br. R. A. S., 6, 1928, pl. 3, p. 30.
19. ELLIOT, Proc. U. S. Nat. Mus., 38, 1910, p. 345.
20. ELLIOT, Proc. U. S. Nat. Mus., 38, 1910, p. 344.
21. ELLIOT, Proc. U. S. Nat. Mus., 38, 1910, p. 345.
22. MILLER, Proc. Wash. Ac. Sci., 2, 1900, p. 241; ELLIOT, Rev. Prim., 2, 1912, p. 252 (the tooth measurement of 39.2 mm is supposed to be a printing error for 29.2 mm).
23. ELLIOT, A. M. N. H., 8-IV, 1909, p. 242.
24. CHASEN, Bull. Raffl. Mus., 15, 1940, p. 67.
25. LYON, Proc. U. S. Nat. Mus., 36, 1909, p. 488.
26. ELLIOT, Proc. U. S. Nat. Mus., 38, 1910, p. 350; MILLER, Proc. U. S. Nat. Museum, 31, 1906, p. 276.
27. CHASEN, Journ. Mal. Br. R. A. S., 3, pl. I, 1925, p. 93.
28. ELLIOT, A. M. N. H., 8-IV, 1909, p. 242; MILLER, Proc. U. S. Nat. Mus. 31, 1906, p. 276.
29. ROBINSON, Journ. F. M. S. Mus., 7, 1916, p. 62.
30. CHASEN, Bull. Raffl. Mus., 15, 1940, p. 67.
31. ELLIOT, Proc. U.S. Nat. Mus., 38, 1910, p. 349 (total length and relative tail length certainly incorrect, not taken over); MILLER, Proc. U. S. Nat. Mus., 31, 1906, p. 276.
32. ELLIOT, A. M. N. H., 8-IV, 1909, p. 245; MILLER, Proc. U. S. Nat. Mus., 31, 1906, p. 276.
33. ELLIOT, A. M. N. H., 8-IV, 1909, p. 253. (For the total length and for the relative tail-length errors must be supposed. Likewise the number of 36.1 mm for the upper molar series in ELLIOT, Rev. Prim., 2, p. 227, is certainly a mistake).
34. LYON, Proc. U. S. Nat. Mus., 34, 1908, p. 670.
35. LYON, Proc. U. S. Nat. Mus., 34, 1908, p. 670.
36. Including measurements of MILLER, Proc. U. S. Nat. Mus., 26, 1903, p. 477; ELLIOT, Rev. Prim., 2, 1912, p. 234 (The total length of 1300 mm given by ELLIOT (head and body 700 mm) was not taken over, as a printing error seems very probable); ROBINSON & KLOSS, Journ. F. M. S. Mus., 8, 1918, p. 7; HAGEN Tijdschr. Kon. Ned. Aardr. Gen., 2e S., 7, 1890, p. 80.
37. MILLER, Proc. U. S. Nat. Mus., 26, 1903, p. 476; ELLIOT, Rev. Prim. 2. 1912, p. 229.
38. LYON, Proc. U. S. Nat. Mus., 52, 1916, p. 453; MILLER, Proc. U. S. Nat. Mus., 26, 1903, p. 477.

40. ELLIOT, Proc. U. S. Nat. Mus., 38, 1910, p. 344; MILLER, Proc. U. S. Nat. Mus., 26, 1903, p. 477.
41. LYON, Proc. U. S. Nat. Mus., 52, 1916, p. 452.
42. MILLER, Smiths. Misc. Coll., 45, 1903, p. 63; LYON, Proc. U.S. Nat. Mus., 31, 1906, p. 606; ELLIOT, Rev. Prim., 2 1912, p. 243.
43. ELLIOT, Proc. U. S. Nat. Mus., 38, 1910, p. 343; LYON, Proc. U. S. Nat. Mus., 31, 1906, p. 606; SODY, Temminckia, 2, 1937, p. 247.
44. LYON, Proc. U. S. Nat. Mus., 31, 1906, p. 606.
46. ELLIOT, Proc. U. S. Nat. Mus., 38, 1910, p. 346; MILLER, Proc. U. S. Nat. Mus., 31, 1906, p. 66.
48. Including measurements of ELLIOT, Proc. U. S. Nat. Mus., 38, 1910, p. 347; GYLDENSTOLPE, Kungl. Sv. Vet. Ak. Handl., 60, 1919, pp. 13, 14; CHASEN & KLOSS, Bull. Raffl. Mus., 6, 1931, p. 50. *Not* KOHLBRUGGE, Nat. Tijdschr. Ned. Ind., 1896, p. 280 (gives total length of 1200 mm).
49. CHASEN & KLOSS, Bull. Raffl. Mus., 6, 1931, p. 50.
50. ELLIOT, Proc. U. S. Nat. Mus. 38, 1910, p. 348; LYON, Proc. U. S. Nat. Mus., 40, 1911, p. 138.
51. ELLIOT, Proc. U. S. Nat. Mus., 38, 1910, p. 347; LYON, Proc. U. S. Nat. Mus., 40, 1911, p. 138.
53. Including THOMAS, A. M. N. H., 8-III, 1909, p. 380 (type *mordax*); A. M. N. H., 8-III, 1909, p. 381 (type *resima*, without tail length). *Not*: KOHLBRUGGE, Nat. Tijdschr. Ned. Ind., 1896, p. 280 (says that in his Java specimens the tail is shorter than head and body, contrary to Borneo). (I left out the measurements of one ♂, Djasinga, with the very abnormal toothmeasurement: c-m² 38.7, p¹-m² 28.1 mm).
54. Including SODY, Nat. Tijdschr. Ned. Ind., 93, 1933, p. 93; MERTENS, Zool. Jahrb., 68, 1936, p. 319. (MERTENS' measurement of 35.6 for the upper molar row is certainly an error and was not taken over).
55. Including MERTENS, Zool. Jahrb. 68, 1936, p. 319.
56. Including MERTENS, Zool. Jahrb. 68, 1936, p. 319.
57. Including MERTENS, Zool. Jahrb. 68, 1936, p. 319.
58. Including MERTENS, Zool. Jahrb. 68, 1936, p. 319.
59. Including SODY, Nat. Tijdschr. Ned. Ind. 92, 1932, p. 338.
60. Including SCHWARZ, A. M. N. H., 8-XI, 1913; Zool. Timor, 2, 1914, p. 117.

Macaca irus F. CUVIER.

Lately (Bull. Raffl. Mus., 15, 1940, p. 66) this species has been reviewed by CHASEN, who, for the whole Malaysian Subregion, accepts 11 subspecies. For Malay Peninsula, Sumatra, Borneo, and most of the smaller islands lying between and round them, he accepts but one race (*irus*)! In this special case we are quite unable to follow him, and we cannot see a reason why — so particularly in this species — such lumping of all described forms should be wishable. The author himself gives an explanation. He says that this monkey is “extremely variable in colour, size, proportions and cranial characters, and there is also much variation with age”. Of course he has here in view *individual* variation, as he adds: “This variation masks the local, or racial variation, which is usually not very striking.” Premising that our personal knowledge is restricted to only a few races, we must say that our experience is quite

different: in most of our local series we did not at all observe an "extremely" large variation (in size or in colour), and we found a quite normal inclination towards forming local races! It is true that sometimes very remarkable "aberrants" (sometimes much "bleached") occur in local or regional series, (especially in costal regions?, cf. in Bawean and in Java: Bantam and Indramaju), which sometimes give us the impression to be "intruders" from other regions! WALLACE already said (Mal. Arch., 1, 1869, p. 326): "This species is very frequent on the banks of rivers and may have been conveyed from island to island on trees *carried down by flood*", whilst, also transfer by man is not excluded in this species. We must also keep in eye the possibility of "bleaching" in such exposed places as sea-beaches (cf. RIDLEY, Natural Science, 6, 1895, p. 24). However, on the other hand it cannot be denied that with many of the described races the describer (especially ELLIOT!) is not succeeded in convincing us of the exactness of his insights, especially because we seldom or never get data, founded on the study of larger local series. But, basing on my own personal experience (study of over 100 prepared specimens), I must say that, in my opinion, most of the races described by ELLIOT, à priori have the probability on their side! Therefore I personally would rather not *reject* all these described races without having studied sufficient material myself! But we do wish to give utterance to the complaint that generally (in fact: always) so few measurements are given in literature, even when larger series were available! The Buitenzorg Museum possesses 75 study specimens, I myself 31. Epitomizing the literature rather thoroughly I come together with our own to a total of only ca. 120 tooth measurements (♂ and ♀ together)! Yet I am sure that in the Musea of London, Singapore, America, and others, several hundreds of these monkeys are preserved. If only the measurements were published, our knowledge could make a good step forwards at once!

A *rather* thorough knowledge of the degree of variation occurring, I only could obtain of the Java and Bali forms. In Java in 12 ♂ c-m² shows a variation of 15.6%, p-m² in 14 ♂ a variation of 16.9%. In the 7 ♂ from Bali c-m² shows a variation of 17.2% (owing to one exceptionally large skull). In all other cases the variation known is smaller. As said above we certainly cannot consider this variation "extremely" large, and we feel quite allowed to describe hereafter 2 new subspecies on the base of "normal" (i.e. rather small) series.

(1) *Macaca irus ? impudens* (ELLIOT).

Material: Rhio Arch.: 1♂, 1♀ juv., Durian I. (Durai), leg. P. F. FRANCK, 18.VI.1923.

2, Durai (Durian), Rhio Archipelago.

This identification is dubious: firstly it is impossible for me to judge the grounds for existence of *impudens* as a Sugi race, secondly it cannot

be proved if the Durai race is the same as that of Sugi. It seems that most of the measurements agree, but, according to the labels, our Durai specimens have much longer tails.

(2) *Macaca irus irus* F. CUVIER.

Material: W. Sumatra: 2♂, 1♀, Sanggul, Benkulen, ± 500 m, leg. J. J. MENDEN, 15-19.VIII.1936; N. Sumatra, Atjeh: 1♂, Lesten, 700 m, leg. A. HOOGERWERF, 19.VIII.1937; 1♂, Mt Setan, Meluwak, 325-520 m, leg. A. HOOGERWERF, 21.I.1937.

The Atjeh specimens are so much browner on the back than the Benkulen series that I feel little doubt that they belong to another race, but it seems wise to wait for further material. VOLZ (N. Sumatra, 2. Die Gajoländer, 1912, p. 369) says that the specimens from S. Sumatra are darker than those from the north, more reddish brown with much black.

(3) *Macaca irus mandibularis* (ELLIOT).

Material: N. W. Borneo: 2♂, Perbuwak, Landak, 900 m, leg. J. J. MENDEN, 27.VII.1937; S. W. Borneo: 1♂, Riam, Kotawaringin distr., leg. J. J. MENDEN, 31.XI.1935; S. Borneo: 2♂, 1♀, Parit Tjempaga, Sampit, leg. J. J. MENDEN, 28.VI-4.VII.1935; C. E. Borneo: 1♂, Marah, leg. MADZOED, 25.XI.1925; N. E. Borneo: Bulungan Distr., 1♂ juv., 1♂, Sungai Sembakung, leg. MOHARI VII.1912; 1♂, Badan, Sungai, Bahang, leg. V. VON PLESSEN, 8.VI.1935; 1♀, Peleben, Sungai Kajan, leg. V. VON PLESSEN, 30.VI.1935.

Borneo: 1, Riam, Kotawaringin (South West); 3, Parit, Tjempaga, Sampit (South); 1, Marah (East); 1, Peleben, S. Kajan, Bulongan (North East); 1, Badan, S. Bahang, Bulongan; 2, S. Sembakung, Bulongan; 2, Perbuwah, Landak (North West).

Studying the Borneo measurements, in comparison with those of Sumatra, we see that Sumatra averages slightly larger in length of the toothrow. We also see that Sumatra shows a higher maximum for the linear measures of the skull, but a lower maximum for the zygomatic breadth. This, however, is not a general character: in Sumatra the skull index (zygomatic breadth in % of greatest length) averages 66.4% (9), in Borneo 67.1 (14), thus about the same. A difference of some importance lies in the relative length of the tail: Sumatra 120%, Borneo 131%. Perhaps one could judge these differences insufficient to justify a separation between Sumatra and Borneo. But there is also difference in the colour of the upper side: Borneo is darker and more grey, less yellowish or reddish, and this point alone would be sufficient to bear the separation! S. MÜLLER already (Verh. Nat. Gesch. N.O.B., 1839, p. 48) mentioned difference in colour: Sumatra "more or less yellowish red", Borneo "yellowish grey-brown or brown-grey".

Within the Borneo series there are again small differences, also, as it seems, more or less locally, but our material is insufficient for such a more detailed study. One very young animal from S. Sembakung (♂, greatest length of skull 81.8 mm) has a fine brown upper head.

(4) *Macaca irus ? carinatae* (ELLIOT).

Material: Karimata Is.: 1♂, P. Serutu, leg. MADZOED, 25.III.1931; 1♀, P. Pelapis, leg. MADZOED, 21.III.1931.

Karimata islands: 1, Pulo Serutu; 1 (juv.), P. Pelapis.

Again we cannot get certainty for want of real *carinatae* (Karimata island). Just like both known Karimata specimens (ELLIOT, MILLER), our Serutu and Pelapis animals agree with Borneo in the large relative tail length. All other measurements are insufficient for any conclusion. In the colours the adult Serutu specimen closely resembles Borneo, but has darker hands and feet. The very young Pelapis animal (♀, greatest length of skull 79.7 mm) has a brown upper head. The whole upper side of it is much browner than in the young Borneo one, mentioned above.

(5) *Macaca irus mordax* THOS. & WROUGHT.

Material: W. Java: 2♂, 1♀, Tjemara & Tjikudjang, Bantam, leg. P. F. FRANCK, 27.VII-9.VIII.1932; 1♂, 1♀ juv., Djasinga, Buitenzorg distr., leg. P. F. FRANCK, 10.IV.1929, 4.IX.1931; 1♂, Buitenzorg town, leg. O. SCHIFFER, 23.IX.1928; 4♀, Indramaju, leg. J. J. MENDEN, 30.VI.1930, 29.III.1931; 3♂, 3♀, Tasikmalaja, leg. F. KOPSTEIN, IV-VIII.1926; C. Java: 1♂, 1♀, Kaligua, Mt Slamet, 1350 m, leg. DENIN, 18.I.1917; 1♂, Pasir Carolina, Purwokerto, leg. KLOSTER, 17.VIII.1932; "Java": ex. Pasteur Institute, Bandung, 26.V.1925.

18, W. Java, 2, C. Java (Mount Slamet).

Already the larger measurements are sufficient to separate Java from Sumatra and Borneo. Of course we have to look here especially to the *averages* of the tooth measurements. But Java also gives clearly maximal large skulls. In the whole species skulls of 130 mm in greatest length are rather rare: in the Museum we possess only 2 (one, Karimon Djawa, 131.5 mm, and one, C. Java). From literature I know but three specimens (MILLER: Nicobar islands, 134.1 mm; POCKOCK: Lower Birma, 133; Domel, Mergui, 130). In my private collection, however, there are four: one from Bali (136.0), and three from C. Java. The accurate numbers of all these C. Java specimens are:

Mount Slamet: 138.8 (SODY coll.), 131.5 (Mus. coll.).

Gedangan: 136.0, 133.4 (both SODY coll.).

(An enormously large ♀ skull has been reported from E. Siam by GYLDENSTOLPE: 124.5 mm).

We may express our presumption that the species reaches a maximum in size in C. Java, and therefore we cannot agree with CHASEN who writes that (very broadly) the general trend of the geographical variation in this species is towards slightly smaller size from north to south. From the data, following hereunder, we conclude that he is also incorrect when he continues: "with a tendency towards even smaller size and a relatively shorter tail on small islands."

In the only very young one in our collection (♂, greatest length of skull 82 mm) the upper head is pure brown, without a trace of blackish.

In general our W. Java material is more variable in colour than any other of our series.

In 18 ♂ the skull index averages 67.6%, in 16 ♂ it is 67.8%.

(6) *Macaca irus baweanus* (ELLIOT).

Material: South Bawean I., Java Sea: 3 ♂, 2 ♀, leg. DENIN, 6.X.1928.

6, Bawean island.

In the measurements perhaps not so much smaller than *mordax* (and certainly larger than Sumatra and Borneo), but strikingly darker in colour than *mordax*. Also on the upper-side of the tail more black occurs. However, it must be said that one of our 6 specimens (♂ ad.), forms a strong exception. As to colour it differs strikingly from the other Bawean animals, *but could be incorporated in mordax of Java without the slightest objection!* I think that this specimen does not affect the right of existence of *baweanus* as a race! This is a case in which we get a very strong impression that a Javan specimen must be got lost to this island. Of course we may not accept this as a scientifically proved fact! But in any case, the other 5 animals do not leave the slightest doubt as to the validity of the race. None of them shows the slightest approach towards this "Javan" specimen.

(7) *Macaca irus karimondjawa* subsp.n.

Material: Karimon Djawa Is.: 2 ♂, 3 ♀, leg. K. W. DAMMERMAN, P. F. FRANCK & DENIN, 7-14.V.1926; 2 ♂, 2 ♀, leg. W. ROMSWINCKEL, 26-28.XI.1930.

Type: ♂ ad., Karimon Djawa (Java Sea). Coll. W. ROMSWINCKEL, 28.VI.1930. Buitenzorg Museum, No 2719. Examined: 7, type locality.

In the size of the toothrow *karimondjawa* equals the average for the whole of Java. It differs by its dark colour, darker even than in *baweanus*, especially on the head and tail upperside. In a very young specimen (♂, greatest length of skull 77.0 mm) the whole upperside of the head is pure blackish, till behind a line connecting the ears. Of the older ones some have the black still clearly predominating on the head. Only in 2 or 3 the light colour is predominating, but the upperside of the head stays darker than in the darkest *baweanus*. There is but very little difference between the colour of the arms and legs and of the back. The largest 3 specimens have a rather striking dark beard on the chin, so clear and dark as I never observed elsewhere.

Measurements of type: Head and body 501; tail 544; hind foot 150; ear 45; Skull: greatest length 131.5; condylobasal length 106.7; basal length 98.1; palatal length 55.2; zygomatic breadth 87.2; breadth of braincase 60.2; interorbital width 6.6; intertemporal width 40.3; greatest breadth of combined nasals 10.2; upper molar row, c-m³, 45.0; ditto, p¹-m³ 345; diastema between posterior upper molars 19.1 mm.

(8) *Macaca irus submordax* subsp.n.

Material: Bali: 1 ♀, Batu Meringgit, leg. P. F. FRANCK, 8.X.1928; 3 ♂, Banju Wetan, leg. J. J. MENDEN, 18.VII.1933.

Type: ♂ ad., Bali, Coll. SODY, No E 85. Examined: 6, Bali, coll. SODY; 4, Bali, Museum collection.

In 1932, when preparing my "Mammals of Bali", I already realised that my Bali macaques were not identical with those from Java in my collection (cf. *Nat. Tijdschr. Ned. Ind.*, 93, 1933, p. 68, 93), but I did not wish to make a separation, as Bali might be nothing but a pure transition form between *mordax* and *sublimitus*. Since that time more data came at hand, making clear that a separation is necessary. The Bali animals differ from those of Java in being slightly smaller (toothrow) and having slightly shorter tails. The best distinguishing character, however, lies in the colour of the forearm, which in Bali is darker and more silvery grey. Whilst in most points Bali seems to be nothing but a "transition" form between *mordax* and *limitus* or *sublimitus*, in the last mentioned respect it stands well apart from Java and also rather well from our eastern series: only the one (mountain) specimen from Lombok, and one Sumba example, show suchlike grey arms. One of the Bali specimens in the museum shows the black patch on and near the base of the tail (upperside), which sometimes occurs on most of the Smaller Sunda islands, but never in Java.

Measurements of type: Head and body 495; tail 510; hind foot 143; ear 48; Skull: greatest length 136.0; condylobasal length 96.8; basal length 91.0; palatal length 60.7; zygomatic breadth 91.3; breadth of braincase 60.0; interorbital width 5.5; intertemporal width 42.2; length of nasals 26.3; breadth of combined nasals 8.9; upper toothrow, c-m², 44.9; ditto, p-m², 35.5; distance between posterior upper molars 200 mm. This is an exceptionally large specimen.

The skull index is averagely 69.3% (10 specimens).

(9) *Macaca irus limitus* (SCHWARZ).

Material: Timor: 1 ♀, Mutis Mts, 3180 m, leg. G. STEIN, 28.II.1932; 1 ♂ neonatus, Niki-Niki, leg. G. STEIN, 28.III.1932.

2, Timor (one of which a newly born baby).

Being the first described subspecies of the Smaller Sunda islands, it is certain that *limitus* of Timor is a good race, but it is nearly unknown in its measurements, though SCHWARZ possessed 10 specimens. Even of the type skull he did not give the greatest length. So, formerly, it was impossible to control his contention that in the Timor race the skull is comparatively broader than in *mordax*. The museum now possesses one adult Timor ♀, with the aid of which I made up the following table of skull indices (zygomatic breadth, expressed in % of greatest length):

	<i>Min.</i>	<i>Aver.</i>	<i>Max.</i>		
Java	60.8	67.68	71.8	(34)	(60.8 in type of <i>resima</i> , next: 63.0 in young specimen).
Bali	66.5	69.28	72.7	(10)	
Lombok	69.4	70.15	70.9	(2)	
Sumbawa	68.3	70.60	72.8	(5)	(1 juv.: 67.2)
Flores	67.1	67.88	68.5	(4)	(2 juv.: 60.8, 66.9)
Sumba	63.7	66.08	68.4	(5)	(2 juv.: 53.5, 61.6)
Timor	—	71.1	—	(1)	(1 juv.: 62.6)

From these numbers we see that really in some islands the skull index is a trifle larger than in Java, *perhaps* also in Timor, and I think we may provisionally accept this as a fact, because SCHWARZ possessed 10 skulls and we must accept that he *studied* them for himself before uttering his contention! Sumba does *not* show a large index.

The newly born baby (♂, greatest length of skull 75 mm) has the upper head blackish.

(10) *Macaca irus sublimitus* SODY.

Material: S u m b a: 1 ♂, 1 ♀, Kampera, leg. P. F. FRANCK, 26-27.III.1925; 1 ♂, 2 ♀, Mao Marru, leg. P. F. FRANCK & DENIN, 4-10.V.1925; 2 ♀, Langgaliru, leg. G. STEIN, 24-29.V.1932; W. Flores: 2 ♂, 2 ♀, Mbura, leg. J. K. de JONG, 17-23.X.1929; 1 ♀ Wai Sano, DENIN, 18.XI.1929; S u m b a w a: 1 ♂, 1 ♀, Batu Dulang, leg. B. RENSCH, 7-8.V.1927; 1 ♂, Pulau Kambing, Bima Bay, leg. B. RENSCH, 28.VII.1927; L o m b o k: 1 ♂, Sembalun, leg. B. RENSCH, 11.IV.1927.

7, Sumba; 5, Flores; 2, Sumbawa; 1, Kambing; 1, Lombok.

Provisionally we accept that really in Sumba the skull index is smaller than in Timor, though further data are urgently necessary. We do not fully trust the large difference from *limitus* in relative tail length, appearing from the table, because the number of measured Timor specimens is so small that mutilation of the majority is possible! Summarizing, we must acknowledge that *sublimitus* still waits for thorough confirmation.

At the other hand we are not at all convinced that on all these islands one and the same race occurs. The single Lombok specimen for instance is of quite a different type, and there seems to be rather much local variation in the length of the tails. For the present, however, it seemed practical to use an arrangement as given here.

According to MERTENS (Abh. Senck. Naturf. Ges., 42, 1930, p.144) the Kambing macaque is not indigenous there, but has been introduced from Bima by the Raja.

[*Macaca irus lapsus* ELLIOT.

Though the Museum collection does not possess specimens from Banka island, I wish to seize this opportunity to draw the attention to the data of KOHLBRUGGE (Zeitschr. Morph. u. Anthrop., 4, 1901, p. 332),

taken from his series of 258 Banka skulls, which he could compare with 16 Java skulls.

His skull-indices for his material are:

	Min.	Aver.	Max.	
for Banka	73.5	81.5	88.3	(258)
for Java	78.8	83.0	89.4	(16)

In view of the large numbers of the measured skulls, KOHLBRUGGE takes this as a good difference, in my opinion rightly.

For the 3 adult Banka specimens in my private collection + ELLIOT's type, my skull-indices are:

66.1	67.90	69.6	(4)
------	-------	------	-----

This does not point to a smaller index than in Java, but the number of measured specimens may be too small.]

III. A NEW MONKEY FROM THE CELEBES GROUP OF ISLANDS (GENUS *CYNOPITHECUS*).

The material of *Cynopithecus* at my disposal consisted of 17 skins and 15 skulls and 1 stuffed specimen, with skull inside, all in the Buitenzorg Museum. As the stuffed specimen has no quite reliable locality, it was further ignored. From literature measurements of some 40 more skulls were collected. Thus our table was compiled (Table II).

From this table several (partly provisional) conclusions can be drawn, among which the following:

1. We may accept that in this group of monkeys the "skull-index" in the ♀ averages somewhat larger than in the ♂. Clearest this is demonstrated in the Malengi (Togean) series, in which the 5 ♂ give: 60.0-61.1-64.2%, the 5 ♀: 62.0-64.2-66.8%. The other data seem to point in the same direction. In any case we do well to compare in this genus the skull indices of the various species per sex only.

2. The Palopo ♀ (in our table placed under *ochreatus*) gives for the skull-index 69.1%, as against a *maximum* in the 15 other measured ♀ specimens from all other localities of 67.0%. For that reason I feel strong doubt if this specimen belongs to one of the described forms, but I do not wish to separate it. In reality I left it undetermined.

3. The minimum index of the ♀ we find in *tonsus*, but here also it concerns one individual only.

4. For the ♂ we find a clear minimum for the skull-index, supported by 2 specimens, in *nigrescens*, thus giving a very clear difference with its neighbour-form *niger*!

5. The maximum for the skull-index in the ♂ is to be found in *tonkeanus*. Here we also find the maximal tooth-measurement. Unfortunately it concerns again one individual.

Table II. *Cynopithecus* spp.

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull: greatest l.	Zygomatic breadth	Skull-index	Upperteeth c—m ³	Upperteeth p ¹ —m ³	Breadth of m ²
<i>niger</i>												
Menado (Bu)	♂	ad.	—	—	—	—	140	87	62.3	—	37	—
Temboan (Mi)	♂	ad.	—	—	—	—	143.3	87.8	61.3	47.7	34.5	—
N.E. Celebes (Mi)	♂	ad.	—	—	—	—	144.5	—	—	—	—	—
Batjan (Mu)	♂	ad.	560	20	155	20	125.5	75.8	60.4	44	35	8.1
Batjan (Bu)	♂	ad.	—	—	—	—	140	89	63.6	—	35	—
Batjan (Be)	♂	y.ad.	—	—	—	—	114	70	61.4	—	—	—
Menado (Bu)	♂	ad.	—	—	—	—	112	75	67.0	—	31	—
N.E. Celebes (Mi)	♂	ad.	—	—	—	—	128.6	—	—	—	—	—
N.E. Celebes (Mi)	♂	ad.	—	—	—	—	124.5	—	—	—	—	—
Amurang (Mu)	♂	juv.	—	—	—	—	87.7	55	62.7	—	—	—
<i>nigrescens</i>												
Negeri Lama (Bu)	♂	ad.	—	—	—	—	148	84	56.8	—	36	—
Duenduo (Malibago) (Bu)	♂	ad.	—	—	—	—	148	81	54.7	—	37	—
<i>hecki</i>												
Locality? (Bu)	♂	ad.	—	—	—	—	150	94	62.7	—	35	—
Locality? (Ma, Bu)	♂	ad.	—	—	—	—	143	91.5	64.0	—	32	—
Locality? (Bu)	♂	ad.	—	—	—	—	152	95	62.5	—	37	—
Matinang Mts. (Bu)	♂	ad.	—	—	—	—	137	86	62.8	—	35	—
Locality? (Be)	♂	ad.	—	—	—	—	130	77	59.2	44.8	—	—
Locality? (Be)	♂	y.ad.	—	—	—	—	119	73	61.3	—	—	—
Locality? (Be)	♂	ad.	—	—	—	—	124.5	80.5	66.3	39.5	—	—
Locality? (Be)	♂	ad.	—	—	—	—	120	75	62.5	40	—	—
N. Celebes (Bu)	♂	y.ad.	—	—	—	—	120	73	60.8	—	34	—
<i>maurus</i>												
Locality? (Bu)	♂	ad.	—	—	—	—	140	96	68.6	—	37	—
(Macassar) (Bu)	♂	ad.	—	—	—	—	140	94	67.1	—	35	—
Locality? (<i>hypomelas</i>) (Bu, Ma)	♂	ad.	—	—	—	—	130	84	64.6	—	32	—
Macassar (Be)	♂	ad.	—	—	—	—	119	81.2	68.2	41	—	—
Loka (Mnt. Bonthain) (Me)	♂	ad.	—	—	—	—	143	92	64.3	—	—	—
Locality? (<i>tonsus</i> MATSCHIE (Ma)	♂	ad.	—	—	—	—	141	91	64.5	—	34	—
Macassar (Me)	♂	y.ad.	—	—	—	—	131	87	66.4	—	—	—
	♂	ad.	—	—	—	—	122	78	63.9	—	35	—

Palopo (Mu)	+	ad.	—	—	—	—	128.5	88.8	69.1	41.5	34.6	8.0
<i>brunnescens</i>												
Muna Island (Bu)	+	ad.	—	—	—	—	145	92	63.4	—	33	—
Buton Island (Mu)	+	ad.	475	55	—	—	141.5	81.7	57.7	45	32.7	7.6
Buton Island (Mu)	+	ad.	—	—	—	—	123.5	79.5	64.4	38	31	7.3
Locality? (Bu)	+	juv.	—	—	—	—	112	69	61.6	—	—	—
<i>tonkeanus</i>												
Tonkean (Bu)	+	ad.	—	—	—	—	145	100	69.0	—	38	—
<i>lembicus</i>												
Pulau Lembeh (Mi)	+	ad.	—	—	—	—	125.2	—	—	—	—	—
Pulau Lembeh (Mi)	+	ad.	520	—	165	—	125.4	80.6	64.3	43.2	33.1	—
Pulau Lembeh (Mi)	+	ad.	—	—	—	—	125.9	—	—	—	—	—
Pulau Lembeh (Mi)	+	ad.	—	—	—	—	111	—	—	—	—	—
Pulau Lembeh (Mi)	+	ad.	—	—	—	—	112.6	—	—	—	—	—
Pulau Lembeh (Mi)	+	ad.	—	—	—	—	113	—	—	—	—	—
<i>togeanus</i>												
Malengi island (Mu)	+	ad.	665	64	167	40	154.5	93.3	60.5	45.8	34.6	7.3
Malengi island (Mu)	+	ad.	598	60	175	40	151	97	64.2	45.5	34.0	8.1
Malengi island (Mu)	+	ad.	601	59	184	38	—	—	—	—	—	—
Malengi island (Mu)	+	juv.	560	55	180	35	140	85	60.7	—	—	8.3
Malengi island (Mu)	+	juv.	560	50	174	37	130	78	60.0	—	—	8.3
Malengi island (Mu)	+	juv.	490	55	160	36	124.5	76	60.1	—	—	8.3
Malengi island (Mu)	+	ad.	562	38	158	35	128.4	82.7	64.4	41.1	34.0	7.7
Malengi island (Mu)	+	ad.	530	55	158	35	129	84.3	65.3	39.2	32.2	7.5
Malengi island (Mu)	+	ad.	565	240	154	35	—	—	—	—	—	—
Malengi island (Mu)	+	juv.	510	55	152	35	122	75.6	62.0	—	—	7.5
Malengi island (Mu)	+	juv.	536	50	152	35	125.5	78.7	62.7	—	—	8.0
Malengi island (Mu)	+	juv.	425	50	140	32	107.4	71.7	66.8	—	—	7.0

Bu = BÜTTIKOFER, Zool. Meded. Leiden, 3, 1917, p. 1-86.

Be = DE BEAUX, Boll. Mus. Zool. Anat. Comp. Univ. Genova, 9, 1929, p. 30.

Me = MEYER, AB. Mus. Dresden, 7, 7, 1899, p. 2.

Mu = Specimen in Buitenzorg Museum.

Mi = MILLER, Journ. Mammal., 12, 1931, p. 413.

Ma = MATSCHIE, Abh. Senckenb. Naturf. Ges., 25, 1900, p. 247-268. — The *hecki*-specimen (not being the type!), measured by MATSCHIE, was remeasured by BÜTTIKOFER, who gives somewhat deviating numbers! I retained MATSCHIE's numbers. The differences are not very large. More difficult was a suchlike case with the type of *hypomelas* MATSCHIE (vide under *maurus*). BÜTTIKOFER's number of 137 mm, for the greatest length of the skull, certainly relates to this type specimen, nearly certainly MATSCHIE's number of 130 mm also! I used BÜTTIKOFER's measurement. Finally MATSCHIE's measurements of *tonsus* were also placed under *maurus*, basing on the authority of BÜTTIKOFER who restudied the specimen, measured by MATSCHIE (not the type!), and definitely states that it is *maurus*.

6. The very high average of *maurus*, on the contrary, is conclusively supported by 8 specimens, and it is certainly interesting to state the reliable difference between *maurus* (with 63.9-66.0-68.6 in 8 ex.) and *hecki* (with 59.2-62.1-64.0 in 6 specimens).

7. *Lembicus* (in colour resembling *niger*) was rightly separated from the last named form by the describer on account of the smaller size.

8. For Malengi the establishing of a new form seems necessary, already on account of the larger size. Our series of 12 specimens only furnishes 4 measurements of adult skulls (6 are juvenile, 2 of the largest adult skulls, being mislaid, could not be measured). But even in the two remaining ♂, and also in the 2 remaining ♀ we find the *maxima* of all *Cynopithecus* skulls known.

The 2 ♂ give 154.4 and 151, the 2 ♀ 129 and 128.4. A Malengi ♂ with 140 mm and a ditto ♀ with 125.5 mm still wholly miss all posterior molars. We propose to name it:

Cynopithecus togeanus sp.n.

Material: 6 ♂, 6 ♀, N. Celebes, Tomini Gulf, Togeian (Schildpad) Islands, P. Malenge, 23.XI.-19.XII.1939, leg. J. J. MENDEN.

Type: ♂ ad., Malengi island, Togeian group, East of Celebes, Coll. J. J. MENDEN, 3.XII.1939, Buitenzorg Museum, Cat. No 6545. Specimens examined: 12, all from type locality (but only 10 skulls could be measured, 6 of which juvenile).

Description: there is no crest on the head, though exceptionally (No 6548) there is a undeniable predisposition for it.

Colour of dorsal side very dark brown, in many cases closely approaching the black of *niger*, sometimes (for instance No 6545) somewhat lighter. Outerside of extremities like back, sometimes slightly lighter.

Ventral side brown, lighter than dorsal side. Especially the hair on the under and lateral sides of the head and on the posterior part of the belly and the innersides of the thighs, much lighter, sometimes nearly pure grey (No 6545).

Measurements of type: Head and body 665, tail 64, hind foot 167, ear 40; Skull: greatest length 154.5; basal length 110.5; palatal length 71.2; zygomatic breadth 93.5; breadth of braincase 66.8; interorbital constriction 7.5; postorbital constriction 46.3; length of upper toothrow (+ c) 45.8; ditto (— c) 34.6 mm.

The skull of the type specimen has only a small occipital crest. No 6547 has a much larger one.

IV. INDO-MALAYAN AND INDO-AUSTRALIAN HALF APES (*TARSIDAE*, *LORISIDAE*).

Tarsius

Seen the large and important existing differences, it seems not liable to doubt that the Indo-Malayan forms of *Tarsius* cannot be united with

the Celebes forms into one polytypic species. Unfortunately we are unknown with the Philippine forms, which, probably, belong to one of these groups. WEBER (*Die Säuget.*, 2, Jena, 1928, p. 753) clearly gives as his opinion that only two *Tarsius* species exist: *tarsius* ERXL. of Sumatra, Borneo, Java, Banka, and Billiton, and *fuscus* FISCH. of Savu, Celebes, Saleyer, Sangir, and the Philippines. Expressly he calls MEYER's names *sangirensis* and *philippinensis* "überflüssig". If for *tarsius* ERXL. we read *tarsier* ERXL., with type locality: the Philippine islands, WEBER must be mistaken in any case: either the Philippine forms belong to the Western species (and then the record of the finding places is wrong), or they belong to the Eastern species (and then the Celebes species ought to be called *tarsier*, whilst *bancanus* HORSF. must be used for the Western species). MEYER, who studied all forms, assures expressly (AB. Mus. Dresden, 1894/95, 1, p. 1): "die Philippinen-Form schliesst sich nicht *T. fuscomanus* FISCH. von Celebes, sondern *spectrum* an". This is contrary to WEBER's newer conception. Though probably this question might be settled easily with the aid of some material, we are not able to "choose" between these two decided, but contradictory, contentions. Hereby comes that CABRERA (*Journ. Mamm.*, 4, 1923, p. 89) has shown that for the Philippines LINNAEUS' name *syrichta* is available, so that the name *tarsier* must disappear wholly. Seen our unacquaintedness with the Philippine forms, and thus not knowing whether *syrichta* must be introduced for our Western or for our Eastern forms, for the present we use *bancanus* for the first, and *fuscus* for the last mentioned group (Table III).

There seems to exist some confusion regarding the tooth measurements. Four measurements are frequently given: i^1-m^3 , $c-m^3$, p^1-m^3 and m^1-m^3 . With the words "upper molar series" different measurements are meant by different authors. As seems correct, most authors take it as p^1-m^3 . However, ELLIOT, for his Billiton specimen, gives for it 151 mm. This cannot be p^1-m^3 , and even not $c-m^3$. Perhaps: i^1-m^3 (or i^2-m^3)? For *T. fuscus dentatus*, of C. Celebes, MILLER & HOLLISTER give for the "upper molar-premolar series" 13.3 and 13.0 mm. Here again it is impossible that really p^1-m^3 is meant. Most certainly the authors mean $c-m^3$.

We are very fortunate in possessing a Billiton series of 17, so that we are able to form an opinion about the degree of individual variation. *In proportion* to the variation in colour, occurring in the whole species, the *individual* variation in colour is so large, that all our scanty specimens from other finding places are covered by it. On the base of *this* (so much finer) material I feel obliged to revise my former opinion (Temminckia, 2, 1937, p. 247), and now must declare that I personally cannot guarantee that there exist differences in colour between material of Sumatra, Banka, Billiton, and Borneo. (See, however, CHASEN, Bull. Raffl. Mus. 15, 1940, p. 87. A good description of a Borneo series has also been given by LE GROS CLARK, P.Z.S., 1924, p. 217). Between Sumatra, Banka, and Billiton, on

Table III. *Tarsius bancanus* HORSF.

Localities	Total length		Skull				Length of i-m ³				Length of c-m ³				Length of p ¹ -m ³				Tail in %			Subspecies	
			Gr. 1.		Gr. br.		Min.	Aver.	Max.	Min.	Aver.	Max.	Min.	Aver.	Max.	Min.	Aver.	Max.					
	Max.		Max.	Max.																			
Sumatra	353	5	38.7	4	33.8	3	—	—	—	—	13.3	13.57	14.0	3	12.0	12.15	12.3	4	129	157.8	205	5	<i>bancanus</i>
Banka	347	3	38.1	4	33.5	4	—	—	—	—	13.7	13.80	13.9	2	12.0	12.07	12.1	4	134	163.7	181	3	"
Billiton	366	15	38.7	17	34.0	16	—	—	—	—	13.0	13.46	13.9	15	11.5	11.93	12.4	16	120	171.5	205	13	" (= <i>saltator</i>)
W. Borneo ¹⁾	370	4	39.5	4	35.5	3	—	—	—	—	—	—	—	—	—	12.3	—	1	132	143.0	158	4	<i>borneanus</i>
Sarawak ²⁾	—	—	40.5	10	35.5	10	—	—	—	—	—	—	—	—	12.2	12.5	13.4	10	—	140.3	—	10	"
E. Borneo ³⁾	347	2	38.4	5	33.4	2	—	—	—	—	14.0	14.00	14.0	2	12.3	12.45	12.6	4	189	192.0	195	2	"
"Borneo" ⁴⁾	376	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	119	126.0	135	3	"
Natunas ⁵⁾	—	—	36.7	1	32	1	—	—	—	—	—	—	—	—	—	13.2	—	1	—	—	—	—	<i>natunensis</i>

¹⁾ Incl. LYON, and ELLIOT.²⁾ Incl. LE GROS CLARK, and CHASEN.³⁾ Incl. GYLDENSTOLPE.⁴⁾ WEBER.⁵⁾ CHASEN.

one side, and Borneo, on the other side, there exists difference in size (Borneo larger). But we cannot find a reason to maintain ELLIOT's *saltator*, of Billiton. When describing it the author did not possess a specimen of *bancanus*. He only compared his single Billiton specimen with HORSFIELD's *description* of one immature specimen, which — as ELLIOT says — is "not very full". I too am not able to see any difference in colour, nor dare I conclude to a difference in measurements. So we determined our museum specimens as follows:

Tarsius bancanus bancanus HORSF.

Material: Lampongs, S. Sumatra: 1♂, Langkapura Est., leg. F. S. HEUBEL, 15.II.1939; 1♀, Bekri Est., leg. P. VAN WAVEREN, 20.VII.1938; 1♂, "Lampongs", undated; Banka I.: 1♀, 1 unsexed, Muntok, purchased, 7.IV-7.VII.1911; Billiton I.: 1♂, 1♀, "Billiton," purchased, undated; 1♂, Banten, leg. F. J. KUIPER, 20.XII.1935; 1♂, Begantung, 50 m, leg. F. J. KUIPER, 22.XI.1936; 2♂, 1♀, Ajer Rajah, leg. F. J. KUIPER, 12.XII.1936-24.IV.1937; 1♀, Ajer Sago, leg. F. J. KUIPER, 4.I.1937; 1♀, Klapa Kampit, leg. F. J. KUIPER, 18.IV.1937; 1♂, Kepajang, leg. F. J. KUIPER, 10.V.1937; 1♀, "Billiton", leg. J. H. WESTERMANN, 4.VII.1938; 2♀, Gantung, leg. J. H. WESTERMANN, 22.IX.1939-12.III.1940; 2♂, 3♀, Lenggang, leg. J. H. WESTERMANN, 6.X.1938.

3, Lampongs, S. Sumatra; 2, Banka; 18, Billiton.

Tarsius bancanus borneanus ELLIOT.

Material: Borneo: 1♂, Long Peleben, Bulungan River, N. E. Borneo, leg. SAÄN, 12.IX.1935; 1♀, "E. Borneo", ex Zool. Garden, Bandung, 1941.

1, Peleben, Bulungan River, E. Borneo; 1, E. Borneo.

Tarsius fuscus FISCHER (Table IV)

Tarsius fuscus fuscus FISCHER.

Material: N. Celebes: 1♂, 1♀, 1 sex. inc., Res. Menado, leg. MOHARI, VIII.08 & undated; 1♀, Mapanget, Minahassa, leg. A. REYNE, 4.VII.1933; 1♂, Tonsealama, Tondano River, Minahassa, leg. J. A. VAN BRAEKEL, 10.XI.1938; 1♂, Bumbulan, Res. Menado, leg. J. J. MENDEN, 5.X.1939.

3, Menado; 1, Mapangat; 1, Tonsealama; all N. E. Celebes.

Tarsius fuscus dentatus MILL. & HOLL.

Material: C. Celebes: 1♀, Malele, leg. VAN ARDENNE, IV.1912; 1♀, Paloppo, leg. MOHARI, XII.1910.

1, Parigi; 1, Maleba; both C. Celebes.

We use this name, though we find the race very weak. The authors based it on the following differences (compared with specimens from N. E. Celebes): 1, Colour more greyish; 2, Longer tail; 3, Larger skull; 4, Larger teeth. We have included the measurements given by them in our table. We do not attach much value to the question of the colour, only one of our Celebes specimens is more greyish (above) than the rest: the one from Tonsealama! For comparing the relative length of the tail (as it seems: very variable), the number of specimens measured seems

Table IV. *Tarsius fuscus* FISCHER.

Localities	Total length		Skull				Length of i-m ³			Length of c-m ³			Length of p ¹ -m ³			Tail in %				Subspecies			
			Gr. 1.		Gr. br.		Min.	Aver.	Max	Min.	Aver.	Max	Min.	Aver.	Max.	Min.	Aver.	Max.					
	Max.		Max.		Max.																Max.		Max.
N. Celebes ¹⁾	397	5	37.8	6	30.0	6	14.8	15.24	15.5	6	12.0	12.63	12.9	6	10.7	11.18	11.3	6	138	173.2	210	5	<i>fuscus</i>
C. Celebes ²⁾	411	3	38.2	4	30.3	4	15.3	15.60	16.0	4	12.6	12.97	13.3	4	11.3	11.40	11.5	2	170	194.0	225	3	<i>dentatus</i>
S. Celebes ³⁾	390	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	144	147.5	151	2	?
P. Peleng	406	9	39.3	9	30.5	9	14.4	14.99	15.5	9	12.0	12.40	12.8	9	10.7	11.02	11.4	9	178	196.0	239	9	<i>pelengensis</i>
Sangir	427	4	38.3	4	31.1	4	15.1	15.70	16.0	3	12.7	13.21	13.6	3	11.4	11.77	12.0	3	155	197.7	234	4	<i>sangirensis</i>

¹⁾ Incl. WEBER.²⁾ Incl. MILLER & HOLLISTER.³⁾ WEBER.

insufficient. The skulls are not noteworthy larger. The principle difference may lie in the size of the tooththrows, but here also the number of specimens measured is hardly sufficient (the authors gave nothing but the measurements of the two Parigi skulls!)

Tarsius fuscus pelengensis subsp. n.

Material: 3 ♂, 6 ♀, Banggai Archipelago, Peleng I., II-17.VIII.1938, leg J. J. MENDEN.

Type: ♂ ad., Pulau Peleng, E. of Celebes. Coll. J. J. MENDEN, 17. VIII.1938. Buitenzorg Museum, No 6605.

Here again we must acknowledge that we are describing a very poor race, but we can compare here 9 specimens from P. Peleng with 10 from the mainland. From the table it may be seen that the tooththrow of *pelengensis* is, slightly smaller, though the skulls are very slightly larger (average 38.0 mm in 9 specimens, as against 37.2 mm in 10 mainland specimens).

Measurements of type: Head and body 136; tail 256; hind foot 65; ear 36; Skull: greatest length 37.7; condylobasal length 30.5; basal length 26.9; palatal length 15.3 greatest (orbital) width 29.5; zygomatic width 24.3; interorbital constriction 2.3; postorbital constriction 21.6; breadth of braincase 22.8; length of bullae, diagonally, 11.2; length of upper tooththrow: i¹-m³ 150; c-m³ 123; p¹-m³ 10.9; m¹-m³ 6.7 mm.

Tarsius fuscus sangirensis MEYER.

Material: Great Sangir I. (Sangihe): 1 ♂, 1 ♀ "Great Sangir", leg. A. REYNE, X.1931; 1 ♂, 1 ♀, Magoniu, leg. A. REYNE, 14.VII-4.VIII.1933.

4, Great Sangir.

A very good race, on the characters given by the author.

Nycticebus.

Nycticebus coucang (BODD.).

Besides the 25 specimens (Java, Sumatra, Borneo) in the Museum, I studied a series of 14 (Java, Sumatra, Banka, Borneo) in my own collection, which however is not available at present. Fortunately I made rather extensive notes on the colours of my specimens, but only 4 skulls were measured. All available measurements, including those found in the literature, are compiled in the following table (Table V).

Before discussing my division of our material in subspecies, I should like to make a head-division in *a.* races with 4 upper incisors, and *b.* races with 2 upper incisors. Though it seems to occur that the second pair of incisors is present in the youth and falls out later (LYON), the table shows clearly that as a very constant rule, this character is very steadfast, and in my opinion it is of rather large importance! I should never wish to unite specimens from two different islands, differing in this respect, into one race!

Table V. *Measurements of Nycticebus coucang* (BODD.)

Localities	Total length		Skull								Length of c-m ³				Subspecies
			Gr. 1.		Gr. br.		Index				Min.	Aver.	Max.		
	Max.		Max.		Max.		Min.	Aver.	Max.						
Mal. Peninsula ¹⁾	318	3	62	6	44	6	60.4	66.90	71.0	6	19.8	20.92	21.5	4	<i>coucang</i>
Sumatra (-Padang) ²⁾	336	11	61.4	6	44.4	6	61.1	68.50	75.3	6	18.9	20.20	20.8	5	„
Padang, Sumatra ³⁾	—	—	61.9	2	45.2	2	65.5	69.25	73.0	2	20.3	21.05	21.8	2	<i>hilleri</i>
P. Tioman ⁴⁾	—	—	60.0	1	40.1	1	—	66.8	—	1	—	21.5	—	1	<i>insularis</i>
P. Tebing Tinggi ⁵⁾	295	1	54.5	1	42.4	1	—	77.8	—	1	—	19.4	—	1	<i>brachycephalus</i>
Batam, Rhio arch. ⁶⁾	290	1	58.3	2	42.2	2	70.1	71.25	72.4	2	20.2	20.35	20.5	2	? „
Bunguran, Natunas ⁷⁾	318	2	58.9	2	40.5	2	68.8	69.75	70.7	2	20.0	20.60	21.2	2	<i>natunae</i>
Banka ⁸⁾	285	4	56.4	4	39.1	4	67.3	70.05	73.0	4	19.1	19.50	19.7	4	<i>bancanus</i>
Borneo ⁹⁾	312	11	58.4	11	42.1	10	63	69.98	75.7	10	19.0	19.73	20.7	11	<i>borneanus</i>
Java ¹⁰⁾	346	15	62.0	17	42.8	17	56.2	65.82	71.4	17	19.7	21.39	22.6	14	<i>javanicus</i>

(By skull-index I mean: the greatest breadth of the skull in percentage of the greatest length).

¹⁾. Incl. LYON, KLOSS. ²⁾. Incl. HAGEN, WEBER, LYON. ³⁾. LYON. ⁴⁾. ROBINSON. ⁵⁾. LYON. ⁶⁾. CHASEN. ⁷⁾. Incl. LYON, CHASEN. ⁸⁾. Incl. LYON. ⁹⁾. Incl. LYON. ¹⁰⁾. Incl. THOMAS.

Nycticebus coucang coucang (BODD.).

Material: E. Sumatra: 1 ♀, Palembang, leg. J. S. de ROOY, 13.XII.1922; W. Sumatra: 1 ♂, Fort de Kock, leg. P. OUWENS, 2.IV.1911; N. Sumatra, Atjeh: 1 ♀, Meluwak-Kungke, between 520-825 m, leg. A. HOOPERWERF, 25.I.1937; Sumatra (?); 1 ♂, Zool. Garden Batavia, 28.II.1934.

1, Meluwak Kungke, Atjeh; 1, Fort de Kock; 1, Palembang; all Sumatra; 1, "?Sumatra".

With CHASEN we are prepared to accept Malacca as the typical locality of *coucang*. Since we do not possess any Malacca specimen, and the series of measurements taken from literature, is very small, we also agree for the present with the view to unite Malacca and Sumatra into one race. As regards STONE & REHN's *hilleri*, we must say that the descriptions, given of this form, do not seem very convincing. The original authors could only study 8 specimens of the whole species, which 8 specimens they divided into 5 subspecies. So we cannot attach much importance to the small differences in colours given by them (the only character on which the race was based!). LYON, who afterwards studied STONE & REHN's type and topotype, says that they differ from Malacca and other Sumatra specimens by the mastoid and audital bullae not being smooth, rounded and inflated, but irregularly grooved instead, whilst *hilleri* should also be slightly larger. He presumes that *hilleri* is a mountainous form and gives as collecting altitude 1500-3000 feet. Our specimen from Fort de Kock has quite normal bullae, just like our other Sumatra examples. From our table it appears that the difference in size from Malacca is only very small, and may be a question of too small a number of measured animals. ¹⁾

Nycticebus coucang borneanus LYON.

Material: S. E. Borneo: 1 unsexed, Ulu Sungai, leg. R. MEYER, 1920; W. Borneo: 1 ♂, Nangah Serawai, leg. H. WINKLER, I.1925; E. Borneo: 1 ♂, Samarinda, leg. H. WITKAMP, 14.VIII. 1932.

¹⁾ We wish to seize this opportunity to name a race, which is not represented in the Museum, as:

Nycticebus coucang brachycephalus, subsp.n.

Type: The adult ♀, Pulo Tebing Tinggi, E. of Sumatra, coll. ABBOTT, recorded by LYON, in Proc. U. S. Nat. Mus., 34, 1908, p. 669, as *Nycticebus malaianus*.

It seems necessary to form a new subspecies for this animal. The tooththrow is rather small (19.4 mm), but the special distinguishing character lies in the skull index, which is 77.8%, a relative breadth, which has not yet been recorded in any other specimen of the whole species.

The measurements, given by LYON, are: Head and body 285; tail 10; hind foot 63; Skull: greatest length 54.5; basal length 46.4; greatest width 42.4; width of braincase 30; maxillary tooththrow 19.4; mandible, condyle to front of symphysis, 36 mm.

The subspecies may at once be used to accept (temporarily?) the 2 Batam specimens, recorded by CHASEN (Bull. Raffles Mus., 10, 1935, p. 8). CHASEN himself placed them under *bancanus*, "in spite of the four upper incisors". In my opinion, however, this is very unwishable. Moreover the Batam measurements seem too large for *bancanus*, but we must acknowledge that, in this respect, we also cannot guarantee unity with *brachycephalus*. In any case, however, the present classification seems more satisfying than that of CHASEN.

1, Nangan Serawai, Melawi, W. Borneo; 1, Ulusungei, S. E. Borneo; 1, Samarinda, E. Borneo.

Also our Borneo material is very poor. We are not convinced that West and East Borneo are inhabited by the same race, but, as we are afraid for the influence of a former preservation in alcohol, we do better to ignore the rather striking difference in colour, existing between W. & E. Borneo (also my own specimen from E. Borneo is very light and yellowish).

BANKS' measurement for the total length of the whole animal (ca 424 mm) may be a mistake! Indeed, the measurement was given in feet and inches only, so perhaps it was only a rough estimation.

On *Nycticebus coucang bancanus*, as represented in my own collection, I already published a few remarks in Temminckia, 2, 1937, p. 245.

Nycticebus coucang javanicus GEOFFROY.

Material: W. J a v a : 1 ♂, 1 ♀, Tjemara, Bantam, leg. P. F. FRANCK, 6.IX.1932; 1 ♂, Palabuan Ratu, Wijnkoopsbay, purchased, 6.I.1936; 1 unsexed, vicinity of Buitenzorg town, purchased, undated; 1 ♀, Batudjadjar, Priangan, leg. M. VAN WELIE, 3.X.1921; 2 ♂, Tjipatudja, Tasikmalaja, Priangan, leg. F. KOPSTEIN, 19.III.1928; 1 ♂, Tegalwaru Est., Krawang, leg. T. L. TAN, 2.VII.1925; 1 ♀, Purwakarta, leg. C. C. TEN BOSCH, 4.VII.1924; 2 ♂, 1 ♀, Sumedang, leg. J. J. MENDEN, 6.I.1930; 1 ♂, Kuningan, 600 m, Cheribon, leg. J. J. MENDEN, 22.I.1930; C. J a v a : 1 ♂, 1 ♀, Kedohgdong Est., Pekalongan, leg. F. TRAUTMAN, 21.VI.1929.

2, Tjamara, Bantam; 1, Palabuan Ratu, Wijnkoops Bay; 1, Buitenzorg; 1, Batudjadjar, Preanger; 2, Tasikmalaya, Preanger; 1, Tegalwaru-landen, Krawang; 1, Purwakarta; 3, Sumedang; 3, Cheribon; 1, Kuningan, Cheribon 600 m, all W. Java; 2, Kedongdong, Pekalongan, C. Java.

Considerable confusion has existed with this form. Though described in 1812 as *javanicus* by GEOFFROY, in 1921 THOMAS renamed it as *ornatus*, as he thought that GEOFFROY's description was too unsuitable for a Java specimen. He added that "the island is quite large enough to contain two different forms of the genus". The 22 Java specimens I studied up till now, certainly all belong to one form. The "Java" specimen, described in 1902 by STONE & REHN, seems rather dubious as regards its origin (Zoo-specimen), and therefore we did not take over the measurements (as given by LYON) in our Table. The authors did not point at all to the very prominently whitish area's alongside of the anterior part of the dark back stripe, whilst LYON opens his description by calling the Javanese form "a small species". In fact it seems to be the largest in the Archipelago. Strangest of all, however, is the opinion of POCOCK, who, as late as 1939 (Fauna Br. Ind., Mamm., I, p. 171), unites the Mergui Archipelago, Malaya, Sumatra, and Java, into one race!

In reality *javanicus* is a very conspicuous race, especially in colour (every specimen at once and very easily distinguishable by the large, clear whitish or greyish blots extending behind the temporal cross-bands on

the head), but also in measurements (skull maximal slender, toothmeasurement largest).

V. NOTES ON INDO-MALAYAN CARNIVORA
(*URSIDAE*, *MUSTELIDAE*, *CANIDAE*, *VIVERRIDAE*, *FELIDAE*).

Helarctos malayanus (RAFFL.)

Material: Sumatra: 2 ♂, Fort van de Capellen, Westcoast Gvt, leg. P. OUWENS, undated; 1 ♀, Wai Sekampung, Lampongs, leg. D. PIETERS, X.1937; 1 ♀ Pedada Bay, Lampongs, leg. D. PIETERS, VIII.1928; 1 ♂, Mt Padjabadja, S. E. Lampongs, leg. D. PIETERS, IV.1929; 1 ♀ Kotabumi Est., Lampongs, leg. Miss F. HEUBEL, 2.II.1939; 1 unsexed, Bangko, Djambi, leg. O. POSTHUMUS, 29.X.1925; 1 ♀ Lubu Karet, Palembang, leg. SOEKARNO, 30.IV.1933; 1 ♂ juv., Kota Negara, Marga Madang, Suku II, Palembang, leg. W. OOSTERBAAN, ex Zool. Garden, Bandung, 25.IV.1934; 1 (♀), "Sumatra", leg. BERTHOLD, undated; Borneo: 1 ♀, S. E. Borneo, A. W. NIEUWENHUYNS, undated; 1 ♂ juv., 1 ♀, Sampit, S. Borneo, leg. J. J. MENDEN, 16.VI.1935. No locality: 1 ♀, 2 unsexed, ex circus, purchased.

In the Buitenzorg Museum study collection are: 9 skulls and 3 skins from Sumatra, 3 skulls and 1 skin from Borneo, and 2 skulls of unknown origin.

Among the skulls with known origin 9 are adult. Unfortunately of my private collection only one adult Sumatra skull is at hand. I further possess some measurements of a "Sumatra" skull which I found in the Museum of the Hague Zoological Gardens (No. 80). A few measurements of another Sumatra skull I got from Mr NAINGGOLAN (in litt.). In the literature I found measurements of 2 Sumatra and 8 Borneo skulls with LYON (Proc. U. S. Nat. Mus., 33, 1907, p. 562; 34, 1908, p. 660; 40, 1911, p. 121), and of 1 Sumatra and 2 Borneo specimens with POCOCK (J. Bomb. N. H. Soc., 36, 1932, p. 136), and the total length of three Lampong specimens (N. I. Jager, 7, 1937, p. 44). Moreover, I used the external measurement of HORSFIELD (Zool. Res. Java, 1824). This latter measurement was taken from the type of the species (Benkulen), be it probably from the stuffed specimen! (Table VI).

Though certainly the numbers of our table are far from sufficient (especially because in so many cases the sexes are unknown and perhaps some of the given sexes might be fault!), yet we can accept now that the Borneo race is smaller than the Sumatra race. Neglecting the question of sex, we find the following averages:

Sumatra: greatest length of skull 240.5 mm (12), tooththrow 45.9 mm (11).
Borneo: " " " 220.0 " (11), " 43.7 " (12).

For the external size we find the largest number in Borneo, which probably may prove once more that these external measurements are not always taken with the same care and exactness as those of the skull.

Unfortunately POCOCK, in the new edition of the Mammalia of Br. India, makes revive "Java" under the habitat of the species! In reality there cannot exist the slightest doubt that the bear does *not* live in Java. Even among fossil bones, no remains of any bear have ever been found in Java.

Table VI. *Helarctos malayanus* (RAFFL.)

	Sex	Age	Head and body	Tail	Hind foot	Skull: greatest length	Condylabasal length	Basal length	Zygomatic breadth	Last 3 upper molars	Antero-posterior diameter of c at alveolus
<i>malayanus</i> (Sumatra)											
? Atjeh	—	ad.	—	—	—	226	—	—	178	—	—
Kateman River	♂	ad.	1190	40	—	256	234	215	208	44	25
"	♂	ad.	1125	30	—	230	220	203	183	46	23
Sungai Kumbang	—	—	—	—	—	—	—	—	—	45	—
Fort van der Capellen	♂	ad.	—	—	—	265	237	220	212	48	27
"	♂	ad.	—	—	—	250	233	214	195	48	25
Djambi	—	ad.	—	—	—	238	219	202	201	44	24.5
Palembang	—	ad.	—	—	—	252	242	221	197	50	27
Benkulen (HORSFIELD)	—	—	1118	—	—	—	—	—	—	—	—
Lampongs	—	y. ad.	—	—	—	218	206	189	154	43.5	24.5
"	—	ad.	—	—	—	232	225	210	186	44	24
"	—	ad.	—	—	—	246	228	212	184	48	25
"	—	ad.	1200	—	210	249	232	213	195	44	25
"	—	ad.	1420	—	—	—	—	—	—	—	—
"	—	ad.	1380	—	—	—	—	—	—	—	—
"	—	ad.	1400	—	—	—	—	—	—	—	—
"Sumatra"	—	ad.	—	—	—	224	—	195	170	—	—
<i>euryspilus</i> (Borneo)											
Landak River	—	ad.	—	—	—	222	205	189.5	176.4	44.5	22.5
Simpang River	—	(j)	—	—	—	220	—	—	—	43	23
Kendawangan River	—	ad.	—	—	—	216	203	185	164	40	22
"	—	(j)	—	—	—	205	—	—	165	43	20
"	—	ad.	—	—	—	—	—	—	164	44	21
"	—	ad.	—	—	—	243	220	206	182	44	26
"	—	ad.	—	—	—	222	—	—	173	45	23
Pemukang Bay	—	ad.	—	—	—	235	210	194	171	45	27
British North Borneo	♂	ad.	1260	90	—	235	210	194	171	45	27
Sarawak	—	ad.	—	—	—	236	218	—	185	49	—
Sampit, South Boreno	—	ad.	—	—	—	206	190	—	157	45	—
South East Borneo	—	ad.	—	—	—	219	197	181	167	41.5	22
	—	ad.	—	—	—	196	182	166	162	40.5	22.5

Charronia flavigula (BODD.)

Material: W. J a v a : 1 ♂, Pengalengan, Preanger, leg. K. F. KERKHOVEN, 24.IV. 1932; 1 ♀ same locality, leg. E. E. KAN, 11.X.1938; E. J a v a : 6 ♂, Yang Highland, 2100-2200 m, leg. LEDEBOER & VAN LAER, 29.II.1929, 20.XII.1932, II.1933, 2.II.1939; 1 ♂, Malampit, Zuider Mts, ex Zool. Garden Surabaya, 1933; S. S u m a t r a : 1 ♀, Djabung, Telokbetong, leg. C. E. JANS, 22.IX.1929; 1 ♀, Kotabumi Est., leg. L. BURGERMAN, 19.VI. 1940; 1 ♀, Djerambah, Kluang, Palembang, leg. SOEKARNO, 3.VII.1933; E. S u m a t r a : 1 ♂, Tebing Tinggi, Eastcoast Gvt, leg. COENRAAD, II. 1932; N. S u m a t r a : 1 ♂, Alur Simpang, Langsa, leg. W. RAPPERT, 30.V.1929; S i a m : 1 ♀, Trong, Lower Siam, purchased, 3.II.1910.

The Buitenzorg Museum possesses in the study collection: 2 skins and skulls (ad.), West Java, 6 skins with only 3 skulls (ad.) and a fourth ad. skin with external measurements, East Java; 5 skins and skulls (3 of which ad.), Sumatra, and 1 skin and skull (ad.), Malay Peninsula.

From my private collection the following adults: Sumatra 1, East Java 1, Banka, 1. In the Leiden Museum I measured: Sumatra 1, West Java 1, Borneo 2. Besides these 17 specimens, which were inserted in the table, I took 33 measurements from literature: LYON, Proc. U. S. Nat. Mus., 40, 1911, p. 120 (Sumatra 2, Borneo 4); KLOSS, P. Z. S., 1916, p. 35 (Malay Peninsula); ROBINSON & KLOSS, Journ. F.M.S. Mus., 7, 1919, p. 304 (Sumatra 2, Java 1); LÖNNBERG & MJÖBERG, A.M.N.H. (9) 16, 1925, p. 516 (Borneo 1); CHASEN & KLOSS, Bull. Raffl. Mus. 6, 1931, p. 52 (Bettotan and Rajoh 4); BANKS, Journ. Mal. Br. R.A.S., 9, 1931, p. 130 (Borneo 1); POCOCK, P.Z.S., 1936, pp. 547, 552 (Malay Peninsula 9, Sumatra 1, Borneo 6). After this paper had been finished already a long time, I saw the paper on this species by BRONGERSMA (Zoöl. Meded. Mus. Leiden, 23, 1941, p. 114-139). Therein the author mentions one well sexed skull from the Archipelago (W. Java), which I did not see in the Leiden Museum myself. The measurements of it, as given by BRONGERSMA, were inserted in my table, except that of the tooththrow, because BRONGERSMA took it on the crowns, while I always take it on the edge of the alveoli!

(The measurements, given by POCOCK, sometimes gave difficulties. His external measurements are always in inches. For the reducing to millimeters I used: 1 inch = 25.4 mm. Now, of some specimens, already formerly the measurements (in millimeters) have been published by other authors. Apparently they were reduced to inches by POCOCK. If now, also in these cases, we go reducing (back) these numbers into millimeters, we find rather important deviations from the original. So, for instance, LYON's original measurement of 445 mm (Makapan, Sumatra, head and body) becomes now 452 mm. For the type of *saba*, CHASEN & KLOSS gave for head and body, tail, and hindfoot: 455, 360 and 90 mm. After the double reduction, via POCOCK, I find 462.5, 371, and 86.5 mm. Also in the skull measurements, not reduced to inches by POCOCK, his numbers sometimes differ from those of the other authors) (Table VII).

Table VII. *Charronia flavigula* (BODD.) contd.

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull: greatest length	Condylbasal length	Zygomatic breadth	Teeth. c-m ¹
<i>saba</i> (Borneo) contd.										
? Sarawak	♀	ad.	432	322	—	—	—	—	—	—
Sungei Matan, W. Borneo	♀	ad.	435	340	93	—	—	80.8	47.7	24.2
Mt. Palong, W. Borneo	♀	ad.	442	365	94	—	—	80.5	45.1	24.8
Pamukang Bay, S. E. Borneo	♀	ad.	425	305	90	—	—	81.2	46.9	24.3
Pleihari, S. E. Borneo	♂	ad.	—	—	—	—	91	90	55	27.5
Borneo	♂ (!)	ad.	—	—	—	—	88	87	55	27.6
<i>robinsoni</i> (Java)										
W. Java, Tjibodas, Gedeh	♀	ad.	461	360	91	33	92.8	90.8	53.1	29.0
W. Java, Gedeh	♀	ad.	—	—	—	—	97.7	97	57	30.5
W. Java, Gedeh	♀	ad.	—	—	—	—	93.7	—	51.1	—
W. Java, Pengalengan	♂	ad.	518	383	101	38	97.5	96.5	55	30.5
W. Java, Pengalengan	♀	ad.	461	349	85	34	88	86.5	51.5	28.0
E. Java, Jang	♂	ad.	493	370	94	37	96	94.5	57.5	30.7
E. Java, Jang	♂	ad.	480	355	—	37	90	89	50	28.0
E. Java, Jang	♂	ad.	500	350	—	35	93.5	92	54.5	28.8
E. Java, Jang	♂	ad.	530	350	—	40	—	—	—	—
E. Java, Zuider Mts.	♂	ad.	—	—	—	—	91.5	90	55.5	28.0

Using the toothmeasurement, c-m¹, as a base for comparison of the sizes of the separate sexes and races, we got:

	♂				♀			
	Min.	Aver.	Max.		Min.	Aver.	Max.	
Mal. Peninsula	30	31.00	32	3	26.5	28.10	29	5
Sumatra	26.7	28.01	29.1	7	26.0	26.47	27.0	3
Borneo	27.5	28.02	29	4	24.2	24.85	26	8
Java	28.0	29.20	30.7	5	28.0	29.17	30.5	3

Good differences between males and females come to light for Malay Peninsula, Sumatra and Borneo, but not for Java! Perhaps from there some wrong sex-determinations may have slipped in? (The skins in the Buitenzorg Museum collection were carefully controlled and found to be in accordance with the labels). In any case it is unallowed to mingle the measurements of ♂ and ♀, and for comparison of the size of different races, unsexed skulls are better ignored.

As concerns the different races, it appears from the table that *peninsularis* is larger than the island-races (only the females from Java

make an exception!) The rather large series of Borneo females, with 26 mm as a maximum, seems to prove sufficiently that *saba* is really smaller than *lasiotis* and *robinsoni*, though the males of *saba* and *lasiotis* do not show difference! My former contention (Temminckia, 2, 1937, p. 243) that "South Borneo ... seems not to fall under the race *saba*", was based on a mis-apprehension of CHASEN & KLOSS' toothmeasurements of *saba*. I now do not see a reason to separate North and South Borneo. Further it seems that, in the direction of Java, the measurements are again increasing somewhat.

Weight of a West Javanese male: 2190 gr.

From the material, now before us, there also appears a very clear and constant difference in colour between *lasiotis* and *robinsoni*: the upper side of the head, which is very light in Java, is much darker in Sumatra (darker also than in our Malay Peninsula specimen). As an average, in Sumatra the yellow throat seems to be more yellow than in Java.

For these reasons we cannot agree with BRONGERSMA's conclusion: "Neither the coloration, nor the measurements of the skull and teeth seem to justify the distinction of more than one subspecies in the Malay Archipelago". The material, studied by him, was too scanty (he only gives the measurements of 6 *sexed* island skulls). We think we may distinguish with certainty 3 subspecies.

for Borneo: *Charronia flavigula saba* (CHAS. & KLOSS) (smaller in size)

for Java: *Charronia flavigula robinsoni* (POCOCK)

for Sumatra (and Banka?): *Charronia flavigula lasiotis* (GRAY) (the latter two differing in colour).

A stomach contents gave: fruit and lizards.

Mustela lutreolina ROB. & THOS.

Material: W. J a v a : 1 ♂, Sukawana, Tangkuban Prah, leg. B. STRASTERS, 23. XII.1918; E. J a v a : 3 ♂, Yang Highland, 2200 m, leg. LEDEBOER, 12.VIII-16.XI.1932; S. E. S u m a t r a : 1 ♂, Mt Dempo, 1800 m, leg. W. C. VERBOOM, 10.IX.1941.

In the Buitenzorg Museum collection 4 Java specimens (see table).

In my own collection a skull from Tjibuni. In literature the measurements of the type specimen, ROBINSON & THOMAS, A.M.N.H. (8) 20, 1917, p. 261, and those of a Sumatra example, BRONGERSMA, Temminckia, 5, 1940, p. 261. Furthermore Dr. M. BARTELS once sent me for determination a skin (without skull), collected in 1912 by his father at Kaligua, Mount Slamet, C. Java, 1500 m, which proved to belong to this species. It yielded no measurements (Table VIII).

The Tangkubanprahu specimen, collected in 1918, with its small measurements, is labeled as a ♂. Sure resexing was impossible. Though not very aged it must be considered as fully adult (all sutures closed and

Table VIII. *Mustela lutreolina* R. & TH.

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull: greatest length	Condylbasal length	Zygomatic breadth	Upper tooththrow c - m'	Upper tooththrow p' - m'
Tjihodas, W. Java, 5500 ft.	♂	ad.	(360)	(180)	(50)	—	58.5	58	30	16.5	—
Tangkubanprahu, 1500 m	♂ (?)	ad.	—	—	—	—	51.5	51.5	26	14.1	11.6
Tjibuni, nr. Pandung, W. Java, 1500 m	?	ad.	—	—	—	—	60	60	32	16.5	12.7
Jang, E. Java, 2200 m	♂	ad.	292	160	52	21	59.5	59.5	32	16.7	13.2
Jang, E. Java, 2200 m	♂	ad.	303	161	48	22	59	59	31.5	16.6	12.9
Jang, E. Java, 2200 m	♂	ad.	321	152	50	21	58	58	31	15.8	12.7
Benkulen, Sumatra	?	ad.	—	—	—	—	57.8	—	30.6	16.7	12.8

even wholly invisible, with the exception of that separating the nasals). I personally feel a strong presumption that it may be a wrongly sexed ♀.

Weights of two of the East Java males: 317 and 340 gram.

Amblonyx cinerea (ILL.)

Amblonyx cinerea wurmbi SODY.

The race was based on a single ♀ specimen from Watanga Mountains, E. Java, which showed a length of the upper tooththrow, greater than in any of the 15 adults (♂ and ♀) from W. Java in my collection. In the new edition of the Mammalia of Br. India, POCOCK says that in his opinion *wurmbi* is a synonym of *cinerea*. He claims that he found twice my E. Javan tooth measurement in Western Javan skulls. Yet I believe that POCOCK — though very unintendedly — rather proves than disproves my contention: that the E. Javanese form a larger race! POCOCK himself says that he (also) disposed of one (single) specimen from E. Java (Surabaja), which he compared with (at least) 4 specimens from W. Java. The Surabaja specimen then gave for the condylbasal length 99 mm, as against 88-94 in the 4 W. Javanese! Now POCOCK explains this difference by saying that "*the skull from Surabaya is exceptionally large*"! This is true (also from other parts of its range no skull of this size seems to be known in the whole species) — but it is exactly the conclusion I needed to confirm my contention that E. Javan specimens are exceptionally large! In my opinion POCOCK thus has given a very fine and wellcome affirmation of my E. Javan race, which is now based on two such 'exceptionally large' specimens from E. Java!

POCOCK's further contention that (West-) "Javan skins vary greatly in colours, probably seasonal", cannot be subscribed by me (of course

very *young* specimens must be excluded). Moreover, as far as I know nobody has ever shown *seasonal* variation in colour in Javan mammals. In any case it does not exist in this species.

In the stomachs I examined I always found the remains of crabs.

Cuon alpinus (PALL.)

In the Buitenzorg Museum we have a good series, among which 22 well localized Java skulls, in the study collection, and one from "Java" without more, of which 17 adult. In my private collection: 9 adult skulls (ample measurements of which have already been published by me in P.Z.S., 1937, p. 258). Hereto could be added the measurements of 2 Java skulls, one in the Ethnographical Museum at Delft, the other in the Museum of the Hague Zoological Gardens. From literature: 3 Java skulls, POCOCK, P.Z.S., 1936, p. 39. From Sumatra only two skulls were available, one that was lent to me by Mr. NAINGGOLAN, the other HARDWICK's type of *sumatrensis*, of which the measurements were published by POCOCK. (Table IX).

Cuon alpinus javanicus (DESM.)

Material: W. J a v a : 2 ♀, Tjianten, Mt Salak, 1100 m, leg. SCHATTENKERK, 15-18. X.1932; 1 ♀ Bolang Est., Toge, Buitenzorg Distr., leg. GEZEL, 1.VIII.1935; 2 ♀, Djasinga Est., Bantam, ex old collection, 1919; 1 ♂ imm., Gua Gadja, Tjileungsi, Buitenzorg Distr., purchased, 14.XI.1932; 1 ♂, 1 ♀, Tjiseureuh Est., Puntjak Pass, Buitenzorg Distr., leg. K. PUFKUS, 2.V.VII.1941; 1 ♂, 1 unsexed, Pasir Datar Est., Sukabumi, 1000 m, leg. M. BARTELS, 17.VI.1924; 1 unsexed, Kawah Tjiwidej, Preanger, leg. C. W. SUYDERHOUD, IV.1922; E. J a v a : 1 ♀, Kunduran, Rembang Distr., leg. GRESSER, 30.IX.1931; 5 ♂, 1 ♀, Yang Highland, leg. van LAER & LEDEBOER, 25.I.1929, III.1929, 7.IV.1929, 10.XI.1933; 2 ♂, 1 ♀ Anim Sand, Kalibaru, Banjuwangi, leg. D. J. VAN DER LINDEN, 26.I-30.XI.1925; 1 unsexed, "Java", purchased, undated.

Here again the number of specimens (especially that with determination of sex) is too small, because both males and females and Western and Eastern specimens should be studied separately.

If we take the upper toothrow (c-m²) as a special object for our study, we find that for the whole of Java it varies between 63 and 71, averagely 68.05 mm (30 specimens). Further we possess 2 subadult ♀ from Djasinga, W. Java (both changing, this process not yet wholly finished), with 65 and 64 mm (greatest *length* of skulls 154 and 155 mm, respectively).

Specifying with regard to sex, we get:

	W. Java				E. Java				Whole of Java			
	Min.	Aver.	Max.		Min.	Aver.	Max.		Min.	Aver.	Max.	
♂	70	70.25	70.5	2	64.5	68.31	70	8	64.5	68.70	70.5	10
♀	65.5	67.20	70.5	5	67	68.33	69	3	65.5	67.51	70.5	9

Table IX. *Cuon alpinus* (PALL.)

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull: greatest length	Condylbasal length	Zygomatic breadth	Upper tooth-row, c - m ²
<i>sumatrensis</i>										
Peudawa, Peureula, Atjeh	♂	ad.	—	—	—	—	162.5	—	98.5	66.5
Sumatra	—	ad.	—	—	—	—	—	+ 158	94	68
<i>javanicus</i> (W. Java)										
Tjianten, Mt. Salak, 1100 m	♂	ad.	830	260	162	85	164	152.5	98.5	66
Tjianten, Mt. Salak, 1100 m	♂	ad.	785	265	157	85	162	152.5	95.5	65.5
Bolang, Baitenzorg	♂	ad.	—	—	—	—	—	—	104	66
Tjibadak	—	ad.	—	—	—	—	169	—	98.5	67.5
Tjibadak	—	ad.	—	—	—	—	173.5	—	97	68
Tjibadak	—	ad.	—	—	—	—	175.5	—	100	68
Puntjak, 1200 m	♂	ad.	894	283	170	90	176	162	99	70.5
Puntjak, 1200 m	♂	ad.	—	—	—	—	178	—	100.5	70
Pasir Datar, Sukabumi	♂	ad.	—	—	—	—	168.5	157	96.5	68
Kawah Tjiwedej, Preanger	♂	ad.	—	—	—	—	176.5	—	105.5	70.5
Kawah Tjiwedej, Preanger	—	ad.	—	—	—	—	178	164.5	103	70.5
(Central Java)										
Tjandiroto, Kedu (Hague)	—	ad.	—	—	—	—	174	161	98	69
Temanggung, Kedu (Delft)	—	ad.	—	—	—	—	171	—	102	66.5
Telawa	♂	ad.	—	—	—	—	—	—	101	68.5
Keling, Mt. Müriah	—	ad.	—	—	—	—	184	—	106	—
(East Java)										
Sumber Brantas, Batu,										
Fasuruan	—	ad.	—	—	—	—	164.5	—	97.5	63
Modjokerto	♂	ad.	—	—	—	—	170	157	97	69
Modjokerto	♂	ad.	—	—	—	—	168	152	96	67
Jang, 2200 m	♂	ad.	1200	260	—	—	184	171	110	70
Jang, 2200 m	♂	ad.	835	235	—	90	176	—	101	68.5
Jang, 2200 m	♂	ad.	—	—	—	—	178	165	101	70.5
Jang	♂	ad.	1030	290	—	—	177	164	101	70
Jang	♂	ad.	—	—	—	—	179	164	102.5	70
Jang	♂	ad.	1050	300	—	—	173	162	98.5	67
Anim Sand, Banjuwangi	♂	ad.	—	—	—	90	171	158	102.5	68
Anim Sand, Banjuwangi	♂	ad.	—	—	—	—	166	155.5	97	64.5
Anim Sand, Banjuwangi	♂	ad.	—	—	—	—	171.5	161	100	69
("Java")										
Java	—	ad.	—	—	—	—	163.5	—	94.5	64
Java	—	ad.	—	—	—	—	171	—	102	—
Java	—	ad.	—	—	—	—	179	168.5	106	71
Java	♂	ad.	—	—	—	—	170	157	97	66.5
Java	—	ad.	—	—	—	—	170	157	98	69

From these data we can only presume with much doubt that the ♂ may be a trifle larger than the ♀.

Specifying with regard to locality, we get:

	♂				♀				Both sexes together			
	Min.	Aver.	Max.		Min.	Aver.	Max.		Min.	Aver.	Max.	
W. Java	70	70.25	70.5	2	65.5	67.20	70.5	5	65.5	68.23	70.5	11
E. Java	64.5	68.31	70	8	67	68.33	69	3	63	68.00	70.5	15

From which we certainly cannot conclude to difference in size between West and East Java.

In one case (Jang, No. 2065) the external measurements seem very large. It is true, however, that this specimen (together with the Muriah one) also furnishes the somewhat exceptionally large skullmeasurement of 184 mm.

The greatest weight, known to me, is that of the ♂ from Kawah Tjiwijdj: 12.9 kg. Another ♂ (Anim Sand, No. 1147) gives 10.8 kg. A ♀ (Mt. Salak, No. 137/32): 8.1 kg.

Cuon alpinus sumatrensis (HARDW.).

Already earlier I pointed to the extreme rarity of Sumatra specimens of Adjag in collections (in fact, as far as I know, RAFFLES' specimen in the British Museum was unique then) and therefore I gave a description of an Atjeh skin which I saw in the collection of Mr. NAINGGOLAN. Since that time I had once more the opportunity to study (rather superficially) a Sumatra (Lampongs) specimen, this time an animal living in the Zoological Gardens at Bandung. Comparing my observations on both specimens, I find that both times exactly the same differences from Javan Adjag were noted. Also the Lampongs animal was clearly smaller than average Javanese, darker in general tinge (more reddish, less yellowish) and with a *sharp* separation between the brown of the sides and the white of the belly.

It may be of some use to republish here that in 1929 (Nat. Tijdschr. Ned. Ind., 89, p. 283) I came to the conclusion that from Borneo no *Cuon* is known. CHASEN (Bull. Raffl. Mus., 15. 1940, p. 93) comes to the same conclusion, but he does not mention TEMMINCK's MS. name *Canis pallens* for a so-called Borneo specimen in the Leiden Museum, published by JENTINK (Cat. Syst. Mus. Hist. Nat. Pays-Bas, 11, 1892, p. 84).

Prionodon linsang (HARDW.)

Prionodon linsang linsang (HARDW.).

Material: W. Sumatra, 1 ♂, Pajakumbuh, Southwest-coast, leg. C. L. VAN DER PLAS, 1928; E. Sumatra: 1 ♀, Pladju, Palembang, leg. VAN GENDEREN, XII.1934.

1 ♂, Pajakumbuh, Sumatra's West coast; 1 ♀, Pladju, nr. Palembang, S. E. Sumatra.

Prionodon linsang gracilis (HORSF.).

Material: W. J a v a : 1 unsexed, Tjisangiri, Mandalagiri Mts, Preanger, 1350 m, purchased, undated; E. J a v a : 2 ♂, Yang-Highland, 2200 m, leg. LEDEBOER, XI.1934; S. E. B o r n e o : 1 unsexed, Ulu Sungei, leg. R. MEYER, 1920; 1 unsexed, Tjimenteng, Djampang Mts, W. Java, in coll. M. BARTELS, 1908.

2 ♂, E. Java, 2200 m; 1 (skull), Tjisangiri, Mandalagiri Mountains Preanger, W. Java, 1350 m; Ulu Sungai, S. E. Borneo.

Prionodon linsang interliniurus subsp.n.

Material: W. Billiton: 1 ♀, skin and skull, young adult, Tandjung Pandan, leg. J. H. WESTERMANN, 9.I.1938, Buitenzorg Museum, Cat. Nr. 6784; 1 ♀, skin only, same locality, same collector, same date, Cat. Nr. 6783.

Type: ♀, young adult, Tandjung Pandan, Billiton island, 1939. Buitenzorg Museum, No 6784. Paratype: ♀ (skin only), same locality, No 6783. Both specimens were collected and presented to the Museum by Ir J. H. WESTERMANN.

The Billiton specimens represent another small race (cf. *fredericae* SODY, of Banka Island).

Prionodon linsang (HARDW.)

	Greatest length of skull				Upper tooththrow (c-m ²)			
	Min.	Aver.	Max.		Min.	Aver.	Max.	
<i>linsang</i> , Sumatra	69.5	72.6	77	10	24.5	26.1	27	9
<i>gracilis</i> , Java, Borneo	65	69.2	73	6	22.8	25.2	26.6	4
<i>fredericae</i> , Banka (type)	—	63.5	—	1	—	19.4	—	1
<i>interliniurus</i> , Billiton (type)	—	62.9	—	1	—	22.1	—	1

There is also some difference in colour: in the Billiton animals the light underside, especially the light tailrings, are more tinged with buff. But the most striking character of the race is formed by the small secondary dark rings, which occur inside the light tailrings, especially in the posterior four. These additional dark rings turn up only on the upper side of the tail and at most reach half of the circumference of it.

Measurements of type: Head and body 316; tail 264; hind foot 53; ear 26; Skull: greatest length 62.9; condylobasal length 62.7; basal length 58.7; palatal length 30.5; zygomatic breadth 29.0; breadth of braincase 21.1; interorbital constriction 11.2; breadth of combined nasals 5.6; distance between temporal ridges 11.8; length of upper tooththrow 22.1 mm.

Viverra tangalunga GRAY.

Material: Sumatra: 1 ♀, Dawas, Palembang, leg. SOEKARNO, 5.VII.1933; 1 ♀, Kluang, Palembang, leg. SOEKARNO, 27.VIII.1933; 1 ♀, Talangbetutu, Palembang, leg. DENIN, 20.XI.1918; 1 unsexed "Sumatra", purchased, undated; N. E. Borneo: 1 ♂, Peleben, Kajan River, Bulungan, leg. V. VON PLESSEN, 16.IX.1935; Celebes: 1 unsexed, Paloppo, leg. H. KIDERLEN, VIII.1921; 3 ♂, Tonsea Lama, Tondano, Menado Distr., leg. VAN BRAEKEL, 10.VII.1937; 10.I.1939, 5.III.1939; 1 ♂, Bumbulan, Menado Distr., leg. J. J. MENDEN, 10.X.1939; 2 ♂, Bolaang Mongondau, leg. A. REYNE, 3-24.VIII.1939; Buru I.: 1 ♂, 1 ♀, Leksula, leg. L. J. TOXOPEUS, 17.III-IV.1921; 1 ♂, "Buru", leg. DENIN, 5.X.1913.

The collection of the Buitenzorg Museum counts 10 skins and 15 skulls (of which 14 adult). Distribution: Sumatra 4, Borneo 1, Celebes 7, Buru 3. In my own collection: Banka 1.

In the literature we chiefly find the series of LYON, Proc. U. S. Nat. Mus., 31, 1906, p. 600; 34, 1908, p. 657; 40, 1911, p. 116 (Sumatra and islands 8, Billiton 2, Borneo and islands 19). Further strayed measurements by MILLER, Proc. U. S. Nat. Mus., 31, 1906, p. 61 and 271 (Lingga 1, Bintang 2, Karimata 2); ROBINSON & KLOSS, Rec. Ind. Mus., 19, 1920, p. 177 (Langkawi 1); CHASEN & KLOSS, Bull. Raffl. Mus., 6, 1931, p. 10 (Borneo 1); POCOCK, J. Bomb. N. H. Soc., 36, 1933, p. 438 (Sumatra 1, Borneo 1).

Summarizing for a survey over the toothmeasurement (c-m²), we get:

	♂				♀			
	Min.	Aver.	Max.		Min.	Aver.	Max.	
Sumatra	45.4	45.92	46.8	4	42.2	44.55	46.2	6
Banka, Billiton	—	44.7	—	1	43.6	44.90	46.2	2
P. Panebangan	—	—	—	—	—	41.7	—	1
P. Karimata	—	—	—	—	—	43.9	—	1
Borneo	43.4	45.05	46.8	10	42.9	43.37	44.0	4
P. Laut	—	—	—	—	—	43.6	—	1
Celebes	44.0	44.67	46.0	6	—	—	—	—
Buru	41.7	42.90	44.1	2	—	43.9	—	1

Sexual difference in size, if present, seems to be very small. Between the separate localities no difference in size appears from the table, except with LYON's adult female specimen from P. Panebangan, with a tooth measurement of 41.7 mm, which number does not occur in the further series of 15 adult females (but it occurs in one of our Buru males). Perhaps a small subspecies?

Viverricula malaccensis (GMEL.).

Material: W. Java: 4 ♂ juv., 1 ♀ juv., Buitenzorg, purchased 11.III.-12.XII.1924; 1 ♀, Buitenzorg, purchased, 16.III.1925; 1 ♂, Buitenzorg, purchased, 3.I.1927; 1 ♀, Buitenzorg, leg. CH. JANS, 21.III.1927; 1 ♀, Buitenzorg, purchased, 20.V.1927; 1 ♂,

Table X. *Viverra tangalunga* GRAY.

	Sex	Age	Head and body	Tail	Hind foot	Skull = greatest l.	Condylobasal length	Basal length	Zygomatic breadth	Upper toothrow c-m ²
Langkawi Id.		ad.	650	342	103	130	—	111	61	—
Pulo Rupert, E. Sumatra		imm.	630	235	100	—	—	101	51.8	43.2
Little Siak River, E. Sum.		ad.	660	320	107	—	—	108.4	60	46.8
"		ad.	680	305	106	—	—	111	58.8	45.7
"		ad.	615	315	105	—	—	109	55	45.4
Siak River, E. Sumatra		ad.	660	330	103	—	—	111.8	62.6	45.3
"		ad.	—	—	—	—	—	111.5	61	45.8
Sungei Mandau		ad.	705	340	105	—	—	109	57.8	45.0
"		ad.	655	315	106	—	—	108.7	57.5	45.4
West Sumatra (topotype)		ad.	—	—	—	117	—	—	61	—
Palembang		ad.	665	283	104	118	116	109.5	56	46.2
"		ad.	566	309	99	108	105	99	51	42.2
"		ad.	—	—	—	117	115	110	59	46.5
Lingga Id.		ad.	665	360	97	—	—	—	—	—
Bintang Id.		ad.	675	315	96	—	—	—	—	—
"		ad.	658	325	95	—	—	—	—	—
Banka Id.		ad.	600	336	94	±120	115	109.5	57	46.2
Billiton Id.		ad.	650	305	95	—	—	107.3	54.5	43.6
"		ad.	620	300	103	—	—	103.7	56.7	44.7
Bettotan, N. Borneo		ad.	—	—	—	—	112	107.5	59.2	—
Saribas, Sarawak		ad.	700	378	—	—	—	—	—	—
Peleben, Bulongan, E. Borneo		ad.	645	310	105	115	114	108.5	61	45
Sempang River, S. W. Borneo		ad.	675	350	104	—	117.6	—	58.0	46.8
"		ad.	685	325	101	—	114.3	—	54.8	43.1
Mt. Palung, foot, S. W. Borneo		imm.	663	330	100	—	113.7	—	54.3	44.0
Kendawangan River, S. W. Borneo.		ad.	635	300	101	—	111.0	—	58.3	44.2
"		ad.	630	315	100	—	108.7	—	57.5	42.9
"		ad.	620	313	102	—	112.5	—	57.7	44.7
Balikpapan Bay, S. E. Borneo		ad.	620	315	92	—	113.0	—	58.4	46.2
"		ad.	640	300	95	—	114.7	—	58.0	45.6
"		ad.	605	315	97	—	110.0	—	57.3	43.4
"		ad.	643	320	103	—	113.9	—	59.6	44.7
Saratoh River, S. E. Borneo		ad.	640	300	100	—	110.6	—	56.3	43.5
"		ad.	662	315	106	—	115.5	—	61.4	45.3
Klumpang Bay, S. E. Borneo		imm.	606	310	97	—	107.5	—	53.1	41.5
"		imm.	600	335	100	—	110.2	—	54.5	42.8
"		imm.	615	300	97	—	109.4	—	54.0	42.6
"		ad.	665	275	98	—	114.9	—	60.0	44.6
Panebangan Isl.		ad.	650	310	102	—	111.4	—	59.0	41.7
Karimata Isl.		ad.	—	350	102	—	—	—	—	—
"		ad.	635	305	97	—	112.3	—	55.0	43.9
Bauwel Isl.		ad.	610	310	100	—	111.8	—	53.5	43.6
Laet Isl.		ad.	658	288	104	—	118.5	112.5	63	46.0
Celebes, Manado		ad.	—	—	—	116	114	109	56	44.0
"		ad.	—	—	—	117	117	111.5	55.5	45.3
"		ad.	—	—	—	111	111	105.5	52	44
"		ad.	—	—	—	115	115	110	60	44.7
"		ad.	—	—	—	111	110.5	105.5	54	44
Celebes, Palopo		ad.	—	—	—	108	108	102.5	55	42.4
Buru		ad.	—	—	—	—	—	—	±55	44.1
"		ad.	570	320	—	110	108	102	57	41.7
"		ad.	—	—	—	112.5	109.5	104.5	56	43.9

Buitenzorg, leg. CH. JANS, 14.I.1928; 2 ♂, 2 ♀, purchased, 19.I.-18.II.1928; 1 ♀, Kotabatu, Buitenzorg, purchased 19.VI.1933; 1 ♀, Buitenzorg, leg. P. F. FRANCK, 21.IV.1935; 1 ♂, Buitenzorg, leg. F. DUPONT, 9.IX.1935; 1 ♂, Semplak, Buitenzorg, purchased, 14.IX.1939; 1 ♂, Buitenzorg, leg. G. J. IMBERT, 10.IX.1933; 1 ♂, 1 ♀, Buitenzorg, purchased, 17.VII.-30.VIII.1935; 1 ♀, juv. Tjiapus, Mt Salak Buitenzorg Distr., 6.XI.1925; 1 sex. inc., Gunung Putri, Buitenzorg Distr., leg. E. DAHLER, 18.VII.1926; 2 ♂, Tjiomas, Buitenzorg Distr., purchased, 25.V.1927; 1 ♀, Bolang Est., Buitenzorg, purchased, 1.XI.1931; 1 ♂, Tandjong Priok, Batavia, leg. CH. JANS, 24.III.1928; 1 ♀, Sukabumi, Buitenzorg Distr., purchased, 7.IX.1926; 1 ♂, Depok, Batavia Distr., leg. E. DAHLER, 6.VI.1926; 1 ♀, Tasikmalaja, Priangan, leg. F. KOPSTEIN, 1.X.1928; 2 ♂, Tjineam, Priangan, leg. P. F. FRANCK, 22.XI.1930; 1 ♂, juv., Tjigugur Est., Parigi, Priangan, Dir.Zool.Garden Bandung, 13.XI.1936; 2 ♀, Cheribon, leg. J. J. MENDEN, 13.XII.1928-9.XI.1929; 1 ♂, Pasir Carolina, Purwakarta, leg. J. KLOOSTER, 29.V.1932; 1 ♂, Kaligua, Mt. Slamet, leg. DENIN, 1.II.1917; 2 ♂, Brebes, Pekalongan, leg. A. K. THE, 30.IX.1937; E. Java: 1 sex.inc., Ranu Pani, Tengger Mts, 2100 m, leg. S. W. G. GISIUS, 1939; B a w e a n: 1 ♀, S. Bawean, leg. P. F. FRANCK, 4.V.1928; S u m b a w a: 2 sex. inc., Sumbawa Besar, 1 ♂, Dompu, leg. B. RENSCH, 25.IV.-28.V.1927.

In the Museum: 39 Java study specimens (17 adult), all West Java, 1 (adult) from Bawean island, and 3 (not adult) from Sumbawa. My notes on my own collection include the following adults: Sumatra, 3; W. Java, 5; E. Java, 2; Mount Muriah, C. Java, 2; Bali, 5. From literature: 8 Java and 2 Kangean measurements, by POCOCK, J. Bomb. N. H. Soc., 36, 1933, p. 656. Furthermore I compiled all measurements of the race *malacensis* which I could find in literature: KLOSS, Journ. N. H. Soc. Siam, 3, 1919, p. 353 (2); POCOCK, l.c. (8); CHASEN, J. Siam. Soc. N. H. Suppl., 10, 1935, p. 43 (3) (Table X).

From the table no obvious differences in measurements between the races inserted appear. The separation of the races is based on differences in colour and pattern. The single specimen from Bawean fits well among the Javanese, and the same seems to prevail for our 3 very incomplete and in-adult skins from Sumbawa. The latter do not show the character on which *baliensis* has been described (cf. also FRECHKOP, Meded. Kon. Nat. Hist. Mus. België, 10, 14, 1934, p. 17, and MERTENS, Zool. Jahrb., 48, 1936, p. 312). It seems dubious if the occurrence in Sumbawa is an original one. It has not been found in Lombok.

For comparison of the sexes may serve:

W. Java		Greatest length of skull				Upper toothrow			
		Min.	Aver.	Max.		Min.	Aver.	Max.	
Largest	♂	98	99.95	103	10	33.5	35.45	37.5	10
Largest	♀	94	97.15	100.5	10	34	35.15	37	10

Perhaps the females are a trifle smaller.

Table XI. *Viverricula malaccensis* (GMEL.)

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull=greatest length	Condylobasal length	Zygomatic breadth	Uppertoothrow, c - m ²
<i>malaccensis</i> (Continent)										
Malacca	♂	ad.	520	345	93	—	96	94.4	47.4	35
Malacca	♂	ad.	553	331	94	—	97	96.1	47	35.2
Patani	♂	ad.	—	—	—	—	96.5	—	43	—
Perak	♂	ad.	—	—	—	—	96.5	—	46	—
Penang	♂	ad.	—	—	—	—	96.5	—	45.5	—
Penang	♀	subad.	—	—	—	—	94	—	43	—
Tenasserim	♂	ad.	—	—	—	—	104	—	51	—
Sittang delta	—	ad.	—	—	—	—	98.5	—	48	—
Sittang delta	—	ad.	—	—	—	—	98	—	47	—
Tonghao (30 miles N. of)	—	ad.	—	—	—	—	101.5	—	45.5	—
Bangnara	♂	ad.	—	—	—	—	102	99.4	45.3	36
Bangnara	♂	ad.	—	—	—	—	96.7	94.9	43.7	36.2
Perak	♂	ad.	—	—	—	—	97	96.1	47	35.2
<i>atchinensis</i> (Sumatra)										
Atjeh, N. Sumatra	♂	ad.	—	—	—	—	96.5	—	44	35
Atjeh, N. Sumatra	♀	ad.	510	310	93	38	93	—	44	35
Atjeh, N. Sumatra	♀	ad.	—	—	—	—	97.5	—	44	35
<i>rasse</i> (Java)										
Mt. Salak	♂	ad.	473	277	84	37	93.5	—	43.5	34.5
Batavia	♂	ad.	—	—	—	—	101.5	—	47	—
Tandjong Priok	♂	ad.	538	295	—	41	100	98	48	35
Depok	♂	ad.	548	322	—	40	102	98	48.5	36.5
Tjiteureup	♂	ad.	610	290	—	—	103	—	48.5	37.5
Buiten Zorg	♂	ad.	506	315	90	41	96	—	43	34
Buiten Zorg	♂	ad.	550	290	—	40	98	95	47.5	35.5
Buiten Zorg	♀	ad.	545	340	95	37	99	—	45	35.5
Buiten Zorg	♀	ad.	501	312	—	38	98	—	41	37
Buiten Zorg	♀	ad.	545	310	—	40	97.5	—	45.5	34
Buiten Zorg	♀	subad.	490	305	—	36	92	89	41	35
Buiten Zorg	♀	ad.	540	320	90	35	96.5	95	44.5	34.5
Bolang	♀	ad.	465	295	—	38	93	91	43	33.5
Sukabumi	♀	ad.	530	310	—	36	97	95	43.5	35
Purwakarta	♂	ad.	600	320	95	38	99.5	97	45	36.5
Tjineam, Preanger	♂	ad.	510	320	86	40	98	95	45.5	36
Tjineam, Preanger	♂	ad.	440	380	91	41	94	90.5	42	35
Preanger	♂	ad.	—	—	—	—	100.5	—	47	—
Preanger	♂	ad.	—	—	—	—	99	—	47	—
Preanger	♂	ad.	—	—	—	—	98	—	47	—
Preanger	♀	ad.	—	—	—	—	100.5	—	47	—
Preanger	♀	ad.	—	—	—	—	94	—	45.5	—
Preanger	♀	ad.	—	—	—	—	92	—	43	—

Table XI. *Viverricula malaccensis* (GMEL.), contd.

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull: greatest length	Condylabasal length	Zygomatic breadth	Upper toothrow, c-m ²
<i>rasse</i> (Java) contd.										
Cheribon	♂	ad.	490	288	86	40	95	—	43	35.5
Cheribon	♂	ad.	472	305	92	40	95	93	41.5	35
Cheribon	♂	ad.	495	310	90	42	98	95	45	35
Brebes, Pekalongan	♂	ad.	507	316	84	32	91.5	89.5	44	33
Brebes, Pekalongan	♂	ad.	496	292	87	38	93.5	91.5	42.5	33.5
Kaligua, Mt. Slamet	♂	ad.	—	—	—	—	91.5	91	42	35
Tjepu, Rembang	♂	ad.	—	—	—	—	93.5	—	46	35.5
Rambipudji, Besuki	♂	ad.	553	310	97	37	101	—	46	37
Java	—	ad.	—	—	—	—	95	—	42.5	—
Kangean island.										
Kangean	♂	subad.	—	—	—	—	96.5	—	43	—
Kangean	♂	ad.	—	—	—	—	91.5	—	45.5	—
Bawean island										
Bawean	♀	ad.	490	280	85	40	92	90	45	34
<i>muriavensis</i> (Java)										
Mt. Muria	♀	ad.	540	268	90	40	97	—	46	37
Mt. Muria	♀	ad.	547	270	90	41	92	—	40.5	35
<i>baliensis</i> (Bali)										
Bali	♂	ad.	545	295	92	42	100	—	44	36
Bali	♀	ad.	535	290	92	42	94.5	—	43	36
Bali	♀	ad.	550	310	90	40	99.6	—	45.5	35.5
Bali	♀	ad.	523	320	90	40	99	—	47.5	35
Bali	♀	ad.	530	320	85	42	96	—	44.5	—

Some weights of adult males are (according to the labels) : 2580, 1590 and 1500 gr.; of adult females: 2910, 2316 and 2010 gr. One female with 1830 gr. is on the boundary of adulthood.

As generally known the Rasé shows some variability. The pattern (especially the 5 lengthwise stripes on the back) is sometimes very sharp and clear (black), otherwise much less so, up to only vaguely visible, in a few instances. In case the pattern is not black, it is often more or less rust-brown. The number of the dark tailrings is always practically 7, included the one at the base of the tail which chiefly extends over the upperside of it only.

Moreover, however, in our series 3 examples occur, so strongly differing from the normal ones (but so much similar among each other) that

one's first thought could be: another species. The whole ventral side is light ochroleucus, without the slightest mixing of any other colour or local darker shading. The dorsal side is ochraceus mixed with the black or blackish brown of a number of hairtips (especially on the neck). At their bases the hairs of the upper side are dark grey. Hands and feet dark brownish grey. Tail ochroleucus with slightly darker rings of the same colour. The conformity of the skulls (and the general impossibility that another species should occur here) make it clear at once that here only some variety of the common Rasé lies before, which we should like to indicate as forma *ochroleucos*. It seems especially remarkable that the mentioned 3 skins, notwithstanding their strong deviation of the standard, are so much alike among them, whilst yet they are not simply albinistic or schizochroistic. The three specimens are not yet fully adult. They have been collected in Buitenzorg, 1933 and 1935.

Herpestes javanicus (GEOFFR.) ¹⁾

Herpestes javanicus tjerapai subsp. n.

Type: ♂ ad., Perlak, Atjeh, N. Sumatra, 0-100 m. Coll. F. J. NAINGGOLAN, X.-1930. Buitenzorg Museum, Cat. No 3185. Specimens examined: all together I studied 5 North Sumatra specimens: 4 from Perlak (one without skull), in collection NAINGGOLAN, while now in the Buitenzorg Museum I find back 2 of these same Perlak-specimens (including the one without skull), and furthermore a specimen presented by the Deli Proefstation at Medan. The label of this latter specimen reads: for sex: "♀", and for locality: "Tjerabei, East coast of Sumatra". There is no doubt that this skin really represents a Sumatra specimen but there must be one or two mistakes with the label. First I am afraid there does not exist a locality named Tjerabei. "Tjerapai" (or Tjerabei) is the native Atjeh name for *Herpestes javanicus*! Then I feel large doubt regarding the sex. The skin (without measurements) certainly is that of a ♀, but the skull is so large (greatest length 82.3 mm) that I have little or no doubt that skin and skull do not belong together. Practically *certain* the skull is that of a male. In this special case the supposition of such an error is the more self-evident as the prepared skin and the skull, not tied together, were received from the Museum of the Deli Tobacco Experiment Station.

From Java I studied 45 specimen (24 of which in my own collection, among which the type of *orientalis*).

¹⁾ It may be useful to repeat here a correction on my earlier work, which I already gave before (Nat. Tijdschr. Ned. Ind., 96, 1936, p. 42): In all of my papers of 1934 and earlier, I consistently wrote "condylobasal length" for the measurement generally called "basal length". So, one is requested to read there basal length each time when condylobasal length was written. In my later papers my nomenclature at this point has been brought in accordance with that of other authors. Unfortunately in the paper itself, in which this correction was inserted, a kind of misprint on this very same point occurs. Therefore it may be stated here with emphasis, that the measurement of 82.5 mm, given there (p. 45) for the type specimen of *Herpestes javanicus orientalis*, does not regard the condylobasal length but the basal length of the skull.

Diagnosis: The difference in colour from the Javan races is extremely large and constant. There is no trace of red or brown in the fur. All longer hairs are (more coarsely or finely) ringed, alternately blackish and light yellowish grey. Only at the tip of the tail the colour of these hairs is more or less ochraceous. The soft underfur shows (especially on the ventral side) a somewhat warmer ochraceous tinge, but remains much lighter than in the Javanese. The feet are dark and they also show some ochraceous.

The Malay Peninsula form of our species (*peninsulae* SCHWARZ) is only known to me from descriptions. However, one of the differences between our Atjeh examples and *peninsulae*, lying in the skull, seems rather important, and it seems improbable that it should be a variation within the subspecies. Our Atjeh specimens "more than" agree with *peninsulae* from Lower Siam and the Peninsula (type locality Bangkok, Siam) in the "almost complete absence of red on the back" (SCHWARZ, A. M. N. H., (8), 6, 1910, p. 231). For our animals we can say that the redbrown is not only lacking "almost completely", but completely. When SCHWARZ describes the head of *peninsulae* as "dark reddish-brown", in our animals it is as free of reddish brown, as much yellow-grey annulated with black, as the whole further upperside. Only the annulations on the head are somewhat shorter and perhaps through that the head seems a trifle darker than the back. Furthermore there is no "dark tip" at the tail, as stated by SCHWARZ for *peninsulae*, but in the latter point both specimens, described from Taiping, Perak, by KLOSS (Journ. F. M. S. Mus., 7, 1917, p. 124) agree with Atjeh. Furthermore the bullae of *tjerapai* show quite the type of *javanicus* (anterior auditory chamber markedly lower than the posterior one), whilst SCHWARZ states that in this respect those of *peninsulae* are "much as in *Mungos exilis* ..., different from those of *M. javanicus*".

As concerns the measurements, *tjerapai* seems to be clearly larger than *peninsulae*, even if we look at the skull, labeled ♀, as a ♂ (Table XII).

Measurements of type: Head and body 400; tail 310; hind foot 75; ear 25; Skull: greatest length 80.9; condylobasal length 78.6; basal length 74.3; palatal length 43.2; zygomatic breadth 40.7; breadth of braincase 27.8; interorbital constriction 16.1; postorbital constriction 14.0; length of nasals 19.9; breadth of combined nasals 7.3; length of upper toothrow, c-m², 29.4; length of bulla 15.1 mm.

Probably the occurrence of this animal in Sumatra is restricted to Atjeh, where, most certainly, it is not uncommon and generally known under the name *Tjerapai*.

As concerns the two Javan races (*javanicus* from the Western part of the island, and *orientalis* from the Eastern part) the difference in measurements appears clearest if we compare specimens from the extreme Western part (Salak, Buitenzorg, Preanger, Subang) with such of the extreme East (Besuki). Already Cheribon (extreme East of West Java) clearly shows larger measurements than the extreme Western parts (♂) and this

Table XII. Skull measurements of *Herpestes javanicus* (GEOFFR.)

		Greatest length				Basal length				Zygom. breadth				Toothrow, c-m ²			
		Min.	Aver.	Max.		Min.	Aver.	Max.		Min.	Aver.	Max.		Min.	Aver.	Max.	
<i>peninsulæ</i>																	
Malay Peninsula ¹⁾	♂	77	77.5	78.0	2	—	—	—	—	37	38.3	39.2	3	26	26.7	27.5	3
<i>tjerapai</i>																	
N. Sumatra	♂	79	81.5	84	4	72.5	74.8	77	4	40.5	41.8	43.1	4	27.5	28.8	29.5	4
<i>javanicus</i>																	
W. Java, Salak	♂	83	84.0	85	2	75	76.7	78.5	2	39	40.2	41.5	2	28.7	29.2	29.8	2
„ , Buitenzorg	♂	77.7	79.7	85.2	9	69.5	74.5	81.0	8	33.5	38.9	46.3	9	27.3	28.4	29.6	9
„ , Subang	♂		85	—	1	—	77.5	—	1	—	40.5	—	1	—	29.3	—	1
„ , Cheribon	♂	84	86.2	87.0	3	75.5	79.3	81.5	3	39.3	42.2	43.8	3	29.4	30.2	30.7	3
C. Java, Slammat	♂	84	84.7	85.5	5	77.5	78.1	79	5	38	40.2	42	5	29.1	29.6	29.8	5
„ , Rembang	♂	—	86	—	1	—	79.5	—	1	—	42	—	1	—	29.2	—	1
<i>orientalis</i>																	
E. Java, Besuki	♂	88.5	89.0	89.5	2	80.5	81.5	82.5	2	44	44.7	45.5	2	29.5	30.2	30.8	2
<i>peninsulæ</i>																	
Malay Peninsula	♀	—	71	—	1	—	—	—	—	—	38.2	—	1	—	25.7	—	1
<i>javanicus</i>																	
W. Java, Salak	♀	68	71.4	76.5	4	62	66.2	70	4	31	33.3	36.5	4	24.3	26.2	27.7	4
„ , Buitenzorg	♀	71	73.5	76	2	66	67.5	69	2	35	35.7	36.5	2	25.8	26.3	26.8	2
„ , Preanger	♀	—	74	—	1	—	70	—	1	—	33.8	—	1	—	± 27.8	—	1
„ , Cheribon	♀	72.3	74.4	77.8	3	67.1	69.1	72.3	3	32.3	35.4	39.4	3	26.1	27.2	27.9	3
C. Java, Slammat	♀	74	76.0	78	2	68.5	70.7	73	2	36	36.0	36	2	25.9	26.6	27.2	2
„ , Muriah	♀	—	78.5	—	1	—	73	—	1	—	37.5	—	1	—	28.7	—	1

¹⁾ Measurements of *peninsulæ* taken from SCHWARZ, A. M. N. H., 8-VI, 1910, p. 231; and KLOSS, Journ. F. M. S. Mus., 7, 1917 p. 124; 7, 1918, p. 241.

enlargement continues over Muriah, Central Java (♀). For a full insight still more material will be necessary.

Panthera tigris (L.)

Material: S u m a t r a : 1 ♀ juv., Djambi, purchased, 8.III.1922; 1 ♀, Baru, Djambi, leg. POSTHUMUS, 28.VIII.1925; 1 ♀ juv., Sungei Karang, Deli, leg. H. H. the DUKE ADOLF v. MECKLENBURG, IX.1923; 1 ♂, Lahat, leg. W. C. VERBOOM, undated; 1 ♀, Pagaralam Est., Benkulen, leg. A. V. A. COULIN, 3.XI.1941; 1 unsexed, between Pagaralam and Lahat, leg. A. V. A. COULIN, 17.I.1941; 1 ♀, Bangkinang, Westcoast Gvt, leg. TH. VOORSTAD, 7.XI.1930; 1 unsexed, Fort de Kock, Westcoast Gvt, leg. E. JACOBSON, 1931; 1 ♂, Bangkinang, Westcoast Gvt, leg. J. H. LANGE, 18.IX.1931; 1 ♀, Padang, Westcoast Gvt, don. Zool. Garden Batavia, 7.X.1939; 1 ♀, Lampongs, purchased, undated; 1 ♂, juv., Tandjong Karang, Lampongs, leg. G. H. THE, 17.IX.1917; 1 ♀, Hatamteginamun, Lampongs, leg. A. F. WEHLBURG, 4.IV.1935; 1 ♂, Tandjong Karang, leg. P. H. SYNJA, IV. 1935; 1 ♂ "Sumatra", don. Zool. Garden Batavia, 21.V.1937; J a v a : 1 unsexed, Tamandjaja, G. Hondje, W. Bantam, leg. VERDUYN LUNEL, IX.1928; 1 unsexed, Tjipandak, S. Tjiandjur, leg. VAN MAARSEVEEN, XI.1936; 1 ♂ juv., Blitar, Kediri, R. M. B. HARIO SOSRO ADINEGORO, IV.1910; 1 ♀, Gaol, E. Java, leg. A. LEDEBOER, 9.IV.1930; W. B a l i , 1 ♀, Sumber Kima, leg. A. F. WEHLBRUG, 27.IX.1937.

In the study collection of the Buitenzorg Museum: 12 skulls and 11 skins from Sumatra, 5 skulls and 2 skins from Java, 1 skull and skin from Bali.

Of the Sumatra skulls one misses sex, a second a more precise locality. But worse is that once or twice we dare not trust the sexes which are given on the labels.

Besides we collected all Sumatra, Java and Bali measurements, obtainable from elsewhere. Here also a trouble was that part of this material is not located more precisely within their islands, while again a number of sexes are wanting. This time, however, we inserted all available measurements (excepted the juvenile) in our table. The principal reason for doing so is that, with this animal, the differences in measurements between ♂ and ♀ appear to be so large, that as a rule the sexes seem to be deducible from the measurements with much probability. Yet, we had to establish the boundaries between ♂ and ♀ ourselves, and after having done so, we do not feel sure that our numbers are absolutely sharp. Among others very young adult and sub-adult specimen, of which we should wish very much to study the measurements, were not available!

The further measurements come from: HAGEN, Tijdschr. Kon. Ned. Aardr. Gen., 2e S., 7, 1890, p. 90; SCHNEIDER, Zool. Jahrb., 23, 1905, p. 98; SCHWARZ, Ann. Mag. Nat. Hist. (8), 10, 1912, p. 326; ROBINSON & KLOSS, Journ. F. M. S. Mus., 8, 1918, p. 8; POCKOCK, J. Bombay N. H. Soc., 33, 1928, pp. 535, 537; BRONGERSMA, Zoöl. Med. Leiden, 18, 1935, p. 67; NAINGGOLAN, Bull. Ned. Ind. Jagersgen., 1.IX.1933, p. 68. Furthermore 4 measurings could be done in the museum of the Hague Zoological Gardens (No 356) and in the Ethnographical Museum, Delft (Sumatra, no. 237/29; Java, nos. 112/2, 176/4). The external ♂ Bali measurement, taken by Mr. WOLTERBEEK MULDER, was found in the archives of our Museum (Table XIII).

Table XIII. *Panthera tigris* (L.)

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull: greatest length	Condylolbasal length	Basal length	Zygomatic breadth	Upper tooth-row c-m ¹	Greatest length pm ⁴
<i>sumatrae</i> (Sumatra)												
Atjeh		—	1610	750	—	—	—	—	—	—	—	—
Deli	♂	ad.	—	—	—	—	325	282	—	229	—	31
Deli	♂	ad.	—	—	—	—	309	—	—	206	—	—
Deli	♂	ad.	1650	505	—	—	—	—	—	—	—	—
Tjerinti Indragiri	♂	ad.	1600	770	—	—	345	—	260	220	—	—
Djapura, Indragiri	♂	ad.	—	—	—	—	305	—	240	200	—	—
Sungei Kumbang	♂	ad.	1765	755	—	—	335	—	—	230	—	36
Bangkinang (S.W.C.)	♂	ad.	—	—	—	—	326	285	270.5	219.5	97	33.7
Sumatra's West Coast	♂	ad.	—	—	—	—	± 290	—	244	187	93	34.9
Lampongs (No. 162/36)	♂	ad.	—	—	—	—	286	262.5	245	196.5	90.5	32
Sumatra	♂	ad.	—	—	—	—	—	—	—	255.5	—	34.2
Sumatra (No. 107/37)	♂	ad.	1600	700	290	100	297	263	248	201	90.5	30.3
<i>sondaica</i> (Java)												
Udjung Kulon	♂	ad.	—	—	—	—	349	303	285	246	105	35
Udjung Kulon	♂	ad.	1800	900	340	85	331	294	274	228	98.5	33
Gunung Hondje	♂	ad.	—	—	—	—	326	—	273	221	100	32
Grobogan, C. Java	♂	ad.	—	—	—	—	328	—	271	241	100.5	35
Probolinggo, E. Java	♂	ad.	—	—	—	—	330	289.5	—	241	—	34
Java	♂	ad.	—	—	—	—	316	—	255	231	96	31.6
Java	♂	ad.	—	—	—	—	315	—	—	220	—	—
Java	♂	ad.	—	—	—	—	322	284.5	—	226	—	33
Java	♂	ad.	—	—	—	—	335	297	—	233.5	—	35
Java	♂	ad.	—	—	—	—	317.5	279.5	—	226	—	33
Java	♂	ad.	—	—	—	—	321.0	284.0	—	212.7	—	33.9
Java	♂	ad.	—	—	—	—	309.0	272.0	—	205.5	—	32.8
<i>balica</i> (Bali)												
Bali (W. M.)	♂	ad.	1730	820	—	—	—	—	—	—	—	—
<i>sumatrae</i> (Sumatra)												
Bangkinang, S.W.C. (No. 13/30)	♂	ad.	—	—	—	—	296	258	241	205.5	92	33
Fort de Kock	♂	ad.	—	—	—	—	281	252	233	193	88	31
Padang	♂	ad.	1358	750	291	100	271	242	227	184	86	29.5
Padang	♂	ad.	—	—	—	—	285.0	250.0	—	187.0	—	33.3
Padang Lowlands	♂	ad.	—	—	—	—	276.1	244.0	—	177.5	—	31.0
Djapura, Indragiri	♂	ad.	—	—	—	—	290	—	230	160	—	—
Djambi	♂	ad.	—	—	—	—	279	—	232	181	85.5	29.5
Lahat, Palembang	♂	ad.	—	—	—	—	290	—	230	175	—	—
Benkulen	♂	ad.	1550	650	680	80	271	245.5	231	184	84.5	31.5
T. Seneng, Lampongs	♂	ad.	1800	720	—	—	—	—	—	—	—	—
Lampongs	♂	ad.	—	—	—	—	282	248	—	182	88.5	30
Sumatra	♂	ad.	—	—	—	—	270	—	—	176	—	—
Sumatra	♂	ad.	—	—	—	—	278.5	—	—	181.0	—	32.7
Sumatra	♂	ad.	—	—	—	—	271.0	241.5	—	179.3	—	30.3
Sumatra	♂	ad.	—	—	—	—	284.0	259.0	—	194.5	—	33.9
<i>sondaica</i> (Java)												
Gaol, E. Java	♂	ad.	1690	690	—	—	272	243	226	181	84	30
Java	♂	ad.	—	—	—	—	265	—	222	180	83.5	30.7
Java	♂	ad.	—	—	—	—	290	—	—	195	—	—
Java	♂	ad.	—	—	—	—	287	259	—	193	—	31

¹) Vide text.

Table XIII. *Panthera tigris* (L.), contd.

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull: greatest length	Condylbasal length	Basal length	Zygomatic breadth	Upper tooth-row c-m ¹	Greatest length pm ⁴
<i>sondaica</i> (Java)												
Java	+0+0	ad.	—	—	—	—	279.5	—	—	188	—	31
Java	—	ad.	—	—	—	—	264	236	—	172.5	—	29
Java	—	ad.	—	—	—	—	283.0	252.5	—	183.5	—	31.9
Java	—	ad.	—	—	—	—	289.5	258.0	—	217.1	—	31.2
Java	—	ad.	—	—	—	—	282.5	252.5	—	186.6	—	31.0
Java	—	ad.	—	—	—	—	279.0	250.0	—	189.8	—	32.3
Java	—	ad.	—	—	—	—	282.5	250.0	—	184.9	—	32.5
<i>balica</i> (Bali)												
Bali	+0	ad.	1530	580	—	—	254	—	—	169	—	—
Bali	+0	ad.	1770	690	—	—	269	242.5	224.5	186.5	86	29.7

The most striking result is furnished by the Javan material. The 9 certain plus 3 presumed males all give greatest lengths of the skulls of 309-349 mm, the 6 certain plus 5 presumed females 264-290 mm. If these were decisive numbers, not only there would be no overlapping, but there would be a clear gap between the skull measurements of the males and females. It was already pointed out, however, that we do not yet trust specially the lower limits.

As regards Sumatra we find a much less clear figure. A "gap" between the measurements of the sexes does not seem to exist. The only thing we could say is that no clear overlapping occurs — with the exception mainly of skull N. 162/36 (with 236 mm), which passes for a male. However, we feel obliged to utter doubt as to the sexing of a pair of the Sumatra skulls. The skin bearing the number 162/36 could be controlled whether really a ♂. But there remains the possibility that skull and skin do not belong to one specimen. The stripped skin was sent to us from Sumatra in 1935 by Mr. P. H. A. SYNJA, a big tigerhunter, who very well might have had some tiger skulls on hand and — either in mistake or with some very good intention! — sent another skull with it. The skull belongs to a rather *old* animal and strongly makes the impression to be of female sex. Reversedly we feel doubt if the ♀ skull, Bangkinang, No 13/30, is really a ♀. In our feeling this clearly *young* adult skull with its measure of 296 mm (larger than any other female measured, included some old ones) belongs to a ♂. Certainly, by changing both mentioned skulls, the Sumatra image would become much finer! It seems rather certain that (with a small overlapping) for Sumatra the line of demarcation between ♂ and ♀ skulls lies not far from 290 mm. Finally the remark that the rather *old* "Sumatra" ♂, No 107/37, with its relatively small

skull (297 mm), is a Zoological Garden specimen, once (in life) having turned in very bad condition.

My own former belief that the Javanese are somewhat smaller than the Sumatrans, is not supported by the available skull measurements. As averages we find for the greatest length:

for Sumatra	♂	314	(9)	♀	280	(14)
for Java	♂	325	(12)	♀	279	(11)
for Bali	♂	—	(—)	♀	261	(2)

The fact that Bali is somewhat smaller than Java and Sumatra, is demonstrated by these few skull measurements with sufficient certainty. Some external measurements, however, given below, appear rather in defiance with this conclusion. Perhaps measuring of already stripped-of skins has occurred, without this having been recorded?

Regarding these external measurements the following. With all the discussed museum-material only few measurements of the whole animal have been noted. Therefore, in this case, I made an extract also from the more "popular" literature (especially hunters reports). In this way I gathered the following numbers for the total length of the whole animal:

For *Sumatra*:

190, 200 (♀), 200 (♀), 200, 200 (♂), 210 (♀), 210, 211 (♀), 216 (♂), 220 (♀), 220 (♀), 220 (♀), 225, 225, 226, 228 (♀), 230, 230 (♂), 230 (♀), 235 (♂), 236, 237 (♂), 240, 245, 250 (♀), 250, 250, 250 (♂), 250 (♂), 250 (♂), 252 (♀), 255 (♂), 260, 260 (♂), 262, 268 (♂), 275 (♂), 275 (♂), 280 (♂), 285, 319 (♂) cm.

For *Java*:

230 (♂), 238 (♀), 258 (♂), 260, 270 (♂) cm.

For *Bali*:

211 (♀), 246 (♀), 255 (♂), 275 (♂), 300 cm.

In general these "popular" hunters-measures seem not quite worthless. Generally they are taken with care! Of course the males occurring among the smaller measurements can be young animals. Among the larger measurements (above 252 cm) not a single ♀ is recorded. Yet there may be exceptions (mistakes or inaccurate work). The number of 310 for an "old male specimen of enormous dimensions", shot at Pangian (Teluk Kwantan, Sumatra) by the big tiger hunter, Mr. HOFMAN (cited from "Sumatra Bode") is very large indeed! Furthermore we regard with some suspicion the largest Bali number! Certainly it is remarkable that here for Bali such great measurements are given! Especially for Java the informations make the impression of being reliable and exact, and certainly in that case they would be very wellcome in connection with the present scarcity of the tiger in this island. Of course we remain desirous for further exact numbers.

The largest weight of a ♂ Sumatra tiger has been given by SCHNEIDER: 130 kg. Further weights from there (all ♂) are: 115 kg., 231 Zollpfund, 220 kati, 104 and 104 kg (our above mentioned Zoological Garden specimen, No 107/37, was a very meagre animal, weighing at its death 95 kg). For a ♀ from Sumatra we found 104 kg. From Java we have only the weight of the big ♂ from S. W. Bantam (No 59/33, J. S. DE KANTER): 140 kg.

Panthera pardus (L.)

Panthera pardus melas (CUV.)

Material: J a v a : 5 ♂, 2 ♀, Tjiseureuh Est., Puntjak Pass, near Buitenzorg, leg. C. H. VAN DOOREN & K. PUFKUS, 5.III.1921-11.XI.1941; 4 ♂, Gobang, Parung, Buitenzorg, purchased, 3.X.1923-22.V.1933; 3 ♀, Tjianten, Mt Salak, leg. SCHATTENKERK, 29.VI.1932-10.II.1941; 1 ♀, Tjiburajut, Mt Salak, Buitenzorg. leg. SMITH, 23.VII.1941; 1 ♂, Nirmala Est., Leuwiliang, Buitenzorg, 1200 m, J. W. H. SMISSAERT, 14.VIII.1942; 2 ♂, Tegalwaru Est., leg. T. L. TAN, VI.-VIII.1926; 1 sex inc., Pengalengan, Priangan, M. KERBOSCH, IV.1922; 2 ♀, Madiun, leg. F. J. APPELMAN & F. VERBEEK, 14.VIII.1921-10.V.1941; 1 ♂, Surakarta, leg. H. H. THE SUSUHUNAN, 21.VI.1921; 1 ♂, Purwokerto, leg. BALGOOY, 6.VI.1934; 1 ♂, Tjilatjap, leg. BALGOOY, 6.IX.1934; 1 ♂, Jang Highland, leg. A. LEDEBOER, 1914; 3 ♂, 2 ♀, 2 sex inc., "Java", Zool. Gardens of Batavia & Bandung, 1937-1942.

The Buitenzorg Museum possesses 32 skulls and 16 study skins (10 "normal" and 6 black), at first sight all, certainly or very probably, original from Java, and 1 skull from India (Mysore). Of the first series there are only 26 with exact localities within Java, and of these 22 are adult. The measurements of these are given in the Table, together with those of 16 adult and well located specimen in my own collection, and 2 suchlike skulls which I found in the Ethnographical Museum at Delft, Holland. In literature measurements of Java panthers could only be found with POCOCK (J. Bomb. N. H. Soc., 34, 1930, p. 328) and BRONGERSMA (Zoöl. Med. Leiden, 18, 1935, p. 74). POCOCK measured 9 specimen, of which only 3 with exact localities, and of these he calls one "just ad.", one "subad." and one "not ad.". The first two were inserted in my Table. BRONGERSMA gives measurements of 18 ad. Javan skulls but here also only 4 possess exact localities, and one is from "West Java". Inserting also these 5 specimens in my Table, the total becomes 47. Another difficulty was that 8 of these 47 specimens were unsexed. I placed these specimens in the sections of the table in which I guessed them to belong! Still worse it should be if some of the given sexes should be fault (see below), which usually cannot be controlled. For Java we are not yet in a stage that we could determine the sexes from the measurements. In fact this is, for Java, the first trial to do the reverse: to fix the differences in size between males and females.

It was certainly desirable to establish the maximum limits in the measurements of females and the minimum of adult males. Overlapping

Table XIV. *Panthera pardus melas* (Cuv.)

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull: greatest length	Condylobasal length	Basal length	Zygomatic breadth	Upper tooththrow c-m ¹	Greatest length pm ¹
Palabuan Ratu, W. Java	♂	ad.	—	—	—	—	194	—	164	129	62.5	23.4
Gunung Salak, W. Java		ad.	—	—	—	—	193	174.5	163	127.5	62	23.9
Buitenzorg, W. Java	♂	ad.	975	796	215	69	184	171	160	123	60	22.0
Buitenzorg, W. Java	♂	ad.	965	765	—	65	178	162	150	115	62	23.9
Buitenzorg, W. Java	♂	ad.	—	—	—	—	216	188.5	177	133	70	25.4
Buitenzorg, W. Java	♂	ad.	—	—	—	—	202	181	169	132	64	24.0
Puntjak, W. Java	♂	ad.	—	—	—	—	193.5	173.5	160	128	62.5	22.8
Puntjak, W. Java	♂	ad.	—	—	—	—	190	—	160.5	124	62	22.1
Puntjak, W. Java	♂	ad.	1090	730	195	60	189	170	158	123	62	22.2
Puntjak, W. Java	♂	ad.	1080	760	—	—	204.5	182	170	132	63.5	22.3
Puntjak, W. Java	♂	ad.	1202	858	—	71	213	190	178	142	64.5	22.5
Krawang, W. Java	♂	ad.	1180	800	—	70	231	202	189	147	69	23.6
Legalwarulanden, W. Java	♂	ad.	—	—	—	—	217	192.5	180.5	142.5	67	23.0
Legalwarulanden, W. Java	♂	ad.	—	—	—	—	212	188	175	135	68	24.0
Subang, W. Java	♂	ad.	—	—	—	—	212	—	181	138	64.5	25.1
Subang, W. Java	♂	ad.	—	—	—	—	195	—	162	124.5	61	23.5
Subang, W. Java	♂	ad.	—	—	—	—	196	—	166.5	119	64	25.0
Pameungpeuk, W. Java	♂	ad.	—	—	—	—	202	—	167.5	130.5	65	24.6
Pameungpeuk, W. Java	♂	ad.	—	—	—	—	207	—	167.5	132.8	63.5	23.5
Pameungpeuk, W. Java	♂	ad.	—	—	—	—	215	—	178	134.9	68	24.6
Pameungpeuk, W. Java	♂	ad.	—	—	—	—	173	—	146	112	59.5	24.3
Pameungpeuk, W. Java	♂	ad.	—	—	—	—	182.5	—	153	117	58.5	24.0
Nest Java	♂	ad.	—	—	—	—	230.0	203.0	—	150.9	—	25.4
Purwokerto, C. Java	♂	ad.	—	—	—	—	225.5	196.5	183	144	68	25.0
Pangandaran, C. Java	sub ad. ¹⁾	ad.	1097	813	—	—	190.5	172.5	—	124.5	—	25
Pililatjap, C. Java	♂	ad.	1120	830	—	78	213	190	177	133.5	67.5	25.0
Cedung Brubus, C. Java	♂	ad.	—	—	—	—	228	187.2	—	134.4	—	23.9
Djakarta, C. Java	♂	ad.	—	—	—	—	182	—	153	118	60.3	22.3
Djakarta, C. Java	♂	ad.	—	—	—	—	—	—	—	118	61.4	24.1
Kradenan, E. Java	♂	ad.	—	—	—	—	207	—	170.5	138	63.5	23.4
Madiun, E. Java	♂	ad.	—	—	—	—	202+	188.0	—	131.6	—	25.8
Lang, E. Java	♂	ad.	—	—	—	—	196	178.5	166	130	63	22.0
Gunung Salak, W. Java	♂	ad.	858	662	175	60	161	147	136	107	52.3	20.0
Gunung Salak, W. Java	♂	ad.	—	—	—	—	189	168	156.5	126	58	22.6
Pondok Gedeh, W. Java, 700 m	♂	ad.	995	650	190	65	166	154.5	144.5	112	56	22.3
Puntjak, W. Java, 1100 m	♂	ad.	—	—	—	—	166	154	143	113.5	57	21.0
Puntjak, W. Java, 1100 m	♂	ad.	—	—	—	—	183.5	165.5	153	±119	59	21.6
Subang, W. Java	♂	ad.	—	—	—	—	174	—	147	112	58	22.3
Subang, W. Java	♂	ad.	—	—	—	—	168	—	142.5	108	56.5	21.1
Pengalengan, W. Java	♂	ad.	—	—	—	—	168	152	141	114	55.5	23.4
Pinjiruan, W. Java	♂	ad.	—	—	—	—	169.0	152.5	—	112.0	—	20.8
Pameungpeuk, W. Java	♂	ad.	—	—	—	—	162	—	136	105	53.7	21.6
Pameungpeuk, W. Java	♂	ad.	—	—	—	—	167	—	140	106	56	20.1
Pasikmalaja, W. Java	♂	ad.	1087	732	—	—	178	165	—	—	—	22
Pangpada, C. Java (?)	♂	ad.	—	—	—	—	—	—	—	111.5	—	21.7
Madiun, E. Java	♂	ad.	—	—	—	—	171.5	155	144	—	—	21
Gunung Wilis, E. Java	♂	ad.	—	—	—	—	169.0	152.7	—	107.3	—	21.3

¹⁾ Vide text.

occurs. I feel not at all certain of the sexes of the specimens Pameung-peuk, W. Java, with their large carnassials but short upper toothrow, and I do not feel absolutely sure that in every other case the sexes on the labels of the skulls are irrefutably certain. But, so far as our data reach, it now seems rather certain that every skull with a greatest length of 190 mm or more belongs to a male, each adult skull of 172 or less probably belongs to a female. There between overlapping. Of course consideration of the age can sometimes help us further.

The other skull (not exactly located, but with certainty from Java) seem not to exceed the limits appearing from the table. But among the "remainder" there are 5 skulls from Zoological Gardens (Bandung, Solo) in our Museum collection, which gave occasion for some remarks.

Begin 1942 the Museum received from the Bandung Garden, three skulls of panthers which had been killed at that time in that Garden. Now it is merely by chance that I know with certainty that one of the panthers in that garden (called "Nellie", but a ♂) originated from the Asiatic mainland! Most certainly one of the skulls belongs to that specimen!

Another ♂ skull (No. 76) measures 233.5 mm! In 1921 H. H. the Sunan of Surakarta (C. Java) sent this large, living panther from Solo to our Museum for passage to the Amsterdam Zoological Gardens. It died, however, at Buitenzorg. We donot know the further history of the specimen, but of old the Sunan of Solo possesses a Zoo, in which there are always some panthers. The present specimen has certainly for a long time lived in captivity. All four canines have been *filed away* to the gum, and from the wear of the edges it is clear that this has been done a long time before its death. We will be cautious enough to leave this specimen out of all further consideration, but it is instructive to realise how this animal — had it reached Amsterdam and lived there for many years — perhaps would have found its way to some collection as a (certain) Java-specimen! All this makes us more suspicious again with regard to Zoo specimens without a very full and accurate history.

The lower limits of the measurements of the adults cannot yet be established sufficiently, firstly because our collection is still too small for that, secondly because there seems to exist different opinions where exactly the boundary lies between adult (young adult, just adult), subadult and not adult. POCK gives as the greatest length of his "not adult" Pangandaran ♀ 165 mm. Our Tjianten ♀ (No 3374), with 161 mm, has the teeth of the definite set all present and, though it is not "old", it would be perfectly impossible to call it "just adult" or even "young adult" (sutures of skull not very distinct, occipital crest rather well developed for a female, etc.). The Pangandaran ♂ of POCK is called "subad." by this author, but in our collection there are skulls of smaller size which we call adult without more.

As regard the total length of the whole animal it appears from 17 collection measurements that the maximum must be about 206 cm (No 33/31). This, however, is not the specimen with the biggest skull. The animal (No 940) with the largest skull (among 80 specimens) follows with an external total length of 198 cm. Stories about Java panthers larger than 206 cm (up till 240 cm!) must be rejected if they do not reach us from well checkable side.

Weights of 3 rather old males: 27, 29 and 39 kg, of 2 adult but not old females: 17.5 and 19 kg.

It is very difficult to get an idea of the % of black specimens, occurring in Java. Very roughly I think: about 1 black against 3 or 4 normal. In a series of 66 specimens which I oversee at this moment (complete specimen or adult skulls), 17 times I noted, or found noted, on the labels of the skulls: "black", 23 times I established that the specimen was "normal". Certainly most of the remaining 26 specimens (all odd skulls of course) must be "normal", because it seems to be a general custom to place a note on the label when the specimen is black, but to make no note at all when it is "normal"! But even if we were certain that all these skulls without any indication belonged to "normal" specimens, we should not be allowed to draw exact conclusions, for it is probable that in the Museum the number of black skins is too large in proportion to the real ratio, because one is sooner inclined to make a present of a black skin than of a spotted one, which has more attractiveness as a trophy. Great panther-hunters, who made annotations about their prizes, could do us much pleasure if they would give us a survey in numbers of their personal experiences in this respect.

Neofelis nebulosa (GRIFF.)

Material: C. Borneo: 1 sex. inc., Tewah, leg. L. E. BRETON VAN GROLL, undated; Sumatra: 1 ♂, Palembang, leg. BRAUTIGAM, XII.1918; 1 sex. inc., Palembang, leg. VAN DRIEL, 20.III.1941; 1 ♂, 1 ♀, 1 sex. inc., "Sumatra", purchased, 12.V.1919, 6.XI.1939.

Neofelis nebulosa diardi (CUV.).

In our Museum are 6 skins and 6 skulls (7 animals), unfortunately most of them with insufficient localities. Of our 5 skins and 6 skulls from Sumatra, only two are known to come from Palembang. The one Borneo skin (without skull) comes from Tewah, C. Borneo.

In our table of measurements we included 5 Sumatra and 1 Borneo(?) specimens, POCOCK, *Fauna Br. Ind.*, Mamm., 1, 1939, 2, 1941; a Sumatra measurement of SCHNEIDER, *Zool. Jahrb.*, 23, 1905, p. 102; a ditto of HAGEN, *Tijdsch. Kon. Aardr. Gen.*, 2nd S., 7, 1890, p. 91; and one of RUDIN, *De Trop. Natuur.*, 24, 1935, p. 152. Finally I included the measurements of a skull from Sumatra's Westcoast, coll. H. F. VAN OS, which I found in the Ethnographical Museum at Delft (No 237/28, sex unknown).

Table XV. *Neofelis nebulosa diardi* (Cuv.).

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull: greatest length	Condylbasal length	Basal length	Zygomatic breadth	Upper toothrow, c-m'	Length of pm ⁴
Sumatra												
Atjeh	♂	s.ad.	—	—	—	—	161	144	—	103	—	20
Atjeh	♂	s.ad.	—	—	—	—	158	142	—	100	—	21
Langkat	♂	ad.	—	—	—	—	180	—	140	—	—	—
Sumatra	♂	ad.	—	—	—	—	190	168	—	127	—	18+
Westcoast	♂	ad.	—	—	—	—	162	—	138	110	53.5	—
Palembang	♂	ad.	—	—	—	—	172	158	149	117	57	17
Palembang	♂	ad.	—	—	—	—	180	161	151	124	57.5	18
(Sumatra)	♂	ad.	—	—	—	—	153	140	130	102	52.5	16.5+
Atjeh	♂	ad.	—	—	—	—	143	131	—	95	—	18
Serdang	♂	—	720	780	—	—	—	—	—	—	—	—
W. Sumatra	♂	ad.	—	—	—	—	140	130	—	95	—	17
Fort v.d. Capellen	♂	ad.	—	—	—	—	145	—	—	97	—	—
Padang Pandjang, N. Borneo (??)	♂	ad.	—	—	—	—	141	129	—	99	—	17+
Sumatra	♂	ad.	755	690	137	53	141	127.5	118.5	93.5	48	15.5
Sumatra	♂	ad.	—	—	—	—	153	140	131	105	51	16.5
S. Sumatra	♂	ad.	1000	700	—	—	—	—	—	—	—	—

(The "Borneo" origin of POCOCK's specimen from "Padang Pandjang" is more than doubtful. Padang Pandjang is a well known place in *Sumatra*. According to the "Lijst v. Aardr. Namen N. I. Arch.", Weltevreden, 1923, no place of that name is known from Borneo).

There is rather much variation in colour among our *Sumatra* skins. One specimen has less heavy markings than the others. The ground colour — especially on the belly — is sometimes lighter, sometimes darker. Our *Borneo* skin agrees rather well with a *Palembang* skin, so far as the pattern concerns, but its ground colour is of a warmer ochraceous tinge.

Finally we must correct another error in POCOCK's new *Fauna of Br. India*, where he gives "Java" under the distribution of this species. We must call this report definitely fault. It may be good to emphasize this, as this fault seems to be very unexterminable, keeping itself up throughout a century without the slightest base! (In 1945 it is repeated again in CARTER, HILL & TATE's "Mammals of the Pacific World", p. 96).

Profelis temminckii (VIG. & HORSF.)

Material: *Sumatra*: 1 ♀, Bireuen, Atjeh, leg. K. B. BERTHOLD, 30.X.1935; 1 ♂, Blang Kedjeren, Atjeh, leg. A. HOGERWERF, 24.I.1937; 1 ♂, Fort de Kock, Westcoast Gvt, leg. VAN DER PLAS, X.1928; 1 ♂, Pajakumbuh, Lubuk Kluok, Westcoast Gvt, leg. RINNER, 17.I.1929; 1 ♀, Mutar Alam, Kroë, Benkulen, 1200 m, leg. F. W. RAPPARD, 15.VII.1935; 1 ♂, Palembang, leg. BRAUTIGAM, undated; 1 ♀, Sukapana, Tegineneng, Lampongs, 70 m, leg. A. F. WEHLBURG, 20.XI.1935; 1 ♀, Ranau Est., Lampongs, leg. W. F. RUDIN, X.1931.

***Profelis temminckii temminckii* (VIG. & HORSF.).**

The Buitenzorg Museum possesses 7 complete specimens and 1 odd skull, all from Sumatra. I furthermore studied 1 Atjeh specimen in my own collection. Some measurements (included those of a Sumatra specimen, given by POCK, P.Z.S., 1932, p. 763) are given here:

Table XVI. *Profelis temminckii temminckii* (VIG. & HORSF.)

	Sex	Age	Head & Body	Tail	Hind foot	Ear	Skull: greatest length	Basal length	Zygomatic breadth	Upper tooth-row, c-m'
<i>Sumatra.</i>										
Blang Kedjeren, Atjeh, 800 m	♂	y.ad.	632	395	154	46	111	95	73	36.0
Atjeh	♂	ad.	800	470	—	—	137	—	90.5	40
Padang	♂	ad.	—	—	—	—	130	—	87.5	—
Fort de Kock	♂	ad.	743	419	152	52	—	118	91	—
Lubuk Kluok, 800 m	♂	ad.	660	420	—	—	126	107	85.5	38.3
Palembang	♂	ad.	—	—	—	—	132.5	112	86	39.5
Kp. Bireuen, Atjeh	♂	ad.	643	346	135	48	114	97	73.5	35.0
Ranau	♀?	ad.	—	—	—	—	118	99.5	76	37.5
Mutar Alam, Kroë, 1200 m	♀	ad.	—	—	—	—	104	—	70.5	36.5
Sukapana, Tjigeneneng, Lampongs; 70 m	♀	ad.	—	—	—	—	—	89.5	75	36.3

Of course our Museum series is too small for internal comparison (within Sumatra). One specimen (Lubuk Kluok) is a perfect melanist! Of the other six the three northern ones (Atjeh twice, Fort de Kock once) are darker (somewhat less red, more yellowish and grey) than the southern ones (Palembang, Kroë, Lampongs).

The distribution of the genus is given by POCK (Fauna Brit. Ind., 1, 1939, p. 258) as (a.o.): “?Java but not Borneo”. Here again we wish to state that this species has never been found on Java.

In the stomach of the Peureula-animal in my collection, the remains of a *Tragulus kanchil* were found.

***Ictailurus planiceps* (VIG. & HORSF.)**

Material: Sumatra: 1 ♂, Tebingtinggi, Eastcoast Gvt, leg. J. A. COENRAAD, II.1932; 1 ♂, Fort de Kock, Westcoast Gvt, purchased, 11.IV.1933; 1 ♂, Lampongs, don. Bandung Zool. Garden, 29.XII.1939; 1 ♂, no locality, leg. VOGELPOEL, 21.III.1934.

In the Buitenzorg Museum are 3 Sumatra specimens. A fourth from there was studied by me in the collection NAINGGOLAN. Hereunder some measurements including all others I know of: a series of 6 (1 Sumatra, 5 Borneo), given by LYON, Proc.U.S.Nat.Mus., 34, 1908, p. 659; 40, 1911, p. 114; the external measurements of a Deli ♂ from HAGEN, Tijdschr. Kon. Ned. Aardr. Gen., 2e S. 7, 1890, p. 92; some skull measurements of an unsexed Sumatra specimen (coll. HAGEN!); one sexed and one unsexed

Table XVII. *Ictalurus planiceps* (VIG. & HORSF.)

	Sex	Age	Head & body	Tail	Hind foot	Ear	Skull: greatest length	Condylbasal length	Basal length	Zygomatic breadth	Upper toothrow c-m ¹	Upper toothrow p-m ¹	Length of p ³	Length of p ⁴
<i>Sumatra</i>														
Tebing Tinggi, S.E. Coast	♂	ad.	—	—	—	—	102	94.5	88.5	64	33.4	24.4	8.5	11.2
Deli, S.E. Coast	♂	ad.	410	145	—	—	—	—	—	—	—	—	—	—
Fort de Kock, S.W. Coast (Sumatra?)	♂	ad.	—	—	—	—	103	96.5	91	57	33.7	26.2	8.2	11.3
Deli, S. E. Coast	♂	ad.	459	137	101	36	100	93.5	88	58.5	32.7	24.0	7.8	10.3
Perlak, Atjeh	♀	ad.	—	—	—	—	—	83.8	—	—	—	—	8.4	12.0
Little Siak R.	♀	ad.	465	155	—	—	98	—	84.5	57.5	32.5	—	—	11.2
	♀	ad.	490	169	104	—	96.5	92.0	86	56.4	32.3	—	—	—
<i>Borneo</i>														
Sampang R.	♂	ad.	505	135	107	—	—	97.0	—	63.5	34.0	—	—	—
Kendawangan R.	♂	ad.	446	149	102	—	—	90.0	—	57.0	33.0	—	—	—
Bokka	♂	ad.	—	—	—	—	—	94.4	—	—	—	—	7.6	11.3
Simpang R.	♀	ad.	464	148	99	—	—	89.5	—	56.5	31.0	—	—	—
"	♀	ad.	455	130	99	—	—	85.7	—	56.2	29.4	—	—	—
"	♀	ad.	—	150	100	—	—	89.7	—	56.3	32.0	—	—	—
"Borneo"	—	ad.	—	—	—	—	—	—	—	—	—	—	7.6	11.3
<i>Thai</i>														
Patani, Peninsular Siam	—	ad.	—	—	—	—	100	—	87	58	—	23.2	—	—

Borneo specimens, from BRONGERSMA, Zool. Med., Leiden, 18, 1935, p. 37; one unsexed Thai-specimen, KLOSS, Journ. N. H. Soc. Siam, 2, 1916, p. 79.

Here also a (slight) sexual difference in size seems to exist (Table XVII).

Pardofelis marmorata (MART.)

Material: Sumatra: 1 ♂, Suliki, Westcoast Gvt, leg. C. VAN DER PLAS, 1928; 1 ♀, Batanghari, Djambi, leg. W. BEZEMER, undated; 1 ♂, 1 ♀, Kluang, Palembang, leg. SOEKARNO, 10.VII.-11.XI.1933; 1 ♂, Kotabumi, Lampongs, leg. L. BURGERMAN, 4.VII.1940; 1 ♀ Tandjung Radja, Lampongs, leg. C. WEHLBRUG, VI.1936; 1 ♂, "S. Sumatra", J. TH. HAMAKER, 20.III.1929.

Pardofelis marmorata marmorata (MART.).

The Buitenzorg Museum contains 8 Sumatra specimens of this species (one stuffed). In 1931 I studied and measured an Atjeh specimen (coll. NAINGGOLAN). Some measurements (included those of a ♀ from Pasuma Estate, ROBINSON & KLOSS, Journ. F. M. S., 7, 1919, p. 261) are given here (Table XVIII).

Table XVIII. *Pardofelis marmorata marmorata* (MART.)

	Sex	Age	Head & body	Tail	Hind foot	Ear	Skull: greatest length	Basal length	Zygomatic breadth	Upper toothrow C-m'
Perlak, Atjeh	♂	ad.	—	—	—	—	93	76	63	31
Suliki, S. W. coast	♂	ad.	585	530	125	41	—	—	—	—
Batang Hari, Djambi	♂	ad.	—	—	—	—	95.2	76.6	64.7	31.0
Palembang	♂	ad.	527	478	127	40	95.8	78.0	70.0	31.5
Kotabumi, Lampongs	♂	ad.	—	—	—	—	92.2	77.3	62.9	29.7
S. Sumatra	♂	ad.	—	—	—	—	97.1	80.4	69.3	31.2
Palembang	♀	subad.	471	464	—	37	87.0	75.1	58.1	28
Pasuma Est., Palembang	♀	subad.	452	483	121	43	88	72	63	28.2
Tandj. Radjah, Lampongs	♀	ad.	555	435	—	—	—	74.5	64.5	29.0

The normal, not extraordinarily large, variation in colour, may be pure individual. Possibly also that Northern specimens might be somewhat lighter on the posterior part of the back (somewhat less black, little sharp markings there). The specimen from Tandjung Radjah is an aberrant. It is a strong melanist. To say that it is "black" would not be strongly exaggerated, but it must be acknowledged that here and there (legs and belly) the lighter markings clearly show through. As far as known this is the first black *marmorata*, and the second black Felide, collected in Sumatra (the other is *Profelis temminckii*, see there). The question is of some importance as it gives us the solution for the always

my opinion, the *remaining* difference (now founded on the study of so many more specimens) is amply large enough to bear our Javanese "small race". It may be resaid that all measured skulls, except the Cheribon specimen, No 2029, are adult, in so far as they all possess their full permanent teeth. Most of them are old or even very old! Yet in our males the condylo-basal length never surpasses 127 mm, while POCCOCK's smallest measurement for Br. India and Ceylon is 128 mm. For the basal length our Javan maximum is 118, as against 127-128 in the 3 Thai specimens of CHASEN & KLOSS. For this reason I believe that now *rhizophoreus* must be accepted as a very well based subspecies.

The available external measurements from Java are:

	Sex	Head & body	Tail	Hind foot	Ear
Batavia	♂	687	263	—	48
Batavia	♂	770	262	—	46
Cheribon	♀ juv.	485	190	129	42
Serang	♀	576	209	—	42
Cheribon	(♂)	600	255	—	42
Batavia	♀	655	230	—	45

The contention in the book of CARTER, HILL & TATE: "Mamm. of the Pacif. World", 1945, p. 98, that this species also occurs in Sumatra, is unfounded. Again I may refer to my own note on the question in the journal: Der Zool. Garten N. F., 8, 1936, p. 141.

Prionailurus bengalensis (KERR)

Material: Borneo: 1 ♀ juv., Pematang Tudjuh, Pontianak, leg. MADZUD, 11.III.1931; 1 sex. inc., Bulungan river, leg. MOHARI, 1912; Sumatra: 1 ♂, 1 ♀, Bakalla Est., Eastcoast Gvt, leg. VAN DER MEER MOHR, 17.V.-VIII.1928; 1 sex. inc., Dusun Baru, Djambi, leg. O. POSTHUMUS, VIII.1925; 1 ♀, Kluang, Palembang, leg. SOEKARNO, 25.IX.1933; 1 ♂, Kajutanam, Westcoast Gvt, purchased, undated; 1 ♂, Sanggul, Benkulen, 500 m, leg. J. J.MENDEN, 21.VIII.1936; 1 ♀, Pulau Bay, Benkulen, leg. F. W. RAPFARD, 12.II.1937; Java: 6 ♂, 12 ♀, vicinity of Buitenzorg town, purchased, 3.VIII.1920-16.VI.1939; 1 ♂, Tjianten, Mt Salak, leg. SCHATTENKERK, 15.VI.1932; 1 ♂, Tandjong Priok, Batavia, leg. DELSMAN, 24.IV.1924; 1 ♀, Mt Mesigit, Priangan, leg. HERREBRUGH, 5.XI.1928; 2 ♂, Sindangbarang, Tjiandjur, purchased, 8.XI.1923; 5.XI.1924; 2 ♂, Tjikadjang, Garut, Priangan, leg. R. REINDERS & C. P. J. DE HAAS, 19.III. 1924, 22.VII. 1941; 2 ♀, Pekalongan, purchased, 22.V.-17.VIII.1931.

In the Buitenzorg Museum are 38 study specimens from Sumatra (7), Java (29), and Borneo (2), of which 20 adult or subadult. Some measurements are given here, together with those of 21 adults in my own collection, also from Sumatra (8), Java (12) and Borneo (1). The table was completed by the addition of all available measurements of other authors:

POCOCK, Fauna Br. Ind., Mamm., 1, 1939, p. 275 (23); KLOSS, Journ. N. H. Soc. Siam, 3, 1918, p. 51 (1); KLOSS, Journ. N. H. Soc. Siam, 3, 1919, p. 351 (1); ALLEN, The Mamm. of China and Mongolia, 1, 1938, p. 460 (25); LÖNNBERG, Ark. f. Zool., 18 A, 2, 1925, p. 14 (3); OSGOOD, Publ. Field Mus. N. H., 18, 1932, p. 253 (4); LYON, Proc. U. S. Nat. Mus., 34, 1908, p. 659 (2); LYON, Proc. U. S. Nat. Mus., 40, 1911, p. 115 (1); BRONGERSMA, Zool. Med. Leiden, 18, 1935, p. 28 (12); FRECHKOP, Med. Kon. Natuurk. Mus., België, 10, 14, 1934, p. 18 (2); GYLDENSTOLPE, Kungl. Svenska Vet. Ak. Handl., 40, 1919, p. 27 (1); KOHLBRUGGE, Natuurk. Tijdschr. N. I., 55, 1896, p. 185 (1); ROBINSON & KLOSS, Journ. F. M. S. Mus, 7, 1919, p. 262 (1). Altogether the table contains the measurements of 118 adult and subadult specimens.

The following remarks may be added to the table.

In the first place we wish to propose as a new name:

Prionailurus bengalensis alleni subsp.n.

Type series: 4 ♂ and 3 ♀, from Hainan, in the American Museum of Natural History. Described by ALLEN, The Mamm. of China and Mongolia, 1, 1938, p. 461 (*Felis bengalensis chinensis*).

ALLEN himself already wrote that "the Hainan skulls may average very slightly smaller than those from the mainland (*chinensis*). It is also noticeable in the latter that the nasals of males seem to be a trifle longer".

We find:

Upper cheekteeth of ♂:

Mainland (<i>chinensis</i>)	28.2 — 29.67 — 31.4 mm (9)
Hainan (<i>alleni</i>)	25.5 — 27.32 — 28.5 mm (4)

Upper cheekteeth of ♀:

Mainland (<i>chinensis</i>)	27.3 — 28.16 — 29.4 mm (9)
Hainan (<i>alleni</i>)	25.4 — 26.97 — 28.0 mm (3)

Median length of nasals in ♂:

Mainland (<i>chinensis</i>)	19.8 — 21.12 — 23.0 mm (9)
Hainan (<i>alleni</i>)	17.3 — 17.85 — 18.5 mm (4)

Median length of nasals in ♀:

Mainland (<i>chinensis</i>)	16.6 — 17.83 — 19.0 mm (9)
Hainan (<i>alleni</i>)	15.0 — 17.17 — 18.5 mm (3)

ALLEN does not proceed to separation. In my opinion, however, we cannot evade it.

On LYON's race *tingia*, from Tebing Tinggi island (East coast Sumatra), I have no opinion. It rests on one specimen (♀), which, according to LYON, was "small, distinctly brighter in colour and with relatively larger teeth" than one specimen (♂) of *sumatrana*, Aru Bay. Seen in the light of our table certainly we cannot appreciate the difference in size, whilst the question of the colour seems doubtful. CHASEN, however (Bull. Raffl. Mus., No 15, 1940, p. 107), accepts the name (the type specimen of which he

Table XX. *Prionailurus bengalensis* (KERR).

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull: greatest length	Condylbasal length	Basal length	Zygomatic breadth	Upper toothrow, c-m ¹	Upper toothrow, p ³ -m ¹	Subspecies
<i>Continent:</i>													
Gilgit	♂	ad.	—	—	—	—	89	81	—	59	—	—	<i>trevelyani</i>
Murree	♂	ad.	549	305	114	—	—	—	—	—	—	—	"
Almora, Kumaun	♂	ad.	—	—	—	—	100	93	—	67	—	—	<i>horsfieldi</i>
Kumaun	♂	ad.	—	—	—	—	92	83	—	63.5	—	—	"
Nepal	♂	ad.	—	—	—	—	97	91	—	69	—	—	"
Bhotan	♂	ad.	—	—	—	—	97	±91	—	67	—	—	"
Tura, Garo Hills	♂	ad.	—	—	—	—	95	90	—	64	—	—	"
Mokokehung, Naga Hills	♂	ad.	—	—	—	—	95	88	—	66	—	—	"
Naini Tal, Kumaun	♂	ad.	538	305	117	—	—	—	—	—	—	—	"
Gorkha, Nepal	♂	ad.	554	310	127	—	—	—	—	—	—	—	"
N. of Toungoo, Burma	♂	ad.	—	—	—	—	102	94	—	66	—	—	<i>bengalensis</i>
N. of Toungoo, Burma	♂	ad.	—	—	—	—	91	85	—	63	—	—	"
Palni Hills, S. India	♂	subad.	508	241	117	—	—	—	—	60	—	—	"
S. Coorg, S. India	♂	ad.	—	—	—	—	87.5	79	—	59	—	—	"
Garo Hills, Assam	♂	ad.	528	300	122	—	—	—	—	—	—	—	"
Toungoo, Burma	♂	ad.	615	310	122	—	—	—	—	—	—	—	"
Toungoo, Burma	♂	ad.	538	295	122	—	—	—	—	—	—	—	"
Chiengmai, N. Thai	♂	ad.	—	—	—	—	99	—	82	67	—	—	"
Fukien	♂	ad.	—	—	—	—	93.0	—	87.0	72.3	28.8	—	<i>chinensis</i>
Fukien	♂	ad.	—	—	—	—	94.0	—	89.0	72.0	28.6	—	"
Hunan	♂	ad.	—	—	—	—	87.0	—	81.5	62.6	29.0	—	"
Fukien	♂	ad.	—	—	—	—	94.6	—	87.3	64.6	30.6	—	"
Fukien	♂	ad.	—	—	—	—	86.3	—	81.0	64.5	28.2	—	"
Fukien	♂	ad.	—	—	—	—	105.0	—	88.0	69.0	—	—	"
Hopei	♂	ad.	—	—	—	—	89.5	—	83.0	63.0	31.4	—	"
Wanksien, Szechwan	♂	ad.	445	230	115	45	—	—	—	—	—	—	"
W. Kanton	♂	ad.	—	—	—	—	99	91.5	85	68.5	30.7	—	"

Hainan:

Hainan
Hainan
Hainan
Hainan

Sumatra:

Perlak, Atjeh
Perlak, Atjeh
Perlak, Atjeh
Aru Bay
Medan
Kajutanam.
Benkulen, 500 m
Giesting, Lampongs
Tandjong Morawa, Deli
Padang
Baru, Djambi

Java:

G. Salak
G. Salak
G. Salak
G. Salak
Tandjong Priok
Buitenzorg
Buitenzorg
Buitenzorg
Buitenzorg
Subang
Bandjarwangi, 900 m
Tjikadjang, 1500 m
Slamet
Tirtasari
Rambipudji

	ad.	553	515	125	—	—	—	—	—	—	—	?
ad.	—	—	—	—	—	84.2	—	79.0	57.0	28.5	—	
ad.	—	—	—	—	—	80.4	—	75.0	58.5	27.3	—	
ad.	—	—	—	—	—	83.2	—	77.3	63.0	28.0	—	
ad.	—	—	—	—	—	80.0	—	74.0	60.0	25.5	—	
ad.	—	—	—	—	—	89	—	77	59	28	17.3	
ad.	480	220	110	40	91	—	77.5	61	28.5	17.1		
ad.	—	—	—	—	89.5	—	76	58	28.3	17.3		
ad.	625	145	114	—	93.5	—	78.7	64	—	15.8		
ad.	550	200	—	45	90.5	83.5	77.5	58	28.3	16.0		
ad.	—	—	—	—	—	—	—	58	26.3	15.9		
ad.	518	197	110	50	—	—	—	—	26.4	16.0		
ad.	450	185	98	42	83.5	—	71.5	56.5	25.5	15.4		
ad.	—	—	—	—	88.0	79.4	—	56.4	—	17.1		
ad.	—	—	—	—	92.3	85.0	—	62.4	—	15.7		
ad.	—	—	—	—	86	79.5	74.5	55	26.5	16.3		
ad.	—	—	—	—	89	—	77	59	26.2	15.8		
ad.	441	195	104	42	83	—	69.5	50	25.5	15.6		
ad.	520	205	113	45	—	—	—	—	—	—		
ad.	—	—	—	—	88.5	83	77.5	57.5	27.5	17.9		
subad.	418	212	—	40	81	74	69	50	23.9	15.4		
ad.	414	198	—	41	80.5	75	68.5	50.5	25.7	16.2		
ad.	540	230	110	43	90.5	83	77.5	57	27.6	17.0		
ad.	510	230	110	40	89	82.5	76	58.5	26.5	16.0		
ad.	518	227	—	43	89	83	77	59.5	26.9	16.2		
ad.	—	—	—	—	89	—	77.5	58	27.5	16.8		
ad.	360	190	110	31	87	80	74	56	26.9	15.7		
subad.	386	159	—	38	75.5	69.5	64	47	24.0	14.7		
ad.	—	—	—	—	86	—	76.5	58	26.8	16.3		
ad.	—	—	—	—	84.0	77.0	—	54.0	—	15.8		
ad.	470	210	103	39	83.5	—	72.5	56	25.8	15.6		

alleni subsp. n.
"
"
"
sumatran
"
"
"
"
"
"
"
"
"
"
javanensis
"
"
"
"
"
"
"
"
"
"
"

Table XX. *Prionailurus bengalensis* (KERR), continued.

	Sex	Age	Head and body	Tail	Hind foot	Ear	Skull: greatest length	Condylobasal length	Basal length	Zygomatic breadth	Upper tooth- row, c - m ¹	Upper tooth- row, p ³ - m ¹	Subspecies
<i>Java</i> (continued):													
„Java”	?	ad.	—	—	—	—	83.1	76.3	—	55.1	—	16.7	<i>javanensis</i>
„Java”	?	ad.	—	—	—	—	83.8	78.2	—	—	—	15.5	„
„Java”	?	ad.	—	—	—	—	88.8	81.3	—	57.7	—	16.4	„
<i>Bali</i> :													
Bali	♂	— 1)	550	180	—	—	81.6	—	—	50.4	—	—	„
<i>Borneo</i> :													
Bulongan	♂	—	483	193	98	42	80.0	76.4	70.6	54.6	25.0	—	<i>borneoensis</i>
Tenggarong	♂	ad.	—	—	—	—	86	—	—	59	26.5	16.1	„
Rantau	?	ad.	—	—	—	—	89.1	83.0	—	58.0	—	17.8	„
Pleihari	♂	ad.	590	240	—	—	—	—	—	—	—	—	„
<i>Continent</i> :													
Kumaun	♂	ad.	—	—	—	—	93	84	—	60	—	—	<i>horsfieldi</i>
Tons Valley, U. Prov.	♂	ad.	—	—	—	—	88	82	—	60	—	—	„
Gorkha, Nepal	♂	ad.	448	295	112	—	—	—	—	—	—	—	„
Chin Hills	♂	ad.	—	—	—	—	86	81	—	58	—	—	<i>bengalensis</i>
S. Coorg, S. India	♂	ad.	528	279	108	—	86	78	—	59	—	—	„
Toungoo, Burma	♂	ad.	498	295	108	—	—	—	—	—	—	—	„
Yunnan	♂	ad.	—	—	—	—	80.0	—	73.8	58.0	28.4	—	„
Thai, Koh Lak	♂	ad.	500	290	111	45	88	—	—	58	—	—	?
Kiangsu	♂	ad.	—	—	—	—	82.0	—	75.5	59.0	27.7	—	<i>chinensis</i>
Fukien	♂	ad.	—	—	—	—	85.3	—	80.0	59.5	28.0	—	„
Szechwan	♂	ad.	485	255	114	50	79.5	—	74.5	57.0	27.8	—	„
Hunau	♂	ad.	—	—	—	—	82.5	—	76.0	56.2	29.4	—	„
Fukien	♂	ad.	—	—	—	—	83.4	—	78.5	59.0	28.2	—	„
Fukien	♂	ad.	—	—	—	—	83.5	—	77.0	60.0	28.0	—	„

Hainan	♀	ad.	—	—	—	—	83.0	—	77.0	58.5	28.0	—	<i>alleni</i> subsp. n.
Hainan	♀	ad.	—	—	—	—	82.5	—	75.5	58.2	27.5	—	"
Hainan	♀	ad.	—	—	—	—	77.0	—	70.8	55.0	25.4	—	"
<i>Sumatra:</i>													
Perlak	♀	ad.	525	195	100	40	89	—	77.5	56	27	16.7	<i>sumatrana</i>
Perlak	♀	ad.	495	200	95	40	86.5	—	74	56.5	28	16.8	"
Medan	♀	ad.	425	195	—	45	85.5	80.5	74.5	57.5	26.1	16.0	"
Fort van der Capellen	♀	ad.	—	—	—	—	83.5	—	71.5	55.5	26	15.8	"
Fort van der Capellen	♀	ad.	—	—	—	—	87	—	76.5	59.5	27	15.9	"
Benkulen	♀	ad. ¹⁾	462	213	106	39	90	—	76	55	—	17.1	"
Benkulen	♀	ad.	520	190	—	33	87.5	80.5	75	55	27.0	16.7	"
Palembang	♀	subad.	431	265	94	22	77.5	71.5	65.5	47.5	25.3	14.4	"
<i>Tebing Tinggi:</i>													
Tebing Tinggi Id	♀	ad.	485	185	168	—	83.2	—	72	56.2	—	16	<i>tingia</i> ¹⁾
<i>Nias:</i>													
Nias	♀	— ¹⁾	—	—	—	—	81.9	75.5	—	51.9	—	—	"
<i>Java:</i>													
G. Salak	♀	ad.	428	200	96	39	81.5	—	70	53	25.3	16.4	<i>javanensis</i>
Buitenzorg	♀	ad.	446	187	104	38	80	74.5	69	49.5	24.7	15.9	"
Buitenzorg	♀	ad.	440	210	98	39	81.5	77	70.5	50.5	25.1	15.0	"
Buitenzorg	♀	ad.	430	230	104	36	84	77.5	71.5	52.5	25.5	16.2	"
G. Missigit, Preanger	♀	ad.	450	200	—	38	85	77	71.5	53.5	25.3	15.5	"
Subang	♀	ad.	—	—	—	—	81.5	—	69	50	24.6	15.9	"
Subang	♀	ad.	—	—	—	—	82.5	—	71.5	51.5	25.6	15.3	"
Slamet	♀	ad.	—	—	—	—	85.5	—	74	53	26.5	16.7	"
Tertasari	♀	ad.	—	—	—	—	80.7	74.0	—	50.6	—	15.8	"
Rambipudji	♀	ad.	470	190	100	39	81	—	67	52	24.9	15.7	"
Rambipudji	♀	ad.	450	185	95	39	—	—	—	—	26.2	16.6	"
<i>Bali:</i>													
Bali	♀	— ¹⁾	570	205	—	—	82.5	75.0	—	51.8	—	—	"
<i>Borneo:</i>													
W. Coast	♀	—	—	—	—	—	—	—	—	62.6	—	16.2	<i>borneoensis</i>
Kendawangan	♀	ad.	495	195	110	—	84.7	77.3	—	57.7	26.0	—	"
Bulongan	♀	subad.	—	—	—	—	74.5	68.5	63.5	48	22.8	14.0	"
E.S.E. Borneo	♀	? juv. ¹⁾	—	—	—	—	79.4	72.2	—	51.7	—	16.2	"
E.S.E. Borneo	♀	? juv. ¹⁾	—	—	—	—	88.0	82.0	—	57.9	—	17.0	"

¹⁾ Vide text.

had not seen), besides for the island of Tebing Tinggi, also for the Malay Peninsula. Unfortunately also from there no material is known to me, whilst the literature within my reach did not produce one single measurement from there. For the rest we only wish to quote all that CHASEN says about the form: "A series from the Malay States is about the same in general tone as a group of specimens from Siam proper, but Malayan skulls run smaller than do those from India and Siam, and furthermore, pantherine spots on the back (between the flanks and the pattern of the centre line) are the exception, and solid spots the rule, which is the reverse of the case presented by my Siamese material".

The Bali ♂ of FRECHKOP misses indication of age. We assume that the small measurement of 81.6 mm (greatest length of skull) is to be ascribed to the specimen not yet being quite adult. Already the Bali ♀ is somewhat larger than this ♂.

The Benkulen ♀ of ROBINSON & KLOSS is indicated by these authors as "subadult". We are afraid that this term does not say quite the same with all authors. In fact ROBINSON & KLOSS' specimen is the largest ♀ (greatest length of skull) known to me from Sumatra!

The Nias example of BRONGERSMA is also somewhat uncertain with regard to the question of age. BRONGERSMA says of it: "Judging by its size this skull belongs to an adult animal". But among the 16 adult Sumatra skulls which are available, the smallest one gives 83.5 mm for the greatest length as against the Nias animal 81.9 mm. In our opinion it is exactly the size which could lead us to the presumption that the animal is *not* fully adult! If really the specimen is fully adult, it will probably be necessary to create a new (small) race for Nias.

Also for the 2 examples of E. S. E. Borneo BRONGERSMA's determination of the age is not quite clear to me. On p. 27 he calls them "juv." without more. Yet all permanent teeth appear to be present. Furthermore in one of them the greatest length of the skull is even 88.0 mm. Even if this specimen is a ♂ the thought will not leave us that it is large enough to be perfectly adult.

The stomachs of some specimens I examined contained the remains of rats (*Rattus rattus brevicaudatus*), bats (*Choerephon plicatus*), swiftlets (*Collocalia* sp.) and a skunk (*Mabuya fasciculatus*).

VI. A NEW RACE OF THE BABIRUSA (*BABIRUSSA BABYRUSSA*) FROM TOGEAN ISLAND.

Of this species the Buitenzorg Museum possesses 12 skins (one of which mounted, with skull inside), 2 mounted heads, with the skulls inside, and 29 skulls (2 of which with whole skeleton). Six of the skulls are without locality. The remainder is divided over 4 localities:

Celebes, 10 specimens: *celebensis*. DENINGER.

Togean island: 4 specimens: *togeanensis* subsp.n.

Buru island: 8 specimens: *babyrussa* L.

Sanana island, Sula group: 4 specimens: ?*frosti* THOS.

(We are not quite convinced that our Sanana specimens are really *frosti*. The type locality of this race is Tali Abu island, also in the Sula group. We have not seen material from there. Judging on the description, there seem to exist differences, but as we are not sure of that, in this paper we assume our Sanana specimens to represent *frosti*).

The series is perfectly sufficient to show that it contains 4 well distinguished races, but it is not large enough to give us a good idea about the variability in form and length of the canines. Three of these races have already been described and named before, the fourth is new and may be called:

***Babirussa babyrussa togeanensis* subsp. n.**

Type: ♂ ad., Malengi island, Togean group, Res. Manado, N. Celebes. Coll. J. J. MENDEN, 23.XII.1939. Buitenzorg Museum, No 81/40. Specimens examined: 3, skins and skulls; 1, mounted head with skull inside; all from Malengi.

The distinguishing of the new race from the older described ones is very easy, externally (colour), as well as with the aid of the skull characters only.

Hair: Only *celebensis* looks like naked (to the sight, not to the touch). In *togeanensis* the hair is rather long and is conspicuous at once; in *babyrussa* and *frosti* it is long, with sometimes an inclination towards mane-forming.

Colour: In this respect our series is rather individually variable, but all 4 Togean specimens are readily distinguishable from the other ones by the underside of the body and the innerside of the legs being much lighter than the rest of the body. In *togeanensis* this whitish colour extends alongside the sides of the upper lip.

Measurements: Some of the skull measurements of the 4 races are given in the accompanying table, in which we also included some data, given by A. B. MEYER, AB. Mus., Dresden, 7, 7, 1899, p. 28; DENINGER, Ber. Naturf. Ges. Freiburg, 17, 1909, p. 185; and THOMAS, A. M. N. H. (9) 5, 1920, p. 185.

As regards the size of the whole animal (skull) *celebensis* seems somewhat larger than *babyrussa*. *Frosti* seems to be smaller again. In *togeanensis* the upper toothrow is much shorter than in *celebensis* and a little longer than in *frosti*; from *babyrussa* no clear difference appears. In *togeanensis* the greatest breadth of m^3 is much smaller than in *celebensis*, perhaps a little smaller than in *babyrussa* and *frosti*. In degree of

Table XXI. Skulls and teeth of *Babirussa babyrussa* (L.)

		<i>celebensis</i>				<i>togeanensis</i>				<i>babyrussa</i>				<i>frosti</i>			
Greatest l., max.	♂	318 (21)				299 (2)				300 (24)				284 (3)			
" " "	♀	286 (2)				255 (1)				262 (1)				253 (3)			
Greatest br., max.	♂	149 (19)				131 (2)				135 (22)				124 (2)			
" " "	♀	—				110 (1)				117 (1)				113 (3)			
L. of upper toothrow	♂	72	76.2	82	18	69	69.2	69.5	2	68	70.0	7.3	22	66	67.0	68	2
" " " "	♀	—	—	—	—	—	70	—	1	—	68	—	1	62	65.7	69.5	2
Breadth of m ³	♂	17.0	17.51	18.4	7	14.3	14.65	15.0	2	15.5	15.70	15.9	6	15.0	15.10	15.2	2
" " "	♀	—	—	—	—	—	14.5	—	1	—	15.8	—	1	14.8	15.75	16.7	2
Constr. nasals (%)	♂	23.1	46.9	71.4	19	50.6	55.2	59.9	2	60.9	78.2	95.0	23	68.2	68.8	69.5	2
" " "	♀	—	—	—	—	—	74.3	—	1	—	88.0	—	1	76.9	79.4	83.7	3
L. of upper canine	♂	174, 188, 203, 206, 208, 258, 281, 291, 326, (9)				89, 159, 172 (3)				91, 124, 172, 182, 201, 255 (6)				104, 141 (2)			

(The pinching in of the nasals is calculated in percentage of the greatest breadth of the nasals).

pinching in of the nasals (mesially, between canines), however, *togeanensis* is clearly related to *celebensis*, and does not at all agree with *babyrussa* and *frosti*!

Further measurements of *togeanensis*:

Number	Sex	Head en body	Tail	Hind foot	Ear	Skull: greatest length	Zygomatic breadth	Greatest breadth of nasals	Smallest breadth of nasals	Upper toothrow	Breadth of m ³	Length of upper c
81/40	♂	1065	305	202	77	299	131	24.1	12.2	69.5	14.3	15.9
82/40	♂	890	320	225	70	293	123	21.2	12.7	69	15.0	8.9
—	♂	—	—	—	—	—	—	—	—	—	—	17.2
83/40	♀	877	273	194	70	255	110	21	15.6	70	14.5	—

(It is a curious fact that we feel unable to localize the skulls without locality present in the Museum collection. As may be seen from the data given above, the four described races seem rather easily distinguishable. But exactly these odd skulls are intermediate in some characters!)

In the above we used DENINGER's name *celebensis* for the Celebes race, therewith reducing LESSON's older name *alfurus* to the synonymy of *babyrussa*. Perhaps it may be of some use to explain this question here, because there also exists another opinion. The first valid name for a babi-

rusa was LINNAEUS' *babyrussa*. For his typical locality we are bound to accept Buru. In his *Manuel de Mammologie* LESSON treated all species described by LINNAEUS. When coming to the Babirusa, he was very well aware of LINNAEUS' description. But as a new genus (*Babirusa*) had been formed for it by RAFINESQUE, the name would become "*Babirusa babyrussa*", which repetition, according to the nomenclatorial rules of that time, was not allowed. For this reason (and for no other) LESSON created the new name *alfurus*. He definitely says that he is renaming LINNAEUS' species, giving as habitat Buru! In the opinion of DENINGER (l.c.), THOMAS (l.c.), and my self, herewith the question is sufficiently clear to accept *alfurus* as a synonym of LINNAEUS' *babyrussa*.

But there exists another opinion. STRESEMANN (*Pallasia*, 2, 1, 1924, p. 49) says that there cannot be any doubt that the full description, given by LESSON under his new name, relates to Celebes animals (though LESSON himself thought and said that he was describing Buru animals!). It seems really certain that this is true. And therefore LESSON's name would relate to the Celebes race, which then should be called *Babirusa babyrussa alfurus* LESSON, reducing DENINGER's name *celebensis* to the synonymy of *alfurus*.

Finally we ask for allowance to give a few notes on the "distribution" of the Babirusa, according to some (more or less inaccurate) authors. It may discourage those, who, up till this day, remain trusting (and passing) all kinds of old reports, without first satisfying themselves of their grounds.

As far as I know, the first who made such a mistake was LINNAEUS himself, who gave *Borneo* as the habitat of his species. Of course he meant Buru, but the Borneo-myth has remained alive with many later authors. Then it was William MARSDEN (*The History of Sumatra*, 3rd. ed., London, 1811, p. 117) who gave our species for *Sumatra*. Independently the same was done by J. OLIVIER (*Land- en Zeetochten in Nederlandsch Indië*, Amsterdam, 1827, p. 444), who says that in this island they hang themselves to the branches of the trees with their tusks when sleeping; by C. LEKKERKERKER (*Land en Volk van Sumatra*, Leiden, 1916, p. 106); by W. VOLZ (*Noord-Sumatra*, 2, Berlin, 1912, p. 377), who says that he obtained a skull in the island; and by others. FITZINGER (*SB. Akad. Wien*, 1864, p. 43) gives *New Ireland*. For *Amboina* it is given by VAN EVERTSZ (*Beschrijving der Reizen, 1655-68*, Amsterdam, 1670, p. 96). With some doubt it is given for *Ternate* and *Waigeu* by P. BLEEKER (*Reis naar de Minahassa en de Moluksche Archipel*, 1855, Batavia, 1856, 1, p. 21). Baron DE BOURGAINVILLE (*Journal de la Navigation autour du Globe de la frégate la Thétis et de la corvette l'Espérance*, Paris, 1837, 1, p. 408) says that he saw two specimens from *Sumbawa*. In a popular journal (*Panorama*, 1939, No. 28) its occurrence in *Malay Peninsula* is suggested. NAGAMICHI KURODA (*Birds of the Island of Java*, Tokyo, 1, 1933, p. XIII) gives the occurrence

in *Java*. The most remarkable, however, seems the report of GRAY in his *Cat. Carn., Pachyd. and Edent. Mamm.* (British Museum), 1869, p. 349, where he gives the Habitat of the species as: "*Borneo; Malacca?; Celebes; Ceram; Timor; Java; Sumatra; New Guinea; New Ireland*". All these finding places, except Celebes, being wrong, whilst the type-locality (Buru) fails — we suppose this to be a maximum and a unicum in the accumulating of mistakes! For the rest we feel sure that this improvised enumeration of faults is not at all complete.
